This is the EgyptAir Flight Crew Operating Manual – Volume 2, Issue No. 013.

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Model BD–500–1A11

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Issue	Description of change	Signature / Date incorporated
001	Initial issue.	Signature on file Jul 08/2016
002	Introduces changes to align with AFM Issue 002 and to update all chapters with new information.	Signature on file Sep 06/2016
003	Introduces changes to align with AFM Issue 003 and to update all chapters with new information.	Signature on file Oct 12/2016
004	Introduces changes to align with AFM Issue 004 and to update all chapters with new information.	Signature on file Nov 10/2016
005	Introduces changes to align with AFM Issue 005 and to update all chapters with new information.	Signature on file Dec 08/2016
006	Introduces changes to align with AFM Issue 006 and to update all chapters with new information.	Signature on file Apr 12/2017
007	Introduces changes to align with AFM Issue 007 and to update all chapters with new information.	Signature on file Aug 31/2017
008	Introduces changes to align with AFM Issue 008 and to update all chapters with new information.	Signature on file Jan 16/2018
009	Introduces changes to align with AFM Issue 009 and to update all chapters with new information.	Signature on file

Issue	Description of change	Signature / Date incorporated
		Aug 06/2018
010	Introduces changes to align with AFM Issue 010 and to update some chapters with new information.	Signature on file Oct 11/2018
011	Introduces changes to align with AFM Issue 011 and to update some chapters with new information.	Signature on file Jan 11/2019
012	Introduces changes to align with AFM Issue 012 and to update some chapters with new information.	Signature on file Jul 22/2019
012A	Introduces changes to align with AFM Issue 012A.	Signature on file Aug 20/2019
013	Introduces changes to align with AFM Issue 013 and to update some chapters with new information.	Signature on file Sep 23/2019

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* The asterisk indicates pages changed, added or deleted.

The option codes that follow appear adjacent to the applicable text.

Absence of an option code means that the data are applicable to all.

Option code	Description
<Metric>	ON A/C ALL Metric
<TC>	ON A/C ALL Type certification – Transport Canada (TC) registered airplanes
<10100101C>	ON A/C ALL Extended operations (ETOPS) capability – 120-minute diversion – APU on demand
<10109100C>	ON A/C ALL Combined options: Authorities and ETOPS (<10100100C> or <10100101C> or <10100102C> or <10100103C>) and (<TC> or <FAA>)
<10100200C>	ON A/C ALL Improved level of calculated in-flight performance
<13000701C>	ON A/C ALL Alternate CG envelope
<13001061C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 134482 lb / 61000 kg
<13001131C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 141096 lb / 64000 kg
<13001176C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 145500 lb / 65997 kg
<13001290C>	ON A/C ALL Maximum Zero Fuel Weight (MZFW) and Maximum Landing Weight (MLW) limitations – 123000 lb / 55792 kg and 129500 lb / 58740 kg

Option code	Description
<13001310C>	ON A/C ALL Maximum Takeoff Weight (MTOW) limitations – 149000 lb / 67585 kg
<21710001D>	ON A/C ALL Ozone converters – Not installed
<23150004C>	ON A/C 55058–55059 SATCOM Iridium system – Installed
<23150006C>	ON A/C ALL AFIRS™ Iridium SATCOM system – Installed
<23159006C>	ON A/C ALL Combined options: Authorities and AFIRS™ Iridium SATCOM system <TC> and <23150006C>
<23240001C>	ON A/C ALL CPDLC – Aeronautical Telecommunication Network (Link 2000+)
<23249001C>	ON A/C ALL Combined options: CPDLC <23240001C> or <23240002C>
<26240002C>	ON A/C ALL Cargo FIREX – 120 minute diversion capability
<31340001C>	ON A/C ALL High load event indication function
<44301201C>	ON A/C ALL Ku-band connectivity system (Panasonic eXConnect®)
<44309202C>	ON A/C ALL Combined options: Ku-band connectivity system <44301201C> or <44301202C> or <44301211C> or <44300212C>
<72211001D>	ON A/C ALL Standard thrust rating – PW1521G-3

Option code	Description
<90000003C>	ON A/C ALL Combined options: <EASA> or <10300002C> or <10400001C> or <13000701C>

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A reference to the service bulletins that follow appears above applicable boxed text.

Service bulletin	Description
BD500-324004	ON A/C 55058–55061 Landing Gear – Wheels and Brakes – Brake Control System (BCS) Software Update (SW2.3.1)
BD500-530003	ON A/C 55058–55063 Fuselage – General – Replacement of the Girt Bar Fittings for the Passenger and Service Doors

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A reference to the modifications that follow appears above applicable boxed text.

Modification	Description
219001	ON A/C ALL Integrated Air System Controller (IASC) Software (5.0) – Installed in production
291002	ON A/C ALL Hydraulic Systems #2 and #3 Alternating Current Motor Pumps (ACMP)(–1004) – Installed in production
324002	ON A/C ALL Brake Control System (BCS) software SW2.2.1 – Installed in production
732002	ON A/C ALL Full Authority Digital Engine Control (FADEC) software v2.10 – Installed in production
732003	ON A/C ALL Full Authority Digital Engine Control (FADEC) software v2.11 – Installed in production

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CHAPTER 1 – INTRODUCTION

GENERAL

INTRODUCTION

The Flight Crew Operating Manual (FCOM) is designed to provide the flight crew with readily accessible operational information. For optimum utilization of the manual, read this introduction carefully.

The purpose of the FCOM is:

- To provide information regarding limitations, operational procedures, and performance,
- To standardize terminology and behavioral patterns,
- To provide rapid access to reference procedures, and
- To provide information on airplane systems and operation that is controlled and revised.

The FCOM is divided into two volumes, as follows:

- Volume 1 – System descriptions, and
- Volume 2 – Procedures and performance.

Throughout this manual, the experience of the typical CSeries crew is recognized and, for this reason, basic system principles are omitted. For example, the text is not intended to teach the crew how to fly an airplane, but to enable an experienced crew to operate the CSeries safely and proficiently.

For clarity and simplicity, this manual is written in the imperative, in order that the information and operating instructions can be shown in a positive sense and require no interpretation by the user.

Specific items that require emphasis are expanded upon and ranked in increasing order of importance in the form of a NOTE, CAUTION, or WARNING.

NOTE

Expands on information which is considered essential to emphasize. Information contained in notes may also be safety-related.

Provides information that can cause damage to equipment if not followed.

Emphasized information that can result in personal injury or loss of life if not followed.

SCOPE OF THE FLIGHT CREW OPERATING MANUAL

A. Volume 1 – System descriptions

Volume 1 contains descriptive airplane systems information. This volume is divided into chapter format, in alphabetical order.

B. Volume 2 – Limitations, procedures and performance

The procedures and performance volume is the complete airplane operating procedures document.

The contents and general format of the procedures and performance volume are as follows:

- Chapter 1 – Introduction: This chapter contains general information to describe the contents of each of the FCOM volumes.
- Chapter 2 – Limitations: This chapter contains the reproduction of the operating limitations that govern operation of the airplane as found in the Airplane Flight Manual.
- Chapter 3 – Normal procedures: This chapter contains detailed procedures for conducting a normal flight with all airplane systems operational. Procedures are listed sequentially by phase of flight, starting with exterior safety inspection and extending through post-flight duties at destination.

- Chapter 4 – Non-normal procedures: This chapter contains procedures for all EICAS warning and caution messages, and non-EICAS related conditions.
- Chapter 5 – Performance: This chapter contains limited performance information to allow dispatch of the airplane if normal performance data are not available.
- Chapter 6 – Supplements: This chapter contains information which supersedes or is in addition to the basic AFM.
- Chapter 8 – Operational guidance: This chapter contains normal procedures that are not routinely done on each flight (e.g. windshear, cold weather operations, etc.).

C. Conventions

The designations PLT and CPLT refer to the physical location of the crew members:

- PLT is the left pilot position, and
- CPLT is the right pilot position.

When the pilot-in-command (PIC) is in a position other than the PLT position, the PIC continues to exercise command authority while performing the duties assigned to that crew position. The PIC must brief the other crew member to ensure that both crew members understand the duties of their assigned station.

The designations PF and PM are used to identify the crew member responsibilities as follows:

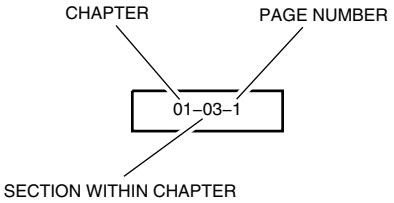
- PF means that the associated action is always performed by the pilot presently flying the airplane, whether it is the pilot or the copilot.
- PM means that the associated action is being monitored by the pilot presently not flying the airplane, whether it is the pilot or the copilot.

PAGINATION

Each chapter of this manual is subdivided into sections categorized by the subject or type of material presented.

This permits issuance of small blocks of revision pages without renumbering and reprinting complete sections of the manual.

Volume 1 and volume 2 are paginated independently with a Chapter/Section/Page numbering system as follows:



Additional identification data in the margin of the page includes the date of issue or revision date printed below the page number and the chapter title and subject shown in the masthead.

Blank pages that must be arranged as facing pages at the end of a section are defined by “This Page Intentionally Left Blank”. In the List of Effective Pages, these blank pages are included in the total page count of each affected chapter.

REVISION SYSTEM

Revisions to this manual are issued when necessary and are numbered consecutively. Each revision must be inserted immediately and entered in the Change record.

Alterations made during revision cycles are identified by a strong vertical line, except when a whole chapter or section is revised. In this case, the reason for revision is given in the Change record.

AIRPLANE FLIGHT MANUAL (AFM)

The Airplane Flight Manual (AFM) (BD500-3AB48-22200-00) contains the information required by the regulatory agencies for certification of the airplane.

- Chapter 1 – Introduction: This chapter contains general information to describe the contents of each of the AFM chapters.
- Chapter 2 – Limitations: Specifies the mandatory airplane limitations (structural weight, center of gravity, operating limitations, operating speeds and system limitations).
- Chapter 3 – Normal procedures: Procedures are given in checklist format (phase of flight) and cover the mandatory checks required by the reliability and safety analyses and related certification documentation.
- Chapter 4 – Non-normal procedures: Procedures for all EICAS warning and caution messages, and non-EICAS-related conditions. These are the result of a component failure or situation, in which the use of the normal or alternate systems can be expected to maintain an acceptable level of airplane operation.
- Chapter 5 – Performance: The certified performance data, for given configurations and conditions, including corresponding performance limitations.
- Chapter 6 – Supplements: The certified supplementary data (noise characteristics, operation on contaminated runways, Category II operations, etc.)
- Chapter 7 – Appendices: Includes the Configuration Deviation List (CDL) – The CDL contains additional limitations for operation without certain secondary airframe and/or nacelle parts.

QUICK REFERENCE HANDBOOK (QRH)

The Quick Reference Handbook (QRH) (BD500−3AB48−22900−00) contains the non−normal procedures and limited performance data. The QRH revision level is directly aligned with the AFM revision level, as the QRH content is an operational expansion of the AFM content.

The non−normal procedures are organized by system and EICAS message format, as found in the Airplane Flight Manual. The same system structure is also used to organize the non-normal procedure QRH content in the Electronic Checklist (ECL).

The performance data section provides limited performance information to allow dispatch of the airplane if normal performance data are not available (EFB, datalink, etc.)

ELECTRONIC CHECKLIST

The airplane is equipped with an Electronic Checklist (ECL). The content of the ECL reflects the intent of the corresponding AFM revision and is directly aligned with the non-normal procedure, operational content in the same revision of the QRH.

MASTER MINIMUM EQUIPMENT LIST (MMEL)

The Master Minimum Equipment List (MMEL) lists items of equipment and under what conditions that equipment can be inoperative. It should be noted that MMEL relief can never deviate from AFM limitations and emergency procedures nor from Airworthiness Directives.

NOTE

In accordance with Airworthiness Regulations, all items of equipment not listed in the MMEL must be operative before dispatch.

The requirements of the MMEL do not apply after the thrust levers are advanced at the start of takeoff.

MMEL format and item numbering follow the standard ATA 2200 classification system.

DISPATCH DEVIATION GUIDE (DDG)

The Dispatch Deviation Guide (DDG) contains procedures required to operate the airplane in various non-standard configurations as permitted by the relief granted within the MMEL.

Chapter 1 of the DDG follows MMEL item number format and provides the details of the procedures highlighted by the MMEL maintenance (M) and operations (O) symbols.

The (O) procedures in the DDG are in addition to the normal and non-normal procedures already available in the AFM, FCOM, and QRH. These additional crew procedures must be done on each flight made with the inoperative system or equipment.

A typical example of an (O) procedure is:

- Dispatch with an inoperative air-conditioning pack – Additional limitations and the procedural changes required to smoke or fire emergencies and to air-conditioning system non-normal procedures.

Chapter 2 of the DDG contains an EICAS message index. This index provides cross-references between EICAS messages and MMEL items which may provide dispatch relief.

AIRWORTHINESS AUTHORITY CODES

Applicable pages of this manual contain Airworthiness authority codes adjacent to the applicable text when a specific paragraph, procedure, or illustration is unique to the specified Authority. Example: <TC>, <FAA>, <EASA>, etc.

CIRCUIT BREAKER RESET

A. General

There is a latent danger in resetting a circuit breaker tripped by an unknown cause because the tripped condition is a signal that something may be wrong in the related electrical circuit.

Until it is positively determined what has caused a circuit breaker trip to occur, flight crews, maintenance personnel, or airplane ground servicing personnel usually have no way of knowing the consequences of resetting a tripped circuit breaker.

Resetting a circuit breaker tripped by an unknown cause should normally be a maintenance function conducted on the ground.

B. In flight

A circuit breaker should not be reset in flight or cycled (i.e., opened or closed) unless doing so is consistent with explicit procedures specified in the FCOM/QRH or unless, in the judgement of the PIC, resetting or cycling the circuit breaker is necessary for the safe completion of the flight.

A logbook write-up is required for an in-flight circuit breaker reset/cycle.

C. On ground

A circuit breaker tripped by an unknown cause may be reset on the ground after maintenance has determined the cause of the trip and has determined that the circuit breaker may be safely reset.

A circuit breaker may be cycled (tripped or reset) as part of a trouble-shooting procedure documented in the Aircraft Maintenance Publication (AMP), unless doing so is specially prohibited for the existing conditions.

If the Master MMEL or DDG contain procedures that allow a tripped circuit breaker to be reset, then the same cautions identified previously also apply.

DEFINITIONS

A. Airspeeds

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

IAS	Indicated airspeed – Airspeed indicator reading corrected for instrument error. Values in this manual assume zero instrument error.
CAS	Calibrated airspeed – Indicated airspeed corrected for static source position error.
Corrected V_{REF}	Corrected reference landing speed – The reference landing speed (V_{REF}) to be used during an approach in icing conditions (as given in Chapter 2) or after a system failure (ΔV_{REF} as provided in Chapter 4).
EAS	Equivalent airspeed – Calibrated airspeed corrected for compressibility.
TAS	True airspeed – Equivalent airspeed corrected for density.
M_I	Indicated Mach number – Machmeter reading corrected for instrument error.
M_T	True Mach number – Machmeter reading corrected for both instrument and static source position errors.
V_1	Takeoff decision speed – The speed used as a reference at which, due to engine failure or other causes, the pilot may elect to stop or continue the takeoff.
V_{1MBE}	Maximum $V_1$for brake energy – The maximum speed on the ground from which a stop can be accomplished within the energy capabilities of the brakes.
V_{1MCG}	Minimum V_1 limited by control on the ground – The takeoff decision speed following an engine failure at V_{MCG}. V_1 may not be less than V_{1MCG}.

V_2	Takeoff safety speed – Target climb speed to be attained at or before a height of 35 feet above the runway during a continued takeoff, following an engine failure.
V_A	Design maneuvering speed – The maximum speed at which application of full available aileron, rudder or elevator will not overstress the airplane.
V_{AC}	Approach climb speed (also known as V_{2GA} or $V_{2\ GO\text{-}AROUND}$) – Target climb speed to be attained during a go-around with one engine inoperative.
V_{APP}	Approach speed – The airspeed to be maintained down to 50 feet over the runway threshold. It is the speed targeted by either the pilot flying, or by any automated system including the autothrottle. The approach speed is V_{REF} plus any increment for use of autothrottle (including auto-land) or wind gust factor.
V_{EF}	Critical engine failure speed – The speed at which, if the critical engine fails, the engine failure is recognized at V_1.
V_{ENR}	Enroute climb speed (green dot).
V_{FE}	Maximum flap extended speed – The highest speed permissible with the wing flaps in a prescribed extended position.
V_{FTO}	Final takeoff climb speed – The speed attained at the end of the flight path acceleration segment during a continued takeoff following an engine failure, and is the climb speed scheduled for the final takeoff climb.
V_{GA}	Climb speed for all engines go-around.
V_{LC}	Initial climb speed in the landing configuration. Is equivalent to V_{REF}.
V_{LE}	Maximum landing gear extended speed – The maximum speed at which the airplane can be safely flown with the landing gear extended.

V_{LO}	Maximum landing gear operating speed – The maximum speed at which the landing gear can be safely extended or retracted.
V_{MO}/M_{MO}	Maximum operating limit speed / Mach number – The maximum operating limit speed (airspeed or Mach number) is the speed that must not be deliberately exceeded in any regime of flight (climb, cruise, or descent) unless a higher speed is authorized for flight test or pilot training operations.
V_{MCA}	Minimum control speed, air – Minimum flight speed at which the airplane is controllable with a maximum of 5-degree bank, when the critical engine suddenly becomes inoperative, with the remaining engine at maximum take-off thrust.
V_{MCG}	Minimum control speed, ground – Minimum speed on the ground at which control can be maintained and the takeoff continued using aerodynamic controls alone, when the critical engine suddenly becomes inoperative, with the remaining engine at maximum takeoff thrust.
V_{MCL}	Minimum control speed during landing approach – Minimum flight speed at which the airplane is controllable with a maximum of 5-degree bank, when the critical engine suddenly becomes inoperative, with the remaining engine at go around thrust.
V_R	Rotation speed – Speed at which rotation is initiated during takeoff.
V_{RA}	Rough air speed – Turbulence penetration speed.
V_{REF}	Reference landing speed – The minimum speed at a height of 50 feet above the runway threshold for the flap selected.
V_{S1G}	Reference stall speed based on 1.0 g criteria.
V_{SR}	Reference stalling speed.

B. Temperature

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

ISA	International standard atmospheric conditions.
OAT	Outside air temperature – The free air temperature, obtained either from in-flight temperature indications or ground meteorological sources.
SAT	Static air temperature (In-flight, SAT = OAT).
TAT	Total air temperature – Static air temperature plus adiabatic compression (ram) rise.

C. Distances

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

Takeoff distance	The takeoff distance on dry runways is the longer of (1) and (2), defined as follows: The takeoff distance on wet and contaminated runways is the longer of (3) or the takeoff distance on dry runways as established from (1) or (2). (1) The distance from the start of the takeoff roll to the point where the airplane attains a height of 35 feet above the takeoff surface, with a failure of the critical engine at V_{EF}. (2) 115% of the distance from the start of the takeoff roll to the point where the airplane attains a height of 35 feet above the takeoff surface, with all engines operating. (3) The distance from the start of the takeoff roll to the point where the airplane attains a height of 15 feet above the takeoff surface, with a failure of the critical engine at V_{EF}.

Takeoff run (with clearway)	The takeoff run on dry runways is the longer of the two distances defined below: 1. The distance from start of the takeoff roll to the mid point between liftoff and the point where the airplane attains a height of 35 feet above the takeoff surface, with a failure of the critical engine at V_{EF}. 2. 115% of the distance from the start of the takeoff roll to the mid point between liftoff and the point where the airplane attains a height of 35 feet above the takeoff surface, with all engines operating. The takeoff run on wet and contaminated runways is the longer of the two distances defined below: 1. The distance from start of the takeoff roll to the point where the airplane attains a height of 15 feet above the takeoff surface, with a failure of the critical engine at V_{EF}. 2. 115% of the distance from the start of the takeoff roll to the mid point between liftoff and the point where the airplane attains a height of 35 feet above the takeoff surface, with all engines operating.
Takeoff run (without clearway)	If the takeoff distance does not include a clearway, the takeoff run is equal to the takeoff distance.
Accelerate-stop distance (applicable to dry, wet and contaminated runways)	The accelerate-stop distance is the longer of (1) and (2), defined as follows: (1) The sum of the distances necessary to: (a) Accelerate the airplane from a standing start to V_{EF} with all engines operating; (b) Accelerate the airplane from V_{EF} to V_1 assuming the critical engine fails at V_{EF}; and

	(c) Come to a full stop from the point reached at the end of the acceleration period prescribed in paragraph (1)(b), assuming that the pilot does not apply any means of retarding the airplane until that point is reached; plus (d) A distance equivalent to 2 seconds at constant V_1. (2) The sum of the distances necessary to: (a) Accelerate the airplane from a standing start to V_1 with all engines operating; (b) Come to a full stop at the end of the period prescribed in paragraph (2)(a), assuming that the pilot does not apply any means of retarding the airplane until that point is reached; plus (c) A distance equivalent to 2 second at constant V_1.
Clearway	An area beyond the runway, not less than 500 feet wide, centrally located about the extended centerline of the runway, and under the control of the airport authorities. The clearway is expressed in terms of a clearway plane, extending from the end of the runway with an upward slope not exceeding 1.25% above which no object nor any terrain protrudes. However, threshold lights may protrude above the plane if their height above the end of the runway is 26 inches or less and if they are located to each side of the runway.
Stopway	An area beyond the takeoff runway at least as wide as the runway and centered upon the extended centerline of the runway, able to support the airplane during an aborted takeoff without causing structural damage to the airplane, and designated by the airport authorities for use in decelerating the airplane during an aborted takeoff.

Actual landing distance	The actual landing distance is the distance from a 50 feet height with the flaps in the normal landing configuration, to a full stop on a smooth, level, hard-surfaced runway and ISA temperature. For dispatch on a dry or wet runway, the Actual Landing Distance (ALD) is calculated using VREF. On a wet runway, the CAFM will not give the ALD. For dispatch on a contaminated runway, the VAPP is used to calculate the Actual Landing Distance (ALD).
Factored landing distance	This value is calculated by the CAFM for dispatch. Autoland off: The factored landing distance is equal to the landing field length for dispatch on dry or wet runway. The factored landing distance is equal to the actual landing distance multiplied by 1.15 for dispatch on a contaminated runway. Autoland on: The factored landing distance is equal to the actual landing distance multiplied by 1.15 on all surfaces.
Landing field length	The landing field length is only calculated for dispatch on dry and wet runways with autoland off. The landing field length data provided by the CAFM include factors for operational rules which require the use of 60% of the available runway in determining landing field length requirements. The required landing field length on a dry runway is the actual landing distance divided by 0.6. The landing field length required under wet runway conditions is equal to 115% of the dry runway landing field length.
Operational landing distance	The operational landing distance is the distance from a 50-foot height at the selected approach speed with the flaps in the normal landing configuration, to a full stop on a runway surface with a specific braking action at the actual conditions of temperature, wind, runway slope, pressure altitude and increment on V_{REF}. OLD data can be determined with the autobrake system on or off.

D. Takeoff path

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

Takeoff path	The takeoff path begins from a standing start and ends at 1500 feet above the takeoff surface or at the point where transition from takeoff to enroute configuration is completed, whichever is higher.
Takeoff flight path	The takeoff flight path begins at the end of the takeoff distance and at a height of 35 feet above the takeoff surface, and ends at 1500 feet above the takeoff surface, or at the point where transition from takeoff to enroute configuration is completed, whichever is higher. This is also known as the Gross takeoff flight path.
Net takeoff flight path	The net takeoff flight path is the gross takeoff flight path diminished by 0.8% climb gradient capability (or equivalent reduction in acceleration along that part of the takeoff flight path at which the airplane is accelerated in level flight). The net takeoff flight path must clear all obstacles in the takeoff area by at least 35 feet vertically.

E. Climb gradient

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

Climb gradient	The ratio of the change in height, during a portion of a climb, to the horizontal distance traversed in the same time interval.
Gross gradient	Climb gradient expressed as a percentage ratio, obtained using the following formula: (Change in height ÷ Horizontal distance travelled) × 100 The gradients provided by the CAFM are based on true (not pressure) rates of climb.
Net gradient	The gross gradient reduced by the required margins.

First segment	The first segment starts at the liftoff point and ends at the point where landing gear retraction is completed, at a speed increasing from V_{LO} at liftoff to V_2.
Second segment	The second segment starts at the point where the landing gear is fully retracted up to at least 400 feet above the runway, flown at V_2 speed and flaps in the takeoff position.
Acceleration segment	The acceleration segment is the part of the takeoff flight path that begins at the end of the second segment and extends horizontally over the distance required to retract flaps to zero, and accelerated to the final takeoff climb speed.
Final segment	The final segment starts from the end of the acceleration segment and extends to the end of the takeoff flight path, flown at the final segment climb speed (V_{FTO}), flaps up.

F. Miscellaneous

The following definitions are commonly used terms. Items not commonly used are defined in the respective sections where they apply.

APR	Automatic power reserve – In the event of an engine failure during takeoff, the APR function will increase the thrust rating of the remaining engine.
Center of Gravity (CG)	The point at which the airplane would balance if suspended. The CG distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
MLW	Maximum landing weight – The maximum airplane weight approved for the landing touchdown.
MRW	Maximum ramp weight – The maximum possible airplane weight allowed for ground handling and taxiing.
MTOW	Maximum takeoff weight – The maximum airplane weight approved for the start of takeoff.

MZFW	Maximum zero fuel weight – The maximum weight allowed before usable fuel is loaded into the airplane.

NOTE

The following ICAO weight conversion factor is used throughout this manual:

- 1 kilogram (kg) = 2.20462262185 pounds (lbs)

As much as possible, these numbers are rounded off to the nearest multiple of 5, except when operational requirements dictate otherwise. These weights correspond to the weights given in the Weight and Balance Manual (BD500-3AB48-22100-00).

ABBREVIATIONS

The abbreviations that follow are found throughout the manual. Some abbreviations can also appear in lowercase letters. Abbreviations that have very limited usage are explained in the chapters where they are used.

A

A/C	Air-conditioning
A/ICE	Anti-ice
AAE	Above Aerodrome Elevation
AC	Advisory Circular, Alternating Current
ACARS	Aircraft Communications Addressing and Reporting System
ACMP	Alternating Current Motor Pump (electric hydraulic pump)
ADS	Air Data System
ADS-B	Automatic Dependent Surveillance Broadcast
AFCS	Automatic Flight Control System
AFM	Airplane Flight Manual
AGL	Above Ground Level

ALT	Altimeter, Altitude, Altitude Hold (PFD/FD)
ALTN	Alternate
ALTS	Altitude Selected
AMP	Aircraft Maintenance Publication
AP	Autopilot
APPR	Approach
APR	Automatic Power Reserve
APU	Auxiliary Power Unit
ARR	Arrival
ASDA	Accelerate-Stop Distance Available
AT	Autothrottle
ATC	Air Traffic Control
ATIS	Automatic Terminal Information System
ATS	Air Turbine Start
AUTO	Automatic
AVAIL	Available

B

BATT	Battery
BTL	Bottle
BRG	Bearing
BTMS	Brake Temperature Monitoring System

C

CAFM	Computerized Airplane Flight Manual
CAS	Calibrated Airspeed
CCP	Cursor Control Panel
CDFA	Continuous Descent Final Approach
CDL	Configuration Deviation List
CG	Center of Gravity
CIFP	Computerized In-Flight Planning

CKPT	Cockpit
CLB	Climb
CLSD	Closed
CNCL	Cancel
CPLT	Copilot
CONFIG	Configuration
CPDLC	Controller Pilot Data Link Communication
CRT	Cathode Ray Tube
CTRL	Control
CTP	Control Tuning Panel

D

DA	Decision Altitude
DC	Direct Current
DCU	Data Concentration Unit
DDG	Dispatch Deviation Guide
DEP	Departure
DEST	Destination
DET	Detection
DH	Decision Height
DIFF	Differential
DISA	Delta ISA
DIST	Distance
DMC	DCU Module Cabinet
DN	Down
DPLY	Deploy
DSPL	Display
DU	Display Unit

E

EAS	Equivalent Airspeed
EASA	European Aviation Safety Agency
ECL	Electronic Checklist
ECS	Environmental Control System
EDM	Emergency Descent Mode
EDP	Engine Driven Pump
EFB	Electronic Flight Bag
EGT	Exhaust Gas Temperature (°C)
EICAS	Engine Indication and Crew Alerting System
ELEV	Elevation
FLC	Flight Level Change
ELT	Emergency Locator Transmitter
EMER	Emergency
ENG	Engine
EPC	Electrical Power Center
EQUIP	Equipment
ESS	Essential
ETP	Equal Time Point
EVAC	Evacuation
EWH	Eye-to-Wheel Height
EXT	Exterior

F

FAA	Federal Aviation Administration (USA)
FAF	Final Approach Fix
FANS	Future Area Navigation System
FAP	Final Approach Point
FCOM	Flight Crew Operating Manual
FCP	Flight Control Panel
FD	Flight Director

FDRAS	Flight Deck Remote Access System
FLC	Flight Level Change
FLT	Flight
FMS	Flight Management System
FPLN	Flight Plan
fpm	Foot (feet) per minute
FPV	Flight Path Vector
ft	Foot/feet
FWD	Forward

G

GA	Go-around
GEN	Generator
GND	Ground
GNSS	Global Navigation Satellite System
GS	Glideslope

H

HAAO	High Altitude Airfield Operation
HI	High
HLEIF	High Load Event Indication Function
HYD	Hydraulic

I

IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization
IFR	Instrument Flight Rules
ILS	Instrument Landing System (LOC and GS)
IMAA	Integrated Modular Avionic Application
IMC	Instrument Meteorological Conditions
INHIB	Inhibit

INIT	Initialization
IPC	Integrated Processing Cabinet
IRS	Inertial Reference System
ISA	International Standard Atmospheric conditions
ISI	Integrated Standby Instruments

K

kg	Kilogram(s)
KIAS	Knots Indicated Airspeed
kVA	Kilovolt-ampere(s)

L

L	Left
LAV	Lavatory
lb	Pound(s)
LCD	Liquid Crystal Display
LDG	Landing
LO	Low
LPGC	Low Pressure Ground Connection
LPV	Localizer Performance with Vertical guidance
L-R	Left and Right
LTS	Lights
LVL	Level
LVO	Low Visibility Operations
LVOP	Low Visibility Operation Plans
LVTO	Low Visibility Takeoff
LW	Landing Weight
LWD	Left Wing Down

M

M_I	Indicated Mach number
M_T	True Mach number
MAA	Missed Approach Altitude
MAN	Manual
MAX	Maximum
mbar	Millibar
MCL	Maximum Climb Thrust
MCT	Maximum Continuous Thrust
MDA	Minimum Descent Altitude
MFD	Multi-function Display(s)
MFS	Multi-function Spoilers
MFW	Minimum Flight Weight
MISALIGN	Misalignment
MISCONFIG	Misconfiguration
MKP	Multi-function Keyboard Panel
MLG	Main Landing Gear
MLW	Maximum Landing Weight
MMEL	Master Minimum Equipment List
M_{MO}	Maximum operating Mach
MRW	Maximum Ramp Weight
MTOW	Maximum Takeoff Weight
MZFW	Maximum Zero Fuel Weight

Miscellaneous

%	Percent
°C	Degree(s) Celsius
°F	Degree(s) Fahrenheit

N

N/A	Not Applicable
N_1	Low pressure rotor speed
N_2	High pressure rotor speed
NADP	Noise Abatement Departure Procedure
ND	Nose Down
nm	Nautical Miles
No.	Number
NORM	Normal
NU	Nose Up

O

OAT	Outside Air Temperature
OEI	One Engine Inoperative
OLD	Operational Landing Distance
OVHT	Overheat
OXY	Oxygen

P

P/N	Part Number
PA	Passenger Address
PARK	Parking
PAX	Passenger
PCE	Pre-cooler Exhaust
PED	Personal Electronic Device
PERF	Performance
PIC	Pilot-in-Command
PFCC	Primary Flight Control Computer
PLT	Pilot
PRESS	Pressure
psi	Pound(s) per Square Inch

psi-A	Pound(s) per Square Inch – Absolute
PTU	Power Transfer Unit
PWR	Power

Q

QNH	Barometric pressure adjusted to sea level
QRH	Quick Reference Handbook
QTY	Quantity

R

R	Right
RA	Resolution Advisory
RAT	Ram Air Turbine
RCAM	Runway Condition Assessment Matrix
RECIRC	Recirculation
REQ	Request
RET	Retract
RNAV	Area Navigation
RNP	Required Navigation Performance
rpm	Revolutions Per Minute
RT	Receiver-Transmitter
RTA	Required Time of Arrival
RTE	Route
RTO	Rejected Takeoff
RVSM	Reduced Vertical Separation Minimum
RVR	Runway Visual Range
RWD	Right Wing Down
RWY	Runway

S

SAT	Static Air Temperature
SBAS	Satellite-Based Augmentation System
SEQ	Sequence
SLD	Super-cooled Large Droplet
SLIPCOMP	Sideslip Compensation
SLS	Sea Level Standard
SMGCS	Surface Movement and Guidance Control System
SOV	Shutoff Valve
SPD	Speed
STAB	Stabilizer
SSEC	Static Source Error Correction

T

TAS	True Airspeed
TAT	Total Air Temperature
TAWS	Terrain Awareness Warning System
TC	Transport Canada
TCAS	Traffic Alert and Collision Avoidance System
TEMP	Temperature
TGL	Temporary Guidance Leaflet
TODA	Takeoff Distance Available
TOGA	Takeoff/Go-around
TORA	Takeoff Run Available
TOW	Takeoff Weight
TRU	Transformer Rectifier Unit

U

US gal	United States gallon(s)
UTC	Universal Time Coordinated

V

$V_{\_}$	V-speed (refer to 5. DEFINITIONS – Airspeeds, in this section.)
V_1	Takeoff decision speed
V_{1MBE}	Maximum V_1 limited by brake energy
V_{1MCG}	Minimum V_1 limited by control on the ground
V_2	Takeoff safety speed
V_A	Design maneuvering speed
V_{AC}	Approach climb speed (Also known as V_{2GA} and $V_{2GO\text{-}AROUND}$)
V_{APP}	Approach speed
V_{EF}	Critical engine failure speed
V_{ENR}	Climb speed during the enroute phase for one engine inoperative
V_{FE}	Maximum flap extended speed
V_{FTO}	Final takeoff speed
V_{GA}	Climb speed for all engines go-around
V_{LC}	Landing climb speed
V_{LE}	Maximum landing gear extended speed
V_{LO}	Maximum landing gear operating speed
V_{MC}	Minimum control speed
V_{MCA}	Minimum control speed, air
V_{MCG}	Minimum control speed, ground
V_{MCL}	Minimum control speed, landing
V_{MO}	Maximum operating speed in knots
V_R	Rotation speed
V_{REF}	Reference landing speed
V_{S1G}	Reference stall speed based on 1.0 g criteria
V_{SR}	Reference stall speed
VFR	Visual Flight Rules
VGP	Vertical Glidepath

VSPDS	V-speeds
VLV	Valve
VSD	Vertical Situation Display

W

WBM	Weight and Balance Manual
WDW	Window
WOW	Weight On Wheels
WSHLD	Windshield
WX	Weather radar
WXR	Weather radar system

X

XBLEED	Cross bleed
XFR	Transfer

OPTION CODES

A complete list of applicable option codes is available in section 00-04, at the beginning of this manual.

Option codes appear adjacent to the applicable text, to indicate an optional configuration component.

Absence of an option code means that the data are applicable to all.

SERVICE BULLETINS

A complete list of applicable service bulletins is available in section 00–05, at the beginning of this manual.

A reference to a service bulletin condition appears above applicable boxed text. A Pre–SB condition is applicable to aircraft that have not incorporated the service bulletin. A Post–SB condition is applicable to aircraft that have incorporated the service bulletin.

MODIFICATIONS

A complete list of applicable modifications is available in section 00–06, at the beginning of this manual.

A reference to a modification appears above applicable boxed text. These modifications are incorporated in production and do not require a service bulletin.

CHAPTER 2 – LIMITATIONS

INTRODUCTION

GENERAL LIMITATIONS

OPERATING SPEEDS

OPERATING LIMITATIONS

List of figures

GENERAL LIMITATIONS

OPERATING SPEEDS

OPERATING LIMITATIONS

AUXILIARY POWER UNIT (APU)

POWER PLANT

INTRODUCTION

Observance of the limitations included in this chapter is mandatory.

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KINDS OF AIRPLANE OPERATION

The airplane is certified in the transport category for day and night operations in the following conditions when the equipment and instruments required by the airworthiness and operating regulations are approved, installed, and in an operable condition:

- VFR and IFR
- Extended range operations <10109100C>
- Flight in icing conditions up to 35000 feet
- Landings with approach path angles no greater than 3.5 degrees

STRUCTURAL WEIGHT LIMITATION

A. Structural weight limitation

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	61454	135482	<13001061C>
Maximum Takeoff Weight (MTOW)	61000	134482	<13001061C>
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>
Minimum Flight Weight (MFW)	36287	80000	

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	64454	142096	<13001131C>
Maximum Takeoff Weight (MTOW)	64000	141096	<13001131C>

Weight	kg	lb	Option code
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>
Minimum Flight Weight (MFW)	36287	80000	

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	66451	146500	<13001176C>
Maximum Takeoff Weight (MTOW)	65997	145500	<13001176C>
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>
Minimum Flight Weight (MFW)	36287	80000	

Weight	kg	lb	Option code
Maximum Ramp Weight (MRW)	68039	150000	<13001310C>
Maximum Takeoff Weight (MTOW)	67585	149000	<13001310C>
Maximum Landing Weight (MLW)	58740	129500	<13001290C>
Maximum Zero Fuel Weight (MZFW)	55792	123000	<13001290C>

Weight	kg	lb	Option code
Minimum Flight Weight (MFW)	36287	80000	

NOTE

The Maximum Takeoff Weight (MTOW) and/or Maximum Landing Weight (MLW) may be further limited due to performance considerations.

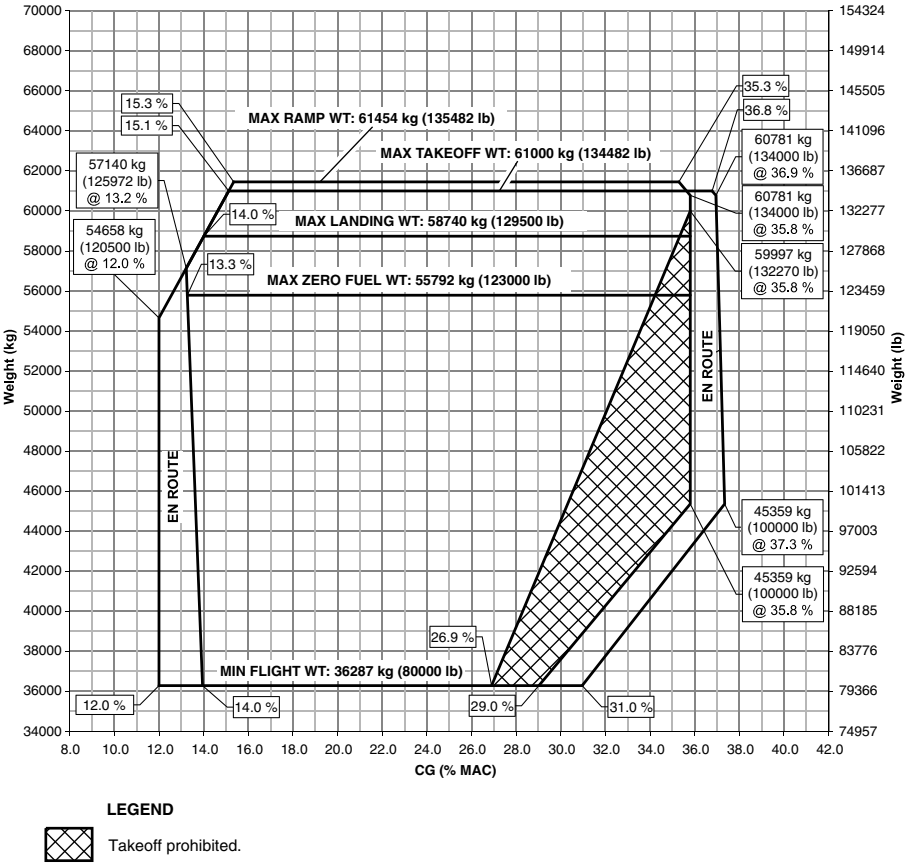
CENTER OF GRAVITY LIMITS

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

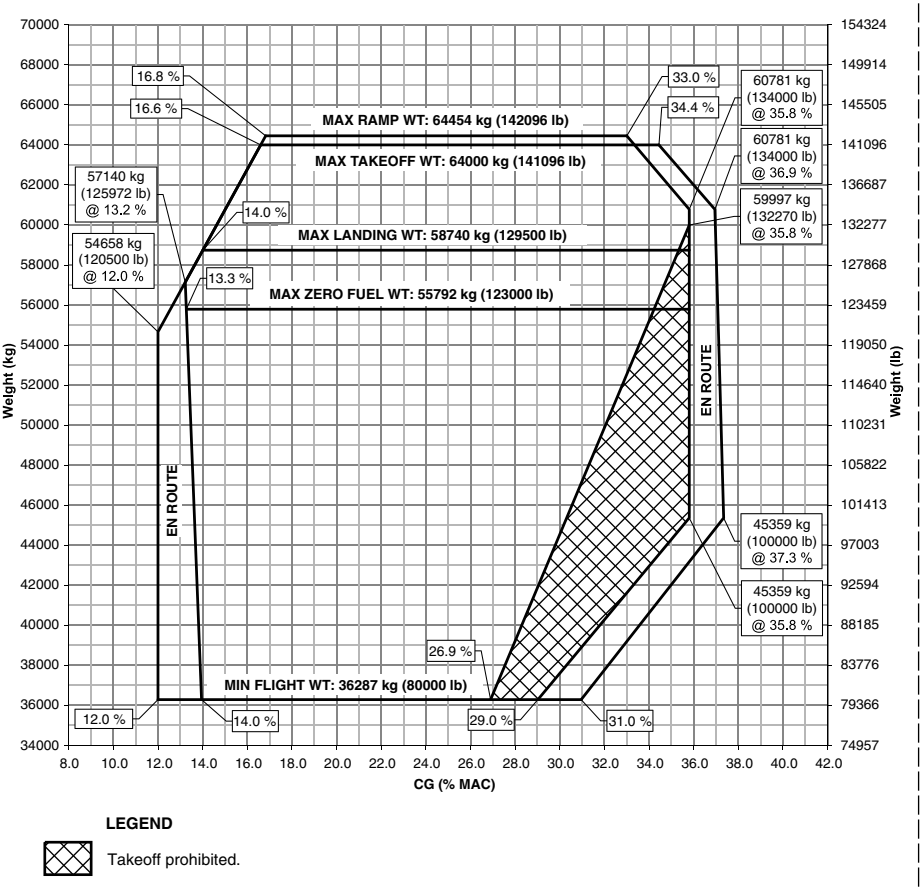
A. Center of gravity limits

The maximum permissible Center of Gravity (CG) range with the landing gear extended is/are shown on the page(s) that follow(s).

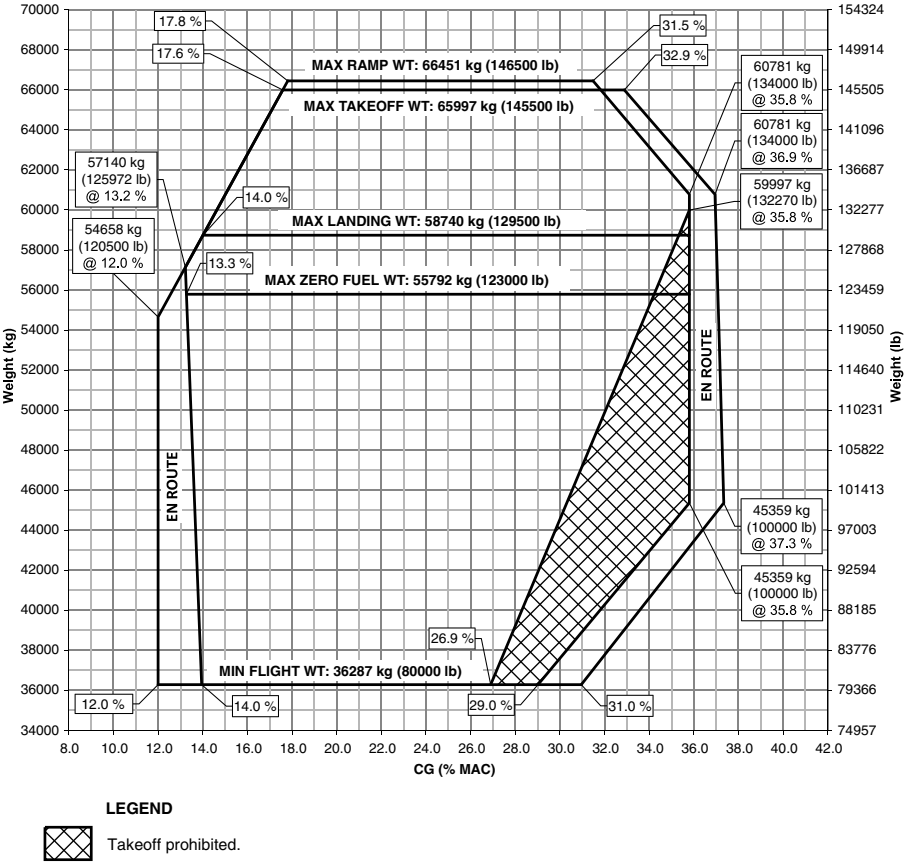
The airplane must be loaded in accordance with the loading instructions associated with the Weight and Balance Manual (WBM) (BD500-3AB48-32100-00). The effect of landing gear retraction on CG position is negligible.



Center of gravity limits <13001061C> and <13001290C>
Figure 02–02–1



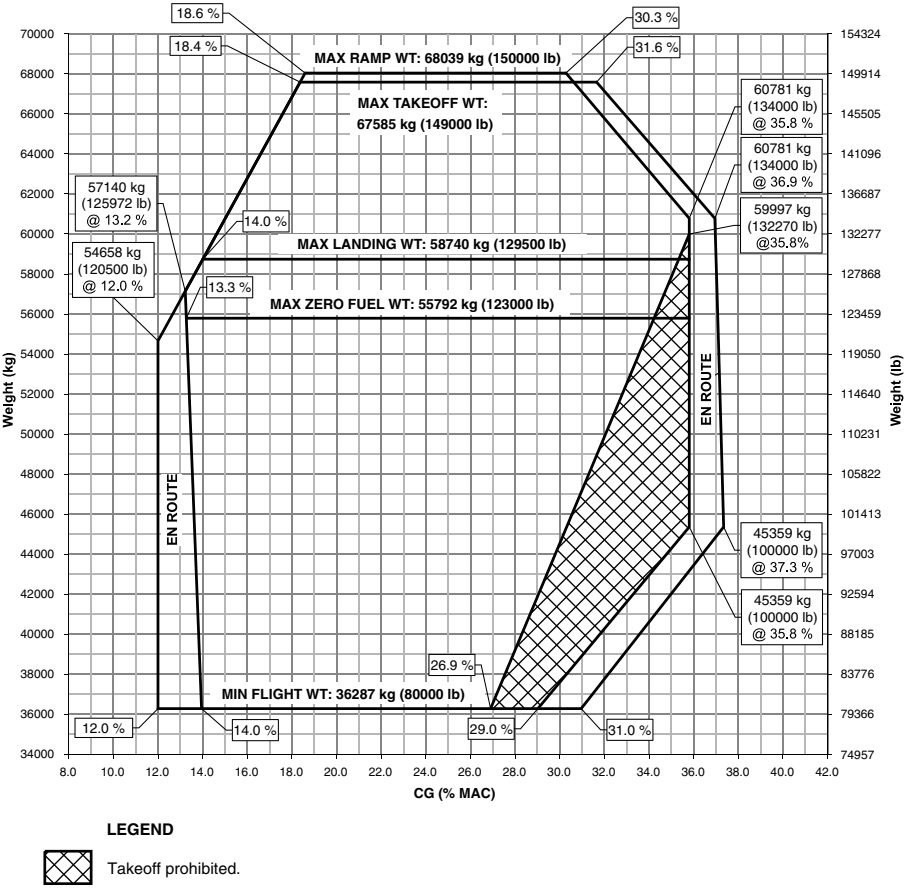
Center of gravity limits <13001131C> and <13001290C>
Figure 02–02–2



LEGEND

Takeoff prohibited.

Center of gravity limits <13001176C> and <13001290C>
Figure 02–02–3



Center of gravity limits <13001310C> and <13001290C>
Figure 02–02–4

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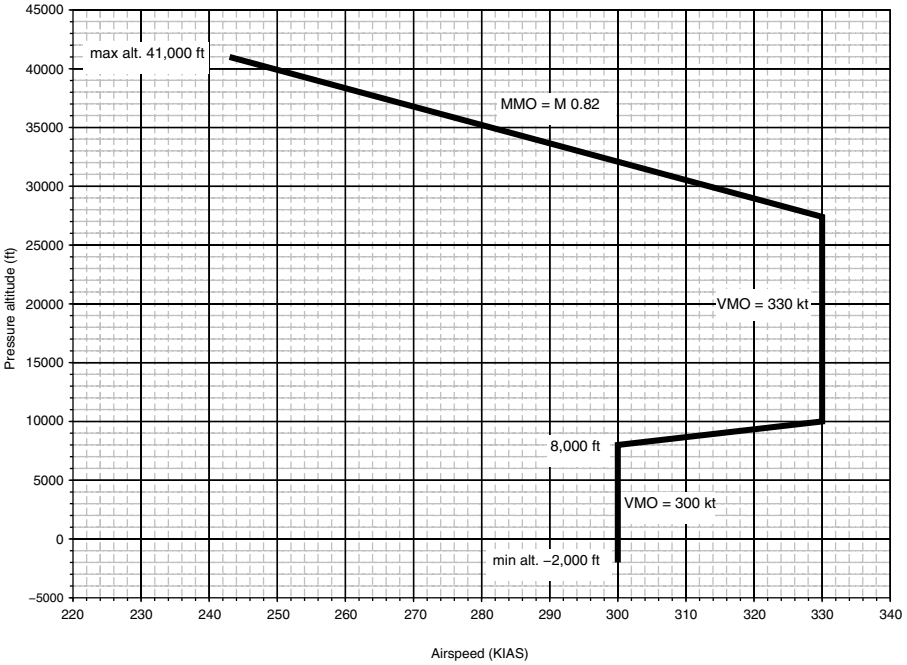
MAXIMUM OPERATING SPEED AND MACH NUMBER

Maximum operating limit speeds as given in Figure 02–03–1 must not be deliberately exceeded in any regime of flight (climb, cruise or descent) unless a higher speed is authorized for flight test or pilot training.



Maximum operating speed and Mach number
Figure 02−03−1

DESIGN MANEUVERING SPEED (VA)

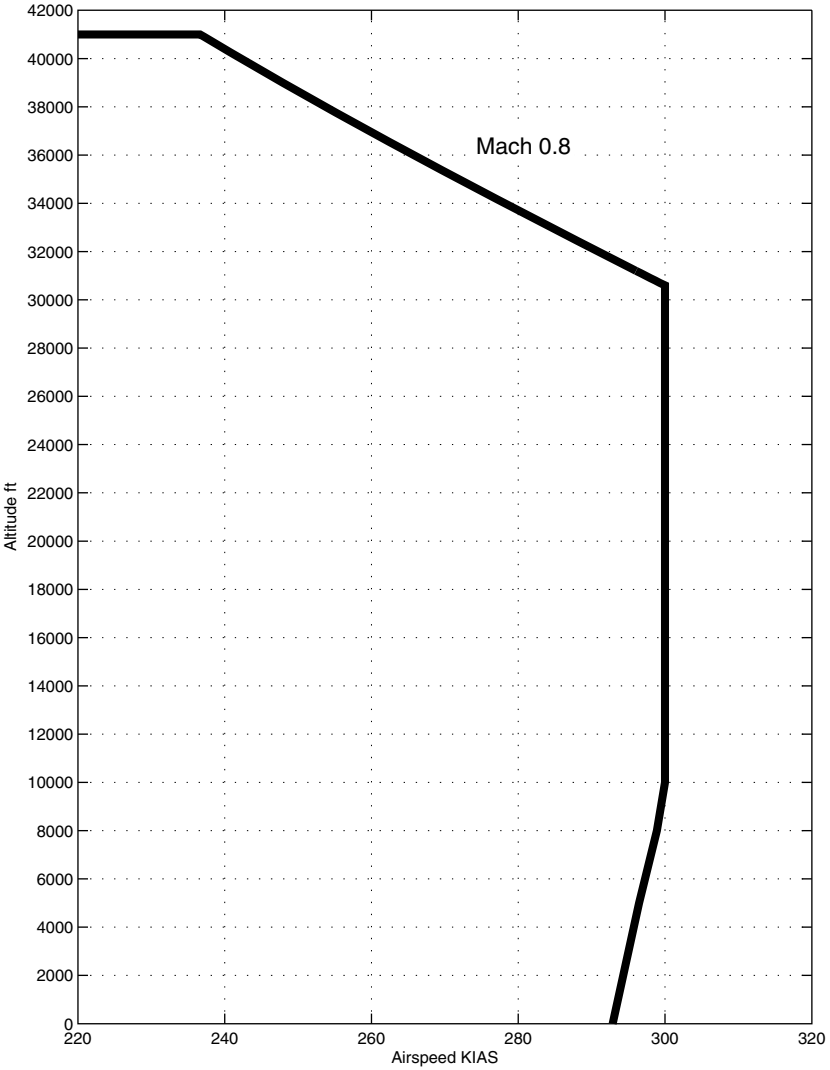
CAUTION

Avoid rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw (e.g. large side-slip angles) as they may be cause for structural failure at any speed, including below V_A, and in any active flight control mode.

When in direct mode, full application of elevator, rudder and aileron controls as well as maneuvers that involve angles of attack near the stall, must be confined to speeds below V_A. Values of V_A are given in Figure 02–03–2, for varying pressure altitudes.

NOTE

When in normal mode, control laws provide automatic protection against any full application of elevator, aileron and rudder as well as maneuvers that involve angles of attack near the stall at any speed.



Maximum Design Maneuvering speeds (VA) in direct mode only
Figure 02–03–2

FLAPS EXTENDED SPEED (VFE)

The maximum speed with flap extended is:

- FLAP 1: 230 KIAS
- FLAP 2: 210 KIAS
- FLAP 3: 210 KIAS
- FLAP 4: 190 KIAS
- FLAP 5: 170 KIAS

MAXIMUM LANDING GEAR OPERATING SPEED (VLO)

The maximum speed for landing gear extension is 250 KIAS.

The maximum speed for landing gear retraction is 220 KIAS.

MAXIMUM LANDING GEAR EXTENDED SPEED (VLE)

The maximum speed with landing gear extended is 250 KIAS.

TURBULENCE PENETRATION SPEED (VRA)

Recommended airspeed for turbulence penetration in moderate to severe turbulence is 265 KIAS (10000 feet and below) or 280 KIAS (above 10000 feet) or 0.75 Mach, whichever is lower.

WINDSHIELD WIPER OPERATION

The windshield wiper must not be operated at more than 250 KIAS.

TIRE LIMIT SPEED

The tire limit speed is 195 knots ground speed.

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ALTITUDE AND TEMPERATURE OPERATING LIMITS

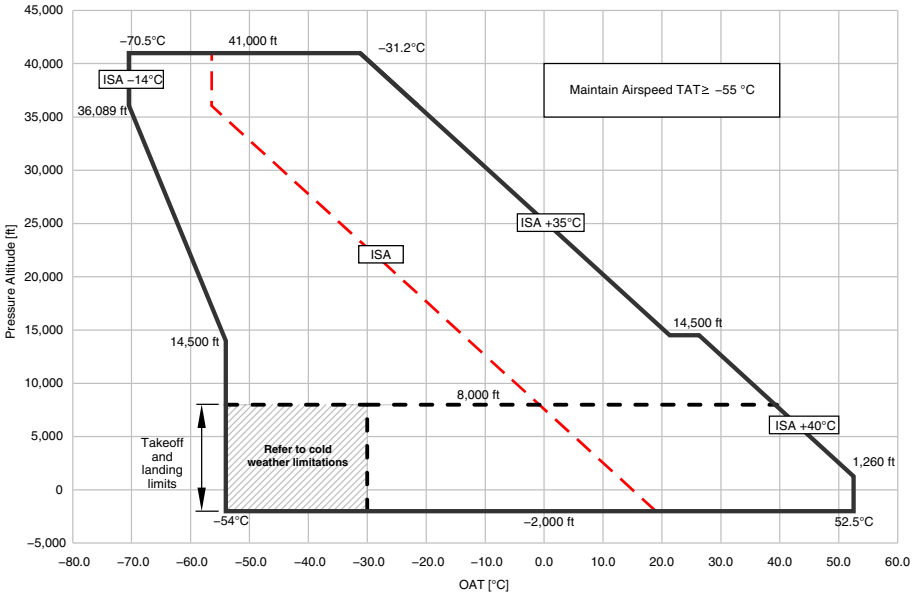
Maximum airport pressure altitude for takeoff and landing is 8000 feet.

Maximum operating altitude is 41000 feet.

Maximum ambient temperature approved for takeoff and landing is 52.5°C (126.5°F).

Minimum ambient temperature approved for takeoff is –54°C (–65°F).

Minimum ambient temperature approved for landing is –54°C (–65°F).

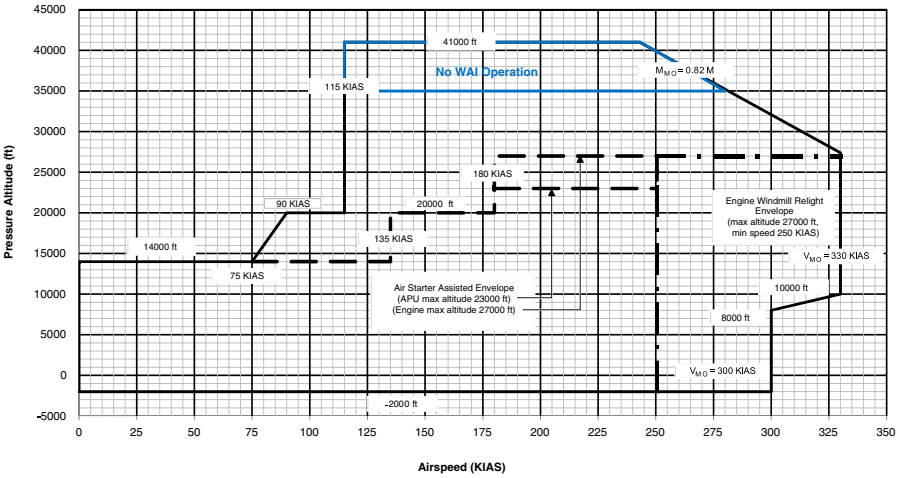


Altitude and temperature operating limits
Figure 02–04–1

ALTITUDE AND SPEED OPERATING LIMITS

(<Mod 219001> or <Post-SB BD500-219001>) and (<Post-SB BD500-732002> or Mod <732002> or <Post-SB BD500-732003> or <Mod 732003>)

The airplane altitude and speed envelope is given in Figure 02–04–2.



Altitude and speed operating limits
Figure 02–04–2

MANEUVERING LIMIT LOAD FACTORS

The maneuvering limit load factors are:

- Flaps up: –1.0 g to 2.5 g
- Flaps down: 0.0 g to 2.0 g

COLD WEATHER OPERATIONS

WARNING

Even small amounts of frost, ice, snow or slush on the wing leading edges and forward upper wing surface may adversely change the stall speeds and stall characteristics, which may result in loss of control on takeoff.

Takeoff is prohibited with frost, ice, snow or slush adhering to any critical surface (wings, horizontal stabilizer, vertical stabilizer, control surfaces and engine inlets). Refer to Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Operational guidance – Cold weather operations – External safety inspection, for instructions.

Operation of the airplane is prohibited if the airplane, with the engines shut down, has been exposed to a ground ambient temperature below –30°C (–22°F) for a period exceeding two hours in the preceding 12 hours. Refer to Flight Crew Operating Manual (FCOM), Volume 2 (BD500–3AB48–32600–02), Operational guidance – Cold weather operations.

Engine operation is prohibited in ground fog conditions with OAT below –18°C (0°F).

Infrared deicing is prohibited.

OPERATION IN ICING CONDITIONS

A. Cowl anti-ice system

(1) Ground operations

The cowl anti-ice system must be ON when the OAT is 10°C (50°F) or below and visible moisture in any form is present (such as fog with visibility of 1500 meters [one mile] or less, rain, snow, sleet and ice crystals).

The cowl anti–ice system must be ON when the OAT is 10°C (50°F) or below when operating on runways, ramps, or taxiways where surface snow, ice, standing water, or slush is present.

(2) Flight operations

NOTE

Icing conditions exist in flight at a TAT of 10°C (50°F) or below, and visible moisture in any form is present (such as clouds, rain, snow, sleet, and ice crystals), except when the SAT is –40°C (–40°F) or below.

The cowl anti-ice system must be AUTO or ON:

- When in icing conditions, or
- When ICE is annunciated by the ice detection system.

B. Wing anti-ice system

(1) Ground operations

The wing anti-ice system must be selected ON for takeoff when OAT is 5°C (41°F) or below and visible moisture in any form is present (such as fog with visibility of 1500 meters [one mile] or less, rain, snow and ice crystals).

The wing anti-ice system must be selected ON for takeoff when the OAT is 5°C (41°F) or below when operating on runways where surface snow, ice, standing water, or slush is present.

(2) Flight operations

NOTE

Icing conditions exist in flight at a TAT of 10°C (50°F) or below, and visible moisture in any form is present (such as clouds, rain, snow, sleet, and ice crystals), except when the SAT is –40°C (–40°F) or below.

The wing anti-ice system must be selected AUTO or ON:

- When in icing conditions, or
- When ICE is annunciated by the ice detection system.

Do not hold in icing conditions with the flaps/slats extended.

Wing anti-ice must be selected OFF when above 35000 feet.

Wing anti-ice ON is prohibited when TAT is above 15°C (59°F).

C. Super-cooled Large Droplet (SLD) icing

Continued operation in areas where Super-cooled Large Droplet (SLD) icing conditions exist is prohibited.

SLD icing conditions are indicated by ice accretion on the flight compartment side windows:

- The wing anti-icing system must be ON in SLD icing conditions.
- The cowl anti-icing system must be ON in SLD icing conditions.
- Leave icing conditions when side window icing occurs.

D. Engine ice shedding (ground)

Engine ice shedding must be performed when the OAT is 3°C (37°F) or below and visible moisture in any form is present such as fog, rain, snow, sleet or ice crystals. Engine run-ups must be, momentarily, to a minimum of 60% N1 at intervals no greater than 30 minutes. Takeoff must be initiated within the 30-minute interval, otherwise a final ice shedding run-up must be done immediately before takeoff to ensure normal engine operation.

E. Engine ice shedding (in flight)

When operating for extended periods in icing conditions, engine vibrations may be encountered, even with the anti-ice on. A momentary increase in thrust, up to CLB thrust, should stop undesirable vibrations.

F. Speed corrections for approach and landing in icing conditions with FLAP 5

During an approach and landing in icing conditions, or if there is evidence of ice accretion, V_{REF}, V_{AC} and V_{GA} speeds must be increased by 5 KIAS.

NOTE

V_{REF} and V_{AC} speeds calculated with the CAFM include the 5 KIAS increment specified above when ice accumulation is selected to Yes in the aircraft data menu of each of the landing calculators (for dispatch or operational).

RUNWAY SLOPES

Maximum runway slopes approved for takeoff and landing are: ±2%

TAILWIND CONDITIONS

The maximum tailwind component approved for takeoff is 10 knots.

The maximum tailwind component approved for landing is 10 knots.

OCCUPANT LIMITS

A. Minimum flight crew

The minimum flight crew is two pilots.

B. Maximum occupants

The maximum number of cabin occupants is 150, consisting of 145 passengers maximum, and up to 5 cabin crewmembers.

OZONE CONCENTRATION <21710001D>

Airplane operations are prohibited on routes where ozone concentrations will exceed the following limits:

- 0.25 parts per million by volume, sea level equivalent, at any time above flight level 320, and

- 0.1 parts per million by volume, sea level equivalent, time-weighted average during any 3-hour interval above flight level 270.

NOTE

Sea level equivalent refers to conditions of 25°C and 760 mm of mercury pressure.

Data to determine flight altitudes and/or duration at altitude in compliance with these requirements are given the Flight Crew Operating Manual (FCOM), Volume 2 – Performance – Flight planning – Ozone tables.

ELECTRONIC CHECKLIST (ECL)

A. Database version

Installation of the ECL does not constitute an operational approval to use the ECL. An alternate source of required documentation must be carried on the airplane. The QRH must be used for the Smoke/fire/fumes procedure.

If used, the ECL part numbers ECL_BACS300AAAQQQ-YY must be verified to make sure that the code QQQ is the same as the latest available AFM issue.

NOTE

"AAA" represents the variant code (000 = BA master variant, 001 to 999 = customer variant).

"QQQ" represents the latest available Airplane Flight Manual (AFM) issue number (001 to 999).

"YY" represents the file version number and is incremented numerically with any issue number (01 to 99).

B. Non–EICAS procedures

Non-EICAS procedures can only be restarted from the Summary page.

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PRESSURIZATION DIFFERENTIAL

The maximum positive differential pressure is 8.8 psid.

The maximum negative differential pressure is –0.5 psid.

During initial landing (at touchdown) the pressure differential must not exceed 1.0 psid.

AIR-CONDITIONING

The doors should not be closed for more than 15 minutes when passengers are on board and the packs are off and no ground ventilation (LPGC), except for deicing operations, during which time with the packs off should be kept to a minimum.

When OAT is above 40°C (104°F) operation without ECS or external cooling (LPGC) is limited to 30 minutes.

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AUTOPILOT ENGAGEMENT

The minimum height for engagement of autopilot is 400 feet AGL.

The minimum height for use of autopilot is 80 feet AGL.

AUTOTHROTTLE

The autothrottle must be disconnected before touchdown for touch and go procedures.

During an approach and landing with autothrottle, the approach speed must be increased by 5 kts.

FLIGHT DIRECTOR

NOTE

During the (V) ALTS CAP mode the flight guidance/autopilot may not maintain the selected airspeed. Crew intervention may be required to maintain the selected airspeed.

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APU TYPE

Honeywell 131-9(C)

APU START

The minimum oil temperature for an APU start is –40°C (–40°F).

Do not perform more than three starts / start attempts in one hour.

A two-minute delay must be observed between start attempts.

APU OPERATION

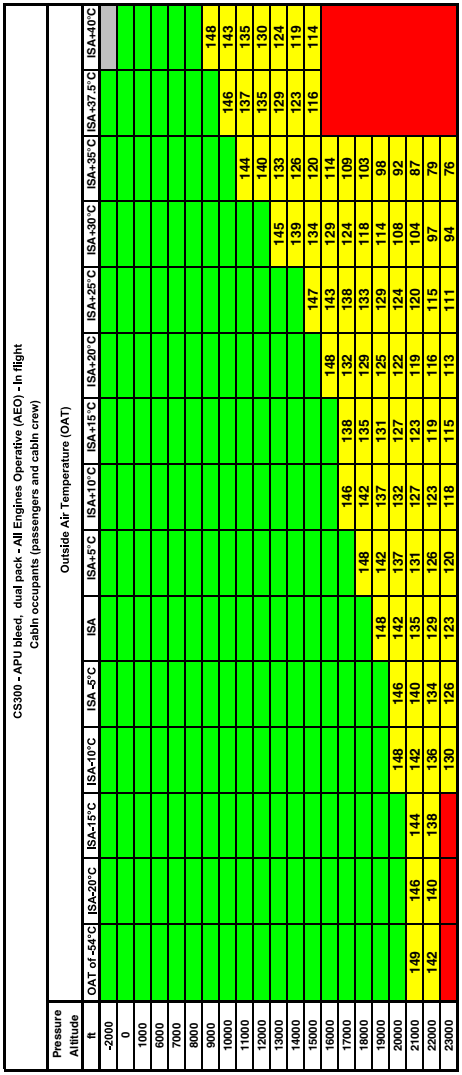
APU starting and operation is permitted within the operating envelopes shown in Operating limitations – Altitude and temperature operating limits and Altitude and speed operating limits.

The altitude limit for APU bleed air extraction is 23000 feet.

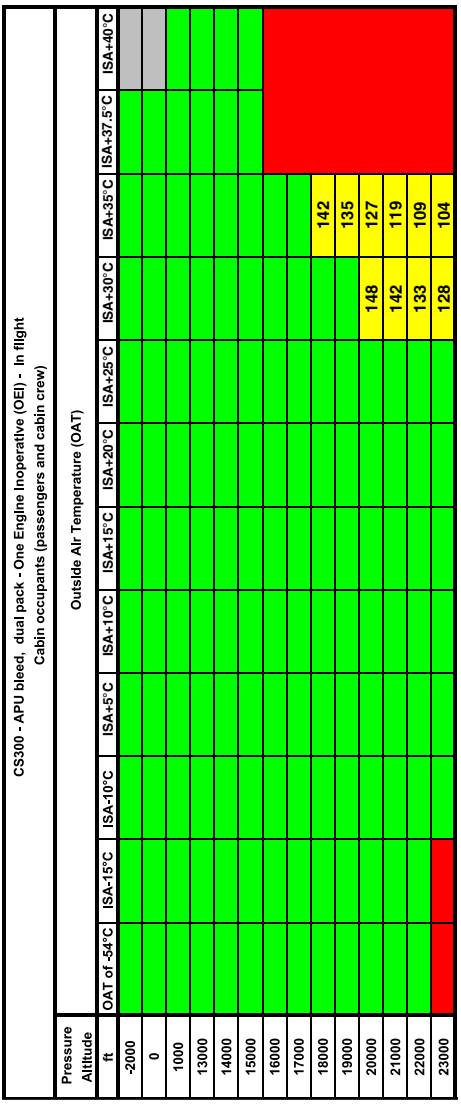
NOTE

Air-conditioning pack operation affects the altitude limit for bleed air extraction based on the number of cabin occupants and outside air temperature. Refer to APU BLEED AIR for limitations.

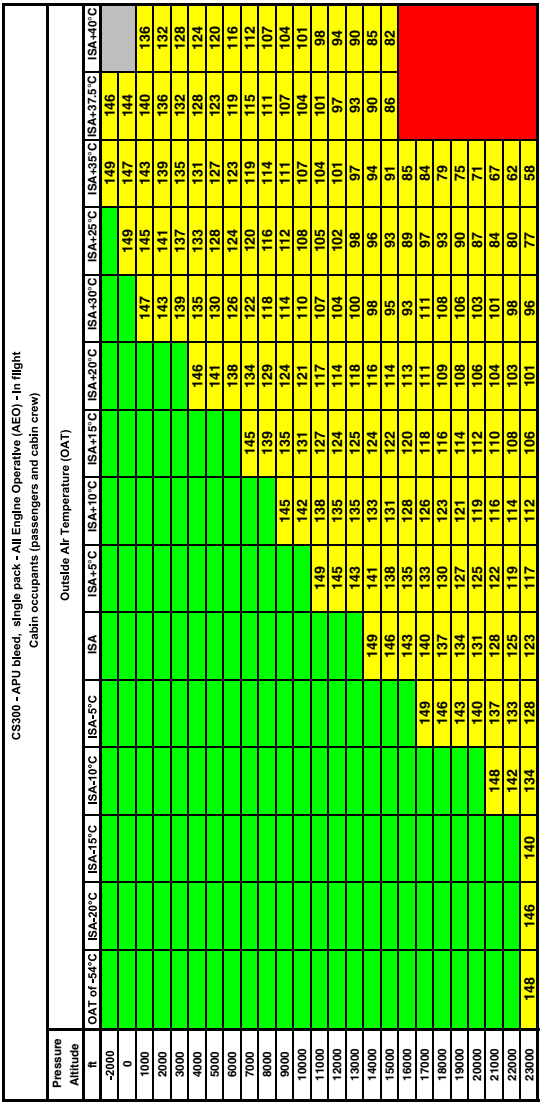
APU BLEED AIR



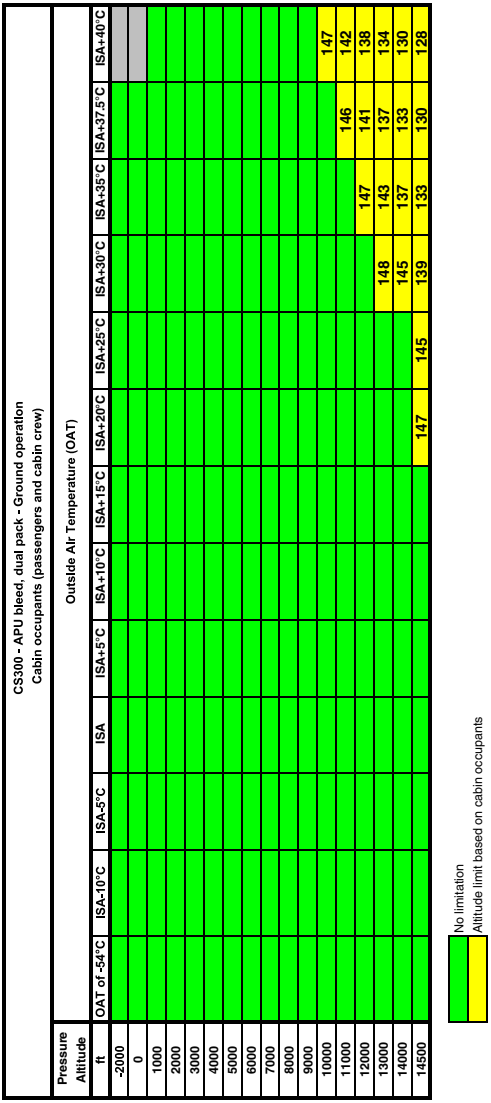
Altitude limit for APU bleed air extraction – APU bleed, dual pack – AEO – In flight
Figure 02–07–1



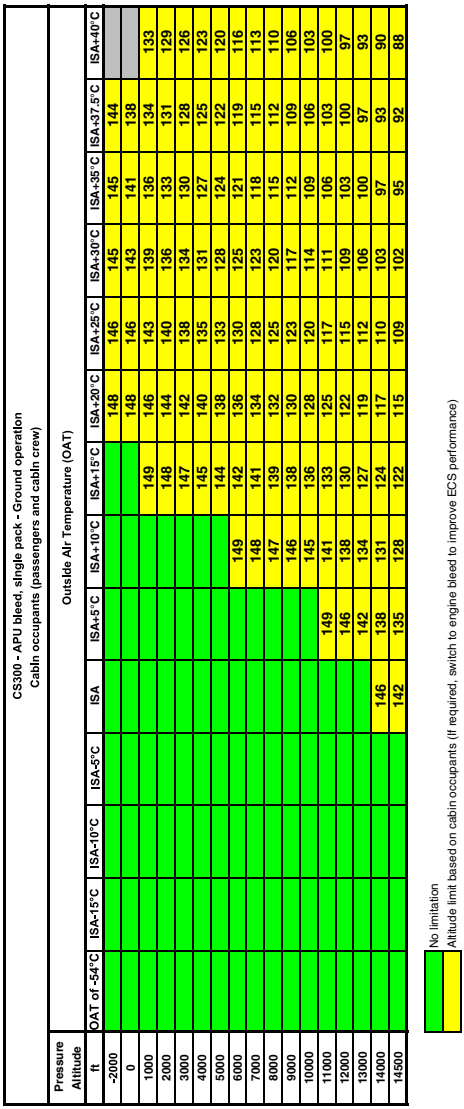
Altitude limit for APU bleed air extraction – APU bleed, dual pack – OEI – In flight
Figure 02–07–2



Altitude limit for APU bleed air extraction – APU bleed, single pack – AEO – In flight
Figure 02–07–3



Altitude limit for APU bleed air extraction – APU bleed, dual pack – Ground operation
Figure 02–07–4



Altitude limit for APU bleed air extraction – APU bleed, single pack – Ground operation
Figure 02–07–5

PERMISSIBLE LOADS ON AC SYSTEMS

Maximum AC generator load must not exceed 75 kVA continuous.

PERMISSIBLE LOADS ON DC SYSTEMS

The maximum permissible continuous load on TRU 1 and 2 is 350 amp.

The maximum permissible continuous load on TRU 3 is 225 amp.

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SLATS/FLAPS

Maximum altitude with slats/flaps extended is 20000 feet.

FLIGHT SPOILERS

Minimum height with flight spoilers manually extended is 300 feet AGL.

Minimum speed with flight spoilers manually extended is V_{REF} + 10 KIAS.

Use of MAX spoilers is prohibited except in an emergency.

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FUEL LOAD

The maximum permissible fuel imbalance between the contents of the left and right tank is 363 kg (800 lb).

Fuel remaining in a tank when the appropriate fuel quantity indicator reads zero is not usable.

The maximum usable fuel load for each fuel tank is as follows:

Maximum usable fuel load				
Tank	Tank volume		Fuel mass [1]	
	L	US gal	kg	lb
Left main tank	3770	996	3050	6725
Right main tank	3770	996	3050	6725
Center tank	13968	3689	11300	24900
Total	21508	5681	17400	38350

[1] Based on a fuel density of 0.809 kg/L (6.75 lb/US gal), rounded to the nearest 10 kg or 25 lb. Fuel mass is provided for reference only and should not be considered limiting.

The minimum fuel quantity for go-around is 442 kg (975 lb) per wing (with the airplane level) and at a maximum airplane climb attitude of 10 degrees nose up.

FUEL TEMPERATURE

Maximum bulk fuel temperature for starting and operating is 52.5°C (126.5°F).

Takeoff with bulk fuel temperature indications below –37°C (–35°F) is prohibited.

FUEL GRADES

Fuels conforming to any of the following specifications are approved for use. Mixing of fuels is permitted.

Australian	Canadian	American	British	Other
1QTA K/1/80	CAN/CGSB-3.23 [2]	ASTM D1655 – JET A [2]	Defence Standard 91-91 [2]	GOST 10227 – TS-1[1], RT[1]
1QTA K/1/80		ASTM D1655 – JET A1 [2]	––	GB6537-2006 – Jet No. 3
––	––	MIL-DTL-83133 – JP-8	––	––

[1] Fuel quantity gauging inaccuracy when using TS-1 or RT fuel will be up to 0.8% higher (over indicating) than when using the other fuels listed in the table.

[2] ASTM D1655, Defence standards 91-91, and CAN/CGSB-3-23 jet fuels whose origin was as ASTM D7566 (Aviation turbine fuel containing synthesized hydrocarbons) and are re-identified as Jet A, Jet A1 fuels are considered equivalent to fossil-based fuels.

FUEL ADDITIVES

Refer to Aircraft Maintenance Publication (AMP), (BD500-3AB48-10200-00), System 12 – Servicing, for the list of approved fuel additives.

FUEL CROSSFLOW

Manual transfer and gravity crossflow must be off for takeoff.

FUEL TRANSFER

Operation of the APU in an unattended mode is prohibited if either wing tank quantity is greater than 2830 kg (6225 lb). If the **FUEL LEAK SUSPECT** caution message is shown, follow the associated non-normal procedure.

When operating on ground the left engine must be started first if either wing tank fuel quantity is greater than 2830 kg (6225 lb).

When operating on ground a manual fuel transfer must be done from the affected wing to the center tank to reduce affected wing quantity to less than 2830 kg (6225 lb) when:

- Either wing tank fuel quantity is greater than 2830 kg (6225 lb), and
- Center tank fuel quantity is less than 10670 kg (23525 lb).

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TOWING OPERATIONS

Use of aircraft brakes during towing operations done with towbarless vehicles is prohibited.

WHEEL BRAKE COOLING LIMITATIONS

The maximum allowable brake temperature for takeoff specified in Chapter 5 – Performance must be observed.

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DISPLAYS

Use of the Vertical Situation Display (VSD) is for advisory purposes only.

Do not print WT & BAL in flight.

Do not print enroute charts and NOTAM chart.

FLIGHT MANAGEMENT SYSTEM (FMS)

Selection of TACAN from the navigation database are prohibited.

Entry of Place/Bearing/Distance (PBD) waypoints that use an airport identifier is prohibited.

The flight crew must verify any altitude constraint on the last waypoint of any entered STAR procedure and/or the first waypoint of any entered approach procedure. The flight crew may correct any such altitude constraint(s) as required to agree with current chart procedures.

Use of the FPLN UPLINK function in flight is prohibited. Any REQUEST PENDING must be cleared before takeoff.

Uplink flight plans must not contain Place/Bearing/Distance (PBD) Waypoints.

Use of FMS waypoint INFO dialog box in flight is prohibited.

Use of FMS ROUTE page – POS REPORT tab is prohibited in terminal area.

Selection of flight plan waypoints using the cursor on the map display is prohibited.

Display of the FMS pages FPLN – INIT or FPLN – WIND/TEMP during takeoff and approach is prohibited.

Localizer approaches must be flown with NAV mode selected before the Final Approach Fix (FAF).

Other than automatic FMS temperature compensation, changes to altitudes in the final approach segment (included FAF and step-down fixes) for any FMS approach procedures are prohibited.

The individual flight plan leg or between aircraft position and the TO waypoint must not exceed:

- RNAV-1/RNP-1 – 200 nm
- RNAV-2/RNP-2 – 400 nm
- RNP-4 – 500 nm
- RNP-10 – 500 nm

FMS navigation at latitudes north of 73°N and south of 60°S is prohibited.

Use of the FMS as a primary navigation source beyond the FAF for ILS, LOC, LOC-BC, LDA, SDF and IGS approaches is prohibited.

MAN SPD must be set and used when flying V_{APP} in the final landing configuration.

Use of OPT ALT and MAX ALT on FMS, PERF – CLB and on FMS, PERF – CRZ pages for flight planning is prohibited.

True headings must be entered in the xxxT format.

NAVIGATION

Operation using QFE altimeter setting is prohibited.

TERRAIN AWARENESS WARNING SYSTEM (TAWS)

Airplane navigation must not be predicated upon the use of the terrain display.

To avoid giving unwanted alerts, the TAWS, TERR switch must be selected to INHIB for takeoff or landing within 15 nm of an airport not contained in the TAWS database.

ENGINES

A. Engine types

Type: PurePower™ PW1521G-3, quantity two. <72211001D>

B. Engine warm-up

Oil temperature	Maximum N1 setting
Below –40°C (–40°F)	Engine start prohibited
Below –6°C (21°F)	Idle
Between –6°C (21°F) and 21°C (70°F)	30% N1
From 21°C (70°F) and above, to 49°C (120°F)	50% N1
49°C (120°F) and above	No limit

ENGINE OPERATING LIMITS

A. Engine operating limits

<Post-SB BD500-732003> or <Mod 732003>

Operating conditions		Operating limits			
Thrust setting	**Time limit**	**Max. EGT**	**Oil pressure min/max**	**Oil temp [4]**	**N1/N2**
	(Minutes)	**°C (°F)**	**PSIG [2]**	**°C (°F)**	
Max takeoff	5[1]	1054°C (1929°F)	50.3 / 175.3	49°C to 163°C [3] (120°F to 325°F)	100%
Max continuous	Continuous	1016°C (1861°F)	50.3 / 175.3	49°C to 163°C [3] (120°F to 325°F)	100%
Reverse thrust	As required	1054°C (1929°F)	50.3 / 175.3	49°C to 163°C [3] (120°F to 325°F)	100%

Operating conditions		Operating limits			
Thrust setting	Time limit	Max. EGT	Oil pressure min/max	Oil temp [4]	N1/N2
	(Minutes)	°C (°F)	PSIG [2]	°C (°F)	
Ground idle (SLS)	Continuous	–	50.3 / 175.3	–40°C to 163°C (–40°F to 325°F)	100%
Flight idle	Continuous	–	50.3 / 175.3	–40°C to 163°C (–40°F to 325°F)	100%
Starting	–	1054°C (1929°F)	–	–40°C to 163°C (–40°F to 325°F)	100%

[1] Time limit may be extended to 10 minutes for One Engine Inoperative (OEI) contingency.
[2] Minimum oil pressure is a function of N2 where the minimum oil pressure ranges from 50.3 psig to 97.0 psig.
[3] Minimum oil temperature for takeoff is 49°C (120°F).
[4] Maximum oil temperature of 174°C (345°F) for up to 20 minutes. Total operation between 163°C (325°F) up to 174°C (345°F) must not exceed 20 minutes.

B. Engine indications

The engine limit display markings on the EICAS must be used to determine compliance with the maximum/minimum limits and precautionary ranges.

C. Airplane cold soak

When the airplane is cold-soaked at an ambient temperature of –20°C (–4°F) or below for more than 8 hours, the thrust reversers must be cycled a minimum of 2 times before takeoff on wet or contaminated runway.

ENGINE START

After three start attempts, or after four minutes continuous cranking, a 30-minute cooling period is required.

Do not engage the starter on ground if indicated N2 rpm exceeds 20%.

ENGINE RELIGHT

Engine starting and operation is permitted within the operating envelopes shown in Operating limitations – Altitude and temperature operating limits and Altitude and speed operating limits.

ENGINE SHUTDOWN

The engine must be operated at or near idle for at least 3 minutes (cumulative) before shutdown. Taxi time may be counted when thrust is at or near idle. This does not apply to non-normal shutdowns. Near idle is defined as up to 40% N1. An additional period equal to or greater than the time spent above 40% N1 must be accounted for.

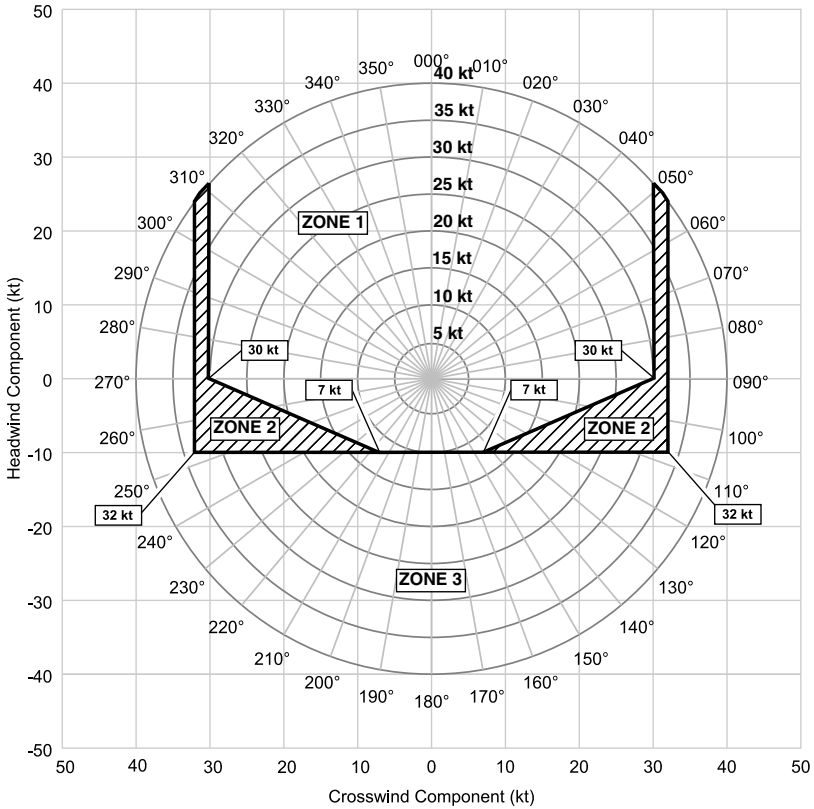
The affected engine must not be re-started after a high power shutdown (from greater than 40% N1), unless the procedures in Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Operational guidance – Power plant – Engine shutdown procedure, are followed. No restriction on emergency in-flight restarts is intended.

ENGINE OPERATING PROCEDURE LIMITS DUE TO WIND

The maximum crosswind and tailwind components for ground operations, at 10 meters (33 feet) tower height are as follows:

Condition	Maximum crosswind component	Maximum tailwind component
Starting on ground	43 kts	18 kts
Taxi	Unlimited	Unlimited
Ice shedding at 60% N1	43 kts	18 kts
High power ground runs (>60% N1): Maintenance runs must be done with aircraft headed into wind.		

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>



Engine operating takeoff limits due to wind
Figure 02–13–1

Engine operating takeoff limits due to wind		
Zone	**Limitation**	
Zone 1	Normal takeoff[1] or High wind takeoff[2] must be used.	
	Airport altitude above 7000 feet	High wind takeoff[2] must be used if cross-wind component exceeds 22 kt.
Zone 2	High wind takeoff[2] must be used.	

Engine operating takeoff limits due to wind	
Zone	**Limitation**
Zone 3	Takeoff prohibited.

[1] Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – Normal takeoff.
[2] Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – High wind takeoff.

OIL

A. Oil grades

Refer to Aircraft maintenance publication.

B. Oil consumption

The maximum allowable oil consumption is 0.38 l/hr (0.4 qt/hr).

THRUST REVERSERS

Thrust reversers are approved for ground use only. Activation of the reverse thrust levers in flight is prohibited.

Use of thrust reversers for backing up is prohibited.

Go-around maneuver and touch-and-go are prohibited after deployment of the thrust reversers.

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CHAPTER 3 – NORMAL PROCEDURES

INTRODUCTION

NORMAL PROCEDURES

List of figures

NORMAL PROCEDURES

INTRODUCTION

The consolidated normal operating procedures included in this chapter have been developed and recommended by Bombardier. They are defined as being fundamental to the normal safe operation of the airplane and are supplementary to normal procedures common to the operation of any modern transport jet airplane.

Normal procedures are provided as guidance and are built in the form of a sequence of steps with relevant expanded information.

NORMAL PROCEDURES

A. General

The CSeries airplane subscribes to the “dark cockpit philosophy” where, in normal operations, there are no lights on when the switches are in either the AUTO or normal position. The normal procedures are based on a fully serviceable aircraft for dispatch. Any deviation is covered by alternative procedures.

All crew members must report to the pilot-in-command (PIC) all abnormalities discovered during airplane and systems inspections and checks. It is required that crew members monitor the airplane and systems through periodical checks of the instruments and displays.

Additional normal procedures that are not routine are found in the Operational guidance chapter.

B. Normal procedures

Normal procedures describe actions which are necessary for routine airplane operation:

- The sequence of procedures follows the normal flight progression.
- The sequence of actions in a procedure follows a recommended scan of panels or equipment except when required by system logic or priority.
- Crew actions are expanded with additional information when necessary.

All procedures are initiated by the pilot-in-command (PIC) or the pilot flying (PF). The designated pilot then reads and actions the procedure.

There are two types of normal procedures: challenge and response, and read and do.

Challenge and response:

- Preflight,
- Before start,
- Before taxi,
- Before takeoff,
- Descent and approach,
- Before landing, and
- Shutdown.

In the challenge and response procedure, the applicable crew member responds to the challenge after having verified the existing configuration. The challenger waits for the response, from one or both pilots, before continuing with the procedure. If the configuration is not in accordance with the required setting and cannot be corrected, the response must be modified to reflect the actual situation.

Read and do:

- Power-on,
- After takeoff,
- High altitude climb check (before reaching 35000 feet),
- After go-around,
- After landing, and
- Power-off.

The read and do procedure is completed by the designated pilot and does not require any response or verification from the other pilot.

In both types of procedure, when completed, the designated pilot states the name of the procedure and the word “complete”. Example: “After takeoff, complete.”

CALLOUTS

All FMA mode changes must be acknowledged by both pilots.

Specific callouts for each procedure are listed at the end of the individual procedure, except for the following:

Situation	PF	PM
If maximum allowable localizer deviation is exceeded		Localizer
	Correcting	
If maximum allowable glideslope deviation is exceeded		Glideslope
	Correcting	
If maximum allowable speed deviation is exceeded		Speed
	Correcting	
If maximum allowable descent rate is exceeded		Sink rate
	Correcting	
If maximum allowable altitude deviation is exceeded		Altitude
	Correcting	
At pilot’s decision to become PF	I have control	
		You have control
At transition	Transition Altimeter set (– – – –)	
		(– – – –) set

EXHAUST SMELL IN CABIN

On ground, if exhaust fumes are experienced or anticipated in crosswind or tailwind conditions and the APU is the bleed source, consider turning the APU BLEED to OFF.

Re-configure as required when crosswind or tailwind conditions no longer exist.

SUPER-COOLED LARGE DROPLET (SLD) ICING

The supplementary data for Super-cooled Large Droplet (SLD) icing conditions are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Super-cooled Large Droplet (SLD) icing.

FLIGHT IN TURBULENCE

The recommended procedures for flight in turbulence are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Flight in turbulence.

OPERATION IN VOLCANIC ASH/DUST

The recommended procedures for operation in volcanic ash/dust are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Operation in volcanic ash/dust.

WINDSHEAR

When windshear is encountered:

- Immediately set maximum thrust,
- Select TOGA,
- Follow escape guidance (if available), or pull sidestick to aft soft stop (respect the stick shaker),
- Ensure flight spoilers are retracted, and
- Do not change landing gear or flap configuration until the vertical flight path is under control.

The detailed recommended procedures for windshear detection and recovery are given in the Flight Crew Operating Manual, Volume 2 (BD500-3AB48-32600-02), Operational guidance – Windshear.

TERRAIN AWARENESS

The terrain display provides situational awareness only, and may not provide the accuracy and/or fidelity upon which to solely base terrain avoidance maneuvering.

When a terrain awareness warning occurs (identified by an aural including the words TERRAIN or OBSTACLE and PULL UP accompanied by a red PULL UP warning on the PFD):

- Disengage the autopilot,
- Immediately initiate a pull up and advance thrust levers to maximum thrust,

NOTE

A momentary exceedance of EGT can occur.

- Ensure flight spoilers are retracted, and
- Climb at the best climb angle, respecting stick shaker, until all alerts cease and it is confirmed that a safe ground clearance exists.

NOTE

Maintaining sidestick at the aft soft stop establishes the best climb angle.

When a terrain awareness caution occurs (identified by an aural including the words TERRAIN or OBSTACLE accompanied by an amber GND PROX caution on the PFD):

- Adjust airplane flight path until alert ceases.

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INTRODUCTION

The normal procedures are grouped, as follows:

1. Before flight
    - Power-on,
    - Cabin inspection,
    - External walkaround,
    - Preflight,
    - Before start,
    - Before taxi,
    - Before takeoff, and
    - Takeoff.
2. In flight
    - After takeoff,
    - High altitude climb check (before reaching 35000 feet),
    - Descent and approach,
    - Before landing,
    - Go-around, and
    - After go-around.
3. After flight
    - After landing,
    - Shutdown, and
    - Power-off.

All the procedures within a major flight category must be done before the next major flight category.

♦ indicates an action that must be done at the first flight of the day.

♦♦ indicates an action that must be done once a day.

BEFORE FLIGHT

A. Power-on

This is a check to determine if airplane systems are in a configuration to safely place AC electrical power on the airplane buses. These steps should be done on through-flights (enroute stops) if AC electrical power is removed from the airplane, or if there is any doubt that all safety aspects of the prevailing situation can be covered. Completion of this check ensures that there will be no danger to the airplane and/or personnel when the systems are powered.

Before batteries are turned ON, as the ECL is not available, steps (1) to (4) must be done by memory.

(1) PARK BRAKE ..... ON

(2) BATT 1 ..... AUTO

(3) BATT 2 ..... AUTO

(4) ECL ..... DU 2

Confirm ECL part number.

(5) PTU ..... AUTO

(6) HYD 3A ..... OFF

(7) HYD 3B ..... OFF

(8) HYD 2B ..... OFF

(9) Landing gear lever ..... DN

(10) Thrust levers ..... IDLE

(11) L ENG run ..... OFF

(12) R ENG run ..... OFF

(13) APU or external power ..... As required

APU start sequence:

(a) Select START for a minimum of 3 seconds.

A. Power-on (Cont'd)

(b) Allow the switch to return to the RUN position for the APU start.

The **APU IN START** *status message is shown.*

(c) Wait for APU GEN to show online on the ELEC synoptic page before initiation of any electrical system configuration change.

To avoid the interruption of the APU start cycle, no electrical system configuration change (such as shutting down an engine or removal of AC external power during the APU start cycle) should be initiated. In this case, if the **APU SHUTDOWN** *advisory message is shown during the APU start cycle, the APU switch must be set to OFF before a new APU start cycle is attempted.*

(14) EQUIP COOLING, INLET ..... Select auto

– COMPLETE –

B. Cabin inspection

The procedures that follow contain information for cabin safety checks. Location of emergency equipment varies between individual operators therefore the location of emergency equipment must be verified.

The cabin inspection must be completed before the first flight of the day or any crew change.

(1) ENTRY light ..... Select on

(2) CEILING and SIDEWALL lights ..... Select on

Before first flight: ceiling and sidewall lights must be on bright for a minimum of 30 minutes to sufficiently charge the photoluminescent floor track lighting.

(3) EMER LIGHTS ..... ON

All emergency exit lights must be on.

Proceed to the back of the airplane and check the items that follow, moving forward through the cabin:

B. Cabin inspection (Cont'd)

(4) Lavatory E smoke detector ..... Test

(a) Push the self-test switch for 5 seconds:

- The smoke detector sounds,
- The status indicator lights red, and
- The ceiling advisory panel flashes orange.

(5) Lavatory E waste bin extinguisher ..... Check

Check that the temperature sensitive strip on the extinguisher shows no evidence of high temperature.

(6) L2 door ..... Check

Check general condition and safety of passenger door and slide pressure.

(7) Aft flight attendant station ..... Check

Check flight attendant seat operation, aft flight attendant panel, and crew handset.

(8) Galley G4 ..... Check

Ensure containers and doors are secured.

(9) R2 door ..... Check

Check general condition and safety of service door and slide pressure.

(10) Emergency equipment ..... Check

(a) Refer to operator location and check:

- Availability and condition of life vests and infant life vests
- Life rafts (if supplied)
- Flashlights – press push-to-test and check green light flashes one time
- Crash axe
- Fire gloves (if supplied)

B. Cabin inspection (Cont'd)

- Clean-agent portable extinguishers – pin is in, plastic or wire seal is in place, charge indicator in the green band and expiry date
- Water portable extinguishers (if supplied) – wire seal and CO2 cartridge visible
- Smoke hood PBE – condition of seal and expiry date
- First aid kits – check seal
- Cabin crew oxygen
- Portable therapeutic oxygen – mask and tote bag attached, psi 1800+
- Portable ELT (if supplied)
- Megaphones – press PTT and listen for feedback

(11) Overwing emergency exit doors ..... Check

Both left and right overwing emergency exit doors must be fully seated, release handle flush, and escape ropes stowed.

(12) Galley G2 ..... Check

Containers and doors are secured.

(13) R1 door ..... Check

Check general condition and safety of service door and slide pressure.

(14) Galley G1 ..... Check

Containers and doors are secured.

(15) Forward flight attendant station ..... Check

Check CMS crew terminal operation and handset.

(16) L1 door ..... Check

Check general condition and safety of passenger door and slide pressure.

B. Cabin inspection (Cont'd)

(17) Lavatory A smoke detector ..... Test

(a) Push the self-test switch for 5 seconds:

- The smoke detector sounds,
- The status indicator lights red, and
- The ceiling advisory panel flashes orange.

(18) Lavatory A waste bin extinguisher ..... Check

Check that the temperature sensitive strip on the extinguisher shows no evidence of high temperature.

(19) EMER LIGHTS ..... OFF

All emergency exit lights must go out.

– COMPLETE –

C. External walkaround

The external walkaround is a visual examination, done before each flight, to ensure that the overall condition of the airplane and equipment are safe for flight.

NOTE

The external walkaround can be done by qualified maintenance personnel.

The word Check is used to confirm that the airplane and equipment are in satisfactory condition.

Even though not noted individually, the airplane and its visible components must be checked as follows:

- Proximate area is free of potential FOD items.
- Flight control surfaces are unobstructed.
- All vents, ports, intakes and exhausts are unobstructed.
- All covers, plugs, picket/mooring lines are removed.

C. External walkaround (Cont'd)

- Any evidence of fluid leaks from components, drains, panels, airplane skin and on the ground.
- Condition of skin (visible damage) on radome section, probe area, fuselage, wings, nacelles, pylons, empennage and cabin windows.
- Applicable access panels and doors are secured.
- Probes for evidence of freezing, severe discoloration, condition and security.
- Tire condition and inflation.

Clear ice could build up on the upper surface of the wings if visible moisture is present and the ambient temperature is at or below freezing, or at ambient temperatures above freezing, with subfreezing temperature fuel (0°C [32°F] or below) in contact with the underside of the upper wing skin. Any condensation, fog, drizzle or rain contacting the chilled upper wing surface quickly freezes to the exterior surface.

During cold weather operations, the flight crew must ensure that the airplane fuselage, wings and tail surfaces are free from ice, snow or frost. (Refer to Operational guidance – Cold weather operations.)

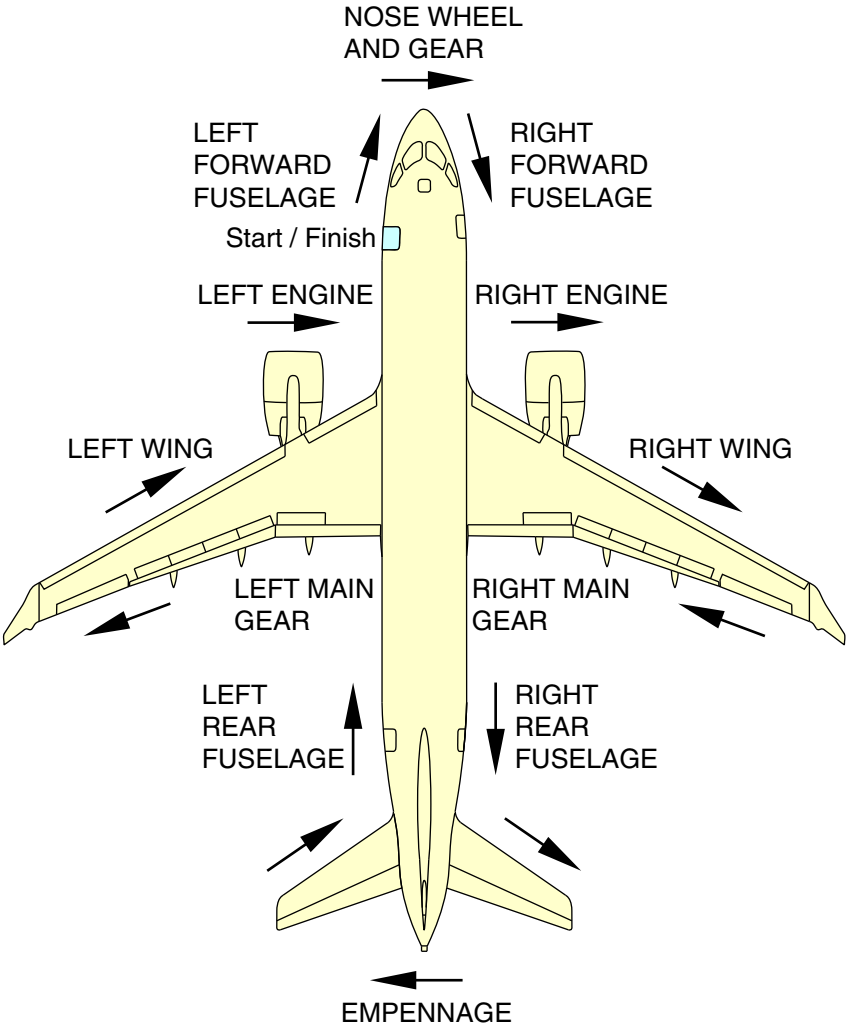
C. External walkaround (Cont'd)

NOTE

Clear ice accumulation on the wing upper surface is very difficult to detect. Clear ice cannot be seen during a walkaround, particularly if the wing is wet. If the fuel temperature is 0°C (32°F) or below and high humidity conditions exist or visible moisture in any form is present, pilots must ensure that the wing upper surface is free of clear ice.

Start at the forward passenger door, continue in the direction shown in the external walkaround sequence illustration (refer to Figure 03–02–1) and finish back at the forward passenger door.

C. External walkaround (Cont'd)



Standard external walkaround
Figure 03–02–1

C. External walkaround (Cont'd)

Left forward fuselage

(1) Passenger door emergency light ..... Check

(2) Ground power service door ..... As required

(3) Oxygen blowout plug ..... Intact

(4) Ice detector probe ..... Check

(5) Pitot probes ..... Check

Probes must be unobstructed, with no abnormal discoloration and the fuselage skin in the vicinity must be free of damage.

(6) AOA vane ..... Check

(7) TAT probe ..... Check

(8) Windshield, windows ..... Check

(9) Windshield, wipers ..... Check, parked

(10) Radome ..... Check

Nosewheel and gear

(11) Wheel chocks ..... As required

(12) Nose gear doors ..... Check

(13) Nosewheel well ..... Check

(14) Nose landing light ..... Check

(15) Tires ..... Check

(16) Nosewheel ..... Aligned

(17) Oleo ..... Check

(18) Gear pin ..... Removed

Right forward fuselage

(19) Ice detector probe ..... Check

C. External walkaround (Cont'd)

(20) Pitot probes ..... Check

Probes must be unobstructed, with no abnormal discoloration and the fuselage skin in the vicinity must be free of damage.

(21) AOA vane ..... Check

(22) TAT probe ..... Check

(23) Forward service door emergency light ..... Check

(24) Forward service door ..... Check

(25) Wing inspection light ..... Check

(26) Forward water drain mast ..... Check

(27) Forward cargo door ..... Check

(28) Red beacon light ..... Check

(29) REFUEL/DEFUEL panel ..... Check

(30) Taxi and landing lights ..... Check

(31) Right forward lower fuselage ..... Check

(32) Antennas ..... Check

(33) Overwing emergency exit door ..... Check

(34) Overwing emergency exit door light ..... Check

Right engine

(35) Engine cowls ..... Check

Thrust reverser and fan cowl latches must be latched and flush.

(36) P2/T2 probe ..... Check

(37) Fan blades ..... Check

(38) Thrust reversers ..... Stowed

C. External walkaround (Cont'd)

(39) Access panels ..... Closed

Oil storage and PCE door must be closed.

(40) Right pylon ..... Check

(41) Turbine ..... Check

Right wing

(42) Leading edge slats ..... Check

(43) Navigation and strobe lights ..... Check

(44) Winglet ..... Check

(45) Static dischargers ..... Check

(46) Aileron ..... Check

(47) Lower wing surface ..... Check

(48) Flaps ..... Check

Right landing gear

(49) Wheel chocks ..... As required

(50) Right landing gear doors ..... Check

(51) Right main landing gear ..... Check

(52) Oleo ..... Check

(53) Tires ..... Check

(54) Electric brake harness ..... Check

(55) Gear pin ..... Removed

(56) Wheel well ..... Check

Right rear fuselage

(57) Right aft lower fuselage ..... Check

(58) Aft cargo door ..... Check

(59) Aft water drain mast ..... Check

C. External walkaround (Cont'd)

(60) Antennas ..... Check

(61) Aft service door ..... Check

(62) Aft service door emergency light ..... Check

(63) MFS and ground spoilers ..... Check

Flush with wing top surface.

Empennage

(64) Horizontal stabilizer ..... Check

(65) APU ..... Check

Check the intake, exhaust, and access doors.

(66) Elevators ..... Check

(67) Rudder ..... Check

(68) Static dischargers ..... Check

(69) Navigation and strobe lights ..... Check

Left rear fuselage

(70) MFS and ground spoilers ..... Check

Flush with wing top surface.

(71) Aft passenger door ..... Check

(72) Aft passenger door emergency light ..... Check

(73) Left aft lower fuselage ..... Check

(74) Overwing emergency exit door ..... Check

(75) Overwing emergency exit door light ..... Check

Left landing gear

(76) Wheel chocks ..... As required

C. External walkaround (Cont'd)

(77) Left landing gear doors ..... Check

(78) Left main landing gear ..... Check

(79) Oleo ..... Check

(80) Tires ..... Check

(81) Electric brake harness ..... Check

(82) Gear pin ..... Removed

(83) Wheel well ..... Check

Left wing

(84) Flaps ..... Check

(85) Lower wing surfaces ..... Check

(86) Aileron ..... Check

(87) Static dischargers ..... Check

(88) Winglet ..... Check

(89) Navigation and strobe lights ..... Check

(90) Leading edge slats ..... Check

Left engine

(91) Engine cowls ..... Check

Thrust reverser and fan cowl latches must be latched and flush.

(92) P2/T2 probe ..... Check

(93) Fan blades ..... Check

(94) Thrust reversers ..... Stowed

(95) Access panels ..... Closed

Oil storage and PCE door must be closed.

(96) Left pylon ..... Check

(97) Turbine ..... Check

C. External walkaround (Cont'd)

Left forward fuselage

(98) Taxi and landing lights ..... Check

(99) Wing inspection light ..... Check

(100) Left forward lower fuselage ..... Check

D. Preflight

(1) Airplane documents ..... On board and checked

Make sure documents are valid.

(2) Emergency equipment ..... Checked

(a) Check the following:

- Escape rope
- Escape hatch – Closed and locked (green witness marks are aligned)
- Flashlights (2)
- Crash axe
- First aid kit
- Smoke hoods
- Fire extinguisher
- Life vests – Under seats

(3) Gear pins ..... On board

Ensure the landing gear pins (3) are on board.

(4) Overhead panel ..... Checked

(a) AURAL WARN ..... Guarded, no lights

(b) PROBE HEAT ..... GND ON, as required.

To remove ice from probes.

(c) WINDOW HEAT ..... No lights

D. Preflight (Cont'd)

(d) PRIM FLT CTRL panel ..... Guarded, no lights

(e) CVR panel ..... No TEST light

(f) CB INTEG/OVHD
INTEG/COMPASS/ANNUN ..... As required

(g) SERV INT/MECH CALL ..... As required

(h) READING/WIPER ..... As required, OFF

(i) FIRE panel ..... Guarded, no lights

(j) HYDRAULIC panel .....PTU AUTO, HYD pumps OFF, guarded, no lights

(k) ELECTRICAL panel .....AUTO, guarded, no lights

EXT PWR AVAIL as required.

(l) APU ..... As required

(m) TAWS panel ..... Guarded, no lights

(n) FUEL panel .....AUTO, no lights, MAN XFR OFF

(o) AIR panel ..... As required, guarded, no lights, XBLEED AUTO

(p) ANTI-ICE panel ..... AUTO

(q) ELT ..... ARM

(r) CARGO fire panel ..... Guarded, no lights

(s) EQUIP COOLING panel ..... AUTO, no lights

(t) PRESSURIZATION panel ..... Guarded, no lights, MAN RATE

Set at mid-position.

(u) EVAC/EMER LTS ..... Guarded, no lights, ARM

(v) READING/WIPER ..... As required, OFF

(w) EXT LTS ..... As required

(x) LDG LTS ..... OFF

D. Preflight (Cont'd)

(y) SEAT BELTS ..... As required

(5) Glareshield ..... Checked

(a) L SIDESTICK PTY ..... Guarded, no lights

(b) L RANGE ..... As required

(c) L TERR, TFC, WX, NAV SRC ..... As required

(d) L BARO ..... IN or HPA

(e) L CTP, XPDR/TCAS ..... As required

(f) SPD ..... FMS

(g) TOGA ..... Select

(h) NAV/VNAV ..... As required

(i) AP ..... No lights

(j) AT ..... No lights

(k) XFR ..... As required

(l) EDM ..... Guarded, no lights

(m) FLC, ALT ..... No lights

(n) ALT selector ..... FT or M

(o) V/S, FPA ..... No lights

(p) R RANGE ..... As required

(q) R TERR, TFC, WX, NAV SRC ..... As required

(r) R BARO ..... IN or HPA

(s) R CTP, XPDR/TCAS ..... As required

(t) R SIDESTICK PTY ..... Guarded, no lights

D. Preflight (Cont'd)

(6) Displays ..... Checked

All displays (DU 1 to DU 5) on and configured as required.

(7) ♦ Ice detector test ..... Complete

(a) AVIONIC synoptic page ..... Select

(b) AVIO, TEST – ICE DETECT ..... Select

(c) Confirm **ICE** caution message is shown.

(d) Confirm DONE is shown.

(8) ♦ Circuit breakers ..... Checked

(a) CB synoptic page ..... Select

(b) Circuit breaker ..... Confirm status

(9) EICAS and INFO ..... Checked

Both pilots check messages.

(10) Altimeters ..... ( ) Set and cross-checked

(a) Set both PFD and ISI.

(b) Check RVSM tolerances, if required.

(11) Center panel ..... Checked

(a) ISI ..... Checked

(b) ALTN GEAR ..... Guarded and NORM

(c) GEAR AURAL ..... Guarded, no lights

(d) AUTOBRAKE ..... RTO

(e) NOSE STEER ..... OFF

(f) ALTN BRAKE ..... Guarded, no lights

(12) Pedestal ..... Checked

(a) L MKP ..... Checked

(b) L CCP ..... Checked

D. Preflight (Cont'd)

(c) ACP 1 ..... Set as required

(d) DISPLAY ..... NORM

(e) L CURSOR R ..... No lights

(f) DSPL TUNE ..... No lights

(g) L PFD, ISI, R PFD ..... Checked

Ensure on-side ADS and IRS. No white or amber ADS or IRS messages on FMA.

(h) Thrust levers ..... IDLE

(i) L ENG run ..... OFF

(j) R ENG run ..... OFF

(k) CONT IGNITION ..... No lights

(l) ENGINE, START ..... AUTO

(m) Spoiler lever ..... RET

(n) SLAT/FLAP lever ..... Set to slat/flap position

(o) ALTN FLAP ..... Guarded and NORM

(p) R MKP ..... Checked

(q) R CCP ..... Checked

(r) ACP 2 ..... Set as required

(s) ACP 3 ..... Set as required

(13) ♦ Rudder trim ..... Checked

(a) Trim ..... Select left and right

(b) On EICAS, check rudder trim movement left and right (triangle outline becomes white) and reset trim to the centerline position.

(c) Confirm triangle outline is green.

D. Preflight (Cont'd)

(14) Sidesticks ..... Checked

(a) FLT CTRL synoptic page ..... Select

(b) Both pilots, in turn, move the sidesticks through the full range of movement in both axes. Release sidestick from full deflection in roll axis and from soft stop in pitch axis.

1 Confirm that the blue dot moves in the same direction as the sidestick.

2 Confirm that the sidestick returns to neutral normally.

3 The blue dot must return to the center of the cross.

(15) ♦ Oxygen masks <TC> or <EASA> ..... Checked

(a) Check third crew member oxygen mask, if required.

(b) SPKR ..... Select

(c) INT ..... Select

At the same time:

(d) PRESS TO TEST lever ..... Push and hold

(e) Emergency flow selector ..... Push and hold

Oxygen flow is heard and the flow indicator shows a yellow cross.

When test is completed:

(f) Release PRESS TO TEST lever and emergency flow selector.

(g) Oxygen mask setting ..... Set to 100%

(h) Oxygen pressure ..... Check

On EICAS, check CREW OXY levels for minimum dispatch pressure.

(16) ♦ FDRAS test ..... Complete

(a) With the flight deck door closed, ask a crew member to enter the emergency access request code on the FDRAS keypad.

(b) Press EMER ACCESS, DENY.

D. Preflight (Cont'd)

(c) Ask the crew member to try to open the door and confirm the door stays locked.

– COMPLETE –

E. Before start

(1) Takeoff briefing ..... Complete

The takeoff briefing is normally given before calling for this checklist.

This briefing includes thrust and flap setting, AUTOBRAKE RTO, anti-ice and environmental requirements, Vspeeds, SID, FCP selection, and emergency briefing.

(2) APU and/or external power ..... As required

(a) After switching from external to APU power, wait 5 seconds before disconnecting external power.

(b) External power must be deselected with the EXT PWR switch (IN USE/AVAIL) before the cable can be removed.

(3) SEAT BELTS ..... ON

(4) Doors ..... Closed and locked

On the DOORS synoptic page, check that the doors are closed.

Visually check the escape hatch is closed and locked.

(5) BEACON ..... ON

(6) PARK BRAKE ..... As required

NOTE

1. The messages that follow may be shown temporarily during engine start and can be ignored if they go out within 10 seconds of engine start completion:

   - **L ELEVATOR FAIL** (Warning)

E. Before start (Cont'd)

- **R ELEVATOR FAIL** (Warning)
- **RUDDER FAIL** (Warning)
- **RUDDER DEGRADED** (Caution)
- **AILERON FAIL** (Caution)
- **FLT CTRL FAULT** (Advisory)

2. The **HYD 3 LO PRESS** caution message may be shown when engines are started.

– COMPLETE –

F. Engine start

(1) Normal (APU-assisted) engine start

Engine starts are done with the start switch in AUTO. The Electronic Engine Control (EEC) ensures the engine start stays within limits and will abort the start if the engine starting limits are exceeded. The **L ENG START ABORT** or **R ENG START ABORT** caution messages can be shown during a normal engine start.

(2) Crossbleed engine start

A crossbleed start is an engine start that uses the opposite engine bleed instead of APU bleed. There is no specific setup or special procedure for a crossbleed start. The procedure is the same as a normal (APU-assisted) engine start.

(3) External air engine start

When necessary, engine starts can be done with a high-pressure ground air cart. Either engine can be used for the external start.

F. Engine start (Cont'd)

The recommended air pressure to be confirmed in the AIR synoptic page is 38 psi. However, at airport elevations higher than sea level, lower recommended pressure values can be used (refer to the table). The use of lower pressures is not recommended as it can cause abnormal engine starts. The maximum pressure permitted for an external start is 45 psi.

Recommended air pressure for external air engine start	
Pressure altitude	**Pressure – AIR synoptic page**
Sea level	38 psi
2500 feet	37 psi
5000 feet	35 psi
7500 feet	34 psi

The crew must coordinate with ground personnel during the external air engine start. After the external air source is connected and bleed air is available, the procedure is the same as a normal (APU-assisted) engine start. When the first engine is started, it is recommended to disconnect the external air cart and do a crossbleed start.

G. Single engine taxi out

Although either engine can be used for single engine taxi, it is recommended to use the right engine for single engine taxi out. This prevents hydraulic pressure spikes of hydraulic system 2 when only HYD 2B is operating, which can cause flight control nuisance messages.

When operational requirements mandate the use of the left engine to taxi out, flaps should only be deployed while the aircraft is stationary to prevent reduced nosewheel steering function.

G. Single engine taxi out (Cont'd)

CAUTION

1. Single engine taxi operations are not recommended on slippery or contaminated surfaces.
2. If the N1 is not increased as required before start of the wing anti-ice test, the **L ENG EXCEEDANCE** or **R ENG EXCEEDANCE** caution message can appear and engine damage can occur.Refer to Normal procedures – Before taxi.

During single engine operations, to make sure that all three hydraulic systems are pressurized during the flight control check and that nosewheel steering stays active, these steps are recommended:

- Single engine operation with right engine operating:

  Select PTU to ON before the slats/flaps are moved or flight control checks are started. After the second engine is started, select the PTU to previous position.

- Single engine operation with left engine operating:

  Select HYD 2B to ON before the slats/flaps are moved or flight control checks are started. After the second engine is started, select HYD 2B to previous position.

NOTE

A **LOAD SHED** advisory message can appear but will self-clear.

In all cases, after the second engine is started, allow suitable time for warm-up.

H. Before taxi

CAUTION

On ground, do not move the flight controls until all hydraulic systems are powered.

(1) HYD 3A ..... AUTO

<Mod 291002> or <Post-SB BD500-291002>

(2) HYD 3B ..... AUTO

<Mod 291002> or <Post-SB BD500-291002>

(3) HYD 2B ..... AUTO

(4) APU ..... As required

(5) FLAP ..... ( ) selected

Set takeoff flaps as entered in FMS.

CAUTION

For the wing anti-ice test, the N1 must be increased to at least the value in the table before the test is started.

If the N1 is not increased as required before start of the wing anti-ice test, the **L ENG EXCEEDANCE** or **R ENG EXCEEDANCE** caution message can appear and engine damage can occur.

H. Before taxi (Cont'd)

NOTE

It is acceptable to momentarily activate the wing anti-ice in flight instead of doing the test on the ground when aircraft operational requirements do not allow to do the test on the ground. Refer to the Flight Crew Operating Manual (FCOM), Volume 2 (BD500-3AB48-32600-02), Normal procedures – Wing anti-ice check in flight for guidelines.

(6) ♦♦ Wing anti-ice test ..... Complete

With at least one pack and engine bleed available:

(a) Advance and maintain thrust levers to adjust N1 to at least the values in the table that follows:

Pressure altitude	FWD CARGO setting	COWL ANTI-ICE setting	Minimum N1 setting	
			Dual engine bleed	Single engine bleed
At or below 8000 feet	OFF, VENT, LO HEAT or HI HEAT	OFF, AUTO or ON	30%	50%
At or below 6000 feet	OFF or VENT	OFF, AUTO or ON	25%	50%

(b) ANTI-ICE, WING ..... ON

(c) AVIONIC synoptic page ..... Select

(d) AVIO, TEST – WING A/ICE ..... Select

(e) Confirm PASS is shown.

(f) Thrust levers ..... As required

(7) ANTI-ICE, COWL ..... AUTO or ON

ON if icing conditions exist.

H. Before taxi (Cont'd)

(8) ANTI-ICE, WING .....AUTO or ON

ON if icing conditions exist.

NOTE

At above 15°C (59°F) OAT, if the wing anti-ice system is ON for more than 3 minutes, the **WING A/ICE ON** caution message comes on.

(9) Flight controls ..... Checked

(a) FLT CTRL synoptic page ..... Monitor

(b) Sidesticks ..... Checked

One pilot checks the flight controls for full and correct range of movement.

(c) Rudder ..... Checked

Ensure full deflection (monitor both sides for correct movement).

(10) NOSE STEER ..... Select on

(11) EICAS and INFO ..... Checked

Both pilots check messages.

– COMPLETE –

I. Demonstrated runway width

The capability of this airplane and compliance with the handling, performance and safety requirements of the certification basis has been demonstrated on a runway width of 30 m (100 ft) or more.

This does not constitute an operational approval to conduct operations on runways with a width of 30 m (100 ft).

J. Before takeoff

(1) FMS ..... Set

Confirm the FMS includes last minute changes. Refer to FMS Operating Guide.

(2) Trims ..... Set

(a) Stabilizer trim ..... Set

Set to correct takeoff trim value in green range on the EICAS status page.

(b) Rudder trim ..... Set to centerline position (green)

(3) FLAP ..... Set

Confirm correct flap selection.

(4) Anti-ice ..... As required

ON as applicable, if icing conditions exist.

(5) AUTOBRAKE ..... As required

(6) EICAS and INFO ..... Checked

Both pilots check messages.

(7) Cabin ..... Ready

If applicable, on EICAS page, check CABIN tile is READY (green).

(8) Runway ..... ( ) confirmed

Ensure correct runway.

– COMPLETE –

K. Airplane geometry considerations for takeoff

At rotation, these pitch and bank angles must be observed:

- Bank angles of more than 15 degrees can cause an engine nacelle strike.
- Pitch angles of more than 11 degrees can cause an aft fuselage strike.

L. Normal takeoff

When aligned on the active runway:

(1) Brakes ..... As required

NOTE

Published performance for normal takeoff is based on holding the brakes on until the thrust levers are advanced to the takeoff setting. When not holding the brakes, the rolling takeoff performance must also be used.

(2) Heading ..... Verify

Make sure that the airplane heading agrees with the assigned runway.

(3) Autothrottle ..... Select, if required.

(4) Thrust levers ..... Advance

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

(a) Advance to approximately 55% N1 on both engines.

(b) Check that N1 for both engines is stabilized.

(c) Advance to takeoff setting.

CAUTION

Failure to achieve takeoff setting promptly can cause a **CONFIG SPOILER** warning message.

When thrust levers are advanced towards the takeoff setting and the autothrottle is selected, the autothrottle engages and sets target takeoff N1 (as selected in the FMS and as limited by the Thrust Limitation at Low Speed (TLLS)).

(5) Flight and engine instruments ..... Monitor

L. Normal takeoff (Cont'd)

At 80 KIAS:

(6) Airspeed ..... Check

(7) Engines ..... Confirm thrust set

Both PFD speed indicators must agree and target takeoff N1 is set.

NOTE

For higher than normal headwinds (more than 40 kt), the autothrottle may not achieve the takeoff N1 value. Consider the use of manual thrust.

At V_R:

(8) Rotate towards PTM.

(a) Rotate 3 to 5 degrees per second towards PTM pitch attitude and transition to the FD when available.

NOTE

The FD appears 3 seconds after weight-off-wheels.

The PTM is removed:

- 7 or more seconds after weight-off-wheels
- 200 feet AGL or more.

When positive rate of climb is indicated:

(9) Landing gear ..... UP

Stabilized climb (not below 400 feet):

(10) FD modes ..... As required

(11) Autopilot ..... As required

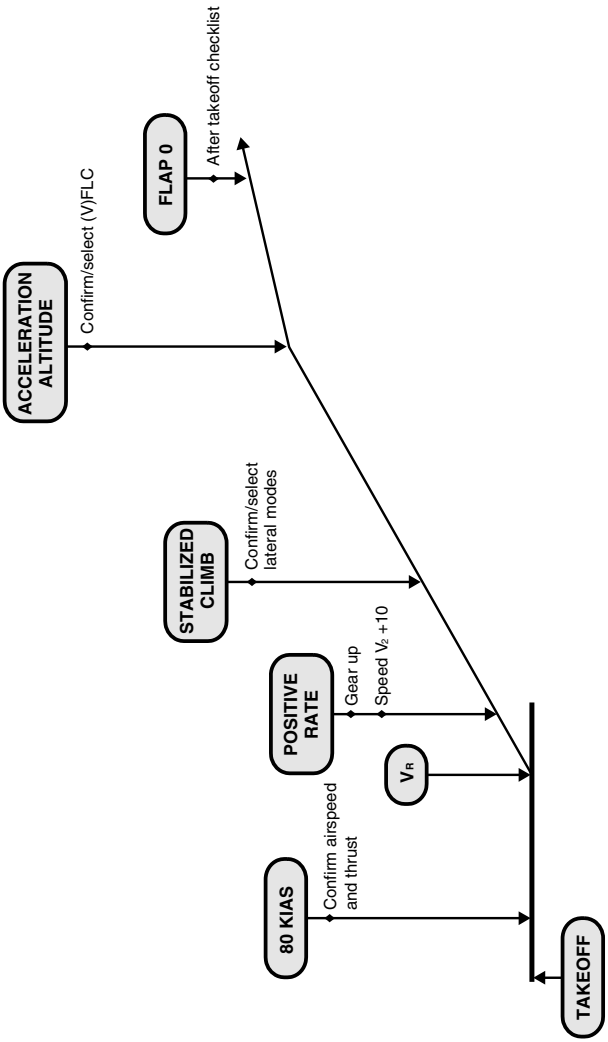
When above acceleration altitude:

(12) FLAP ..... Retract on schedule

L. Normal takeoff (Cont'd)

Mode selections and callouts – Takeoff			
Condition	**Mode selection**	**PF**	**PM**
At 80 KIAS and thrust at required N1 value			80 knots, thrust set
		Check	
At V_1			V_1
At V_R			Rotate
When positive rate of climb is confirmed			Positive rate
		Gear up	
Stabilized climb	Confirm/select NAV or HDG	FMS 1(2) (HDG)	
			Check
Acceleration altitude	Confirm/select FLC	(V)FLC	
			Check
		FLAP #	
FLAP 0		After takeoff checklist	
			After takeoff checklist complete

L. Normal takeoff (Cont'd)



Takeoff profile
Figure 03–02–2
– COMPLETE –

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

M. High wind takeoff

When aligned on the active runway:

(1) Brakes ..... As required

NOTE

Published performance for high wind takeoff accounts for delayed setting of takeoff thrust lever position. When not holding the brakes, the rolling takeoff performance must also be used.

(2) Heading ..... Verify

Make sure that the airplane heading agrees with the assigned runway.

(3) Autothrottle ..... Select, if required.

(4) Thrust levers ..... Advance

(a) Advance to approximately 55% N1 on both engines.

(b) Check that N1 for both engines is stabilized.

(5) Brakes ..... Release, if required.

At 20 knots ground speed:

(6) Thrust levers ..... Advance to takeoff setting.

(7) Flight and engine instruments ..... Monitor

At 80 KIAS:

(8) Airspeed ..... Check

(9) Engines ..... Confirm thrust set

Both PFD speed indicators must agree and target takeoff N1 is set.

M. High wind takeoff (Cont'd)

NOTE

For higher than normal headwinds (more than 40 kt), the autothrottle may not achieve the takeoff N1 value. Consider the use of manual thrust.

At V_R:

(10) Rotate towards PTM.

(a) Rotate 3 to 5 degrees per second towards PTM pitch attitude and transition to the FD when available.

NOTE

The FD appears 3 seconds after weight-off-wheels.

The PTM is removed:

- 7 or more seconds after weight-off-wheels
- 200 feet AGL or more.

When positive rate of climb is indicated:

(11) Landing gear ..... UP

Stabilized climb (not below 400 feet):

(12) FD modes ..... As required

(13) Autopilot ..... As required

When above acceleration altitude:

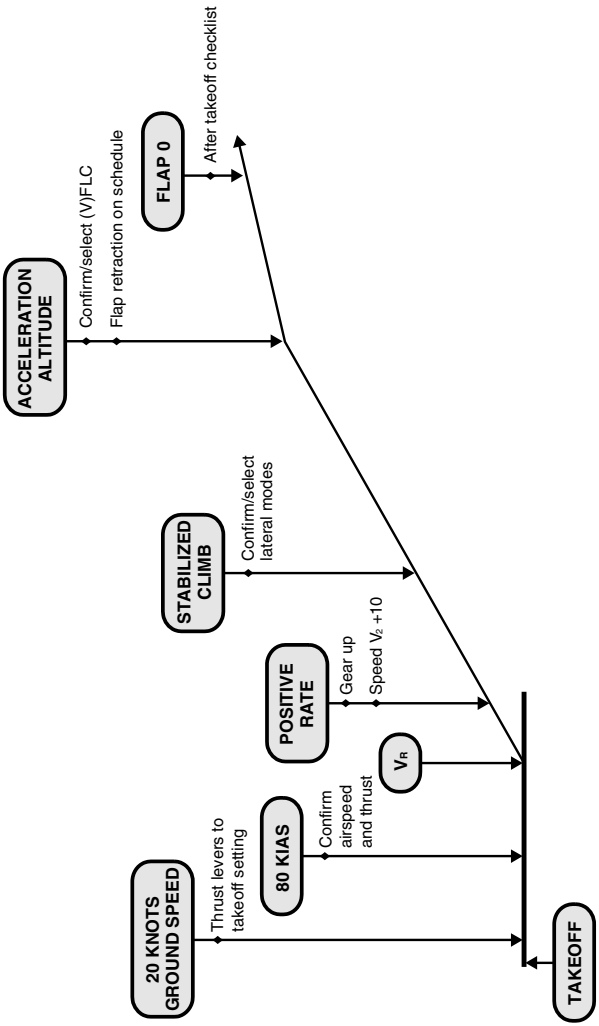
(14) FLAP ..... Retract on schedule

Mode selections and callouts – Takeoff			
Condition	**Mode selection**	**PF**	**PM**
At 20 knots ground speed			20 knots

M. High wind takeoff (Cont'd)

Mode selections and callouts – Takeoff			
Condition	**Mode selection**	**PF**	**PM**
At 80 KIAS and thrust at required N1 value			80 knots, thrust set
		Check	
At V_1			V_1
At V_R			Rotate
When positive rate of climb is confirmed			Positive rate
		Gear up	
Stabilized climb	Confirm/select NAV or HDG	FMS 1(2) (HDG)	
			Check
Acceleration altitude	Confirm/select FLC	(V)FLC	
			Check
		FLAP #	
FLAP 0		After takeoff checklist	
			After takeoff checklist complete

M. High wind takeoff (Cont'd)



High wind takeoff profile
Figure 03–02–3
– COMPLETE –

N. Takeoff – Maximum recommended crosswind

The table that follows provides values for maximum crosswind based on the conditions given in the Runway Condition Assessment Matrix (RCAM).

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

Maximum recommended crosswind for takeoff			
Runway condition code	**Runway surface condition description**	**Pilot-reported braking action**	**Maximum recommended crosswind (kt)**
6	Dry	—	32 [1]
5	• Frost • Wet (includes damp and 3 mm (0.12 in.) depth or less of water) 3 mm (0.12 in.) depth or less of: • Slush • Dry snow • Wet snow	Good	32 [1]
4	–15°C and colder outside air temperature: • Compacted snow	Good to medium	27 [1]
3	• Wet (“slippery when wet” runway) • Dry snow or wet snow (any depth) over compacted snow More than 3 mm (0.12 in.) depth, of: • Dry snow	Medium	20 [1]

N. Takeoff – Maximum recommended crosswind (Cont'd)

Maximum recommended crosswind for takeoff			
Runway condition code	**Runway surface condition description**	**Pilot-reported braking action**	**Maximum recommended crosswind (kt)**
	• Wet snow Warmer than –15°C outside air temperature: • Compacted snow		
2	More than 3 mm (0.12 in.) depth, of: • Water • Slush	Medium to poor	10 [1]
1	Ice	Poor	10 [1]

[1] AFM engine operating takeoff limits due to wind can be more restrictive for takeoff.

IN FLIGHT

A. After takeoff

(1) Landing gear ..... UP

(2) FLAP 0

(3) ANTI-ICE, L COWL ..... AUTO

(4) ANTI-ICE, WING ..... AUTO

(5) ANTI-ICE, R COWL ..... AUTO

(6) EICAS ..... Checked

The PM checks messages.

– COMPLETE –

B. Initial climb – Maneuvering speeds

During the takeoff phase, the speeds that follow are recommended:

- All engines operating: V_2 + 10 KIAS
- One engine inoperative: V_2

When a turn in the takeoff configuration is required, these bank angles are permitted:

- All engines operating: Maximum bank angle of 30 degrees
- One engine inoperative: Maximum bank angle of 15 degrees

C. Slat/flap retraction

While the aircraft is accelerating, slat/flap retraction is done by selecting the next FLAP position as it becomes available (F-speed shown on airspeed tape). Selection of the next flap position must be initiated at a speed not less than the F-speed for the next flap position. For example, while accelerating with FLAP 3, flap retraction to FLAP 2 can be initiated at not less than the posted F2 speed.

The PF calls each FLAP configuration change. The PM retracts the FLAP on schedule.

C. Slat/flap retraction (Cont'd)

When a turn is required while accelerating, the bank angles that follow are permitted when flap retraction is initiated at the F-speeds:

- All engines operating: Maximum bank angle of 25 degrees
- One engine inoperative: Maximum bank angle of 15 degrees

With all engines operating, if flap retraction is desired during a 30-degree bank turn, add 10 KIAS to the posted F-speeds before selecting flap.

D. Wing anti-ice check in flight

NOTE

It is acceptable to momentarily activate the wing anti-ice in flight instead of doing the test on the ground (refer to Normal procedures – Before taxi).

(1) ♦♦ Wing anti-ice check ..... Complete, if wing anti-ice test not done on ground.

Below 19000 feet and before the approach, with TAT equal to or below 15°C (59°F):

(a) ANTI-ICE, WING ..... ON

(b) After 2 minutes, confirm no wing anti-ice warning or caution message shown.

(c) ANTI-ICE, WING ..... AUTO

– COMPLETE –

E. High altitude climb check (before reaching 35000 feet)

CAUTION

If still in icing conditions, climb must be stopped at 35000 feet. Failure to select WING ANTI-ICE to OFF above 35000 feet could result in engine nacelle overheating, and trigger engine fire warnings.

(1) ANTI-ICE, WING ..... OFF

(2) Avoid icing conditions.

– COMPLETE –

F. Cruise/holding

Green dot speed maximizes the climb gradient, minimizes drag and is the minimum recommended speed in the cruise configuration. Green dot speed is the recommended best speed for holding as it results in minimum fuel flow.

Green dot speed varies depending on all-engines versus one-engine inoperative conditions.

These bank angles are permitted during flight at green dot speed:

- All engines operating:
  - Maximum bank angle of 30 degrees at altitudes up to 31500 ft.
  - Maximum bank angle of 15 degrees at altitudes above 31500 ft.
- One engine inoperative: Maximum bank angle of 25 degrees

G. Descent and approach

(1) ANTI-ICE, WING (below 35000 feet) ..... AUTO

(2) FMS ..... Set

Refer to FMS Operating Guide.

G. Descent and approach (Cont'd)

(3) Minima ..... Set

Set MDA and/or DH.

(4) AUTOBRAKE ..... As required

(5) EICAS ..... Checked

Both pilots check messages.

(6) Approach briefing ..... Complete

This briefing includes STAR, approach type, minima, flap setting, Vspeeds, AUTOBRAKE setting, environmental conditions and missed approach.

– COMPLETE –

H. Slat/flap extension

The deceleration to landing configuration is intended to be completed as a continuous flow. The deceleration normally starts between 3000 and 2000 feet Above Aerodrome Elevation (AAE) in order to be stable by 1000 feet AAE.

Slat/flap extension is done by selecting the next FLAP position as it becomes available (F-speed shown on airspeed tape). Selection of the next FLAP position must be initiated at a speed not less than the F-speed for the next flap position. For example, while flying with FLAP 2, flap extension to FLAP 3 can be initiated at a speed not less than the F3 speed.

To minimize thrust lever movements while the autothrottle is engaged, it is recommended to select the next FLAP position as the speed trend vector reaches the next F-speed. The PF calls each FLAP configuration change. The PM extends the FLAP on schedule.

The maximum bank angle permitted when slat/flap extension is initiated at the F-speeds while decelerating is 25 degrees of bank. If slat/flap extension is desired during a 30-degree bank turn, add 10 KIAS to the posted F-speeds before selecting the next FLAP position.

H. Slat/flap extension (Cont'd)

At certain weights, the posted F1 speed may be higher than the green dot speed because it includes a specific margin to account for deceleration if the flaps are selected.

If maneuvering is required at speeds at or above green dot, but below the posted F1, the flight crew can safely maintain the configuration at FLAP 0 without any loss of maneuvering capability. As soon as a speed reduction below green dot is required, FLAP 1 should be selected.

If FMS F-speeds are not shown or available, the suggested slat/flap extension speeds for each FLAP configuration are as follows:

- FLAP 1 = 220 KIAS
- FLAP 2 = 200 KIAS
- FLAP 3 = 180 KIAS
- FLAP 4 = 160 KIAS or while slowing to V_{REF} (for FLAP 4 landing)
- FLAP 5 = Slowing to V_{REF}

I. Stabilized approach philosophy

To maximize aircraft efficiency, every effort must be made to use a continuous descent profile. Level-offs due to ATC, or procedural constraints, are to be expected and should not change procedures significantly, except for anticipating when to begin deceleration and aircraft configuration changes for landing.

Approach slopes should normally be intercepted above 1500 feet AAE and guidelines are given for a 3-degree flight path angle.

A stabilized approach is extremely important to ensure a safe approach and landing. The use of a stabilized approach concept is encouraged to help eliminate CFIT. The stabilized approach is characterized by maintaining a stable:

- Approach speed,
- Descent rate,
- Vertical flight path, and

I. Stabilized approach philosophy (Cont'd)

- Configuration to landing.

After crossing the FAF, the crew must ensure correct configuration for landing, the proper approach speed, power setting, and flight path before descending below the minimum stabilized approach height:

- 1000 ft AAE in IMC, or
- 500 ft AAE in VMC.

Benefits of a stabilized approach are:

- Increased safety and standardization,
- Improved Situational Awareness (SA),
- Reduced pilot workload,
- Improved fuel efficiency,
- Reduced noise levels,
- Approach procedure similarities (precision and non-precision approaches), and
- Reduced probability of infringement on required obstacle clearance during the final approach segment.

J. Continuous Descent Final Approach (CDFA)

CDFA is a technique consistent with stabilized approach procedures for flying the final approach segment of a non-precision approach procedure as a constant descent. This is accomplished without level-off from an altitude at or above the final approach fix altitude to a point approximately 15 m (50 ft) height above the landing runway threshold or the point where the flare maneuver should begin.

CDFA procedures consider the Minimum Descent Altitude (MDA) as a Decision Altitude (DA) and, if the runway is not in sight when the aircraft reaches the MDA, a go-around must be executed.

Some authorities may also require that a buffer be added to the MDA when using it as a DA for a CDFA so that a descent below the published MDA does not occur during the initiation of the go-around procedure.

J. Continuous Descent Final Approach (CDFA) (Cont'd)

The authorities require adequate training programs and guidance to the flight crews to obtain an Operations Specification (Ops Spec) for conducting CDFA procedures.

Compliance with these instructions does not constitute operational approval for the use of CDFA procedures.

K. Approach capability – Approach Status Annunciator (ASA)

(1) ILS approaches – With or without autoland

During an ILS approach, the aircraft will automatically show the highest available approach capability (automatic up-mode capability) in the ASA field of the PFD (and HUD), based on aircraft system health and configuration.

The table that follows describes the ASA indications:

ASA indication	Lowest weather permitted	Autoland possible
LAND 2	CAT III fail passive (with DH)	Yes
APPR 2 (without HUD)	CAT II (DH)	No
APPR 2 (with HUD)	CAT II (DH)	No
APPR 1	CAT I	No

Supplement 8 – Category II, Category III and autoland operations. must be used for all autoland approaches.

(2) Non-ILS approaches

For all non-ILS approaches, when the navigation source (NAV SRC) is FMS, there is no indication on the ASA.

Localizer-based backcourse approaches have no autoland functionality and there is no indication on the ASA.

L. Glideslope/glidepath intercept from above

Usually, an ILS or RNAV approach profile will show a glideslope/glidepath capture from below. However, there are situations that will require a glideslope/glidepath capture from above. When this occurs, it is recommended to try to capture the glideslope/glidepath before the FAF/FAP or, in any case, before 1000 feet AAE.

The technique that follows can help the crew intercept the glideslope/glidepath safely and establish a stabilized approach before 1000 feet AAE:

- Select APPR on the FCP and make sure the GS (VGP) is armed.
- Establish final landing configuration and set the FCP altitude (not below 1000 feet AAE).
- Select (V)FLC and make sure that the thrust levers are reduced to IDLE.
- If necessary, set the maximum vertical speed at –1000 to –1500 fpm to achieve GS (VGP) capture.
- Monitor the rate of descent and airspeed to avoid flap exceedance. Use flight spoilers, as required.
- After GS (VGP) capture, continue normal procedures.

If not stable before 1000 feet AAE, a go-around must be completed.

M. FCP modes and FMA for different approaches

The use of Vertical Navigation (VNAV) is recommended to reduce crew workload and ensure that altitude constraints are respected in all phases of flight. The table that follows assumes that the approach is started with VNAV already selected by the crew.

M. FCP modes and FMA for different approaches (Cont'd)

	Approach type	FCP		FMA	
		Cleared for the approach	Above 1500 feet AAE	Lateral	Vertical
		Select			
	ILS [4][5]	APPR		APPR LOC 1(2) then APPR LOC	GS
	LPV [5]	APPR		APPR FMS 1(2)	VGP
	LNAV/ VNAV [5]	APPR		APPR FMS 1(2)	VGP
SCDA	LNAV [5]	APPR		APPR FMS 1(2)	VGP
	VOR (GNSS overlay) [5]	APPR		APPR FMS 1(2)	VGP
	NDB (GNSS overlay) [5]	APPR		APPR FMS 1(2)	VGP
	LOC [1][2][4]	APPR	Select NAV	APPR LOC 1(2) then LOC 1(2)	VPATH
			Deselect VNAV		FPA
	B/C [4]	APPR	Deselect VNAV	APPR B/C 1(2)	FPA
	NDB [1][2][3] (no GNSS overlay)	APPR		APPR FMS 1(2)	VPATH

M. FCP modes and FMA for different approaches (Cont'd)

	Approach type	FCP		FMA	
		Cleared for the approach	Above 1500 feet AAE	Lateral	Vertical
		Select			
			Deselect VNAV		FPA
	VOR [1][2][3] (no GNSS overlay)	APPR		APPR FMS 1(2)	VPATH
			Deselect VNAV		FPA
	VOR [3] (approach not in FMS database)	APPR		APPR VOR 1(2)	VPATH
					FPA

[1] VPATH (VNAV) may not be displayed beyond the FAF (depending on the last FMS waypoint).

[2] No later than the FAF, the PF must deselect VNAV (changing to FPA mode) and maintain/adjust flight path angle as required. When FPA is the active mode, the PF sets the missed approach altitude (MAA).

[3] VOR or NDB with APPR FOR REFERENCE ONLY. PF and PM must show the appropriate bearing pointers.

[4] APPR should be armed when the aircraft is in a position to capture the localizer with an intercept angle no greater than 70 degrees.

[5] If an underspeed (USPD) condition occurs during a precision or non-precision approach, after speed recovery, the crew must re-select VNAV, and deselect then re-select the approach on the FCP.

N. ILS approach

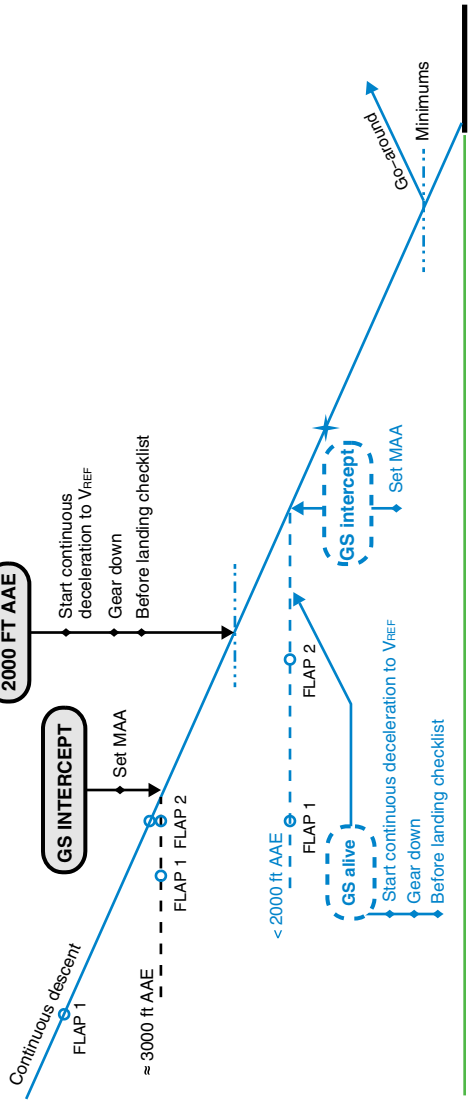
Mode selections and callouts – ILS approach			
Condition	**Mode selection**	**PF**	**PM**
Cleared for approach	Select APPR [1]	Approach	
			Check
Approaching localizer			Localizer alive
		Check	
Localizer captured		APPR LOC 1(2)	
			Check
Approaching glideslope			Glideslope alive
		Check	
FLAP configuration as required		FLAP #	
Glideslope captured		GS Missed approach altitude __ set	
			Check
Glideslope altitude check			__ feet at __
		Check	
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	

N. ILS approach (Cont'd)

Mode selections and callouts – ILS approach			
Condition	**Mode selection**	**PF**	**PM**
			Before landing checklist complete
At final aircraft landing configuration	MAN SPD Set V_{REF}		
100 feet above minimums			Approaching minimums
		Check	
At minimums			Minimums
		Landing (go-around)	
Decelerating through 80 KIAS			80 knots

[1] APPR should be armed when the aircraft is in a position to capture the localizer with an intercept angle no greater than 70 degrees.

N. ILS approach (Cont'd)



ILS approach profile
Figure 03–02–4

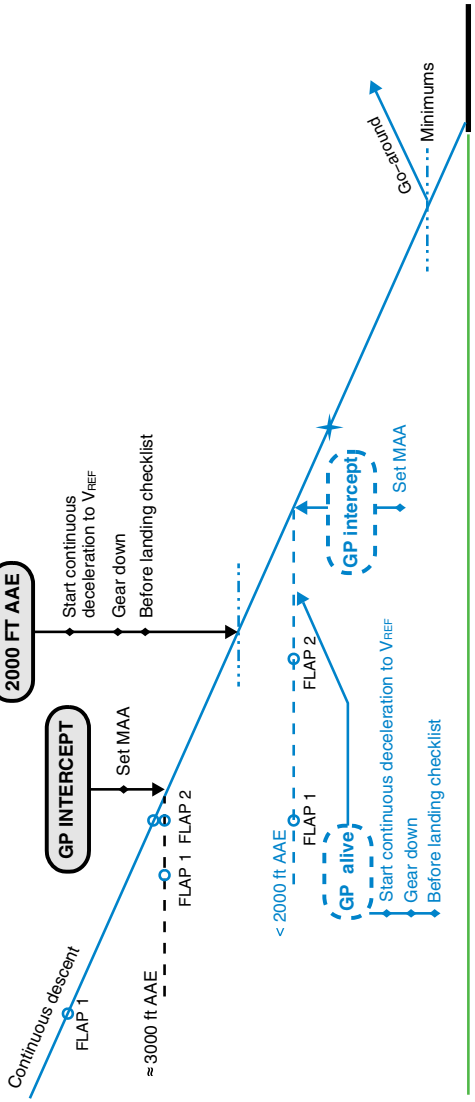
O. Approaches with vertical guidance

Mode selections and callouts – Approaches with vertical guidance LPV, LNAV/VNAV, LNAV and GNSS overlay NDB and VOR approaches			
Condition	**Mode selection**	**PF**	**PM**
Cleared for approach	Select APPR	Approach	
			Check
FMS course captured		APPR FMS 1(2)	
			Check
Approaching path			Path alive
		Check	
FLAP configuration as required		FLAP #	
VGP captured		VGP Missed approach altitude __ set	
			Check
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	
			Before landing checklist complete
Over the FAF			__ feet at __ RNP (LPV) approach

O. Approaches with vertical guidance (Cont'd)

Mode selections and callouts – Approaches with vertical guidance LPV, LNAV/VNAV, LNAV and GNSS overlay NDB and VOR approaches			
Condition	**Mode selection**	**PF**	**PM**
		Check	
At final aircraft landing configuration	MAN SPD set V_{REF}		
100 feet above minimums			Approaching minimums
		Check	
At minimums			Minimums
		Landing (go-around)	
Decelerating through 80 KIAS			80 knots

O. Approaches with vertical guidance (Cont'd)



Approaches with vertical guidance profile
Figure 03–02–5

P. Approaches without vertical guidance

Mode selections and callouts – Approaches without vertical guidance Non-GNSS overlay NDB and VOR approaches			
Condition	**Mode selection**	**PF**	**PM**
Cleared for approach	Select APPR	Approach	
			Check
FMS course captured		APPR FMS 1(2)	
			Check
Approaching path	Set altitude selector to MDA		Path alive
		Check	
FLAP configuration as required		FLAP #	
VPATH captured		VPATH	
			Check
Stabilized on VPATH and before the FAF	Deselect VNAV	FPA Missed approach altitude __ set	
			Check
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	
			Before landing checklist complete

P. Approaches without vertical guidance (Cont'd)

Mode selections and callouts – Approaches without vertical guidance Non-GNSS overlay NDB and VOR approaches			
Condition	**Mode selection**	**PF**	**PM**
Over the FAF			__ feet at __
		Check	
At final aircraft landing configuration	MAN SPD Set V_{REF}		
100 feet above minimums			Approaching minimums
		Check	
At minimums			Minimums
		Landing (go-around)	
Decelerating through 80 KIAS			80 knots

Mode selections and callouts – Approaches without vertical guidance LOC approach			
Condition	**Mode selection**	**PF**	**PM**
Cleared for approach	Select APPR [1]	Approach	
			Check
Approaching localizer			Localizer alive
		Check	
Localizer captured		APPR LOC 1(2)	

P. Approaches without vertical guidance (Cont'd)

Mode selections and callouts – Approaches without vertical guidance LOC approach			
Condition	**Mode selection**	**PF**	**PM**
			Check
Stabilized on localizer – above 1500 feet AAE	Select NAV	LOC 1(2)	
			Check
Approaching path	Set altitude selector to MDA Select FPA	VFPA	
			Check
FLAP configuration as required		FLAP #	
Over the FAF			__ feet at __
		Check	
Stabilized on path and below missed approach altitude	Deselect VNAV Set altitude selector to MAA	FPA Missed approach altitude __ set	
			Check
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	
			Before landing checklist complete
At final aircraft landing configuration	MAN SPD Set V_{REF}		

P. Approaches without vertical guidance (Cont'd)

Mode selections and callouts – Approaches without vertical guidance LOC approach			
Condition	**Mode selection**	**PF**	**PM**
100 feet above minimums			Approaching minimums
		Check	
At minimums			Minimums
		Landing (go-around)	
Decelerating through 80 KIAS			80 knots

NOTE

When no altitude distance chart is available, it is recommended to descend to the FAF crossing altitude and complete the aircraft configuration for landing before crossing the FAF and engaging FPA in order to descend to the MDA.

[1] APPR should be armed when the aircraft is in a position to capture the localizer with an intercept angle no greater than 70 degrees.

Mode selections and callouts – Approaches without vertical guidance B/C approach			
Condition	**Mode selection**	**PF**	**PM**
Cleared for approach	Select APPR [1]	Approach	
			Check
Approaching localizer			Localizer alive

P. Approaches without vertical guidance (Cont'd)

Mode selections and callouts – Approaches without vertical guidance B/C approach			
Condition	**Mode selection**	**PF**	**PM**
		Check	
Localizer captured		APPR B/C 1(2)	
			Check
Approaching path	Set altitude selector to MDA	VPATH	
			Check
FLAP configuration as required		FLAP #	
Over the FAF			__ feet at __
		Check	
Stabilized on path and below missed approach altitude	Deselect VNAV Set altitude selector to MAA	Select rate FPA Missed approach altitude __ set	
			Check
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	
			Before landing checklist complete

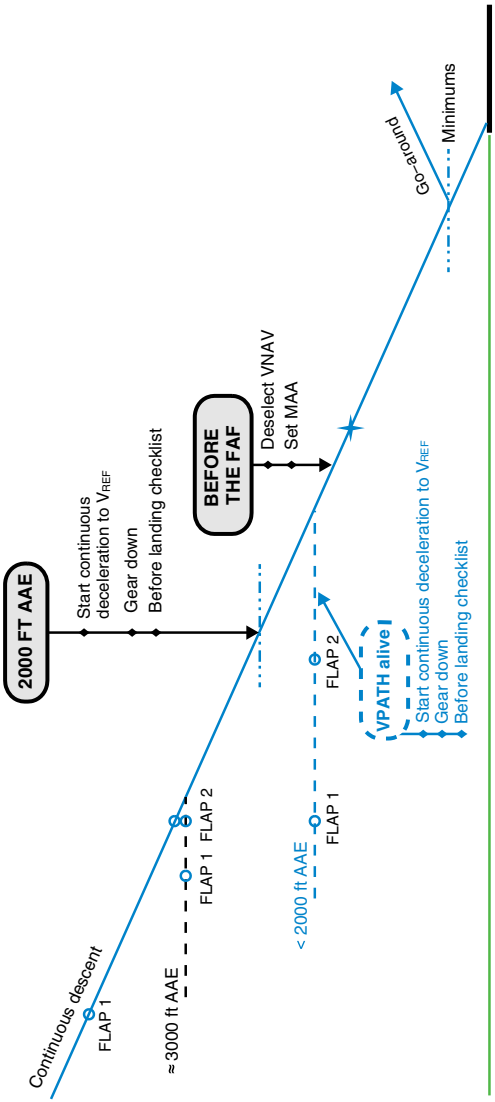
I

P. Approaches without vertical guidance (Cont'd)

Mode selections and callouts – Approaches without vertical guidance B/C approach			
Condition	**Mode selection**	**PF**	**PM**
At final aircraft landing configuration	MAN SPD Set V_{REF}		
100 feet above minimums			Approaching minimums
		Check	
At minimums			Minimums
		Landing (go-around)	
Decelerating through 80 KIAS			80 knots

[1] APPR should be armed when the aircraft is in a position to capture the localizer with an intercept angle no greater than 70 degrees.

P. Approaches without vertical guidance (Cont'd)



Approaches without vertical guidance profile
Figure 03–02–6

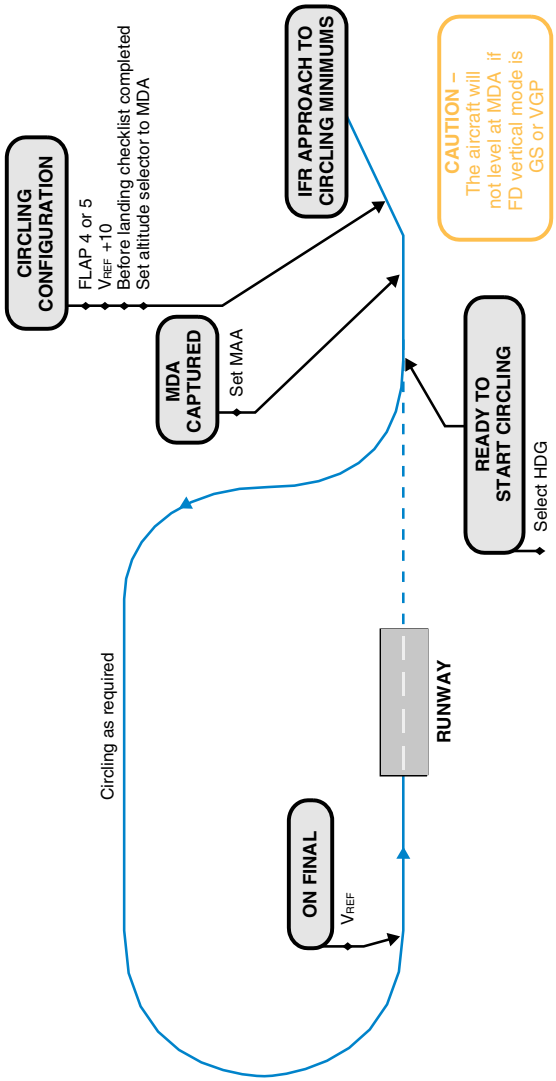
Q. Circling approach

Mode selections and callouts – Circling procedure			
Condition	**Mode selection**	**PF**	**PM**
Cleared for approach	Select APPR	Approach	
			Check
Lateral course capture		APPR FMS 1(2) or APPR LOC 1(2)	
			Check
Approaching path	Set altitude selector to MDA		Path alive
		Check	
FLAP configuration as required		FLAP #	
Vertical path captured:			
– VGP vertical guidance		VGP	
– VPATH vertical guidance		VPATH	
			Check
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	
			Before landing checklist complete
Above 1500 feet AAE:			
– VGP vertical guidance	Deselect VNAV	FPA	

Q. Circling approach (Cont'd)

Mode selections and callouts – Circling procedure			
Condition	**Mode selection**	**PF**	**PM**
– VPATH vertical guidance	Deselect VNAV	FPA	
			Check
Over the FAF			__ feet at __
		Check	
At final aircraft landing configuration	MAN SPD V_{REF} + 10 KIAS		
100 feet above minimums			Approaching minimums
		Check	
Altitude capture at MDA		ALTS Missed approach altitude __ set	Minimums
			Check
Visual contact or missed approach point			Visual XX o'clock or missed approach point
		Circling or go-around	
When aligned with landing runway and ready to land	MAN SPD V_{REF}		
Decelerating through 80 KIAS			80 knots

Q. Circling approach (Cont'd)



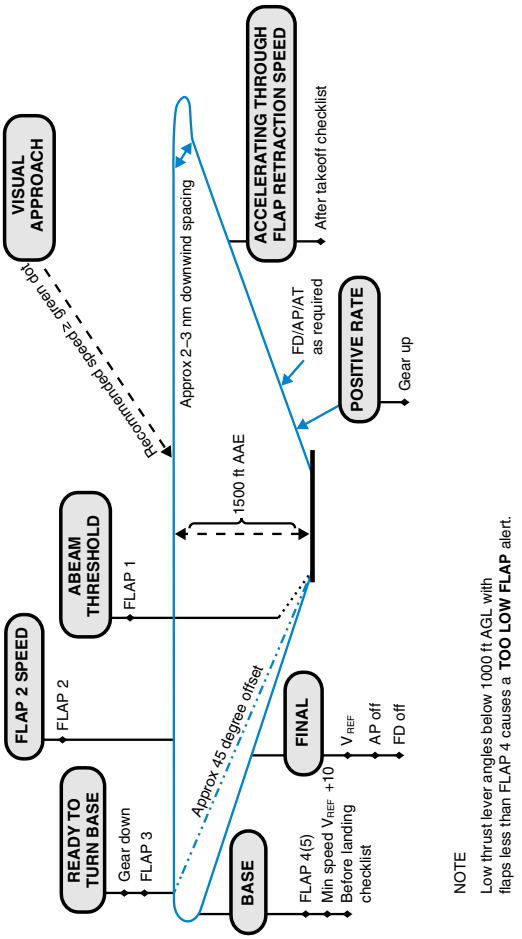
Circling approach
Figure 03–02–7

R. Circuit/visual approach

Selection of visual approach in the FMS provides a FD-guided 3-degree slope to the threshold.

Mode selections and callouts – Circuit/visual approach			
Condition	**Mode selection**	**PF**	**PM**
FLAP configuration as required		FLAP #	
When ready for landing gear selection		Gear down	
When ready for final FLAP selection		FLAP 4(5), Before landing checklist	
			Before landing checklist, complete
At final aircraft landing configuration	MAN SPD set V_{REF}		
Before landing		Autopilot off FD off	
Decelerating through 80 KIAS			80 knots

R. Circuit/visual approach (Cont'd)



Visual circuit approach profile
Figure 03–02–8

S. Before landing

(1) Altimeters ..... ( ) Set and cross-checked

(2) Landing gear ..... DN

(3) FLAP .....( ) indicating

NOTE

The normal flap setting for landing is FLAP 4. FLAP 5 can be used for short field landings without additional operational restrictions.

(4) Cabin ..... Ready

If applicable, on EICAS page, check CABIN tile is READY (green).

– COMPLETE –

T. Landing configuration – Maneuvering speeds

While in the landing configuration with all engines operating at V_{REF} (or corrected V_{REF} if icing speeds applicable), the maximum bank angle is 25 degrees.

For a 30-degree bank turn while in the landing configuration, add 5 KIAS more to V_{REF} (or corrected V_{REF} if icing speeds applicable).

U. Speed adder for approach and landing in gusty wind conditions

The V_{REF} speed adder should be used for approach and landing when turbulence or gusty wind conditions are anticipated during the approach and landing.

When gusty conditions are reported, it is recommended to add half of the gust, to a maximum of 10 KIAS.

The speed adder should be entered in the field adjacent to the VREF on the PERF – ARR tab.

V. Landing – Maximum recommended crosswind

The table that follows provides values for maximum crosswind based on the conditions given in the Runway Condition Assessment Matrix (RCAM).

Maximum recommended crosswind for landing			
Runway condition code	**Runway surface condition description**	**Pilot-reported braking action**	**Maximum recommended crosswind (kt)**
6	Dry	—	29
5	• Frost • Wet (includes damp and 3 mm (0.12 in.) depth or less of water) 3 mm (0.12 in.) depth or less of: • Slush • Dry snow • Wet snow	Good	29
4	–15°C and colder outside air temperature: • Compacted snow	Good to medium	27
3	• Wet (“slippery when wet” runway) • Dry snow or wet snow (any depth) over compacted snow More than 3 mm (0.12 in.) depth, of: • Dry snow • Wet snow	Medium	20

V. Landing – Maximum recommended crosswind (Cont'd)

Maximum recommended crosswind for landing			
Runway condition code	**Runway surface condition description**	**Pilot-reported braking action**	**Maximum recommended crosswind (kt)**
	Warmer than –15°C outside air temperature: • Compacted snow		
2	More than 3 mm (0.12 in.) depth, of: • Water • Slush	Medium to poor	10
1	Ice	Poor	10

W. Airplane geometry considerations for landing

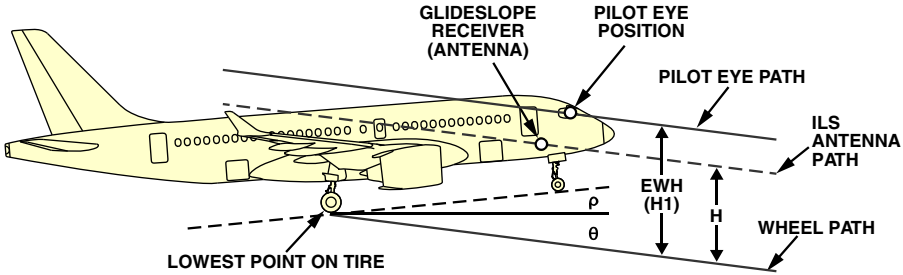
(1) Eye-to-Wheel Height (EWH)

Eye-to-Wheel Height (EWH) is the highest expected vertical distance from the pilot's eyes to the lowest portion of the airplane at threshold crossing speed with maximum certified landing weight, in the normal landing configuration with a given glideslope.

The EWH (H1) value in the table that follows assumes these conditions:

- Maximum certified landing weight,
- Normal landing configuration and speed (FLAP 4 or 5),
- Glideslope of 3 degrees, and
- ILS antenna crosses threshold at 50 feet.

W. Airplane geometry considerations for landing (Cont'd)



NOTES

1. ρ is the aircraft pitch attitude in the landing configuration.
2. θ is the ILS glidepath angle.

Eye–to–wheel height
Figure 03–02–9

Eye-to-Wheel Height (EWH)			
Aircraft pitch attitude (degrees)	**Glidepath (degrees)**	**H (ft)**	**EWH (H1) (ft)**
1	3	14	20
2		15	21
3		16	21
4		17	22

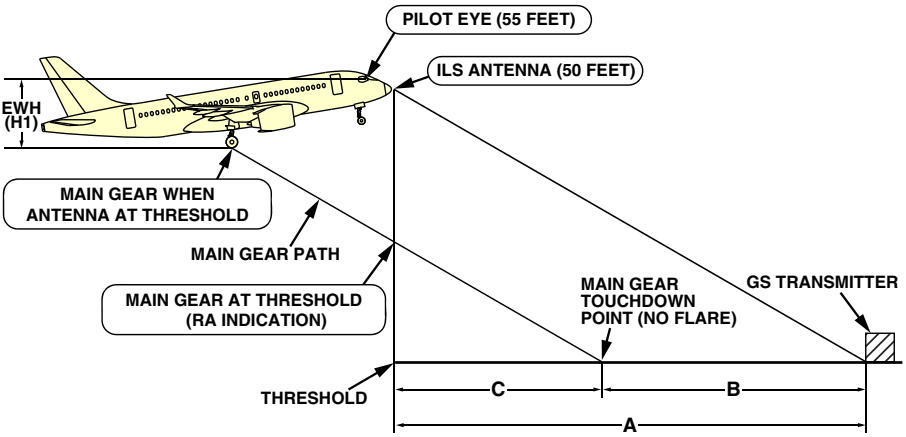
(2) ILS final approach and landing geometry

The ILS landing geometry data in the table that follows assumes these conditions:

- FLAP 4 or 5,
- Pilot eye position at 55 feet,
- ILS antenna crosses threshold at 50 feet,
- ILS glidepath angle of 2.5, 3, or 3.5 degrees (as applicable),

W. Airplane geometry considerations for landing (Cont'd)

- No flare at main gear touchdown, and
- Pitch angle of 4 degrees.

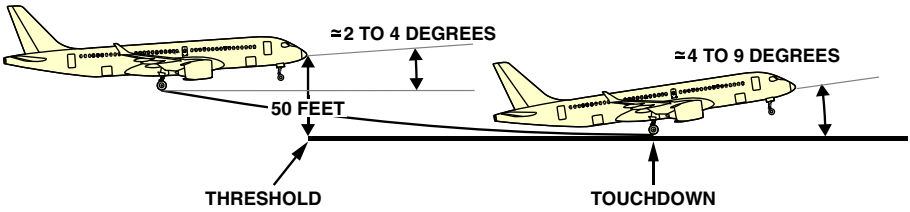


ILS final approach and landing geometry
Figure 03–02–10

ILS final approach and landing geometry <Metric>						
Main gear when antenna at threshold (ft)	**Main gear at threshold (ft)**	**EWH (H1) (ft)**	**Glideslope (degrees)**	**A (m)**	**B (m)**	**C Touchdown point (m)**
38	33	22	3.5	249	85	164
			3	291	99	192
			2.5	349	119	230

(3) Landing threshold and touchdown geometry

W. Airplane geometry considerations for landing (Cont'd)



Landing threshold and touchdown geometry
Figure 03–02–11

At touchdown, these pitch and bank angles must be observed:

- Bank angles of more than 15 degrees can cause an engine nacelle strike.
- Pitch angles of more than 10 degrees can cause an aft fuselage strike.

X. Go-around procedure

For recommendations on single engine go-around, refer to Chapter 8 – Operational guidance – Go-around – Single engine.

(1) TOGA ..... Select

Arms autothrottles (AT) if not previously armed, sets Flight Director (FD) to give initial pitch guidance, and synchronizes heading bug.

(2) Thrust levers ..... Advance to go-around thrust

Monitor thrust.

(3) Rotate to follow FD.

X. Go-around procedure (Cont'd)

(4) FLAP ..... Set for go-around

Landing FLAP	Go-around FLAP
4	2
5	4

NOTE

During single engine go-around, the beta target indicator is shown.

When a positive rate of climb is indicated:

(5) Landing gear ..... UP

(6) Speed .....Set V_{AC} or V_{GA}

(7) FD modes .....As required

(8) Autopilot .....As required

(9) FLAP ..... Retract on schedule

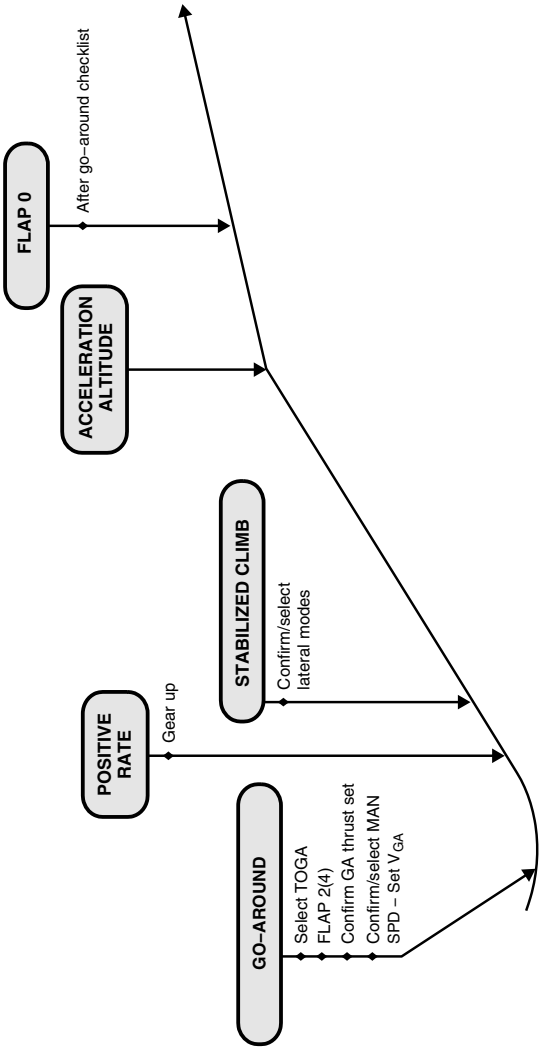
(10) After go-around .....Accomplish Refer to Normal procedures – After go-around.

Mode selections and callouts – Go–around – Dual engine			
Condition	**Mode selection**	**PF**	**PM**
Go–around decision made	Select TOGA	Go–around FLAP 2(4)	
			FLAP 2(4)
Positive rate of climb confirmed			Positive rate
		Gear up	

X. Go-around procedure (Cont'd)

Mode selections and callouts – Go–around – Dual engine			
Condition	**Mode selection**	**PF**	**PM**
	Confirm/ select MAN SPD – Set V_{GA}		
Selection and/or confirmation of lateral navigation modes as required	Select or confirm NAV (HDG)	FMS 1(2) (HDG)	
			Check
At acceleration altitude		FLAP #	
		After go–around checklist	
			After go–around checklist complete

X. Go-around procedure (Cont'd)



Go–around – Dual engine profile
Figure 03–02–12

– COMPLETE –

Y. Go-around – Maneuvering speeds

During the go-around phase, the following speeds are recommended:

- All engines operating: V_{GA} (or corrected V_{GA} if icing speeds applicable)
- One engine inoperative: V_{AC} (or corrected V_{AC} if icing speeds applicable)

When a turn in the go-around phase is required, these bank angles are permitted:

- All engines operating: Maximum bank angle of 30 degrees at V_{GA} (or corrected V_{GA} if icing speeds applicable)
- One engine inoperative: Maximum bank angle of 20 degrees at V_{AC} (or corrected V_{AC} if icing speeds applicable)

Z. After go-around

(1) Landing gear ..... UP

(2) FLAP 0

(3) EICAS ..... Checked

The PM checks messages.

– COMPLETE –

AFTER FLIGHT

A. After landing

(1) FLAP 0

– COMPLETE –

B. Reverse thrust operation

Reverse thrust significantly reduces the aircraft stopping distance when used in conjunction with braking, especially on slippery surfaces.

Reverse thrust is most effective at high speeds.

Raise the thrust reverser levers to the interlock/deploy position. After reverser interlock release, pull thrust reverser levers back to the maximum position, if required. The PM monitors engine indications and calls any abnormalities.

Maintain reverse thrust as required. The thrust reverse auto cutback reduces the reverse thrust to reverse idle at 60 knots.

Stow reversers when the aircraft has achieved the desired taxi speed.

When autobrake is not selected, do not wait for thrust reverser deployment before applying manual braking.

To prevent Foreign Object Damage (FOD) to the engines, it is not recommended to use thrust reversers during taxi. However, momentary use of idle reverse thrust may be needed on slippery surfaces for airplane control. In these cases, the use of reverse thrust above reverse idle is not recommended.

C. Single engine taxi in

There are no operational restrictions on which engine to use for single engine taxi in, as long as the engine shutdown requirements are met. However, if the flaps must be retracted after one engine is shut down, it is recommended to use the right engine for single engine taxi in to prevent reduced nosewheel steering function.

Recommendations:

- Single engine operation planned with right engine shutdown:

C. Single engine taxi in (Cont'd)

Select HYD 2B to ON before the right engine is shut down. On arrival at the parking location or gate, select the HYD 2B to previous position.

- Single engine operation planned with left engine shutdown:

Select PTU to ON before the left engine is shut down. On arrival at the parking location or gate, select PTU to previous position.

D. Shutdown

(1) PARK BRAKE ..... ON

(2) NOSE STEER ..... OFF

(3) APU and/or external power ..... As required

APU start sequence:

(a) Select START for a minimum of 3 seconds.

(b) Allow the switch to return to the RUN position for the APU start.

The **APU IN START** *status message is shown.*

(c) Wait for APU GEN to show online on the ELEC synoptic page before initiation of any electrical system configuration change.

To avoid the interruption of the APU start cycle, no electrical system configuration change (such as shutting down an engine or removal of AC external power during the APU start cycle) should be initiated. In this case, if the **APU SHUTDOWN** *advisory message is shown during the APU start cycle, the APU switch must be set to OFF before a new APU start cycle is attempted.*

(4) L ENG run ..... OFF

(5) R ENG run ..... OFF

(6) SEAT BELTS ..... OFF

(7) BEACON ..... OFF

D. Shutdown (Cont'd)

(8) ♦♦ Flight control test ..... Complete

<Mod 291002> or <Post-SB BD500-291002>

(a) HYD 3B ..... ON

<Mod 291002> or <Post-SB BD500-291002>

(b) HYD 2B ..... ON

(c) PTU ..... ON

(d) AVIONIC synoptic page ..... Select

(e) AVIO, TEST – FLT CTRL ..... Select

(f) Confirm PASS is shown.

(g) PTU ..... AUTO

(9) HYD 3A ..... OFF

(10) HYD 3B ..... OFF

(11) HYD 2B ..... OFF

– COMPLETE –

E. Power-off

(1) ECL ..... DU 2

(2) EQUIP COOLING, INLET ..... OFF

(3) EMER LTS ..... OFF

(4) APU ..... OFF

Confirm APU has completed its cooldown phase (approximately 60 seconds) and is shut down, with the APU door closed, before removing battery power.

(5) EXT PWR (if connected) ..... AVAIL

(6) DOME ..... Select off

(7) BATT 1 ..... OFF

E. Power-off (Cont'd)

(8) BATT 2 ..... OFF

NOTE

After a complete power-off, a minimum time of 15 seconds is recommended before aircraft power is restored.

– COMPLETE –

CHAPTER 4 – NON–NORMAL PROCEDURES

List of figures

FLIGHT CONTROLS

HYDRAULIC POWER

SMOKE, FIRE AND FUMES

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INTRODUCTION

The non-normal procedures contained in this chapter describe actions which are necessary to protect the airplane and its occupants from impending serious or critical harm, and to cope with an impending or effective failure of any system or component or any other situation, determined by the flight crew, to present significant adverse effect on safety.

Unless otherwise specified, the titles of the procedures given in this chapter reflect the display of the corresponding EICAS warning (red) or caution (amber) messages. In addition, the master warning or caution system operates where applicable.

These procedures have been developed and recommended by Bombardier and approved by Transport Canada for use in the operation of the airplane. These procedures are provided as guidance and should not be construed as prohibiting the development of equivalent Regulatory Authority-approved procedures.

PRINCIPLES

The presentation of these non-normal procedures assumes a standard flight compartment composition with regard to flight compartment resource management. It is essential that the pilot-in-command (PIC) assess the situation and clearly determine the task distribution for the various phases of flight. Non-normal operation is non-routine, and all actions in non-normal procedures are announced before being performed. Under no circumstances should control of the airplane be compromised.

The expanded version of the non-normal procedures is given in this chapter. The chapter consists of the basic non-normal procedures to which background information and explanatory text are added to facilitate learning and understanding.

A non-normal condition, caused by a system malfunction, is indicated by the illumination of the MASTER WARNING or MASTER CAUTION switch, the applicable aural warning and the applicable warning or caution message shown on the EICAS primary display. The EICAS message is used to direct the flight crew to the appropriate non-normal procedure contained in the Electronic Checklist (ECL) or Quick Reference Handbook (QRH) and further described in this chapter. However, some non-normal conditions result in a number of messages to be shown. The flight crew must assess the situation and determine the nature of the condition.

Whenever an emergency condition arises, indicated by a red warning EICAS message, the master warning system and appropriate switch, in addition to the failure indications referenced in the following procedures, operate where applicable. The nature of the emergency condition must first be recognized and assessed, then the MASTER WARNING switch must be selected to reset the master warning system and silence the aural warning.

Unless otherwise specified in these non-normal procedures, the landing configuration of the airplane will be landing gear down and slats/flaps at FLAP 4 or 5.

Procedures for failures that occur during ground operations are generally contained within the Master Minimum Equipment List (MMEL) and the Dispatch Deviation Guide (DDG). However, the Flight Crew Operating Manual (FCOM) does provide coverage for rejected takeoff, engine/APU fire, passenger evacuation, and takeoff configuration warnings.

LANDING AND GO-AROUND SPEEDS

For failures where a ΔV_{REF} is given, crews should use the speeds that follow for landing and in the event of a go-around:

- Corrected V_{REF} = V_{REF} (without failure) + ΔV_{REF}
- V_{AC} (with failure) = V_{AC} (without failure) + ΔV_{REF}
- V_{GA} (with failure) = V_{GA} (without failure) + ΔV_{REF}

LANDING DISTANCE FACTORS

For each non-normal procedure where they are provided, the landing distance factors must be applied on the reference Operational Landing Distance (OLD) without failure. The published factors are applicable for all runway surfaces and conditions and account for the impact of the failure on the Operational Landing Distance.

This reference Operational Landing Distance is determined using the CAFM and can be calculated either with both thrust reversers operating or with both thrust reversers not deployed. The reference OLD can be increased by an operational distance factor in the CAFM as required (see Chapter 5 – Performance).

The OLD must be determined at the reference flap angle for each failure and with the normal V_{REF} speed.

MULTIPLE FAILURES

In the event of multiple failures that have a ΔV_{REF} addition, use the highest ΔV_{REF} only.

In the unlikely event of multiple unrelated failures that have OLD factors, multiply the OLD factors. In the case of multiple related failures, use the highest OLD factor.

NON-NORMAL PROCEDURE FORMAT

The procedures in this chapter assume that certain actions are accomplished by the crew, as follows:

- Automatic systems are functioning correctly.
- Normal procedures have been properly accomplished.
- MASTER WARNING / MASTER CAUTION switches are reset.
- Obvious corrective action (if any) is taken for crew awareness items.
- SEAT BELTS are selected ON as required.

DIVERSION TERMINOLOGY

The diversion terms used within this chapter are as follows:

- Plan to land at the nearest suitable airport – Intended for the flight crew to plan a landing while working through a non-normal checklist.
- Land at the nearest suitable airport – Landing airport and duration of the flight are at the discretion of the PIC. Extended flight beyond the nearest suitable airport is not recommended.
- Land immediately at the nearest suitable airport – Land without delay at the nearest airport where a safe approach and landing is reasonably assured.
- Suitable airport – Suitable airport is defined as the airport where a safe approach and landing is assured.

AIR–CONDITIONING, BLEED AND PRESSURIZATION

CABIN ALT (Warning)

(1) Oxygen masks ..... On, 100%

Normal (N) is available if 100% is not required.

NOTE

Expect pressure breathing if cabin altitude above FL300 and demand breathing below FL300.

(2) Crew communication .....Establish

When mask is removed, closing the storage box door will transfer the microphone to normal.

(3) Emergency descent procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Emergency descent.

– COMPLETE –

CABIN DIFF PRESS (Warning)

(1) AUTO PRESS ..... MAN

(2) MAN RATE ..... UP

(3) **CABIN DIFF PRESS** warning message goes out:

- **Yes –** Go to (4)
- **No –** Go to (8)

CABIN DIFF PRESS (Warning) (Cont'd)

(4) CABIN DIFF PRESS warning message goes out:

(5) MAN RATE ..... Closely monitor and adjust as required to control pressurization. Refer to cabin altitude table.

(a) Set cabin altitude from the table or landing elevation, whichever is higher.

NOTE

Maximum value is 7800 feet.

Airplane pressure altitude (feet)	Cabin altitude (feet)
8000	500
10000	800
15000	1400
20000	2200
25000	3200
30000	4600
35000	5900
40000	7500

On approach:

(6) Cabin altitude .....Adjust to landing field elevation.

After landing:

(7) MAN RATE ..... UP

– COMPLETE –

CABIN DIFF PRESS (Warning) (Cont'd)

(8) CABIN DIFF PRESS warning message stays on:

(9) L PACK ..... OFF

(10) R PACK ..... OFF

(11) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(12) RAM AIR ..... OPEN

(13) RECIRC AIR ..... OFF

(14) EMER DEPRESS ..... ON

(15) Land at the nearest suitable airport.

– COMPLETE –

EMERGENCY DESCENT (Warning)

Description: Emergency Descent Mode (EDM) automatically engaged.

When EDM is engaged, the following are preset:

- *Altitude is preset to 15000 feet,*
- *HDG mode is active,*
- *V_{MO} – 10 KIAS/M_{MO} – 0.02 M,*
- *Autopilot is engaged,*
- *Autothrottle is engaged and goes to IDLE, and*
- *7700 set on XPDR.*

The pilot can change selections, as required.

(1) EDM required:

➔ **Yes –** Go to (2)

➔ **No –** Go to (29)

EMERGENCY DESCENT (Warning) (Cont'd)

(2) EDM required:

(3) Oxygen masks ..... If required, on, 100%

Normal (N) is available if 100% is not required.

(4) SEAT BELTS ..... ON

(5) Cabin ..... Advise

Use PA to advise occupants to be seated with seat belts on.

(6) PAX OXY (if required) ..... DPLY

When thrust levers at IDLE:

(7) SPOILER lever ..... FULL then MAX

CAUTION

If the **SPOILER MISMATCH** advisory message comes on after the pilot has initiated descent, set IDLE and cycle the SPOILER lever to deploy spoilers.

(8) Altitude selection ..... As required

(9) HDG ..... As required

(10) Structural damage:

- **Yes –** Go to (11)
- **No –** Go to (20)

(11) Structural damage:

(12) Airspeed ..... Do not exceed the speed at which the damage occurred.

At a safe altitude:

(13) SPOILER lever ..... RET

EMERGENCY DESCENT (Warning) (Cont'd)

(14) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(15) EDM ..... Select off

(16) Transponder ..... As required

(17) FCP modes ..... As required

(18) Land at the nearest suitable airport.

(19) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

(20) No structural damage:

(21) Airspeed ..... Do not exceed V_{MO}/M_{MO}.

NOTE

When EDM mode is engaged, closely monitor airspeed and ensure that the aircraft is not going into overspeed. If the aircraft goes into overspeed, deactivate EDM and complete the emergency descent manually if required.

At a safe altitude:

(22) SPOILER lever ..... RET

(23) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(24) EDM ..... Select off

EMERGENCY DESCENT (Warning) (Cont'd)

(25) Transponder ..... As required

(26) FCP modes ..... As required

(27) Land at the nearest suitable airport.

(28) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

(29) EDM not required:

(30) EDM ..... Select off

(31) FCP modes ..... As required

– COMPLETE –

EQUIP BAY OVHT (Warning)

Description: Forward or midbay temperature above 67°C.

(1) EQUIP COOLING, EXHAUST ..... ON

NOTE

Minimize time below 10000 feet.

(2) Land immediately at the nearest suitable airport.

– COMPLETE –

AIR SYS ESS CTLR FAIL (Caution)

(1) EQUIP COOLING, EXHAUST ..... ON

(2) CABIN PWR (if galley chiller installed) ..... OFF

AIR SYS ESS CTLR FAIL (Caution) (Cont'd)

(3) EQUIP COOLING, INLET ..... OFF

(4) RECIRC AIR ..... OFF

(5) ANTI-ICE, WING ..... OFF

(6) Leave/avoid icing conditions.

(7) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

At 10000 feet or lowest safe altitude:

(8) L BLEED ..... OFF

(9) R BLEED ..... OFF

(10) APU BLEED ..... OFF

APU generator is available, if required.

(11) EMER DEPRESS ..... ON

(12) AIR, CARGO FWD ..... VENT

(13) Consider live cargo.

When cabin is depressurized:

(14) RAM AIR ..... OPEN

Provides airflow through the cabin.

(15) Land at the nearest suitable airport.

(16) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

APU BLEED LEAK (Caution)

(1) APU BLEED ..... OFF

APU BLEED LEAK (Caution) (Cont'd)

(2) **APU BLEED LEAK** caution message goes out:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) APU BLEED LEAK caution message goes out:

(4) No further action required.

– COMPLETE –

(5) APU BLEED LEAK caution message stays on:

(6) APU ..... OFF

(7) L BLEED ..... OFF

(8) L PACK ..... OFF

(9) XBLEED ..... MAN CLSD

(10) Altitude ..... Not above 31000 feet

(11) ANTI-ICE, WING ..... OFF

(12) Leave/avoid icing conditions.

– COMPLETE –

AUTO PRESS FAIL (Caution)

(1) AUTO PRESS ..... MAN

(2) MAN RATE ..... Closely monitor and adjust as required to control pressurization. Refer to cabin altitude table.

(a) Set cabin altitude from the table or landing elevation, whichever is higher.

AUTO PRESS FAIL (Caution) (Cont'd)

NOTE

Maximum value is 7800 feet.

Airplane pressure altitude (feet)	Cabin altitude (feet)
8000	500
10000	800
15000	1400
20000	2200
25000	3200
30000	4600
35000	5900
40000	7500

On approach:

(3) Cabin altitude .....Adjust to landing field elevation.

After landing:

(4) MAN RATE ..... UP

– COMPLETE –

CABIN ALT (Caution)

(1) **CABIN ALT LEVEL HI** advisory message is also shown:

- **Yes –** Go to (2)
- **No –** Go to (5)

(2) CABIN ALT LEVEL HI advisory message is also shown:

(3) Oxygen masks .....ON, 100%

CABIN ALT (Caution) (Cont'd)

(4) Crew communication ..... Establish

– COMPLETE –

(5) CABIN ALT LEVEL HI advisory message is not shown:

(6) AUTO PRESS ..... MAN

(7) AUTO PRESS ..... Select auto

(8) **CABIN ALT** caution message goes out:

- **Yes –** Go to (9)
- **No –** Go to (11)

(9) CABIN ALT caution message goes out:

(10) No further action required.

– COMPLETE –

(11) CABIN ALT caution message stays on:

(12) AUTO PRESS ..... MAN

(13) MAN RATE ..... Closely monitor and adjust as required to control pressurization. Refer to cabin altitude table.

(a) Set cabin altitude from the table or landing elevation, whichever is higher.

NOTE

Maximum value is 7800 feet.

Airplane pressure altitude (feet)	Cabin altitude (feet)
8000	500
10000	800

CABIN ALT (Caution) (Cont'd)

Airplane pressure altitude (feet)	Cabin altitude (feet)
15000	1400
20000	2200
25000	3200
30000	4600
35000	5900
40000	7500

On approach:

(14) Cabin altitude .....Adjust to landing field elevation.

After landing:

(15) MAN RATE ..... UP

– COMPLETE –

DITCHING MISCONFIG (Caution)

Description: DITCHING selected ON and RAM AIR selected OPEN.

(1) RAM AIR .....Select closed

– COMPLETE –

EMER DEPRESS ON (Caution)

(1) EMER DEPRESS required:

- **Yes –** Go to (2)
- **No –** Go to (4)

EMER DEPRESS ON (Caution) (Cont'd)

(2) EMER DEPRESS required:

(3) Pressurization ..... Monitor

– COMPLETE –

(4) EMER DEPRESS not required:

(5) EMER DEPRESS ..... OFF

– COMPLETE –

EMERGENCY DESCENT (Caution)

Description: Emergency Descent Mode (EDM) manually engaged.

When EDM is selected, the following are preset:

- *Altitude is preset to 15000 feet,*
- *HDG mode is active,*
- *V_{MO} – 10 KIAS/M_{MO} – 0.02 M,*
- *Autopilot is engaged, and*
- *Autothrottle is engaged and goes to IDLE.*

The pilot can change selections, as required.

(1) Oxygen masks ..... If required, on, 100%

Normal (N) is available if 100% is not required.

(2) SEAT BELTS ..... ON

(3) Cabin ..... Advise

Use PA to advise occupants to be seated with seat belts on.

(4) PAX OXY (if required) ..... DPLY

When thrust levers at IDLE:

(5) SPOILER lever ..... FULL then MAX

EMERGENCY DESCENT (Caution) (Cont'd)

CAUTION

If the **SPOILER MISMATCH** advisory message comes on after the pilot has initiated descent, set IDLE and cycle the SPOILER lever to deploy the spoilers.

(6) Altitude selection ..... As required

(7) HDG ..... As required

(8) Structural damage:

- **Yes –** Go to (9)
- **No –** Go to (17)

(9) Structural damage:

(10) Airspeed ..... Do not exceed the speed at which the damage occurred.

At a safe altitude:

(11) SPOILER lever ..... RET

(12) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(13) EDM ..... Select off

(14) FCP modes ..... As required

(15) Land at the nearest suitable airport.

EMERGENCY DESCENT (Caution) (Cont'd)

(16) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

(17) No structural damage:

(18) Airspeed ..... Do not exceed V_{MO}/M_{MO}.

NOTE

When EDM mode is engaged, closely monitor airspeed and ensure that the aircraft is not going into overspeed. If the aircraft goes into overspeed, deactivate EDM and complete the emergency descent manually if required.

At a safe altitude:

(19) SPOILER lever ..... RET

(20) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(21) EDM ..... Select off

(22) FCP modes ..... As required

(23) Land at the nearest suitable airport.

(24) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

ENG BLEED MISCONFIG (Caution)

(1) AIR synoptic page ..... Select

(2) Determine bleed source:

- **Engine** – Go to (3)
- **APU** – Go to (5)

(3) Engine is bleed source:

(4) XBLEED ..... AUTO

– COMPLETE –

(5) APU is bleed source:

(6) L BLEED ..... Select auto

(7) R BLEED ..... Select auto

(8) XBLEED ..... AUTO

(9) **ENG BLEED MISCONFIG** caution message goes out:

- **Yes** – Go to (10)
- **No** – Go to (12)

(10) ENG BLEED MISCONFIG caution message goes out:

(11) No further action required.

– COMPLETE –

(12) ENG BLEED MISCONFIG caution message stays on:

(13) APU BLEED ..... OFF

– COMPLETE –

EQUIP BAY COOL FAIL (Caution)

Description: Failure of both extract fans or loss of one zone temperature measurement.

EQUIP BAY COOL FAIL (Caution) (Cont'd)

(1) EQUIP COOLING, EXHAUST ..... ON

NOTE

Minimize time below 10000 feet.

(2) CABIN PWR (if galley chiller installed) ..... OFF

(3) Land at the nearest suitable airport.

– COMPLETE –

FWD CARGO HEAT FAIL (Caution)

(1) FWD CARGO ..... VENT

– COMPLETE –

FWD CARGO LO TEMP (Caution)

(1) FWD CARGO ..... HI HEAT

(2) **FWD CARGO LO TEMP** caution message goes out:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) FWD CARGO LO TEMP caution message goes out:

(4) No further action required.

– COMPLETE –

(5) FWD CARGO LO TEMP caution message stays on:

(6) Consider live cargo.

– COMPLETE –

L AIR SYS CTLR FAIL (Caution)

(1) L PACK ..... OFF

(2) TRIM AIR ..... OFF

(3) AIR, CARGO FWD ..... VENT

(4) Consider live cargo.

(5) L BLEED ..... OFF

(6) XBLEED ..... MAN CLSD

Isolates the left bleed air manifold.

(7) APU BLEED ..... OFF

APU generator is available, if required.

(8) ANTI-ICE, WING ..... OFF

(9) Altitude ..... Not above 31000 feet

(10) Leave/avoid icing conditions.

(11) Land at the nearest suitable airport.

(12) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L BLEED FAIL (Caution)

(1) XBLEED ..... MAN CLSD

(2) L BLEED ..... OFF

(3) ANTI-ICE, WING ..... OFF

(4) APU BLEED ..... OFF

(5) L PACK ..... OFF

(6) Altitude ..... Not above 31000 feet

L BLEED FAIL (Caution) (Cont'd)

(7) Leave/avoid icing conditions.

(8) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L BLEED LEAK (Caution)

(1) L BLEED ..... OFF

(2) APU BLEED ..... OFF

(3) L PACK ..... OFF

(4) Altitude ..... Not above 31000 feet

(5) XBLEED ..... MAN CLSD

Isolates the left bleed air manifold.

(6) ANTI-ICE, WING ..... OFF

(7) Leave/avoid icing conditions.

(8) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

(9) **L BLEED LEAK** caution message goes out:

- **Yes –** Go to (10)
- **No –** Go to (12)

(10) L BLEED LEAK caution message goes out:

(11) No further action required.

– COMPLETE –

L BLEED LEAK (Caution) (Cont'd)

(12) L BLEED LEAK caution message stays on:

(13) Left thrust lever ..... Confirm and reduce towards IDLE.

(14) L BLEED LEAK caution message goes out:

→ **Yes –** Go to (15)

→ **No –** Go to (17)

(15) L BLEED LEAK caution message goes out:

(16) No further action required.

– COMPLETE –

(17) L BLEED LEAK caution message stays on:

(18) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L BLEED OVHT (Caution)

(1) R BLEED auto:

→ **Yes –** Go to (2)

→ **No –** Go to (13)

(2) R BLEED auto:

(3) L BLEED ..... OFF

(4) Altitude ..... Not above 31000 feet

(5) All engines operating landing in icing conditions expected:

→ **Yes –** Go to (6)

→ **No –** Go to (11)

L BLEED OVHT (Caution) (Cont'd)

(6) All engines operating landing in icing conditions expected:

On approach:

(7) FMS, PERF – ARR – SLAT/FLAP 5

(8) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 10

(9) OLD factor ..... Multiply by 1.50

Before landing:

(10) SLAT/FLAP lever 5

– COMPLETE –

(11) All engines operating landing in icing conditions not expected:

(12) No further action required.

– COMPLETE –

(13) R BLEED OFF:

(14) L BLEED ..... OFF

(15) ANTI-ICE, WING ..... OFF

(16) Leave/avoid icing conditions.

(17) L BLEED ..... Select auto

(18) **L BLEED OVHT** caution message stays out:

- **Yes –** Go to (19)
- **No –** Go to (21)

(19) L BLEED OVHT caution message stays out:

(20) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L BLEED OVHT (Caution) (Cont'd)

(21) L BLEED OVHT caution message comes on:

(22) L BLEED ..... OFF

(23) L PACK ..... OFF

(24) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(25) RAM AIR ..... OPEN

(26) RECIRC AIR ..... OFF

(27) EMER DEPRESS ..... ON

– COMPLETE –

<Mod 219001> or <Post-SB BD500–219001>

L PACK FAIL (Caution)

(1) L PACK ..... OFF

(2) L PACK FAIL caution message goes out:

- **Yes –** Go to (3)
- **No –** Go to (11)

(3) L PACK FAIL caution message goes out:

(4) L PACK ..... Select auto

(5) L PACK FAIL caution message stays out:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) L PACK FAIL caution message stays out:

(7) No further action required.

– COMPLETE –

L PACK FAIL (Caution) (Cont'd)

(8) L PACK FAIL caution message comes on:

(9) L PACK ..... OFF

(10) Altitude ..... Not above 31000 feet

– COMPLETE –

(11) L PACK FAIL caution message stays on:

Indicates loss of leak detection or both IASC1 channels.

(12) Altitude ..... Not above 31000 feet

(13) L BLEED ..... OFF

(14) APU BLEED ..... OFF

(15) ANTI-ICE, WING ..... OFF

(16) XBLEED ..... MAN CLSD

Isolates the left bleed air manifold.

(17) Leave/avoid icing conditions.

(18) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L PACK LEAK (Caution)

(1) L PACK ..... OFF

(2) Altitude ..... Not above 31000 feet

– COMPLETE –

L PACK OVHT (Caution)

(1) L PACK ..... OFF

(2) Altitude ..... Not above 31000 feet

– COMPLETE –

LDG ELEV MISCONFIG (Caution)

Description: HAAO option is not installed and a higher than 10000 feet landing pressure altitude is computed.

(1) FMS, PERF – ARR or CTP MAN LDG ELEV ..... Confirm correct landing elevation and BARO setting is computed.

– COMPLETE –

LEAK DET FAIL (Caution)

Description: Total leak detection failure.

(1) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

At 10000 feet or lowest safe altitude:

(2) L BLEED ..... OFF

(3) R BLEED ..... OFF

(4) APU BLEED ..... OFF

(5) ANTI-ICE, WING ..... OFF

(6) RAM AIR ..... OPEN

Provides airflow through the cabin.

(7) RECIRC AIR ..... OFF

(8) EMER DEPRESS ..... ON

LEAK DET FAIL (Caution) (Cont'd)

(9) Leave/avoid icing conditions.

(10) Land at the nearest suitable airport.

(11) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

R AIR SYS CTLR FAIL (Caution)

(1) R PACK ..... OFF

(2) TRIM AIR ..... OFF

(3) AIR, CARGO FWD ..... VENT

(4) Consider live cargo.

(5) R BLEED ..... OFF

(6) CABIN PWR (if IFE installed) ..... OFF

(7) Altitude ..... Not above 31000 feet

(8) Land at the nearest suitable airport.

(9) All engines operating landing in icing conditions expected:

➔ **Yes –** Go to (10)

➔ **No –** Go to (15)

(10) All engines operating landing in icing conditions expected:

On approach:

(11) FMS, PERF – ARR – SLAT/FLAP 5

(12) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 10

(13) OLD factor ..... Multiply by 1.50

R AIR SYS CTLR FAIL (Caution) (Cont'd)

Before landing:

(14) SLAT/FLAP lever 5

– COMPLETE –

(15) All engines operating landing in icing conditions not expected:

(16) No further action required.

– COMPLETE –

R BLEED FAIL (Caution)

(1) XBLEED ..... MAN CLSD

Isolates the right bleed air manifold.

(2) R BLEED ..... OFF

(3) ANTI-ICE, WING ..... OFF

(4) R PACK ..... OFF

(5) Altitude ..... Not above 31000 feet

(6) Leave/avoid icing conditions.

(7) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

R BLEED LEAK (Caution)

(1) R BLEED ..... OFF

(2) R PACK ..... OFF

(3) Altitude ..... Not above 31000 feet

R BLEED LEAK (Caution) (Cont'd)

(4) XBLEED .....MAN CLSD

Isolates the right bleed air manifold.

(5) ANTI-ICE, WING ..... OFF

(6) Leave/avoid icing conditions.

(7) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

(8) **R BLEED LEAK** caution message goes out:

➔ **Yes –** Go to (9)

➔ **No –** Go to (11)

(9) R BLEED LEAK caution message goes out:

(10) No further action required.

– COMPLETE –

(11) R BLEED LEAK caution message stays on:

(12) Right thrust lever ..... Confirm and reduce towards IDLE.

(13) **R BLEED LEAK** caution message goes out:

➔ **Yes –** Go to (14)

➔ **No –** Go to (16)

(14) R BLEED LEAK caution message goes out:

(15) No further action required.

– COMPLETE –

R BLEED LEAK (Caution) (Cont'd)

(16) R BLEED LEAK caution message stays on:

(17) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

R BLEED OVHT (Caution)

(1) L BLEED auto:

- **Yes –** Go to (2)
- **No –** Go to (13)

(2) L BLEED auto:

(3) R BLEED ..... OFF

(4) Altitude ..... Not above 31000 feet

(5) All engines operating landing in icing conditions expected:

- **Yes –** Go to (6)
- **No –** Go to (11)

(6) All engines operating landing in icing conditions expected:

On approach:

(7) FMS, PERF – ARR – SLAT/FLAP 5

(8) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 10

(9) OLD factor ..... Multiply by 1.50

Before landing:

(10) SLAT/FLAP lever 5

– COMPLETE –

R BLEED OVHT (Caution) (Cont'd)

(11) All engines operating landing in icing conditions not expected:

(12) No further action required.

– COMPLETE –

(13) L BLEED OFF:

(14) R BLEED ..... OFF

(15) ANTI-ICE, WING ..... OFF

(16) Leave/avoid icing conditions.

(17) R BLEED ..... Select auto

(18) **R BLEED OVHT** caution message stays out:

- **Yes –** Go to (19)
- **No –** Go to (21)

(19) R BLEED OVHT caution message stays out:

(20) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(21) R BLEED OVHT caution message comes on:

(22) R BLEED ..... OFF

(23) R PACK ..... OFF

(24) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(25) RAM AIR ..... OPEN

(26) RECIRC AIR ..... OFF

(27) EMER DEPRESS ..... ON

– COMPLETE –

<Mod 219001> or <Post-SB BD500–219001>

R PACK FAIL (Caution)

(1) R PACK ..... OFF

(2) **R PACK FAIL** caution message goes out:

→ **Yes –** Go to (3)

→ **No –** Go to (11)

(3) R PACK FAIL caution message goes out:

(4) R PACK ..... Select auto

(5) **R PACK FAIL** caution message stays out:

→ **Yes –** Go to (6)

→ **No –** Go to (8)

(6) R PACK FAIL caution message stays out:

(7) No further action required.

– COMPLETE –

(8) R PACK FAIL caution message comes on:

(9) R PACK ..... OFF

(10) Altitude ..... Not above 31000 feet

– COMPLETE –

(11) R PACK FAIL caution message stays on:

Indicates loss of leak detection or both IASC2 channels.

(12) Altitude ..... Not above 31000 feet

(13) R BLEED ..... OFF

(14) ANTI-ICE, WING ..... OFF

(15) XBLEED ..... MAN CLSD

Isolates the right bleed air manifold.

R PACK FAIL (Caution) (Cont'd)

(16) Leave/avoid icing conditions.

(17) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

R PACK LEAK (Caution)

(1) R PACK ..... OFF

(2) Altitude ..... Not above 31000 feet

– COMPLETE –

R PACK OVHT (Caution)

(1) R PACK ..... OFF

(2) Altitude ..... Not above 31000 feet

– COMPLETE –

RAM AIR FAIL (Caution)

(1) RAM AIR selected open:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) RAM AIR selected open:

NOTE

1. Fresh air flow is not available.

RAM AIR FAIL (Caution) (Cont'd)

2. Crew and passenger oxygen is available if required.
3. Equipment bay overheat is possible.

(3) Land immediately at the nearest suitable airport.

– COMPLETE –

(4) RAM AIR selected closed:

(5) Cabin pressure ..... Monitor

(6) R PACK ..... OFF

(7) Altitude ..... Not above 31000 feet

(8) Land at the nearest suitable airport.

(9) Unpressurized flight procedure ..... Accomplish, if required. Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

RECIRC AIR FAIL (Caution)

(1) RECIRC AIR ..... OFF

– COMPLETE –

TRIM AIR FAIL (Caution)

(1) TRIM AIR ..... OFF

(2) **TRIM AIR FAIL** caution message goes out:

➔ **Yes –** Go to (3)

➔ **No –** Go to (15)

TRIM AIR FAIL (Caution) (Cont'd)

(3) TRIM AIR FAIL caution message goes out:

(4) TRIM AIR ..... Select auto

(5) TRIM AIR FAIL caution message stays out:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) TRIM AIR FAIL caution message stays out:

(7) No further action required.

– COMPLETE –

(8) TRIM AIR FAIL caution message comes on:

(9) AIR, CARGO FWD ..... VENT

(10) Consider live cargo.

(11) TRIM AIR ..... OFF

(12) TRIM AIR FAIL caution message goes out:

- **Yes –** Go to (13)
- **No –** Go to (15)

(13) TRIM AIR FAIL caution message goes out:

(14) No further action required.

– COMPLETE –

(15) TRIM AIR FAIL caution message stays on:

(16) AIR synoptic page ..... Select

(17) Affected side ..... Check

(18) Select affected side:

- **Left side –** Go to (19)
- **Right side –** Go to (28)

TRIM AIR FAIL (Caution) (Cont'd)

(19) Left side affected:

(20) L BLEED ..... OFF

(21) APU BLEED ..... OFF

(22) L PACK ..... OFF

(23) Altitude ..... Not above 31000 feet

(24) XBLEED ..... MAN CLSD

Isolates the left bleed air manifold.

(25) ANTI-ICE, WING ..... OFF

(26) Leave/avoid icing conditions.

(27) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(28) Right side affected:

(29) R BLEED ..... OFF

(30) R PACK ..... OFF

(31) Altitude ..... Not above 31000 feet

(32) XBLEED ..... MAN CLSD

Isolates the right bleed air manifold.

(33) ANTI-ICE, WING ..... OFF

(34) Leave/avoid icing conditions.

(35) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

TRIM AIR LEAK (Caution)

(1) TRIM AIR ..... OFF

(2) **TRIM AIR LEAK** caution message goes out:

- **Yes –** Go to (3)
- **No –** Go to (6)

(3) TRIM AIR LEAK caution message goes out:

(4) AIR, CARGO FWD ..... VENT

(5) Consider live cargo.

– COMPLETE –

(6) TRIM AIR LEAK caution message stays on:

(7) AIR synoptic page ..... Select

(8) Affected side ..... Check

(9) Select affected side:

- **Left side: –** Go to (10)
- **Right side: –** Go to (19)

(10) Left side affected:

(11) L BLEED ..... OFF

(12) APU BLEED ..... OFF

(13) L PACK ..... OFF

(14) Altitude ..... Not above 31000 feet

(15) XBLEED ..... MAN CLSD

Isolates the left bleed air manifold.

(16) ANTI-ICE, WING ..... OFF

(17) Leave/avoid icing conditions.

TRIM AIR LEAK (Caution) (Cont'd)

(18) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(19) Right side affected:

(20) R BLEED ..... OFF

(21) R PACK ..... OFF

(22) Altitude ..... Not above 31000 feet

(23) XBLEED ..... MAN CLSD

Isolates the right bleed air manifold.

(24) ANTI-ICE, WING ..... OFF

(25) Leave/avoid icing conditions.

(26) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

WING A/ICE LEAK (Caution)

(1) ANTI-ICE, WING ..... OFF

(2) Leave/avoid icing conditions.

(3) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

XBLEED FAIL (Caution)

(1) AIR synoptic page ..... Select

(2) Determine position of XBLEED valve:

- **Failed open –** Go to (3)
- **Failed closed –** Go to (15)

(3) Valve is failed open:

(4) XBLEED ..... MAN OPEN

(5) Either L BLEED or R BLEED ..... OFF

(6) Altitude ..... Not above 31000 feet

(7) All engines operating landing in icing conditions expected:

- **Yes –** Go to (8)
- **No –** Go to (13)

(8) All engines operating landing in icing conditions expected:

On approach:

(9) FMS, PERF – ARR – SLAT/FLAP 5

(10) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 10

(11) OLD factor ..... Multiply by 1.50

Before landing:

(12) SLAT/FLAP lever 5

– COMPLETE –

(13) All engines operating landing in icing conditions not expected:

(14) No further action required.

– COMPLETE –

XBLEED FAIL (Caution) (Cont'd)

(15) Valve is failed closed:

(16) XBLEED .....MAN CLSD

– COMPLETE –

Emergency descent

(1) Oxygen masks .....If required, on, 100%

Normal (N) is available if 100% is not required.

(2) EDM ..... Select on

EDM is available only above 25000 feet.

The **EMERGENCY DESCENT** *caution message will be shown.*

When EDM is selected, the following are preset:

- *Altitude is preset to 15000 feet,*
- *HDG mode is active,*
- *V_{MO} – 10 KIAS/M_{MO} – 0.02 M,*
- *Autopilot is engaged, and*
- *Autothrottle is engaged and goes to IDLE.*

The pilot can change selections, as required.

(3) SEAT BELTS .....ON

(4) Cabin .....Advise

Use PA to advise occupants to be seated with seat belts on.

(5) PAX OXY (if required) .....DPLY

When thrust levers at IDLE:

(6) SPOILER lever .....FULL then MAX

Emergency descent (Cont'd)

CAUTION

If the **SPOILER MISMATCH** advisory message comes on after the pilot has initiated descent, set IDLE and cycle the SPOILER lever to deploy the spoilers.

(7) Altitude selection ..... As required

(8) HDG ..... As required

(9) Structural damage:

➔ **Yes –** Go to (10)

➔ **No –** Go to (18)

(10) Structural damage:

(11) Airspeed ..... Do not exceed the speed at which the damage occurred.

At a safe altitude:

(12) SPOILER lever ..... RET

(13) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(14) EDM ..... Select off

(15) FCP modes ..... As required

(16) Land at the nearest suitable airport.

Emergency descent (Cont'd)

(17) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

(18) No structural damage:

(19) Airspeed ..... Do not exceed V_{MO}/M_{MO}.

NOTE

When EDM mode is engaged, closely monitor airspeed and ensure that the aircraft is not going into overspeed. If the aircraft goes into overspeed, deactivate EDM and complete the emergency descent manually if required.

At a safe altitude:

(20) SPOILER lever ..... RET

(21) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(22) EDM ..... Select off

(23) FCP modes ..... As required

(24) Land at the nearest suitable airport.

(25) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

Uncontrolled temperature in flight deck or cabin

(1) Cabin pressure normal:

➔ **Yes –** Go to (2)

➔ **No –** Go to (11)

(2) Cabin pressure normal:

(3) MAN TEMP ..... ON

(4) Adjust affected duct temperature manually.

(5) Temperature controlled:

➔ **Yes –** Go to (6)

➔ **No –** Go to (8)

(6) Temperature controlled:

(7) Temperature ..... Monitor

– COMPLETE –

(8) Temperature not controlled:

(9) Affected PACK ..... OFF

(10) Altitude ..... Not above 31000 feet

– COMPLETE –

(11) Cabin pressure not normal:

(12) Temperature in flight deck and cabin ..... Monitor

NOTE

The temperature in the aircraft can become uncontrollable during operation in unpressurized flight conditions for long periods of time.

Recommendations for temperature control:

Uncontrolled temperature in flight deck or cabin (Cont'd)

If flight deck and cabin temperature are too cold:

- *Set RECIRC FAN to ON,*
- *Set CABIN PWR to ON,*
- *Set GALLEY HEAT to HI,*
- *Open the window shades,*
- *Set EMER DEPRESS to OFF, set AUTO PRESS to MAN, and adjust MAN RATE towards DN.*

If flight deck and cabin temperature are too hot:

- *Set RECIRC FAN to OFF,*
- *Set CABIN PWR to OFF,*
- *Set GALLEY HEAT to OFF,*
- *Close the window shades,*
- *Lower cabin lighting to minimum, and*
- *Open all air outlets and gaspers.*

– COMPLETE –

Unpressurized flight procedure

(1) Packs on:

➔ **Yes –** Go to (2)

➔ **No –** Go to (5)

(2) Packs on:

(3) Altitude ..... 10000 feet or lowest safe altitude, whichever is higher.

(4) EMER DEPRESS ..... ON

– COMPLETE –

Unpressurized flight procedure (Cont'd)

(5) Packs off:

(6) Altitude ..... 10000 feet or lowest safe altitude, whichever is higher.

(7) L PACK ..... OFF

(8) R PACK ..... OFF

(9) RAM AIR ..... OPEN

(10) RECIRC AIR ..... OFF

(11) EMER DEPRESS ..... ON

NOTE

Trim air provides warm air.

– COMPLETE –

AURAL/VISUAL WARNING SYSTEM

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AURAL WARN FAIL (Caution)

Description: All aural warnings have failed.

(1) Aural warnings failed on:

- **Yes –** Go to (2)
- **No –** Go to (5)

(2) Aural warnings failed on:

(3) AURAL WARN .....INHIB

NOTE

Two crew members required in flight deck at all times.

(4) EICAS and PFDs .....Closely monitor

– COMPLETE –

(5) Aural warnings failed off:

NOTE

Two crew members required in flight deck at all times.

(6) EICAS and PFDs .....Closely monitor

– COMPLETE –

Aural warnings failed on

(1) AURAL WARN .....INHIB

NOTE

Two crew members required in flight deck at all times.

(2) EICAS and PFDs .....Closely monitor

– COMPLETE –

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AUTOMATIC FLIGHT CONTROL SYSTEM (AFCS)

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CONFIG AP (Warning)

(1) Takeoff .....Discontinue

– COMPLETE –

FD FAIL (Caution)

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) In flight:

(3) XFR ..... Select

Transfers FD to the non-affected side.

NOTE

RNP AR approaches are prohibited.

– COMPLETE –

(4) On ground:

(5) Departure data ..... Confirm complete

– COMPLETE –

FD MODE CHANGE (Caution)

(1) FD modes .....Confirm and re-select FCP modes

(2) **FD MODE CHANGE** caution message stays out:

- **Yes –** Go to (3)
- **No –** Go to (5)

FD MODE CHANGE (Caution) (Cont'd)

(3) FD MODE CHANGE caution message stays out:

(4) No further action required.

– COMPLETE –

(5) FD MODE CHANGE caution message comes on:

(6) Reversion panel, FD/AT ..... ALTN

(7) XFR ..... Select

(8) FD modes ..... Confirm and re-select FCP modes

– COMPLETE –

AUXILIARY POWER UNIT (APU)

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APU FIRE (Warning)

(1) In flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (12)

(2) In flight:

(3) Plan to land at the nearest suitable airport.

(4) APU ..... OFF

(5) APU, FIRE ..... Confirm and select

(6) After 10 seconds, **APU FIRE** warning message goes out:

➔ **Yes –** Go to (7)

➔ **No –** Go to (9)

(7) After 10 seconds, APU FIRE warning message goes out:

(8) Land immediately at the nearest suitable airport.

– COMPLETE –

(9) After 10 seconds, APU FIRE warning message stays on or there are other indications of fire:

(10) APU, BTL ..... Select

(11) Land immediately at the nearest suitable airport.

– COMPLETE –

(12) On ground:

APU has an unattended mode. APU auto-shutdown and fire extinguishing is enabled.

(13) APU ..... OFF

(14) APU, FIRE ..... Select

(15) APU, BTL ..... Select

APU FIRE (Warning) (Cont'd)

APU BTL AVAIL green light in BTL discharge switch may not be available due to auto-shutdown and discharge sequence.

(16) Emergency evacuation procedure ..... As required Refer to Evacuation — Emergency evacuation.

– COMPLETE –

APU OVERSPEED (Warning)

Description: APU failed to auto-shutdown.

(1) APU ..... OFF

(2) APU, FIRE ..... Confirm and select

(3) APU .....Do not restart.

– COMPLETE –

APU (Caution)

Description: APU failures that do not cause auto-shutdown, high oil temperature, high EGT, door failed closed, and fuel filter clogged.

(1) APU required:

- **Yes –** Go to (2)
- **No –** Go to (5)

(2) APU required:

(3) STATUS synoptic page ..... Select

(4) APU ..... Monitor

– COMPLETE –

APU (Caution) (Cont'd)

(5) APU not required:

(6) APU ..... OFF

– COMPLETE –

APU BLEED FAIL (Caution)

(1) APU BLEED ..... OFF

(2) APU BLEED ..... Select auto

(3) **APU BLEED FAIL** caution message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) APU BLEED FAIL caution message goes out:

(5) No further action required.

– COMPLETE –

(6) APU BLEED FAIL caution message comes on:

(7) APU BLEED ..... OFF

(8) APU required for electrical power:

- **Yes –** Go to (9)
- **No –** Go to (12)

(9) APU required for electrical power:

(10) STATUS synoptic page ..... Select

(11) APU ..... Monitor

– COMPLETE –

APU BLEED FAIL (Caution) (Cont'd)

(12) APU not required for electrical power:

(13) APU ..... OFF

– COMPLETE –

APU DOOR OPEN (Caution)

Description: APU door failed open after shutdown.

(1) APU (if available) .....START

(2) APU starts:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) APU starts:

(4) No further action required.

– COMPLETE –

(5) APU does not start:

(6) APU ..... OFF

(7) Airspeed ..... Not more than 250 KIAS

– COMPLETE –

DITCHING AND FORCED LANDING

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Ditching

Preparation:

(1) Cabin crew ..... Brief

*Use TEST – **T**ype of emergency, planned touchdown location, **E**vacuation routes, **S**ignals for bracing and evacuating, **T**ime available.*

(2) ECL ..... DU 2

(3) ELT ..... ON

(4) SEAT BELTS ..... ON

(5) Cockpit door ..... Latch open

(6) TAWS, GEAR ..... INHIB

(7) TAWS, TERR ..... INHIB

(8) TAWS, FLAP ..... INHIB

(9) AVIONIC synoptic page ..... Select

(10) AVIO, SMS RUNWAY (if installed) ..... INHIB

Approach:

(11) RAM AIR ..... Check closed

(12) DITCHING ..... ON

(13) ANTI-ICE, WING ..... OFF

NOTE

1. Plan to land parallel to swells and wings level.
2. Aim to touch down with minimum airspeed and vertical rate, at a higher than normal landing attitude (approximately 11 degrees).
3. The **GEAR** warning message and aural will activate and cannot be muted.

(14) LDG LTS ..... ON

Ditching (Cont'd)

(15) Landing gear ..... UP

(16) Flaps .....Maximum available

NOTE

Flap extension may take approximately 3 minutes to reach landing flap.

(17) Harness .....Tighten and lock

Just before contact:

(18) EMER LTS .....ON

(19) PA ..... Give the brace command.

(20) L ENG, FIRE ..... Select

(21) APU, FIRE ..... Select

(22) R ENG, FIRE ..... Select

After water contact:

(23) Evacuation .....Initiate

Use PA or EVAC CMD, as required.

(24) BATT 1 ..... OFF

(25) BATT 2 ..... OFF

– COMPLETE –

Forced landing

Preparation:

(1) Cabin crew .....Brief

*Use TEST – **T**ype of emergency, planned touchdown location, **E**vacuation routes, **S**ignals for bracing and evacuating, **T**ime available.*

Forced landing (Cont'd)

(2) ECL ..... DU 2

(3) ELT ..... ON

(4) SEAT BELTS ..... ON

(5) Cockpit door ..... Latch open

(6) TAWS, GEAR ..... INHIB

(7) TAWS, TERR ..... INHIB

(8) TAWS, FLAP ..... INHIB

(9) AVIONIC synoptic page ..... Select

(10) AVIO, SMS RUNWAY (if installed) ..... INHIB

Approach:

(11) EMER DEPRESS ..... ON

(12) LDG LTS ..... ON

(13) Landing gear ..... As required

(14) ALTN GEAR ..... As required

(15) Flaps ..... Maximum available

NOTE

Flap extension can take approximately 3 minutes to reach landing flap.

(16) Harness ..... Tighten and lock

Before contact:

NOTE

If any gear is down:

Forced landing (Cont'd)

Land at a normal landing attitude and minimum vertical rate.

If all gear are up:

1. Aim to touch down with minimum vertical rate at V_{REF}, at a lower than normal landing attitude (approximately 5 degrees).
2. The **GEAR** warning message and aural will activate and cannot be muted.

(17) EMER LTS ..... ON

(18) PA ..... Give the brace command.

(19) L ENG, FIRE ..... Select

(20) APU, FIRE ..... Select

(21) R ENG, FIRE ..... Select

After contact:

(22) SPOILER lever ..... FULL

(23) L ENG BTL 1 ..... Select

(24) APU BTL ..... Select

(25) R ENG BTL 2 ..... Select

(26) Evacuation ..... Initiate

Use PA or EVAC CMD, as required.

(27) BATT 1 ..... OFF

(28) BATT 2 ..... OFF

– COMPLETE –

DOORS

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CKPT DOOR EMER ACCESS (Warning)

(1) COCKPIT DOOR, EMER ACCESS ..... DENY

– COMPLETE –

AFT DOOR (Caution)

(1) SEAT BELTS ..... ON

(2) DOOR synoptic page ..... Select

(3) Affected door ..... Determine

(4) Cabin crew ..... Advise

(5) Cabin pressure normal:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) Cabin pressure normal:

(7) No further action required.

– COMPLETE –

(8) Cabin pressure not normal:

(9) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

AFT SLIDE (Caution)

(1) DOOR synoptic page ..... Select

(2) Affected slide ..... Determine

(3) Cabin crew ..... Check visual indicators and ARM if able.

AFT SLIDE (Caution) (Cont'd)

(4) AFT SLIDE caution message goes out:

➔ **Yes –** Go to (5)

➔ **No –** Go to (7)

(5) AFT SLIDE caution message goes out:

(6) No further action required.

– COMPLETE –

(7) AFT SLIDE caution message stays on:

(8) Cabin crew .....Advise

– COMPLETE –

CARGO DOOR (Caution)

(1) SEAT BELTS ..... ON

(2) Cabin pressure normal:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) Cabin pressure normal:

(4) No further action required.

– COMPLETE –

(5) Cabin pressure not normal:

(6) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

CKPT DOOR LOCK FAIL (Caution)

(1) Cockpit door ..... Lock manually

– COMPLETE –

DOOR SLIDE DISARMED (Caution)

(1) DOOR synoptic page ..... Select

(2) Affected slide .....Determine

(3) Cabin crew .....Check visual indicators and ARM if able.

(4) **DOOR SLIDE DISARMED** caution message goes out:

➔ **Yes –** Go to (5)

➔ **No –** Go to (7)

(5) DOOR SLIDE DISARMED caution message goes out:

(6) No further action required.

– COMPLETE –

(7) DOOR SLIDE DISARMED caution message stays on:

(8) Cabin crew .....Advise

– COMPLETE –

EQUIP BAY DOOR (Caution)

(1) SEAT BELTS ..... ON

(2) Cabin pressure normal:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

EQUIP BAY DOOR (Caution) (Cont'd)

(3) Cabin pressure normal:

(4) No further action required.

– COMPLETE –

(5) Cabin pressure not normal:

(6) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

FWD DOOR (Caution)

(1) SEAT BELTS ..... ON

(2) DOOR synoptic page ..... Select

(3) Affected door ..... Determine

(4) Cabin crew ..... Advise

(5) Cabin pressure normal:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) Cabin pressure normal:

(7) No further action required.

– COMPLETE –

(8) Cabin pressure not normal:

(9) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

FWD SLIDE (Caution)

(1) DOOR synoptic page ..... Select

(2) Affected slide ..... Determine

(3) Cabin crew ..... Check visual indicators and ARM if able.

(4) **FWD SLIDE** caution message goes out:

- **Yes –** Go to (5)
- **No –** Go to (7)

(5) FWD SLIDE caution message goes out:

(6) No further action required.

– COMPLETE –

(7) FWD SLIDE caution message stays on:

(8) Cabin crew ..... Advise

– COMPLETE –

OVERWING DOOR (Caution)

(1) SEAT BELTS ..... ON

(2) DOOR synoptic page ..... Select

(3) Affected door ..... Determine

(4) Cabin crew ..... Advise

(5) Cabin pressure normal:

- **Yes –** Go to (6)
- **No –** Go to (8)

OVERWING DOOR (Caution) (Cont'd)

(6) Cabin pressure normal:

(7) No further action required.

– COMPLETE –

(8) Cabin pressure not normal:

(9) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

WING SLIDE (Caution)

(1) DOOR synoptic page ..... Select

(2) Affected slide .....Determine

(3) Cabin crew .....Advise

– COMPLETE –

ELECTRICAL

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EMER PWR ONLY (Warning)

(1) Airspeed ..... Not more than 300 KIAS/0.80 M

(2) XFR ..... If required, select to left side.

(3) CTP, XPDR/TCAS .....If required, select XPDR 1

(4) Plan to land at the nearest suitable airport.

(5) RAT GEN .....ON

(6) CABIN PWR ..... OFF

(7) APU (if available) .....START

(8) L GEN ..... OFF

(9) L GEN ..... Select on

One reset attempt only.

(10) R GEN ..... OFF

(11) R GEN ..... Select on

One reset attempt only.

(12) **EMER PWR ONLY** warning message goes out:

- **Yes –** Go to (13)
- **No –** Go to (15)

(13) EMER PWR ONLY warning message goes out:

When any PFCC is active and airplane is back in Normal mode, the autopilot is available.

(14) Land at the nearest suitable airport.

– COMPLETE –

EMER PWR ONLY (Warning) (Cont'd)

(15) EMER PWR ONLY warning message stays on:

(16) Confirm which EICAS message shown:

- **RAT GEN ON advisory message –** Go to (17)
- **BATT EMER PWR ON advisory message –** Go to (28)

(17) RAT GEN ON advisory message:

(18) EQUIP COOLING, EXHAUST .....ON

(19) Leave/avoid icing conditions.

Ice detectors and windshield/window heat not available. Cowl and wing anti-ice are available in manual mode only. RAT is not anti-iced.

(20) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(21) Airspeed .....Not less than 155 KIAS until landing assured.

CAUTION

1. Below 148 KIAS the RAT generator may be inoperative and the airplane will be operating on battery power only.
2. Do not land on contaminated runway.

(22) Affected systems .....Review

Significant systems affected when operating on RAT power:

EMER PWR ONLY (Warning) (Cont'd)

- Hydraulic pumps 2B, 3A, 3B, and PTU
- Rudder trim
- XPDR 2
- TCAS
- Right fuel pump
- ADSP 1 and ADSP 2
- Autothrottle
- NAV to NAV transfer
- ADS-B
- VHF datalink/CPDLC
- Seat belt signs
- VHF 2
- HUD (if installed)
- DU 3, DU 4, and DU 5
- CCP 2 (available on DU 2 only)
- TAWS
- WXR
- HF 2 (if installed)
- SATCOM (if installed)
- GNSS 2 (LPV minimums not authorized)
- DME 1 and 2
- NAV 2 and 3
- RAD ALT 2 and 3
- IRU 2
- TRU 1 and 2
- Attendant call lights
- Slats/flaps slower than normal
- Left and right thrust reversers
- Exterior lighting (landing lights, strobe lights, navigation lights, beacon lights, taxi lights)
- Left and right ice detectors (manual anti-ice control only)
- Left and right windshield heating, right window heating
- Left and right windshield wipers
- Left and right map and reading lights
- Recirculation fan
- Fuel inerting
- Toilet flush
- MKP 2

EMER PWR ONLY (Warning) (Cont'd)

On approach:

(23) Airspeed .....Not less than 155 KIAS until landing assured.

CAUTION

1. Below 148 KIAS the batteries may be the only source of electrical power, and last for at least 5 minutes. Batteries will recharge above 148 KIAS if go-around is required.
2. Brakes are not available when batteries are depleted.
3. Do not land on contaminated runway.

(24) Approach speed ..... V_{REF}

NOTE

FMS VSPEEDS not available.

(25) OLD factor ..... Multiply by 1.30

Go-around considerations: Recommended speed V_{FE} – 10 kt.

After landing:

(26) Do not taxi.

(27) PARK BRAKE .....ON

– COMPLETE –

EMER PWR ONLY (Warning) (Cont'd)

(28) BATT EMER PWR ON advisory message:

WARNING

Batteries are the only source of electrical power and last for at least 5 minutes.

(29) EQUIP COOLING, EXHAUST ..... ON

(30) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(31) Affected systems ..... Review

Significant systems affected when on battery power only:

- Hydraulic pumps 2B, 3A, 3B, and PTU
- Rudder trim
- Stabilizer trim
- XPDR 2
- TCAS
- Left and right fuel pump
- ADSP 1 and ADSP 2
- Autothrottle
- NAV to NAV transfer
- DME 1 and 2
- NAV 2 and 3
- RAD ALT 2 and 3
- IRU 2
- TRU 1, 2 and 3
- Attendant call lights
- Slats/flaps slower than normal
- Left and right thrust reversers
- Exterior lighting (landing lights, strobe lights, navigation lights, beacon lights, taxi lights)

EMER PWR ONLY (Warning) (Cont'd)

- ADS-B
- VHF datalink/CPDLC
- Seat belt signs
- VHF 2
- HUD (if installed)
- DU 3, DU 4, and DU 5
- CCP 2 (available on DU 2 only)
- TAWS
- WXR
- HF 2 (if installed)
- SATCOM (if installed)
- GNSS 2 (LPV minimums not authorized)
- Left and right ice detectors (manual anti-ice control only)
- Left and right windshield heating, left and right window heating
- Left and right windshield wipers
- Left and right map and reading lights
- Recirculation fan
- Fuel inerting
- Toilet flush
- MKP 2

On approach:

(32) Approach speed ..... V_{REF}

NOTE

FMS VSPEEDS not available.

(33) OLD factor ..... Multiply by 1.30

CAUTION

1. Brakes are not available when batteries are depleted.

EMER PWR ONLY (Warning) (Cont'd)

2. Do not land on contaminated runway.

After landing:

(34) Do not taxi.

(35) PARK BRAKE ..... ON

– COMPLETE –

AC BUS 1 (Caution)

Description: AC BUS 1 is not powered and at least one AC primary power source is available.

(1) HYD 2B ..... OFF

(2) Anti-ice system .....Operate manually in icing conditions

(3) Leave/avoid icing conditions.

(4) Affected systems .....Review

Significant systems affected:

- Hydraulic pump 2B
- TRU 1
- SATCOM
- Left landing light
- Left taxi light
- Nose landing light
- Left windshield heater and wiper
- Cockpit power outlet
- Toilet flush (below 20000 feet)

– COMPLETE –

AC BUS 2 (Caution)

Description: AC BUS 2 is not powered and at least one AC primary power source is available.

(1) HYD 3A ..... OFF

(2) HYD 3B ..... OFF

(3) Anti-ice system .....Operate manually in icing conditions

(4) Leave/avoid icing conditions.

NOTE

Drag may be higher than normal. Fuel burn may increase due to extra drag.

(5) Affected systems .....Review

Significant systems affected:

- Hydraulic pumps 3A and 3B
- Hydraulic pump 2B (when single engine-driven generator or APU available)
- MFS 2
- Slats/flaps slower than normal
- Right fuel pump
- Recirculation fan
- TRU 2
- Nose taxi light
- Right landing light
- Right taxi light
- Right windshield heater and wiper
- Right window heater

– COMPLETE –

AC ESS BUS (Caution)

Description: AC ESS BUS is not powered and at least one AC primary power source is available.

(1) Affected systems .....Review

Significant systems affected:

- Left fuel pump
- Left window heater
- TRU 3

– COMPLETE –

APU GEN FAIL (Caution)

(1) APU GEN ..... OFF

(2) APU GEN ..... Select on

One reset attempt only.

(3) **APU GEN FAIL** caution message stays out:

→ **Yes –** Go to (4)

→ **No –** Go to (6)

(4) APU GEN FAIL caution message stays out:

(5) No further action required.

– COMPLETE –

(6) APU GEN FAIL caution message comes on:

(7) APU GEN ..... OFF

APU still available for bleed air.

(8) **L GEN OFF** or **R GEN OFF** status message is also shown:

→ **Yes –** Go to (9)

→ **No –** Go to (11)

APU GEN FAIL (Caution) (Cont'd)

(9) L GEN OFF or R GEN OFF status message is also shown:

(10) Land at the nearest suitable airport.

– COMPLETE –

(11) L GEN OFF or R GEN OFF status message is not shown:

(12) No further action required

– COMPLETE –

BATT 1 FAIL (Caution)

Description: Battery not connected to DC ESS BUS or battery charger fault.

(1) BATT 1 ..... OFF

(2) BATT 1 ..... AUTO

One reset attempt only.

(3) **BATT 1 FAIL** caution message stays out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) BATT 1 FAIL caution message stays out:

(5) No further action required.

– COMPLETE –

(6) BATT 1 FAIL caution message comes on:

(7) BATT 1 ..... OFF

– COMPLETE –

BATT 1 OVERTEMP (Caution)

Description: Battery 1 temperature is equal to or greater than 71°C.

BATT 1 OVERTEMP (Caution) (Cont'd)

(1) BATT 1 ..... OFF

Turns off battery charger 1 to cool battery.

(2) Land at nearest suitable airport.

– COMPLETE –

BATT 2 FAIL (Caution)

Description: Battery not connected to DC ESS BUS or battery charger fault.

(1) BATT 2 ..... OFF

(2) BATT 2 ..... AUTO

One reset attempt only.

(3) **BATT 2 FAIL** caution message stays out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) BATT 2 FAIL caution message stays out:

(5) No further action required.

– COMPLETE –

(6) BATT 2 FAIL caution message comes on:

(7) BATT 2 ..... OFF

– COMPLETE –

BATT 2 OVERTEMP (Caution)

Description: Battery 2 temperature is equal to or greater than 71°C.

(1) BATT 2 ..... OFF

Turns off battery charger 2 to cool battery.

BATT 2 OVERTEMP (Caution) (Cont'd)

(2) Land at the nearest suitable airport.

– COMPLETE –

BATT DISCHARGING (Caution)

Description: Battery 1 or 2 or both discharging for more than five minutes on ground only.

(1) APU or external power available:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) APU or external power available:

(3) APU or external power ..... START / Establish

– COMPLETE –

(4) APU or external power not available:

(5) BATT 1 ..... OFF

(6) BATT 2 ..... OFF

– COMPLETE –

DC BUS 1 (Caution)

Description: DC BUS 1 is not powered and at least one AC primary power source is available.

(1) Land at the nearest suitable airport.

If time and conditions permit:

(2) PTU ..... OFF

(3) Leave/avoid icing conditions.

DC BUS 1 (Caution) (Cont'd)

NOTE

RNP AR approaches are prohibited.

(4) Affected systems .....Review

Significant systems affected:

- Left thrust reverser
- PTU
- Hydraulic 1 pressure indication
- Hydraulic 2 quantity indication
- Flaps slower than normal
- Rudder trim
- Fuel inerting
- Autothrottle
- ADSP 1
- DU 3
- DME 1
- TAWS
- Attendant call lights
- Left map light
- Left windshield heat
- Aft toilet
- Forward toilet
- Exterior lighting (navigation lights)
- SATCOM (if installed)
- HUD (if installed)

– COMPLETE –

DC BUS 2 (Caution)

Description: DC BUS 2 is not powered and at least one AC primary power source is available.

(1) Land at the nearest suitable airport.

If time and conditions permit:

(2) Affected systems .....Review

DC BUS 2 (Caution) (Cont'd)

Significant systems affected:

- Right thrust reverser
- Hydraulic 2 pressure indication
- Slats slower than normal
- Recirculation fan
- ADSP 2
- DU 4 and DU 5
- DME 2
- GNSS 2
- HF 2 (if installed)
- MKP 2
- NAV 2
- RAD ALT 2
- XPDR 2
- VHF 2
- Weather radar
- Right map light
- Right window heat
- Right windshield heat
- R HUD (if installed)

– COMPLETE –

DC EMER BUS (Caution)

Description: DC EMER BUS is not powered and at least one battery is available.

(1) Land at the nearest suitable airport.

NOTE

Do not shut down the APU.

(2) Affected systems .....Review

Significant systems affected:

- Left fuel shutoff valve
- Hydraulic 2 shutoff valve

DC EMER BUS (Caution) (Cont'd)

- Right fuel shutoff valve
- Hydraulic 1 shutoff valve
- RAT manual deployment
- APU inlet door power

– COMPLETE –

DC ESS BUS 1 (Caution)

Description: DC ESS BUS 1 is not powered and at least one AC primary power source is available.

NOTE

The **L BRAKE FAIL** and **R BRAKE FAIL** caution messages come on with the **DC ESS BUS 1** caution message when the landing gear is extended. The steps in these caution messages are included in this procedure and do not need to be done separately. The OLD factor in this procedure must be applied and already includes the affected systems.

(1) Cockpit door ..... Lock manually

(2) Cabin crew .....Advise

NOTE

Forward lavatory smoke detection is inoperative.

(3) AUTOBRAKE ..... OFF

(4) Land at the nearest suitable airport.

NOTE

Do not shut down the APU.

(5) Affected systems .....Review

DC ESS BUS 1 (Caution) (Cont'd)

Significant systems affected:

- APU start
- APU door actuator
- Left fuel pump
- Trim air
- Forward lavatory smoke detection
- Crew oxygen pressure indication
- Remote cockpit door lock
- Passenger oxygen auto deploy function
- Wheel brakes – reduced braking force
- DU 1
- ACP 3
- HF 1
- MKP 1
- VHF 3
- L HUD (if installed)

On approach:

(6) OLD factor ..... Multiply by 1.50

(7) Brakes .....After landing, apply with caution.

NOTE

Anti–skid may not be available on left and right brakes.

(8) Thrust reversers .....After landing, apply as required.

– COMPLETE –

DC ESS BUS 2 (Caution)

Description: DC ESS BUS 2 is not powered and at least one AC primary power source is available.

(1) SPD mode ..... MAN

DC ESS BUS 2 (Caution) (Cont'd)

NOTE

Do not re-select FMS SPD mode.

(2) NAV SRC .....FMS 1

(3) XFR .....Select to left side.

(4) ANTI-ICE, WING ..... OFF

(5) Leave/avoid icing conditions.

(6) Land at the nearest suitable airport.

(7) Cabin crew .....Advise

NOTE

Aft lavatory smoke detection is inoperative.

(8) AUTOBRAKE ..... OFF

(9) Use AVIONIC, CTP tab for R CTP functions.

NOTE

1. LPV and RNP AR approaches are prohibited with single FMS operative.
2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(10) Affected systems .....Review

DC ESS BUS 2 (Caution) (Cont'd)

NOTE

The **L BRAKE FAIL** and **R BRAKE FAIL** caution messages come on with the **DC ESS BUS 2** caution message when the landing gear is extended. The steps in these caution messages are included in this procedure and do not need to be done separately. The OLD factor in this procedure must be applied and already includes the affected systems.

Significant systems affected:

- Hydraulic 3 quantity indication
- Aft lavatory smoke detection
- Outflow valve manual control
- Wing anti-ice
- Passenger oxygen auto deploy function
- Wheel brakes – reduced braking force
- ADSP 4
- APPR 1
- CCP 2
- CTP 2
- FMS 2
- MKP 2

(11) Go-around procedure ..... Accomplish, if required. Refer to Normal procedures – Go-around procedure.

On approach:

(12) OLD factor ..... Multiply by 1.50

(13) Brakes .....After landing, apply with caution.

NOTE

Anti-skid may not be available on left and right brakes.

DC ESS BUS 2 (Caution) (Cont'd)

(14) Thrust reversers .....After landing, apply as required.

– COMPLETE –

DC ESS BUS 3 (Caution)

Description: DC ESS BUS 3 is not powered and at least one AC primary power source is available.

(1) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(2) NAV SRC .....FMS 2

(3) XFR .....Select to right side.

(4) Altitude .....Not above 37000 feet

(5) EQUIP COOLING, EXHAUST .....ON

(6) Leave/avoid icing conditions.

(7) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(8) CTP 2, XPDR/TCAS ..... Select XPDR 2

(9) Use AVIONIC, CTP tab for L CTP functions.

NOTE

1. LPV and RNP AR approaches are prohibited with single FMS operative.

DC ESS BUS 3 (Caution) (Cont'd)

2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(10) Affected systems .....Review

Significant systems affected:

- Hydraulic 1 quantity indication
- Hydraulic 3 pressure indication
- PFCC 3
- MFS (1 pair)
- Slats/flaps slower than normal
- Rudder degraded
- Right stick shaker
- Gravity transfer
- Alternate gear extension
- Equipment bay cooling
- Ram air
- Wing anti-ice
- DU 2
- XPDR 1
- ADSP 3
- CCP 1
- CTP 1
- FMS 1
- GNSS 1
- ISI
- NAV 1
- OMS
- RAD ALT 1
- Reversion panel
- VHF 1
- Left window heat
- L HUD (if installed)
- CPDLC (if installed)

(11) Go-around procedure ..... Accomplish, if required. Refer to Normal procedures – Go-around procedure.

On approach:

(12) FMS, PERF – ARR – SLAT/FLAP 4

DC ESS BUS 3 (Caution) (Cont'd)

(13) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(14) OLD factor ..... Multiply by 1.15

Before landing:

(15) SLAT/FLAP lever 4

– COMPLETE –

L GEN FAIL (Caution)

(1) L GEN ..... OFF

(2) L GEN ..... Select on

One reset attempt only.

(3) **L GEN FAIL** caution message stays out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) L GEN FAIL caution message stays out:

(5) No further action required.

– COMPLETE –

(6) L GEN FAIL caution message comes on:

(7) L GEN ..... OFF

(8) APU (if available) .....START

(9) **R GEN OFF** or **APU GEN OFF** status message is also shown:

- **Yes –** Go to (10)
- **No –** Go to (12)

L GEN FAIL (Caution) (Cont'd)

(10) R GEN OFF or APU GEN OFF status message is also shown:

(11) Land at the nearest suitable airport.

– COMPLETE –

(12) R GEN OFF or APU GEN OFF status message is not shown:

(13) No further action required

– COMPLETE –

L GEN OIL (Caution)

Description: Left generator low oil pressure or high oil temperature.

(1) APU (if available) .....START

(2) L GEN .....Confirm and OFF

(3) L DISC ..... Confirm and DISC

NOTE

Disconnect can only be reset on ground.

(4) **R GEN OFF** or **APU GEN OFF** status message is also shown:

- **Yes –** Go to (5)
- **No –** Go to (7)

(5) R GEN OFF or APU GEN OFF status message is also shown:

(6) Land at the nearest suitable airport.

– COMPLETE –

(7) R GEN OFF or APU GEN OFF status message is not shown:

(8) No further action required

– COMPLETE –

R GEN FAIL (Caution)

(1) R GEN ..... OFF

(2) R GEN ..... Select on

One reset attempt only.

(3) **R GEN FAIL** caution message stays out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) R GEN FAIL caution message stays out:

(5) No further action required.

– COMPLETE –

(6) R GEN FAIL caution message comes on:

(7) R GEN ..... OFF

(8) APU (if available) .....START

(9) **L GEN OFF** or **APU GEN OFF** status message is also shown:

- **Yes –** Go to (10)
- **No –** Go to (12)

(10) L GEN OFF or APU GEN OFF status message is also shown:

(11) Land at the nearest suitable airport.

– COMPLETE –

(12) L GEN OFF or APU GEN OFF status message is not shown:

(13) No further action required

– COMPLETE –

R GEN OIL (Caution)

Description: Right generator oil low pressure or high oil temperature.

R GEN OIL (Caution) (Cont'd)

(1) APU (if available) .....START

(2) R GEN .....Confirm and OFF

(3) R DISC ..... Confirm and DISC

NOTE

Disconnect can only be reset on ground.

(4) **L GEN OFF** or **APU GEN OFF** status message is also shown:

- **Yes –** Go to (5)
- **No –** Go to (7)

(5) L GEN OFF or APU GEN OFF status message is also shown:

(6) Land at the nearest suitable airport.

– COMPLETE –

(7) L GEN OFF or APU GEN OFF status message is not shown:

(8) No further action required

– COMPLETE –

RAT GEN FAIL (Caution)

Description: RAT generator is deployed but not online.

In use and in flight:

(1) RAT GEN .....ON

Resets the RAT GEN.

– COMPLETE –

EVACUATION

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Emergency evacuation

When using the ECL, both pilots must select CHKL on their respective display units (DU 2 and DU 3).

The checklist is completed as read and do. The right seat pilot (CPLT) assumes the duties of the PM and reads the evacuation checklist. The left seat pilot (PLT) completes the action when commanded.

(1) DOME ..... ON

(2) ATC ..... Advise

Advise aircraft position and persons on board.

(3) PARK BRAKE ..... ON

(4) ECL ..... DU 2 and DU 3

(5) SPOILER lever ..... Ensure RET

(6) Thrust levers ..... IDLE

(7) L ENG run ..... OFF

(8) R ENG run ..... OFF

(9) APU ..... OFF

The PM must select UPR on the right CCP to gain access to DU 2.

(10) L ENG FIRE ..... Select

(11) APU FIRE ..... Select

(12) R ENG FIRE ..... Select

(13) EMER DEPRESS ..... ON

(14) EMER LTS ..... ON

(15) Evacuation ..... Initiate

Use PA or EVAC CMD, as required.

(16) BATT 1 ..... OFF

Emergency evacuation (Cont'd)

(17) BATT 2 ..... OFF

– COMPLETE –

FIRE PROTECTION

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AFT CARGO BTL FAIL (Caution)

Description: One or more bottle(s) not available to aft cargo bay.

(1) Cargo in aft cargo bay:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) Cargo in aft cargo bay:

(3) Land at the nearest suitable airport.

– COMPLETE –

(4) No cargo in aft cargo bay:

(5) No further action required.

– COMPLETE –

AFT CARGO SMOKE FAIL (Caution)

Description: Aft smoke detection system failed.

(1) Cargo in aft cargo bay:

- **Yes –** Go to (2)
- **No –** Go to (5)

(2) Cargo in aft cargo bay:

(3) AIR, CARGO AFT ..... OFF

(4) Land at the nearest suitable airport.

– COMPLETE –

(5) No cargo in aft cargo bay:

(6) No further action required.

– COMPLETE –

APU BTL FAIL (Caution)

(1) APU required for flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) APU required for flight:

(3) Land at the nearest suitable airport.

– COMPLETE –

(4) APU not required for flight:

(5) APU ..... OFF

– COMPLETE –

APU FIRE DET FAIL (Caution)

(1) APU required for flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) APU required for flight:

(3) Land at the nearest suitable airport.

– COMPLETE –

(4) APU not required for flight:

(5) APU ..... OFF

– COMPLETE –

CARGO BTL FAIL (Caution)

Description: One or more bottle(s) not available to cargo bays.

CARGO BTL FAIL (Caution) (Cont'd)

(1) Cargo in either cargo bay:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) Cargo in either cargo bay:

(3) Land at the nearest suitable airport.

– COMPLETE –

(4) No cargo in either cargo bay:

(5) No further action required.

– COMPLETE –

EQUIP BAY SMOKE FAIL (Caution)

NOTE

This message can appear after power loss to EFAN or temporarily (for less than 2 minutes) during power transients.

(1) **EMER PWR ONLY** warning message or **AIR SYS ESS CTLR FAIL** caution message is also shown:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) EMER PWR ONLY warning message or AIR SYS ESS CTLR FAIL caution message is also shown:

(3) No further action required.

– COMPLETE –

EQUIP BAY SMOKE FAIL (Caution) (Cont'd)

(4) EMER PWR ONLY warning message or AIR SYS ESS CTLR FAIL caution message is not shown:

(5) RECIRC AIR ..... OFF

(6) CABIN PWR (if galley chiller installed) ..... OFF

(7) EQUIP COOLING, INLET ..... OFF

(8) EQUIP BAY COOL FAIL caution message is also shown:

- **Yes –** Go to (9)
- **No –** Go to (12)

(9) EQUIP BAY COOL FAIL caution message is also shown:

(10) EQUIP COOLING, EXHAUST ..... ON

(11) Land at the nearest suitable airport.

– COMPLETE –

(12) EQUIP BAY COOL FAIL caution message is not shown:

(13) EQUIP COOLING, EXHAUST ..... VLV ONLY

(14) Land at the nearest suitable airport.

– COMPLETE –

FIRE SYSTEM FAIL (Caution)

(1) Land immediately at the nearest suitable airport.

– COMPLETE –

FWD CARGO BTL FAIL (Caution)

Description: One or more bottle(s) not available to forward cargo bay.

FWD CARGO BTL FAIL (Caution) (Cont'd)

(1) Cargo in forward cargo bay:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) Cargo in forward cargo bay:

(3) Land at the nearest suitable airport.

– COMPLETE –

(4) No cargo in forward cargo bay:

(5) No further action required.

– COMPLETE –

FWD CARGO SMOKE FAIL (Caution)

Description: Forward smoke detection system failed.

(1) Cargo in forward cargo bay:

➔ **Yes –** Go to (2)

➔ **No –** Go to (5)

(2) Cargo in forward cargo bay:

(3) AIR, CARGO FWD ..... OFF

(4) Land at the nearest suitable airport.

– COMPLETE –

(5) No cargo in forward cargo bay:

(6) No further action required.

– COMPLETE –

L ENG BTL FAIL (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

L ENG FIRE DET FAIL (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

LAV SMOKE FAIL (Caution)

(1) Cabin crew .....Advise

– COMPLETE –

L-R ENG BTL FAIL (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

MLG BAY OVHT DET FAIL (Caution)

(1) STATUS synoptic page ..... Select

(2) Brake temperature is green:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) Brake temperature is green:

(4) No further action required.

– COMPLETE –

MLG BAY OVHT DET FAIL (Caution) (Cont'd)

(5) Brake temperature is not green:

(6) Airspeed ..... Not more than 250 KIAS

(7) Landing gear ..... DN

When brake temperature is within normal range:

(8) Landing gear ..... As required

– COMPLETE –

R ENG BTL FAIL (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

R ENG FIRE DET FAIL (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

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FLIGHT CONTROLS

CONFIG FLAP (Warning)

(1) Takeoff .....Discontinue

– COMPLETE –

CONFIG RUDDER TRIM (Warning)

(1) Takeoff .....Discontinue

– COMPLETE –

CONFIG SIDESTICK (Warning)

Description: Left or right sidestick priority selected.

(1) Takeoff .....Discontinue

– COMPLETE –

CONFIG SPOILER (Warning)

(1) Takeoff .....Discontinue

– COMPLETE –

CONFIG STAB TRIM (Warning)

(1) Takeoff .....Discontinue

– COMPLETE –

FLT CTRL DIRECT (Warning)

WARNING

Controllability is reduced and fly-by-wire envelope protection is not available. Minimize control inputs.

(1) Assume manual control.

(2) Airspeed ..... Not more than 300 KIAS/0.80 M

(3) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot
- Flight director may not be available
- Roll authority reduced
- Flight spoilers
- Sidestick priority
- Ground lift dumping
- Nosewheel steering may not be available

CAUTION

1. Do not attempt this reset procedure more than once.
2. Do not attempt reset:
   - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.

FLT CTRL DIRECT (Warning) (Cont'd)

- Unless the aircraft is stable, straight, level and trimmed.

When any PFCC is active and airplane is back in Normal mode, the autopilot is available.

(4) PFCC 1 ..... OFF

(5) PFCC 1 ..... Select on

After 30 seconds:

Time delay to allow PFCC 1 to reset before deselecting PFCC 2.

(6) PFCC 2 ..... OFF

(7) PFCC 2 ..... Select on

After 30 seconds:

Time delay to allow PFCC 2 to reset before deselecting PFCC 3.

(8) PFCC 3 ..... OFF

(9) PFCC 3 ..... Select on

(10) **FLT CTRL DIRECT** warning message goes out:

➔ **Yes –** Go to (11)

➔ **No –** Go to (13)

(11) FLT CTRL DIRECT warning message goes out:

(12) Land at the nearest suitable airport.

– COMPLETE –

(13) FLT CTRL DIRECT warning message stays on:

(14) Altitude ..... Not above 31000 feet

(15) Land immediately at the nearest suitable airport.

FLT CTRL DIRECT (Warning) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

On approach:

CAUTION

Control authority is reduced. Minimize control inputs.

(16) FMS, PERF – ARR – SLAT/FLAP 4

(17) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(18) OLD factor ..... Multiply by 1.45

Before landing:

(19) SLAT/FLAP lever 4

After touchdown:

(20) SPOILER lever .....FULL

– COMPLETE –

L ELEVATOR FAIL (Warning)

(1) Airspeed ..... Not more than 200 KIAS

(2) Do not retract flaps.

(3) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

L ELEVATOR FAIL (Warning) (Cont'd)

On approach:

(4) FMS, PERF – ARR – SLAT/FLAP 4

(5) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(6) OLD factor ..... Multiply by 1.30

Go-around considerations:

It is acceptable to retract the slats/flaps to a go-around FLAP setting but not beyond:

- If the slats/flaps are in FLAP 4, then the go-around setting is FLAP 2.
- If the slats/flaps are in FLAP 5, then the go-around setting is FLAP 4.

Fuel consumption will be increased by a factor of:

- 1.5 with slats/flaps extended at FLAP 2.
- 2.1 with slats/flaps extended at FLAP 4.

Before landing:

(7) SLAT/FLAP lever 4

– COMPLETE –

R ELEVATOR FAIL (Warning)

(1) Airspeed ..... Not more than 200 KIAS

(2) Do not retract flaps.

(3) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

R ELEVATOR FAIL (Warning) (Cont'd)

On approach:

(4) FMS, PERF – ARR –SLAT/FLAP 4

(5) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(6) OLD factor ..... Multiply by 1.30

Go-around considerations:

It is acceptable to retract the slats/flaps to a go-around FLAP setting but not beyond:

- If the slats/flaps are in FLAP 4, then the go-around setting is FLAP 2.
- If the slats/flaps are in FLAP 5, then the go-around setting is FLAP 4.

Fuel consumption will be increased by a factor of:

- 1.5 with slats/flaps extended at FLAP 2.
- 2.1 with slats/flaps extended at FLAP 4.

Before landing:

(7) SLAT/FLAP lever 4

– COMPLETE –

RUDDER FAIL (Warning)

(1) FLT CTRL synoptic page ..... Select

(2) Rudder position ..... Check

(3) Airspeed ..... Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.

(4) Do not retract flaps.

(5) Land immediately at the nearest suitable airport.

RUDDER FAIL (Warning) (Cont'd)

NOTE

1. Select the longest runway with minimal crosswind.
2. If rudder has failed out of neutral position use lateral control and differential thrust as required to maintain straight flight until touchdown.
3. Ensure the rudder pedals are centered before touchdown.
4. Nosewheel steering is still available.

On approach:

(6) FMS, PERF – ARR – SLAT/FLAP 5

(7) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 5

(8) OLD factor ..... Multiply by 1.85

Go-around considerations:

It is acceptable to retract the slats/flaps to a go-around FLAP setting but not beyond:

- If the slats/flaps are in FLAP 4, then the go-around setting is FLAP 2.
- If the slats/flaps are in FLAP 5, then the go-around setting is FLAP 4.

Fuel consumption will be increased by a factor of:

- 1.5 with slats/flaps extended at FLAP 2.
- 2.1 with slats/flaps extended at FLAP 4.

Before landing:

(9) SLAT/FLAP lever 5

RUDDER FAIL (Warning) (Cont'd)

WARNING

If the rudder has failed out of neutral position, maintain differential thrust until directional control is established on the runway.

CAUTION

1. Do not prolong the flare or delay the derotation.
2. Use prompt differential braking as required to assist in directional control.

Immediately after touchdown:

(10) SPOILER lever .....FULL

– COMPLETE –

ADS DEGRADED (Caution)

NOTE

1. Avoid abrupt maneuvering.
2. Avoid use of the spoiler lever until airspeed is less than 300 KIAS/0.80 M and altitude is below 35000 feet.

(1) Airspeed ..... Not more than 300 KIAS/0.80 M

(2) Altitude ..... Not above 35000 feet

(3) Land at the nearest suitable airport.

ADS DEGRADED (Caution) (Cont'd)

On approach:

(4) FMS, PERF – ARR – SLAT/FLAP 4

(5) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(6) OLD factor ..... Multiply by 1.30

Before landing:

(7) SLAT/FLAP lever 4

– COMPLETE –

AILERON FAIL (Caution)

Description: Loss of control over left or right aileron, or both ailerons.

(1) Failure occurs at speed less than or equal to 200 KIAS:

- **Yes –** Go to (2)
- **No –** Go to (6)

(2) Failure occurs at speed less than or equal to 200 KIAS:

(3) Airspeed ..... Not more than 200 KIAS

(4) OLD factor ..... Multiply by 1.15

(5) Land at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.
2. Roll rate may be reduced. Avoid over-control.

– COMPLETE –

AILERON FAIL (Caution) (Cont'd)

(6) Failure occurs at speed more than 200 KIAS:

(7) Airspeed ..... Not more than 300 KIAS or the speed at which the failure occurred, whichever is lower.

(8) OLD factor ..... Multiply by 1.15

(9) Land at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.
2. Roll rate may be reduced. Avoid over-control.

– COMPLETE –

ALPHA LIMIT (Caution)

NOTE

Low speed warning/protection increased due to wing anti-ice system malfunction in icing conditions.

On approach:

(1) FMS, PERF – ARR – VREF ..... V_{REF} + 5

(2) OLD factor ..... Multiply by 1.20

– COMPLETE –

FLAP FAIL (Caution)

NOTE

If at any time the **FLAP FAIL** caution message is replaced by the **SLAT-FLAP FAIL** caution message, go to the indicated procedure immediately.

(1) **SLAT-FLAP FAIL** caution message is also shown:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) SLAT-FLAP FAIL caution message is also shown:

(3) SLAT-FLAP FAIL procedure ..... Accomplish Refer to Flight controls – SLAT-FLAP FAIL.

– COMPLETE –

(4) SLAT-FLAP FAIL caution message is not shown:

(5) SLAT/FLAP lever ..... Select previous position.

NOTE

Allow time for the flaps and slats to return to the previous position.

(6) SLAT/FLAP lever ..... Re-select desired position.

(7) **FLAP FAIL** caution message goes out:

- **Yes –** Go to (8)
- **No –** Go to (10)

(8) FLAP FAIL caution message goes out:

(9) No further action required.

– COMPLETE –

FLAP FAIL (Caution) (Cont'd)

(10) FLAP FAIL caution message stays on:

(11) Altitude ..... Not above 20000 feet

(12) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.
3. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.

(13) Anti-ice system ..... Operate manually in icing conditions.

(14) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(15) **SLAT SKEW** caution message is also shown:

- **Yes –** Go to (16)
- **No –** Go to (47)

FLAP FAIL (Caution) (Cont'd)

(16) SLAT SKEW caution message is also shown:

(17) Check FLAP position:

- **FLAP position is 0-1 –** Go to (18)
- **FLAP position is 2 –** Go to (24)
- **FLAP position is 3 –** Go to (30)
- **FLAP position is 4 –** Go to (36)
- **FLAP position is 5 –** Go to (42)

(18) FLAP position is 0-1:

(19) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+54KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	69580 (153400)	64090 (141300)	58780 (129600)	54060 (119200)	49710 (109600)	45580 (100500)
0	32	63180 (139300)	57920 (127700)	53290 (117500)	48980 (108000)	44900 (99000)	41050 (90500)
20	68	57560 (126900)	52970 (116800)	48670 (107300)	44580 (98300)	40770 (89900)	37140 (81900)
30	86	55150 (121600)	50750 (111900)	46530 (102600)	42590 (93900)	38910 (85800)	35420 (78100)
40 AND ABOVE	104 AND ABOVE	52970 (116800)	48620 (107200)	44580 (98300)	40680 (89700)	37190 (82000)	33700 (74300)

CS300_LW_ATA27_DVREF54_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 25% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 54 kt
Figure 04–11–1

FLAP FAIL (Caution) (Cont'd)

On approach:

(20) TAWS, FLAP ..... INHIB

(21) FMS, PERF – ARR – SLAT/FLAP 4

(22) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 54

(23) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.10

Go-around considerations: Do not retract flaps.

– COMPLETE –

(24) FLAP position is 2:

(25) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+33KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	78330 (172700)	75740 (167000)	73160 (161300)	70620 (155700)	66310 (146200)	61140 (134800)
0	32	75380 (166200)	72800 (160500)	70300 (155000)	65490 (144400)	60410 (133200)	55740 (122900)
20	68	72660 (160200)	70170 (154700)	65220 (143800)	60140 (132600)	55510 (122400)	51300 (113100)
30	86	71440 (157500)	67900 (149700)	62680 (138200)	57740 (127300)	53380 (117700)	49350 (108800)
40 AND ABOVE	104 AND ABOVE	70260 (154900)	65360 (144100)	60280 (132900)	55610 (122600)	51430 (113400)	47440 (104600)

CS300_LW_ATA27_DVREF33_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 20% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 33 kt
Figure 04–11–2

FLAP FAIL (Caution) (Cont'd)

On approach:

(26) TAWS, FLAP .....INHIB

(27) FMS, PERF – ARR – SLAT/FLAP 4

(28) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 33

(29) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.60	1.80

Go-around considerations: Do not retract flaps.

– COMPLETE –

(30) FLAP position is 3:

(31) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+22KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82960 (182900)	80370 (177200)	77740 (171400)	75110 (165600)	72480 (159800)	69620 (153500)
0	32	80010 (176400)	77380 (170600)	74790 (164900)	72160 (159100)	69620 (153500)	64720 (142700)
20	68	77290 (170400)	74700 (164700)	72120 (159000)	69580 (153400)	64540 (142300)	59640 (131500)
30	86	75970 (167500)	73430 (161900)	70890 (156300)	67130 (148000)	62090 (136900)	57370 (126500)
40 AND ABOVE	104 AND ABOVE	74790 (164900)	72210 (159200)	69710 (153700)	64720 (142700)	59820 (131900)	55380 (122100)

CS300_LW_ATA27_DVREF22_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 19% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 22 kt
Figure 04–11–3

FLAP FAIL (Caution) (Cont'd)

On approach:

(32) TAWS, FLAP .....INHIB

(33) FMS, PERF – ARR – SLAT/FLAP 4

(34) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 22

(35) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

Go-around considerations: Do not retract flaps.

– COMPLETE –

(36) FLAP position is 4:

(37) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–4

FLAP FAIL (Caution) (Cont'd)

On approach:

(38) TAWS, FLAP .....INHIB

(39) FMS, PERF – ARR – SLAT/FLAP 4

(40) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 15

(41) OLD factor ..... Multiply by 1.40

Go-around considerations: Do not retract flaps.

– COMPLETE –

(42) FLAP position is 5:

On approach:

(43) TAWS, FLAP .....INHIB

(44) FMS, PERF – ARR – SLAT/FLAP 4

(45) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 9

(46) OLD factor ..... Multiply by 1.40

Go-around considerations: Do not retract flaps.

– COMPLETE –

(47) SLAT SKEW caution message is not shown:

(48) Check FLAP position:

- **FLAP position is 0-1 –** Go to (49)
- **FLAP position is 2 –** Go to (56)
- **FLAP position is 3, 4 or 5 –** Go to (63)

(49) FLAP position is 0-1:

(50) Maximum landing weight .....Use the table to determine value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+41KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	75340 (166100)	72750 (160400)	69980 (154300)	64630 (142500)	59510 (131200)	54830 (120900)
0	32	72390 (159600)	69170 (152500)	63820 (140700)	58690 (129400)	54150 (119400)	49940 (110100)
20	68	68850 (151800)	63500 (140000)	58420 (128800)	53880 (118800)	49660 (109500)	45720 (100800)
30	86	66130 (145800)	60870 (134200)	56060 (123600)	51750 (114100)	47670 (105100)	43810 (96600)
40 AND ABOVE	104 AND ABOVE	63540 (140100)	58460 (128900)	53930 (118900)	49750 (109700)	45760 (100900)	42040 (92700)

CS300_LW_ATA27_DVREF41_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 21% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 41 kt
Figure 04–11–5

FLAP FAIL (Caution) (Cont'd)

On approach:

NOTE

Normal slat operation is available.

(51) TAWS, FLAP .....INHIB

(52) FMS, PERF – ARR – SLAT/FLAP 4

(53) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 41

(54) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.65	1.80

Go-around considerations: Do not retract flaps.

Before landing:

(55) SLAT/FLAP lever 4

– COMPLETE –

(56) FLAP position is 2:

(57) Maximum landing weight .....Use the table to determine value and correct for wind and slope.

FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–6

FLAP FAIL (Caution) (Cont'd)

On approach:

NOTE

Normal slat operation is available.

(58) TAWS, FLAP .....INHIB

(59) FMS, PERF – ARR – SLAT/FLAP 4

(60) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 15

(61) OLD factor ..... Multiply by 1.45

Go-around considerations: Do not retract flaps.

Before landing:

(62) SLAT/FLAP lever 4

– COMPLETE –

(63) FLAP position is 3, 4 or 5:

On approach:

NOTE

Normal slat operation is available.

(64) TAWS, FLAP .....INHIB

(65) FMS, PERF – ARR – SLAT/FLAP 4

(66) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + ΔV_{REF}. Set value from table.

(67) OLD factor .....Multiply by value from table.

FLAP	$\Delta V_{REF\ (FLAP\ 4)}$	OLD factor
3	5	1.25

FLAP FAIL (Caution) (Cont'd)

FLAP	$\Delta V_{REF\ (FLAP\ 4)}$	OLD factor
4	5	1.20
5	5	1.20

Go-around considerations: Do not retract flaps.

Before landing:

(68) SLAT/FLAP lever 4

– COMPLETE –

FLAP SLOW (Caution)

Description: Flap movement speed is significantly slower than normal.

(1) Flap movement ..... Monitor

– COMPLETE –

FLT CTRL DIRECT (Caution)

Fly-by-wire envelope protection is not available. Minimize control inputs.

(1) Assume manual control.

(2) Airspeed ..... Not more than 300 KIAS/0.80 M

(3) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot

FLT CTRL DIRECT (Caution) (Cont'd)

- Flight director may not be available
- Sidestick priority may not be available
- Automatic ground lift dumping may not be available (manual control available)
- Nosewheel steering may not be available

CAUTION

1. Do not attempt this reset procedure more than once.
2. Do not attempt reset:
   - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.
   - Unless the aircraft is stable, straight, level and trimmed.

When any PFCC is active and airplane is back in Normal mode, the autopilot is available.

(4) PFCC 1 ..... OFF

(5) PFCC 1 ..... Select on

After 30 seconds:

Time delay to allow PFCC 1 to reset before deselecting PFCC 2.

(6) PFCC 2 ..... OFF

(7) PFCC 2 ..... Select on

After 30 seconds:

Time delay to allow PFCC 2 to reset before deselecting PFCC 3.

FLT CTRL DIRECT (Caution) (Cont'd)

(8) PFCC 3 ..... OFF

(9) PFCC 3 ..... Select on

(10) **FLT CTRL DIRECT** caution message goes out:

- **Yes –** Go to (11)
- **No –** Go to (13)

(11) FLT CTRL DIRECT caution message goes out:

(12) Land at the nearest suitable airport.

– COMPLETE –

(13) FLT CTRL DIRECT caution message stays on:

(14) Altitude ..... Not above 31000 feet

(15) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

CAUTION

Control authority is reduced. Minimize control inputs.

(16) FMS, PERF – ARR – SLAT/FLAP 4

(17) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(18) OLD factor ..... Multiply by 1.45

Before landing:

(19) SLAT/FLAP lever 4

FLT CTRL DIRECT (Caution) (Cont'd)

After touchdown:

(20) SPOILER lever .....FULL

– COMPLETE –

FLT CTRL DIRECT ADS (Caution)

CAUTION

Fly-by-wire envelope protection is not available. Minimize control inputs.

(1) Assume manual control.

(2) Airspeed reliable:

- **Yes –** Go to (3)
- **No –** Go to (27)

(3) Airspeed reliable:

(4) Airspeed ..... Not more than 300 KIAS/0.80 M

(5) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot
- Flight director may not be available
- Stick shaker may not be available

(6) At least two valid ADSP sources become available:

- **Yes –** Go to (7)
- **No –** Go to (25)

FLT CTRL DIRECT ADS (Caution) (Cont'd)

(7) At least two valid ADSP sources become available:

CAUTION

1. Do not attempt this reset procedure more than once.
2. Do not attempt reset:
   - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.
   - Unless the aircraft is stable, straight, level and trimmed.

When any PFCC is active and airplane is back in normal mode, the autopilot is available.

(8) PFCC 1 ..... OFF

(9) PFCC 1 ..... Select on

After 30 seconds:

Time delay to allow PFCC 1 to reset before deselecting PFCC 2.

(10) PFCC 2 ..... OFF

(11) PFCC 2 ..... Select on

After 30 seconds:

Time delay to allow PFCC 2 to reset before deselecting PFCC 3.

(12) PFCC 3 ..... OFF

(13) PFCC 3 ..... Select on

FLT CTRL DIRECT ADS (Caution) (Cont'd)

(14) **FLT CTRL DIRECT ADS** caution message goes out:

- **Yes –** Go to (15)
- **No –** Go to (17)

(15) FLT CTRL DIRECT ADS caution message goes out:

(16) Land at the nearest suitable airport.

– COMPLETE –

(17) FLT CTRL DIRECT ADS caution message stays on:

(18) Altitude ..... Not above 31000 feet

(19) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

CAUTION

Control authority is reduced. Minimize control inputs.

(20) FMS, PERF – ARR – SLAT/FLAP 4

(21) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(22) OLD factor ..... Multiply by 1.45

Before landing:

(23) SLAT/FLAP lever 4

FLT CTRL DIRECT ADS (Caution) (Cont'd)

After touchdown:

(24) SPOILER lever .....FULL

– COMPLETE –

(25) At least two ADSP sources do not become available:

(26) Unreliable airspeed procedure ..... Accomplish Refer to Instruments system – Unreliable airspeed.

– COMPLETE –

(27) Airspeed unreliable:

(28) Unreliable airspeed procedure ..... Accomplish Refer to Instruments system – Unreliable airspeed.

– COMPLETE –

FLT CTRL DIRECT IRS (Caution)

Fly-by-wire envelope protection is not available. Minimize control inputs.

(1) Assume manual control.

(2) Airspeed ..... Not more than 300 KIAS/0.80 M

(3) Plan to land at the nearest suitable airport.

Significant systems affected:

- Autopilot
- Flight director may not be available

FLT CTRL DIRECT IRS (Caution) (Cont'd)

(4) FMS, POS – IRS ..... SET IRS HDG, if required.

NOTE

It may take up to 7 minutes for an IRS to become available.

(5) At least one IRS becomes available:

➔ **Yes –** Go to (6)

➔ **No –** Go to (24)

(6) At least one IRS becomes available:

CAUTION

1. Do not attempt this reset procedure more than once.
2. Do not attempt reset:
   - If there were significant flight control induced aircraft transients immediately before the reversion to direct mode.
   - Unless the aircraft is stable, straight, level and trimmed.

When any PFCC is active and airplane is back in Normal mode, the autopilot is available.

(7) PFCC 1 ..... OFF

(8) PFCC 1 ..... Select on

After 30 seconds:

Time delay to allow PFCC 1 to reset before deselecting PFCC 2.

FLT CTRL DIRECT IRS (Caution) (Cont'd)

(9) PFCC 2 ..... OFF

(10) PFCC 2 ..... Select on

After 30 seconds:

Time delay to allow PFCC 2 to reset before deselecting PFCC 3.

(11) PFCC 3 ..... OFF

(12) PFCC 3 ..... Select on

(13) **FLT CTRL DIRECT IRS** caution message goes out:

- **Yes –** Go to (14)
- **No –** Go to (16)

(14) FLT CTRL DIRECT IRS caution message goes out:

(15) Land at the nearest suitable airport.

– COMPLETE –

(16) FLT CTRL DIRECT IRS caution message stays on:

(17) Altitude ..... Not above 31000 feet

(18) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

CAUTION

Control authority is reduced. Minimize control inputs.

(19) FMS, PERF – ARR – SLAT/FLAP 4

FLT CTRL DIRECT IRS (Caution) (Cont'd)

(20) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(21) OLD factor ..... Multiply by 1.45

Before landing:

(22) SLAT/FLAP lever 4

After touchdown:

(23) SPOILER lever ..... FULL

– COMPLETE –

(24) No IRS becomes available:

(25) Altitude ..... Not above 31000 feet

(26) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

Control authority is reduced. Minimize control inputs.

(27) FMS, PERF – ARR – SLAT/FLAP 4

(28) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(29) OLD factor ..... Multiply by 1.45

Before landing:

(30) SLAT/FLAP lever 4

FLT CTRL DIRECT IRS (Caution) (Cont'd)

After touchdown:

(31) SPOILER lever .....FULL

– COMPLETE –

GND LIFT DUMP FAIL (Caution)

Description: Loss of automatic ground lift dump.

On approach:

(1) OLD factor ..... Multiply by 1.55

After touchdown:

(2) SPOILER lever .....FULL

– COMPLETE –

GND SPOILER FAIL (Caution)

On approach:

(1) FMS, PERF – ARR – SLAT/FLAP 4

(2) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$

(3) OLD factor ..... Multiply by 1.20

Before landing:

(4) SLAT/FLAP lever 4

– COMPLETE –

L ELEVATOR FAIL (Caution)

(1) Airspeed ..... Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.

L ELEVATOR FAIL (Caution) (Cont'd)

(2) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

(3) FMS, PERF – ARR – SLAT/FLAP 4

(4) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(5) OLD factor ..... Multiply by 1.30

Before landing:

(6) SLAT/FLAP lever 4

– COMPLETE –

L SIDESTICK (Caution)

(1) Right seat pilot becomes flying pilot.

(2) Right glareshield, SIDESTICK ..... PTY

(3) Navigation modes ..... Confirm

– COMPLETE –

PITCH AUTHORITY (Caution)

CAUTION

Pitch is approaching maximum available authority.

(1) FLT CTRL synoptic page ..... Select

PITCH AUTHORITY (Caution) (Cont'd)

(2) Flight controls ..... Monitor

(3) Airspeed ..... Not more than 250 KIAS

(4) Land immediately at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.
2. If elevator(s) is/are close to nose up limit: Pitch up and flare authority are limited. Higher airspeed gives better pitch up authority. Do not extend flaps further until on approach.
3. If elevator(s) is/are close to nose down limit: Pitch down authority is limited. Slower airspeed gives better pitch down authority. Avoid spoiler use and rapid thrust increases.
4. Fuel burn may increase due to extra drag.

On approach:

(5) FMS, PERF – ARR – SLAT/FLAP 4

(6) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(7) OLD factor ..... Multiply by 1.30

Before landing:

(8) SLAT/FLAP lever 4

– COMPLETE –

R ELEVATOR FAIL (Caution)

(1) Airspeed ..... Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.

R ELEVATOR FAIL (Caution) (Cont'd)

(2) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

(3) FMS, PERF – ARR – SLAT/FLAP 4

(4) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(5) OLD factor ..... Multiply by 1.30

Before landing:

(6) SLAT/FLAP lever 4

– COMPLETE –

R SIDESTICK (Caution)

(1) Left seat pilot becomes flying pilot.

(2) Left glareshield, SIDESTICK ..... PTY

(3) Navigation modes ..... Confirm

– COMPLETE –

ROLL AUTHORITY (Caution)

CAUTION

Roll is approaching maximum available authority. Flight control system is compensating for an airplane asymmetry. Minimize control inputs.

ROLL AUTHORITY (Caution) (Cont'd)

(1) FLT CTRL synoptic page ..... Select

(2) Flight controls ..... Monitor

(3) Land immediately at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.
2. Drag may be higher than normal. Do not rely on FMS fuel predictions.

– COMPLETE –

RUDDER DEGRADED (Caution)

NOTE

Rudder response may be slower than normal.

(1) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

– COMPLETE –

SLAT FAIL (Caution)

NOTE

If at any time the **SLAT FAIL** caution message is replaced by the **SLAT-FLAP FAIL** caution message, go to the indicated procedure immediately.

SLAT FAIL (Caution) (Cont'd)

(1) **SLAT-FLAP FAIL** caution message is also shown:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) SLAT-FLAP FAIL caution message is also shown:

(3) SLAT-FLAP FAIL procedure ..... Accomplish Refer to Flight controls – SLAT-FLAP FAIL.

– COMPLETE –

(4) SLAT-FLAP FAIL caution message is not shown:

(5) SLAT/FLAP lever ..... Select previous position.

NOTE

Allow time for the flaps and slats to return to the previous position.

(6) SLAT/FLAP lever ..... Re-select desired position.

(7) **SLAT FAIL** caution message goes out:

- **Yes –** Go to (8)
- **No –** Go to (10)

(8) SLAT FAIL caution message goes out:

(9) No further action required.

– COMPLETE –

(10) SLAT FAIL caution message stays on:

(11) Altitude ..... Not above 20000 feet

(12) Airspeed ..... Not more than V_{FE}.

SLAT FAIL (Caution) (Cont'd)

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.
3. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.

(13) Anti-ice system .....Operate manually in icing conditions.

(14) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

(15) SLAT position ..... Check

(16) FMS, PERF – ARR – SLAT/FLAP 4

(17) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)} + \Delta V_{REF}$. Set value from table.

(18) OLD factor .....Multiply by value from table.

SLAT	$\Delta V_{REF\ (FLAP\ 4)}$	OLD factor
IN	15	1.40
OUT/MID/FULL	5	1.20

SLAT FAIL (Caution) (Cont'd)

Before landing:

(19) SLAT/FLAP lever 4

– COMPLETE –

SLAT SKEW (Caution)

(1) Altitude ..... Not above 20000 feet

(2) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.
3. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.

(3) Anti-ice system ..... Operate manually in icing conditions.

(4) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(5) **FLAP FAIL** caution message is also shown:

- **Yes –** Go to (6)
- **No –** Go to (47)

SLAT SKEW (Caution) (Cont'd)

(6) FLAP FAIL caution message is also shown:

(7) SLAT/FLAP lever ..... Select previous position.

NOTE

Allow time for the FLAP and SLAT to return to the previous position.

(8) SLAT/FLAP lever ..... Re-select desired position.

(9) **FLAP FAIL** caution message goes out:

- **Yes –** Go to (10)
- **No –** Go to (16)

(10) FLAP FAIL caution message goes out:

(11) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–7

SLAT SKEW (Caution) (Cont'd)

On approach:

(12) FMS, PERF – ARR – SLAT/FLAP 4

(13) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 15

(14) OLD factor ..... Multiply by 1.40

Before landing:

(15) SLAT/FLAP lever 4

– COMPLETE –

(16) FLAP FAIL caution message stays on:

(17) Check FLAP position:

- **FLAP position is 0-1 –** Go to (18)
- **FLAP position is 2 –** Go to (24)
- **FLAP position is 3 –** Go to (30)
- **FLAP position is 4 –** Go to (36)
- **FLAP position is 5 –** Go to (42)

(18) FLAP position is 0-1:

(19) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+54KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	69580 (153400)	64090 (141300)	58780 (129600)	54060 (119200)	49710 (109600)	45580 (100500)
0	32	63180 (139300)	57920 (127700)	53290 (117500)	48980 (108000)	44900 (99000)	41050 (90500)
20	68	57560 (126900)	52970 (116800)	48670 (107300)	44580 (98300)	40770 (89900)	37140 (81900)
30	86	55150 (121600)	50750 (111900)	46530 (102600)	42590 (93900)	38910 (85800)	35420 (78100)
40 AND ABOVE	104 AND ABOVE	52970 (116800)	48620 (107200)	44580 (98300)	40680 (89700)	37190 (82000)	33700 (74300)

CS300_LW_ATA27_DVREF54_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 25% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 54 kt
Figure 04–11–8

SLAT SKEW (Caution) (Cont'd)

On approach:

(20) TAWS, FLAP ..... INHIB

(21) FMS, PERF – ARR – SLAT/FLAP 4

(22) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 54

(23) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.10

– COMPLETE –

(24) FLAP position is 2:

(25) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+33KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	78330 (172700)	75740 (167000)	73160 (161300)	70620 (155700)	66310 (146200)	61140 (134800)
0	32	75380 (166200)	72800 (160500)	70300 (155000)	65490 (144400)	60410 (133200)	55740 (122900)
20	68	72660 (160200)	70170 (154700)	65220 (143800)	60140 (132600)	55510 (122400)	51300 (113100)
30	86	71440 (157500)	67900 (149700)	62680 (138200)	57740 (127300)	53380 (117700)	49350 (108800)
40 AND ABOVE	104 AND ABOVE	70260 (154900)	65360 (144100)	60280 (132900)	55610 (122600)	51430 (113400)	47440 (104600)

CS300_LW_ATA27_DVREF33_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 20% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 33 kt
Figure 04–11–9

SLAT SKEW (Caution) (Cont'd)

On approach:

(26) TAWS, FLAP ..... INHIB

(27) FMS, PERF – ARR – SLAT/FLAP 4

(28) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 33

(29) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.60	1.80

– COMPLETE –

(30) FLAP position is 3:

(31) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+22KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82960 (182900)	80370 (177200)	77740 (171400)	75110 (165600)	72480 (159800)	69620 (153500)
0	32	80010 (176400)	77380 (170600)	74790 (164900)	72160 (159100)	69620 (153500)	64720 (142700)
20	68	77290 (170400)	74700 (164700)	72120 (159000)	69580 (153400)	64540 (142300)	59640 (131500)
30	86	75970 (167500)	73430 (161900)	70890 (156300)	67130 (148000)	62090 (136900)	57370 (126500)
40 AND ABOVE	104 AND ABOVE	74790 (164900)	72210 (159200)	69710 (153700)	64720 (142700)	59820 (131900)	55380 (122100)

CS300_LW_ATA27_DVREF22_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 19% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 22 kt
Figure 04–11–10

SLAT SKEW (Caution) (Cont'd)

On approach:

(32) TAWS, FLAP ..... INHIB

(33) FMS, PERF – ARR – SLAT/FLAP 4

(34) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 22

(35) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

– COMPLETE –

(36) FLAP position is 4:

(37) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–11

SLAT SKEW (Caution) (Cont'd)

On approach:

(38) TAWS, FLAP ..... INHIB

(39) FMS, PERF – ARR – SLAT/FLAP 4

(40) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 15

(41) OLD factor ..... Multiply by 1.40

– COMPLETE –

(42) FLAP position is 5:

On approach:

(43) TAWS, FLAP ..... INHIB

(44) FMS, PERF – ARR – SLAT/FLAP 4

(45) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 9

(46) OLD factor ..... Multiply by 1.40

– COMPLETE –

(47) FLAP FAIL caution message is not shown:

(48) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT SKEW (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–12

SLAT SKEW (Caution) (Cont'd)

On approach:

(49) FMS, PERF – ARR – SLAT/FLAP 4

(50) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 15

(51) OLD factor ..... Multiply by 1.40

Before landing:

(52) SLAT/FLAP lever 4

– COMPLETE –

SLAT SLOW (Caution)

NOTE

Slat movement speed is slower than normal.

(1) Slat movement ..... Monitor

– COMPLETE –

SLAT-FLAP FAIL (Caution)

NOTE

If at any time the **SLAT-FLAP FAIL** caution message is replaced by either the **FLAP FAIL** caution message or the **SLAT FAIL** caution message, go to the indicated procedure immediately.

(1) SLAT/FLAP lever ..... Select previous position.

SLAT-FLAP FAIL (Caution) (Cont'd)

NOTE

Allow time for the flaps and slats to return to the previous position.

(2) SLAT/FLAP lever ..... Re-select desired position.

(3) **SLAT-FLAP FAIL** caution message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) SLAT–FLAP FAIL caution message goes out:

(5) No further action required.

– COMPLETE –

(6) SLAT–FLAP FAIL caution message stays on:

(7) Altitude ..... Not above 20000 feet

(8) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. High alpha protection setting is adjusted to account for the failure.
3. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.

(9) Anti-ice system ..... Operate manually in icing conditions.

(10) Land at the nearest suitable airport.

SLAT-FLAP FAIL (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

(11) Check FLAP position:

- **FLAP position is 0-1 –** Go to (12)
- **FLAP position is 2 –** Go to (26)
- **FLAP position is 3 –** Go to (40)
- **FLAP position is 4 –** Go to (53)
- **FLAP position is 5 –** Go to (66)

(12) FLAP position is 0-1:

(13) Check SLAT position:

- **SLAT position IN –** Go to (14)
- **SLAT position OUT/MID/FULL –** Go to (20)

(14) SLAT position IN:

(15) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+54KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	69580 (153400)	64090 (141300)	58780 (129600)	54060 (119200)	49710 (109600)	45580 (100500)
0	32	63180 (139300)	57920 (127700)	53290 (117500)	48980 (108000)	44900 (99000)	41050 (90500)
20	68	57560 (126900)	52970 (116800)	48670 (107300)	44580 (98300)	40770 (89900)	37140 (81900)
30	86	55150 (121600)	50750 (111900)	46530 (102600)	42590 (93900)	38910 (85800)	35420 (78100)
40 AND ABOVE	104 AND ABOVE	52970 (116800)	48620 (107200)	44580 (98300)	40680 (89700)	37190 (82000)	33700 (74300)

CS300_LW_ATA27_DVREF54_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 25% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 54 kt
Figure 04–11–13

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

(16) TAWS, FLAP .....INHIB

(17) FMS, PERF – ARR – SLAT/FLAP 4

(18) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 54

(19) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.10

– COMPLETE –

(20) SLAT position OUT/MID/FULL:

(21) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+41KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	75340 (166100)	72750 (160400)	69980 (154300)	64630 (142500)	59510 (131200)	54830 (120900)
0	32	72390 (159600)	69170 (152500)	63820 (140700)	58690 (129400)	54150 (119400)	49940 (110100)
20	68	68850 (151800)	63500 (140000)	58420 (128800)	53880 (118800)	49660 (109500)	45720 (100800)
30	86	66130 (145800)	60870 (134200)	56060 (123600)	51750 (114100)	47670 (105100)	43810 (96600)
40 AND ABOVE	104 AND ABOVE	63540 (140100)	58460 (128900)	53930 (118900)	49750 (109700)	45760 (100900)	42040 (92700)

CS300_LW_ATA27_DVREF41_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 21% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 41 kt
Figure 04–11–14

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

(22) TAWS, FLAP .....INHIB

(23) FMS, PERF – ARR – SLAT/FLAP 4

(24) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 41

(25) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.65	1.80

– COMPLETE –

(26) FLAP position is 2:

(27) Check SLAT position:

- **SLAT position IN –** Go to (28)
- **SLAT position OUT/MID/FULL –** Go to (34)

(28) SLAT position IN:

(29) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+33KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	78330 (172700)	75740 (167000)	73160 (161300)	70620 (155700)	66310 (146200)	61140 (134800)
0	32	75380 (166200)	72800 (160500)	70300 (155000)	65490 (144400)	60410 (133200)	55740 (122900)
20	68	72660 (160200)	70170 (154700)	65220 (143800)	60140 (132600)	55510 (122400)	51300 (113100)
30	86	71440 (157500)	67900 (149700)	62680 (138200)	57740 (127300)	53380 (117700)	49350 (108800)
40 AND ABOVE	104 AND ABOVE	70260 (154900)	65360 (144100)	60280 (132900)	55610 (122600)	51430 (113400)	47440 (104600)

CS300_LW_ATA27_DVREF33_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 20% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 33 kt
Figure 04–11–15

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

(30) TAWS, FLAP ..... INHIB

(31) FMS, PERF – ARR – SLAT/FLAP 4

(32) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 33

(33) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.60	1.80

– COMPLETE –

(34) SLAT position OUT/MID/FULL:

(35) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–16

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

(36) TAWS, FLAP ..... INHIB

(37) FMS, PERF – ARR – SLAT/FLAP 4

(38) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 15

(39) OLD factor ..... Multiply by 1.45

– COMPLETE –

(40) FLAP position is 3:

(41) Check SLAT position:

➔ **SLAT position IN –** Go to (42)

➔ **SLAT position OUT/MID/FULL –** Go to (48)

(42) SLAT position IN:

(43) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+22KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82960 (182900)	80370 (177200)	77740 (171400)	75110 (165600)	72480 (159800)	69620 (153500)
0	32	80010 (176400)	77380 (170600)	74790 (164900)	72160 (159100)	69620 (153500)	64720 (142700)
20	68	77290 (170400)	74700 (164700)	72120 (159000)	69580 (153400)	64540 (142300)	59640 (131500)
30	86	75970 (167500)	73430 (161900)	70890 (156300)	67130 (148000)	62090 (136900)	57370 (126500)
40 AND ABOVE	104 AND ABOVE	74790 (164900)	72210 (159200)	69710 (153700)	64720 (142700)	59820 (131900)	55380 (122100)

CS300_LW_ATA27_DVREF22_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 19% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 22 kt
Figure 04–11–17

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

(44) TAWS, FLAP .....INHIB

(45) FMS, PERF – ARR – SLAT/FLAP 4

(46) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 22

(47) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

– COMPLETE –

(48) SLAT position OUT/MID/FULL:

On approach:

(49) TAWS, FLAP .....INHIB

(50) FMS, PERF – ARR – SLAT/FLAP 4

(51) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ + 5

(52) OLD factor ..... Multiply by 1.25

(53) FLAP position is 4:

(54) Check SLAT position:

- **SLAT position IN –** Go to (55)
- **SLAT position OUT/MID/FULL –** Go to (61)

(55) SLAT position IN:

(56) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

SLAT-FLAP FAIL (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–11–18

SLAT-FLAP FAIL (Caution) (Cont'd)

On approach:

(57) TAWS, FLAP ..... INHIB

(58) FMS, PERF – ARR – SLAT/FLAP 4

(59) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 15

(60) OLD factor ..... Multiply by 1.40

– COMPLETE –

(61) SLAT position OUT/MID/FULL:

On approach:

(62) TAWS, FLAP ..... INHIB

(63) FMS, PERF – ARR – SLAT/FLAP 4

(64) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 5

(65) OLD factor ..... Multiply by 1.20

(66) FLAP position is 5:

(67) SLAT position ..... Check

On approach:

(68) TAWS, FLAP ..... INHIB

(69) FMS, PERF – ARR – SLAT/FLAP 4

(70) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + ΔV_{REF}

(71) OLD factor ..... Multiply by value from table.

SLAT	$\Delta V_{REF\ (FLAP\ 4)}$	OLD factor
IN	9	1.40
OUT/MID/FULL	5	1.20

– COMPLETE –

SLAT-FLAP LEVER FAIL (Caution)

(1) Altitude ..... Not above 20000 feet

(2) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.
3. Slats/flaps will be deployed with the ALTN FLAP switch.

(3) Anti-ice system ..... Operate manually in icing conditions.

(4) Land at the nearest suitable airport.

On approach:

(5) Airspeed ..... Not more than 200 KIAS

(6) TAWS, FLAP ..... INHIB

(7) PTU ..... ON

(8) HYD 3B ..... ON

(9) HYD 2B ..... ON

(10) FMS, PERF – ARR – SLAT/FLAP 4

(11) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 5

(12) OLD factor ..... Multiply by 1.25

Go-around considerations: Do not retract flaps.

Before landing:

(13) SLAT/FLAP lever 3

SLAT-FLAP LEVER FAIL (Caution) (Cont'd)

(14) ALTN FLAP ..... DPLY

– COMPLETE –

SPOILER DEGRADED (Caution)

(1) Altitude ..... Not above 37000 feet

NOTE

Select the longest runway with minimal crosswind.

(2) OLD factor ..... Multiply by 1.20

– COMPLETE –

SPOILER DPLY (Caution)

(1) SPOILER lever ..... RET

– COMPLETE –

SPOILER FAIL (Caution)

NOTE

Roll rate may be reduced. Avoid over-control.

(1) Altitude ..... Not above 33000 feet

NOTE

Select the longest runway with minimal crosswind.

(2) OLD factor ..... Multiply by 1.30

– COMPLETE –

SPOILER LEVER FAIL (Caution)

(1) SPOILER lever ..... RET

NOTE

1. Spoilers will retract and be inoperative for the remainder of the flight.
2. Ground lift dumping will deploy on landing.

(2) Spoiler lever failed in the RET position:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) Spoiler lever failed in the RET position:

(4) Altitude ..... Not above 33000 feet

– COMPLETE –

(5) Spoiler lever not failed in the RET position:

(6) Thrust levers ..... Advance momentarily until spoilers retract.

(7) Altitude ..... Not above 33000 feet

– COMPLETE –

STAB DEGRADED (Caution)

On approach:

(1) FMS, PERF – ARR – SLAT/FLAP 4

(2) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(3) OLD factor ..... Multiply by 1.30

STAB DEGRADED (Caution) (Cont'd)

Before landing:

(4) SLAT/FLAP lever 4

– COMPLETE –

STAB TRIM FAIL (Caution)

(1) Airspeed ..... Not more than 250 KIAS

(2) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

On approach:

(3) FMS, PERF – ARR – SLAT/FLAP 4

(4) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(5) OLD factor ..... Multiply by 1.30

Before landing:

(6) SLAT/FLAP lever 4

– COMPLETE –

YAW AUTHORITY (Caution)

CAUTION

Rudder is approaching maximum available authority. Flight control system is compensating for an airplane asymmetry. Minimize control inputs.

YAW AUTHORITY (Caution) (Cont'd)

(1) FLT CTRL synoptic page ..... Select

(2) Flight controls ..... Monitor

(3) Land immediately at the nearest suitable airport.

NOTE

1. Select the longest runway with minimal crosswind.
2. Drag may be higher than normal. Do not rely on FMS fuel predictions.

– COMPLETE –

Rudder pedal jammed

(1) FLT CTRL synoptic page ..... Select

(2) Airspeed ..... Not more than 200 KIAS or the speed at which the failure occurred, whichever is higher.

(3) Rudder position ..... Check

(4) Rudder trim ..... Adjust, if required, to center lateral stick.

NOTE

Rudder trim should be applied in the direction of the failed pedal.

(5) NOSE STEER ..... OFF

(6) Land immediately at the nearest suitable airport.

Rudder pedal jammed (Cont'd)

NOTE

1. Select the longest runway with minimal crosswind.
2. If rudder has failed out of neutral position use lateral control and differential thrust as required to maintain straight flight until touchdown.

On approach:

(7) FMS, PERF – ARR – SLAT/FLAP 5

(8) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 5

(9) OLD factor ..... Multiply by 1.85

Before landing:

(10) SLAT/FLAP lever 5

WARNING

If the rudder has failed out of neutral position, maintain differential thrust until directional control is established on the runway.

CAUTION

1. Do not prolong the flare or delay the derotation.
2. Use prompt differential braking as required to assist in directional control.

Immediately after touchdown:

(11) SPOILER lever ..... FULL

Rudder pedal jammed (Cont'd)

When stopped:

(12) NOSE STEER ..... Select on

NOTE

Normal tiller steering is available.

– COMPLETE –

Slat-flap lever jammed

(1) Altitude ..... Not above 20000 feet

(2) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed/altitude are not required.
2. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.
3. Slats/flaps will be deployed using the ALTN FLAP switch.

(3) Anti-ice system ..... Operate manually in icing conditions.

(4) Land at the nearest suitable airport.

On approach:

(5) Airspeed ..... Not more than 200 KIAS

(6) TAWS, FLAP ..... INHIB

(7) PTU ..... ON

Slat-flap lever jammed (Cont'd)

(8) HYD 3B ..... ON

(9) HYD 2B ..... ON

(10) FMS, PERF – ARR – SLAT/FLAP 4

(11) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 5

(12) OLD factor ..... Multiply by 1.25

Go-around considerations: Do not retract flaps.

Before landing:

(13) ALTN FLAP ..... DPLY

– COMPLETE –

Spoiler lever jammed

(1) Spoiler lever jammed in RET position:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) Spoiler lever jammed in RET position:

(3) Altitude ..... Not above 33000 feet

– COMPLETE –

(4) Spoiler lever not in RET position:

(5) Thrust levers ..... Advance momentarily until spoilers retract.

NOTE

1. The **SPOILER MISMATCH** advisory message comes on when spoilers are retracted.
2. Ground lift dumping will deploy on landing.

Spoiler lever jammed (Cont'd)

(6) Altitude ..... Not above 33000 feet

– COMPLETE –

Stall recovery

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) Pitch attitude ..... Lower nose to reduce angle of attack.

(4) Roll attitude ..... Wings level

(5) Thrust levers ..... As required

(6) SPOILER lever ..... RET

(7) Return to the desired flight path.

NOTE

During recovery always control pitch attitude in a smooth steady manner, respecting stick shaker.

– COMPLETE –

Upset recovery – Nose high

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) Pitch attitude ..... As required to reduce angle of attack.

(4) Roll attitude ..... As required

(5) Thrust levers ..... As required

Upset recovery – Nose high (Cont'd)

(6) SPOILER lever ..... As required

(7) Return to desired flight path when airspeed is sufficiently increasing.

NOTE

Reducing thrust may assist in achieving a nose down pitch rate.

WARNING

Avoid excessive use of pitch trim or rudder which can result in high structural loads.

– COMPLETE –

Upset recovery – Nose low

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) Pitch attitude ..... As required to reduce angle of attack.

(4) Roll attitude ..... As required

(5) Thrust levers ..... As required

(6) SPOILER lever ..... As required

(7) Return to desired flight path.

NOTE

During recovery always control pitch attitude in a smooth steady manner, respecting stick shaker. Recovery from stall may be required.

Upset recovery – Nose low (Cont'd)

WARNING

Avoid excessive use of pitch trim or rudder which can result in high structural loads.

– COMPLETE –

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FUEL

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APU FUEL SOV FAIL (Caution)

(1) APU required:

➔ **Yes –** Go to (2)

➔ **No –** Go to (5)

(2) APU required:

(3) STATUS synoptic page ..... Select

(4) APU ..... Monitor

– COMPLETE –

(5) APU not required:

(6) APU ..... OFF

– COMPLETE –

FUEL COLLECTOR LO LVL (Caution)

Description: Suspect the transfer ejector has failed in either the left or right tank.

(1) L BOOST PUMP ..... AUTO

(2) R BOOST PUMP ..... AUTO

Ensures positive feed to the collector tanks.

(3) Aircraft attitude ..... Reduce pitch to 10 degrees nose up or less and maintain coordinated flight.

Ensures gravity fuel flow into collector tank via the flapper valves.

(4) Land at the nearest suitable airport.

(5) Fuel quantity/balance ..... Monitor

FUEL COLLECTOR LO LVL (Caution) (Cont'd)

If necessary to balance fuel:

(6) GRAV XFR ..... ON and monitor

– COMPLETE –

FUEL CTR XFR FAIL (Caution)

(1) FUEL synoptic page ..... Select

NOTE

Reduction of pitch attitude can be necessary if in climb. Unless terrain is a factor, reduce pitch attitude.

(2) Center tank quantity decreasing:

➔ **Yes –** Go to (3)

➔ **No –** Go to (6)

(3) Center tank quantity decreasing:

(4) Fuel quantity/balance ..... Monitor

If necessary to balance fuel:

(5) GRAV XFR ..... ON

– COMPLETE –

(6) Center tank quantity not decreasing:

NOTE

All fuel remaining in the center tank is considered unusable.

(7) Land at the nearest suitable airport.

(8) Fuel quantity/balance ..... Monitor

FUEL CTR XFR FAIL (Caution) (Cont'd)

If necessary to balance fuel:

(9) GRAV XFR ..... ON and monitor

– COMPLETE –

FUEL IMBALANCE (Caution)

(1) FUEL synoptic page ..... Select

NOTE

Consider potential fuel leak.

(2) Fuel quantity/balance ..... Monitor

(3) MAN XFR ..... Select to side with low quantity

(4) Wait for the **FUEL MAN XFR COMPLETE** advisory message to be shown.

(5) MAN XFR ..... OFF

NOTE

It is acceptable to do repetitive, pre-emptive manual transfers to the lower quantity side.

(6) **FUEL IMBALANCE** caution message goes out:

- **Yes –** Go to (7)
- **No –** Go to (9)

(7) FUEL IMBALANCE caution message goes out:

When fuel is balanced:

(8) Fuel quantity/balance ..... Monitor

– COMPLETE –

FUEL IMBALANCE (Caution) (Cont'd)

(9) FUEL IMBALANCE caution message stays on:

(10) GRAV XFR ..... ON

NOTE

1. A steady heading sideslip will accelerate gravity crossflow operation. Fly one wing low slip (on the side with less fuel) to ensure proper operation and to accelerate gravity crossflow.
2. It may take considerable time for fuel to balance.

When fuel is balanced:

(11) GRAV XFR ..... Select off

(12) Fuel quantity/balance ..... Monitor

– COMPLETE –

FUEL LEAK SUSPECT (Caution)

(1) In flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (19)

(2) In flight:

(3) Plan to land at the nearest suitable airport.

(4) FUEL synoptic page ..... Select

(5) Fuel quantity/balance ..... Monitor

(6) GRAV XFR ..... Select off

(7) L BOOST PUMP ..... OFF

(8) R BOOST PUMP ..... OFF

FUEL LEAK SUSPECT (Caution) (Cont'd)

(9) MAN XFR ..... OFF

(10) Engine fuel leak is visually confirmed:

- **Yes –** Go to (11)
- **No –** Go to (17)

(11) Engine fuel leak is visually confirmed:

(12) Select affected engine:

- **Left engine –** Go to (13)
- **Right engine –** Go to (15)

(13) Left engine affected:

(14) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(15) Right engine affected:

(16) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

(17) Engine fuel leak is not visually confirmed:

(18) Land immediately at the nearest suitable airport.

– COMPLETE –

(19) On ground:

(20) Engines are on:

- **Yes –** Go to (21)
- **No –** Go to (24)

FUEL LEAK SUSPECT (Caution) (Cont'd)

(21) Engines are on:

(22) AC external power ..... Establish

(23) APU and engine(s) ..... OFF

To avoid possible fuel spill.

– COMPLETE –

(24) Engines are off:

(25) APU is on:

- **Yes –** Go to (26)
- **No –** Go to (39)

(26) APU is on:

(27) Right tank quantity above 2830 kg (6225 lb):

- **Yes –** Go to (28)
- **No –** Go to (37)

(28) Right tank quantity above 2830 kg (6225 lb):

(29) MAN XFR L

When FUEL MAN XFR COMPLETE advisory message comes on:

(30) MAN XFR ..... OFF

NOTE

The **FUEL LEAK SUSPECT** caution message should go out after 5 minutes.

(31) After 5 minutes, **FUEL LEAK SUSPECT** caution message goes out:

- **Yes –** Go to (32)
- **No –** Go to (34)

FUEL LEAK SUSPECT (Caution) (Cont'd)

(32) After 5 minutes, FUEL LEAK SUSPECT caution message goes out:

(33) No further action required.

– COMPLETE –

(34) After 5 minutes, FUEL LEAK SUSPECT caution message stays on:

(35) AC external power ..... Establish

(36) APU and engine(s) ..... OFF

To avoid possible fuel spill.

– COMPLETE –

(37) Right tank quantity below 2830 kg (6225 lb):

(38) FMS, FPLN – FUEL ..... Confirm BLOCK fuel entry.

– COMPLETE –

(39) APU is off:

(40) Right tank quantity above 2830 kg (6225 lb):

- **Yes –** Go to (41)
- **No –** Go to (43)

(41) Right tank quantity above 2830 kg (6225 lb):

(42) Do not start APU.

To avoid possible fuel spill.

– COMPLETE –

(43) Right tank quantity below 2830 kg (6225 lb):

(44) FMS, FPLN – FUEL ..... Confirm BLOCK fuel entry.

– COMPLETE –

FUEL MAN XFR FAIL (Caution)

(1) MAN XFR ..... OFF

(2) L BOOST PUMP ..... AUTO

(3) R BOOST PUMP ..... AUTO

(4) GRAV XFR ..... ON

(5) Fuel quantity/balance ..... Monitor

– COMPLETE –

FUEL TANK HI TEMP (Caution)

(1) Land at the nearest suitable airport.

– COMPLETE –

FUEL TANK LO TEMP (Caution)

(1) Altitude ..... Descend or deviate to a warmer air mass.

NOTE

Consider increasing airspeed to M_{MO}/V_{MO}.

(2) FUEL synoptic page ..... Select

(3) Fuel temperature ..... Monitor

– COMPLETE –

L ENG FUEL LO PRESS (Caution)

(1) L BOOST PUMP ..... ON

(2) R BOOST PUMP ..... ON

L ENG FUEL LO PRESS (Caution) (Cont'd)

(3) L ENG FUEL LO PRESS caution message goes out:

➔ **Yes –** Go to (4)

➔ **No –** Go to (6)

(4) L ENG FUEL LO PRESS caution message goes out:

(5) Land at the nearest suitable airport.

– COMPLETE –

(6) L ENG FUEL LO PRESS caution message stays on:

(7) Left thrust lever .....Avoid abrupt changes.

(8) Left engine instruments ..... Monitor

(9) Left engine fuel flow normal:

➔ **Yes –** Go to (10)

➔ **No –** Go to (12)

(10) Left engine fuel flow normal:

(11) Land at the nearest suitable airport.

– COMPLETE –

(12) Left engine fuel flow not normal:

(13) L BOOST PUMP ..... AUTO

(14) R BOOST PUMP ..... AUTO

(15) Shutdown – Left engine procedure .....Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L ENG FUEL SOV FAIL (Caution)

(1) Indicated after an engine fire procedure:

➔ **Yes –** Go to (2)

➔ **No –** Go to (5)

(2) Indicated after an engine fire procedure:

(3) L BOOST PUMP ..... OFF

(4) R BOOST PUMP ..... OFF

– COMPLETE –

(5) Message not due to engine fire procedure:

(6) Engine instruments ..... Monitor

– COMPLETE –

L FUEL LO QTY (Caution)

(1) L BOOST PUMP ..... AUTO

(2) R BOOST PUMP ..... AUTO

(3) Fuel quantity ..... Check

(4) Land immediately at the nearest suitable airport.

NOTE

Minimum fuel to conduct a go-around is 442 kg (975 lbs) in each wing and assumes a maximum airplane climb attitude of 10 degrees nose up.

(5) Fuel imbalance procedure ..... Accomplish, if required. Refer to Fuel – FUEL IMBALANCE.

– COMPLETE –

R ENG FUEL LO PRESS (Caution)

(1) L BOOST PUMP ..... ON

(2) R BOOST PUMP ..... ON

(3) **R ENG FUEL LO PRESS** caution message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) R ENG FUEL LO PRESS caution message goes out:

(5) Land at the nearest suitable airport.

– COMPLETE –

(6) R ENG FUEL LO PRESS caution message stays on:

(7) Right thrust lever ..... Avoid abrupt changes.

(8) Right engine instruments ..... Monitor

(9) Right engine fuel flow normal:

- **Yes –** Go to (10)
- **No –** Go to (12)

(10) Right engine fuel flow normal:

(11) Land at the nearest suitable airport.

– COMPLETE –

(12) Right engine fuel flow not normal:

(13) L BOOST PUMP ..... AUTO

(14) R BOOST PUMP ..... AUTO

(15) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

R ENG FUEL SOV FAIL (Caution)

(1) Indicated after an engine fire procedure:

➔ **Yes –** Go to (2)

➔ **No –** Go to (5)

(2) Indicated after an engine fire procedure:

(3) L BOOST PUMP ..... OFF

(4) R BOOST PUMP ..... OFF

– COMPLETE –

(5) Message not due to engine fire procedure:

(6) Engine instruments ..... Monitor

– COMPLETE –

R FUEL LO QTY (Caution)

(1) L BOOST PUMP ..... AUTO

(2) R BOOST PUMP ..... AUTO

(3) Fuel quantity ..... Check

(4) Land immediately at the nearest suitable airport.

NOTE

Minimum fuel to conduct a go-around is 442 kg (975 lbs) in each wing and assumes a maximum airplane climb attitude of 10 degrees nose up.

(5) Fuel imbalance procedure ..... Accomplish, if required. Refer to Fuel – FUEL IMBALANCE.

– COMPLETE –

Fuel quantity indication failure

(1) L BOOST PUMP ..... OFF

(2) R BOOST PUMP ..... OFF

(3) Land at the nearest suitable airport.

– COMPLETE –

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HYDRAULIC POWER

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HYD 1 HI TEMP (Caution)

(1) HYD synoptic page ..... Select

(2) PTU ..... OFF

(3) HYD 1 temperature less than 120°C:

➔ **Yes –** Go to (4)

➔ **No –** Go to (6)

(4) HYD 1 temperature less than 120°C:

(5) HYD 1 system temperature ..... Monitor

– COMPLETE –

(6) HYD 1 temperature more than 120°C:

(7) HYD 1 SOV .....CLSD

NOTE

The **HYD 1 LO PRESS** caution message appears with this step but does not need to be done separately. The OLD factor in this procedure must be applied and includes the affected systems.

(8) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(9) Altitude .....Not above 33000 feet

(10) Affected systems .....Review

Significant systems affected:

- MFS 1 and 3
- Flaps slower than normal

HYD 1 HI TEMP (Caution) (Cont'd)

- Ground spoilers
- Landing gear retraction
- Normal landing gear extension
- Left thrust reverser

On approach:

(11) FMS, PERF – ARR –SLAT/FLAP 4

(12) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(13) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.30	1.40

Go-around considerations: Use the steps deferred to after go-around procedure if gear retraction is required.

Before landing:

(14) SLAT/FLAP lever 4

(15) Landing gear ..... DN

(16) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

After go-around:

If gear retraction is required:

(17) PTU ..... ON

(18) ALTN GEAR ..... NORM

(19) Landing gear ..... UP

HYD 1 HI TEMP (Caution) (Cont'd)

(20) PTU ..... AUTO

– COMPLETE –

HYD 1 LO PRESS (Caution)

(1) **HYD 1 HI TEMP** caution message previously shown:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) HYD 1 HI TEMP caution message previously shown:

(3) No further action required.

– COMPLETE –

(4) HYD 1 HI TEMP caution message not previously shown:

(5) HYD synoptic page ..... Select

(6) HYD 1 fluid quantity indication is more than 5% or is invalid:

- **Yes –** Go to (7)
- **No –** Go to (24)

(7) HYD 1 fluid quantity indication is more than 5% or is invalid:

(8) PTU ..... ON

(9) **HYD 1 LO PRESS** caution message goes out:

- **Yes –** Go to (10)
- **No –** Go to (12)

(10) HYD 1 LO PRESS caution message goes out:

(11) No further action required.

– COMPLETE –

HYD 1 LO PRESS (Caution) (Cont'd)

(12) HYD 1 LO PRESS caution message stays on:

(13) HYD 1 SOV .....CLSD

(14) PTU ..... OFF

(15) Altitude .....Not above 33000 feet

(16) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(17) Affected systems .....Review

Significant systems affected:

- MFS 1 and 3
- Flaps slower than normal
- Ground spoilers
- Landing gear retraction
- Normal landing gear extension
- Left thrust reverser

On approach:

(18) FMS, PERF– ARR – SLAT/FLAP 4

(19) FMS, PERF– ARR – VREF .....$V_{REF(FLAP\ 4)}$

(20) OLD factor .....Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.30	1.40

Go–around considerations: Do not retract gear.

HYD 1 LO PRESS (Caution) (Cont'd)

Before landing:

(21) SLAT/FLAP lever 4

(22) Landing gear ..... DN

(23) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

– COMPLETE –

(24) HYD 1 fluid quantity indication is less than 5%:

(25) HYD 1 SOV ..... CLSD

(26) PTU ..... OFF

(27) Altitude ..... Not above 33000 feet

(28) Land at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(29) Affected systems ..... Review

Significant systems affected:

- MFS 1 and 3
- Flaps slower than normal
- Ground spoilers
- Landing gear retraction
- Normal landing gear extension
- Left thrust reverser

On approach:

(30) FMS, PERF– ARR – SLAT/FLAP 4

HYD 1 LO PRESS (Caution) (Cont'd)

(31) FMS, PERF– ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(32) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.30	1.40

Go–around considerations: Do not retract gear.

Before landing:

(33) SLAT/FLAP lever 4

(34) Landing gear ..... DN

(35) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

– COMPLETE –

HYD 1 SOV FAIL (Caution)

(1) SOV required closed for any other non-normal procedure:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) SOV required closed for any other non-normal procedure:

(3) HYD 1 SOV ..... CLSD

– COMPLETE –

(4) SOV not required closed for any other non-normal procedure:

(5) HYD synoptic page ..... Select

HYD 1 SOV FAIL (Caution) (Cont'd)

(6) HYD 1A flow line is green:

→ **Yes –** Go to (7)

→ **No –** Go to (9)

(7) HYD 1A flow line is green:

(8) No further action required.

– COMPLETE –

(9) HYD 1A flow line is white:

(10) HYD 1 SOV ..... CLSD

(11) HYD 1 SOV ..... Select open

(12) Hydraulic system 1 ..... Monitor

– COMPLETE –

HYD 1-2 LO PRESS (Caution)

(1) Plan to land at the nearest suitable airport.

(2) HYD 3B ..... ON

(3) HYD 2B ..... ON

(4) PTU ..... OFF

(5) **HYD 1-2 LO PRESS** caution message goes out:

→ **Yes –** Go to (6)

→ **No –** Go to (10)

(6) HYD 1-2 LO PRESS caution message goes out:

(7) HYD synoptic page ..... Select

(8) Hydraulic pressure and temperature ..... Monitor

HYD 1-2 LO PRESS (Caution) (Cont'd)

(9) Land immediately at the nearest suitable airport.

– COMPLETE –

(10) HYD 1-2 LO PRESS caution message stays on:

(11) Land immediately at the nearest suitable airport.

(12) HYD 1 SOV ..... CLSD

(13) HYD 3A ..... ON

(14) HYD 2 SOV ..... CLSD

(15) HYD 2B ..... OFF

(16) NOSE STEER ..... OFF

NOTE

Select the longest runway with minimal crosswind.

(17) Altitude ..... Not above 33000 feet

CAUTION

Do not land on contaminated runway.

(18) Affected systems ..... Review

Significant systems affected:

- MFS 1, 3 and 4
- Slats/flaps slower than normal
- Ground spoilers
- Landing gear retraction
- Normal landing gear extension

HYD 1-2 LO PRESS (Caution) (Cont'd)

- Nosewheel steering
- Both thrust reversers

NOTE

Minimize control inputs.

On approach:

(19) FMS, PERF – ARR – SLAT/FLAP 4

(20) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ + 10

(21) OLD factor ..... Multiply by 1.85

Go-around considerations: Do not retract gear.

Before landing:

(22) SLAT/FLAP lever 4

(23) Landing gear ..... DN

(24) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

– COMPLETE –

HYD 1-3 LO PRESS (Caution)

(1) Plan to land at the nearest suitable airport.

(2) PTU ..... OFF

(3) HYD 3A ..... ON

(4) HYD 3B ..... ON

(5) HYD 2B ..... ON

HYD 1-3 LO PRESS (Caution) (Cont'd)

(6) **HYD 1-3 LO PRESS** caution message goes out:

- **Yes –** Go to (7)
- **No –** Go to (11)

(7) HYD 1-3 LO PRESS caution message goes out:

(8) HYD synoptic page ..... Select

(9) Hydraulic pressure and temperature ..... Monitor

(10) Land immediately at the nearest suitable airport.

– COMPLETE –

(11) HYD 1-3 LO PRESS caution message stays on:

(12) Land immediately at the nearest suitable airport.

NOTE

Select the longest runway with minimal crosswind.

(13) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed is not required.
2. High alpha protection setting is adjusted to account for the failure.
3. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.

(14) HYD 1 SOV ..... CLSD

(15) HYD 3A ..... OFF

(16) HYD 3B ..... OFF

HYD 1-3 LO PRESS (Caution) (Cont'd)

(17) Altitude ..... Not above 33000 feet

(18) Affected systems ..... Review

Significant systems affected:

- Left elevator
- MFS 1, 2 and 3
- Flaps
- Slats slower than normal
- Ground spoilers
- Landing gear retraction
- Normal landing gear extension
- Left thrust reverser

NOTE

Minimize control inputs.

(19) Check FLAP position:

➔ **FLAP position is 0-1 –** Go to (20)

➔ **FLAP position is 2 –** Go to (29)

➔ **FLAP position is 3, 4 or 5 –** Go to (38)

(20) FLAP position is 0-1:

(21) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

HYD 1-3 LO PRESS (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		HYD 1-3 V_{REF}+41KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	74570 (164400)	72030 (158800)	69530 (153300)	64630 (142500)	59510 (131200)	54830 (120900)
0	32	71660 (158000)	69170 (152500)	63820 (140700)	58690 (129400)	54150 (119400)	49940 (110100)
20	68	68850 (151800)	63500 (140000)	58420 (128800)	53880 (118800)	49660 (109500)	45720 (100800)
30	86	66130 (145800)	60870 (134200)	56060 (123600)	51750 (114100)	47670 (105100)	43810 (96600)
40 AND ABOVE	104 AND ABOVE	63540 (140100)	58460 (128900)	53930 (118900)	49750 (109700)	45760 (100900)	42040 (92700)

CS300_LW_ATA29_HYD13_DVREF41_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 21% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – HYD 1–3 – ΔVREF 41 kt
Figure 04–13–1

HYD 1-3 LO PRESS (Caution) (Cont'd)

On approach:

(22) TAWS, FLAP ..... INHIB

(23) FMS, PERF – ARR – SLAT/FLAP 4

(24) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ +41

(25) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.85	2.20

Go-around considerations: Do not retract gear.

Before landing:

(26) SLAT/FLAP lever 4

(27) Landing gear ..... DN

(28) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

– COMPLETE –

(29) FLAP position is 2:

(30) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

HYD 1-3 LO PRESS (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		HYD 1-3 V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	84050 (185300)	81510 (179700)	78830 (173800)	76200 (168000)	73570 (162200)	70570 (155600)
0	32	81100 (178800)	78510 (173100)	75930 (167400)	73250 (161500)	70660 (155800)	67720 (149300)
20	68	78420 (172900)	75840 (167200)	73250 (161500)	70620 (155700)	68080 (150100)	65090 (143500)
30	86	77150 (170100)	74570 (164400)	71980 (158700)	69390 (153000)	66850 (147400)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	75930 (167400)	73340 (161700)	70800 (156100)	68260 (150500)	65680 (144800)	60910 (134300)

CS300_LW_ATA29_HYD13_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – HYD 1–3 – ΔVREF 15 kt
Figure 04–13–2

HYD 1-3 LO PRESS (Caution) (Cont'd)

On approach:

(31) TAWS, FLAP ..... INHIB

(32) FMS, PERF – ARR – SLAT/FLAP 4

(33) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ +15

(34) OLD factor ..... Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.50	1.80

Go-around considerations: Do not retract gear.

Before landing:

(35) SLAT/FLAP lever 4

(36) Landing gear ..... DN

(37) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

– COMPLETE –

(38) FLAP position is 3, 4 or 5:

On approach:

(39) TAWS, FLAP ..... INHIB

(40) FMS, PERF – ARR – SLAT/FLAP 4

(41) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$ +ΔV_{REF}. Set value from table.

(42) OLD factor ..... Multiply by value from table.

HYD 1-3 LO PRESS (Caution) (Cont'd)

FLAP	$\Delta V_{REF(FLAP\ 4)}$	OLD factor Dry runway	OLD factor Wet runway
3	10	1.40	1.60
4	10	1.45	1.65
5	10	1.55	1.70

Go-around considerations: Do not retract gear.

Before landing:

(43) SLAT/FLAP lever 4

(44) Landing gear ..... DN

(45) ALTN GEAR ..... DN

The landing gear is commanded in the down-and-locked position.

– COMPLETE –

HYD 2 HI TEMP (Caution)

(1) HYD synoptic page ..... Select

(2) HYD 2B ..... OFF

(3) HYD 2 temperature less than 120°C:

➔ **Yes –** Go to (4)

➔ **No –** Go to (6)

(4) HYD 2 temperature less than 120°C:

(5) HYD 2 system temperature ..... Monitor

– COMPLETE –

(6) HYD 2 temperature more than 120°C:

(7) HYD 2 SOV ..... CLSD

HYD 2 HI TEMP (Caution) (Cont'd)

NOTE

The **HYD 2 LO PRESS** caution message appears with this step but does not need to be done separately. The OLD factor in this procedure must be applied and includes the affected systems.

(8) PTU ..... OFF

(9) NOSE STEER ..... OFF

NOTE

Select the longest runway with minimal crosswind.

(10) Land at the nearest suitable airport.

(11) Altitude ..... Not above 37000 feet

(12) Affected systems ..... Review

Significant systems affected:

- MFS 4
- Slats slower than normal
- PTU
- Nosewheel steering
- Right thrust reverser

On approach:

(13) FMS, PERF – ARR – SLAT/FLAP 4

(14) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(15) OLD factor ..... Multiply by value from table.

HYD 2 HI TEMP (Caution) (Cont'd)

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(16) SLAT/FLAP lever 4

– COMPLETE –

HYD 2 LO PRESS (Caution)

(1) **HYD 2 HI TEMP** caution message previously shown:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) HYD 2 HI TEMP caution message previously shown:

(3) No further action required.

– COMPLETE –

(4) HYD 2 HI TEMP caution message not previously shown:

(5) HYD synoptic page ..... Select

(6) HYD 2 fluid quantity indication is more than 5% or is invalid:

➔ **Yes –** Go to (7)

➔ **No –** Go to (23)

(7) HYD 2 fluid quantity indication is more than 5% or is invalid:

(8) HYD 2B ..... ON

(9) **HYD 2 LO PRESS** caution message goes out:

➔ **Yes –** Go to (10)

➔ **No –** Go to (12)

HYD 2 LO PRESS (Caution) (Cont'd)

(10) HYD 2 LO PRESS caution message goes out:

(11) No further action required.

– COMPLETE –

(12) HYD 2 LO PRESS caution message stays on:

(13) HYD 2 SOV ..... CLSD

(14) HYD 2B ..... OFF

(15) PTU ..... OFF

(16) NOSE STEER ..... OFF

NOTE

Select the longest runway with minimal crosswind.

(17) Altitude ..... Not above 37000 feet

NOTE

Drag may be higher than normal. Fuel burn may increase due to extra drag.

(18) Affected systems ..... Review

Significant systems affected:

- MFS 4
- Slats slower than normal
- PTU
- Nosewheel steering
- Right thrust reverser

On approach:

(19) FMS, PERF – ARR – SLAT/FLAP 4

HYD 2 LO PRESS (Caution) (Cont'd)

(20) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(21) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(22) SLAT/FLAP lever 4

– COMPLETE –

(23) HYD 2 fluid quantity indication is less than 5%:

(24) HYD 2 SOV ..... CLSD

(25) HYD 2B ..... OFF

(26) PTU ..... OFF

(27) NOSE STEER ..... OFF

NOTE

Select the longest runway with minimal crosswind.

(28) Altitude ..... Not above 37000 feet

NOTE

Drag may be higher than normal. Fuel burn may increase due to extra drag.

(29) Affected systems ..... Review

Significant systems affected:

- MFS 4
- Slats slower than normal

HYD 2 LO PRESS (Caution) (Cont'd)

- PTU
- Nosewheel steering
- Right thrust reverser

On approach:

(30) FMS, PERF – ARR – SLAT/FLAP 4

(31) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(32) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(33) SLAT/FLAP lever 4

– COMPLETE –

HYD 2 SOV FAIL (Caution)

(1) SOV required closed for any other non-normal procedure:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) SOV required closed for any other non-normal procedure:

(3) HYD 2 SOV ..... CLSD

– COMPLETE –

(4) SOV not required closed for any other non-normal procedure:

(5) HYD synoptic page ..... Select

HYD 2 SOV FAIL (Caution) (Cont'd)

(6) HYD 2A flow line is green:

➔ **Yes –** Go to (7)

➔ **No –** Go to (9)

(7) HYD 2A flow line is green:

(8) No further action required.

– COMPLETE –

(9) HYD 2A flow line is white:

(10) HYD 2 SOV ..... CLSD

(11) HYD 2 SOV ..... Select open

(12) Hydraulic system 2 ..... Monitor

– COMPLETE –

HYD 2-3 LO PRESS (Caution)

CAUTION

Control authority is reduced. Minimize control inputs.

(1) Plan to land at the nearest suitable airport.

(2) PTU ..... OFF

(3) HYD 3A ..... ON

(4) HYD 3B ..... ON

(5) HYD 2B ..... ON

HYD 2-3 LO PRESS (Caution) (Cont'd)

(6) **HYD 2-3 LO PRESS** caution message goes out:

→ **Yes –** Go to (7)

→ **No –** Go to (11)

(7) HYD 2-3 LO PRESS caution message goes out:

(8) HYD synoptic page ..... Select

(9) Hydraulic pressure and temperature ..... Monitor

(10) Land immediately at the nearest suitable airport.

– COMPLETE –

(11) HYD 2-3 LO PRESS caution message stays on:

(12) Land immediately at the nearest suitable airport.

(13) Airspeed ..... Not more than V_{FE}.

NOTE

1. If slat/flap are confirmed 0, reduction of cruise airspeed is not required.
2. High alpha protection setting is adjusted to account for the failure.
3. The recommended airspeed until final approach is V_{FE} – 10 KIAS for the selected SLAT/FLAP lever position.

(14) HYD 3A ..... OFF

(15) HYD 3B ..... OFF

(16) HYD 2 SOV ..... CLSD

(17) HYD 2B ..... OFF

(18) NOSE STEER ..... OFF

HYD 2-3 LO PRESS (Caution) (Cont'd)

NOTE

Select the longest runway with minimal crosswind.

(19) Altitude ..... Not above 33000 feet

(20) Affected systems ..... Review

Significant systems affected:

- Right elevator
- Ailerons
- MFS 2 and 4
- Slats
- Flaps slower than normal
- PTU
- Nosewheel steering
- Right thrust reverser

NOTE

Minimize control inputs.

(21) Check SLAT position:

➔ **SLAT position IN –** Go to (22)

➔ **SLAT position OUT/MID/FULL –** Go to (29)

(22) SLAT position IN:

(23) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

HYD 2-3 LO PRESS (Caution) (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		HYD 2-3 V_{REF}+20KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	82550 (182000)	79960 (176300)	77330 (170500)	74700 (164700)	72070 (158900)	69210 (152600)
0	32	79560 (175400)	76970 (169700)	74380 (164000)	71800 (158300)	69260 (152700)	66360 (146300)
20	68	76880 (169500)	74290 (163800)	71750 (158200)	69170 (152500)	66260 (146100)	61320 (135200)
30	86	75610 (166700)	73020 (161000)	70480 (155400)	67940 (149800)	63820 (140700)	59010 (130100)
40 AND ABOVE	104 AND ABOVE	74380 (164000)	71840 (158400)	69350 (152900)	66450 (146500)	61500 (135600)	56880 (125400)

CS300_LW_ATA29_HYD23_DVREF20_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – HYD 2–3 – ΔVREF 20 kt
Figure 04–13–3

HYD 2-3 LO PRESS (Caution) (Cont'd)

On approach:

(24) Rudder trim .....Set ½ a triangle width of RIGHT trim

NOTE

The triangle refers to the inverted triangular rudder trim pointer.

(25) FMS, PERF – ARR – SLAT/FLAP 4

(26) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ +20

(27) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.45	1.55

Before landing:

(28) SLAT/FLAP lever 4

– COMPLETE –

(29) SLAT position OUT/MID/FULL:

On approach:

(30) Rudder trim .....Set ½ a triangle width of RIGHT trim

NOTE

The triangle refers to the inverted triangular rudder trim pointer.

(31) FMS, PERF – ARR – SLAT/FLAP 4

(32) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$ +10

HYD 2-3 LO PRESS (Caution) (Cont'd)

(33) OLD factor .....Multiply by value from table.

OLD factor Dry runway	OLD factor Wet runway
1.30	1.35

Before landing:

(34) SLAT/FLAP lever 4

– COMPLETE –

HYD 3 HI TEMP (Caution)

(1) HYD synoptic page ..... Select

(2) HYD 3B ..... AUTO

(3) HYD 3A ..... OFF

(4) HYD 3 temperature less than 120°C:

➔ **Yes –** Go to (5)

➔ **No –** Go to (7)

(5) HYD 3 temperature less than 120°C:

(6) HYD 3 system temperature ..... Monitor

– COMPLETE –

(7) HYD 3 temperature more than 120°C:

(8) HYD 3B ..... OFF

HYD 3 HI TEMP (Caution) (Cont'd)

NOTE

The **HYD 3 LO PRESS** caution message appears with this step but does not need to be done separately. The OLD factor in this procedure must be applied and includes the affected systems.

(9) Land at the nearest suitable airport.

(10) Altitude ..... Not above 37000 feet

(11) Affected systems ..... Review

Significant systems affected:

- MFS 2
- Slats/flaps slower than normal

On approach:

(12) FMS, PERF – ARR – SLAT/FLAP 4

(13) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(14) OLD factor ..... Multiply by 1.15

Before landing:

(15) SLAT/FLAP lever 4

– COMPLETE –

HYD 3 LO PRESS (Caution)

(1) **HYD 3 HI TEMP** caution message previously shown:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

HYD 3 LO PRESS (Caution) (Cont'd)

(2) HYD 3 HI TEMP caution message previously shown:

(3) No further action required.

– COMPLETE –

(4) HYD 3 HI TEMP caution message not previously shown:

(5) AC BUS 2 caution message is also shown:

➔ **Yes –** Go to (6)

➔ **No –** Go to (15)

(6) AC BUS 2 caution message is also shown:

(7) HYD 3A ..... OFF

(8) HYD 3B ..... OFF

(9) Altitude ..... Not above 37000 feet

NOTE

Drag may be higher than normal. Fuel burn may increase due to extra drag.

(10) Affected systems ..... Review

Significant systems affected:

- MFS 2
- Slats/flaps slower than normal

On approach:

(11) FMS, PERF – ARR – SLAT/FLAP 4

(12) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(13) OLD factor ..... Multiply by 1.15

HYD 3 LO PRESS (Caution) (Cont'd)

Before landing:

(14) SLAT/FLAP lever 4

– COMPLETE –

(15) AC BUS 2 caution message is not shown:

(16) HYD synoptic page ..... Select

(17) HYD 3 fluid quantity indication is more than 5% or is invalid:

- **Yes –** Go to (18)
- **No –** Go to (33)

(18) HYD 3 fluid quantity indication is more than 5% or is invalid:

(19) HYD 3A ..... ON

(20) HYD 3B ..... ON

(21) **HYD 3 LO PRESS** caution message goes out:

- **Yes –** Go to (22)
- **No –** Go to (24)

(22) HYD 3 LO PRESS caution message goes out:

(23) No further action required.

– COMPLETE –

(24) HYD 3 LO PRESS caution message stays on:

(25) HYD 3A ..... OFF

(26) HYD 3B ..... OFF

(27) Altitude ..... Not above 37000 feet

HYD 3 LO PRESS (Caution) (Cont'd)

NOTE

Drag may be higher than normal. Fuel burn may increase due to extra drag.

(28) Affected systems .....Review

Significant systems affected:

- MFS 2
- Slats/flaps slower than normal

On approach:

(29) FMS, PERF – ARR – SLAT/FLAP 4

(30) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$

(31) OLD factor ..... Multiply by 1.15

Before landing:

(32) SLAT/FLAP lever 4

– COMPLETE –

(33) HYD 3 fluid quantity indication is less than 5%:

(34) HYD 3A ..... OFF

(35) HYD 3B ..... OFF

(36) Altitude .....Not above 37000 feet

NOTE

Drag may be higher than normal. Fuel burn may increase due to extra drag.

HYD 3 LO PRESS (Caution) (Cont'd)

(37) Affected systems .....Review

Significant systems affected:

- MFS 2
- Slats/flaps slower than normal

On approach:

(38) FMS, PERF – ARR – SLAT/FLAP 4

(39) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$

(40) OLD factor ..... Multiply by 1.15

Before landing:

(41) SLAT/FLAP lever 4

– COMPLETE –

HYD EDP 1A FAIL (Caution)

Description: Hydraulic 1 low pressure and the left SOV is not closed.

(1) HYD synoptic page ..... Select

(2) PTU ..... OFF

(3) System pressure stays normal:

➔ **Yes –** Go to (4)

➔ **No –** Go to (6)

(4) System pressure stays normal:

Confirms HYD EDP 1A is operating and the pressure switch has failed.

(5) PTU ..... AUTO

– COMPLETE –

HYD EDP 1A FAIL (Caution) (Cont'd)

(6) System pressure does not stay normal:

Confirms HYD EDP 1A has failed.

(7) PTU ..... ON

(8) HYD 1 SOV ..... CLSD

(9) Hydraulic system 1 ..... Monitor

On approach:

(10) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

On landing:

(11) Do not use left thrust reverser.

– COMPLETE –

HYD EDP 2A FAIL (Caution)

Description: Hydraulic 2 low pressure and the right SOV is not closed.

(1) HYD synoptic page ..... Select

(2) HYD 2B ..... OFF

(3) System pressure stays normal:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) System pressure stays normal:

Confirms HYD EDP 2A is operating and the pressure switch has failed.

HYD EDP 2A FAIL (Caution) (Cont'd)

(5) HYD 2B ..... AUTO

– COMPLETE –

(6) System pressure does not stay normal:

Confirms HYD EDP 2A has failed.

(7) HYD 2B ..... ON

(8) HYD 2 SOV ..... CLSD

(9) Hydraulic system 2 ..... Monitor

On approach:

(10) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

On landing:

(11) Do not use right thrust reverser.

– COMPLETE –

HYD PTU FAIL (Caution)

(1) PTU ..... OFF

– COMPLETE –

<Mod 291002> or <Post-SB BD500-291002>

HYD PUMP 2B FAIL (Caution)

(1) HYD 2B ..... ON

HYD PUMP 2B FAIL (Caution) (Cont'd)

(2) **HYD PUMP 2B FAIL** caution message goes out:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) HYD PUMP 2B FAIL caution message goes out:

(4) No further action required.

– COMPLETE –

(5) HYD PUMP 2B FAIL caution message stays on:

(6) HYD 2B ..... OFF

– COMPLETE –

HYD PUMP 3A FAIL (Caution)

(1) HYD 3A ..... OFF

– COMPLETE –

<Mod 291002> or <Post-SB BD500-291002>

HYD PUMP 3B FAIL (Caution)

(1) HYD 3B ..... ON

(2) **HYD PUMP 3B FAIL** caution message goes out:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) HYD PUMP 3B FAIL caution message goes out:

(4) No further action required.

– COMPLETE –

HYD PUMP 3B FAIL (Caution) (Cont'd)

(5) HYD PUMP 3B FAIL caution message stays on:

(6) HYD 3B ..... OFF

– COMPLETE –

HYD RAT PUMP FAIL (Caution)

(1) Land immediately at the nearest suitable airport.

(2) APU (if available) .....START

(3) HYD 3A ..... ON

(4) HYD 3B ..... ON

(5) HYD 2B ..... ON

(6) HYD synoptic page ..... Select

(7) Hydraulic systems ..... Monitor

– COMPLETE –

ICE AND RAIN PROTECTION

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L WING A/ICE FAIL (Warning)

(1) In flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (15)

(2) In flight:

(3) ANTI-ICE, WING ..... OFF

(4) Leave/avoid icing conditions.

(5) **L WING A/ICE FAIL** warning message goes out:

➔ **Yes –** Go to (6)

➔ **No –** Go to (8)

(6) L WING A/ICE FAIL warning message goes out:

(7) No further action required.

– COMPLETE –

(8) L WING A/ICE FAIL warning message stays on:

(9) APU BLEED ..... OFF

(10) L BLEED ..... OFF

(11) XBLEED ..... MAN CLSD

(12) L PACK ..... OFF

(13) Altitude ..... Not above 31000 feet

(14) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(15) On ground:

(16) ANTI-ICE, WING ..... OFF

(17) APU BLEED ..... OFF

L WING A/ICE FAIL (Warning) (Cont'd)

(18) L BLEED ..... OFF

(19) XBLEED ..... MAN CLSD

(20) L PACK ..... OFF

– COMPLETE –

R WING A/ICE FAIL (Warning)

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (14)

(2) In flight:

(3) ANTI-ICE, WING ..... OFF

(4) Leave/avoid icing conditions.

(5) **R WING A/ICE FAIL** warning message goes out:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) R WING A/ICE FAIL warning message goes out:

(7) No further action required.

– COMPLETE –

(8) R WING A/ICE FAIL warning message stays on:

(9) R BLEED ..... OFF

(10) XBLEED ..... MAN CLSD

(11) R PACK ..... OFF

(12) Altitude ..... Not above 31000 feet

R WING A/ICE FAIL (Warning) (Cont'd)

(13) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(14) On ground:

(15) ANTI-ICE, WING ..... OFF

(16) R BLEED ..... OFF

(17) XBLEED ..... MAN CLSD

(18) R PACK ..... OFF

– COMPLETE –

COWL A/ICE ON (Caution)

Description: Left or right cowl anti-ice manually selected on above 15°C OAT.

(1) ANTI-ICE, L COWL ..... AUTO

(2) ANTI-ICE, R COWL ..... AUTO

– COMPLETE –

ICE (Caution)

(1) ANTI-ICE, L COWL ..... ON

(2) ANTI-ICE, R COWL ..... ON

(3) Below 35000 feet (both bleeds available) or 31000 feet (single bleed):

- **Yes –** Go to (4)
- **No –** Go to (12)

ICE (Caution) (Cont'd)

(4) Below 35000 feet (both bleeds available) or 31000 feet (single bleed):

(5) ANTI-ICE, WING ..... ON

(6) ICE caution message goes out:

- **Yes –** Go to (7)
- **No –** Go to (9)

(7) ICE caution message goes out:

(8) Anti-ice system ..... As required

– COMPLETE –

(9) ICE caution message stays on:

(10) Leave/avoid icing conditions.

(11) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(12) Above 35000 feet (both bleeds available) or 31000 feet (single bleed):

(13) ANTI-ICE, WING ..... OFF

(14) Leave/avoid icing conditions or descend below 35000 feet (or 31000 feet for single bleed) to select ANTI-ICE, WING to ON.

(15) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L COWL A/ICE FAIL (Caution)

(1) ANTI-ICE, L COWL ..... OFF

(2) Leave/avoid icing conditions.

– COMPLETE –

L COWL A/ICE FAIL ON (Caution)

(1) ANTI-ICE, L COWL ..... OFF, if not required.

(2) Leave/avoid icing conditions.

– COMPLETE –

L ICE DET FAIL (Caution)

NOTE

Wing and cowl anti-ice automatic function may not be available.

(1) Anti-ice system .....Operate manually in icing conditions.

– COMPLETE –

L SIDE WDW HEAT FAIL (Caution)

(1) WINDOW HEAT, L SIDE ..... OFF

(2) WINDOW HEAT, L SIDE ..... Select auto

(3) **L SIDE WDW HEAT FAIL** caution message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

L SIDE WDW HEAT FAIL (Caution) (Cont'd)

(4) L SIDE WDW HEAT FAIL caution message goes out:

(5) No further action required.

– COMPLETE –

(6) L SIDE WDW HEAT FAIL caution message stays on:

(7) WINDOW HEAT, L SIDE ..... OFF

– COMPLETE –

L WING A/ICE LO HEAT (Caution)

(1) Engine thrust .....Increase, as required.

(2) L WING A/ICE LO HEAT caution message goes out:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) L WING A/ICE LO HEAT caution message goes out:

(4) No further action required.

– COMPLETE –

(5) L WING A/ICE LO HEAT caution message stays on:

(6) Leave/avoid icing conditions.

(7) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L WING A/ICE OVHT (Caution)

(1) L BLEED auto:

➔ **Yes –** Go to (2)

➔ **No –** Go to (20)

(2) L BLEED auto:

(3) L BLEED ..... OFF

(4) **L WING A/ICE OVHT** caution message goes out:

➔ **Yes –** Go to (5)

➔ **No –** Go to (15)

(5) L WING A/ICE OVHT caution message goes out:

(6) Altitude ..... Not above 31000 feet

(7) All engines operating landing in icing conditions expected:

➔ **Yes –** Go to (8)

➔ **No –** Go to (13)

(8) All engines operating landing in icing conditions expected:

On approach:

(9) FMS, PERF – ARR – SLAT/FLAP 5

(10) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 10

(11) OLD factor ..... Multiply by 1.50

Before landing:

(12) SLAT/FLAP lever 5

– COMPLETE –

(13) All engines operating landing in icing conditions not expected:

(14) No further action required.

– COMPLETE –

L WING A/ICE OVHT (Caution) (Cont'd)

(15) L WING A/ICE OVHT caution message stays on:

(16) ANTI-ICE, WING ..... OFF

(17) Leave/avoid icing conditions.

(18) L BLEED ..... Select auto

(19) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(20) L BLEED OFF:

(21) ANTI-ICE, WING ..... OFF

(22) Leave/avoid icing conditions.

(23) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

L WSHLD HEAT FAIL (Caution)

(1) L WSHLD ..... OFF

(2) L WSHLD ..... Select auto

(3) L WSHLD HEAT FAIL caution message goes out:

➔ **Yes –** Go to (4)

➔ **No –** Go to (6)

(4) L WSHLD HEAT FAIL caution message goes out:

(5) No further action required.

– COMPLETE –

L WSHLD HEAT FAIL (Caution) (Cont'd)

(6) L WSHLD HEAT FAIL caution message stays on:

(7) L WSHLD ..... OFF

(8) Leave/avoid icing conditions.

– COMPLETE –

R COWL A/ICE FAIL (Caution)

(1) ANTI-ICE, R COWL ..... OFF

(2) Leave/avoid icing conditions.

– COMPLETE –

R COWL A/ICE FAIL ON (Caution)

(1) ANTI-ICE, R COWL ..... OFF, if not required.

(2) Leave/avoid icing conditions.

– COMPLETE –

R ICE DET FAIL (Caution)

NOTE

Wing and cowl anti-ice automatic function may not be available.

(1) Anti-ice system ..... Operate manually in icing conditions.

– COMPLETE –

R SIDE WDW HEAT FAIL (Caution)

(1) WINDOW HEAT, R SIDE ..... OFF

(2) WINDOW HEAT, R SIDE ..... Select auto

(3) **R SIDE WDW HEAT FAIL** caution message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) R SIDE WDW HEAT FAIL caution message goes out:

(5) No further action required.

– COMPLETE –

(6) R SIDE WDW HEAT FAIL caution message stays on:

(7) WINDOW HEAT, R SIDE ..... OFF

– COMPLETE –

R WING A/ICE LO HEAT (Caution)

(1) Engine thrust .....Increase, as required.

(2) **R WING A/ICE LO HEAT** caution message goes out:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) R WING A/ICE LO HEAT caution message goes out:

(4) No further action required.

– COMPLETE –

(5) R WING A/ICE LO HEAT caution message stays on:

(6) Leave/avoid icing conditions.

R WING A/ICE LO HEAT (Caution) (Cont'd)

(7) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

R WING A/ICE OVHT (Caution)

(1) R BLEED auto:

- **Yes –** Go to (2)
- **No –** Go to (20)

(2) R BLEED auto:

(3) R BLEED ..... OFF

(4) **R WING A/ICE OVHT** caution message goes out:

- **Yes –** Go to (5)
- **No –** Go to (15)

(5) R WING A/ICE OVHT caution message goes out:

(6) Altitude ..... Not above 31000 feet

(7) All engines operating landing in icing conditions expected:

- **Yes –** Go to (8)
- **No –** Go to (13)

(8) All engines operating landing in icing conditions expected:

On approach:

(9) FMS, PERF – ARR – SLAT/FLAP 5

(10) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 5)}$ + 10

(11) OLD factor ..... Multiply by 1.50

R WING A/ICE OVHT (Caution) (Cont'd)

Before landing:

(12) SLAT/FLAP lever 5

– COMPLETE –

(13) All engines operating landing in icing conditions not expected:

(14) No further action required.

– COMPLETE –

(15) R WING A/ICE OVHT caution message stays on:

(16) ANTI-ICE, WING ..... OFF

(17) Leave/avoid icing conditions.

(18) R BLEED ..... Select auto

(19) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(20) R BLEED OFF:

(21) ANTI-ICE, WING ..... OFF

(22) Leave/avoid icing conditions.

(23) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

R WSHLD HEAT FAIL (Caution)

(1) R WSHLD ..... OFF

(2) R WSHLD ..... Select auto

R WSHLD HEAT FAIL (Caution) (Cont'd)

(3) **R WSHLD HEAT FAIL** caution message goes out:

→ **Yes –** Go to (4)

→ **No –** Go to (6)

(4) R WSHLD HEAT FAIL caution message goes out:

(5) No further action required.

– COMPLETE –

(6) R WSHLD HEAT FAIL caution message stays on:

(7) R WSHLD ..... OFF

(8) Leave/avoid icing conditions.

– COMPLETE –

WING A/ICE FAIL (Caution)

(1) ANTI-ICE, WING ..... OFF

(2) Leave/avoid icing conditions.

(3) **WING A/ICE FAIL** caution message goes out:

→ **Yes –** Go to (4)

→ **No –** Go to (6)

(4) WING A/ICE FAIL caution message goes out:

(5) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(6) WING A/ICE FAIL caution message stays on:

(7) AIR synoptic page ..... Select

WING A/ICE FAIL (Caution) (Cont'd)

(8) Identify failed L WAIV or R WAIV (amber and open):

- **L WAIV –** Go to (9)
- **R WAIV –** Go to (16)
- **No valve is amber –** Go to (22)

(9) L WAIV failed:

(10) APU BLEED ..... OFF

(11) L BLEED ..... OFF

(12) XBLEED ..... MAN CLSD

(13) L PACK ..... OFF

(14) Altitude ..... Not above 31000 feet

(15) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(16) R WAIV failed:

(17) R BLEED ..... OFF

(18) XBLEED ..... MAN CLSD

(19) R PACK ..... OFF

(20) Altitude ..... Not above 31000 feet

(21) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

(22) No valve is amber:

(23) L BLEED ..... OFF

WING A/ICE FAIL (Caution) (Cont'd)

(24) R BLEED ..... OFF

(25) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(26) RAM AIR ..... OPEN

(27) RECIRC AIR ..... OFF

(28) EMER DEPRESS ..... ON

(29) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

WING A/ICE MISCONFIG (Caution)

(1) L BLEED and/or R BLEED ..... If available, select auto.

Only one bleed is available:

(2) Altitude ..... Not above 31000 feet

(3) **WING A/ICE MISCONFIG** caution message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) WING A/ICE MISCONFIG caution message goes out:

(5) No further action required.

– COMPLETE –

(6) WING A/ICE MISCONFIG caution message stays on:

(7) Leave/avoid icing conditions.

WING A/ICE MISCONFIG (Caution) (Cont'd)

(8) Ice dispersal procedure ..... Accomplish, if required. Refer to Ice and rain protection – Ice dispersal procedure.

– COMPLETE –

WING A/ICE ON (Caution)

(1) ANTI-ICE, WING ..... AUTO or OFF

– COMPLETE –

Arcing, delaminated, shattered, or cracked window or windshield

(1) Affected WSHLD or WINDOW HEAT ..... OFF

(2) AUTO PRESS ..... MAN

(3) MAN RATE ..... UP, to achieve differential pressure (ΔP) of 7.2 psid or less

(4) Crew and passenger oxygen .....On, if required

(5) Descent .....Initiate, if required

(6) Windshield core ply or inboard ply is shattered:

➔ **Yes –** Go to (7)

➔ **No –** Go to (11)

(7) Windshield core ply or inboard ply is shattered:

When operating below 8000 feet:

(8) Airspeed ..... Reduce to minimum practical.

(9) Cabin altitude ..... Set to destination airport elevation.

Arcing, delaminated, shattered, or cracked window or windshield (Cont'd)

(10) Land at the nearest suitable airport.

– COMPLETE –

(11) Windshield core ply or inboard ply is not shattered:

When operating below 8000 feet:

(12) Airspeed ..... Reduce to minimum practical.

– COMPLETE –

Ice dispersal procedure

(1) Airspeed ..... Increase to V_{MO}/M_{MO}, if possible.

(2) Ice remains on wing leading edge:

- **Yes –** Go to (3)
- **No –** Go to (8)

(3) Ice remains on wing leading edge:

(4) Maneuvering speed ..... Not less than 200 KIAS

On approach:

(5) FMS, PERF – ARR – VREF ..... V_{REF} + 10

(6) OLD factor ..... Multiply by 1.30

Before landing:

(7) Do not prolong the flare.

– COMPLETE –

(8) Ice does not remain on wing leading edge:

(9) No further action required.

– COMPLETE –

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INSTRUMENTS SYSTEM

ADS 1 PROBE HEAT FAIL (Caution)

(1) **ADS 2 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (4)

(2) ADS 2 FAIL advisory message is also shown:

(3) Reversion panel, L PFD ..... Select ADS until ADS 3 is shown.

NOTE

1. L PFD and ISI have the same ADS source.
2. Airspeed and altitude data from ADS 1 are unreliable in icing conditions.

– COMPLETE –

(4) ADS 2 FAIL advisory message is not shown:

(5) Reversion panel, L PFD ..... Select ADS until ADS 4 is shown.

(6) XFR ..... Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 2 may be degraded in sideslip.
4. Airspeed and altitude data from ADS 1 are unreliable in icing conditions.
5. Touch and go procedures are prohibited.

– COMPLETE –

ADS 1 SLIPCOMP FAIL (Caution)

(1) **ADS 2 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (4)

(2) ADS 2 FAIL advisory message is also shown:

(3) XFR ..... Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 1 are degraded in sideslip.
4. Touch and go procedures are prohibited.

– COMPLETE –

(4) ADS 2 FAIL advisory message is not shown:

(5) Reversion panel, L PFD ..... Select ADS until ADS 4 is shown.

NOTE

Airspeed and altitude data from ADS 1 are degraded in sideslip.

– COMPLETE –

ADS 2 PROBE HEAT FAIL (Caution)

(1) **ADS 1 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (4)

(2) ADS 1 FAIL advisory message is also shown:

(3) Reversion panel, R PFD ..... Select ADS until ADS 3 is shown.

NOTE

1. R PFD and ISI have the same ADS source.
2. Airspeed and altitude data from ADS 2 are unreliable in icing conditions.

– COMPLETE –

(4) ADS 1 FAIL advisory message is not shown:

(5) Reversion panel, R PFD ..... Select ADS until ADS 4 is shown.

(6) XFR .....Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 1 may be degraded in sideslip.
4. Airspeed and altitude data from ADS 2 are unreliable in icing conditions.
5. Touch and go procedures are prohibited.

– COMPLETE –

ADS 2 SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (4)

(2) ADS 1 FAIL advisory message is also shown:

(3) XFR ..... Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 2 are degraded in sideslip.
4. Touch and go procedures are prohibited.

– COMPLETE –

(4) ADS 1 FAIL advisory message is not shown:

(5) Reversion panel, R PFD ..... Select ADS until ADS 4 is shown.

NOTE

Airspeed and altitude data from ADS 2 are degraded in sideslip.

– COMPLETE –

ADS 3 FAIL (Caution)

(1) Reversion panel, ISI ..... Select ADS until ADSREV is shown vertically.

– COMPLETE –

ADS 3 PROBE HEAT FAIL (Caution)

(1) Reversion panel, ISI ..... Select ADS until ADSREV is shown vertically.

(2) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

- **Yes –** Go to (3)
- **No –** Go to (9)

(3) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

(4) Confirm which EICAS message is also shown:

- **ADS 1 FAIL advisory message –** Go to (5)
- **ADS 2 FAIL advisory message –** Go to (7)

(5) ADS 1 FAIL advisory message is also shown:

(6) XFR ..... Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. L PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 4 are degraded in sideslip.
5. Airspeed and altitude data from ADS 3 are unreliable in icing conditions.
6. Touch and go procedures are prohibited.

– COMPLETE –

(7) ADS 2 FAIL advisory message is also shown:

(8) XFR ..... Select to left side.

ADS 3 PROBE HEAT FAIL (Caution) (Cont'd)

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. R PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 4 are degraded in sideslip.
5. Airspeed and altitude data from ADS 3 are unreliable in icing conditions.
6. Touch and go procedures are prohibited.

– COMPLETE –

(9) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

NOTE

1. Airspeed and altitude data from ADS 3 are unreliable in icing conditions.
2. Airspeed and altitude data from ADS 4 are degraded in sideslip.

– COMPLETE –

ADS 3 SLIPCOMP FAIL (Caution)

(1) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (3)

ADS 3 SLIPCOMP FAIL (Caution) (Cont'd)

(2) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

NOTE

Airspeed and altitude data on ISI and from ADS 3 are degraded in sideslip.

– COMPLETE –

(3) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

(4) Reversion panel, ISI ..... Select ADS until ADSREV is shown vertically.

NOTE

Airspeed and altitude data from ADS 3 are degraded in sideslip.

– COMPLETE –

ADS 4 PROBE HEAT FAIL (Caution)

(1) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (10)

(2) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

(3) Confirm which EICAS message is also shown:

→ **ADS 1 FAIL advisory message –** Go to (4)

→ **ADS 2 FAIL advisory message –** Go to (7)

(4) ADS 1 FAIL advisory message is also shown:

(5) Reversion panel, L PFD ..... Select ADS until ADS 3 is shown.

ADS 4 PROBE HEAT FAIL (Caution) (Cont'd)

(6) XFR ..... Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. L PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 3 are degraded in sideslip.
5. Airspeed and altitude data from ADS 4 are unreliable in icing conditions.
6. Touch and go procedures are prohibited.

– COMPLETE –

(7) ADS 2 FAIL advisory message is also shown:

(8) Reversion panel, R PFD ..... Select ADS until ADS 3 is shown.

(9) XFR ..... Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. R PFD and ISI have the same ADS source.
4. Airspeed and altitude data from ADS 3 are degraded in sideslip.
5. Airspeed and altitude data from ADS 4 are unreliable in icing conditions.

ADS 4 PROBE HEAT FAIL (Caution) (Cont'd)

6. Touch and go procedures are prohibited.

– COMPLETE –

(10) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

NOTE

1. Airspeed and altitude data from ADS 4 are unreliable in icing conditions.
2. Airspeed and altitude data from ADS 3 are degraded in sideslip.

– COMPLETE –

ADS 4 SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (8)

(2) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

(3) Confirm which EICAS message is also shown:

→ **ADS 1 FAIL advisory message –** Go to (4)

→ **ADS 2 FAIL advisory message –** Go to (6)

(4) ADS 1 FAIL advisory message is also shown:

(5) XFR .....Select to right side.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.

ADS 4 SLIPCOMP FAIL (Caution) (Cont'd)

2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 4 are degraded in sideslip.
4. Touch and go procedures are prohibited.

– COMPLETE –

(6) ADS 2 FAIL advisory message is also shown:

(7) XFR ..... Select to left side.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data from ADS 4 are degraded in sideslip.
4. Touch and go procedures are prohibited.

– COMPLETE –

(8) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

NOTE

Airspeed and altitude data from ADS 4 are degraded in sideslip.

– COMPLETE –

ADS ISI PROBE HEAT (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (10)

(2) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

(3) Confirm which EICAS message is also shown:

→ **ADS 1 FAIL advisory message –** Go to (4)

→ **ADS 2 FAIL advisory message –** Go to (7)

(4) ADS 1 FAIL advisory message is also shown:

(5) Reversion panel, L PFD ..... Select ADS until ADS 2 is shown.

(6) Land at the nearest suitable airport.

NOTE

1. L PFD and R PFD have the same ADS source.
2. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are unreliable in icing conditions and degraded in sideslip.
3. The **FLT CTRL DIRECT ADS** caution message may be shown.

– COMPLETE –

(7) ADS 2 FAIL advisory message is also shown:

(8) Reversion panel, R PFD ..... Select ADS until ADS 1 is shown.

(9) Land at the nearest suitable airport.

ADS ISI PROBE HEAT (Caution) (Cont'd)

NOTE

1. L PFD and R PFD have the same ADS source.
2. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are unreliable in icing conditions and degraded in sideslip.
3. The **FLT CTRL DIRECT ADS** caution message may be shown.

– COMPLETE –

(10) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

NOTE

Airspeed and altitude data on the ISI and from ADS 3 and ADS 4 are unreliable in icing conditions.

– COMPLETE –

ADS ISI SLIPCOMP FAIL (Caution)

(1) **ADS 1 FAIL** or **ADS 2 FAIL** advisory message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (10)

(2) ADS 1 FAIL or ADS 2 FAIL advisory message is also shown:

(3) Confirm which EICAS message is also shown:

→ **ADS 1 FAIL advisory message –** Go to (4)

→ **ADS 2 FAIL advisory message –** Go to (7)

(4) ADS 1 FAIL advisory message is also shown:

(5) XFR .....Select to right side.

ADS ISI SLIPCOMP FAIL (Caution) (Cont'd)

(6) Land at the nearest suitable airport.

NOTE

1. Use R PFD (or R HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are degraded in sideslip.

– COMPLETE –

(7) ADS 2 FAIL advisory message is also shown:

(8) XFR ..... Select to left side.

(9) Land at the nearest suitable airport.

NOTE

1. Use L PFD (or L HUD, if installed) for approach.
2. Minimize crosswind for approach.
3. Airspeed and altitude data on ISI and from ADS 3 and ADS 4 are degraded in sideslip.

– COMPLETE –

(10) ADS 1 FAIL and ADS 2 FAIL advisory message are not shown:

NOTE

Airspeed and altitude data from ADS 3 and ADS 4 are degraded in sideslip.

– COMPLETE –

ADS-B OUT FAIL (Caution)

Description: Automatic Dependent Surveillance Broadcast (ADS-B) not capable of reporting its position due to failure of both GNSS.

(1) ATC .....Advise

– COMPLETE –

ADS-B 1 OUT FAIL (Caution)

(1) Other transponder ..... Select

– COMPLETE –

ADS-B 2 OUT FAIL (Caution)

(1) Other transponder ..... Select

– COMPLETE –

DMC 1 FAIL (Caution)

(1) CTP, XPDR/TCAS ..... Select XPDR 2

(2) FD ..... Couple to right side.

(3) ACP, SAT (if installed) ..... Select on

For incoming calls, the flight crew is notified when the CALL light comes on and a ring tone is heard in the headset only.

(4) Anti-ice system .....Operate manually in icing conditions.

(5) Affected systems .....Review

Significant systems affected:

- Hydraulic 1 quantity indication
- MKP 1 (CAS and arrow keys available)

DMC 1 FAIL (Caution) (Cont'd)

- AFCS 1
- ADF 1
- COM 1
- DME 1
- GNSS 1
- HF 1
- NAV 1
- RAD ALT 1
- TAWS
- XPDR 1
- L CTP – WX control
- L HUD (if installed)

– COMPLETE –

DMC 2 FAIL (Caution)

(1) CTP, XPDR/TCAS ..... Select XPDR 1

(2) FD .....Couple to left side.

(3) Anti-ice system .....Operate manually in icing conditions

(4) Affected systems .....Review

Significant systems affected:

DMC 2 FAIL (Caution) (Cont'd)

- Hydraulic 2 and 3 quantity indication
- AFCS 2
- ADF 2
- COM 2
- DME 2
- GNSS 2
- HF 2
- MKP 2 (CAS and arrow keys available)
- NAV 2 and 3
- RAD ALT 2
- XPDR 2
- R CTP – WX control
- R HUD (if installed)
- Crew oxygen pressure indication

– COMPLETE –

DUAL ADS FAIL (Caution)

NOTE

The FPV red flag is shown on one of the PFD in the cases of ADS 3 and ADS 4 failure or ADS 1 and ADS 2 failure.

(1) Land at the nearest suitable airport.

(2) L and R PFD show ADS source data indication in amber:

➔ **Yes –** Go to (3)

➔ **No –** Go to (10)

(3) L and R PFD show ADS source data indication in amber:

(4) Reversion panel, L or R PFD ..... Select ADS until ADS source data indication is not amber on both PFDs.

DUAL ADS FAIL (Caution) (Cont'd)

(5) Airspeed and altitude are shown on ISI:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) Airspeed and altitude are shown on ISI:

(7) No further action required.

– COMPLETE –

(8) Airspeed and altitude are not shown on ISI:

NOTE

If ADS 3 and ADS 4 are failed, the ISI will not show airspeed and altitude.

(9) Reversion panel, ISI .....Select ADS until ISI shows airspeed and altitude.

– COMPLETE –

(10) L and R PFD show ADS source data indication not in amber:

(11) Airspeed and altitude are shown on ISI:

- **Yes –** Go to (12)
- **No –** Go to (14)

(12) Airspeed and altitude are shown on ISI:

(13) Review ADS sources shown.

NOTE

1. ISI ADS source is ADS 3 if ADSREV is not shown.
2. ISI ADS source is ADS 4 if ADSREV is shown.

– COMPLETE –

DUAL ADS FAIL (Caution) (Cont'd)

(14) Airspeed and altitude are not shown on ISI:

(15) Reversion panel, ISI ..... Select ADS until ISI shows airspeed and altitude.

NOTE

If ADS 3 and ADS 4 are failed, the ISI will not show airspeed and altitude.

– COMPLETE –

EFIS COMPARATOR FAIL (Caution)

(1) Flight instruments ..... Monitor

(2) ISI ..... If available, cross-check

– COMPLETE –

EFIS MISCOMPARE (Caution)

(1) IAS and/or ALT amber flag(s) shown:

- **Yes –** Go to (2)
- **No –** Go to (5)

(2) IAS and/or ALT amber flag(s) shown:

(3) Flight instruments ..... Cross-check

(4) Reversion panel, L or R PFD ..... Select ADS as required until flag(s) removed.

– COMPLETE –

EFIS MISCOMPARE (Caution) (Cont'd)

(5) IAS and/or ALT amber flag(s) not shown:

(6) ROL or PIT or ATT or HDG amber flag(s) shown:

- **Yes –** Go to (7)
- **No –** Go to (10)

(7) ROL or PIT or ATT or HDG amber flag(s) shown:

(8) Flight instruments ..... Cross-check

(9) Reversion panel, L or R PFD .....Select IRS as required until flag(s) removed.

– COMPLETE –

(10) ROL or PIT or ATT or HDG amber flag(s) not shown:

(11) RAD amber flag shown:

- **Yes –** Go to (12)
- **No –** Go to (13)

(12) RAD amber flag shown:

NOTE

Altitude call-outs may be degraded.

– COMPLETE –

(13) RAD amber flag not shown:

(14) FPV amber flag shown:

- **Yes –** Go to (15)
- **No –** Go to (17)

(15) FPV amber flag shown:

(16) Flight instruments ..... Cross-check

EFIS MISCOMPARE (Caution) (Cont'd)

NOTE

FPV from one or both PFD may be degraded.

– COMPLETE –

(17) FPV amber flag not shown:

(18) VSPD amber flag shown:

- **Yes –** Go to (19)
- **No –** Go to (21)

(19) VSPD amber flag shown:

(20) FMS, PERF – DEP/ARR ..... SET VSPEEDS

– COMPLETE –

(21) VSPD amber flag not shown:

(22) FMS or VNAV amber flag shown:

- **Yes –** Go to (23)
- **No –** Go to (25)

(23) FMS or VNAV amber flag shown:

(24) Select a different type of approach, if required.

– COMPLETE –

(25) Approach Status Annunciation (ASA) field in amber box:

(26) No further action required.

– COMPLETE –

ENG DSPL MISCOMPARE (Caution)

(1) Reversion panel, DISPLAY .....SWAP

ENG DSPL MISCOMPARE (Caution) (Cont'd)

(2) Engine instruments ..... Monitor

– COMPLETE –

IPC 1 FAIL (Caution)

(1) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(2) **FMS 2 FAIL** or **IPC 2 FAIL** caution message is also shown:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) FMS 2 FAIL or IPC 2 FAIL caution message is also shown:

(4) Dual FMS failure procedure ..... Accomplish. Refer to Navigation – Dual FMS failure.

– COMPLETE –

(5) FMS 2 FAIL or IPC 2 FAIL caution message not shown:

(6) NAV SRC .....FMS 2

(7) XFR .....Select to right side.

NOTE

1. LPV and RNP AR approaches are prohibited with single FMS operative.
2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(8) Affected systems .....Review

IPC 1 FAIL (Caution) (Cont'd)

Significant systems affected:

- FMS 1
- CPDLC (if installed)

(9) Go-around procedure ..... Accomplish, if required. Refer to Normal procedures – Go-around procedure.

– COMPLETE –

IPC 2 FAIL (Caution)

(1) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(2) **FMS 1 FAIL** or **IPC 1 FAIL** caution message is also shown:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) FMS 1 FAIL or IPC 1 FAIL caution message is also shown:

(4) Dual FMS failure procedure ..... Accomplish. Refer to Navigation – Dual FMS failure.

– COMPLETE –

(5) FMS 1 FAIL or IPC 1 FAIL caution message not shown:

(6) NAV SRC ..... FMS 1

(7) XFR ..... Select to left side.

IPC 2 FAIL (Caution) (Cont'd)

NOTE

1. LPV and RNP AR approaches are prohibited with single FMS operative.
2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(8) Affected systems .....Review

Significant systems affected:

- FMS 2

(9) Go-around procedure ..... Accomplish, if required. Refer to Normal procedures – Go-around procedure.

– COMPLETE –

IPC 3 FAIL (Caution)

(1) Terrain and aircraft configuration ..... Monitor

(2) Affected systems .....Review

Significant systems affected:

- TAWS
- L HUD (if installed)

– COMPLETE –

IPC 4 FAIL (Caution)

(1) Affected systems .....Review

IPC 4 FAIL (Caution) (Cont'd)

Significant systems affected:

- R HUD (if installed)

– COMPLETE –

IRS SAME SOURCE (Caution)

Description: Only one IRS is providing heading and attitude information.

(1) Flight instruments ..... Monitor

(2) Land at the nearest suitable airport.

– COMPLETE –

IRS SET HEADING (Caution)

(1) FMS, POS – IRS – SET IRS HDG ..... Enter Mag heading

NOTE

IRS SET HEADING caution message stays posted and affected IRS cannot be displayed on PFD until it is aligned.

After entry of current magnetic heading, the **IRS SET HEADING** *caution message stays posted until the affected IRS enters the Align in Motion (AIM) Attitude or Navigation mode. It is not possible to select the affected IRS for display until completion of the AIM phase (as shown by the NAVIGATION annunciation on the IRS – STATUS page).*

– COMPLETE –

L CTP TUNING FAIL (Caution)

(1) L CTP ..... OFF

L CTP TUNING FAIL (Caution) (Cont'd)

(2) Use AVIONIC, CTP tab for L CTP functions.

(3) ACP, SAT (if installed) ..... Select on

For incoming calls, the flight crew is notified with a ring tone in the headset only.

– COMPLETE –

L-R RADIO TUNING (Caution)

(1) L CTP ..... OFF

(2) R CTP ..... OFF

(3) CCP menu .....Select CNS

(4) ACP, SAT (if installed) ..... Select on

For incoming calls, the flight crew is notified with a ring tone in the headset only.

– COMPLETE –

R CTP TUNING FAIL (Caution)

(1) R CTP ..... OFF

(2) Use AVIONIC, CTP tab for R CTP functions.

– COMPLETE –

RAD ALT FAIL (Caution)

(1) Affected systems .....Review

Significant systems affected:

- Autothrottle (retard)
- TCAS

RAD ALT FAIL (Caution) (Cont'd)

- Autoland
- Category II
- TAWS – GPWS
- TAWS – WS
- WXR – PWS
- EFIS comparator (inoperative for RAD ALT only)

– COMPLETE –

WXR ON (Caution)

(1) WX ..... Select

(2) WXR ..... STBY

– COMPLETE –

XPDR 1 FAIL (Caution)

(1) CTP, XPDR/TCAS ..... Select XPDR 2

– COMPLETE –

XPDR 2 FAIL (Caution)

(1) CTP, XPDR/TCAS ..... Select XPDR 1

– COMPLETE –

Display unit failure procedure

(1) ECL ..... If required, move to available MFW.

(2) Autopilot ..... If required, select to operative side.

Display unit failure procedure (Cont'd)

(3) Transponder ..... If required, select to operative side.

1. Single DU failure:
   - DISPLAY, SWAP selection is available if DU 2 and DU 3 are functional.
2. Multiple DU failure:
   - Full format PFD(s) can be switched manually to half format PFD(s) with selection of DISPLAY, REV.
   - DISPLAY, SWAP selection is available if DU 2 and DU 3 are functional.
   - DU 1 or DU 4 with PFD at half format: ECL and CB pages are not available on the MFW on that DU.
   - DU 5 with PFD at half format: WX overlay is not available on that DU.

– COMPLETE –

Unreliable airspeed

Indications of unreliable airspeed can include:

- *Pitch attitude, thrust setting or external noise not consistent with indicated airspeed.*
- *Large airspeed differences shown between PFDs and/or the ISIs.*
- *Loss of multiple airspeed indication.*
- **FLT CTRL DIRECT ADS** *caution message.*

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) FD ..... Select off

Unreliable airspeed (Cont'd)

NOTE

Disregard FPV.

If below safe altitude:

(Max climb)

(4) Pitch .....Set 12.5 degrees NU

(5) Thrust levers .....Advance to MAX

NOTE

A momentary exceedance of EGT can occur.

(6) SLAT/FLAP configuration .....Maintain

(7) SPOILER lever ..... RET

(8) Landing gear ..... UP

When at a safe altitude:

(Climb)

(9) Pitch .....Set 5 degrees NU

(10) Thrust levers .....Set CLB thrust

(11) Flaps ..... Retract in stages

(12) AURAL WARN .....INHIB, if required.

CAUTION

Fly-by-wire envelope protection is not available. Minimize control inputs.

Unreliable airspeed (Cont'd)

NOTE

Select the longest runway available.

(13) ADS reversion ..... Review available ADS sources.

NOTE

1. Consider airspeed unreliable until at least two ADS sources agree and have been cross-checked with the N1/thrust data that follows.
2. Stick shaker may be unreliable.
3. FPV and FD should be considered unreliable until confirmed otherwise.
4. Check all available data sources, including:
   - FMS, POS – GNSS for ground speed,
   - FMS, POS – GNSS INFORMATION for GNSS ALT (if required),
   - Acceleration cue (if available).
5. Wind vector may be unreliable.

(14) Aircraft weight:

- **Light (less than 45359 kg [100000 lb]) –** Go to (15)
- **Mid (45359 kg [100000 lb] to 54431 kg [120000 lb]) –** Go to (29)
- **Heavy (more than 54431 kg [120000 lb]) –** Go to (43)

(15) Aircraft at light weight (less than 45359 kg [100000 lb]):

(16) Use the appropriate procedure for required phase of flight.

Unreliable airspeed (Cont'd)

Cruise:

(250 KIAS / 0.7 M / FLAP 0 / landing gear up)

(17) Airspeed .....Use N1/pitch table data

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
30001 to 40000 ft	81	1.5
20001 to 30000 ft	74	0.5
10001 to 20000 ft	65	0.5
0 to 10000 ft	58	1.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Descent:

(250 KIAS / 0.74 M / FLAP 0 / landing gear up)

(18) Thrust levers ..... IDLE

(19) Pitch .....Set 3.0 degrees ND

Level-off and slowdown:

(190 KIAS / FLAP 0-3 / landing gear up)

(20) Airspeed .....Use N1/pitch data

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
15000 ft	53	3.5
10000 ft	49	3.5

Unreliable airspeed (Cont'd)

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
5000 ft	46	3.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(21) SLAT/FLAP lever .....Select in stages to achieve FLAP 3

Configure for approach:

(150 KIAS / FLAP 3 / landing gear up)

(22) Airspeed .....Use N1/pitch data

150 KIAS / level / FLAP 3 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
15000 ft	57	2.5
10000 ft	53	2.5
5000 ft	49	2.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(23) SLAT/FLAP lever 4

(24) Landing gear ..... DN

Unreliable airspeed (Cont'd)

(25) Airspeed ..... Use N1/pitch data to achieve 150 KIAS

Target: 150 KIAS / FLAP 4 / landing gear down	
Cruise N1 (%) [1]	**Pitch (degrees NU)**
65	1.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Final approach descent:

NOTE

Vary N1 as required to maintain 3 degree glideslope.

(26) Thrust ..... Use data below for target $V_{REF(FLAP\ 4)}$

V_{REF} / 3 degree glideslope / FLAP 4 / landing gear down		
Altitude	**Glideslope N1 (%) [1]**	**Pitch (degrees NU)**
SL to 5000 ft	40	3.5
5001 to 10000 ft	43	3.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(27) OLD factor ..... Multiply by 1.20

After touch down:

(28) SPOILER lever .....FULL

– COMPLETE –

Unreliable airspeed (Cont'd)

(29) Aircraft at mid weight (45359 kg [100000 lb] to 54431 kg [120000 lb]):

(30) Use the appropriate procedure for required phase of flight.

Cruise:

(250 KIAS / 0.7 M / FLAP 0 / landing gear up)

(31) Airspeed ..... Use N1/pitch table data

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
30001 to 40000 ft	85	2.0
20001 to 30000 ft	77	1.5
10001 to 20000 ft	67	1.5
0 to 10000 ft	59	1.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Descent:

(250 KIAS / 0.74 M / FLAP 0 / landing gear up)

(32) Thrust levers ..... IDLE

(33) Pitch ..... Set 2.0 degrees ND

Level-off and slowdown:

(190 KIAS / FLAP 0-3 / landing gear up)

(34) Airspeed ..... Use N1/pitch data

Unreliable airspeed (Cont'd)

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
15000 ft	57	4.5
10000 ft	53	4.5
5000 ft	49	4.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(35) SLAT/FLAP lever .....Select in stages to achieve FLAP 3

Configure for approach:

(150 KIAS / FLAP 3 / landing gear up)

(36) Airspeed .....Use N1/pitch data

150 KIAS / level / FLAP 3 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
15000 ft	61	4.5
10000 ft	57	4.5
5000 ft	53	4.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(37) SLAT/FLAP lever 4

(38) Landing gear ..... DN

Unreliable airspeed (Cont'd)

(39) Airspeed ..... Use N1/pitch data to achieve 150 KIAS.

Target: 150 KIAS / FLAP 4 / landing gear down	
Cruise N1 (%) [1]	**Pitch (degrees NU)**
67	2.8

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Final approach descent:

NOTE

Vary N1 as required to maintain 3 degree glideslope.

(40) Thrust ..... Use data below for target $V_{REF(FLAP\ 4)}$

V_{REF} / 3 degree glideslope / FLAP 4 / landing gear down		
Altitude	**Glideslope N1 (%) [1]**	**Pitch (degrees NU)**
SL to 5000 ft	45	3.5
5001 to 10000 ft	48	3.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(41) OLD factor ..... Multiply by 1.20

After touch down:

(42) SPOILER lever .....FULL

– COMPLETE –

Unreliable airspeed (Cont'd)

(43) Aircraft at heavy weight (more than 54431 kg [120000 lb]):

(44) Use the appropriate procedure for required phase of flight.

Cruise:

(250 KIAS / 0.7 M / FLAP 0 / landing gear up)

(45) Airspeed .....Use N1/pitch data

250 KIAS / 0.7 M cruise / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
30001 to 40000 ft	87	3.0
20001 to 30000 ft	78	2.0
10001 to 20000 ft	68	2.0
0 to 10000 ft	60	2.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Descent:

(250 KIAS / 0.74 M / FLAP 0 / landing gear up)

(46) Thrust levers ..... IDLE

(47) Pitch .....Set 1.0 degree ND

Level-off and slowdown:

(190 KIAS / FLAP 0-3 / landing gear up)

(48) Airspeed .....Use N1/pitch data

Unreliable airspeed (Cont'd)

190 KIAS / level / FLAP 0 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
15000 ft	60	5.5
10000 ft	56	5.5
5000 ft	52	5.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(49) SLAT/FLAP lever .....Select in stages to achieve FLAP 3

Configure for approach:

(150 KIAS / FLAP 3 / landing gear up)

(50) Airspeed .....Use N1/pitch data

150 KIAS / level / FLAP 3 / landing gear up		
Altitude	**Cruise N1 (%) [1]**	**Pitch (degrees NU)**
15000 ft	65	6.0
10000 ft	60	6.0
5000 ft	56	6.0

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(51) SLAT/FLAP lever 4

(52) Landing gear ..... DN

Unreliable airspeed (Cont'd)

(53) Airspeed ..... Use N1/pitch data to achieve 150 KIAS.

Target: 150 KIAS / FLAP 4 / landing gear down	
Cruise N1 (%) [1]	**Pitch (degrees NU)**
69	4.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

Final approach descent:

NOTE

Vary N1 as required to maintain 3 degree glideslope.

(54) Thrust ..... Use data below for target $V_{REF(FLAP\ 4)}$

V_{REF} / 3 degree glideslope / FLAP 4 / landing gear down		
Altitude	**Glideslope N1 (%) [1]**	**Pitch (degrees NU)**
SL to 5000 ft	48	3.5
5001 to 10000 ft	52	3.5

[1] Reduce N1 by 2% per 10°C below ISA or increase N1 by 2% per 10°C above ISA.

(55) OLD factor ..... Multiply by 1.20

After touch down:

(56) SPOILER lever .....FULL

– COMPLETE –

LANDING GEAR, WHEEL, AND BRAKE SYSTEM

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BRAKE OVHT (Warning)

Description: Any brake temperature indication of 15 or more.

(1) Airspeed ..... Not more than 250 KIAS

(2) Landing gear ..... DN

(3) STATUS synoptic page ..... Select

(4) Brake temperature ..... Monitor

NOTE

Brake temperature may take some time to decrease.

(5) **BRAKE OVHT** warning message goes out and brake temperature is decreasing:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) BRAKE OVHT warning message goes out and brake temperature is decreasing:

When brake temperature indication is below 14, **BRAKE OVHT** *warning message is replaced by* **BRAKE HI TEMP** *advisory message.*

(7) Landing gear ..... As required

Gear can be retracted when speed is less than 220 KIAS.

– COMPLETE –

(8) BRAKE OVHT warning message stays on:

(9) Land at the nearest suitable airport.

(10) Tire pressure ..... Check

TIRE LO PRESS *advisory message and status page amber indications show tire pressure is less than 70%.*

BRAKE OVHT (Warning) (Cont'd)

(11) Tire pressure is normal or only one tire pressure is amber:

➔ **Yes –** Go to (12)

➔ **No –** Go to (14)

(12) Tire pressure is normal or only one tire pressure is amber:

(13) No further action required.

– COMPLETE –

(14) Tire pressure is amber for both tires on the same side:

(15) Low tire pressure landing procedure ..... Accomplish Refer to Landing gear, wheel, and brake system – Low tire pressure landing procedure.

– COMPLETE –

CONFIG BRAKE (Warning)

(1) Takeoff .....Discontinue

– COMPLETE –

GEAR (Warning)

(1) Landing gear ..... DN

– COMPLETE –

AUTOBRAKE FAIL (Caution)

(1) Manual brakes ..... Apply, as required.

(2) AUTOBRAKE ..... OFF

– COMPLETE –

BRAKE FAIL (Caution)

Description: Loss of normal and alternate braking.

(1) AUTOBRAKE ..... OFF

(2) In flight:

→ **Yes –** Go to (3)

→ **No –** Go to (7)

(3) In flight:

On approach:

(4) OLD factor ..... Multiply by 2.90

(5) Thrust reversers .....After landing, apply as required.

Park brake may not be available.

(6) PARK BRAKE ..... Apply during landing roll.

– COMPLETE –

(7) On ground:

(8) Thrust reversers ..... Apply as required.

Park brake may not be available.

(9) PARK BRAKE ..... Apply as required.

– COMPLETE –

BRAKE ON (Caution)

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (9)

(2) In flight:

(3) PARK BRAKE ..... OFF

NOTE

If message stays on in flight, uneven braking may occur during landing roll.

(4) **BRAKE ON** caution message goes out:

- **Yes –** Go to (5)
- **No –** Go to (7)

(5) BRAKE ON caution message goes out:

(6) No further action required.

– COMPLETE –

(7) BRAKE ON caution message stays on:

(8) AUTOBRAKE ..... OFF

– COMPLETE –

(9) On ground:

(10) Do not take off.

– COMPLETE –

CPLT BRAKE PEDAL FAIL (Caution)

NOTE

Braking not available with right side pedals. Left side braking available.

– COMPLETE –

GEAR DISAGREE (Caution)

(1) Landing gear lever selected UP:

- **Yes –** Go to (2)
- **No –** Go to (15)

(2) Landing gear lever selected UP:

(3) Airspeed ..... Not more than 250 KIAS

(4) Landing gear lever ..... DN

(5) **GEAR DISAGREE** caution message goes out:

- **Yes –** Go to (6)
- **No –** Go to (8)

(6) GEAR DISAGREE caution message goes out:

(7) Land at the nearest suitable airport.

– COMPLETE –

(8) GEAR DISAGREE caution message stays on:

(9) ALTN GEAR ..... DN

(10) **GEAR DISAGREE** caution message goes out:

- **Yes –** Go to (11)
- **No –** Go to (13)

GEAR DISAGREE (Caution) (Cont'd)

(11) GEAR DISAGREE caution message goes out:

(12) Land at the nearest suitable airport.

NOTE

Gear UP selection is not available.

– COMPLETE –

(13) GEAR DISAGREE caution message stays on:

(14) Gear up or unsafe landing procedure ..... Accomplish Refer to Landing gear, wheel, and brake system – Gear up or unsafe landing procedure.

– COMPLETE –

(15) Landing gear lever selected DN:

(16) ALTN GEAR ..... DN

(17) GEAR DISAGREE caution message goes out:

- **Yes –** Go to (18)
- **No –** Go to (20)

(18) GEAR DISAGREE caution message goes out:

(19) Land at the nearest suitable airport.

NOTE

Gear UP selection is not available.

– COMPLETE –

GEAR DISAGREE (Caution) (Cont'd)

(20) GEAR DISAGREE caution message stays on:

(21) Gear up or unsafe landing procedure ..... Accomplish Refer to Landing gear, wheel, and brake system – Gear up or unsafe landing procedure.

– COMPLETE –

GEAR FAIL (Caution)

(1) Airspeed ..... Not more than 250 KIAS

(2) Landing gear ..... DN

(3) Landing gear confirmed down and locked (three greens):

- **Yes –** Go to (4)
- **No –** Go to (7)

(4) Landing gear confirmed down and locked (three greens):

(5) Do not retract landing gear.

(6) Land at the nearest suitable airport.

– COMPLETE –

(7) Landing gear not confirmed down and locked:

(8) ALTN GEAR ..... DN

NOTE

1. Gear UP selection is not available.
2. **GEAR FAIL** caution message may stay on, even if the landing gear is down and locked.

(9) LDG LTS, TAXI ..... NARROW

GEAR FAIL (Caution) (Cont'd)

(10) LDG LTS, NOSE ..... ON

Nose landing gear failure:

If taxi and/or nose landing lights are visually confirmed on, the nose gear is down and locked.

(11) Landing gear confirmed down and locked (three greens):

- **Yes –** Go to (12)
- **No –** Go to (14)

(12) Landing gear confirmed down and locked (three greens):

(13) Land at the nearest suitable airport.

NOTE

Gear UP selection is not available.

– COMPLETE –

(14) Landing gear not confirmed down and locked:

(15) Gear up or unsafe landing procedure ..... Accomplish Refer to Landing gear, wheel, and brake system – Gear up or unsafe landing procedure.

– COMPLETE –

L BRAKE FAIL (Caution)

Description: Both left wheel brakes or left anti-skid may not be available.

(1) **DC ESS BUS 1** or **DC ESS BUS 2** caution message is also shown:

- **Yes –** Go to (2)
- **No –** Go to (4)

L BRAKE FAIL (Caution) (Cont'd)

(2) DC ESS BUS 1 or DC ESS BUS 2 caution message is also shown:

(3) No further action required.

– COMPLETE –

(4) DC ESS BUS 1 or DC ESS BUS 2 caution message is not shown:

(5) AUTOBRAKE ..... OFF

(6) In flight:

- **Yes –** Go to (7)
- **No –** Go to (11)

(7) In flight:

On approach:

(8) OLD factor ..... Multiply by 1.50

(9) Brakes .....After landing, apply with caution.

NOTE

Anti-skid may not be available on left brakes.

(10) Thrust reversers .....After landing, apply as required.

– COMPLETE –

(11) On ground:

(12) Brakes ..... Apply with caution.

NOTE

Anti-skid may not be available on left brakes.

(13) Thrust reversers ..... Apply as required.

– COMPLETE –

NORM BRAKE FAIL (Caution)

(1) ALTN BRAKE ..... ON

The use of ALTN BRAKE disables the anti-skid system.

(2) AUTOBRAKE ..... OFF

(3) In flight:

- **Yes –** Go to (4)
- **No –** Go to (8)

(4) In flight:

On approach:

(5) OLD factor ..... Multiply by 1.50

(6) Brakes ..... After landing, apply light to moderate braking.

CAUTION

Extreme caution is required during braking to avoid tire damage or blowout.

(7) Thrust reversers ..... After landing, apply to maximum extent.

NOTE

Park brake may not be available.

– COMPLETE –

(8) On ground:

(9) Brakes ..... Apply with caution.

NORM BRAKE FAIL (Caution) (Cont'd)

CAUTION

Extreme caution is required during braking to avoid tire damage or blowout.

(10) Thrust reversers ..... Apply to maximum extent.

NOTE

Park brake may not be available.

– COMPLETE –

NOSE STEER FAIL (Caution)

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (16)

(2) In flight:

(3) FLT CTRL DIRECT warning or caution message also shown:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) FLT CTRL DIRECT warning or caution message also shown:

Before landing:

(5) During landing roll, use differential braking, rudder, and engine thrust as required to assist in directional control.

– COMPLETE –

NOSE STEER FAIL (Caution) (Cont'd)

(6) FLT CTRL DIRECT warning or caution message not shown:

(7) NOSE STEER ..... OFF

(8) NOSE STEER ..... Select on

(9) **NOSE STEER FAIL** caution message goes out:

- **Yes –** Go to (10)
- **No –** Go to (12)

(10) NOSE STEER FAIL caution message goes out:

(11) No further action required.

– COMPLETE –

(12) NOSE STEER FAIL caution message stays on:

(13) NOSE STEER ..... OFF

Castoring mode only.

NOTE

1. Select the longest runway with minimal crosswind.
2. Taxi with caution.

On approach:

(14) OLD factor ..... Multiply by 1.20

Before landing:

(15) During landing roll, use differential braking, rudder, and engine thrust as required to assist in directional control.

– COMPLETE –

(16) On ground:

(17) Stop the aircraft. Use differential braking, rudder, and engine thrust as required to assist in directional control.

NOSE STEER FAIL (Caution) (Cont'd)

(18) Nose steering tiller and rudder .....Center

(19) NOSE STEER ..... OFF

(20) NOSE STEER ..... Select on

(21) **NOSE STEER FAIL** caution message goes out:

- **Yes –** Go to (22)
- **No –** Go to (24)

(22) NOSE STEER FAIL caution message goes out:

(23) No further action required.

– COMPLETE –

(24) NOSE STEER FAIL caution message stays on:

(25) NOSE STEER ..... OFF

Castoring mode only.

NOTE

Taxi with caution.

– COMPLETE –

NOSE STEER MISALIGN (Caution)

Description: Nosewheel angle is beyond active steering range.

(1) Do not taxi.

(2) NOSE STEER .....Confirm OFF

NOSE STEER MISALIGN (Caution) (Cont'd)

NOTE

Nose landing gear realignment is required.

– COMPLETE –

NOSE TIRE LO PRESS (Caution)

(1) Use differential braking, rudder, and engine thrust as required to assist in directional control.

– COMPLETE –

PARK BRAKE FAIL (Caution)

(1) Maintain braking until wheels are chocked.

– COMPLETE –

PLT BRAKE PEDAL FAIL (Caution)

NOTE

Braking not available with left side pedals. Right side braking available.

– COMPLETE –

R BRAKE FAIL (Caution)

Description: Both right wheel brakes or right anti-skid may not be available.

R BRAKE FAIL (Caution) (Cont'd)

(1) DC ESS BUS 1 or DC ESS BUS 2 caution message is also shown:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) DC ESS BUS 1 or DC ESS BUS 2 caution message is also shown:

(3) No further action required.

– COMPLETE –

(4) DC ESS BUS 1 or DC ESS BUS 2 caution message is not shown:

(5) AUTOBRAKE ..... OFF

(6) In flight:

➔ **Yes –** Go to (7)

➔ **No –** Go to (11)

(7) In flight:

On approach:

(8) OLD factor ..... Multiply by 1.50

(9) Brakes .....After landing, apply with caution.

NOTE

Anti-skid may not be available on right brakes.

(10) Thrust reversers .....After landing, apply as required.

– COMPLETE –

(11) On ground:

(12) Brakes ..... Apply with caution.

R BRAKE FAIL (Caution) (Cont'd)

NOTE

Anti-skid may not be available on right brakes.

(13) Thrust reversers ..... Apply as required.

– COMPLETE –

WOW FAIL (Caution)

1. Touchdown protection is inoperative. Do not apply brakes until all landing gear are on the ground.
2. Nosewheel steering may not be available.
3. Do not land on contaminated runway.

(1) EICAS and all synoptic pages ..... Monitor

Significant systems affected:

- Autobrake
- Regulation of de-rotation braking
- Nosewheel steering may not be available
- Thrust reversers (above reverse idle may not be available)

(2) AUTOBRAKE ..... OFF

(3) OLD factor ..... Multiply by 1.30

– COMPLETE –

Gear up or unsafe landing procedure

NOTE

Reduce fuel to a minimum while maintaining sufficient fuel for a power-on approach.

Preparation:

If one main landing gear is up or unsafe:

Maintain directional control with nosewheel steering and rudder. When engine touches down, maintain directional control with rudder and asymmetric braking.

If nose gear is UP or unsafe:

Trim stabilizer nose up after touchdown. Lower the nose gently to the runway prior to loss of elevator control.

If all wheels are up or unsafe:

If both main landing gear cannot be locked down consider a wheels-up landing.

(1) Cabin crew ..... Brief

*Use TEST – **T**ype of emergency, planned touchdown location, **E**vacuation routes, **S**ignals for bracing and evacuating, **T**ime available.*

(2) SEAT BELTS ..... ON

(3) TAWS, GEAR ..... INHIB

(4) Cockpit door ..... Latch open

(5) Harness ..... Tighten and lock

On approach:

(6) EMER DEPRESS ..... ON

(7) APU (if available) ..... START

(8) HYD 2B ..... ON

Gear up or unsafe landing procedure (Cont'd)

(9) PTU ..... ON

(10) AUTOBRAKE ..... OFF

(11) SLAT/FLAP lever 5

Before contact:

NOTE

If any gear is down:

Land at a normal landing attitude and minimum vertical rate.

If all gear are up:

Aim to touch down with minimum vertical rate at V_{REF}, at a lower than normal landing attitude (approximately 5 degrees).

(12) EMER LTS ..... ON

(13) PA ..... Give the brace command.

When stopped:

(14) PARK BRAKE ..... ON

(15) L ENG run ..... OFF

(16) R ENG run ..... OFF

(17) Evacuation required:

- **Yes –** Go to (18)
- **No –** Go to (20)

(18) Evacuation required:

(19) Emergency evacuation ..... Accomplish Refer to Evacuation – Emergency evacuation.

– COMPLETE –

Gear up or unsafe landing procedure (Cont'd)

(20) Evacuation not required:

WARNING

The aircraft is not in a safe condition until the gear locking pins are installed.

– COMPLETE –

Low tire pressure landing procedure

(1) Hold low pressure main gear off as long as possible.

(2) Use differential braking, rudder, and engine thrust as required to assist in directional control.

(3) OLD factor ..... Multiply by 1.30

– COMPLETE –

Tire burst on takeoff

(1) Tire burst occurs at less than 80 KIAS:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) Tire burst occurs at less than 80 KIAS:

(3) Rejected takeoff procedure ..... Accomplish, if required. Refer to Rejected takeoff.

– COMPLETE –

Tire burst on takeoff (Cont'd)

(4) Tire burst occurs at more than 80 KIAS:

If conditions permit:

(5) Takeoff ..... Continue

Before landing:

(6) Low tire pressure landing procedure .....Consult for guidance. Refer to Landing gear, wheel, and brake system – Low tire pressure landing.

– COMPLETE –

MISCELLANEOUS SYSTEMS

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CREW OXY LO PRESS (Caution)

(1) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

– COMPLETE –

ELT ON (Caution)

(1) ELT ..... TEST/RESET

(2) ELT ..... ARM

– COMPLETE –

EMER LTS OFF (Caution)

Description: Emergency lights switch selected to OFF.

Emergency lights required on:

(1) EMER LTS ..... ARM

– COMPLETE –

KU BAND ON (Caution) <44309202C>

(1) Discontinue deicing/anti-icing.

(2) Advise deicing operator to clear all deicing personnel from the aircraft.

– COMPLETE –

Bomb on board

If there is a bomb-on-board threat, it is recommended to evacuate the aircraft as soon as possible.

Bomb on board (Cont'd)

While airborne, aircraft structural integrity may be improved in the event of an explosion by flying a low IAS and by minimizing the cabin differential pressure. A lower MSL altitude may reduce the consequences of an explosive depressurization. The slowest practical airspeed should be flown, considering factors such as time to destination and fuel required.

The intent is to maintain the cabin altitude constant and reduce the pressure differential to 1 psi until just before landing. A 1 psi differential equates to approximately a 2500-foot higher aircraft altitude than the indicated cabin altitude.

There is a specific threat that a bomb is on board, suspected or confirmed.

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (31)

(2) In flight:

(3) In flight and time permits:

- **Yes –** Go to (4)
- **No –** Go to (27)

(4) In flight and time permits:

(5) Land at the nearest suitable airport.

At a safe altitude:

(6) Level off.

(7) Airspeed ..... Maintain as low as practical but not lower than green dot.

(8) SEAT BELTS ..... ON

(9) Cabin ..... Advise

(10) ATC ..... Advise

(11) XPDR 7700

Bomb on board (Cont'd)

(12) Attempt to maintain cabin delta P at approximately 1 psi for as long as possible.

Aircraft altitude = Cabin altitude + 2500 feet.

(13) AUTO PRESS ..... MAN

(14) If required, descend to a safe altitude as close as possible to cabin altitude + 2500 feet.

(15) MAN RATE .....Adjust if required to maintain delta P at 1 psi.

NOTE

Detonation may affect landing gear extension. It is recommended to extend the landing gear if remaining fuel permits.

Fuel consumption may increase by 100% with landing gear extended.

(16) Remaining fuel permits:

- **Yes –** Go to (17)
- **No –** Go to (22)

(17) Remaining fuel permits:

(18) Landing gear ..... DN

(19) Airspeed ..... As required until ready for approach.

Before landing:

(20) EMER DEPRESS ..... ON

Bomb on board (Cont'd)

After landing:

(21) Emergency evacuation procedure ..... Accomplish, if required. Refer to Evacuation — Emergency evacuation.

– COMPLETE –

(22) Remaining fuel does not permit:

(23) Landing gear ..... UP

(24) Airspeed ..... As required until ready for approach.

Before landing:

(25) EMER DEPRESS ..... ON

After landing:

(26) Emergency evacuation procedure ..... Accomplish, if required. Refer to Evacuation — Emergency evacuation.

– COMPLETE –

(27) Time does not permit:

(28) Land immediately at the nearest suitable airport.

Before landing:

(29) EMER DEPRESS ..... ON

After landing:

(30) Emergency evacuation procedure ..... Accomplish, if required. Refer to Evacuation — Emergency evacuation.

– COMPLETE –

Bomb on board (Cont'd)

(31) On ground:

(32) Emergency evacuation procedure ..... Accomplish, if required. Refer to Evacuation — Emergency evacuation.

– COMPLETE –

Pilot incapacitation

In case of pilot incapacitation, the following are general guidelines:

- Ensure autopilot is engaged.
- Call flight attendant to flight compartment.
- Check that incapacitated pilot does not interfere with flight controls. It is preferable to have incapacitated pilot removed from flight compartment.
- If unable to remove incapacitated pilot, instruct flight attendant to lock shoulder harness of incapacitated pilot and move seat rearwards.
- If an immediate landing is imperative, obtain advice on most suitable airport where medical assistance can be readily rendered.

– COMPLETE –

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NAVIGATION

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APPROACH NOT AVAIL (Caution)

Description: Both GNSS are not supplying position to the FMS or SBAS is not available.

(1) FMS, POS – GNSS ..... Select

(2) GNSS are selected:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) GNSS are selected:

(4) Select a non-GNSS type of approach, if required.

– COMPLETE –

(5) GNSS are not selected:

(6) GNSS 1 and 2 ..... Select

– COMPLETE –

FMS 1 FAIL (Caution)

(1) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(2) **FMS 2 FAIL** or **IPC 2 FAIL** caution message is also shown:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) FMS 2 FAIL or IPC 2 FAIL caution message is also shown:

(4) Dual FMS failure procedure ..... Accomplish Refer to Navigation – Dual FMS failure.

– COMPLETE –

FMS 1 FAIL (Caution) (Cont'd)

(5) FMS 2 FAIL or IPC 2 FAIL caution message not shown:

(6) NAV SRC ..... FMS 2

(7) XFR ..... Select to right side.

NOTE

1. LPV and RNP AR approaches are prohibited with single FMS operative.
2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(8) Go-around procedure ..... Accomplish, if required. Refer to Normal procedures – Go-around procedure.

– COMPLETE –

FMS 2 FAIL (Caution)

(1) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(2) FMS 1 FAIL or IPC 1 FAIL caution message is also shown:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) FMS 1 FAIL or IPC 1 FAIL caution message is also shown:

(4) Dual FMS failure procedure ..... Accomplish Refer to Navigation – Dual FMS failure.

– COMPLETE –

FMS 2 FAIL (Caution) (Cont'd)

(5) FMS 1 FAIL or IPC 1 FAIL caution message not shown:

(6) NAV SRC ..... FMS 1

(7) XFR ..... Select to left side.

NOTE

1. LPV and RNP AR approaches are prohibited with single FMS operative.
2. With single FMS operation, auto tuning for a NAV to NAV transfer will not occur on the cross-side PFD. Manual tuning is required.

(8) Go-around procedure ..... Accomplish, if required. Refer to Normal procedures – Go-around procedure.

– COMPLETE –

FMS FUEL (Caution)

(1) Fuel quantity ..... Check

(2) Fuel leak suspected:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) Fuel leak suspected:

(4) Fuel leak suspect procedure ..... Accomplish Refer to Fuel – FUEL LEAK SUSPECT.

– COMPLETE –

FMS FUEL (Caution) (Cont'd)

(5) Fuel leak not suspected:

(6) Re-plan flight as necessary.

– COMPLETE –

FMS OEI PERF ACTIVE (Caution)

(1) Both engines operating:

- **Yes –** Go to (2)
- **No –** Go to (7)

(2) Both engines operating:

(3) Thrust levers .....Matched

(4) FMS – THRUST – OEI FMS PERF .....CNCL

(5) Autothrottle ..... Select off

(6) Autothrottle ..... Select on then as required

– COMPLETE –

(7) One engine inoperative:

(8) Determine inoperative engine:

- **Left engine –** Go to (9)
- **Right engine –** Go to (15)

(9) Left engine inoperative:

(10) Left engine shutdown procedure previously accomplished:

- **Yes –** Go to (11)
- **No –** Go to (13)

FMS OEI PERF ACTIVE (Caution) (Cont'd)

(11) Left engine shutdown procedure previously accomplished:

(12) No further action required.

– COMPLETE –

(13) Left engine shutdown procedure not previously accomplished:

(14) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(15) Right engine inoperative:

(16) Right engine shutdown procedure previously accomplished:

➔ **Yes –** Go to (17)

➔ **No –** Go to (19)

(17) Right engine shutdown procedure previously accomplished:

(18) No further action required.

– COMPLETE –

(19) Right engine shutdown procedure not previously accomplished:

(20) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

FMS PERF DEP CONFIG (Caution)

Description: Difference between entered FMS data and the actual airplane configuration.

(1) FMS, PERF – DEP .....Review

– COMPLETE –

FMS PERF DEP VSPEEDS (Caution)

Description: Vspeeds are not within allowed range.

(1) FMS, PERF – DEP .....Review

NOTE

Flight plan changes may require reselecting FMS PERF DEP page data including DERATED THRUST prior to re-posting VSPEEDS.

– COMPLETE –

FMS POSITION (Caution)

(1) FMS, POS – FMS .....LOAD

– COMPLETE –

GNSS NOT AVAIL (Caution)

(1) Select a non-GNSS type of approach, if required.

NOTE

RNP AR approaches are prohibited.

– COMPLETE –

LPV NOT AVAIL (Caution)

Description: Both GNSS are not supplying position to the FMS or SBAS is not available.

LPV NOT AVAIL (Caution) (Cont'd)

NOTE

SBAS guidance not available. LPV minima not authorized.

(1) FMS, PERF – ARR – ARRIVAL DATA – APPROACH MODE ..... Select RNP

(2) Approach minima ..... Reset

– COMPLETE –

TAWS FAIL (Caution)

Description: Terrain Awareness Warning System (TAWS) has failed.

NOTE

1. All TAWS alerts are not available.
2. Increased pilot awareness required.

(1) TAWS, TERR ..... INHIB

(2) TERRAIN overlay ..... De-select

(3) Terrain and aircraft configuration ..... Monitor

NOTE

RNP AR approaches are prohibited.

– COMPLETE –

TCAS FAIL (Caution)

(1) ATC .....Advise

– COMPLETE –

TCAS OFF (Caution)

(1) CTP, XPDR/TCAS ..... Select AUTO

– COMPLETE –

UNABLE RNP (Caution)

Description: RNP accuracy is not maintained.

(1) ATC .....Advise

(2) Discontinue approach.

– COMPLETE –

Dual FMS failure

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) NAV source .....VOR or LOC

NOTE

RNP AR approaches are prohibited.

(4) SPD mode ..... MAN

(5) Autopilot .....As required

(6) Autothrottle .....As required

(7) ATC .....Advise

Dual FMS failure (Cont'd)

(8) Fuel quantity ..... Monitor

(9) Affected systems .....Review

Significant systems affected:

- FMS lateral and vertical navigation functions not available.
- Approach flap speeds are not shown.
- Landing V-speed will not be calculated. (AVIONIC synoptic page can be used).
- Time and fuel prediction calculations not available.

NOTE

Current position is shown on the CTP, TUNE/MENU – STBY NAV.

- Loss of landing field elevation definition and selection.

(10) CTP, LDG ELEV – MAN .....Enter destination elevation

On approach:

(11) Flap extension speeds .....Use V_{FE} – 10 KIAS

(12) AVIONIC synoptic page ..... Select

(13) AVIO, VSPEEDS ..... Enter VFTO, VREF, and VAC

NOTE

For VFTO use green dot speed – OEI value.

(14) AVIONIC synoptic page .....Set VSPEEDS

Select DISPLAY to set VSPEEDS.

Go-around considerations: For VGA, use VAC + 10 KIAS.

– COMPLETE –

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POWER PLANT

DUAL ENG FAIL (Warning)

(1) RAT GEN ..... ON

(2) Airspeed ..... Green dot

(3) Plan to land at the nearest suitable airport.

(4) APU (if available) ..... START

(5) Thrust levers ..... IDLE

(6) L ENG run ..... OFF

(7) R ENG run ..... OFF

(8) Relight envelope ..... Establish

Windmill envelope:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

- Airspeed – Not less than 250 KIAS
- Altitude – Not above 27000 feet

ATS envelope:

- Use ATS envelope only if APU bleed air available.
- Start one engine at a time.
- Airspeed – Not more than 250 KIAS
- Altitude – Not above 23000 feet

(9) Windmill envelope available:

➔ **Yes –** Go to (10)

➔ **No –** Go to (35)

(10) Windmill envelope available:

(11) L ENG run ..... ON

(12) R ENG run ..... ON

DUAL ENG FAIL (Warning) (Cont'd)

(13) Monitor engine RELIGHT/START icon:

- **Both engines started –** Go to (14)
- **One engine started –** Go to (17)
- **No engine started –** Go to (25)

(14) Both engines started:

(15) Thrust levers ..... As required

(16) Land at the nearest suitable airport.

– COMPLETE –

(17) One engine started:

(18) Thrust lever (operating engine) ..... As required

(19) Autothrottle ..... Select off

(20) Determine inoperative engine:

- **Left engine –** Go to (21)
- **Right engine –** Go to (23)

(21) Left engine inoperative:

(22) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(23) Right engine inoperative:

(24) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

DUAL ENG FAIL (Warning) (Cont'd)

(25) No engine started:

(26) Time and altitude permit another relight attempt:

- **Yes –** Go to (27)
- **No –** Go to (29)

(27) Time and altitude permit another relight attempt:

(28) DUAL ENG FAIL procedure ..... Repeat

– COMPLETE –

(29) Time and altitude do not permit another relight attempt:

(30) Determine forced landing or ditching:

- **Forced landing –** Go to (31)
- **Ditching –** Go to (33)

(31) Forced landing:

(32) Forced landing procedure ..... Accomplish Refer to Ditching and forced landing – Forced landing.

– COMPLETE –

(33) Ditching:

(34) Ditching procedure ..... Accomplish Refer to Ditching and forced landing – Ditching.

– COMPLETE –

(35) APU ATS envelope available:

(36) ANTI-ICE, WING ..... OFF

(37) L ENG run ..... ON

(38) Monitor engine RELIGHT/START icon.

DUAL ENG FAIL (Warning) (Cont'd)

(39) Left engine starts:

- **Yes –** Go to (40)
- **No –** Go to (53)

(40) Left engine starts:

(41) Left thrust lever ..... As required

(42) R ENG run ..... ON

(43) Monitor engine RELIGHT/START icon.

(44) Right engine starts:

- **Yes –** Go to (45)
- **No –** Go to (49)

(45) Both engines started:

(46) Thrust levers ..... As required

(47) FMS – THRUST – OEI FMS PERF ..... CNCL

(48) Land immediately at the nearest suitable airport.

– COMPLETE –

(49) Only left engine started:

(50) Left thrust lever ..... As required

(51) Autothrottle ..... Select off

(52) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

(53) Left engine does not start:

(54) L ENG run ..... OFF

(55) R ENG run ..... ON

DUAL ENG FAIL (Warning) (Cont'd)

(56) Monitor engine RELIGHT/START icon.

(57) Right engine starts:

- **Yes –** Go to (58)
- **No –** Go to (62)

(58) Only right engine started:

(59) Right thrust lever ..... As required

(60) Autothrottle ..... Select off

(61) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(62) Right engine does not start (no engine started):

(63) R ENG run ..... OFF

(64) Time and altitude permit another relight attempt:

- **Yes –** Go to (65)
- **No –** Go to (67)

(65) Time and altitude permit another relight attempt:

(66) DUAL ENG FAIL procedure ..... Repeat

– COMPLETE –

(67) Time and altitude do not permit another relight attempt:

(68) Determine forced landing or ditching:

- **Forced landing –** Go to (69)
- **Ditching –** Go to (71)

DUAL ENG FAIL (Warning) (Cont'd)

(69) Forced landing:

(70) Forced landing procedure ..... Accomplish Refer to Ditching and forced landing – Forced landing.

– COMPLETE –

(71) Ditching:

(72) Ditching procedure ..... Accomplish Refer to Ditching and forced landing – Ditching.

– COMPLETE –

L ENG FIRE (Warning)

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (26)

(2) In flight:

(3) Autothrottle ..... Select off

(4) Left thrust lever .....Confirm and IDLE

(5) L ENG run .....Confirm and OFF

(6) L ENG FIRE ..... Confirm and select

After 10 seconds:

(7) L ENG, BTL 1 ..... Select

After 30 seconds:

(8) **L ENG FIRE** warning message goes out:

- **Yes –** Go to (9)
- **No –** Go to (17)

L ENG FIRE (Warning) (Cont'd)

(9) L ENG FIRE warning message goes out:

(10) XBLEED ..... MAN CLSD

(11) L PACK ..... OFF

(12) APU BLEED ..... OFF

(13) ANTI-ICE, WING ..... OFF

(14) Leave/avoid icing conditions.

(15) Land immediately at the nearest suitable airport.

(16) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(17) L ENG FIRE warning message stays on:

(18) L ENG, BTL 2 ..... Select

(19) XBLEED ..... MAN CLSD

(20) L PACK ..... OFF

(21) APU BLEED ..... OFF

(22) ANTI-ICE, WING ..... OFF

(23) Leave/avoid icing conditions.

(24) Land immediately at the nearest suitable airport.

(25) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(26) On ground:

(27) PARK BRAKE ..... ON

(28) Thrust levers ..... IDLE

(29) L ENG run ..... OFF

L ENG FIRE (Warning) (Cont'd)

(30) R ENG run ..... OFF

(31) L ENG FIRE ..... Select

(32) L ENG, BTL 1 ..... Select

(33) L ENG, BTL 2 ..... Select

(34) Emergency evacuation procedure ..... As required Refer to Evacuation – Emergency evacuation.

– COMPLETE –

L ENG OIL PRESS (Warning)

(1) Autothrottle ..... Select off

(2) Left thrust lever ..... Confirm and reduce towards IDLE.

(3) **L ENG OIL PRESS** warning message goes out:

- **Yes –** Go to (4)
- **No –** Go to (8)

(4) L ENG OIL PRESS warning message goes out:

(5) Left thrust lever ..... As required

(6) Autothrottle ..... As required

(7) Oil pressure ..... Monitor

– COMPLETE –

(8) L ENG OIL PRESS warning message stays on:

(9) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

R ENG FIRE (Warning)

(1) In flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (24)

(2) In flight:

(3) Autothrottle ..... Select off

(4) Right thrust lever .....Confirm and IDLE

(5) R ENG run .....Confirm and OFF

(6) R ENG FIRE ..... Confirm and select

After 10 seconds:

(7) R ENG, BTL 1 ..... Select

After 30 seconds:

(8) **R ENG FIRE** warning message goes out:

➔ **Yes –** Go to (9)

➔ **No –** Go to (16)

(9) R ENG FIRE warning message goes out:

(10) XBLEED .....MAN CLSD

(11) R PACK ..... OFF

(12) ANTI-ICE, WING ..... OFF

(13) Leave/avoid icing conditions.

(14) Land immediately at the nearest suitable airport.

(15) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

R ENG FIRE (Warning) (Cont'd)

(16) R ENG FIRE warning message stays on:

(17) R ENG, BTL 2 ..... Select

(18) XBLEED .....MAN CLSD

(19) R PACK ..... OFF

(20) ANTI-ICE, WING ..... OFF

(21) Leave/avoid icing conditions.

(22) Land immediately at the nearest suitable airport.

(23) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

(24) On ground:

(25) PARK BRAKE .....ON

(26) Thrust levers ..... IDLE

(27) R ENG run ..... OFF

(28) L ENG run ..... OFF

(29) R ENG FIRE ..... Select

(30) R ENG, BTL 1 ..... Select

(31) R ENG, BTL 2 ..... Select

(32) Emergency evacuation procedure ..... As required Refer to Evacuation – Emergency evacuation.

– COMPLETE –

R ENG OIL PRESS (Warning)

(1) Autothrottle ..... Select off

R ENG OIL PRESS (Warning) (Cont'd)

(2) Right thrust lever ..... Confirm and reduce towards IDLE.

(3) **R ENG OIL PRESS** warning message goes out:

- **Yes –** Go to (4)
- **No –** Go to (8)

(4) R ENG OIL PRESS warning message goes out:

(5) Right thrust lever ..... As required

(6) Autothrottle ..... As required

(7) Oil pressure ..... Monitor

– COMPLETE –

(8) R ENG OIL PRESS warning message stays on:

(9) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

AT RETARD INHIBIT (Caution)

Description: Autothrottle will not retard thrust levers to IDLE on landing.

Before landing:

(1) Autothrottle ..... Select off

(2) Thrust levers ..... Operate manually

– COMPLETE –

ENG OIL LO TEMP (Caution)

(1) In flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (9)

(2) In flight:

(3) Autothrottle ..... Select off

(4) Thrust lever (affected engine) ..... Confirm and reduce towards IDLE.

(5) Engine oil temperatures ..... Monitor

When ENG OIL LO TEMP caution message goes out:

(6) Thrust lever (affected engine) ..... As required

(7) Autothrottle ..... As required

(8) Engine oil temperatures ..... Monitor

– COMPLETE –

(9) On ground:

(10) Do not take off until engine oil temperature indication is in the normal range.

– COMPLETE –

ENG SETTING MISMATCH (Caution)

(1) FMS, PERF – DEP ..... Cancel FLEX.

(2) FMS, PERF – DEP, TO THRUST ..... Select as required.

Enter new takeoff thrust setting (TO, TO-1, TO-2, TO-3) as appropriate.

(3) FMS, PERF – DEP, VSPEEDS ..... Set VSPEEDS.

Enter new V1, VR, V2 and SET VSPEEDS.

ENG SETTING MISMATCH (Caution) (Cont'd)

(4) **ENG SETTING MISMATCH** caution message goes out:

- **YES –** Go to (5)
- **NO –** Go to (7)

(5) ENG SETTING MISMATCH caution message goes out:

(6) No further action required.

– COMPLETE –

(7) ENG SETTING MISMATCH caution message stays on:

(8) FMS, PERF – DEP, TO THRUST ..... Use TO setting.

(9) FMS, PERF – DEP, VSPEEDS ..... Set VSPEEDS.

Enter new V1, VR, V2 and SET VSPEEDS.

– COMPLETE –

<Post-SB BD500-732003> or <Mod 732003>

ENG VIBRATION (Caution)

(1) Source of vibration:

- **FAN VIB readout –** Go to (2)
- **N_1 or N_2 VIB icon –** Go to (18)

(2) Source of vibration — FAN VIB readout:

(3) Airplane in icing conditions:

- **Yes –** Go to (4)
- **No –** Go to (14)

(4) Airplane in icing conditions:

(5) Autothrottle ..... Select off

ENG VIBRATION (Caution) (Cont'd)

(6) Thrust lever (affected engine(s)) .....Advance (not more than climb thrust).

NOTE

Vibration may increase during ice shedding.

(7) **ENG VIBRATION** caution message goes out:

- **Yes –** Go to (8)
- **No –** Go to (11)

(8) ENG VIBRATION caution message goes out:

(9) Thrust levers ..... As required

(10) Autothrottle ..... As required

– COMPLETE –

(11) ENG VIBRATION caution message stays on:

(12) Thrust lever (affected engine(s)) ..... Confirm and reduce towards IDLE.

(13) Leave/avoid icing conditions.

– COMPLETE –

(14) Airplane not in icing conditions:

(15) Autothrottle ..... Select off

(16) Thrust lever (affected engine(s)) ..... Confirm and reduce towards IDLE.

(17) Vibration controlled or **ENG VIBRATION** caution message goes out:

- **Yes –** Go to (22)
- **No –** Go to (26)

ENG VIBRATION (Caution) (Cont'd)

(18) Source of vibration — N_1 or N_2 VIB icon:

(19) Autothrottle ..... Select off

(20) Thrust lever (affected engine) ..... Confirm and reduce towards IDLE.

(21) Vibration controlled or **ENG VIBRATION** caution message goes out:

- **Yes –** Go to (22)
- **No –** Go to (26)

(22) Vibration controlled or ENG VIBRATION caution message goes out:

(23) Thrust lever (affected engine) ..... As required

(24) Autothrottle ..... As required

(25) Engine instruments ..... Monitor

– COMPLETE –

(26) Vibration not controlled or ENG VIBRATION caution message stays on:

NOTE

It is not recommended that an engine be shut down unless there is another indication of a severe engine abnormality.

(27) Other engine indications are normal:

- **Yes –** Go to (28)
- **No –** Go to (31)

(28) Other engine indications are normal:

(29) Thrust levers ..... As required

ENG VIBRATION (Caution) (Cont'd)

(30) Engine instruments ..... Monitor

– COMPLETE –

(31) Other engine indications are not normal:

(32) Select affected engine:

- **Left engine –** Go to (33)
- **Right engine –** Go to (35)

(33) Left engine affected:

(34) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

(35) Right engine affected:

(36) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

L ENG EXCEEDANCE (Caution)

(1) Left engine indications normal:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) Left engine indications normal:

(3) Left engine instruments ..... Monitor

– COMPLETE –

L ENG EXCEEDANCE (Caution) (Cont'd)

(4) Left engine indications not normal:

(5) Autothrottle ..... Select off

(6) Left thrust lever ..... Confirm and reduce towards IDLE.

(7) **L ENG EXCEEDANCE** caution message goes out:

→ **Yes –** Go to (8)

→ **No –** Go to (11)

(8) L ENG EXCEEDANCE caution message goes out:

(9) Left thrust lever ..... As required

(10) Left engine instruments ..... Monitor

– COMPLETE –

(11) L ENG EXCEEDANCE caution message stays on:

(12) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L ENG FAIL (Caution)

(1) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L ENG NACELLE OVHT (Caution)

(1) Autothrottle ..... Select off

(2) Left thrust lever ..... Confirm and IDLE

(3) ANTI-ICE, L COWL ..... OFF

L ENG NACELLE OVHT (Caution) (Cont'd)

(4) Leave/avoid icing conditions.

After 30 seconds:

(5) **L ENG NACELLE OVHT** caution message goes out:

- **Yes –** Go to (6)
- **No –** Go to (9)

(6) L ENG NACELLE OVHT caution message goes out:

(7) Left thrust lever ..... As required

(8) Autothrottle ..... As required

– COMPLETE –

(9) L ENG NACELLE OVHT caution message stays on:

(10) Shutdown – Left engine procedure ..... Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L ENG OIL FILTER (Caution)

(1) Left engine instruments ..... Check

(2) Engine indications normal:

- **Yes –** Go to (3)
- **No –** Go to (5)

(3) Engine indications normal:

(4) Left engine instruments ..... Monitor

– COMPLETE –

L ENG OIL FILTER (Caution) (Cont'd)

(5) Engine indications not normal:

(6) Land at the nearest suitable airport.

– COMPLETE –

L ENG OPER DEGRADED (Caution)

(1) L THROTTLE FAIL caution message is also shown:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) L THROTTLE FAIL caution message is also shown:

(3) L THROTTLE FAIL procedure ..... Accomplish Refer to Power plant – L THROTTLE FAIL.

– COMPLETE –

(4) L THROTTLE FAIL caution message is not shown:

(5) Autothrottle ..... Select off

(6) Left thrust lever .....Avoid abrupt changes.

(7) L BLEED ..... Select auto

(8) APU BLEED ..... OFF

(9) Avoid icing conditions.

(10) Left engine instruments ..... Monitor

(11) Land at the nearest suitable airport.

NOTE

Full thrust or full reverse thrust may not be available.

– COMPLETE –

L ENG START ABORT (Caution)

(1) L ENG run ..... OFF

– COMPLETE –

L ENG STARTER FAIL ON (Caution)

(1) In flight:

- **Yes –** Go to (2)
- **No –** Go to (15)

(2) In flight:

(3) L BLEED ..... OFF

(4) L PACK ..... OFF

(5) APU BLEED ..... OFF

(6) XBLEED ..... MAN CLSD

(7) Altitude ..... Not above 31000 feet

(8) ANTI-ICE, WING ..... OFF

(9) Leave/avoid icing conditions.

(10) **L ENG STARTER FAIL ON** caution message goes out:

- **Yes –** Go to (11)
- **No –** Go to (13)

(11) L ENG STARTER FAIL ON caution message goes out:

(12) No further action required.

– COMPLETE –

(13) L ENG STARTER FAIL ON caution message stays on:

(14) Land at the nearest suitable airport.

– COMPLETE –

L ENG STARTER FAIL ON (Caution) (Cont'd)

(15) On ground:

(16) L ENG run ..... OFF

(17) L BLEED ..... OFF

(18) APU BLEED ..... OFF

(19) XBLEED ..... MAN CLSD

(20) External air supply ..... Remove

– COMPLETE –

L REVERSER FAIL (Caution)

NOTE

The left thrust reverser is not available.

On approach:

(1) FMS, PERF – ARR – SLAT/FLAP 4

(2) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(3) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(4) SLAT/FLAP lever 4

– COMPLETE –

L REVERSER UNLOCK (Caution)

(1) Autothrottle ..... Select off

(2) Left thrust lever .....Confirm and IDLE

(3) Land immediately at the nearest suitable airport.

NOTE

Both thrust reversers available after landing.

– COMPLETE –

L THROTTLE FAIL (Caution)

(1) Autothrottle ..... Select off

(2) Left thrust lever .....Confirm and IDLE

NOTE

1. The FADEC commands the thrust setting on the left engine to IDLE regardless of the thrust lever position.
2. The left thrust lever and thrust reverser is inoperative.

(3) Engine thrust confirmed IDLE:

➔ **Yes –** Go to (4)

➔ **No –** Go to (10)

(4) Engine thrust confirmed IDLE:

On approach:

(5) FMS, PERF – ARR – SLAT/FLAP 4

(6) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$

L THROTTLE FAIL (Caution) (Cont'd)

(7) OLD factor .....Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(8) SLAT/FLAP lever 4

(9) Rudder trim .....Centered by 1000 feet AGL

Prevents nosewheel steering deviation after landing.

– COMPLETE –

(10) Engine thrust not IDLE:

(11) Shutdown – Left engine procedure .....Accomplish Refer to Power plant – Shutdown – Left engine.

– COMPLETE –

L-R ENG FUEL FILTER (Caution)

Description: Both filters bypassed.

(1) Fuel flow ..... Monitor

(2) Thrust levers .....Avoid abrupt changes.

(3) Land immediately at the nearest suitable airport.

– COMPLETE –

I

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

R ENG EXCEEDANCE (Caution)

(1) Right engine indications normal:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) Right engine indications normal:

(3) Right engine instruments ..... Monitor

– COMPLETE –

(4) Right engine indications not normal:

(5) Autothrottle ..... Select off

(6) Right thrust lever ..... Confirm and reduce towards IDLE.

(7) **R ENG EXCEEDANCE** caution message goes out:

➔ **Yes –** Go to (8)

➔ **No –** Go to (11)

(8) R ENG EXCEEDANCE caution message goes out:

(9) Right thrust lever ..... As required

(10) Right engine instruments ..... Monitor

– COMPLETE –

(11) R ENG EXCEEDANCE caution message stays on:

(12) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

R ENG FAIL (Caution)

(1) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

R ENG NACELLE OVHT (Caution)

(1) Autothrottle ..... Select off

(2) Right thrust lever ..... Confirm and IDLE

(3) ANTI-ICE, R COWL ..... OFF

(4) Leave/avoid icing conditions.

After 30 seconds:

(5) **R ENG NACELLE OVHT** caution message goes out:

- **Yes –** Go to (6)
- **No –** Go to (9)

(6) R ENG NACELLE OVHT caution message goes out:

(7) Right thrust lever ..... As required

(8) Autothrottle ..... As required

– COMPLETE –

(9) R ENG NACELLE OVHT caution message stays on:

(10) Shutdown – Right engine procedure ..... Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

R ENG OIL FILTER (Caution)

(1) Right engine instruments ..... Check

(2) Engine indications normal:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) Engine indications normal:

(4) Right engine instruments ..... Monitor

– COMPLETE –

(5) Engine indications not normal:

(6) Land at the nearest suitable airport.

– COMPLETE –

R ENG OPER DEGRADED (Caution)

(1) **R THROTTLE FAIL** caution message is also shown:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

(2) R THROTTLE FAIL caution message is also shown:

(3) R THROTTLE FAIL procedure ..... Accomplish Refer to Power plant – R THROTTLE FAIL.

– COMPLETE –

(4) R THROTTLE FAIL caution message is not shown:

(5) Autothrottle ..... Select off

(6) Right thrust lever .....Avoid abrupt changes.

(7) R BLEED ..... Select auto

(8) APU BLEED ..... OFF

R ENG OPER DEGRADED (Caution) (Cont'd)

(9) Avoid icing conditions.

(10) Right engine instruments ..... Monitor

(11) Land at the nearest suitable airport.

NOTE

Full thrust or full reverse thrust may not be available.

– COMPLETE –

R ENG START ABORT (Caution)

(1) R ENG run ..... OFF

– COMPLETE –

R ENG STARTER FAIL ON (Caution)

(1) In flight:

➔ **Yes –** Go to (2)

➔ **No –** Go to (14)

(2) In flight:

(3) R BLEED ..... OFF

(4) R PACK ..... OFF

(5) XBLEED ..... MAN CLSD

(6) Altitude ..... Not above 31000 feet

(7) ANTI-ICE, WING ..... OFF

(8) Leave/avoid icing conditions.

R ENG STARTER FAIL ON (Caution) (Cont'd)

(9) **R ENG STARTER FAIL ON** caution message goes out:

➔ **Yes –** Go to (10)

➔ **No –** Go to (12)

(10) R ENG STARTER FAIL ON caution message goes out:

(11) No further action required.

– COMPLETE –

(12) R ENG STARTER FAIL ON caution message stays on:

(13) Land at the nearest suitable airport.

– COMPLETE –

(14) On ground:

(15) R ENG run ..... OFF

(16) R BLEED ..... OFF

(17) XBLEED .....MAN CLSD

– COMPLETE –

R REVERSER FAIL (Caution)

NOTE

The right thrust reverser is not available.

On approach:

(1) FMS, PERF – ARR – SLAT/FLAP 4

(2) FMS, PERF – ARR – VREF .....$V_{REF(FLAP\ 4)}$

(3) OLD factor .....Multiply by value from table.

R REVERSER FAIL (Caution) (Cont'd)

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(4) SLAT/FLAP lever 4

– COMPLETE –

R REVERSER UNLOCK (Caution)

(1) Autothrottle ..... Select off

(2) Right thrust lever .....Confirm and IDLE

(3) Land immediately at the nearest suitable airport.

NOTE

Both thrust reversers available after landing.

– COMPLETE –

R THROTTLE FAIL (Caution)

(1) Autothrottle ..... Select off

(2) Right thrust lever .....Confirm and IDLE

NOTE

1. The FADEC commands the thrust setting on the right engine to IDLE regardless of the thrust lever position.

R THROTTLE FAIL (Caution) (Cont'd)

2. The right thrust lever and thrust reverser is inoperative.

(3) Engine thrust confirmed IDLE:

➔ **Yes –** Go to (4)

➔ **No –** Go to (10)

(4) Engine thrust confirmed IDLE:

On approach:

(5) FMS, PERF – ARR – SLAT/FLAP 4

(6) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(7) OLD factor .....Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(8) SLAT/FLAP lever 4

(9) Rudder trim .....Centered by 1000 feet AGL

Prevents nosewheel steering deviation after landing.

– COMPLETE –

(10) Engine thrust not IDLE:

(11) Shutdown – Right engine procedure .....Accomplish Refer to Power plant – Shutdown – Right engine.

– COMPLETE –

THROTTLE IN REVERSE (Caution)

(1) Thrust levers .....Advance to IDLE or greater.

– COMPLETE –

Relight – Left engine

No attempt should be made to restart an engine if there are indications of engine damage. Engine damage can be identified by:

- *Abnormal vibrations,*
- *Loss of oil quantity,*
- *Loss of oil pressure,*
- *No rotational speed indications (or stays at 0 rpm/%),*
- *Surges,*
- *Any exceedances (EGT, overspeeds, etc.), or*
- *If the engine was shut down because of an engine fire or there is a recognizable possibility that an attempted relight can cause a fire.*

(1) APU (if available) .....START

(2) Autothrottle ..... Select off

(3) Left thrust lever .....Confirm and IDLE

(4) L ENG run .....Confirm and OFF

(5) Relight envelope .....Establish

ATS envelope:

- Airspeed – Not more than 250 KIAS
- Altitude – Not above 27000 feet (crossbleed) or 23000 feet (APU)

Windmill envelope:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

- Airspeed – Not less than 250 KIAS

Relight – Left engine (Cont'd)

- Altitude – Not above 27000 feet

(6) ANTI-ICE, WING ..... OFF

For crossbleed relights, ensure the operating engine EGT is less than 970°C before selecting the ENG run switch to ON.

(7) L ENG run ..... ON

(8) Monitor engine RELIGHT/START icon.

(9) Engine relights:

➔ **Yes –** Go to (10)

➔ **No –** Go to (18)

(10) Engine relights:

(11) Left thrust lever ..... As required

(12) FMS – THRUST – OEI FMS PERF ..... CNCL

(13) Autothrottle ..... As required

(14) SPD mode ..... As required

(15) TCAS ..... Select AUTO

(16) ANTI-ICE, WING ..... As required

(17) Land at the nearest suitable airport.

– COMPLETE –

(18) Engine does not relight:

(19) L ENG run ..... Confirm and OFF

Relight – Left engine (Cont'd)

(20) ANTI-ICE, WING ..... AUTO

(21) Autothrottle ..... As required

(22) Altitude ..... Not above 31000 feet

The altitude limit for single bleed operations is 31000 feet.

(23) Land at the nearest suitable airport.

On approach:

(24) FMS, PERF – ARR – SLAT/FLAP 4

(25) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(26) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(27) SLAT/FLAP lever 4

(28) Rudder trim ..... Centered by 1000 feet AGL

Prevents nosewheel steering deviation after landing.

– COMPLETE –

Relight – Right engine

No attempt should be made to restart an engine if there are indications of engine damage. Engine damage can be identified by:

- *Abnormal vibrations,*
- *Loss of oil quantity,*
- *Loss of oil pressure,*

Relight – Right engine (Cont'd)

- *No rotational speed indications (or stays at 0 rpm/%),*
- *Surges,*
- *Any exceedances (EGT, overspeeds, etc.), or*
- *If the engine was shut down because of an engine fire or there is a recognizable possibility that an attempted relight can cause a fire.*

(1) APU (if available) .....START

(2) Autothrottle ..... Select off

(3) Right thrust lever .....Confirm and IDLE

(4) R ENG run .....Confirm and OFF

(5) Relight envelope .....Establish

ATS envelope:

- Airspeed – Not more than 250 KIAS
- Altitude – Not above 27000 feet (crossbleed) or 23000 feet (APU)

Windmill envelope:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

- Airspeed – Not less than 250 KIAS
- Altitude – Not above 27000 feet

(6) ANTI-ICE, WING ..... OFF

CAUTION

For crossbleed relights, ensure the operating engine EGT is less than 970°C before selecting the ENG run switch to ON.

(7) R ENG run ..... ON

Relight – Right engine (Cont'd)

(8) Monitor engine RELIGHT/START icon.

(9) Engine relights:

➔ **Yes –** Go to (10)

➔ **No –** Go to (18)

(10) Engine relights:

(11) Right thrust lever ..... As required

(12) FMS – THRUST – OEI FMS PERF ..... CNCL

(13) Autothrottle ..... As required

(14) SPD mode ..... As required

(15) TCAS ..... Select AUTO

(16) ANTI-ICE, WING ..... As required

(17) Land at the nearest suitable airport.

– COMPLETE –

(18) Engine does not relight:

(19) R ENG run ..... Confirm and OFF

(20) ANTI-ICE, WING ..... AUTO

(21) Autothrottle ..... As required

(22) Altitude ..... Not above 31000 feet

The altitude limit for single bleed operations is 31000 feet.

(23) Land at the nearest suitable airport.

On approach:

(24) FMS, PERF – ARR – SLAT/FLAP 4

(25) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(26) OLD factor ..... Multiply by value from table.

Relight – Right engine (Cont'd)

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(27) SLAT/FLAP lever 4

(28) Rudder trim .....Centered by 1000 feet AGL

Prevents nosewheel steering deviation after landing.

– COMPLETE –

Shutdown – Left engine

(1) APU (if available) .....START

(2) Autothrottle ..... Select off

(3) Left thrust lever .....Confirm and IDLE

(4) L ENG run .....Confirm and OFF

(5) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(6) TCAS .....TA ONLY

No attempt should be made to restart an engine if there are indications of engine damage. Engine damage can be identified by:

- *Abnormal vibrations,*
- *Loss of oil quantity,*
- *Loss of oil pressure,*

Shutdown – Left engine (Cont'd)

- *No rotational speed indications (or stays at 0 rpm/%),*
- *Surges,*
- *Any exceedances (EGT, overspeeds, etc.), or*
- *If the engine was shut down because of an engine fire or there is a recognizable possibility that an attempted relight can cause a fire.*

(7) Engine damage suspected or precautionary shutdown:

➔ **Yes –** Go to (8)

➔ **No –** Go to (17)

(8) Engine damage suspected or precautionary shutdown:

(9) Autothrottle ..... As required

(10) Altitude ..... Not above 31000 feet

Altitude limit for single bleed operation is 31000 feet.

(11) Land at the nearest suitable airport.

NOTE

Do not rely on FMS fuel predictions.

On approach:

(12) FMS, PERF – ARR – SLAT/FLAP 4

(13) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

(14) OLD factor ..... Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Shutdown – Left engine (Cont'd)

Before landing:

(15) SLAT/FLAP lever 4

(16) Rudder trim .....Centered by 1000 feet AGL

Prevents nosewheel steering deviation after landing.

– COMPLETE –

(17) Engine damage not suspected or not a precautionary shutdown:

(18) Relight – Left engine procedure .....Accomplish Refer to Power plant – Relight – Left engine.

– COMPLETE –

Shutdown – Right engine

(1) APU (if available) .....START

(2) Autothrottle ..... Select off

(3) Right thrust lever .....Confirm and IDLE

(4) R ENG run .....Confirm and OFF

(5) SPD mode ..... MAN

NOTE

Do not re-select FMS SPD mode.

(6) TCAS .....TA ONLY

No attempt should be made to restart an engine if there are indications of engine damage. Engine damage can be identified by:

- *Abnormal vibrations,*
- *Loss of oil quantity,*
- *Loss of oil pressure,*

Shutdown – Right engine (Cont'd)

- *No rotational speed indications (or stays at 0 rpm/%),*
- *Surges,*
- *Any exceedances (EGT, overspeeds, etc.), or*
- *If the engine was shut down because of an engine fire or there is a recognizable possibility that an attempted relight can cause a fire.*

(7) Engine damage suspected or precautionary shutdown:

➔ **Yes –** Go to (8)

➔ **No –** Go to (17)

(8) Engine damage suspected or precautionary shutdown:

(9) Autothrottle ..... As required

(10) Altitude ..... Not above 31000 feet

The altitude limit for single bleed operations is 31000 feet.

NOTE

With the APU generator ON, the center fuel tank empty of fuel and the left engine at power, the **FUEL IMBALANCE** caution message can post repeatedly. It is acceptable to do repetitive, preemptive manual transfers to reduce the frequency of the **FUEL IMBALANCE** caution message.

(11) Land at the nearest suitable airport.

NOTE

Do not rely on FMS fuel predictions.

On approach:

(12) FMS, PERF – ARR – SLAT/FLAP 4

(13) FMS, PERF – ARR – VREF ..... $V_{REF(FLAP\ 4)}$

Shutdown – Right engine (Cont'd)

(14) OLD factor .....Multiply by value from table.

OLD factor Dry or wet runway	OLD factor Contaminated runway conditions
1.20	1.30

Before landing:

(15) SLAT/FLAP lever 4

(16) Rudder trim .....Centered by 1000 feet AGL

Prevents nosewheel steering deviation after landing.

– COMPLETE –

(17) Engine damage not suspected or not a precautionary shutdown:

(18) Relight – Right engine procedure .....Accomplish Refer to Power plant – Relight – Right engine.

– COMPLETE –

REJECTED TAKEOFF

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Rejected takeoff

(1) Thrust levers ..... IDLE

(2) Wheel brakes .....Maximum

(3) Thrust reversers ..... Maximum, consistent with directional control.

(4) ATC .....Advise

When stopped:

(5) PARK BRAKE ..... ON

(6) Evacuation required:

➔ **Yes –** Go to (7)

➔ **No –** Go to (9)

(7) Evacuation required:

(8) Emergency evacuation procedure ..... Accomplish Refer to Evacuation – Emergency evacuation.

– COMPLETE –

(9) Evacuation not required:

(10) Passengers .....Advise

– COMPLETE –

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SMOKE, FIRE AND FUMES

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Smoke/fire/fumes procedure

(1) Oxygen masks ..... If required, on, 100%, and EMERGENCY

(2) Cabin and crew communication ..... Establish

(3) Plan to land at the nearest suitable airport.

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

CAUTION

Passenger masks should not be deployed when performing smoke or fire procedures.

(4) EQUIP COOLING, INLET ..... OFF

(5) CABIN PWR ..... OFF

(6) RECIRC AIR ..... OFF

WARNING

Any time smoke/fumes becomes the greatest threat accomplish the Smoke or fumes removal procedure.

Smoke/fire/fumes procedure (Cont'd)

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(7) Time permits and source of smoke/fire/fumes can be quickly identified and eliminated:

- **Yes –** Go to (11)
- **No –** Go to (8)

(8) Time does not permit and source of smoke/fire/fumes cannot be quickly identified:

CAUTION

The crew should consider an overweight landing, tailwind landing, ditching or off–airport landing.

(9) Land immediately at the nearest suitable airport.

(10) Smoke or fumes removal procedure .... Accomplish, if required. Refer to Smoke, fire and fumes – Smoke or fumes removal.

– COMPLETE –

Smoke/fire/fumes procedure (Cont'd)

(11) Time permits and source of smoke/fire/fumes can be quickly identified and eliminated:

(12) Select appropriate procedure for source of smoke/fire/fumes:

- **Air-conditioning –** Go to (13)
- **Electrical –** Go to (33)
- **Cabin –** Go to (107)

(13) Source is identified as coming from air-conditioning:

NOTE

Smoke may take a considerable amount of time to dissipate.

(14) XBLEED .....MAN CLSD

(15) APU BLEED ..... OFF

(16) L PACK ..... OFF

(17) Altitude .....Not above 31000 feet

(18) Smoke/fire/fumes stops:

- **Yes –** Go to (19)
- **No –** Go to (22)

Smoke/fire/fumes procedure (Cont'd)

(19) Smoke/fire/fumes stops:

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(20) Land immediately at the nearest suitable airport.

(21) Smoke or fumes removal procedure .... Accomplish, if required. Refer to Smoke, fire and fumes – Smoke or fumes removal.

– COMPLETE –

(22) Smoke/fire/fumes does not stop:

(23) L PACK ..... Select auto

(24) R PACK ..... OFF

(25) Smoke/fire/fumes stops:

- **Yes –** Go to (26)
- **No –** Go to (29)

Smoke/fire/fumes procedure (Cont'd)

(26) Smoke/fire/fumes stops:

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(27) Land immediately at the nearest suitable airport.

(28) Smoke or fumes removal procedure .... Accomplish, if required. Refer to Smoke, fire and fumes – Smoke or fumes removal.

– COMPLETE –

(29) Smoke/fire/fumes does not stop:

(30) R PACK ..... Select auto

CAUTION

The crew should consider an overweight landing, tailwind landing, ditching, or off-airport landing.

(31) Land immediately at the nearest suitable airport.

(32) Smoke or fumes removal procedure .... Accomplish, if required. Refer to Smoke, fire and fumes – Smoke or fumes removal.

– COMPLETE –

Smoke/fire/fumes procedure (Cont'd)

(33) Source is identified as coming from electrical:

NOTE

Smoke may take a considerable amount of time to dissipate.

The series of steps that follow isolate each channel of the electrical system, one at a time.

(34) ECL ..... DU 5

(35) ELEC synoptic page ..... Select

Channel 1 isolation:

NOTE

During this procedure DU 1, DU 3, AC BUS 1, DC BUS 1, and DC ESS BUS 1 will not be powered.

(36) BUS ISOL ..... MAIN

(37) Affected generator ..... OFF

NOTE

The affected generator supplies power to AC BUS 1 on the ELEC synoptic page.

(38) BATT 1 ..... OFF

(39) CTP, XPDR/TCAS ..... Select XPDR 2

(40) FD .....Couple to left side.

NOTE

1. The use of EICAS, REV compresses both PFD and allows two additional MFW.

Smoke/fire/fumes procedure (Cont'd)

2. To recover the use of autopilot, ensure FD is coupled to left side and re-engage autopilot if necessary.

(41) Smoke/fire/fumes stops:

➔ **Yes –** Go to (42)

➔ **No –** Go to (47)

(42) Smoke/fire/fumes stops:

CAUTION

1. Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.
2. Do not land on contaminated runway.

Significant systems affected:

- APU start
- APU door actuator
- PTU
- Hydraulic pump 2B
- Hydraulic 1 pressure indication
- Hydraulic 2 quantity indication
- Crew oxygen pressure indication
- Rudder trim
- Passenger oxygen auto deploy function
- Attendant call lights
- Flaps slower than normal
- Wheel brakes – reduced braking force
- Left thrust reverser
- Left windshield wiper and heating

Smoke/fire/fumes procedure (Cont'd)

- Left fuel pump
- Autopilot (if FD not coupled left)
- ADSP 1
- Autothrottle
- XPDR 1
- TCAS
- TAWS
- DME 1
- VHF 3
- HF 1 (if installed)
- SATCOM (if installed)
- HUD (if installed)
- RAD ALT 3 (if installed)
- DU 1 and DU 3
- Tire pressure indication
- MKP 1 (arrow keys and ENTER available)
- Nose landing light
- Left landing light
- Left taxi light
- Left map and reading lights
- Remote cockpit door lock
- Forward lavatory smoke detection
- Toilet flush
- Navigation lights
- Seat belt signs
- Left and right cockpit power outlets
- Fuel inerting
- Trim air
- TRU 1
- ACP 3 (VHF 1 only)

(43) Land immediately at the nearest suitable airport.

(44) Reversion panel, L or R PFD ..... Select ADS until ADS source data indication is not amber on both PFDs.

NOTE

RNP AR approaches are prohibited.

Smoke/fire/fumes procedure (Cont'd)

On approach:

(45) FMS, PERF – ARR – VREF ..... V_{REF}

(46) OLD factor ..... Multiply by 1.70

– COMPLETE –

(47) Smoke/fire/fumes does not stop:

Channel 2 isolation:

NOTE

During this procedure DU 4, DU 5, AC BUS 2, DC BUS 2, and DC ESS BUS 2 will not be powered.

(48) BUS ISOL ..... Confirm MAIN

(49) BATT 1 ..... AUTO

(50) Affected generator ..... Select on

NOTE

Before Channel 1 isolation, the affected generator supplied power to AC BUS 1 on the ELEC synoptic page.

After 30 seconds:

(51) ECL ..... DU 2

(52) Affected generator ..... OFF

NOTE

The affected generator supplies power to AC BUS 2 on the ELEC synoptic page.

(53) BATT 2 ..... OFF

Smoke/fire/fumes procedure (Cont'd)

(54) CTP, XPDR/TCAS ..... Select XPDR 1

(55) CTP 2 ..... Select off

(56) CTP 1 ..... ATC on VHF 1, if required

(57) Smoke/fire/fumes stops:

- **Yes –** Go to (58)
- **No –** Go to (70)

(58) Smoke/fire/fumes stops:

CAUTION

1. Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.
2. Do not land on contaminated runway.

Significant systems affected:

- Hydraulic pumps 3A and 3B
- Hydraulic pump 2B (when single engine-driven generator or APU available)
- Hydraulic 2 pressure indication
- Hydraulic 3 quantity indication
- Right fuel pump
- VHF 2
- CTP 2
- MKP 2 (arrow keys and ENTER available)
- CCP 2
- Passenger oxygen auto deploy function
- Slats
- Flaps slower than normal

Smoke/fire/fumes procedure (Cont'd)

- XPDR 2
- TCAS
- WXR
- Wing anti–ice
- ADSP 2 and ADSP 4
- HF 2 (if installed)
- FMS 2 (LPV minimums not authorized)
- GNSS 2 (LPV minimums not authorized)
- APPR 1
- DME 2
- NAV 2
- RAD ALT 2
- DU 4 and DU 5
- R HUD (if installed)
- Wheel brakes – reduced braking force
- Right thrust reverser
- Right landing light
- Nose taxi light
- Right taxi light
- Right map and reading lights
- Right window heating
- Right windshield wiper and heating
- Outflow valve manual control
- Aft lavatory smoke detection
- Recirculation fan
- TRU 2

(59) Land immediately at the nearest suitable airport.

(60) Reversion panel, L or R PFD ..... Select ADS until ADS source data indication is not amber on both PFDs.

(61) Use AVIONIC, CTP tab for R CTP functions.

NOTE

RNP AR approaches are prohibited.

Smoke/fire/fumes procedure (Cont'd)

On approach:

(62) Check SLAT position:

- **SLAT position IN –** Go to (63)
- **SLAT position OUT/MID/FULL –** Go to (67)

(63) SLAT position IN:

(64) Maximum landing weight ..... Use the table to determine the value and correct for wind and slope.

Smoke/fire/fumes procedure (Cont'd)

LANDING WEIGHT KG (LB) LIMITED BY MAXIMUM BRAKE ENERGY AND TIRE SPEED							
FLIGHT CONTROL FAILURE		V_{REF}+15KT					
OAT		PRESSURE ALTITUDE (FT)					
^{0}C	^{0}F	0	2000	4000	6000	8000	10000
-20 AND BELOW	-4 AND BELOW	85230 (187900)	82680 (182300)	80010 (176400)	77380 (170600)	74750 (164800)	71840 (158400)
0	32	82280 (181400)	79690 (175700)	77060 (169900)	74430 (164100)	71840 (158400)	68990 (152100)
20	68	79600 (175500)	77010 (169800)	74380 (164000)	71800 (158300)	69260 (152700)	65540 (144500)
30	86	78330 (172700)	75740 (167000)	73160 (161300)	70530 (155500)	68030 (150000)	63140 (139200)
40 AND ABOVE	104 AND ABOVE	77110 (170000)	74520 (164300)	71930 (158600)	69350 (152900)	65770 (145000)	60910 (134300)

CS300_LW_ATA27_DVREF15_05AUG2016

Wind correction:

Tailwind: decrease landing weight by 18% per 10kts of tailwind.

Runway Slope Correction:

Downhill: decrease maximum landing weight by 2% per 1% downhill slope.

Landing weight limited by brake energy and tire speed – ΔVREF 15 kt
Figure 04–21–1

Smoke/fire/fumes procedure (Cont'd)

(65) FMS, PERF – ARR – VREF ..... V_{REF} + 15

(66) OLD factor ..... Multiply by 2.05

– COMPLETE –

(67) SLAT position OUT/MID/FULL:

(68) FMS, PERF – ARR – VREF ..... V_{REF} + 5

(69) OLD factor ..... Multiply by 1.85

– COMPLETE –

(70) Smoke/fire/fumes does not stop:

Channel 3 isolation:

NOTE

During this procedure DU 2, AC ESS BUS, and DC ESS BUS 3 will not be powered.

(71) HYD 3A ..... OFF

(72) BATT 2 ..... AUTO

(73) Affected generator ..... Select on

NOTE

Before Channel 2 isolation, the affected generator supplied power to AC BUS 2 on the ELEC synoptic page.

(74) CTP 2 ..... Select on

After 30 seconds:

(75) ECL ..... DU 5

(76) BUS ISOL ..... ESS

Smoke/fire/fumes procedure (Cont'd)

(77) CTP, XPDR/TCAS ..... Select XPDR 2

(78) CTP 1 ..... Select off

(79) CTP 2 ..... ATC on VHF 2, if required

(80) Smoke/fire/fumes stops:

- **Yes –** Go to (81)
- **No –** Go to (88)

(81) Smoke/fire/fumes stops:

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

Significant systems affected:

- Hydraulic 1 quantity indication
- Hydraulic 3 pressure indication
- ISI (ATT only)
- Rudder degraded
- Left fuel pump
- Gravity transfer
- ADSP 3
- VHF 1
- XPDR 1
- CTP 1
- CCP 1 (arrow keys and ENTER available)
- Reversion panel
- DU 2
- L HUD (if installed)
- Slats/flaps slower than normal
- MFS (1 pair)
- Right stick shaker

Smoke/fire/fumes procedure (Cont'd)

- Wing anti-ice
- PFCC 3
- FMS 1 (LPV minimums not authorized)
- GNSS 1 (LPV minimums not authorized)
- NAV 1
- RAD ALT 1
- Alternate gear extension
- Ram air
- Equipment bay cooling
- Left window heating
- CPDLC (if installed)
- TRU 3
- OMS

(82) Land immediately at the nearest suitable airport.

(83) FD ..... Couple to right side.

(84) Reversion panel, L or R PFD ..... Select ADS until ADS source data indication is not amber on both PFDs.

(85) Use AVIONIC, CTP tab for L CTP functions.

NOTE

RNP AR approaches are prohibited.

On approach:

(86) FMS, PERF – ARR – VREF ..... V_{REF}

(87) OLD factor ..... Multiply by 1.15

– COMPLETE –

Smoke/fire/fumes procedure (Cont'd)

(88) Smoke/fire/fumes does not stop:

These steps will deploy the RAT:

NOTE

During this procedure DU 3, DU 4, DU 5, AC BUS 1, AC BUS 2, DC BUS 1, and DC BUS 2 will not be powered.

(89) BUS ISOL ..... AUTO

(90) CTP 1 ..... Select on, ATC on VHF 1

(91) ECL ..... DU 2

(92) RAT GEN ..... ON

(93) CTP, XPDR/TCAS ..... Select XPDR 1

(94) FD .....Couple to left side.

CAUTION

The **EMER PWR ONLY** warning message will be shown after all generators are selected off. The steps are included in this procedure and do not need to be done separately.

(95) L GEN ..... OFF

(96) R GEN ..... OFF

(97) APU GEN ..... OFF

(98) L PACK .....Confirm auto

(99) R PACK .....Confirm auto

(100) EQUIP COOLING, EXHAUST ..... ON

Smoke/fire/fumes procedure (Cont'd)

(101) Land immediately at the nearest suitable airport.

(102) Leave/avoid icing conditions.

CAUTION

1. Below 148 KIAS the RAT generator may be inoperative and the airplane will be operating on battery power only.
2. Brakes are not available when batteries are depleted.
3. Do not land on contaminated runway.

(103) Airspeed .....Not less than 155 KIAS until landing assured.

NOTE

RNP AR approaches are prohibited.

Significant systems affected when operating on RAT power:

- Hydraulic pumps 2B, 3A, 3B, and PTU
- Rudder trim
- XPDR 2
- TCAS
- Right fuel pump
- ADSP 1 and ADSP 2
- Autothrottle
- IRU 2
- TRU 1 and 2
- Attendant call lights
- Slats/flaps slower than normal
- Left and right thrust reversers
- Exterior lighting (landing lights, strobe lights, navigation lights, beacon lights, taxi lights)

Smoke/fire/fumes procedure (Cont'd)

- NAV to NAV transfer
- ADS-B
- VHF datalink/CPDLC
- VHF 2
- HUD (if installed)
- DU 3, DU 4, and DU 5
- CCP 2 (available on DU 2 only)
- TAWS
- WXR
- HF 2 (if installed)
- SATCOM (if installed)
- GNSS 2 (LPV minimums not authorized)
- DME 1 and 2
- NAV 2 and 3
- RAD ALT 2 and 3
- Left and right ice detectors (manual anti-ice control only)
- Left and right windshield heating, right window heating
- Left and right windshield wipers
- Left and right map and reading lights
- Recirculation fan
- Fuel inerting
- Toilet flush
- Seat belt signs
- MKP 2

On approach:

(104) Airspeed .....Not less than 155 KIAS until landing assured.

Smoke/fire/fumes procedure (Cont'd)

CAUTION

1. Below 148 KIAS the batteries may be the only source of electrical power, and last for at least 5 minutes. Batteries will recharge above 148 KIAS if go-around is required.
2. Brakes are not available when batteries are depleted.

(105) Approach speed ..... V_{REF}

NOTE

FMS VSPEEDS not available.

(106) OLD factor ..... Multiply by 1.30

(107) Source is identified as coming from the cabin:

(108) Designated crew member .....Advise

(a) To isolate and extinguish source of smoke or fire, and to secure the area.

(b) To turn off all electrical sources via CMS.

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(109) Land immediately at the nearest suitable airport.

Smoke/fire/fumes procedure (Cont'd)

(110) Smoke or fumes removal procedure .... Accomplish, if required. Refer to Smoke, fire and fumes – Smoke or fumes removal.

– COMPLETE –

Smoke or fumes removal

(1) EMER DEPRESS ..... ON

(2) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(3) PACK FLOW ..... HI (if available)

(4) AUTO PRESS ..... Select auto

(5) Smoke is evacuating at an acceptable rate:

- **Yes –** Go to (6)
- **No –** Go to (9)

(6) Smoke is evacuating at an acceptable rate:

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(7) Land immediately at the nearest suitable airport.

Smoke or fumes removal (Cont'd)

(8) Smoke/fire/fumes procedure ..... Continue, if required. Refer to Smoke, fire and fumes – Smoke/fire/fumes procedure.

– COMPLETE –

(9) Smoke is not evacuating at an acceptable rate:

(10) AUTO PRESS ..... MAN

CAUTION

Continuing to destination is not recommended. If the decision to continue is made, the flight crew must acknowledge that the threat has been positively identified, confirmed to be extinguished, and the smoke/fumes have dissipated.

(11) Land immediately at the nearest suitable airport.

(12) Smoke/fire/fumes procedure ..... Continue, if required. Refer to Smoke, fire and fumes – Smoke/fire/fumes procedure.

– COMPLETE –

AFT CARGO FIRE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

(1) CARGO, AFT FIRE ..... Select

AFT CARGO FIRE (Warning) (Cont'd)

(2) RECIRC AIR ..... OFF

(3) AIR, CARGO, AFT ..... OFF

(4) CARGO BTL ..... Select

(5) Land immediately at the nearest suitable airport.

– COMPLETE –

EQUIP BAY SMOKE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

(1) **EQUIP BAY OVHT** warning message is also shown:

→ **Yes –** Go to (2)

→ **No –** Go to (27)

(2) EQUIP BAY OVHT warning message is also shown:

(3) EQUIP COOLING, EXHAUST ..... ON

(4) RECIRC AIR ..... OFF

(5) CABIN PWR ..... OFF

(6) EQUIP COOLING, INLET ..... OFF

(7) All packs and bleeds available:

→ **Yes –** Go to (8)

→ **No –** Go to (10)

EQUIP BAY SMOKE (Warning) (Cont'd)

(8) All packs and bleeds available:

(9) Land immediately at the nearest suitable airport.

– COMPLETE –

(10) One or two pack(s) or one or two bleed(s) not available:

(11) Oxygen masks ..... If required, on, 100%

Normal (N) is available if 100% is not required.

(12) EMER DEPRESS ..... ON

(13) EDM ..... ON

NOTE

When EDM mode is engaged, closely monitor airspeed and ensure that the aircraft is not going into overspeed. If the aircraft goes into overspeed, deactivate EDM and complete the emergency descent manually if required.

(14) SEAT BELTS ..... ON

(15) Cabin ..... Advise

Use PA to advise occupants to be seated with seat belts on.

(16) PAX OXY (if required) ..... DPLY

(17) SPOILER lever ..... FULL then MAX

(18) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(19) HDG ..... As required

At a safe altitude:

(20) SPOILER lever ..... RET

EQUIP BAY SMOKE (Warning) (Cont'd)

(21) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(22) EDM ..... Select off

(23) Transponder ..... As required

(24) FCP modes ..... As required

(25) Land immediately at the nearest suitable airport.

(26) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

(27) EQUIP BAY OVHT warning message is not shown:

(28) RECIRC AIR ..... OFF

(29) CABIN PWR ..... OFF

(30) EQUIP COOLING, INLET ..... OFF

(31) EQUIP COOLING, EXHAUST ..... VLV ONLY

(32) All packs and bleeds available:

- **Yes –** Go to (33)
- **No –** Go to (35)

(33) All packs and bleeds available:

(34) Land immediately at the nearest suitable airport.

– COMPLETE –

EQUIP BAY SMOKE (Warning) (Cont'd)

(35) One or two pack(s) or one or two bleed(s) not available:

(36) Oxygen masks ..... If required, on, 100%

Normal (N) is available if 100% is not required.

(37) EMER DEPRESS ..... ON

(38) EDM ..... ON

NOTE

When EDM mode is engaged, closely monitor airspeed and ensure that the aircraft is not going into overspeed. If the aircraft goes into overspeed, deactivate EDM and complete the emergency descent manually if required.

(39) SEAT BELTS ..... ON

(40) Cabin ..... Advise

Use PA to advise occupants to be seated with seat belts on.

(41) PAX OXY (if required) ..... DPLY

(42) SPOILER lever ..... FULL then MAX

(43) Descent ..... 10000 feet or lowest safe altitude, whichever is higher.

(44) HDG ..... As required

At a safe altitude:

(45) SPOILER lever ..... RET

(46) Oxygen masks ..... As required

When mask is removed, closing the storage box door will transfer the microphone to normal.

(47) EDM ..... Select off

EQUIP BAY SMOKE (Warning) (Cont'd)

(48) Transponder ..... As required

(49) FCP modes ..... As required

(50) Land immediately at the nearest suitable airport.

(51) Unpressurized flight procedure ..... Accomplish Refer to Air-conditioning, bleed and pressurization – Unpressurized flight procedure.

– COMPLETE –

FWD CARGO FIRE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

(1) CARGO, FWD FIRE ..... Select

(2) RECIRC AIR ..... OFF

(3) AIR, CARGO, FWD ..... OFF

(4) CARGO BTL ..... Select

(5) Land immediately at the nearest suitable airport.

– COMPLETE –

LAV SMOKE (Warning)

WARNING

During smoke/fire/fumes emergencies, prepare to land the aircraft without delay while conducting fire suppression and/or smoke evacuation procedures.

(1) SEAT BELTS ..... ON

(2) Cabin crew ..... Advise

(3) Smoke or fumes removal procedure .... Accomplish, if required. Refer to Smoke, fire and fumes – Smoke or fumes removal.

– COMPLETE –

MLG BAY OVHT (Warning)

(1) Airspeed ..... Not more than 250 KIAS

(2) Landing gear ..... DN

(3) **MLG BAY OVHT** warning message goes out:

- **Yes –** Go to (4)
- **No –** Go to (6)

(4) MLG BAY OVHT warning message goes out:

(5) Landing gear ..... As required

– COMPLETE –

(6) MLG BAY OVHT warning message stays on:

(7) Land at the nearest suitable airport.

(8) STATUS synoptic page ..... Select

(9) Tire pressure ..... Check

MLG BAY OVHT (Warning) (Cont'd)

(10) Tire pressure is normal or only one tire pressure is amber:

- **Yes –** Go to (11)
- **No –** Go to (13)

(11) Tire pressure is normal or only one tire pressure is amber:

(12) No further action required.

– COMPLETE –

(13) Tire pressure is amber for both tires on the same side:

(14) Low tire pressure landing procedure ..... Accomplish Refer to Landing gear, wheel, and brake system – Low tire pressure landing procedure.

– COMPLETE –

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CHAPTER 5 – PERFORMANCE

INTRODUCTION

DISPATCH DATA

DISPATCH DATA – PW1521G–3 <72211001D>

OPERATIONAL DATA – PW1521G–3 <72211001D>

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CONVERSION AND CORRECTIONS

OZONE CONCENTRATION

INTRODUCTION

A. Introduction

The information provided in this chapter is used to calculate specific types of performance data.

The chapter is divided into four sections:

- Dispatch
- Flight planning
- Operational
- Regulatory TOW and LW charts

Each section contains a limited and conservative set of data that has been pre-computed with the use of the Performance software. For the full extent and optimization of the performance data, the use of the Performance software (CAFM, CIFP, etc.) is recommended.

At the beginning of each section, a step-by-step example is given to explain how to use the data. For higher accuracy interpolation is possible and is demonstrated where appropriate. Extrapolation is not permitted.

NOTE

The examples and associated tables are for illustrative purposes only and may not represent the actual performance of the aircraft. Always use the correct charts to derive the performance calculations.

In the event of a discrepancy between the data in this chapter and the data in the approved Airplane Flight Manual (AFM), the AFM always takes precedence.

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INTRODUCTION

The dispatch data section provides limited data for the takeoff, enroute, and landing phases. It allows for self-dispatch of the aircraft when no other means are available.

This section contains descriptions of the data, examples, and the required tables to calculate the parameters for self-dispatch.

The examples used in this section are designed to represent a single dispatch scenario from takeoff to landing. They show the steps to calculate the parameters that follow:

- Maximum allowable takeoff weight,
- Takeoff speeds,
- Takeoff AEO departure gradient,
- Enroute net level-off weight, and
- Maximum allowable landing weight.

NOTE

The charts used in the examples are for illustrative purposes only and may not represent the actual performance of the aircraft. Always use the correct charts to derive the performance calculations.

EXAMPLE – DISPATCH

A. Example conditions <Metric>

The examples throughout the dispatch data section assume the conditions that follow:

Takeoff:

- Runway length = 2845 m
- Slope = +1.5% (+ uphill)
- Headwind = 20 kts
- Line-up adjustment = 0 m

- Runway elevation = 1000 ft
- QNH = 1013 hPa
- Runway condition = Dry
- Temperature = 28°C (ISA + 15°C)
- Engine bleed settings = Off
- Flap setting = FLAP 3
- Engine thrust rating = TO
- Obstacle height from lowest point of runway = 325 ft
- Obstacle distance from brake release = 4045 m
- MTOW (structural) = 60781 kg
- SID required gradient = 6.7% up to 6300 ft AGL
- Winds aloft = 25 kts

Enroute:

- Highest obstacle elevation = 17000 ft
- Enroute temperature = ISA
- Wind = Still
- QNH = 1013 hPa
- APU = ON

Landing:

- Landing Distance Available (LDA) = 1700 m
- Headwind = 10 kts
- Runway elevation = 500 ft
- QNH = 1013 hPa
- MLW (structural) = 52390 kg
- Flap setting = FLAP 5
- Temperature = 30°C

B. Maximum allowable takeoff weight <Metric>

The maximum allowable takeoff weight is the lowest of the following:

- Runway/climb limited takeoff weight,
- Obstacle limited takeoff weight, or
- Maximum structural Takeoff Weight (MTOW).

To calculate the maximum takeoff weight allowed, for simplification use the shortest of the TORA, TODA or ASDA declared by the airport authority, then:

1. Use the wind and slope corrections to determine the corrected runway length (using the set of tables appropriate for runway surface conditions).
2. Calculate the weight limited by field and climb considerations.
3. Calculate the weight limited by obstacle consideration.
4. Compare the results of step 2 and step 3 to the structural limited takeoff weight and keep the lowest weight. This becomes the maximum allowable takeoff weight.

NOTE

1. Published takeoff tables are based on V_1=V_R and a fixed V_2/V_S ratio of 1.25. Maximum brake energy and maximum tire speed limitations are taken into account in the weight limited by field consideration.
2. Line-up distance adjustments are to be applied before entering the tables for the determination of the maximum allowable takeoff weight.

(1) Runway length

The Slope corrected runway length tables (refer to Takeoff – Runway length corrections – Dry and wet <72211001D>) are used to adjust the runway length due to the applicable slope.

The slope corrected runway length is found at the intersection of the selected runway length and the applicable runway slope.

The Slope and wind corrected runway length table (refer to Takeoff – Runway length corrections – Dry and wet <72211001D>) is used to adjust the runway length due to the applicable wind condition (after applying the slope correction).

The slope and wind corrected runway length is found at the intersection of the runway length corrected for slope (determined previously) and the applicable wind value.

Example:

Conditions:

- Runway length = 2845 m (2800 m used in table, conservatively)
- Runway slope = +1.5%

Use the Example – Takeoff – Slope corrected runway length table (refer to Figure 05–02–1).

SLOPE CORRECTED RUNWAY LENGTH - TAKEOFF

PW1524G - TO FLAP 3 ENGINE BLEEDS OFF	DRY RUNWAY	SLOPE CORR'D LENGTH (M)

RWY LENGTH (M)	SLOPE (%)								
	DOWNHILL					UPHILL			
	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0
1200	1210	1200	1200	1200	1200	1180	1160	1150	1130
1400	1410	1410	1400	1400	1400	1370	1330	1310	1290
1600	1620	1620	1610	1600	1600	1560	1500	1480	1440
1800	1830	1820	1810	1800	1800	1750	1680	1650	1600
2000	2040	2030	2010	2000	2000	1940	1850	1810	1760
2200	2240	2230	2210	2210	2200	2130	2030	1980	1910
2400	2450	2440	2420	2410	2400	2320	2200	2150	2070
2600	2660	2640	2620	2610	2600	2510	2370	2310	2220
2800	2870	2850	2820	2810	2800	2700	2550	2480	2380
3000	3070	3060	3030	3010	3000	2890	2720	2640	2530
3200	3280	3260	3230	3210	3200	3080	2890	2810	2690
3400	3490	3470	3430	3420	3400	3270	3070	2980	2850
3600	3690	3670	3640	3620	3600	3460	3240	3140	3000
3800	3900	3880	3840	3820	3800	3650	3410	3310	3160
4000	4110	4090	4040	4020	4000	3840	3590	3480	3310
4200	4320	4290	4250	4220	4200	4030	3760	3640	3470
4400	4520	4500	4450	4420	4400	4220	3940	3810	3630
4600	4730	4700	4650	4630	4600	4410	4110	3980	3780
4800	4940	4910	4850	4830	4800	4600	4280	4140	3940
5000	5150	5120	5060	5030	5000	4790	4460	4310	4090

Example – Takeoff – Slope corrected runway length <Metric>
Figure 05–02–1

Result:

- Slope corrected runway length = 2480 m

Next step conditions:

- Slope corrected runway length = 2480 m (2400 m used in table, conservatively)
- Headwind = 20 kts

Use the Example – Takeoff – Slope and wind corrected runway length table (refer to Figure 05–02–2).

SLOPE AND WIND CORRECTED RUNWAY LENGTH–TAKEOFF					
PW1524G–TO FLAP 3 ENGINE BLEEDS OFF	DRY RUNWAY				SLOPE AND WIND CORR'D LENGTH (M)
SLOPE CORR'D LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	–10.0	0.0	10.0	20.0	30.0
1200	920	1200	1270	1350	1420
1400	1100	1400	1480	1560	1640
1600	1280	1600	1690	1770	1860
1800	1460	1800	1900	1980	2080
2000	1630	2000	2110	2200	2300
2200	1810	2200	2320	2410	2520
2400	1990	2400	2530	2620	2750
2600	2170	2600	2740	2830	2970
2800	2340	2800	2940	3040	3190
3000	2520	3000	3150	3250	3410
3200	2700	3200	3360	3460	3630
3400	2880	3400	3570	3680	3850
3600	3050	3600	3780	3890	4070
3800	3230	3800	3990	4100	4290
4000	3410	4000	4200	4310	4520
4200	3590	4200	4410	4520	4740
4400	3760	4400	4620	4730	4960
4600	3940	4600	4830	4940	5180
4800	4120	4800	5040	5160	5400
5000	4300	5000	5250	5370	5620

Example – Takeoff – Slope and wind corrected runway length <Metric>
Figure 05–02–2

Result:

- Slope and wind corrected runway length = 2620 m

(2) Runway/climb limited weight

Once the corrected runway length is determined, the Runway limited weight tables (refer to Takeoff – Runway/climb limited weight <72211001D>) are used to determine the runway/climb limited weight.

The runway/climb limited weight is found at the intersection of the corrected runway length (determined previously), and the applicable temperature conditions.

Example:

Conditions:

- Slope and wind corrected runway length = 2620 m (2600 m used in table, conservatively)
- Runway pressure altitude = 1000 ft (based on QNH)
- Temperature = 28°C (ISA +15°C)

Use the Example – Takeoff – Runway limited weight table (refer to Figure 05–02–3).

RUNWAY LIMITED WEIGHT –TAKEOFF									
PW1524G –TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 1000 FT DRY RUNWAY					TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	51.0	49.9	48.8	47.8	46.8	45.9	45.0	42.3	--
1400	55.9	54.7	53.4	52.3	51.2	50.2	49.3	48.0	45.1
1600	60.6	59.3	57.9	56.6	55.5	54.4	53.3	51.9	48.7
1800	64.4	63.2	62.0	60.8	59.6	58.3	57.2	55.7	52.1
2000	67.5	66.5	65.3	64.2	63.1	62.0	60.9	59.4	55.3
2200	67.5	67.5	67.5	67.1	66.0	65.0	64.0	62.5	58.4
2400	67.5	67.5	67.5	67.5	67.5	67.5	66.7	65.2	61.4
2600	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
2800	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
3000	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
3200	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
3400	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
3600	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
3800	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2
4000	67.5	67.5	67.5	67.5	67.5	67.5	67.5	67.5	62.2

Example – Takeoff – Runway limited weight <Metric>
Figure 05–02–3

Result:

- Takeoff weight (runway/climb limited) = 67500 kg
- Keep this runway/climb limited takeoff weight value to compare with the structural and obstacle limited takeoff weights.

(3) Obstacle limited weight

The Obstacle limited weight table (refer to Takeoff – Obstacle limited weight <72211001D>) is used to determine the obstacle limited weight that applies to the selected conditions.

NOTE

The obstacle limited takeoff weight is valid for a straight out departure after engine failure with an acceleration altitude of 1500 ft AAE. If there are any obstacles higher and further than those presented in the table, or a turning procedure is required, a more comprehensive study of the obstacle limitation must be done.

The obstacle limited weight is found at the intersection of the obstacle height and the obstacle distance from the brake release point.

The Obstacle limited weight adjustments table (refer to Takeoff – Obstacle limited weight adjustments <72211001D>) is used to adjust the obstacle limited weight for the applicable pressure altitude and temperature.

NOTE

The obstacle height is determined by subtracting the elevation of the lowest point of the runway from the obstacle elevation.

Example:

Conditions:

- Obstacle height = 325 ft (350 ft used in the table, conservatively)

- Obstacle distance = 4045 m (4000 m used in the table, conservatively)

Use the Example – Obstacle limited weight table (refer to Figure 05–02–4).

OBSTACLE LIMITED WEIGHT							
PW1524G –TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 0 FT DRY AND WET RUNWAY ISA +15 AND BELOW WIND CALM		TOW (1000 KG)		
OBST. HEIGHT (FT)	OBSTACLE DISTANCE FROM BRAKE RELEASE (1000 M)						
	1	2	3	4	5	6	7
20	43.5	62.1	63.5	63.5	63.5	63.5	63.5
50	40.1	58.2	63.5	63.5	63.5	63.5	63.5
100	--	53.5	62.4	63.5	63.5	63.5	63.5
150	--	50.1	59.0	63.5	63.5	63.5	63.5
200	--	47.3	56.2	62.4	63.5	63.5	63.5
250	--	45.0	53.9	60.2	63.5	63.5	63.5
300	--	42.5	51.8	57.2	62.5	63.5	63.5
350	--	40.5	50.0	56.3	60.8	63.5	63.5
400	--	--	48.4	54.6	59.2	62.5	63.5
500	--	--	45.6	51.7	56.3	59.8	62.5
600	--	--	43.0	49.2	53.8	57.4	60.3
700	--	--	40.6	47.0	51.5	55.2	58.2
800	--	--	--	45.1	49.6	53.2	56.2
900	--	--	--	43.2	47.8	51.4	54.5
1000	--	--	--	41.4	46.2	49.8	52.8
1100	--	--	--	39.8	44.7	48.3	51.3
1200	--	--	--	--	43.2	46.9	49.9
1300	--	--	--	--	41.8	45.6	48.6

Example – Obstacle limited weight <Metric>
Figure 05–02–4

Result:

- Uncorrected obstacle limited weight = 56300 kg

Next step conditions:

- Uncorrected obstacle limited weight = 56300 kg
- Runway pressure altitude = 1000 ft
- Temperature = ISA + 15°C

Use the Example – Obstacle limited weight adjustments table (refer to Figure 05–02–5).

OBSTACLE LIMITED WEIGHT ADJUSTMENTS								
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF	DRY AND WET RUNWAY						CORRECTION (1000 KG)	
UNCORR`D OBST. WEIGHT (KG)	TEMPERATURE (°C)			ALTITUDE (FT)			COWL A/I	ALL A/I
	ISA + 15 and below	ISA + 25	ISA + 35	0	5000	10000	ON	ON
63503	0.0	-5.6	-12.6	0.0	-6.3	-15.7	-1.8	-2.2
60000	0.0	-5.3	-11.8	0.0	-5.9	-14.8	-1.7	-2.1
55000	0.0	-4.8	-10.8	0.0	-5.5	-13.5	-1.5	-1.9
50000	0.0	-4.4	-9.8	0.0	-5.0	-12.2	-1.4	-1.8
45000	0.0	-4.0	-8.8	0.0	-4.5	-11.0	-1.3	-1.6
40000	0.0	-3.6	-7.7	0.0	-4.0	-9.7	-1.1	-1.4

Example – Obstacle limited weight adjustments <Metric>
Figure 05–02–5

Result (by interpolation):

- Correction for temperature = 0 kg
- Correction for altitude = –1200 kg (rounded)
- Takeoff weight (obstacle limited) = 56300 – 1200 = 55100 kg

Keep this obstacle limited takeoff weight value to compare with the structural and runway/climb limited takeoff weights.

(4) Maximum allowable takeoff weight

The maximum allowable takeoff weight is equal to the lowest weight value (more restrictive weight) between the structural MTOW, runway/climb limited weight, and obstacle limited weight.

Example:

(results collected from previous calculations):

- Maximum structural takeoff weight = 60781 kg
- Runway/climb limited takeoff weight = 67500 kg
- Obstacle limited takeoff weight =55100 kg

Compare the three weights and select the lowest value.

Conclusion:

Maximum allowable takeoff weight = 55100 kg

NOTE

When determining the maximum takeoff weight from a wet or contaminated runway, the takeoff weight on a dry runway must also be determined. The lowest of the two is retained as the final maximum value for takeoff (this is commonly referred to as the dry check).

C. Takeoff speeds <Metric>

To calculate the takeoff speeds:

1. Use the takeoff weight, temperature and airport pressure altitude, to determine uncorrected takeoff speeds.
2. Correct the takeoff speeds for runway slope and engine bleeds.
3. Confirm that the corrected takeoff speeds respect the minimum speeds (V_{1MCG}, V_{RMIN}, V_{2MIN}).

The Takeoff speed tables (refer to Takeoff – Takeoff speeds <72211001D>) are used to determine takeoff speeds V_1, V_R and V_2.

(1) Uncorrected takeoff speeds

The takeoff speeds are found at the intersection of the applicable takeoff weight and temperature.

NOTE

The takeoff speeds should be interpolated for altitude, weight and temperature.

Example:

Conditions (as defined in previous section):

- Takeoff weight = 55100 kg
- Temperature = 28°C (ISA + 15°C)
- Runway conditions = Dry
- Runway elevation = 1000 ft
- QNH = 1013 hPa
- Flap setting = FLAP 3

Use the Example – Takeoff speeds table (refer to Figure 05–02–6).

TAKEOFF SPEEDS									
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF	PRESSURE ALTITUDE 1000 FT							V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
40000	112 124	112 123	112 123	112 123	112 123	112 123	112 123	112 122	112 121
45000	114 125	114 125	114 125	114 125	114 125	115 125	115 125	116 125	118 125
50000	123 132	124 132	124 132	124 132	124 132	124 132	124 132	125 132	126 132
55000	131 138	131 138	132 138	132 138	132 138	132 138	132 138	132 138	134 138
60000	138 143	138 143	139 143	139 143	139 143	139 143	139 143	139 143	141 143
63503	143 147	143 147	143 147	144 147	144 147	144 147	144 147	144 147	145 147

CS100_23K_FCOM_v001_TO speeds_1000FT

Example – Takeoff speeds <Metric>
Figure 05–02–6

Results (by interpolation):

- $V_1 = V_R = 132$ kts
- $V_2 = 138$ kts

(2) Corrected takeoff speed

The V_1 corrections table (refer to Takeoff – Takeoff speed adjustments <72211001D>) is used to adjust the takeoff decision speed for runway slope or engine bleed configuration, as required.

The corrections due to slope are found at the intersection of the takeoff weight and the applicable runway slope.

The corrections due to engine bleed configuration are found at the intersection of the takeoff weight and the applicable engine bleed configuration.

The V_1 corrections due to runway slope and engine bleed configuration must be applied cumulatively.

Example:

Conditions:

- Takeoff weight = 55100 kg
- Runway slope = +1.5%
- Engine bleed settings = ECS off, A/I off

Use the Example – V_1 adjustments table (refer to Figure 05–02–7) to correct for runway slope and engine bleed settings.

V1 ADJUSTMENTS							
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF						ADJUSTMENT (KIAS)	
WEIGHT (KG)	SLOPE (%)					BLEEDS	
	DOWNHILL			UPHILL		ECS ON	All
	-2.0	-1.0	0.0	1.0	2.0		
40000	+ 0+	0+	0+	6+	6+	0+	0
45000	+ 0+	0+	0+	0+	0+	0+	0
50000	+ 0+	0+	0+	0+	0+	0+	0
55000	+ 0+	0+	0+	0+	0+	0+	1
60000	+ 0+	0+	0+	0+	0+	0+	1
63500	+ 0+	0+	0+	0+	0+	0+	1

NOTE

Check V1MCG
"Bleeds All" corresponds to ECS + COWL + WING A/I ON

Example – V1 adjustments <Metric>
Figure 05–02–7

Results:

- Correction for slope = 0 kts
- Corrections for engine bleeds = 0 kts
- $V_1 = V_R = 132 + 0 + 0 = 132$ kts (rounded)

(3) Takeoff speed verification

The takeoff speed calculated from the previous steps must respect the minimum speeds V_{1MCG}, V_{RMIN}, and V_{2MIN} (refer to Takeoff – Minimum speeds <72211001D>).

The V_{1MCG}, V_{RMIN} and V_{2MIN} are read in their respective tables, at the intersection of the takeoff weight and pressure altitude for the applicable conditions.

To check if takeoff speed limitations are respected, use the Example – V_{1MCG} table (refer to Figure 05–02–8), Example – V_{RMIN} table (refer to Figure 05–02–9) and Example – V_{2MIN} table (refer to Figure 05–02–10).

V1MCG								
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF			DRY AND WET RUNWAY				V1MCG (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)							
	0	1000	2000	3000	4000	6000	8000	10000
40000	110	110	110	110	110	110	110	110
45000	109	109	109	109	109	109	109	109
50000	109	109	109	109	109	109	109	109
55000	108	108	108	108	108	108	108	108
60000	108	108	108	108	108	108	108	108
63503	108	108	108	108	108	108	108	108

Example – V1MCG <Metric>
Figure 05–02–8

VRMIN								
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF		DRY AND WET RUNWAY					VRMIN (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)							
	0	1000	2000	3000	4000	6000	8000	10000
40000	112	112	112	112	112	112	112	113
45000	112	112	112	112	112	112	112	114
50000	112	113	113	114	114	116	117	118
55000	119	119	120	121	121	122	124	125
60000	125	126	126	127	128	129	130	131
63503	130	130	131	131	132	133	134	135

Example – VRMIN <Metric>
Figure 05–02–9

V2MIN								
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF		DRY AND WET RUNWAY					V2MIN (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)							
	0	1000	2000	3000	4000	6000	8000	10000
40000	123	123	123	123	123	123	123	123
45000	123	123	123	123	123	123	123	123
50000	122	122	122	122	122	122	122	122
55000	127	127	127	127	127	127	127	127
60000	132	132	132	132	132	132	132	132
63503	135	135	135	135	135	135	135	135

Example – V2MIN <Metric>
Figure 05–02–10

Results (by interpolation):

- V_{1MCG} = 108 kts (<V_1 determined previously)

- V_{RMIN} = 120 kts (<V_R determined previously)
- V_{2MIN} = 128 kts (<V_2 determined previously)

Conclusion:

There is no speed limitation in this case and the takeoff speeds are:

- $V_1 = V_R$ = 132 kts
- V_2 = 138 kts

NOTE

If any speed is less than the corresponding minimum speed, takeoff is not allowed using the FCOM data.

D. AEO departure gradient <Metric>

A departure procedure may include a required minimum gradient.

The AEO departure gradient table (refer to Takeoff – AEO departure gradient <72211001D>) is used to determine the average departure gradient under normal operating conditions.

The gradient published in this table:

- Is a geometric gradient based on zero wind, starting at the end of the takeoff distance and extending up to 10000 ft (AAE),
- Is based on the AEO takeoff (FLAP 3),
- Is based on a normal climb procedure with an acceleration altitude of 1500 ft (AAE), and
- A final climb speed of 250 KIAS is assumed. Loss of climb gradient in a turn has been taken into account.

The AEO departure gradient is found at the intersection of the applicable takeoff weight and temperature.

The AEO departure gradient correction values are used to adjust the AEO departure gradient for the airport pressure altitude and the engine bleed settings for the applicable conditions.

Example:

Conditions:

- SID required gradient = 6.7% up to 6300 ft AAE
- Takeoff weight = 55100 kg
- Flap setting = FLAP 3
- Engine thrust rating = TO
- Winds aloft = 25 kt headwind
- Airport pressure altitude = 1000 ft
- Temperature = ISA + 15°C
- Engine bleed settings = ECS off, AI off

Use the Example – AEO departure gradient table (refer to Figure 05–02–11):

AEO DEPARTURE GRADIENT				
PW1524G - TO FLAP 3 ENGINE BLEEDS OFF, A/I OFF	PRESSURE ALTITUDE 0 FT WIND CALM			GRADIENT (%)
WEIGHT (KG)	ISA DEVIATION (°C)			
	+10	+15	+20	+25
63503	8.23	7.30	6.35	5.45
60000	8.96	7.97	6.95	6.00
55000	10.14	9.05	7.93	6.88
50000	11.55	10.33	9.08	7.92
45000	13.27	11.89	10.48	9.17
40000	15.42	13.83	12.21	10.71
Pressure Altitude per 1000 ft ΔGRADIENT = - 0.6%			ECS ON ΔGRADIENT = - 0.4%	

CS100_23K_FCOM_v006_AEO_DEPARTURE_GRADIENT

NOTE

TO climb with normal procedure
MAX TO thrust until clean then MCL
ECS ON from 1500 FT AAE
Acceleration altitude 1500 FT AAE
Gradient given from 35 FT to 10000 FT AAE

Example – AEO departure gradient <Metric>
Figure 05–02–11

Result (by interpolation):

- Uncorrected AEO departure gradient = 9.0%
- Correction for altitude = – 0.6 × 1.000 = –0.6%
- Corrections for engine bleeds = None
- Apply the corrections for airport pressure altitude (subtract 0.6%) and engine bleed (no corrections).
- AEO departure gradient = 9.0 – 0.6 = 8.4%

Conclusion:

The calculated 8.4% gradient, which is valid up to 10000 ft, is higher than the required SID gradient of 6.7% up to 6300 ft AGL. Therefore, there is excess in climb performance.

E. Enroute performance <Metric>

The net level-off weight (one engine inoperative) must be calculated to ensure clearance of the highest obstacle by 1000 ft in level flight.

The Net level-off weight table (refer to Enroute – Net level-off weight <72211001D>) is used to determine the maximum weight to achieve a required net ceiling.

If the calculated net level-off weight is higher than the determined takeoff weight, the enroute limited weight analysis is complete. No reduction to the maximum takeoff weight is required.

If it is lower, the maximum takeoff weight can be conservatively reduced to the net level-off weight value. Alternatively, a driftdown analysis may be done (not within the scope of this manual).

NOTE

On routes with MEA above 10000 ft a depressurized escape procedure may be necessary.

The net level-off weight is found at the intersection of the temperature and the level-off pressure altitude. The level-off pressure altitude may be based either on the obstacle clearance elevation (highest obstacle plus 1000 ft), or on the MEA.

The obstacle clearance elevation or the MEA should be corrected for temperature (refer to True altitude versus pressure altitude), QNH (refer to QNH versus pressure altitude), and wind (refer to Wind/altimeter correction) to obtain the corrected level-off pressure altitude before entering the table.

Example:

Conditions:

- Highest obstacle elevation = 17000 ft
- Enroute temperature = ISA
- Wind = Still
- QNH = Standard
- APU = ON

Add the obstacle clearance of 1000 ft:

- Obstacle clearance elevation = 17000 + 1000 = 18000 ft

Based on example conditions (standard QNH, ISA, calm winds), no pressure altitude correction are required.

Use the Example – Net level-off weight table (refer to Figure 05–02–12).

NET LEVEL OFF WEIGHT				
PW1524G –MCT ONE ENGINE INOPERATIVE FLAP 0				WEIGHT (1000 KG)
	ALTITUDE (FT)	TEMPERATURE (°C)		
		ISA and below	ISA + 10	ISA + 20
ENGINE BLEEDS ON APU ON	28000	41.1	38.9	36.2
	26000	44.6	42.2	39.4
	24000	48.1	45.5	42.6
APU BLEEDS ON	22000	51.7	49.1	45.8
	20000	55.4	52.8	49.2
	18000	59.3	56.7	52.7
	16000	63.3	60.5	55.8
	14000	67.3	64.0	58.5
	12000	71.3	67.6	61.2
	10000	75.3	71.1	63.9

NOTE

Bleed air must be supplied by the engine above 23000 ft.

Example – Net level–off weight <Metric>
Figure 05–02–12

Result:

- Net level-off weight = 59300 kg

Conclusion:

The net level-off weight is higher than the maximum takeoff weight of 55100 kg (determined previously). Therefore, the net level-off weight is not limiting.

F. Maximum allowable landing weight <Metric>

The maximum allowable landing weight is the lowest of the following:

- Runway length limited landing weight,
- Approach/landing climb limited weight, or
- Maximum structural Landing Weight (MLW).

NOTE

The approach speed (V_{APP}) is not a required input to the data used to determine the maximum allowable landing weight at dispatch.

To calculate the maximum allowable landing weight, use the LDA declared by the airport authority, then:

1. Use the wind corrections to determine the corrected runway length.
2. Calculate the runway length limited weight.
3. Calculate the approach/landing climb limited weight.
4. Compare the results of step 2 and step 3 to the structural limited landing weight and keep the lowest weight. This becomes the maximum allowable landing weight.

(1) Runway corrected length

The Wind corrected runway length table (refer to Landing – Runway length corrections <72211001D>) is used to adjust the runway length for the applicable wind condition.

The wind corrected runway length is found at the intersection of the applicable runway length and the wind condition.

Example:

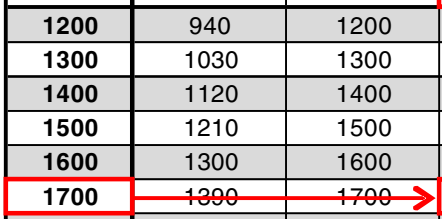
Conditions:

- Landing Distance Available (LDA) = 1700 m
- Headwind = 10 kt
- Runway elevation = 500 ft

- QNH = 1013 hPa
- Flap setting = FLAP 5
- MLW (structural) = 52390 kg

Use the Example – Landing – Wind corrected runway length table (refer to Figure 05–02–13).

WIND CORRECTED RUNWAY LENGTH –LDG					
PW1524G FLAP 5		DRY RUNWAY ISA			CORR'D LENGTH (M)
RWY LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	940	1200	1270	1350	1420
1300	1030	1300	1380	1450	1530
1400	1120	1400	1480	1560	1640
1500	1210	1500	1580	1670	1750
1600	1300	1600	1690	1770	1860
1700	1390	1700	1790	1880	1970
1800	1480	1800	1890	1990	2080
1900	1570	1900	2000	2090	2190
2000	1660	2000	2100	2200	2300
2100	1750	2100	2200	2310	2410
2200	1840	2200	2310	2410	2520
2300	1930	2300	2410	2520	2630
2400	2020	2400	2510	2630	2740
2500	2110	2500	2620	2730	2850
2600	2200	2600	2720	2840	2960
2700	2290	2700	2820	2950	3070
2800	2380	2800	2930	3050	3180
2900	2470	2900	3030	3160	3280
3000	2560	3000	3130	3270	3390
3100	2650	3100	3240	3370	3500



Example – Landing – Wind corrected runway length <Metric>
Figure 05–02–13

Result:

- Wind corrected runway length = 1790 m

(2) Runway limited landing weight

The Runway limited weight table (refer to Landing – Runway limited weight <72211001D>) is used to determine the weight limited by runway length.

The runway limited weight is found at the intersection of the corrected runway length (determined previously), and the airport pressure altitude.

Example:

Conditions:

- Wind corrected runway length = 1790 m (determined in previous step)
- Runway pressure altitude = 500 ft (based on QNH)

Use the Example – Landing – Runway limited weight table (refer to Figure 05–02–14).

RUNWAY LIMITED WEIGHT –LDG								
PW1524G FLAP 5		DRY RUNWAY ISA					LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)							
	0	1000	2000	3000	4000	6000	8000	10000
1200	45.2	43.8	42.5	41.3	--	--	--	--
1300	50.8	49.3	47.8	46.4	45.0	42.3	--	--
1400	56.4	54.7	53.2	51.6	50.0	47.1	44.2	41.5
1500	62.0	60.2	58.5	56.8	55.1	51.9	48.8	45.8
1600	63.5	63.5	63.5	61.9	60.1	56.6	53.3	50.0
1700	63.5	63.5	63.5	63.5	63.5	61.4	57.8	54.3
1800	63.5	63.5	63.5	63.5	63.5	63.5	62.3	58.5
1900	63.5	63.5	63.5	63.5	63.5	63.5	63.5	62.8
2000	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2100	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2200	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2300	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2400	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2500	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2600	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2700	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2800	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
2900	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
3000	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5
3100	63.5	63.5	63.5	63.5	63.5	63.5	63.5	63.5

Example – Landing – Runway limited weight <Metric>
Figure 05–02–14

Result:

- Runway limited landing weight = 63500 kg

Keep this runway limited landing weight value to compare with the structural and approach/landing climb limited weights.

(3) Approach/landing climb limited weight

The Approach/landing climb limited weight table (refer to Landing – Approach/landing climb limited weight <72211001D>) is used to determine the weight limited by regulatory approach/landing climb gradient requirements.

The approach/landing climb limited weight is found at the intersection of the applicable airport pressure altitude and temperature conditions.

Example:

Conditions:

- Airport pressure altitude = 500 ft
- Temperature = 30°C
- Landing FLAP = FLAP 5

Use the Example – Landing – Approach/landing climb limited weight table (refer to Figure 05–02–15).

APPROACH / LANDING CLIMB LIMITED WEIGHT									
PW1524G –TO FLAP 5 ENGINE BLEEDS OFF								LANDING WEIGHT (1000 KG)	
PRESS. ALT. (FT)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
0	57.2	57.2	57.2	57.2	57.2	57.2	57.2	57.2	51.3
1000	56.2	56.2	56.2	56.2	56.2	56.2	56.2	55.1	49.5
2000	55.3	55.3	55.3	55.3	55.3	55.3	55.3	53.1	47.8
3000	54.3	54.3	54.3	54.3	54.3	54.3	54.3	51.1	46.1
4000	53.2	53.2	53.2	53.2	53.2	53.2	53.2	49.3	44.5
6000	50.9	50.9	50.9	50.9	50.9	50.9	50.1	45.7	41.2
8000	48.5	48.5	48.5	48.5	48.5	48.4	46.3	42.1	--
10000	46.2	46.2	46.2	46.2	46.2	44.9	42.8	--	--
CORRECTION	COWL A/I ON				ALL A/I ON				
LANDING WEIGHT (1000 KG)	- 0.8				- 7.5				

Example – Landing – Approach/landing climb limited weight <Metric>
Figure 05–02–15

Result (by interpolation):

- Approach/landing climb limited landing weight = 56150 kg

Keep this approach/landing climb limited weight value to compare with the structural and runway limited landing weights.

(4) Maximum allowable landing weight

The maximum allowable landing weight is equal to the lowest weight value (more restrictive weight) between the structural MLW, runway limited weight, and climb limited weight.

Example (results from previous calculations):

- Maximum structural landing weight = 52390 kg
- Runway limited landing weight = 63500 kg
- Approach/landing climb limited weight = 56150 kg

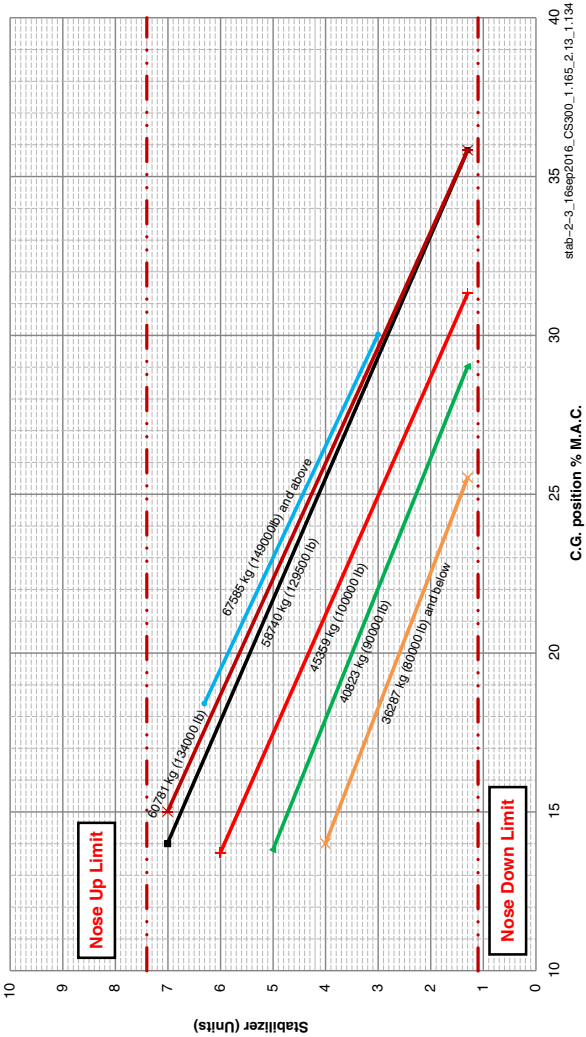
Compare the three weights and select the lowest value.

Conclusion:

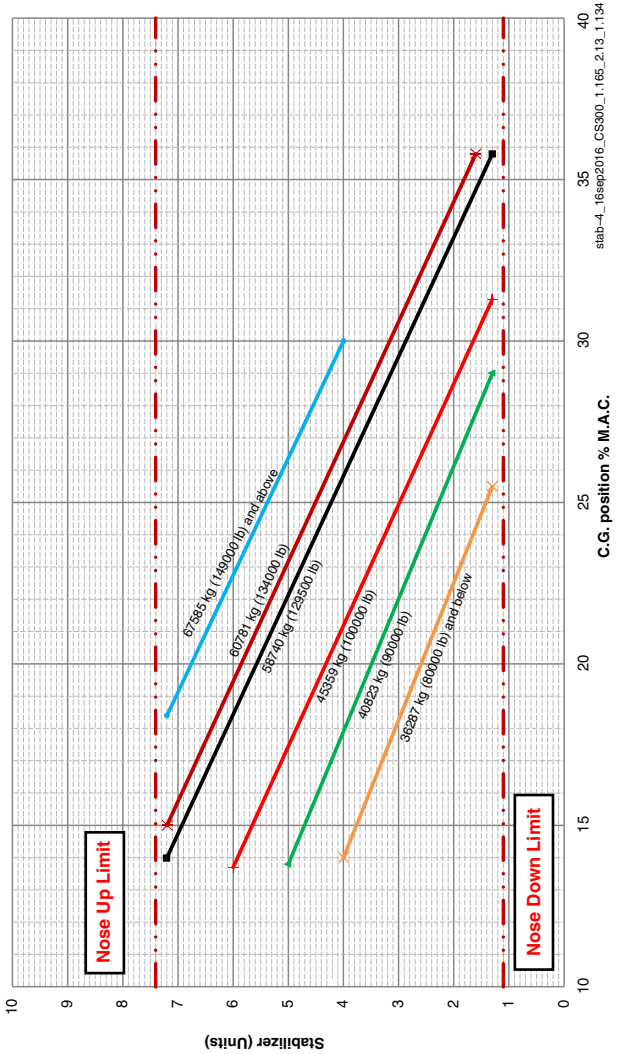
Maximum allowable landing weight = 52390 kg.

TAKEOFF

A. Stabilizer settings



Stabilizer settings (units) – FLAP 2 and FLAP 3
Figure 05–02B–1



Stabilizer settings (units) – FLAP 4
Figure 05–02B–2

B. Line-up allowance adjustment

Line-up allowance adjustment (m)		
Runway entry angle (°)	**TODA**	**ASDA**
90	10.7	25.9
180	19.0	34.3

C. Runway length corrections – Dry and wet – PW1521G-3 <72211001D>

SLOPE CORRECTED RUNWAY LENGTH - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF	DRY RUNWAY								SLOPE CORR'D LENGTH (M)
RWY LENGTH (M)	SLOPE (%)								
	DOWNHILL					UPHILL			
	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0
1200	1195	1195	1195	1195	1200	1185	1170	1150	1135
1400	1410	1410	1405	1400	1400	1375	1355	1330	1310
1600	1670	1650	1635	1615	1600	1570	1545	1515	1490
1800	1885	1865	1840	1820	1800	1765	1735	1705	1670
2000	2100	2075	2050	2025	2000	1960	1930	1880	1770
2200	2315	2290	2260	2230	2200	2160	2075	1895	1720
2400	2535	2505	2470	2435	2400	2355	2275	2095	1920
2600	2760	2720	2680	2640	2600	2555	2505	2315	2125
2800	2975	2935	2890	2840	2800	2750	2700	2530	2330
3000	3180	3135	3090	3045	3000	2950	2900	2740	2540
3200	3380	3335	3290	3245	3200	3150	3100	2940	2740
3400	3580	3535	3490	3445	3400	3350	3300	3140	2940
3600	3780	3735	3690	3645	3600	3550	3500	3340	3140
3800	3980	3935	3890	3845	3800	3750	3700	3540	3340
4000	4180	4135	4090	4045	4000	3950	3900	3740	3540
4200	4380	4335	4290	4245	4200	4150	4100	3940	3740
4400	4580	4535	4490	4445	4400	4350	4300	4140	3940
4600	4780	4735	4690	4645	4600	4550	4500	4340	4140
4800	4980	4935	4890	4845	4800	4750	4700	4540	4340
5000	5180	5135	5090	5045	5000	4950	4900	4740	4540

CS300_21K_FCOM_MET_v02_TO_FL_slopecorr_dry

Takeoff – Slope corrected runway length – Dry <Metric> and <72211001D>
Figure 05–02B–3

SLOPE CORRECTED RUNWAY LENGTH - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			WET RUNWAY					SLOPE CORR'D LENGTH (M)	
RWY LENGTH (M)	SLOPE (%)								
	DOWNHILL					UPHILL			
	-2.0	-1.5	-1.0	-0.5	0.0	0.5	1.0	1.5	2.0
1200	1175	1180	1190	1195	1200	1195	1190	1185	1185
1400	1375	1380	1385	1390	1400	1390	1380	1370	1355
1600	1575	1580	1585	1590	1600	1585	1570	1555	1535
1800	1795	1795	1795	1795	1800	1780	1760	1740	1715
2000	2045	2035	2020	2010	2000	1975	1950	1925	1905
2200	2255	2240	2230	2215	2200	2170	2145	2120	2095
2400	2465	2450	2435	2415	2400	2370	2340	2315	2285
2600	2675	2660	2640	2620	2600	2565	2535	2505	2465
2800	2885	2865	2845	2820	2800	2765	2735	2700	2660
3000	3100	3080	3055	3025	3000	2965	2930	2895	2850
3200	3310	3285	3260	3225	3200	3165	3130	3090	3050
3400	3525	3495	3465	3430	3400	3365	3330	3290	3245
3600	3725	3695	3665	3630	3600	3565	3530	3490	3445
3800	3925	3895	3865	3830	3800	3765	3730	3690	3645
4000	4125	4095	4065	4030	4000	3965	3930	3890	3845
4200	4325	4295	4265	4230	4200	4165	4130	4090	4045
4400	4525	4495	4465	4430	4400	4365	4330	4290	4245
4600	4725	4695	4665	4630	4600	4565	4530	4490	4445
4800	4925	4895	4865	4830	4800	4765	4730	4690	4645
5000	5125	5095	5065	5030	5000	4965	4930	4890	4845

CS300_21K_FCOM_MET_v02_TO_FL_slopecorr_wet

Takeoff – Slope corrected runway length – Wet <Metric> and <72211001D>
Figure 05–02B–4

SLOPE AND WIND CORRECTED RUNWAY LENGTH - TAKEOFF					
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF	DRY RUNWAY				SLOPE AND WIND CORR'D LENGTH (M)
SLOPE CORR'D LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	925	1200	1265	1335	1400
1400	1095	1400	1485	1565	1645
1600	1270	1600	1695	1785	1880
1800	1440	1800	1900	2000	2100
2000	1615	2000	2105	2220	2325
2200	1800	2200	2310	2430	2545
2400	1985	2400	2520	2640	2760
2600	2165	2600	2725	2855	2980
2800	2350	2800	2935	3070	3200
3000	2550	3000	3135	3270	3405
3200	2750	3200	3335	3470	3605
3400	2950	3400	3535	3670	3805
3600	3150	3600	3735	3870	4005
3800	3350	3800	3935	4070	4205
4000	3550	4000	4135	4270	4405
4200	3750	4200	4335	4470	4605
4400	3950	4400	4535	4670	4805
4600	4150	4600	4735	4870	5005
4800	4350	4800	4935	5070	5205
5000	4550	5000	5135	5270	5405

CS300_21K_FCOM_MET_v02_TO_FL_slope_windcorr_dry

Takeoff – Slope and wind corrected runway length – Dry <Metric> and <72211001D>

Figure 05–02B–5

SLOPE AND WIND CORRECTED RUNWAY LENGTH - TAKEOFF					
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF		WET RUNWAY			SLOPE AND WIND CORR'D LENGTH (M)
SLOPE CORR'D LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	905	1200	1290	1385	1470
1400	1060	1400	1490	1585	1670
1600	1230	1600	1705	1810	1905
1800	1400	1800	1915	2025	2135
2000	1575	2000	2120	2245	2360
2200	1740	2200	2330	2455	2580
2400	1900	2400	2535	2675	2805
2600	2065	2600	2745	2890	3030
2800	2240	2800	2960	3115	3260
3000	2420	3000	3170	3335	3500
3200	2600	3200	3375	3550	3715
3400	2780	3400	3585	3765	3940
3600	2980	3600	3785	3970	4145
3800	3180	3800	3985	4170	4345
4000	3380	4000	4185	4370	4545
4200	3580	4200	4385	4570	4745
4400	3780	4400	4585	4770	4945
4600	3980	4600	4785	4970	5145
4800	4180	4800	4985	5170	5345
5000	4380	5000	5185	5370	5545

CS300_21K_FCOM_MET_v02_TO_FL_slope_windcorr_wet

Takeoff – Slope and wind corrected runway length – Wet <Metric> and <72211001D>

Figure 05–02B–6

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

D. High wind takeoff performance penalties

The table that follows is a summary of performance penalties to be applied when the High wind takeoff procedure is used. These are described in the Airplane Flight Manual (AFM) – Chapter 5 – Takeoff performance calculations.

High wind takeoff performance penalties			
Wind condition	**Headwind more than 10 kt**	**Headwind up to 10 kt**	**Tailwind up to 10 kt**
Distance penalty[1]	+300 ft	+275 ft	+265 ft
Distance to be added for runway slope[1]:			
– Less than 0.5% uphill	+0 ft	+0 ft	+0 ft
– Greater than 0.5% uphill	+75 ft per % slope	+75 ft per % slope	+75 ft per % slope
Distance to be added for rolling takeoff[1]	+100 ft	+100 ft	+100 ft

[1] The performance penalties to be applied on all takeoff distances are determined from the CAFM Takeoff Performance module when Normal Take-Off is selected and Rolling Take-Off is selected to No. The term all takeoff distances refers to all that follow:

- One engine inoperative takeoff distance
- One engine inoperative takeoff run
- All engine operating takeoff distance
- All engine operating takeoff run
- Accelerate-stop distance

E. Takeoff – Quick turn-around weight

(1) BTMS operative

- Maximum kinetic energy for RTO and landing:

  The procedure that follows must be done 15 minutes after a stop or when the temperatures have peaked:

  1. All BTMS digits within the GREEN band (digit 6 or lower):

     No brake energy limitations.

  2. BTMS reading in the WHITE band (7 to 14):

     Allow the brakes to cool down within the green band.

  3. BTMS reading in RED band:

     No dispatch, cool down the brakes and do a wheel inspection.

- Landing gear maximum BTMS temperature for gear retraction:

  Maximum brake temperature (BTMS) for gear retraction is BTMS digit 07 and decreasing.

F. Runway/climb limited weight – Dry and wet – PW1521G-3

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 0FT DRY RUNWAY					TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	50.3	49.2	48.0	46.9	45.9	44.9	43.9	42.9	40.4
1400	54.7	53.5	52.2	51.1	50.0	48.9	47.8	46.8	44.1
1600	58.9	57.5	56.2	55.0	53.8	52.6	51.5	50.5	47.4
1800	62.8	61.3	60.0	58.6	57.4	56.1	55.0	53.8	50.6
2000	66.7	65.2	63.7	62.3	60.9	59.6	58.3	57.1	53.5
2200	67.9	67.9	67.3	65.8	64.3	63.0	61.6	60.3	56.4
2400	67.9	67.9	68.0	67.9	67.7	66.2	64.8	63.4	59.3
2600	67.9	67.9	68.0	67.9	67.9	67.8	67.6	66.4	60.6
2800	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3000	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3200	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3400	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3600	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3800	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
4000	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.0				-1.3				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_0FT_DRY

Takeoff – Runway limited weight – Dry – 0 ft <Metric> and <72211001D>
Figure 05–02B–7

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 1000FT DRY RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	49.0	47.9	46.8	45.8	44.7	43.7	42.8	41.6	39.1
1400	53.3	52.1	50.9	49.8	48.7	47.6	46.6	45.3	42.6
1600	57.3	56.0	54.8	53.6	52.4	51.3	50.2	48.8	45.9
1800	61.1	59.7	58.4	57.1	55.9	54.7	53.6	52.1	48.9
2000	64.9	63.4	62.0	60.6	59.3	58.0	56.8	55.2	51.8
2200	67.0	67.0	65.5	64.0	62.6	61.3	60.0	58.2	54.6
2400	67.0	67.0	66.9	66.9	65.8	64.4	63.0	61.2	57.2
2600	67.0	67.0	66.9	66.9	66.8	66.7	66.0	64.1	58.5
2800	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
3000	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
3200	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
3400	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
3600	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
3800	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
4000	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.0				-1.5				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_1000FT_DRY

Takeoff – Runway limited weight – Dry – 1000 ft <Metric> and <72211001D>
Figure 05–02B–8

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 2000FT DRY RUNWAY					TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	47.8	46.7	45.6	44.6	43.6	42.6	41.7	40.2	–
1400	51.9	50.8	49.6	48.5	47.4	46.4	45.4	43.8	41.2
1600	55.8	54.6	53.4	52.2	51.1	50.0	48.9	47.2	44.3
1800	59.5	58.1	56.9	55.6	54.5	53.3	52.2	50.4	47.3
2000	63.1	61.7	60.3	59.0	57.7	56.5	55.3	53.3	50.0
2200	65.9	65.2	63.7	62.3	60.9	59.6	58.4	56.2	52.7
2400	65.9	65.9	65.9	65.5	64.1	62.7	61.4	59.0	55.3
2600	65.9	65.9	65.9	65.9	65.8	65.6	64.2	61.8	56.5
2800	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3000	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3200	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3400	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3600	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3800	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
4000	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.0				-1.8				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_2000FT_DRY

Takeoff – Runway limited weight – Dry – 2000 ft <Metric> and <72211001D>
Figure 05–02B–9

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 3000FT DRY RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	46.5	45.4	44.4	43.4	42.4	41.5	40.6	–	--
1400	50.5	49.4	48.3	47.2	46.2	45.2	44.2	42.3	39.8
1600	54.3	53.1	52.0	50.9	49.8	48.7	47.6	45.6	42.8
1800	57.8	56.5	55.3	54.2	53.0	51.9	50.8	48.7	45.7
2000	61.3	60.0	58.6	57.3	56.1	55.0	53.8	51.5	48.3
2200	64.8	63.3	61.9	60.6	59.2	58.0	56.8	54.3	50.9
2400	63.8	64.8	64.8	63.7	62.2	60.9	59.7	56.9	53.4
2600	63.8	64.8	64.8	64.8	64.7	63.8	62.4	59.6	54.5
2800	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3000	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3200	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3400	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3600	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3800	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
4000	63.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-0.9				-2.6				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_3000FT_DRY

Takeoff – Runway limited weight – Dry – 3000 ft <Metric> and <72211001D>
Figure 05–02B–10

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 4000FT DRY RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	45.2	44.2	43.2	42.2	41.3	40.4	39.1	--	--
1400	49.1	48.1	47.0	46.0	45.0	44.0	43.0	40.9	39.7
1600	52.8	51.7	50.6	49.5	48.4	47.4	46.4	44.0	41.4
1800	56.2	55.0	53.9	52.7	51.6	50.5	49.5	47.0	44.1
2000	59.6	58.3	57.0	55.8	54.6	53.5	52.4	49.7	46.7
2200	62.9	61.5	60.2	58.9	57.6	56.4	55.2	52.4	49.1
2400	63.7	63.7	63.2	61.8	60.5	59.2	58.0	54.9	51.5
2600	63.7	63.7	63.7	63.7	63.4	62.0	60.7	57.4	52.6
2800	63.7	63.7	63.7	63.7	63.6	63.5	63.3	58.6	52.6
3000	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
3200	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
3400	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
3600	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
3800	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
4000	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.3				-4.1				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_4000FT_DRY

Takeoff – Runway limited weight – Dry – 4000 ft <Metric> and <72211001D>
Figure 05–02B–11

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 6000FT DRY RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	42.7	41.7	40.7	39.8	37.4	--	--	--	--
1400	46.4	45.3	44.3	43.4	42.4	41.5	40.4	39.3	--
1600	49.8	48.7	47.7	46.7	45.7	44.7	43.4	41.0	39.7
1800	53.1	51.9	50.8	49.7	48.7	47.7	46.4	43.7	40.9
2000	56.1	54.9	53.7	52.6	51.5	50.4	49.1	46.3	43.3
2200	59.2	57.8	56.6	55.4	54.3	53.1	51.7	48.7	45.6
2400	61.1	60.8	59.4	58.2	56.9	55.8	54.3	51.0	47.7
2600	61.1	61.1	61.1	60.9	59.6	58.3	56.7	53.3	48.7
2800	61.1	61.1	61.1	61.1	61.0	60.8	59.1	54.3	48.7
3000	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
3200	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
3400	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
3600	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
3800	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
4000	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-2.1				-6.5				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_6000FT_DRY

Takeoff – Runway limited weight – Dry – 6000 ft <Metric> and <72211001D>
Figure 05–02B–12

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 8000FT DRY RUNWAY					TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	40.0	39.1	--	--	--	--	--	--	--
1400	43.6	42.6	41.6	40.7	39.8	39.9	--	--	--
1600	46.8	45.7	44.7	43.8	42.8	41.9	40.3	39.2	--
1800	49.8	48.7	47.7	46.7	45.7	44.7	43.0	40.5	39.2
2000	52.7	51.5	50.4	49.4	48.3	47.3	45.5	42.9	40.0
2200	55.4	54.2	53.1	52.0	50.9	49.8	47.9	45.1	42.1
2400	58.2	56.9	55.7	54.5	53.4	52.3	50.2	47.2	44.1
2600	58.3	58.3	58.2	56.9	55.7	54.6	52.5	49.3	44.7
2800	58.3	58.3	58.3	58.2	58.1	56.9	54.7	50.1	44.7
3000	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
3200	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
3400	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
3600	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
3800	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
4000	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-4.2				-8.5				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_8000FT_DRY

Takeoff – Runway limited weight – Dry – 8000 ft <Metric> and <72211001D>
Figure 05–02B–13

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 0FT WET RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	44.6	43.4	42.3	41.1	–	--	--	--	–
1400	49.1	47.8	46.6	45.4	44.3	43.2	42.2	41.2	–
1600	53.2	51.9	50.6	49.3	48.1	47.0	45.9	44.8	42.2
1800	57.0	55.6	54.3	53.0	51.7	50.5	49.3	48.2	45.4
2000	60.7	59.2	57.7	56.4	55.1	53.8	52.6	51.4	48.4
2200	64.2	62.6	61.1	59.7	58.3	56.9	55.7	54.4	51.2
2400	67.6	65.9	64.3	62.8	61.4	60.0	58.6	57.3	53.9
2600	67.9	67.9	67.4	65.8	64.2	62.8	61.4	60.0	56.3
2800	67.9	67.9	68.0	67.9	67.0	65.5	64.0	62.6	58.7
3000	67.9	67.9	68.0	67.9	67.9	67.8	66.6	65.1	60.6
3200	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3400	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3600	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
3800	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
4000	67.9	67.9	68.0	67.9	67.9	67.8	67.6	67.5	60.6
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.0				-1.2				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_0FT_WET

Takeoff – Runway limited weight – Wet – 0 ft <Metric> and <72211001D>
Figure 05–02B–14

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 1000FT WET RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	43.3	42.2	41.1	--	--	--	--	--	--
1400	47.7	46.5	45.3	44.2	43.1	42.0	41.0	--	--
1600	51.7	50.4	49.2	48.0	46.8	45.7	44.6	43.3	40.8
1800	55.5	54.1	52.8	51.5	50.3	49.1	48.0	46.6	43.9
2000	59.0	57.5	56.2	54.9	53.6	52.4	51.2	49.7	46.7
2200	62.4	60.9	59.4	58.0	56.7	55.4	54.2	52.6	49.5
2400	65.7	64.1	62.6	61.1	59.7	58.3	57.0	55.4	52.0
2600	67.0	67.0	65.5	63.9	62.5	61.0	59.7	57.9	54.4
2800	67.0	67.0	66.9	66.7	65.1	63.6	62.2	60.4	56.7
3000	67.0	67.0	66.9	66.9	66.8	66.2	64.7	62.8	58.5
3200	67.0	67.0	66.9	66.9	66.8	66.7	66.6	65.2	58.5
3400	67.0	67.0	66.9	66.9	66.8	66.7	66.6	63.8	58.5
3600	67.0	67.0	66.9	66.9	66.8	66.7	66.6	63.8	58.5
3800	67.0	67.0	66.9	66.9	66.8	66.7	66.6	63.8	58.5
4000	67.0	67.0	66.9	66.9	66.8	66.7	66.6	63.8	58.5
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.0				-1.5				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_1000FT_WET

Takeoff – Runway limited weight – Wet – 1000 ft <Metric> and <72211001D>
Figure 05–02B–15

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 2000FT WET RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	42.1	41.0	--	--	--	--	--	--	--
1400	46.4	45.2	44.0	42.9	41.9	40.8	--	--	--
1600	50.3	49.1	47.8	46.7	45.5	44.4	43.4	41.8	39.4
1800	53.9	52.6	51.4	50.1	48.9	47.8	46.7	45.0	42.3
2000	57.3	56.0	54.6	53.4	52.1	50.9	49.8	48.0	45.1
2200	60.6	59.2	57.7	56.4	55.1	53.9	52.7	50.8	47.7
2400	63.8	62.3	60.8	59.4	58.0	56.7	55.4	53.5	50.2
2600	65.9	65.2	63.6	62.1	60.7	59.3	58.0	55.9	52.6
2800	65.9	65.9	65.9	64.8	63.3	61.9	60.5	58.2	54.7
3000	65.9	65.9	65.9	65.9	65.8	64.3	62.9	60.5	56.5
3200	65.9	65.9	65.9	65.9	65.8	65.7	65.3	62.8	56.5
3400	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3600	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
3800	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
4000	65.9	65.9	65.9	65.9	65.8	65.7	65.6	62.9	56.5
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.0				-1.8				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_2000FT_WET

Takeoff – Runway limited weight – Wet – 2000 ft <Metric> and <72211001D>
Figure 05–02B–16

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 3000FT WET RUNWAY					TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	40.9	–	–	--	--	–	--	--	–
1400	45.0	43.9	42.8	41.7	40.7	–	--	--	–
1600	48.9	47.7	46.5	45.3	44.2	43.2	42.1	40.3	–
1800	52.4	51.1	49.9	48.7	47.6	46.4	45.4	43.4	40.9
2000	55.7	54.4	53.1	51.9	50.7	49.5	48.4	46.3	43.5
2200	58.9	57.5	56.1	54.8	53.6	52.4	51.2	49.0	46.1
2400	62.0	60.5	59.0	57.7	56.3	55.1	53.9	51.6	48.5
2600	64.8	63.3	61.8	60.4	59.0	57.6	56.4	54.0	50.7
2800	64.8	64.8	64.5	62.9	61.5	60.1	58.8	56.2	52.8
3000	64.8	64.8	64.8	64.8	63.9	62.5	61.1	58.4	54.5
3200	64.8	64.8	64.8	64.8	64.7	64.6	63.4	60.6	54.5
3400	64.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3600	64.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
3800	64.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
4000	64.8	64.8	64.8	64.8	64.7	64.6	64.5	60.8	54.5
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-0.9				-2.6				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_3000FT_WET

Takeoff – Runway limited weight – Wet – 3000 ft <Metric> and <72211001D>
Figure 05–02B–17

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 4000FT WET RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	--	--	--	--	--	--	--	--	--
1400	43.7	42.6	41.5	40.5	--	--	--	--	--
1600	47.5	46.3	45.1	44.0	43.0	41.9	40.9	38.1	--
1800	50.9	49.7	48.5	47.3	46.2	45.1	44.1	41.9	39.4
2000	54.1	52.8	51.6	50.4	49.2	48.1	47.0	44.7	42.0
2200	57.2	55.8	54.5	53.3	52.1	50.9	49.8	47.3	44.4
2400	60.2	58.7	57.3	56.0	54.8	53.6	52.4	49.8	46.8
2600	63.0	61.4	60.0	58.6	57.3	56.0	54.8	52.1	48.9
2800	63.7	63.7	62.6	61.1	59.7	58.4	57.1	54.2	50.9
3000	63.7	63.7	63.7	63.6	62.1	60.7	59.3	56.3	52.6
3200	63.7	63.7	63.7	63.7	63.6	62.9	61.5	58.4	52.6
3400	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
3600	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
3800	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
4000	63.7	63.7	63.7	63.7	63.6	63.5	63.4	58.6	52.6
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-1.3				-4.1				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_4000FT_WET

Takeoff – Runway limited weight – Wet – 4000 ft <Metric> and <72211001D>
Figure 05–02B–18

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 6000FT WET RUNWAY					TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	--	--	--	--	--	--	--	--	--
1400	41.1	40.0	37.1	--	--	--	--	--	--
1600	44.6	43.5	42.4	41.4	40.4	39.4	--	--	--
1800	47.9	46.7	45.6	44.5	43.4	42.4	41.2	40.0	37.1
2000	50.9	49.7	48.5	47.4	46.3	45.3	44.0	41.5	40.2
2200	53.8	52.5	51.3	50.1	49.0	47.9	46.5	43.9	41.2
2400	56.5	55.2	53.9	52.7	51.5	50.4	49.0	46.2	43.4
2600	59.1	57.7	56.4	55.1	53.9	52.7	51.3	48.4	45.4
2800	61.1	60.2	58.7	57.4	56.1	54.9	53.4	50.3	47.2
3000	61.1	61.1	61.1	59.7	58.3	57.0	55.4	52.3	48.7
3200	61.1	61.1	61.1	61.1	60.5	59.1	57.4	54.2	48.7
3400	61.1	61.1	61.1	61.1	61.0	60.9	59.4	54.3	48.7
3600	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
3800	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
4000	61.1	61.1	61.1	61.1	61.0	60.9	59.8	54.3	48.7
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-2.1				-6.5				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_6000FT_WET

Takeoff – Runway limited weight – Wet – 6000 ft <Metric> and <72211001D>
Figure 05–02B–19

RUNWAY LIMITED WEIGHT - TAKEOFF									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF				PRESSURE ALTITUDE 8000FT WET RUNWAY				TOW (1000 KG)	
CORR'D RWY LENGTH (M)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
1200	--	–	--	--	--	–	–	--	–
1400	37.0	–	--	--	--	–	–	--	–
1600	41.8	40.7	39.7	39.0	--	–	–	--	–
1800	44.8	43.7	42.7	41.6	40.6	39.7	39.1	--	–
2000	47.7	46.5	45.4	44.4	43.3	42.3	40.7	39.6	37.2
2200	50.4	49.2	48.0	46.9	45.8	44.8	43.1	40.6	39.4
2400	53.0	51.7	50.5	49.4	48.2	47.2	45.4	42.8	40.0
2600	55.4	54.1	52.8	51.6	50.5	49.4	47.5	44.7	41.9
2800	57.7	56.3	55.0	53.8	52.6	51.4	49.4	46.6	43.6
3000	58.3	58.3	57.1	55.8	54.6	53.4	51.3	48.4	44.7
3200	58.3	58.3	58.3	57.8	56.5	55.3	53.2	50.1	44.7
3400	58.3	58.3	58.3	58.2	58.2	57.1	55.0	50.1	44.7
3600	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
3800	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
4000	58.3	58.3	58.3	58.2	58.2	58.1	55.4	50.1	44.7
CORRECTION	COWL A/I ON + ECS ON				COWL + WING A/I + ECS ON				
TOW (1000 KG)	-4.2				-8.5				

CS300_21K_FCOM_MET_v02_TO_RwyLimW_8000FT_WET

Takeoff – Runway limited weight – Wet – 8000 ft <Metric> and <72211001D>
Figure 05–02B–20

G. Obstacle limited weight – PW1521G-3

OBSTACLE LIMITED WEIGHT							
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 0 FT DRY AND WET RUNWAY ISA +15°C AND BELOW WIND CALM			TOW (1000 KG)	
OBST. HEIGHT (FT)	OBSTACLE DISTANCE FROM BRAKE RELEASE (1000 M)						
	1	2	3	4	5	6	7
20	--	51.5	65.1	67.5	67.5	67.5	67.5
50	--	51.5	63.8	67.5	67.5	67.5	67.5
100	--	50.3	59.0	64.9	67.5	67.5	67.5
150	--	47.2	55.6	61.7	65.8	67.5	67.5
200	--	44.6	53.1	59.1	63.3	66.3	67.5
250	--	42.4	51.0	56.9	61.2	64.3	66.6
300	--	40.4	49.1	55.0	59.3	62.5	64.9
350	–	–	47.5	53.3	57.7	60.9	63.4
400	–	–	46.0	51.8	56.1	59.4	62.0
500	–	–	43.3	49.1	53.5	56.8	59.5
600	–	–	41.0	46.8	51.2	54.5	57.3
700	–	–	–	44.8	49.1	52.5	55.3
800	–	–	–	42.9	47.3	50.7	53.5
900	–	–	–	41.2	45.6	49.1	51.9
1000	–	–	–	39.7	44.1	47.6	50.4
1100	–	–	–	--	42.7	46.2	49.0
1200	–	–	–	--	41.3	44.9	47.8
1300	–	–	–	--	40.1	43.6	46.6

CS300_21K_FCOM_MET_v02_TO_OBSLIMW

NOTE

Data valid for a straight out departure only

Obstacle limited weight <Metric> and <72211001D>
Figure 05–02B–21

H. Obstacle limited weight adjustments – PW1521G-3

OBSTACLE LIMITED WEIGHT ADJUSTMENTS								
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS ON	DRY AND WET RUNWAY						CORRECTION (1000 KG)	
UNCORR`D OBST. WEIGHT (KG)	TEMPERATURE (°C)			ALTITUDE (FT)			COWL A/I +ECS	ALL A/I + ECS
	ISA + 15 and below	ISA + 25	ISA + 35	0	5000	8000	ON	ON
67500	0.0	-6.8	-13.2	0.0	-7.8	-12.6	-1.4	-5.8
65000	0.0	-6.5	-12.7	0.0	-7.5	-12.2	-1.3	-5.6
60000	0.0	-6.0	-11.7	0.0	-6.9	-11.2	-1.2	-5.2
55000	0.0	-5.5	-10.8	0.0	-6.3	-10.3	-1.1	-4.7
50000	0.0	-5.0	-9.8	0.0	-5.8	-9.4	-1.0	-4.3
45000	0.0	-4.5	-8.8	0.0	-5.2	-8.4	-0.9	-3.9
39000	0.0	-3.9	-7.6	0.0	-4.5	-7.3	-0.8	-3.4

CS300_21K_FCOM_MET_v02_TO_Obs ADJUSTMENTS

Obstacle limited weight adjustments <Metric> and <72211001D>
Figure 05–02B–22

I. Takeoff speeds – Dry and wet – PW1521G-3

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 0 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	104	104	104	104	104	104	104	104	105
	118	118	118	118	118	117	117	117	115
40000	104	104	104	104	104	104	104	104	106
	118	118	118	118	117	117	117	117	116
44000	110	110	110	110	111	111	111	111	114
	121	121	121	121	121	121	121	121	121
48000	118	118	118	118	118	118	119	119	121
	127	127	127	127	127	127	127	127	127
52000	125	125	125	125	125	125	126	126	128
	132	132	132	132	132	132	132	132	132
56000	131	132	132	132	132	132	132	132	134
	137	137	137	137	137	137	137	137	137
60000	138	138	138	138	138	138	138	138	140
	142	142	142	142	142	142	142	142	142
64000	143	143	143	143	143	143	144	144	145
	146	146	146	146	146	146	146	146	146
67500	148	148	148	148	148	148	148	148	149
	150	150	150	150	150	150	150	150	150

CS300_21K_FCOM_MET_v02_TO_speeds_0FT

Takeoff speeds – 0 ft <Metric> and <72211001D>
Figure 05–02B–23

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 1000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	104	104	104	104	104	104	104	105	105
	118	118	117	117	117	117	117	116	114
40000	104	104	104	104	104	104	104	105	107
	118	117	117	117	117	117	117	116	116
44000	110	111	111	111	111	111	112	112	115
	121	121	121	121	121	121	121	121	121
48000	118	118	118	119	119	119	119	120	122
	127	127	127	127	127	127	127	127	127
52000	125	125	125	126	126	126	126	127	129
	132	132	132	132	132	132	132	132	132
56000	132	132	132	132	132	132	133	133	135
	137	137	137	137	137	137	137	137	137
60000	138	138	138	138	138	138	138	139	140
	142	142	142	142	142	142	142	142	142
64000	144	144	144	144	144	144	144	144	145
	146	146	146	146	146	146	146	146	146
67500	148	148	148	148	148	148	148	148	149
	150	150	150	150	150	150	150	150	150

CS300_21K_FCOM_MET_v02_TO_speeds_1000FT

Takeoff speeds – 1000 ft <Metric> and <72211001D>
Figure 05–02B–24

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 2000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	104	104	104	104	104	104	105	105	106
	117	117	117	117	117	116	116	115	114
40000	104	104	104	104	104	105	105	105	108
	117	117	117	117	116	116	116	116	116
44000	111	111	111	112	112	112	112	113	116
	121	121	121	121	121	121	121	121	121
48000	119	119	119	119	119	119	120	121	123
	127	127	127	127	127	127	127	127	127
52000	126	126	126	126	126	126	126	127	129
	132	132	132	132	132	132	132	132	132
56000	132	132	133	133	133	133	133	134	135
	137	137	137	137	137	137	137	137	137
60000	138	138	139	139	139	139	139	140	141
	142	142	142	142	142	142	142	142	142
64000	144	144	144	144	144	144	144	145	145
	146	146	146	146	146	146	146	146	146
67500	148	148	148	148	148	148	148	149	150
	150	150	150	150	150	150	150	150	150

CS300_21K_FCOM_MET_v02_TO_speeds_2000FT

Takeoff speeds – 2000 ft <Metric> and <72211001D>
Figure 05–02B–25

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 3000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	104	104	104	104	105	105	105	105	107
	117	117	117	116	116	116	116	115	114
40000	104	104	104	105	105	105	105	106	109
	117	116	116	116	116	116	116	116	116
44000	112	112	112	112	112	113	113	114	117
	121	121	121	121	121	121	121	121	121
48000	119	119	119	120	120	120	120	121	123
	127	127	127	127	127	127	127	127	127
52000	126	126	126	127	127	127	127	128	130
	132	132	132	132	132	132	132	132	132
56000	133	133	133	133	133	133	133	134	136
	137	137	137	137	137	137	137	137	137
60000	139	139	139	139	139	139	139	140	141
	142	142	142	142	142	142	142	142	142
64000	144	144	144	144	144	144	145	145	146
	147	147	147	147	147	147	147	147	147
67500	149	149	149	149	149	149	149	149	150
	150	150	150	150	150	150	150	150	150

CS300_21K_FCOM_MET_v02_TO_speeds_3000FT

Takeoff speeds – 3000 ft <Metric> and <72211001D>
Figure 05–02B–26

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 4000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	104	104	105	105	105	105	105	105	108
	116	116	116	116	116	116	115	114	114
40000	104	105	105	105	105	105	105	107	110
	116	116	116	116	116	116	116	116	116
44000	112	112	113	113	113	113	113	115	117
	121	121	121	121	121	121	121	121	121
48000	120	120	120	120	120	120	121	122	124
	127	127	127	127	127	127	127	127	127
52000	127	127	127	127	127	127	127	129	130
	132	132	132	132	132	132	132	132	132
56000	133	133	134	134	134	134	134	135	136
	137	137	137	137	137	137	137	137	137
60000	139	139	139	139	140	140	140	141	141
	142	142	142	142	142	142	142	142	142
64000	145	145	145	145	145	145	145	145	146
	147	147	147	147	147	147	147	147	147
67500	149	149	149	149	149	149	149	150	–
	150	150	150	150	150	150	150	150	--

CS300_21K_FCOM_MET_v02_TO_speeds_4000FT

Takeoff speeds – 4000 ft <Metric> and <72211001D>
Figure 05–02B–27

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 5000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	105	105	105	105	105	105	105	106	109
	116	116	116	115	115	115	115	114	114
40000	105	105	105	105	106	106	106	108	111
	116	116	116	116	116	116	116	116	116
44000	113	113	113	113	114	114	114	116	118
	122	122	122	122	122	122	122	122	122
48000	120	120	121	121	121	121	121	123	125
	127	127	127	127	127	127	127	127	127
52000	127	127	128	128	128	128	128	130	131
	132	132	132	132	132	132	132	132	132
56000	134	134	134	134	134	134	134	136	136
	138	138	138	138	138	138	138	138	138
60000	140	140	140	140	140	140	140	141	142
	142	142	142	142	142	142	142	142	142
64000	145	145	145	145	145	145	145	146	--
	147	147	147	147	147	147	147	147	–
67500	149	149	149	149	149	149	149	150	–
	151	151	151	151	151	151	151	151	–

CS300_21K_FCOM_MET_v02_TO_speeds_5000FT

Takeoff speeds – 5000 ft <Metric> and <72211001D>
Figure 05–02B–28

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 6000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	105	105	105	105	105	105	105	107	110
	115	115	115	115	115	114	114	114	114
40000	106	106	106	106	106	107	107	109	111
	116	116	116	116	116	116	116	116	116
44000	114	114	114	114	114	114	115	117	119
	122	122	122	122	122	122	122	122	122
48000	121	121	121	121	122	122	122	124	125
	127	127	127	127	127	127	127	127	127
52000	128	128	128	128	128	128	129	130	131
	132	132	132	132	132	132	132	132	132
56000	134	135	135	135	135	135	135	136	137
	138	138	138	138	138	138	138	138	138
60000	140	140	140	140	140	140	141	141	142
	142	142	142	142	142	142	142	142	142
64000	145	145	145	145	145	145	146	146	--
	147	147	147	147	147	147	147	147	--
67500	150	150	150	150	150	150	150	150	--
	151	151	151	151	151	151	151	151	--

CS300_21K_FCOM_MET_v02_TO_speeds_6000FT

Takeoff speeds – 6000 ft <Metric> and <72211001D>
Figure 05–02B–29

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 7000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	105	105	105	105	105	105	106	108	110
	115	115	114	114	114	114	114	114	114
40000	106	107	107	107	107	107	108	110	112
	116	116	116	116	116	116	116	116	116
44000	114	114	115	115	115	115	116	118	119
	122	122	122	122	122	122	122	122	122
48000	122	122	122	122	122	122	123	124	126
	127	127	127	127	127	127	127	127	127
52000	129	129	129	129	129	129	130	131	132
	133	133	133	133	133	133	133	133	133
56000	135	135	135	135	135	135	136	137	137
	138	138	138	138	138	138	138	138	138
60000	141	141	141	141	141	141	141	142	--
	143	143	143	143	143	143	143	143	--
64000	146	146	146	146	146	146	146	147	--
	147	147	147	147	147	147	147	147	--
67500	150	150	150	150	150	150	150	--	--
	151	151	151	151	151	151	151	--	--

CS300_21K_FCOM_MET_v02_TO_speeds_7000FT

Takeoff speeds – 7000 ft <Metric> and <72211001D>
Figure 05–02B–30

TAKEOFF SPEEDS									
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF			PRESSURE ALTITUDE 8000 FT					V1=VR (KIAS) V2 (KIAS)	
WEIGHT (KG)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
39000	105	105	106	106	106	106	107	109	111
	114	114	114	114	114	114	114	114	114
40000	107	107	108	108	108	108	109	111	113
	116	116	116	116	116	116	116	116	116
44000	115	115	115	115	116	116	117	118	120
	122	122	122	122	122	122	122	122	122
48000	122	122	123	123	123	123	124	125	126
	127	127	127	127	127	127	127	127	127
52000	129	129	129	129	129	130	130	131	132
	133	133	133	133	133	133	133	133	133
56000	135	136	136	136	136	136	136	137	138
	138	138	138	138	138	138	138	138	138
60000	141	141	141	141	141	141	141	142	--
	143	143	143	143	143	143	143	143	--
64000	146	146	146	146	146	146	146	–	--
	147	147	147	147	147	147	147	–	--
67500	150	150	150	150	150	150	150	–	--
	151	151	151	151	151	151	151	–	–

CS300_21K_FCOM_MET_v02_TO_speeds_8000FT

Takeoff speeds – 8000 ft <Metric> and <72211001D>
Figure 05–02B–31

J. Takeoff speed adjustments – PW1521G-3

V1 and VR ADJUSTMENTS							
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF						ADJUSTMENT (KIAS)	
WEIGHT (KG)	SLOPE (%)					BLEEDS	
	DOWNHILL			UPHILL			
	-2.0	-1.0	0.0	1.0	2.0	ECS ON	All
39000	-2	-1	+ 0	+ 0	+ 0	+ 0	+ 0
40000	-2	-1	+ 0	+ 0	+ 0	+ 0	+ 0
44000	-3	-1	+ 0	+ 1	+ 1	+ 0	+ 0
48000	-3	-1	+ 0	+ 1	+ 1	+ 0	+ 0
52000	-3	-1	+ 0	+ 1	+ 1	+ 0	+ 0
56000	-3	-1	+ 0	+ 1	+ 1	+ 0	+ 0
60000	-3	-1	+ 0	+ 1	+ 1	+ 0	+ 0
64000	-3	-1	+ 0	+ 1	+ 1	+ 0	+ 0
67500	-5	-2	+ 0	+ 1	+ 1	+ 0	+ 0

CS300_21K_FCOM_MET_v02_TO_speeds_adj

NOTE

Check V1MCG
"Bleeds All" corresponds to ECS + COWL + WING A/I ON

Takeoff speed adjustments <Metric> and <72211001D>
Figure 05–02B–32

K. Minimum speeds (V_{1MCG}, V_{RMIN}, V_{2MIN}) – PW1521G-3

V1MCG							
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF	DRY AND WET RUNWAY					V1MCG (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
39000	96	96	96	96	96	96	96
40000	96	96	96	96	96	96	96
44000	96	96	96	96	96	96	96
48000	96	96	96	96	96	95	96
52000	96	96	96	96	96	95	95
56000	96	96	96	96	95	95	95
60000	96	96	95	95	95	95	95
64000	96	96	95	95	95	95	95
67500	95	95	95	95	95	95	95

CS300_21K_FCOM_MET_v02_TO_minSpeeds_v1mcg

V1MCG <Metric> and <72211001D>
Figure 05–02B–33

VRMIN							
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF	DRY AND WET RUNWAY					VRMIN (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
39000	104	104	104	104	104	104	104
40000	104	104	104	104	104	104	104
44000	105	106	106	106	107	107	108
48000	112	112	113	113	113	114	114
52000	118	119	119	119	120	120	120
56000	124	124	125	125	125	126	126
60000	129	130	130	130	131	131	131
64000	135	135	135	135	136	136	136
67500	139	139	139	140	140	140	141

CS300_21K_FCOM_MET_v02_TO_minSpeeds_vr

VRMIN <Metric> and <72211001D>
Figure 05–02B–34

V2MIN							
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF	DRY AND WET RUNWAY					V2MIN (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
39000	110	111	111	111	111	111	111
40000	111	111	111	111	111	111	111
44000	116	116	116	116	116	116	116
48000	121	121	121	121	121	121	121
52000	126	126	126	126	126	126	126
56000	131	131	131	131	131	131	131
60000	135	135	135	135	136	136	136
64000	140	140	140	140	140	140	140
67500	143	143	143	144	144	144	144

CS300_21K_FCOM_MET_v02_TO_minSpeeds_v2

V2MIN <Metric> and <72211001D>
Figure 05–02B–35

L. Maximum takeoff N1 – Static – PW1521G-3 <72211001D>

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (AEO)

ENGINE BLEEDS CLOSED

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	73.6	75.9	76.5	77.2	77.8	78.4	79.5	80.6	81.6	82.6	83.7
–50	–58	74.2	76.6	77.2	77.9	78.5	79.1	80.3	81.3	82.4	83.3	84.4
–45	–49	75.1	77.4	78.1	78.7	79.3	79.9	81.1	82.2	83.3	84.3	85.4
–40	–40	75.9	78.2	78.9	79.6	80.2	80.8	82.0	83.1	84.2	85.2	86.3
–35	–31	76.7	79.1	79.7	80.4	81.0	81.7	82.9	84.0	85.1	86.1	87.2
–30	–22	77.4	79.9	80.6	81.2	81.9	82.5	83.7	84.9	85.9	86.9	88.1
–25	–13	78.2	80.7	81.4	82.1	82.7	83.3	84.6	85.7	86.8	87.8	89.0
–20	–4	79.0	81.5	82.2	82.9	83.5	84.2	85.4	86.6	87.7	88.7	89.8
–15	5	79.8	82.3	83.0	83.7	84.3	85.0	86.2	87.4	88.5	89.5	90.7
–10	14	80.5	83.1	83.8	84.5	85.1	85.8	87.1	88.2	89.3	90.4	91.6
–5	23	81.3	83.8	84.6	85.3	85.9	86.6	87.9	89.1	90.2	91.2	92.4
0	32	82.0	84.6	85.3	86.1	86.7	87.4	88.7	89.9	91.0	92.1	93.3
5	41	82.8	85.4	86.1	86.8	87.5	88.2	89.5	90.7	91.8	92.9	93.3
10	50	83.5	86.2	86.9	87.6	88.3	89.0	90.3	91.5	92.6	92.8	92.7
15	59	84.3	86.9	87.7	88.4	89.1	89.8	91.1	92.3	92.0	91.9	92.0
20	68	85.0	87.7	88.4	89.2	89.9	90.6	91.5	91.2	91.0	90.8	91.0
25	77	85.7	88.4	89.2	89.9	90.3	90.3	90.2	90.1	89.8	89.7	89.8
30	86	86.5	89.2	89.2	89.2	89.2	89.2	89.1	88.9	88.5	88.4	88.7
35	95	86.8	88.0	88.0	88.0	88.0	87.9	87.8	87.6	87.4	87.4	87.5
40	104	85.6	86.8	86.8	86.8	86.7	86.7	86.6	86.4	86.6	86.2	86.1
45	113	84.2	85.5	85.5	85.5	85.5	85.5	85.4	85.4	85.4	84.8	––
53	127	82.3	83.6	83.6	83.5	83.4	83.4	83.4	83.2	––	––	––

cs300_pw1521G_v05r2_status_takeoff_to_avg_000.ch16

Maximum takeoff – Static to 30 KIAS – AEO – Engine bleeds closed <72211001D>
Figure 05–02B–36

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (AEO)

PACKS ON, ANTI–ICE OFF

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	73.6	75.9	76.6	77.2	77.8	78.4	79.6	80.7	81.7	82.7	83.7
–50	–58	74.3	76.6	77.2	77.9	78.5	79.1	80.3	81.4	82.4	83.4	84.5
–45	–49	75.1	77.4	78.1	78.8	79.4	80.0	81.2	82.3	83.3	84.3	85.4
–40	–40	75.9	78.3	78.9	79.6	80.2	80.8	82.1	83.2	84.2	85.2	86.3
–35	–31	76.7	79.1	79.8	80.4	81.1	81.7	82.9	84.0	85.1	86.1	87.2
–30	–22	77.5	79.9	80.6	81.3	81.9	82.5	83.8	84.9	86.0	87.0	88.1
–25	–13	78.3	80.7	81.4	82.1	82.7	83.4	84.6	85.8	86.8	87.9	89.0
–20	–4	79.0	81.5	82.2	82.9	83.6	84.2	85.4	86.6	87.7	88.7	89.9
–15	5	79.8	82.3	83.0	83.7	84.4	85.0	86.3	87.4	88.5	89.6	90.8
–10	14	80.6	83.1	83.8	84.5	85.2	85.8	87.1	88.3	89.4	90.4	91.6
–5	23	81.3	83.9	84.6	85.3	86.0	86.6	87.9	89.1	90.2	91.3	92.5
0	32	82.1	84.7	85.4	86.1	86.8	87.4	88.7	89.9	91.0	92.1	92.8
5	41	82.8	85.4	86.2	86.9	87.6	88.2	89.5	90.7	91.9	92.3	92.0
10	50	83.6	86.2	86.9	87.7	88.3	89.0	90.3	91.5	91.5	91.3	91.2
15	59	84.3	87.0	87.7	88.4	89.1	89.8	91.0	90.7	90.4	90.1	90.0
20	68	85.1	87.7	88.5	89.2	89.9	89.9	89.7	89.6	89.1	88.7	88.5
25	77	85.8	88.5	88.8	88.8	88.8	88.7	88.5	88.2	87.6	87.3	87.1
30	86	86.4	87.6	87.6	87.5	87.5	87.4	87.1	86.8	86.2	85.9	85.8
35	95	85.1	86.3	86.2	86.2	86.1	85.9	85.7	85.3	84.9	84.6	84.5
40	104	83.7	84.8	84.8	84.7	84.6	84.4	84.2	83.9	83.7	83.3	83.1
45	113	82.3	83.3	83.3	83.2	83.2	83.0	82.8	82.6	82.5	82.0	--
53	127	80.1	81.2	81.2	81.2	81.1	80.9	80.7	80.4	--	--	--

cs300_pw1521G_v05r2_status_takeoff_to_avg_100.ch16

Maximum takeoff – Static to 30 KIAS – AEO – Packs on, anti–ice off <72211001D>
Figure 05–02B–37

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	73.6	75.9	76.6	77.2	77.8	78.4	79.6	80.7	81.7	82.7	83.8
–50	**–58**	74.3	76.6	77.3	77.9	78.5	79.1	80.3	81.4	82.4	83.4	84.6
–45	**–49**	75.1	77.5	78.1	78.8	79.4	80.0	81.2	82.3	83.3	84.4	85.5
–40	**–40**	75.9	78.3	79.0	79.6	80.2	80.9	82.1	83.2	84.2	85.3	86.4
–35	**–31**	76.7	79.1	79.8	80.5	81.1	81.7	82.9	84.1	85.1	86.2	87.3
–30	**–22**	77.5	79.9	80.6	81.3	81.9	82.6	83.8	84.9	86.0	87.1	88.2
–25	**–13**	78.3	80.8	81.4	82.1	82.8	83.4	84.7	85.8	86.9	87.9	89.1
–20	**–4**	79.1	81.6	82.2	82.9	83.6	84.2	85.5	86.7	87.7	88.8	90.0
–15	**5**	79.8	82.3	83.1	83.8	84.4	85.1	86.3	87.5	88.6	89.7	90.8
–10	**14**	80.6	83.1	83.8	84.5	85.2	85.9	87.1	88.3	89.4	90.5	91.7
–5	**23**	81.4	83.9	84.6	85.3	86.0	86.7	88.0	89.2	90.3	91.3	92.4
0	**32**	82.1	84.7	85.4	86.1	86.8	87.5	88.8	90.0	91.1	92.2	92.1
5	**41**	82.9	85.5	86.2	86.9	87.6	88.3	89.6	90.8	91.4	91.4	91.6
10	**50**	83.6	86.2	87.0	87.7	88.4	89.1	90.4	90.7	90.7	90.5	90.8

cs300_pw1521G_v05r2_status_takeoff_to_avg_110.ch16

Maximum takeoff – Static to 30 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>
Figure 05–02B–38

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	73.6	75.9	76.6	77.2	77.8	78.4	79.6	80.7	81.7	82.7	83.8
–50	–58	74.3	76.6	77.3	77.9	78.5	79.1	80.3	81.4	82.4	83.4	84.6
–45	–49	75.1	77.5	78.1	78.8	79.4	80.0	81.2	82.3	83.3	84.4	85.5
–40	–40	75.9	78.3	79.0	79.6	80.2	80.9	82.1	83.2	84.2	85.3	86.4
–35	–31	76.7	79.1	79.8	80.5	81.1	81.7	82.9	84.1	85.1	86.2	87.3
–30	–22	77.5	79.9	80.6	81.3	81.9	82.6	83.8	84.9	86.0	87.1	88.2
–25	–13	78.3	80.8	81.4	82.1	82.8	83.4	84.7	85.8	86.9	87.9	89.1
–20	–4	79.1	81.6	82.2	82.9	83.6	84.2	85.5	86.7	87.7	88.8	90.0
–15	5	79.8	82.3	83.1	83.8	84.4	85.1	86.3	87.5	88.6	89.7	90.8
–10	14	80.6	83.1	83.8	84.5	85.2	85.9	87.1	88.3	89.4	90.5	91.7
–5	23	81.4	83.9	84.6	85.3	86.0	86.7	88.0	89.2	90.3	91.3	92.1
0	32	82.1	84.7	85.4	86.1	86.8	87.5	88.8	90.0	91.1	91.4	91.8
5	41	82.9	85.5	86.2	86.9	87.6	88.3	89.6	90.6	90.7	90.8	91.2
10	50	83.6	86.2	87.0	87.7	88.4	89.1	89.8	89.8	90.0	89.8	90.3

cs300_pw1521G_v05r2_status_takeoff_to_avg_111.ch16

Maximum takeoff – Static to 30 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–02B–39

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (AEO)

COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	73.6	75.9	76.6	77.2	77.8	78.4	79.6	80.7	81.7	82.7	83.8
–50	**–58**	74.3	76.6	77.3	77.9	78.5	79.1	80.3	81.4	82.4	83.4	84.6
–45	**–49**	75.1	77.5	78.1	78.8	79.4	80.0	81.2	82.3	83.3	84.4	85.5
–40	**–40**	75.9	78.3	79.0	79.6	80.2	80.9	82.1	83.2	84.2	85.3	86.4
–35	**–31**	76.7	79.1	79.8	80.5	81.1	81.7	82.9	84.1	85.1	86.2	87.3
–30	**–22**	77.5	79.9	80.6	81.3	81.9	82.6	83.8	84.9	86.0	87.1	88.2
–25	**–13**	78.3	80.8	81.4	82.1	82.8	83.4	84.7	85.8	86.9	87.9	89.1
–20	**–4**	79.1	81.6	82.2	82.9	83.6	84.2	85.5	86.7	87.7	88.8	90.0
–15	**5**	79.8	82.3	83.1	83.8	84.4	85.1	86.3	87.5	88.6	89.7	90.8
–10	**14**	80.6	83.1	83.8	84.5	85.2	85.9	87.1	88.3	89.4	90.5	91.7
–5	**23**	81.4	83.9	84.6	85.3	86.0	86.7	88.0	89.2	90.3	91.3	92.5
0	**32**	82.1	84.7	85.4	86.1	86.8	87.5	88.8	90.0	91.1	92.2	93.2
5	**41**	82.9	85.5	86.2	86.9	87.6	88.3	89.6	90.8	91.9	93.0	92.9
10	**50**	83.6	86.2	87.0	87.7	88.4	89.1	90.4	91.6	92.5	91.9	92.3

cs300_pw1521G_v05r2_status_takeoff_to_avg_010.ch16

Maximum takeoff – Static to 30 KIAS – AEO – Cowl anti–ice on <72211001D>
Figure 05–02B–40

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	73.6	75.9	76.6	77.2	77.8	78.4	79.6	80.7	81.7	82.7	83.8
–50	**–58**	74.3	76.6	77.3	77.9	78.5	79.1	80.3	81.4	82.4	83.4	84.6
–45	**–49**	75.1	77.5	78.1	78.8	79.4	80.0	81.2	82.3	83.3	84.4	85.5
–40	**–40**	75.9	78.3	79.0	79.6	80.2	80.9	82.1	83.2	84.2	85.3	86.4
–35	**–31**	76.7	79.1	79.8	80.5	81.1	81.7	82.9	84.1	85.1	86.2	87.3
–30	**–22**	77.5	79.9	80.6	81.3	81.9	82.6	83.8	84.9	86.0	87.1	88.2
–25	**–13**	78.3	80.8	81.4	82.1	82.8	83.4	84.7	85.8	86.9	87.9	89.1
–20	**–4**	79.1	81.6	82.2	82.9	83.6	84.2	85.5	86.7	87.7	88.8	90.0
–15	**5**	79.8	82.3	83.1	83.8	84.4	85.1	86.3	87.5	88.6	89.7	90.8
–10	**14**	80.6	83.1	83.8	84.5	85.2	85.9	87.1	88.3	89.4	90.5	91.7
–5	**23**	81.4	83.9	84.6	85.3	86.0	86.7	88.0	89.2	90.3	91.3	92.5
0	**32**	82.1	84.7	85.4	86.1	86.8	87.5	88.8	90.0	91.1	92.2	92.9
5	**41**	82.9	85.5	86.2	86.9	87.6	88.3	89.6	90.8	91.9	92.1	92.5
10	**50**	83.6	86.2	87.0	87.7	88.4	89.1	90.4	90.9	91.7	91.2	91.8

cs300_pw1521G_v05r2_status_takeoff_to_avg_011.ch16

Maximum takeoff – Static to 30 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–41

M. Maximum takeoff N1 – 140 KIAS – PW1521G-3 <72211001D>

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (AEO or OEI) or TO–1 APR

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	75.0	77.1	77.7	78.4	79.0	79.7	80.8	81.7	82.8	83.6	84.2	84.5
–50	–58	76.1	78.1	78.8	79.5	80.1	80.7	81.9	82.8	83.9	84.7	85.3	85.6
–45	–49	76.9	79.0	79.7	80.3	81.0	81.6	82.8	83.7	84.8	85.6	86.3	86.6
–40	–40	77.7	79.8	80.5	81.2	81.8	82.5	83.6	84.6	85.7	86.5	87.2	87.5
–35	–31	78.5	80.7	81.4	82.1	82.7	83.4	84.5	85.5	86.6	87.4	88.1	88.4
–30	–22	79.3	81.5	82.2	82.9	83.6	84.2	85.4	86.4	87.5	88.3	89.0	89.3
–25	–13	80.1	82.3	83.0	83.7	84.4	85.1	86.2	87.2	88.4	89.2	89.9	90.2
–20	–4	80.9	83.1	83.8	84.6	85.2	85.9	87.1	88.1	89.2	90.1	90.8	91.0
–15	5	81.7	83.9	84.7	85.4	86.1	86.8	87.9	89.0	90.1	90.9	91.6	91.9
–10	14	82.5	84.7	85.5	86.2	86.9	87.6	88.8	89.8	91.0	91.8	92.5	92.8
–5	23	83.3	85.5	86.3	87.0	87.7	88.4	89.6	90.6	91.8	92.7	93.3	93.6
0	32	84.0	86.3	87.1	87.8	88.5	89.2	90.4	91.5	92.6	93.5	94.2	94.5
5	41	84.8	87.1	87.8	88.6	89.3	90.0	91.2	92.3	93.5	94.3	94.7	94.7
10	50	85.5	87.9	88.6	89.4	90.1	90.8	92.1	93.1	94.3	94.4	94.3	94.4
15	59	86.3	88.7	89.4	90.2	90.9	91.6	92.9	93.8	93.7	93.7	93.7	93.8
20	68	87.1	89.4	90.2	90.9	91.7	92.4	93.1	93.0	93.0	92.8	92.9	93.0
25	77	87.8	90.2	91.0	91.7	92.1	92.2	92.2	92.1	91.9	91.7	91.8	92.0
30	86	88.5	90.9	91.0	91.1	91.1	91.2	91.1	91.0	90.7	90.5	90.6	91.0
35	95	88.9	89.8	89.9	89.9	90.0	90.0	90.0	89.8	89.4	89.2	89.3	––
40	104	87.7	88.7	88.7	88.8	88.8	88.9	88.9	88.6	88.2	87.9	88.0	––
45	113	86.5	87.5	87.6	87.6	87.7	87.7	87.7	87.4	86.9	86.6	––	––
53	127	84.6	85.6	85.7	85.7	85.8	85.8	85.8	85.3	––	––	––	––

cs300_pw1521G_v05r2_status_mto_140knt_avg_000.ch16

Maximum takeoff – 140 KIAS – AEO or OEI – Engine bleeds closed <72211001D>
Figure 05–02B–42

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (AEO)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	75.1	77.1	77.8	78.4	79.1	79.7	80.8	81.8	82.8	83.6	84.3	84.6
–50	–58	76.1	78.2	78.8	79.5	80.2	80.8	81.9	82.9	83.9	84.8	85.4	85.7
–45	–49	76.9	79.0	79.7	80.4	81.0	81.7	82.8	83.8	84.9	85.7	86.3	86.7
–40	–40	77.8	79.9	80.6	81.2	81.9	82.6	83.7	84.7	85.8	86.6	87.3	87.6
–35	–31	78.6	80.7	81.4	82.1	82.8	83.4	84.6	85.6	86.7	87.5	88.2	88.5
–30	–22	79.4	81.6	82.2	82.9	83.6	84.3	85.5	86.4	87.6	88.4	89.1	89.4
–25	–13	80.2	82.4	83.1	83.8	84.5	85.1	86.3	87.3	88.4	89.3	90.0	90.3
–20	–4	81.0	83.2	83.9	84.6	85.3	86.0	87.2	88.2	89.3	90.2	90.8	91.1
–15	5	81.8	84.0	84.7	85.4	86.1	86.8	88.0	89.0	90.2	91.0	91.7	92.0
–10	14	82.5	84.8	85.5	86.2	86.9	87.6	88.8	89.9	91.0	91.9	92.5	92.9
–5	23	83.3	85.6	86.3	87.1	87.8	88.5	89.7	90.7	91.9	92.7	93.4	93.7
0	32	84.1	86.4	87.1	87.8	88.6	89.3	90.5	91.6	92.7	93.6	93.9	93.8
5	41	84.8	87.2	87.9	88.7	89.4	90.1	91.3	92.4	93.6	93.7	93.6	93.6
10	50	85.6	87.9	88.7	89.4	90.2	90.9	92.1	93.2	93.2	93.1	93.1	93.1
15	59	86.4	88.7	89.5	90.2	91.0	91.7	92.7	92.6	92.5	92.3	92.2	92.2
20	68	87.1	89.5	90.2	91.0	91.8	91.9	91.8	91.7	91.4	91.0	90.8	90.8
25	77	87.9	90.2	90.7	90.8	90.8	90.8	90.7	90.5	90.0	89.6	89.4	89.5
30	86	88.6	89.5	89.6	89.6	89.6	89.6	89.5	89.2	88.6	88.3	88.2	88.4
35	95	87.4	88.3	88.3	88.3	88.3	88.3	88.2	87.9	87.3	87.0	86.9	--
40	104	86.1	87.0	87.0	87.0	87.0	87.0	86.8	86.5	86.1	85.7	85.6	--
45	113	84.7	85.6	85.7	85.7	85.7	85.6	85.5	85.3	84.7	84.4	--	--
53	127	82.7	83.5	83.5	83.5	83.5	83.6	83.6	83.2	--	--	--	--

cs300_pw1521G_v05r2_status_mto_140knt_avg_100.ch16

Maximum takeoff – 140 KIAS – AEO – Packs on, anti–ice off <72211001D>
Figure 05–02B–43

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.7
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.6	93.7	93.6
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	93.2	93.2	93.3	93.4
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	92.2	92.6	92.5	92.6	92.8	92.8

cs300_pw1521G_v05r2_status_mto_140knt_avg_110.ch16

Maximum takeoff – 140 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>
Figure 05–02B–44

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.6
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.3	93.4	93.4
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	92.7	92.8	93.0	93.1
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	91.9	91.9	91.8	92.1	92.4	92.5

cs300_pw1521G_v05r2_status_mto_140knt_avg_111.ch16

Maximum takeoff – 140 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>

Figure 05–02B–45

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (OEI) or TO–1 APR

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.1	77.8	78.5	79.1	79.7	80.8	81.8	82.8	83.7	84.3	84.6
–50	**–58**	76.1	78.2	78.9	79.5	80.2	80.8	81.9	82.9	84.0	84.8	85.4	85.8
–45	**–49**	76.9	79.1	79.7	80.4	81.1	81.7	82.8	83.8	84.9	85.7	86.4	86.7
–40	**–40**	77.8	79.9	80.6	81.3	81.9	82.6	83.7	84.7	85.8	86.6	87.3	87.6
–35	**–31**	78.6	80.7	81.4	82.1	82.8	83.4	84.6	85.6	86.7	87.5	88.2	88.5
–30	**–22**	79.4	81.6	82.3	83.0	83.6	84.3	85.5	86.5	87.6	88.4	89.1	89.4
–25	**–13**	80.2	82.4	83.1	83.8	84.5	85.2	86.3	87.3	88.5	89.3	90.0	90.3
–20	**–4**	81.0	83.2	83.9	84.6	85.3	86.0	87.2	88.2	89.3	90.2	90.9	91.2
–15	**5**	81.8	84.0	84.7	85.4	86.1	86.8	88.0	89.1	90.2	91.1	91.7	92.0
–10	**14**	82.6	84.8	85.5	86.3	87.0	87.7	88.9	89.9	91.1	91.9	92.6	92.9
–5	**23**	83.3	85.6	86.3	87.1	87.8	88.5	89.7	90.7	91.9	92.8	93.4	93.7
0	**32**	84.1	86.4	87.1	87.9	88.6	89.3	90.5	91.6	92.7	93.6	93.5	93.4
5	**41**	84.8	87.2	87.9	88.7	89.4	90.1	91.3	92.4	93.4	93.2	93.2	93.1
10	**50**	85.6	87.9	88.7	89.5	90.2	90.9	92.2	92.9	92.7	92.6	92.5	92.5
15	**59**	86.4	88.7	89.5	90.2	91.0	91.7	92.2	92.1	91.9	91.7	91.5	91.5
20	**68**	87.1	89.5	90.3	91.0	91.4	91.4	91.3	91.1	90.7	90.1	89.8	89.8
25	**77**	87.9	90.3	90.3	90.3	90.3	90.2	90.2	89.8	89.1	88.6	88.3	88.3
30	**86**	88.2	89.1	89.1	89.1	89.0	88.9	88.8	88.5	87.7	87.3	87.0	87.3
35	**95**	87.0	87.8	87.8	87.8	87.7	87.6	87.4	87.0	86.3	86.1	85.7	--
40	**104**	85.7	86.4	86.4	86.4	86.3	86.2	86.0	85.7	85.0	84.7	84.4	--
45	**113**	84.2	85.0	85.0	84.9	84.8	84.7	84.7	84.4	83.7	83.4	--	--
53	**127**	82.2	82.9	82.8	82.7	82.7	82.6	82.7	82.3	--	--	--	--

cs300_pw1521G_v05r2_status_mto_140knt_avg_300.ch16

Maximum takeoff – 140 KIAS – OEI – Pack(s) on, anti–ice off <72211001D>
Figure 05–02B–46

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (OEI) or TO–1 APR

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.2	77.3	78.0	78.6	79.3	79.9	81.0	81.9	83.0	83.9	84.5	84.8
–50	**–58**	76.3	78.3	79.0	79.7	80.3	81.0	82.1	83.1	84.2	85.0	85.7	86.0
–45	**–49**	77.1	79.2	79.9	80.6	81.2	81.9	83.0	84.0	85.1	85.9	86.6	86.9
–40	**–40**	77.9	80.1	80.7	81.4	82.1	82.8	83.9	84.9	86.0	86.8	87.5	87.8
–35	**–31**	78.8	80.9	81.6	82.3	82.9	83.6	84.8	85.8	86.9	87.8	88.4	88.8
–30	**–22**	79.6	81.7	82.4	83.1	83.8	84.5	85.6	86.7	87.8	88.7	89.3	89.7
–25	**–13**	80.4	82.6	83.3	84.0	84.7	85.3	86.5	87.5	88.7	89.5	90.2	90.5
–20	**–4**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	90.4	91.1	91.3
–15	**5**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	90.4	91.3	91.8	92.1
–10	**14**	82.7	85.0	85.7	86.4	87.1	87.8	89.0	90.1	91.2	92.1	92.7	93.0
–5	**23**	83.5	85.8	86.5	87.2	87.9	88.7	89.9	90.9	92.0	92.9	92.8	92.5
0	**32**	84.3	86.6	87.3	88.1	88.8	89.5	90.7	91.7	92.8	92.6	91.8	91.3
5	**41**	85.0	87.3	88.1	88.8	89.6	90.3	91.4	92.3	92.1	91.6	90.2	89.8
10	**50**	85.8	88.1	88.9	89.6	90.4	90.8	91.6	91.3	90.8	90.0	88.8	88.3

cs300_pw1521G_v05r2_status_mto_140knt_avg_310.ch16

Maximum takeoff – 140 KIAS – OEI – Pack(s) on, cowl anti–ice on <72211001D>

Figure 05–02B–47

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (OEI) or TO–1 APR

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.2	77.3	78.0	78.6	79.3	79.9	81.0	81.9	83.0	83.9	84.5	84.8
–50	**–58**	76.3	78.3	79.0	79.7	80.3	81.0	82.1	83.1	84.2	85.0	85.7	86.0
–45	**–49**	77.1	79.2	79.9	80.6	81.2	81.9	83.0	84.0	85.1	85.9	86.6	86.9
–40	**–40**	77.9	80.1	80.7	81.4	82.1	82.8	83.9	84.9	86.0	86.8	87.5	87.8
–35	**–31**	78.8	80.9	81.6	82.3	82.9	83.6	84.8	85.8	86.9	87.8	88.4	88.8
–30	**–22**	79.6	81.7	82.4	83.1	83.8	84.5	85.6	86.7	87.8	88.7	89.3	89.7
–25	**–13**	80.4	82.6	83.3	84.0	84.7	85.3	86.5	87.5	88.7	89.5	90.2	90.5
–20	**–4**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	90.4	91.1	91.0
–15	**5**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	90.4	91.3	91.2	90.9
–10	**14**	82.7	85.0	85.7	86.4	87.1	87.8	89.0	90.1	91.2	91.4	90.9	90.6
–5	**23**	83.5	85.8	86.5	87.2	87.9	88.7	89.9	90.9	91.2	90.8	90.4	90.0
0	**32**	84.3	86.6	87.3	88.1	88.8	89.5	90.7	90.8	90.5	90.1	89.1	88.4
5	**41**	85.0	87.3	88.1	88.8	89.6	90.3	90.3	89.9	89.4	88.5	86.9	86.1
10	**50**	85.8	88.1	88.9	89.6	89.5	89.4	89.0	88.5	87.8	86.3	84.8	83.9

cs300_pw1521G_v05r2_status_mto_140knt_avg_312.ch16

Maximum takeoff – 140 KIAS – OEI – Pack(s) on, wing and cowl anti–ice on <72211001D>

Figure 05–02B–48

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (AEO or OEI) or TO–1 APR

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.8
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.7	94.3	94.6
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	93.6	94.5	94.4	94.4
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	92.2	93.3	93.9	93.8	94.0	94.1

cs300_pw1521G_v05r2_status_mto_140knt_avg_010.ch16

Maximum takeoff – 140 KIAS – AEO or OEI – Cowl anti–ice on <72211001D>
Figure 05–02B–49

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.8
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.7	94.2	94.5
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	93.6	94.2	94.1	94.2
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	92.2	92.9	93.2	93.2	93.6	93.8

cs300_pw1521G_v05r2_status_mto_140knt_avg_011.ch16

Maximum takeoff – 140 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–50

THRUST SETTING– %N1

MAXIMUM TAKEOFF – 140 KIAS

TO (OEI) or TO–1 APR

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.2	77.3	78.0	78.6	79.3	79.9	81.0	81.9	83.0	83.9	84.5	84.8
–50	**–58**	76.3	78.3	79.0	79.7	80.3	81.0	82.1	83.1	84.2	85.0	85.7	86.0
–45	**–49**	77.1	79.2	79.9	80.6	81.2	81.9	83.0	84.0	85.1	85.9	86.6	86.9
–40	**–40**	77.9	80.1	80.7	81.4	82.1	82.8	83.9	84.9	86.0	86.8	87.5	87.8
–35	**–31**	78.8	80.9	81.6	82.3	82.9	83.6	84.8	85.8	86.9	87.8	88.4	88.8
–30	**–22**	79.6	81.7	82.4	83.1	83.8	84.5	85.6	86.7	87.8	88.7	89.3	89.7
–25	**–13**	80.4	82.6	83.3	84.0	84.7	85.3	86.5	87.5	88.7	89.5	90.2	90.5
–20	**–4**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	90.4	91.1	91.4
–15	**5**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	90.4	91.3	92.0	92.3
–10	**14**	82.7	85.0	85.7	86.4	87.1	87.8	89.0	90.1	91.2	92.1	92.8	93.2
–5	**23**	83.5	85.8	86.5	87.2	87.9	88.7	89.9	90.9	92.1	93.0	93.4	93.3
0	**32**	84.3	86.6	87.3	88.1	88.8	89.5	90.7	91.8	92.9	93.2	93.1	93.0
5	**41**	85.0	87.3	88.1	88.8	89.6	90.3	91.5	92.6	92.5	92.6	92.4	92.3
10	**50**	85.8	88.1	88.9	89.6	90.4	91.1	91.8	91.7	91.7	91.6	91.6	91.5

cs300_pw1521G_v05r2_status_mto_140knt_avg_012.ch16

Maximum takeoff – 140 KIAS – OEI – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–51

N. Derate N1 TO-1 – Static – PW1521G-3 <72211001D>

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–1 (AEO)

ENGINE BLEEDS CLOSED

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	70.8	73.1	73.7	74.3	74.9	75.5	76.6	77.6	78.5	79.5	80.5
–50	–58	71.4	73.7	74.3	75.0	75.6	76.2	77.3	78.3	79.2	80.2	81.2
–45	–49	72.2	74.5	75.2	75.8	76.4	77.0	78.1	79.2	80.1	81.1	82.1
–40	–40	73.0	75.3	76.0	76.6	77.2	77.8	79.0	80.0	81.0	81.9	83.0
–35	–31	73.8	76.1	76.8	77.4	78.0	78.6	79.8	80.9	81.8	82.8	83.9
–30	–22	74.5	76.9	77.6	78.2	78.8	79.4	80.6	81.7	82.7	83.6	84.7
–25	–13	75.3	77.7	78.4	79.0	79.6	80.2	81.4	82.5	83.5	84.5	85.6
–20	–4	76.0	78.5	79.1	79.8	80.4	81.1	82.2	83.3	84.3	85.3	86.5
–15	5	76.8	79.2	79.9	80.6	81.2	81.8	83.0	84.2	85.2	86.2	87.3
–10	14	77.5	80.0	80.7	81.3	82.0	82.6	83.8	84.9	86.0	87.0	88.2
–5	23	78.2	80.7	81.4	82.1	82.8	83.4	84.6	85.7	86.8	87.8	89.0
0	32	79.0	81.5	82.2	82.9	83.5	84.2	85.4	86.5	87.6	88.6	89.8
5	41	79.7	82.2	82.9	83.6	84.3	84.9	86.2	87.3	88.4	89.4	89.8
10	50	80.4	83.0	83.7	84.4	85.0	85.7	86.9	88.1	89.2	89.2	89.3
15	59	81.1	83.7	84.4	85.1	85.8	86.4	87.7	88.7	88.6	88.5	88.6
20	68	81.8	84.4	85.2	85.9	86.5	87.2	87.9	87.8	87.7	87.5	87.6
25	77	82.5	85.2	85.9	86.6	87.0	87.0	86.9	86.8	86.5	86.4	86.5
30	86	83.2	85.9	85.9	85.9	85.9	85.9	85.8	85.6	85.3	85.2	85.2
35	95	83.5	84.8	84.8	84.8	84.7	84.7	84.6	84.3	84.2	84.0	83.9
40	104	82.3	83.5	83.5	83.5	83.5	83.4	83.3	83.1	82.9	82.7	82.5
45	113	81.1	82.3	82.3	82.3	82.3	82.2	82.1	81.7	81.7	81.4	––
53	127	79.2	80.5	80.4	80.3	80.2	80.1	80.0	79.6	––	––	––

cs300_pw1521G_v05r2_status_takeoff_to1_avg_000.ch16

Derated takeoff TO–1 – Static to 30 KIAS – AEO – Engine bleeds closed <72211001D>
Figure 05–02B–52

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–1 (AEO)

PACKS ON, ANTI–ICE OFF

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	70.8	73.1	73.7	74.3	74.9	75.5	76.6	77.6	78.6	79.5	80.5
–50	–58	71.5	73.8	74.4	75.0	75.6	76.2	77.3	78.3	79.3	80.2	81.3
–45	–49	72.3	74.6	75.2	75.8	76.4	77.0	78.1	79.2	80.2	81.1	82.2
–40	–40	73.0	75.4	76.0	76.7	77.2	77.8	79.0	80.1	81.0	82.0	83.0
–35	–31	73.8	76.2	76.8	77.5	78.1	78.7	79.8	80.9	81.9	82.8	83.9
–30	–22	74.6	76.9	77.6	78.3	78.9	79.5	80.7	81.7	82.7	83.7	84.8
–25	–13	75.3	77.7	78.4	79.1	79.7	80.3	81.5	82.6	83.6	84.5	85.7
–20	–4	76.1	78.5	79.2	79.8	80.5	81.1	82.3	83.4	84.4	85.4	86.5
–15	5	76.8	79.3	79.9	80.6	81.2	81.9	83.1	84.2	85.2	86.2	87.3
–10	14	77.6	80.0	80.7	81.4	82.0	82.7	83.9	85.0	86.0	87.0	88.2
–5	23	78.3	80.8	81.5	82.2	82.8	83.4	84.7	85.8	86.8	87.8	89.0
0	32	79.0	81.5	82.2	82.9	83.6	84.2	85.4	86.6	87.6	88.7	89.0
5	41	79.7	82.3	83.0	83.7	84.3	85.0	86.2	87.3	88.4	88.6	88.5
10	50	80.4	83.0	83.7	84.4	85.1	85.7	87.0	88.1	88.0	87.8	87.7
15	59	81.2	83.7	84.4	85.2	85.8	86.5	87.5	87.3	87.1	86.7	86.5
20	68	81.9	84.5	85.2	85.9	86.6	86.6	86.4	86.2	85.8	85.4	85.2
25	77	82.6	85.2	85.6	85.5	85.4	85.4	85.2	84.9	84.4	84.1	83.8
30	86	83.2	84.3	84.3	84.3	84.2	84.1	83.9	83.5	83.0	82.7	82.4
35	95	81.8	83.0	83.0	82.9	82.8	82.7	82.4	82.1	81.7	81.4	81.1
40	104	80.4	81.6	81.5	81.4	81.3	81.2	80.9	80.6	80.4	80.1	79.7
45	113	79.1	80.2	80.1	80.1	79.9	79.8	79.5	79.3	79.2	78.7	--
53	127	77.0	78.1	78.0	78.0	77.8	77.6	77.3	77.1	--	--	--

cs300_pw1521G_v05r2_status_takeoff_to1_avg_100.ch16

Derated takeoff TO–1 – Static to 30 KIAS – AEO – Packs on, anti–ice off <72211001D>
Figure 05–02B–53

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–1 (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	70.9	73.1	73.8	74.4	74.9	75.5	76.6	77.7	78.6	79.6	80.6
–50	**–58**	71.5	73.8	74.4	75.0	75.6	76.2	77.3	78.4	79.3	80.3	81.3
–45	**–49**	72.3	74.6	75.2	75.9	76.5	77.1	78.2	79.2	80.2	81.2	82.2
–40	**–40**	73.1	75.4	76.0	76.7	77.3	77.9	79.0	80.1	81.1	82.0	83.1
–35	**–31**	73.8	76.2	76.8	77.5	78.1	78.7	79.9	80.9	81.9	82.9	84.0
–30	**–22**	74.6	77.0	77.6	78.3	78.9	79.5	80.7	81.8	82.8	83.7	84.9
–25	**–13**	75.4	77.8	78.4	79.1	79.7	80.3	81.5	82.6	83.6	84.6	85.7
–20	**–4**	76.1	78.5	79.2	79.9	80.5	81.1	82.3	83.4	84.4	85.4	86.6
–15	**5**	76.8	79.3	80.0	80.7	81.3	81.9	83.1	84.2	85.2	86.2	87.4
–10	**14**	77.6	80.1	80.7	81.4	82.1	82.7	83.9	85.0	86.1	87.1	88.3
–5	**23**	78.3	80.8	81.5	82.2	82.8	83.5	84.7	85.8	86.9	87.9	89.0
0	**32**	79.0	81.6	82.2	82.9	83.6	84.2	85.5	86.6	87.7	88.5	88.7
5	**41**	79.8	82.3	83.0	83.7	84.3	85.0	86.2	87.4	88.0	87.9	88.2
10	**50**	80.5	83.0	83.8	84.5	85.1	85.8	87.0	87.3	87.3	87.1	87.3

cs300_pw1521G_v05r2_status_takeoff_to1_avg_110.ch16

Derated takeoff TO–1 – Static to 30 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>
Figure 05–02B–54

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–1 (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	70.9	73.1	73.8	74.4	74.9	75.5	76.6	77.7	78.6	79.6	80.6
–50	–58	71.5	73.8	74.4	75.0	75.6	76.2	77.3	78.4	79.3	80.3	81.3
–45	–49	72.3	74.6	75.2	75.9	76.5	77.1	78.2	79.2	80.2	81.2	82.2
–40	–40	73.1	75.4	76.0	76.7	77.3	77.9	79.0	80.1	81.1	82.0	83.1
–35	–31	73.8	76.2	76.8	77.5	78.1	78.7	79.9	80.9	81.9	82.9	84.0
–30	–22	74.6	77.0	77.6	78.3	78.9	79.5	80.7	81.8	82.8	83.7	84.9
–25	–13	75.4	77.8	78.4	79.1	79.7	80.3	81.5	82.6	83.6	84.6	85.7
–20	–4	76.1	78.5	79.2	79.9	80.5	81.1	82.3	83.4	84.4	85.4	86.6
–15	5	76.8	79.3	80.0	80.7	81.3	81.9	83.1	84.2	85.2	86.2	87.4
–10	14	77.6	80.1	80.7	81.4	82.1	82.7	83.9	85.0	86.1	87.1	88.3
–5	23	78.3	80.8	81.5	82.2	82.8	83.5	84.7	85.8	86.9	87.9	88.7
0	32	79.0	81.6	82.2	82.9	83.6	84.2	85.5	86.6	87.7	87.9	88.4
5	41	79.8	82.3	83.0	83.7	84.3	85.0	86.2	87.2	87.3	87.3	87.8
10	50	80.5	83.0	83.8	84.5	85.1	85.8	86.5	86.4	86.6	86.3	86.8

cs300_pw1521G_v05r2_status_takeoff_to1_avg_111.ch16

Derated takeoff TO–1 – Static to 30 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–02B–55

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–1 (AEO)

COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	70.9	73.1	73.8	74.4	74.9	75.5	76.6	77.7	78.6	79.6	80.6
–50	**–58**	71.5	73.8	74.4	75.0	75.6	76.2	77.3	78.4	79.3	80.3	81.3
–45	**–49**	72.3	74.6	75.2	75.9	76.5	77.1	78.2	79.2	80.2	81.2	82.2
–40	**–40**	73.1	75.4	76.0	76.7	77.3	77.9	79.0	80.1	81.1	82.0	83.1
–35	**–31**	73.8	76.2	76.8	77.5	78.1	78.7	79.9	80.9	81.9	82.9	84.0
–30	**–22**	74.6	77.0	77.6	78.3	78.9	79.5	80.7	81.8	82.8	83.7	84.9
–25	**–13**	75.4	77.8	78.4	79.1	79.7	80.3	81.5	82.6	83.6	84.6	85.7
–20	**–4**	76.1	78.5	79.2	79.9	80.5	81.1	82.3	83.4	84.4	85.4	86.6
–15	**5**	76.8	79.3	80.0	80.7	81.3	81.9	83.1	84.2	85.2	86.2	87.4
–10	**14**	77.6	80.1	80.7	81.4	82.1	82.7	83.9	85.0	86.1	87.1	88.3
–5	**23**	78.3	80.8	81.5	82.2	82.8	83.5	84.7	85.8	86.9	87.9	89.1
0	**32**	79.0	81.6	82.2	82.9	83.6	84.2	85.5	86.6	87.7	88.7	89.8
5	**41**	79.8	82.3	83.0	83.7	84.3	85.0	86.2	87.4	88.4	89.1	89.4
10	**50**	80.5	83.0	83.8	84.5	85.1	85.8	87.0	88.2	88.6	88.5	88.8

cs300_pw1521G_v05r2_status_takeoff_to1_avg_010.ch16

Derated takeoff TO–1 – Static to 30 KIAS – AEO – Cowl anti–ice on <72211001D>
Figure 05–02B–56

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–1 (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	70.9	73.1	73.8	74.4	74.9	75.5	76.6	77.7	78.6	79.6	80.6
–50	**–58**	71.5	73.8	74.4	75.0	75.6	76.2	77.3	78.4	79.3	80.3	81.3
–45	**–49**	72.3	74.6	75.2	75.9	76.5	77.1	78.2	79.2	80.2	81.2	82.2
–40	**–40**	73.1	75.4	76.0	76.7	77.3	77.9	79.0	80.1	81.1	82.0	83.1
–35	**–31**	73.8	76.2	76.8	77.5	78.1	78.7	79.9	80.9	81.9	82.9	84.0
–30	**–22**	74.6	77.0	77.6	78.3	78.9	79.5	80.7	81.8	82.8	83.7	84.9
–25	**–13**	75.4	77.8	78.4	79.1	79.7	80.3	81.5	82.6	83.6	84.6	85.7
–20	**–4**	76.1	78.5	79.2	79.9	80.5	81.1	82.3	83.4	84.4	85.4	86.6
–15	**5**	76.8	79.3	80.0	80.7	81.3	81.9	83.1	84.2	85.2	86.2	87.4
–10	**14**	77.6	80.1	80.7	81.4	82.1	82.7	83.9	85.0	86.1	87.1	88.3
–5	**23**	78.3	80.8	81.5	82.2	82.8	83.5	84.7	85.8	86.9	87.9	89.1
0	**32**	79.0	81.6	82.2	82.9	83.6	84.2	85.5	86.6	87.7	88.7	89.5
5	**41**	79.8	82.3	83.0	83.7	84.3	85.0	86.2	87.4	88.4	88.5	89.1
10	**50**	80.5	83.0	83.8	84.5	85.1	85.8	87.0	87.6	87.9	87.7	88.4

cs300_pw1521G_v05r2_status_takeoff_to1_avg_011.ch16

Derated takeoff TO–1 – Static to 30 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–57

O. Derate N1 TO-1 – 140 KIAS – PW1521G-3 <72211001D>

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (AEO or OEI) or TO–2 APR

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	72.3	74.3	74.9	75.5	76.2	76.8	77.8	78.7	79.7	80.4	81.0	81.3
–50	–58	73.2	75.3	75.9	76.6	77.2	77.8	78.8	79.7	80.7	81.5	82.1	82.4
–45	–49	74.1	76.1	76.8	77.4	78.0	78.7	79.7	80.6	81.6	82.4	83.0	83.3
–40	–40	74.8	76.9	77.6	78.2	78.9	79.5	80.6	81.5	82.5	83.3	83.9	84.2
–35	–31	75.6	77.7	78.4	79.1	79.7	80.3	81.4	82.3	83.4	84.1	84.7	85.0
–30	–22	76.4	78.5	79.2	79.9	80.5	81.2	82.2	83.2	84.2	85.0	85.6	85.9
–25	–13	77.2	79.3	80.0	80.7	81.3	82.0	83.1	84.0	85.1	85.8	86.5	86.8
–20	–4	77.9	80.1	80.8	81.5	82.1	82.8	83.9	84.9	85.9	86.7	87.3	87.7
–15	5	78.7	80.9	81.6	82.3	82.9	83.6	84.7	85.7	86.7	87.5	88.2	88.5
–10	14	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.6	88.3	89.0	89.3
–5	23	80.2	82.4	83.1	83.8	84.5	85.2	86.3	87.3	88.4	89.2	89.8	90.2
0	32	80.9	83.2	83.9	84.6	85.3	86.0	87.1	88.1	89.2	90.0	90.7	91.0
5	41	81.7	83.9	84.6	85.4	86.1	86.7	87.9	88.9	90.0	90.8	91.2	91.2
10	50	82.4	84.7	85.4	86.1	86.8	87.5	88.7	89.7	90.8	90.8	90.8	90.8
15	59	83.1	85.4	86.2	86.9	87.6	88.3	89.5	90.4	90.3	90.2	90.3	90.3
20	68	83.9	86.2	86.9	87.7	88.3	89.0	89.7	89.7	89.6	89.5	89.6	89.6
25	77	84.6	86.9	87.7	88.4	88.8	88.9	88.9	88.8	88.6	88.5	88.4	88.6
30	86	85.3	87.6	87.7	87.8	87.8	87.9	87.8	87.7	87.5	87.2	87.2	87.6
35	95	85.6	86.6	86.6	86.7	86.7	86.8	86.7	86.6	86.2	85.9	85.9	––
40	104	84.5	85.4	85.4	85.5	85.6	85.6	85.6	85.3	84.9	84.6	84.6	––
45	113	83.3	84.3	84.3	84.4	84.5	84.4	84.4	84.1	83.6	83.2	––	––
53	127	81.4	82.4	82.5	82.5	82.5	82.5	82.4	81.9	––	––	––	––

cs300_pw1521G_v05r2_status_to–1_140knt_avg_000.ch16

Derated takeoff TO–1 – 140 KIAS – AEO or OEI – Engine bleeds closed <72211001D>
Figure 05–02B–58

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (AEO)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	72.3	74.3	74.9	75.6	76.2	76.8	77.8	78.7	79.7	80.5	81.1	81.4
–50	–58	73.3	75.3	76.0	76.6	77.2	77.9	78.9	79.8	80.8	81.6	82.2	82.5
–45	–49	74.1	76.2	76.8	77.4	78.1	78.7	79.8	80.7	81.7	82.5	83.1	83.4
–40	–40	74.9	77.0	77.6	78.3	78.9	79.6	80.6	81.6	82.6	83.3	83.9	84.2
–35	–31	75.7	77.8	78.4	79.1	79.8	80.4	81.5	82.4	83.4	84.2	84.8	85.1
–30	–22	76.5	78.6	79.2	79.9	80.6	81.2	82.3	83.2	84.3	85.1	85.7	86.0
–25	–13	77.2	79.4	80.1	80.7	81.4	82.0	83.2	84.1	85.2	85.9	86.6	86.9
–20	–4	78.0	80.2	80.8	81.5	82.2	82.8	84.0	84.9	86.0	86.8	87.4	87.7
–15	5	78.8	80.9	81.6	82.3	83.0	83.7	84.8	85.8	86.8	87.6	88.3	88.6
–10	14	79.5	81.7	82.4	83.1	83.8	84.4	85.6	86.6	87.6	88.4	89.1	89.4
–5	23	80.2	82.5	83.2	83.9	84.6	85.2	86.4	87.4	88.5	89.3	89.9	90.3
0	32	81.0	83.2	83.9	84.7	85.3	86.0	87.2	88.2	89.3	90.1	90.4	90.3
5	41	81.7	84.0	84.7	85.4	86.1	86.8	88.0	89.0	90.1	90.2	90.1	90.1
10	50	82.5	84.7	85.5	86.2	86.9	87.6	88.8	89.8	89.8	89.6	89.6	89.6
15	59	83.2	85.5	86.2	86.9	87.7	88.3	89.3	89.2	89.1	88.8	88.7	88.8
20	68	83.9	86.2	87.0	87.7	88.4	88.6	88.5	88.3	88.1	87.6	87.5	87.4
25	77	84.6	87.0	87.4	87.5	87.5	87.5	87.4	87.2	86.7	86.3	86.1	86.1
30	86	85.3	86.2	86.3	86.3	86.3	86.3	86.2	85.9	85.4	85.1	84.8	85.0
35	95	84.1	85.0	85.0	85.1	85.1	85.0	84.9	84.6	84.1	83.8	83.5	––
40	104	82.8	83.7	83.7	83.8	83.7	83.7	83.5	83.2	82.8	82.4	82.2	––
45	113	81.6	82.4	82.4	82.5	82.4	82.3	82.2	81.9	81.5	81.0	––	––
53	127	79.5	80.4	80.4	80.3	80.3	80.2	80.2	79.8	––	––	––	––

cs300_pw1521G_v05r2_status_to–1_140knt_avg_100.ch16

Derated takeoff TO–1 – 140 KIAS – AEO – Packs on, anti–ice off <72211001D>
Figure 05–02B–59

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.4	74.4	75.0	75.7	76.3	76.9	77.9	78.8	79.8	80.6	81.2	81.5
–50	**–58**	73.3	75.4	76.0	76.7	77.3	77.9	79.0	79.9	80.9	81.7	82.3	82.6
–45	**–49**	74.2	76.2	76.9	77.5	78.2	78.8	79.8	80.8	81.8	82.6	83.2	83.5
–40	**–40**	75.0	77.0	77.7	78.3	79.0	79.6	80.7	81.6	82.7	83.4	84.1	84.3
–35	**–31**	75.7	77.8	78.5	79.2	79.8	80.5	81.6	82.5	83.5	84.3	84.9	85.2
–30	**–22**	76.5	78.6	79.3	80.0	80.6	81.3	82.4	83.3	84.4	85.2	85.8	86.1
–25	**–13**	77.3	79.4	80.1	80.8	81.4	82.1	83.2	84.2	85.2	86.0	86.7	87.0
–20	**–4**	78.1	80.2	80.9	81.6	82.3	82.9	84.0	85.0	86.1	86.9	87.5	87.9
–15	**5**	78.8	81.0	81.7	82.4	83.1	83.7	84.9	85.8	86.9	87.7	88.4	88.7
–10	**14**	79.6	81.8	82.5	83.2	83.8	84.5	85.7	86.6	87.7	88.5	89.2	89.6
–5	**23**	80.3	82.5	83.2	83.9	84.6	85.3	86.5	87.4	88.5	89.4	90.1	90.3
0	**32**	81.1	83.3	84.0	84.7	85.4	86.1	87.3	88.2	89.3	90.2	90.2	90.2
5	**41**	81.8	84.0	84.8	85.5	86.2	86.9	88.1	89.1	89.8	89.8	89.8	89.9
10	**50**	82.5	84.8	85.5	86.3	87.0	87.7	88.8	89.2	89.1	89.1	89.2	89.3

cs300_pw1521G_v05r2_status_to–1_140knt_avg_110.ch16

Derated takeoff TO–1 – 140 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>
Figure 05–02B–60

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.4	74.4	75.0	75.7	76.3	76.9	77.9	78.8	79.8	80.6	81.2	81.5
–50	**–58**	73.3	75.4	76.0	76.7	77.3	77.9	79.0	79.9	80.9	81.7	82.3	82.6
–45	**–49**	74.2	76.2	76.9	77.5	78.2	78.8	79.8	80.8	81.8	82.6	83.2	83.5
–40	**–40**	75.0	77.0	77.7	78.3	79.0	79.6	80.7	81.6	82.7	83.4	84.1	84.3
–35	**–31**	75.7	77.8	78.5	79.2	79.8	80.5	81.6	82.5	83.5	84.3	84.9	85.2
–30	**–22**	76.5	78.6	79.3	80.0	80.6	81.3	82.4	83.3	84.4	85.2	85.8	86.1
–25	**–13**	77.3	79.4	80.1	80.8	81.4	82.1	83.2	84.2	85.2	86.0	86.7	87.0
–20	**–4**	78.1	80.2	80.9	81.6	82.3	82.9	84.0	85.0	86.1	86.9	87.5	87.9
–15	**5**	78.8	81.0	81.7	82.4	83.1	83.7	84.9	85.8	86.9	87.7	88.4	88.7
–10	**14**	79.6	81.8	82.5	83.2	83.8	84.5	85.7	86.6	87.7	88.5	89.2	89.6
–5	**23**	80.3	82.5	83.2	83.9	84.6	85.3	86.5	87.4	88.5	89.4	90.1	90.1
0	**32**	81.1	83.3	84.0	84.7	85.4	86.1	87.3	88.2	89.3	89.8	89.9	89.9
5	**41**	81.8	84.0	84.8	85.5	86.2	86.9	88.1	89.1	89.2	89.3	89.5	89.6
10	**50**	82.5	84.8	85.5	86.3	87.0	87.7	88.6	88.6	88.4	88.6	88.9	89.0

cs300_pw1521G_v05r2_status_to–1_140knt_avg_111.ch16

Derated takeoff TO–1 – 140 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>

Figure 05–02B–61

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (OEI) or TO–2 APR

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	72.3	74.3	75.0	75.6	76.2	76.8	77.9	78.8	79.8	80.5	81.1	81.4
–50	–58	73.3	75.3	76.0	76.6	77.2	77.9	78.9	79.8	80.8	81.6	82.2	82.5
–45	–49	74.1	76.2	76.8	77.5	78.1	78.7	79.8	80.7	81.7	82.5	83.1	83.4
–40	–40	74.9	77.0	77.6	78.3	78.9	79.6	80.7	81.6	82.6	83.4	84.0	84.3
–35	–31	75.7	77.8	78.5	79.1	79.8	80.4	81.5	82.4	83.5	84.2	84.8	85.2
–30	–22	76.5	78.6	79.3	79.9	80.6	81.2	82.3	83.3	84.3	85.1	85.7	86.0
–25	–13	77.2	79.4	80.1	80.7	81.4	82.1	83.2	84.1	85.2	85.9	86.6	86.9
–20	–4	78.0	80.2	80.8	81.5	82.2	82.9	84.0	84.9	86.0	86.8	87.4	87.8
–15	5	78.8	80.9	81.6	82.3	83.0	83.7	84.8	85.8	86.8	87.6	88.3	88.6
–10	14	79.5	81.7	82.4	83.1	83.8	84.5	85.6	86.6	87.7	88.5	89.1	89.5
–5	23	80.3	82.5	83.2	83.9	84.6	85.3	86.4	87.4	88.5	89.3	90.0	90.1
0	32	81.0	83.2	84.0	84.7	85.4	86.0	87.2	88.2	89.3	90.1	90.0	89.9
5	41	81.7	84.0	84.7	85.4	86.1	86.8	88.0	89.0	90.0	89.8	89.6	89.6
10	50	82.5	84.7	85.5	86.2	86.9	87.6	88.8	89.5	89.2	89.1	89.0	89.0
15	59	83.2	85.5	86.2	87.0	87.7	88.4	88.9	88.7	88.5	88.2	88.0	88.0
20	68	83.9	86.2	87.0	87.7	88.1	88.1	88.0	87.8	87.3	86.8	86.5	86.4
25	77	84.7	87.0	87.0	87.0	87.0	86.9	86.8	86.5	85.8	85.4	85.0	84.9
30	86	85.0	85.8	85.8	85.8	85.7	85.6	85.5	85.2	84.4	84.1	83.7	83.8
35	95	83.7	84.5	84.5	84.5	84.4	84.3	84.1	83.8	83.1	82.8	82.4	––
40	104	82.4	83.1	83.2	83.1	83.0	82.9	82.7	82.3	81.8	81.4	81.0	––
45	113	81.1	81.8	81.8	81.8	81.6	81.4	81.4	81.1	80.4	80.1	––	––
53	127	79.0	79.7	79.6	79.5	79.4	79.3	79.3	78.9	––	––	––	––

cs300_pw1521G_v05r2_status_to–1_140knt_avg_300.ch16

Derated takeoff TO–1 – 140 KIAS – OEI – Pack(s) on, anti–ice off <72211001D>
Figure 05–02B–62

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (OEI) or TO–2 APR

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.5	74.5	75.1	75.8	76.4	77.0	78.0	78.9	79.9	80.7	81.3	81.6
–50	**–58**	73.5	75.5	76.1	76.8	77.4	78.0	79.1	80.0	81.0	81.8	82.4	82.7
–45	**–49**	74.3	76.3	77.0	77.6	78.3	78.9	80.0	80.9	81.9	82.7	83.3	83.6
–40	**–40**	75.1	77.1	77.8	78.5	79.1	79.7	80.8	81.7	82.8	83.6	84.2	84.5
–35	**–31**	75.8	77.9	78.6	79.3	79.9	80.6	81.7	82.6	83.7	84.5	85.1	85.4
–30	**–22**	76.6	78.8	79.4	80.1	80.8	81.4	82.5	83.4	84.5	85.3	86.0	86.3
–25	**–13**	77.4	79.5	80.2	80.9	81.6	82.2	83.3	84.3	85.4	86.2	86.8	87.2
–20	**–4**	78.2	80.3	81.0	81.7	82.4	83.0	84.2	85.1	86.2	87.0	87.7	87.8
–15	**5**	78.9	81.1	81.8	82.5	83.2	83.8	85.0	85.9	87.0	87.9	88.0	87.6
–10	**14**	79.7	81.9	82.6	83.3	84.0	84.6	85.8	86.8	87.9	88.4	87.7	87.3
–5	**23**	80.4	82.7	83.4	84.1	84.8	85.4	86.6	87.6	88.4	87.9	87.2	86.7
0	**32**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	87.9	87.2	86.0	85.2
5	**41**	81.9	84.2	84.9	85.6	86.3	87.0	88.1	87.6	86.9	85.8	83.9	82.8
10	**50**	82.6	84.9	85.7	86.4	87.1	87.6	87.1	86.4	85.5	83.8	81.8	80.7

cs300_pw1521G_v05r2_status_to–1_140knt_avg_310.ch16

Derated takeoff TO–1 – 140 KIAS – OEI – Pack(s) on, cowl anti–ice on <72211001D>

Figure 05–02B–63

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (OEI) or TO–2 APR

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.5	74.5	75.1	75.8	76.4	77.0	78.0	78.9	79.9	80.7	81.3	81.6
–50	**–58**	73.5	75.5	76.1	76.8	77.4	78.0	79.1	80.0	81.0	81.8	82.4	82.7
–45	**–49**	74.3	76.3	77.0	77.6	78.3	78.9	80.0	80.9	81.9	82.7	83.3	83.6
–40	**–40**	75.1	77.1	77.8	78.5	79.1	79.7	80.8	81.7	82.8	83.6	84.2	84.5
–35	**–31**	75.8	77.9	78.6	79.3	79.9	80.6	81.7	82.6	83.7	84.5	85.1	85.4
–30	**–22**	76.6	78.8	79.4	80.1	80.8	81.4	82.5	83.4	84.5	85.3	86.0	86.3
–25	**–13**	77.4	79.5	80.2	80.9	81.6	82.2	83.3	84.3	85.4	86.2	86.8	87.2
–20	**–4**	78.2	80.3	81.0	81.7	82.4	83.0	84.2	85.1	86.2	87.0	87.7	87.7
–15	**5**	78.9	81.1	81.8	82.5	83.2	83.8	85.0	85.9	87.0	87.9	87.8	87.5
–10	**14**	79.7	81.9	82.6	83.3	84.0	84.6	85.8	86.8	87.9	87.9	87.5	87.2
–5	**23**	80.4	82.7	83.4	84.1	84.8	85.4	86.6	87.6	87.8	87.4	87.0	86.5
0	**32**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	87.5	87.2	86.6	85.6	84.9
5	**41**	81.9	84.2	84.9	85.6	86.3	87.0	87.0	86.6	86.0	85.0	83.4	82.6
10	**50**	82.6	84.9	85.7	86.4	86.3	86.1	85.7	85.1	84.4	82.9	81.2	80.4

cs300_pw1521G_v05r2_status_to–1_140knt_avg_312.ch16

Derated takeoff TO–1 – 140 KIAS – OEI – Pack(s) on, wing and cowl anti–ice on <72211001D>
Figure 05–02B–64

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (AEO or OEI) or TO–2 APR

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.4	74.4	75.0	75.7	76.3	76.9	77.9	78.8	79.8	80.6	81.2	81.5
–50	**–58**	73.3	75.4	76.0	76.7	77.3	77.9	79.0	79.9	80.9	81.7	82.3	82.6
–45	**–49**	74.2	76.2	76.9	77.5	78.2	78.8	79.8	80.8	81.8	82.6	83.2	83.5
–40	**–40**	75.0	77.0	77.7	78.3	79.0	79.6	80.7	81.6	82.7	83.4	84.1	84.3
–35	**–31**	75.7	77.8	78.5	79.2	79.8	80.5	81.6	82.5	83.5	84.3	84.9	85.2
–30	**–22**	76.5	78.6	79.3	80.0	80.6	81.3	82.4	83.3	84.4	85.2	85.8	86.1
–25	**–13**	77.3	79.4	80.1	80.8	81.4	82.1	83.2	84.2	85.2	86.0	86.7	87.0
–20	**–4**	78.1	80.2	80.9	81.6	82.3	82.9	84.0	85.0	86.1	86.9	87.5	87.9
–15	**5**	78.8	81.0	81.7	82.4	83.1	83.7	84.9	85.8	86.9	87.7	88.4	88.7
–10	**14**	79.6	81.8	82.5	83.2	83.8	84.5	85.7	86.6	87.7	88.5	89.2	89.6
–5	**23**	80.3	82.5	83.2	83.9	84.6	85.3	86.5	87.4	88.5	89.4	90.1	90.4
0	**32**	81.1	83.3	84.0	84.7	85.4	86.1	87.3	88.2	89.3	90.2	90.9	91.1
5	**41**	81.8	84.0	84.8	85.5	86.2	86.9	88.1	89.1	90.2	90.7	90.8	90.9
10	**50**	82.5	84.8	85.5	86.3	87.0	87.7	88.8	89.8	90.2	90.3	90.4	90.6

cs300_pw1521G_v05r2_status_to–1_140knt_avg_010.ch16

Derated takeoff TO–1 – 140 KIAS – AEO or OEI – Cowl anti–ice on <72211001D>
Figure 05–02B–65

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.4	74.4	75.0	75.7	76.3	76.9	77.9	78.8	79.8	80.6	81.2	81.5
–50	**–58**	73.3	75.4	76.0	76.7	77.3	77.9	79.0	79.9	80.9	81.7	82.3	82.6
–45	**–49**	74.2	76.2	76.9	77.5	78.2	78.8	79.8	80.8	81.8	82.6	83.2	83.5
–40	**–40**	75.0	77.0	77.7	78.3	79.0	79.6	80.7	81.6	82.7	83.4	84.1	84.3
–35	**–31**	75.7	77.8	78.5	79.2	79.8	80.5	81.6	82.5	83.5	84.3	84.9	85.2
–30	**–22**	76.5	78.6	79.3	80.0	80.6	81.3	82.4	83.3	84.4	85.2	85.8	86.1
–25	**–13**	77.3	79.4	80.1	80.8	81.4	82.1	83.2	84.2	85.2	86.0	86.7	87.0
–20	**–4**	78.1	80.2	80.9	81.6	82.3	82.9	84.0	85.0	86.1	86.9	87.5	87.9
–15	**5**	78.8	81.0	81.7	82.4	83.1	83.7	84.9	85.8	86.9	87.7	88.4	88.7
–10	**14**	79.6	81.8	82.5	83.2	83.8	84.5	85.7	86.6	87.7	88.5	89.2	89.6
–5	**23**	80.3	82.5	83.2	83.9	84.6	85.3	86.5	87.4	88.5	89.4	90.1	90.4
0	**32**	81.1	83.3	84.0	84.7	85.4	86.1	87.3	88.2	89.3	90.2	90.8	90.8
5	**41**	81.8	84.0	84.8	85.5	86.2	86.9	88.1	89.1	90.2	90.3	90.6	90.7
10	**50**	82.5	84.8	85.5	86.3	87.0	87.7	88.8	89.6	89.5	89.8	90.1	90.3

cs300_pw1521G_v05r2_status_to–1_140knt_avg_011.ch16

Derated takeoff TO–1 – 140 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–66

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–1 (OEI) or TO–2 APR

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	72.5	74.5	75.1	75.8	76.4	77.0	78.0	78.9	79.9	80.7	81.3	81.6
–50	**–58**	73.5	75.5	76.1	76.8	77.4	78.0	79.1	80.0	81.0	81.8	82.4	82.7
–45	**–49**	74.3	76.3	77.0	77.6	78.3	78.9	80.0	80.9	81.9	82.7	83.3	83.6
–40	**–40**	75.1	77.1	77.8	78.5	79.1	79.7	80.8	81.7	82.8	83.6	84.2	84.5
–35	**–31**	75.8	77.9	78.6	79.3	79.9	80.6	81.7	82.6	83.7	84.5	85.1	85.4
–30	**–22**	76.6	78.8	79.4	80.1	80.8	81.4	82.5	83.4	84.5	85.3	86.0	86.3
–25	**–13**	77.4	79.5	80.2	80.9	81.6	82.2	83.3	84.3	85.4	86.2	86.8	87.2
–20	**–4**	78.2	80.3	81.0	81.7	82.4	83.0	84.2	85.1	86.2	87.0	87.7	88.0
–15	**5**	78.9	81.1	81.8	82.5	83.2	83.8	85.0	85.9	87.0	87.9	88.6	88.9
–10	**14**	79.7	81.9	82.6	83.3	84.0	84.6	85.8	86.8	87.9	88.7	89.4	89.7
–5	**23**	80.4	82.7	83.4	84.1	84.8	85.4	86.6	87.6	88.7	89.5	90.0	89.9
0	**32**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	89.7	89.7	89.5
5	**41**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	89.1	89.1	88.9	88.8
10	**50**	82.6	84.9	85.7	86.4	87.1	87.8	88.5	88.4	88.2	88.1	88.1	87.9

cs300_pw1521G_v05r2_status_to–1_140knt_avg_012.ch16

Derated takeoff TO–1 – 140 KIAS – OEI – Wing and cowl anti–ice on <72211001D>

Figure 05–02B–67

P. Derate N1 TO-2 – Static – PW1521G-3 <72211001D>

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–2 (AEO)

ENGINE BLEEDS CLOSED

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	68.1	70.3	70.9	71.5	72.1	72.7	73.7	74.7	75.6	76.5	77.5
–50	–58	68.7	70.9	71.6	72.2	72.7	73.3	74.4	75.4	76.3	77.2	78.2
–45	–49	69.4	71.7	72.3	73.0	73.5	74.1	75.2	76.2	77.2	78.0	79.0
–40	–40	70.2	72.5	73.1	73.8	74.3	74.9	76.0	77.0	78.0	78.9	79.9
–35	–31	70.9	73.2	73.9	74.5	75.1	75.7	76.8	77.8	78.8	79.7	80.7
–30	–22	71.7	74.0	74.7	75.3	75.9	76.5	77.6	78.7	79.6	80.5	81.6
–25	–13	72.4	74.8	75.4	76.1	76.7	77.3	78.4	79.4	80.4	81.3	82.4
–20	–4	73.1	75.5	76.2	76.8	77.4	78.0	79.2	80.2	81.2	82.1	83.2
–15	5	73.8	76.2	76.9	77.6	78.2	78.8	80.0	81.0	82.0	82.9	84.0
–10	14	74.5	77.0	77.6	78.3	78.9	79.5	80.7	81.8	82.8	83.7	84.8
–5	23	75.2	77.7	78.4	79.0	79.7	80.3	81.5	82.6	83.6	84.5	85.6
0	32	75.9	78.4	79.1	79.8	80.4	81.0	82.2	83.3	84.3	85.3	86.4
5	41	76.6	79.1	79.8	80.5	81.1	81.8	83.0	84.1	85.1	86.1	86.4
10	50	77.3	79.8	80.5	81.2	81.9	82.5	83.7	84.8	85.8	85.9	86.0
15	59	78.0	80.6	81.2	81.9	82.6	83.2	84.4	85.4	85.4	85.3	85.3
20	68	78.7	81.2	82.0	82.7	83.3	83.9	84.7	84.6	84.5	84.4	84.5
25	77	79.3	81.9	82.7	83.4	83.8	83.8	83.7	83.6	83.3	83.3	83.3
30	86	80.0	82.6	82.7	82.7	82.7	82.7	82.6	82.4	82.2	82.1	82.0
35	95	80.4	81.6	81.6	81.6	81.5	81.5	81.4	81.2	80.9	80.8	80.7
40	104	79.2	80.4	80.4	80.4	80.4	80.3	80.2	79.8	79.7	79.5	79.3
45	113	78.0	79.2	79.2	79.2	79.2	79.1	78.9	78.5	78.4	78.1	––
53	127	75.7	77.3	77.2	77.1	77.0	76.9	76.8	76.3	––	––	––

cs300_pw1521G_v05r2_status_takeoff_to2_avg_000.ch16

Derated takeoff TO–2 – Static to 30 KIAS – AEO – Engine bleeds closed <72211001D>
Figure 05–02B–68

THRUST SETTING– %N1

DERATED TAKEOFF − STATIC to 30 KIAS

TO−2 (AEO)

PACKS ON, ANTI−ICE OFF

PW1521G−3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	−2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
−54	−65	68.1	70.3	70.9	71.6	72.1	72.7	73.8	74.8	75.7	76.5	77.5
−50	−58	68.7	71.0	71.6	72.2	72.8	73.3	74.4	75.4	76.3	77.2	78.2
−45	−49	69.5	71.7	72.4	73.0	73.6	74.1	75.2	76.2	77.2	78.1	79.1
−40	−40	70.2	72.5	73.2	73.8	74.4	74.9	76.1	77.1	78.0	78.9	79.9
−35	−31	71.0	73.3	73.9	74.6	75.1	75.7	76.8	77.9	78.8	79.7	80.8
−30	−22	71.7	74.0	74.7	75.3	75.9	76.5	77.7	78.7	79.6	80.6	81.6
−25	−13	72.4	74.8	75.4	76.1	76.7	77.3	78.4	79.5	80.4	81.4	82.4
−20	−4	73.1	75.5	76.2	76.8	77.4	78.1	79.2	80.3	81.2	82.2	83.2
−15	5	73.8	76.3	76.9	77.6	78.2	78.8	80.0	81.1	82.0	83.0	84.1
−10	14	74.6	77.0	77.7	78.3	79.0	79.6	80.8	81.8	82.8	83.8	84.9
−5	23	75.3	77.7	78.4	79.1	79.7	80.3	81.5	82.6	83.6	84.6	85.7
0	32	75.9	78.4	79.1	79.8	80.4	81.1	82.3	83.3	84.4	85.3	85.6
5	41	76.6	79.2	79.8	80.5	81.2	81.8	83.0	84.1	85.1	85.3	85.2
10	50	77.3	79.9	80.6	81.3	81.9	82.5	83.8	84.9	84.8	84.6	84.4
15	59	78.0	80.6	81.3	82.0	82.6	83.3	84.2	84.0	83.8	83.5	83.3
20	68	78.7	81.3	82.0	82.7	83.3	83.3	83.2	83.0	82.6	82.2	82.1
25	77	79.4	82.0	82.3	82.3	82.2	82.2	82.0	81.7	81.2	81.0	80.6
30	86	80.1	81.1	81.1	81.0	81.0	80.9	80.6	80.3	79.8	79.5	79.3
35	95	78.7	79.8	79.8	79.7	79.6	79.5	79.3	78.9	78.5	78.2	77.9
40	104	77.3	78.5	78.4	78.3	78.2	78.1	77.8	77.4	77.2	76.8	76.5
45	113	76.0	77.0	77.0	76.9	76.8	76.7	76.3	76.1	75.9	75.5	––
53	127	73.4	74.9	74.8	74.8	74.7	74.4	74.2	73.8	––	––	––

cs300_pw1521G_v05r2_status_takeoff_to2_avg_100.ch16

Derated takeoff TO−2 − Static to 30 KIAS − AEO − Packs on, anti−ice off <72211001D>
Figure 05−02B−69

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–2 (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	–65	68.1	70.4	71.0	71.6	72.2	72.7	73.8	74.8	75.7	76.6	77.6
–50	–58	68.8	71.0	71.6	72.2	72.8	73.4	74.5	75.5	76.4	77.3	78.3
–45	–49	69.5	71.8	72.4	73.0	73.6	74.2	75.3	76.3	77.2	78.1	79.2
–40	–40	70.3	72.6	73.2	73.8	74.4	75.0	76.1	77.1	78.1	79.0	80.0
–35	–31	71.0	73.3	73.9	74.6	75.2	75.8	76.9	77.9	78.9	79.8	80.8
–30	–22	71.7	74.1	74.7	75.4	75.9	76.6	77.7	78.7	79.7	80.6	81.7
–25	–13	72.4	74.8	75.5	76.1	76.7	77.3	78.5	79.5	80.5	81.4	82.5
–20	–4	73.2	75.6	76.2	76.9	77.5	78.1	79.3	80.3	81.3	82.2	83.3
–15	5	73.9	76.3	77.0	77.6	78.2	78.9	80.0	81.1	82.1	83.0	84.1
–10	14	74.6	77.0	77.7	78.4	79.0	79.6	80.8	81.9	82.9	83.8	84.9
–5	23	75.3	77.8	78.4	79.1	79.7	80.4	81.6	82.6	83.6	84.6	85.7
0	32	76.0	78.5	79.2	79.8	80.5	81.1	82.3	83.4	84.4	85.2	85.3
5	41	76.7	79.2	79.9	80.6	81.2	81.8	83.1	84.2	84.8	84.6	84.8
10	50	77.4	79.9	80.6	81.3	81.9	82.6	83.8	84.1	84.1	83.8	84.0

cs300_pw1521G_v05r2_status_takeoff_to2_avg_110.ch16

Derated takeoff TO–2 – Static to 30 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>
Figure 05–02B–70

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–2 (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	68.1	70.4	71.0	71.6	72.2	72.7	73.8	74.8	75.7	76.6	77.6
–50	**–58**	68.8	71.0	71.6	72.2	72.8	73.4	74.5	75.5	76.4	77.3	78.3
–45	**–49**	69.5	71.8	72.4	73.0	73.6	74.2	75.3	76.3	77.2	78.1	79.2
–40	**–40**	70.3	72.6	73.2	73.8	74.4	75.0	76.1	77.1	78.1	79.0	80.0
–35	**–31**	71.0	73.3	73.9	74.6	75.2	75.8	76.9	77.9	78.9	79.8	80.8
–30	**–22**	71.7	74.1	74.7	75.4	75.9	76.6	77.7	78.7	79.7	80.6	81.7
–25	**–13**	72.4	74.8	75.5	76.1	76.7	77.3	78.5	79.5	80.5	81.4	82.5
–20	**–4**	73.2	75.6	76.2	76.9	77.5	78.1	79.3	80.3	81.3	82.2	83.3
–15	**5**	73.9	76.3	77.0	77.6	78.2	78.9	80.0	81.1	82.1	83.0	84.1
–10	**14**	74.6	77.0	77.7	78.4	79.0	79.6	80.8	81.9	82.9	83.8	84.9
–5	**23**	75.3	77.8	78.4	79.1	79.7	80.4	81.6	82.6	83.6	84.6	85.4
0	**32**	76.0	78.5	79.2	79.8	80.5	81.1	82.3	83.4	84.4	84.7	85.0
5	**41**	76.7	79.2	79.9	80.6	81.2	81.8	83.1	84.0	84.1	84.0	84.4
10	**50**	77.4	79.9	80.6	81.3	81.9	82.6	83.3	83.2	83.4	83.0	83.5

cs300_pw1521G_v05r2_status_takeoff_to2_avg_111.ch16

Derated takeoff TO–2 – Static to 30 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–02B–71

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–2 (AEO)

COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	68.1	70.4	71.0	71.6	72.2	72.7	73.8	74.8	75.7	76.6	77.6
–50	**–58**	68.8	71.0	71.6	72.2	72.8	73.4	74.5	75.5	76.4	77.3	78.3
–45	**–49**	69.5	71.8	72.4	73.0	73.6	74.2	75.3	76.3	77.2	78.1	79.2
–40	**–40**	70.3	72.6	73.2	73.8	74.4	75.0	76.1	77.1	78.1	79.0	80.0
–35	**–31**	71.0	73.3	73.9	74.6	75.2	75.8	76.9	77.9	78.9	79.8	80.8
–30	**–22**	71.7	74.1	74.7	75.4	75.9	76.6	77.7	78.7	79.7	80.6	81.7
–25	**–13**	72.4	74.8	75.5	76.1	76.7	77.3	78.5	79.5	80.5	81.4	82.5
–20	**–4**	73.2	75.6	76.2	76.9	77.5	78.1	79.3	80.3	81.3	82.2	83.3
–15	**5**	73.9	76.3	77.0	77.6	78.2	78.9	80.0	81.1	82.1	83.0	84.1
–10	**14**	74.6	77.0	77.7	78.4	79.0	79.6	80.8	81.9	82.9	83.8	84.9
–5	**23**	75.3	77.8	78.4	79.1	79.7	80.4	81.6	82.6	83.6	84.6	85.7
0	**32**	76.0	78.5	79.2	79.8	80.5	81.1	82.3	83.4	84.4	85.4	86.4
5	**41**	76.7	79.2	79.9	80.6	81.2	81.8	83.1	84.2	85.2	85.8	86.1
10	**50**	77.4	79.9	80.6	81.3	81.9	82.6	83.8	84.9	85.3	85.2	85.5

cs300_pw1521G_v05r2_status_takeoff_to2_avg_010.ch16

Derated takeoff TO–2 – Static to 30 KIAS – AEO – Cowl anti–ice on <72211001D>
Figure 05–02B–72

THRUST SETTING– %N1

DERATED TAKEOFF – STATIC to 30 KIAS

TO–2 (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)										
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500
–54	**–65**	68.1	70.4	71.0	71.6	72.2	72.7	73.8	74.8	75.7	76.6	77.6
–50	**–58**	68.8	71.0	71.6	72.2	72.8	73.4	74.5	75.5	76.4	77.3	78.3
–45	**–49**	69.5	71.8	72.4	73.0	73.6	74.2	75.3	76.3	77.2	78.1	79.2
–40	**–40**	70.3	72.6	73.2	73.8	74.4	75.0	76.1	77.1	78.1	79.0	80.0
–35	**–31**	71.0	73.3	73.9	74.6	75.2	75.8	76.9	77.9	78.9	79.8	80.8
–30	**–22**	71.7	74.1	74.7	75.4	75.9	76.6	77.7	78.7	79.7	80.6	81.7
–25	**–13**	72.4	74.8	75.5	76.1	76.7	77.3	78.5	79.5	80.5	81.4	82.5
–20	**–4**	73.2	75.6	76.2	76.9	77.5	78.1	79.3	80.3	81.3	82.2	83.3
–15	**5**	73.9	76.3	77.0	77.6	78.2	78.9	80.0	81.1	82.1	83.0	84.1
–10	**14**	74.6	77.0	77.7	78.4	79.0	79.6	80.8	81.9	82.9	83.8	84.9
–5	**23**	75.3	77.8	78.4	79.1	79.7	80.4	81.6	82.6	83.6	84.6	85.7
0	**32**	76.0	78.5	79.2	79.8	80.5	81.1	82.3	83.4	84.4	85.4	86.1
5	**41**	76.7	79.2	79.9	80.6	81.2	81.8	83.1	84.2	85.2	85.2	85.7
10	**50**	77.4	79.9	80.6	81.3	81.9	82.6	83.8	84.4	84.6	84.4	85.1

cs300_pw1521G_v05r2_status_takeoff_to2_avg_011.ch16

Derated takeoff TO–2 – Static to 30 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–73

Q. Derate N1 TO-2 – 140 KIAS – PW1521G-3 <72211001D>

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (AEO or OEI)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.5	71.5	72.1	72.8	73.3	73.9	74.9	75.8	76.7	77.4	78.0	78.2
–50	**–58**	70.5	72.5	73.1	73.7	74.3	74.9	76.0	76.8	77.8	78.5	79.0	79.3
–45	**–49**	71.2	73.3	73.9	74.6	75.2	75.8	76.8	77.7	78.6	79.3	79.9	80.2
–40	**–40**	72.0	74.0	74.7	75.3	76.0	76.6	77.6	78.5	79.5	80.2	80.7	81.0
–35	**–31**	72.8	74.8	75.5	76.1	76.8	77.4	78.4	79.3	80.3	81.0	81.6	81.9
–30	**–22**	73.5	75.6	76.3	76.9	77.6	78.2	79.2	80.1	81.1	81.8	82.4	82.7
–25	**–13**	74.3	76.3	77.0	77.7	78.3	79.0	80.0	80.9	81.9	82.7	83.2	83.5
–20	**–4**	75.0	77.1	77.8	78.5	79.1	79.8	80.8	81.7	82.8	83.5	84.1	84.3
–15	**5**	75.7	77.9	78.6	79.2	79.9	80.5	81.6	82.5	83.6	84.3	84.9	85.1
–10	**14**	76.4	78.6	79.3	80.0	80.6	81.3	82.4	83.3	84.3	85.1	85.7	85.9
–5	**23**	77.2	79.3	80.0	80.7	81.4	82.1	83.2	84.1	85.1	85.9	86.4	86.7
0	**32**	77.9	80.1	80.8	81.5	82.2	82.8	83.9	84.9	85.9	86.7	87.2	87.5
5	**41**	78.6	80.8	81.5	82.2	82.9	83.6	84.7	85.6	86.7	87.4	87.8	87.8
10	**50**	79.3	81.5	82.2	83.0	83.6	84.3	85.4	86.4	87.5	87.5	87.5	87.5
15	**59**	80.0	82.2	83.0	83.7	84.4	85.0	86.2	87.1	87.1	87.0	87.0	87.1
20	**68**	80.7	83.0	83.7	84.4	85.1	85.8	86.5	86.4	86.4	86.3	86.4	86.4
25	**77**	81.4	83.7	84.4	85.1	85.6	85.6	85.6	85.5	85.4	85.3	85.3	85.4
30	**86**	82.1	84.4	84.5	84.5	84.6	84.6	84.6	84.5	84.2	84.0	84.0	84.3
35	**95**	82.5	83.3	83.4	83.5	83.5	83.6	83.5	83.4	83.0	82.7	82.7	--
40	**104**	81.4	82.3	82.3	82.4	82.4	82.5	82.4	82.1	81.7	81.3	81.4	--
45	**113**	80.2	81.1	81.2	81.3	81.3	81.3	81.2	80.8	80.3	79.9	--	--
53	**127**	77.9	79.2	79.3	79.3	79.3	79.3	79.2	78.6	--	--	--	--

cs300_pw1521G_v05r2_status_to–2_140knt_avg_000.ch16

Derated takeoff TO–2 – 140 KIAS – AEO or OEI – Engine bleeds closed <72211001D>
Figure 05–02B–74

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (AEO)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.6	71.6	72.2	72.8	73.4	74.0	75.0	75.8	76.8	77.5	78.0	78.3
–50	**–58**	70.5	72.5	73.2	73.8	74.4	75.0	76.0	76.9	77.8	78.5	79.1	79.4
–45	**–49**	71.3	73.3	74.0	74.6	75.2	75.8	76.8	77.7	78.7	79.4	80.0	80.2
–40	**–40**	72.1	74.1	74.8	75.4	76.0	76.6	77.7	78.6	79.6	80.3	80.8	81.1
–35	**–31**	72.8	74.9	75.5	76.2	76.8	77.4	78.5	79.4	80.4	81.1	81.7	81.9
–30	**–22**	73.6	75.6	76.3	77.0	77.6	78.2	79.3	80.2	81.2	81.9	82.5	82.8
–25	**–13**	74.3	76.4	77.1	77.8	78.4	79.0	80.1	81.0	82.0	82.8	83.3	83.6
–20	**–4**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.8	83.6	84.2	84.4
–15	**5**	75.8	77.9	78.6	79.3	79.9	80.6	81.7	82.6	83.6	84.4	84.9	85.2
–10	**14**	76.5	78.7	79.3	80.1	80.7	81.4	82.5	83.4	84.4	85.2	85.7	86.0
–5	**23**	77.2	79.4	80.1	80.8	81.5	82.1	83.2	84.2	85.2	86.0	86.5	86.8
0	**32**	77.9	80.1	80.8	81.5	82.2	82.9	84.0	84.9	86.0	86.8	87.0	86.9
5	**41**	78.6	80.9	81.6	82.3	83.0	83.6	84.8	85.7	86.8	86.9	86.8	86.7
10	**50**	79.3	81.6	82.3	83.0	83.7	84.4	85.5	86.5	86.5	86.3	86.3	86.3
15	**59**	80.0	82.3	83.0	83.8	84.4	85.1	86.1	85.9	85.8	85.6	85.5	85.5
20	**68**	80.7	83.0	83.8	84.5	85.2	85.3	85.2	85.1	84.8	84.4	84.3	84.2
25	**77**	81.4	83.7	84.2	84.2	84.2	84.2	84.2	83.9	83.6	83.2	82.9	82.8
30	**86**	82.1	83.0	83.0	83.1	83.1	83.1	82.9	82.7	82.2	81.9	81.6	81.8
35	**95**	81.0	81.8	81.8	81.8	81.8	81.8	81.7	81.4	80.9	80.6	80.3	––
40	**104**	79.8	80.6	80.6	80.6	80.6	80.6	80.4	80.0	79.5	79.2	78.9	––
45	**113**	78.4	79.3	79.3	79.3	79.3	79.2	79.1	78.7	78.2	77.8	––	––
53	**127**	75.9	77.2	77.2	77.1	77.1	77.1	77.0	76.5	––	––	––	––

cs300_pw1521G_v05r2_status_to–2_140knt_avg_100.ch16

Derated takeoff TO–2 – 140 KIAS – AEO – Packs on, anti–ice off <72211001D>
Figure 05–02B–75

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.6	71.6	72.2	72.9	73.5	74.1	75.1	75.9	76.9	77.6	78.1	78.4
–50	**–58**	70.6	72.6	73.2	73.9	74.5	75.1	76.1	76.9	77.9	78.6	79.2	79.5
–45	**–49**	71.4	73.4	74.0	74.7	75.3	75.9	76.9	77.8	78.8	79.5	80.1	80.3
–40	**–40**	72.1	74.2	74.8	75.5	76.1	76.7	77.8	78.6	79.6	80.3	80.9	81.2
–35	**–31**	72.9	74.9	75.6	76.3	76.9	77.5	78.6	79.5	80.5	81.2	81.8	82.1
–30	**–22**	73.6	75.7	76.4	77.0	77.7	78.3	79.4	80.3	81.3	82.0	82.6	82.9
–25	**–13**	74.4	76.5	77.2	77.8	78.5	79.1	80.2	81.1	82.1	82.8	83.4	83.7
–20	**–4**	75.1	77.2	77.9	78.6	79.2	79.9	81.0	81.9	82.9	83.7	84.3	84.5
–15	**5**	75.8	78.0	78.7	79.4	80.0	80.7	81.8	82.7	83.7	84.5	85.1	85.3
–10	**14**	76.6	78.7	79.4	80.1	80.8	81.4	82.5	83.5	84.5	85.3	85.8	86.2
–5	**23**	77.3	79.5	80.2	80.9	81.5	82.2	83.3	84.2	85.3	86.1	86.6	86.9
0	**32**	78.0	80.2	80.9	81.6	82.3	82.9	84.1	85.0	86.1	86.8	86.8	86.7
5	**41**	78.7	80.9	81.6	82.4	83.0	83.7	84.8	85.8	86.6	86.4	86.4	86.5
10	**50**	79.4	81.7	82.4	83.1	83.8	84.4	85.6	86.0	85.8	85.8	85.9	86.0

cs300_pw1521G_v05r2_status_to–2_140knt_avg_110.ch16

Derated takeoff TO–2 – 140 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>

Figure 05–02B–76

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.6	71.6	72.2	72.9	73.5	74.1	75.1	75.9	76.9	77.6	78.1	78.4
–50	**–58**	70.6	72.6	73.2	73.9	74.5	75.1	76.1	76.9	77.9	78.6	79.2	79.5
–45	**–49**	71.4	73.4	74.0	74.7	75.3	75.9	76.9	77.8	78.8	79.5	80.1	80.3
–40	**–40**	72.1	74.2	74.8	75.5	76.1	76.7	77.8	78.6	79.6	80.3	80.9	81.2
–35	**–31**	72.9	74.9	75.6	76.3	76.9	77.5	78.6	79.5	80.5	81.2	81.8	82.1
–30	**–22**	73.6	75.7	76.4	77.0	77.7	78.3	79.4	80.3	81.3	82.0	82.6	82.9
–25	**–13**	74.4	76.5	77.2	77.8	78.5	79.1	80.2	81.1	82.1	82.8	83.4	83.7
–20	**–4**	75.1	77.2	77.9	78.6	79.2	79.9	81.0	81.9	82.9	83.7	84.3	84.5
–15	**5**	75.8	78.0	78.7	79.4	80.0	80.7	81.8	82.7	83.7	84.5	85.1	85.3
–10	**14**	76.6	78.7	79.4	80.1	80.8	81.4	82.5	83.5	84.5	85.3	85.8	86.2
–5	**23**	77.3	79.5	80.2	80.9	81.5	82.2	83.3	84.2	85.3	86.1	86.6	86.7
0	**32**	78.0	80.2	80.9	81.6	82.3	82.9	84.1	85.0	86.1	86.5	86.5	86.5
5	**41**	78.7	80.9	81.6	82.4	83.0	83.7	84.8	85.8	86.0	86.0	86.1	86.2
10	**50**	79.4	81.7	82.4	83.1	83.8	84.4	85.4	85.3	85.1	85.3	85.6	85.7

cs300_pw1521G_v05r2_status_to–2_140knt_avg_111.ch16

Derated takeoff TO–2 – 140 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>

Figure 05–02B–77

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (OEI)

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	69.6	71.6	72.2	72.8	73.4	74.0	75.0	75.9	76.8	77.5	78.1	78.3
–50	–58	70.5	72.5	73.2	73.8	74.4	75.0	76.0	76.9	77.9	78.6	79.1	79.4
–45	–49	71.3	73.3	74.0	74.6	75.2	75.8	76.9	77.7	78.7	79.4	80.0	80.3
–40	–40	72.1	74.1	74.8	75.4	76.0	76.7	77.7	78.6	79.6	80.3	80.8	81.1
–35	–31	72.8	74.9	75.6	76.2	76.8	77.5	78.5	79.4	80.4	81.1	81.7	82.0
–30	–22	73.6	75.7	76.3	77.0	77.6	78.2	79.3	80.2	81.2	81.9	82.5	82.8
–25	–13	74.3	76.4	77.1	77.8	78.4	79.1	80.1	81.0	82.0	82.8	83.4	83.6
–20	–4	75.1	77.2	77.9	78.5	79.2	79.8	80.9	81.8	82.8	83.6	84.2	84.4
–15	5	75.8	77.9	78.6	79.3	80.0	80.6	81.7	82.6	83.7	84.4	85.0	85.2
–10	14	76.5	78.7	79.4	80.1	80.7	81.4	82.5	83.4	84.4	85.2	85.8	86.1
–5	23	77.2	79.4	80.1	80.8	81.5	82.1	83.2	84.2	85.2	86.0	86.6	86.7
0	32	77.9	80.1	80.8	81.6	82.2	82.9	84.0	85.0	86.0	86.8	86.6	86.5
5	41	78.7	80.9	81.6	82.3	83.0	83.6	84.8	85.7	86.7	86.4	86.3	86.2
10	50	79.3	81.6	82.3	83.0	83.7	84.4	85.5	86.2	86.0	85.8	85.7	85.7
15	59	80.1	82.3	83.1	83.8	84.4	85.1	85.7	85.4	85.3	85.0	84.8	84.8
20	68	80.8	83.0	83.8	84.5	84.9	84.8	84.8	84.5	84.1	83.6	83.3	83.2
25	77	81.4	83.8	83.8	83.8	83.7	83.7	83.6	83.3	82.7	82.2	81.8	81.7
30	86	81.8	82.5	82.5	82.5	82.5	82.4	82.3	81.9	81.2	80.9	80.5	80.6
35	95	80.6	81.3	81.3	81.3	81.2	81.1	80.9	80.6	79.8	79.6	79.1	––
40	104	79.3	80.0	80.0	80.0	79.9	79.8	79.6	79.1	78.5	78.2	77.8	––
45	113	77.9	78.7	78.7	78.6	78.5	78.3	78.2	77.8	77.2	76.8	––	––
53	127	75.4	76.5	76.4	76.3	76.2	76.1	76.2	75.6	––	––	––	––

cs300_pw1521G_v05r2_status_to–2_140knt_avg_300.ch16

Derated takeoff TO–2 – 140 KIAS – OEI – Pack(s) on, anti–ice off <72211001D>
Figure 05–02B–78

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (OEI)

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.8	71.7	72.3	73.0	73.6	74.2	75.2	76.0	77.0	77.7	78.3	78.6
–50	**–58**	70.7	72.7	73.3	74.0	74.6	75.2	76.2	77.1	78.1	78.8	79.3	79.6
–45	**–49**	71.5	73.5	74.1	74.8	75.4	76.0	77.0	77.9	78.9	79.7	80.2	80.5
–40	**–40**	72.2	74.3	74.9	75.6	76.2	76.8	77.9	78.8	79.8	80.5	81.1	81.4
–35	**–31**	73.0	75.1	75.7	76.4	77.0	77.6	78.7	79.6	80.6	81.3	81.9	82.2
–30	**–22**	73.8	75.8	76.5	77.2	77.8	78.4	79.5	80.4	81.4	82.2	82.8	83.1
–25	**–13**	74.5	76.6	77.3	77.9	78.6	79.2	80.3	81.2	82.2	83.0	83.6	83.9
–20	**–4**	75.2	77.3	78.0	78.7	79.4	80.0	81.1	82.0	83.0	83.8	84.4	84.4
–15	**5**	75.9	78.1	78.8	79.5	80.1	80.8	81.9	82.8	83.8	84.6	84.7	84.2
–10	**14**	76.7	78.8	79.5	80.2	80.9	81.6	82.7	83.6	84.6	85.1	84.3	84.0
–5	**23**	77.4	79.6	80.3	81.0	81.7	82.3	83.4	84.4	85.2	84.6	83.9	83.3
0	**32**	78.1	80.3	81.0	81.7	82.4	83.1	84.2	85.2	84.7	83.9	82.6	81.8
5	**41**	78.8	81.0	81.8	82.5	83.2	83.8	84.9	84.4	83.6	82.4	80.5	79.5
10	**50**	79.5	81.8	82.5	83.2	83.9	84.4	83.8	83.1	82.2	80.6	78.5	77.4

cs300_pw1521G_v05r2_status_to–2_140knt_avg_310.ch16

Derated takeoff TO–2 – 140 KIAS – OEI – Pack(s) on, cowl anti–ice on <72211001D>

Figure 05–02B–79

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (OEI)

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.8	71.7	72.3	73.0	73.6	74.2	75.2	76.0	77.0	77.7	78.3	78.6
–50	**–58**	70.7	72.7	73.3	74.0	74.6	75.2	76.2	77.1	78.1	78.8	79.3	79.6
–45	**–49**	71.5	73.5	74.1	74.8	75.4	76.0	77.0	77.9	78.9	79.7	80.2	80.5
–40	**–40**	72.2	74.3	74.9	75.6	76.2	76.8	77.9	78.8	79.8	80.5	81.1	81.4
–35	**–31**	73.0	75.1	75.7	76.4	77.0	77.6	78.7	79.6	80.6	81.3	81.9	82.2
–30	**–22**	73.8	75.8	76.5	77.2	77.8	78.4	79.5	80.4	81.4	82.2	82.8	83.1
–25	**–13**	74.5	76.6	77.3	77.9	78.6	79.2	80.3	81.2	82.2	83.0	83.6	83.9
–20	**–4**	75.2	77.3	78.0	78.7	79.4	80.0	81.1	82.0	83.0	83.8	84.4	84.3
–15	**5**	75.9	78.1	78.8	79.5	80.1	80.8	81.9	82.8	83.8	84.6	84.5	84.1
–10	**14**	76.7	78.8	79.5	80.2	80.9	81.6	82.7	83.6	84.6	84.7	84.1	83.8
–5	**23**	77.4	79.6	80.3	81.0	81.7	82.3	83.4	84.4	84.7	84.1	83.6	83.1
0	**32**	78.1	80.3	81.0	81.7	82.4	83.1	84.2	84.3	83.9	83.3	82.2	81.5
5	**41**	78.8	81.0	81.8	82.5	83.2	83.8	83.8	83.4	82.7	81.7	80.0	79.2
10	**50**	79.5	81.8	82.5	83.2	83.1	83.0	82.5	81.9	81.1	79.6	77.9	77.1

cs300_pw1521G_v05r2_status_to–2_140knt_avg_312.ch16

Derated takeoff TO–2 – 140 KIAS – OEI – Pack(s) on, wing and cowl anti–ice on <72211001D>
Figure 05–02B–80

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (AEO or OEI)

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.6	71.6	72.2	72.9	73.5	74.1	75.1	75.9	76.9	77.6	78.1	78.4
–50	**–58**	70.6	72.6	73.2	73.9	74.5	75.1	76.1	76.9	77.9	78.6	79.2	79.5
–45	**–49**	71.4	73.4	74.0	74.7	75.3	75.9	76.9	77.8	78.8	79.5	80.1	80.3
–40	**–40**	72.1	74.2	74.8	75.5	76.1	76.7	77.8	78.6	79.6	80.3	80.9	81.2
–35	**–31**	72.9	74.9	75.6	76.3	76.9	77.5	78.6	79.5	80.5	81.2	81.8	82.1
–30	**–22**	73.6	75.7	76.4	77.0	77.7	78.3	79.4	80.3	81.3	82.0	82.6	82.9
–25	**–13**	74.4	76.5	77.2	77.8	78.5	79.1	80.2	81.1	82.1	82.8	83.4	83.7
–20	**–4**	75.1	77.2	77.9	78.6	79.2	79.9	81.0	81.9	82.9	83.7	84.3	84.5
–15	**5**	75.8	78.0	78.7	79.4	80.0	80.7	81.8	82.7	83.7	84.5	85.1	85.3
–10	**14**	76.6	78.7	79.4	80.1	80.8	81.4	82.5	83.5	84.5	85.3	85.8	86.2
–5	**23**	77.3	79.5	80.2	80.9	81.5	82.2	83.3	84.2	85.3	86.1	86.6	86.9
0	**32**	78.0	80.2	80.9	81.6	82.3	82.9	84.1	85.0	86.1	86.8	87.4	87.6
5	**41**	78.7	80.9	81.6	82.4	83.0	83.7	84.8	85.8	86.9	87.4	87.5	87.5
10	**50**	79.4	81.7	82.4	83.1	83.8	84.4	85.6	86.6	86.9	87.0	87.1	87.2

cs300_pw1521G_v05r2_status_to–2_140knt_avg_010.ch16

Derated takeoff TO–2 – 140 KIAS – AEO or OEI – Cowl anti–ice on <72211001D>
Figure 05–02B–81

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.6	71.6	72.2	72.9	73.5	74.1	75.1	75.9	76.9	77.6	78.1	78.4
–50	**–58**	70.6	72.6	73.2	73.9	74.5	75.1	76.1	76.9	77.9	78.6	79.2	79.5
–45	**–49**	71.4	73.4	74.0	74.7	75.3	75.9	76.9	77.8	78.8	79.5	80.1	80.3
–40	**–40**	72.1	74.2	74.8	75.5	76.1	76.7	77.8	78.6	79.6	80.3	80.9	81.2
–35	**–31**	72.9	74.9	75.6	76.3	76.9	77.5	78.6	79.5	80.5	81.2	81.8	82.1
–30	**–22**	73.6	75.7	76.4	77.0	77.7	78.3	79.4	80.3	81.3	82.0	82.6	82.9
–25	**–13**	74.4	76.5	77.2	77.8	78.5	79.1	80.2	81.1	82.1	82.8	83.4	83.7
–20	**–4**	75.1	77.2	77.9	78.6	79.2	79.9	81.0	81.9	82.9	83.7	84.3	84.5
–15	**5**	75.8	78.0	78.7	79.4	80.0	80.7	81.8	82.7	83.7	84.5	85.1	85.3
–10	**14**	76.6	78.7	79.4	80.1	80.8	81.4	82.5	83.5	84.5	85.3	85.8	86.2
–5	**23**	77.3	79.5	80.2	80.9	81.5	82.2	83.3	84.2	85.3	86.1	86.6	86.9
0	**32**	78.0	80.2	80.9	81.6	82.3	82.9	84.1	85.0	86.1	86.8	87.4	87.4
5	**41**	78.7	80.9	81.6	82.4	83.0	83.7	84.8	85.8	86.9	87.0	87.2	87.3
10	**50**	79.4	81.7	82.4	83.1	83.8	84.4	85.6	86.3	86.2	86.5	86.8	87.0

cs300_pw1521G_v05r2_status_to–2_140knt_avg_011.ch16

Derated takeoff TO–2 – 140 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–02B–82

THRUST SETTING– %N1

DERATED TAKEOFF – 140 KIAS

TO–2 (OEI)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	69.8	71.7	72.3	73.0	73.6	74.2	75.2	76.0	77.0	77.7	78.3	78.6
–50	**–58**	70.7	72.7	73.3	74.0	74.6	75.2	76.2	77.1	78.1	78.8	79.3	79.6
–45	**–49**	71.5	73.5	74.1	74.8	75.4	76.0	77.0	77.9	78.9	79.7	80.2	80.5
–40	**–40**	72.2	74.3	74.9	75.6	76.2	76.8	77.9	78.8	79.8	80.5	81.1	81.4
–35	**–31**	73.0	75.1	75.7	76.4	77.0	77.6	78.7	79.6	80.6	81.3	81.9	82.2
–30	**–22**	73.8	75.8	76.5	77.2	77.8	78.4	79.5	80.4	81.4	82.2	82.8	83.1
–25	**–13**	74.5	76.6	77.3	77.9	78.6	79.2	80.3	81.2	82.2	83.0	83.6	83.9
–20	**–4**	75.2	77.3	78.0	78.7	79.4	80.0	81.1	82.0	83.0	83.8	84.4	84.7
–15	**5**	75.9	78.1	78.8	79.5	80.1	80.8	81.9	82.8	83.8	84.6	85.2	85.5
–10	**14**	76.7	78.8	79.5	80.2	80.9	81.6	82.7	83.6	84.6	85.4	86.0	86.3
–5	**23**	77.4	79.6	80.3	81.0	81.7	82.3	83.4	84.4	85.4	86.2	86.6	86.5
0	**32**	78.1	80.3	81.0	81.7	82.4	83.1	84.2	85.2	86.2	86.4	86.2	86.1
5	**41**	78.8	81.0	81.8	82.5	83.2	83.8	85.0	85.9	85.9	85.7	85.5	85.4
10	**50**	79.5	81.8	82.5	83.2	83.9	84.6	85.3	85.1	85.0	84.8	84.8	84.6

cs300_pw1521G_v05r2_status_to–2_140knt_avg_012.ch16

Derated takeoff TO–2 – 140 KIAS – OEI – Wing and cowl anti–ice on <72211001D>

Figure 05–02B–83

R. Flexible N1 – TO FLEX – Engine bleeds closed – PW1521G-3 <72211001D>

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = –2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	34	44	54	64	74	84	94
–54	73.5	70.2	67.2	64.4	63.8	63.8	63.8
–50	74.2	70.9	67.8	65.0	64.4	64.4	64.4
–45	75.0	71.7	68.6	65.7	65.1	65.1	65.1
–40	75.8	72.5	69.3	66.4	65.8	65.8	65.8
–35	76.6	73.2	70.1	67.1	66.5	66.5	66.5
–30	77.4	74.0	70.8	67.8	67.1	67.1	67.1
–25	78.2	74.7	71.5	68.5	67.8	67.8	67.8
–20	79.0	75.5	72.2	69.2	68.5	68.5	68.5
–15	79.8	76.2	73.0	69.9	69.1	69.1	69.1
–10	80.5	77.0	73.7	70.5	69.8	69.8	69.8
–5	81.3	77.7	74.4	71.2	70.5	70.5	70.5
0	82.0	78.4	75.0	71.9	71.1	71.1	71.1
5	82.8	79.1	75.7	72.5	71.8	71.8	71.8
10	83.5	79.8	76.4	73.2	72.4	72.4	72.4
15	84.2	80.5	77.1	73.8	73.0	73.0	73.0
20	85.0	81.2	77.7	74.4	73.7	73.7	73.7
25	85.7	81.9	78.4	75.1	74.3	74.3	74.3
30	86.4	82.6	79.1	75.7	74.9	74.9	74.9
35	–	83.3	79.7	76.3	75.3	75.3	75.3
40	–	84.0	80.3	76.9	74.0	74.0	74.0
45	–	–	81.0	77.5	74.1	72.7	72.7
53	–	–	82.0	78.5	75.0	71.5	70.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_–2000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude –2000 ft <72211001D>
Figure 05–02B–84

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = Sea Level

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	30	40	50	60	70	80	90
–54	75.8	72.6	69.4	66.5	66.1	66.1	66.1
–50	76.5	73.2	70.0	67.2	66.7	66.7	66.7
–45	77.3	74.0	70.8	67.9	67.4	67.4	67.4
–40	78.2	74.9	71.5	68.6	68.1	68.1	68.1
–35	79.0	75.7	72.3	69.4	68.8	68.8	68.8
–30	79.8	76.5	73.1	70.1	69.5	69.5	69.5
–25	80.7	77.2	73.8	70.8	70.2	70.2	70.2
–20	81.5	78.0	74.5	71.5	70.9	70.9	70.9
–15	82.3	78.8	75.3	72.2	71.6	71.6	71.6
–10	83.0	79.5	76.0	72.9	72.3	72.3	72.3
–5	83.8	80.3	76.7	73.6	73.0	73.0	73.0
0	84.6	81.0	77.4	74.3	73.7	73.7	73.7
5	85.4	81.8	78.1	75.0	74.3	74.3	74.3
10	86.1	82.5	78.8	75.6	75.0	75.0	75.0
15	86.9	83.2	79.5	76.3	75.7	75.7	75.7
20	87.7	83.9	80.2	77.0	76.3	76.3	76.3
25	88.4	84.7	80.9	77.6	77.0	77.0	77.0
30	89.2	85.4	81.6	78.3	77.6	77.6	77.6
35	–	86.1	82.2	78.9	76.5	76.5	76.5
40	–	86.8	82.9	79.5	76.2	75.2	75.2
45	–	–	83.6	80.2	76.8	74.0	74.0
53	–	–	–	81.2	77.7	74.3	71.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_SL_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude Sea level <72211001D>
Figure 05–02B–85

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 1000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	28	38	48	58	68	78	88
–54	76.4	73.2	70.0	67.0	66.7	66.7	66.7
–50	77.1	73.9	70.6	67.6	67.3	67.3	67.3
–45	78.0	74.7	71.4	68.4	68.0	68.0	68.0
–40	78.8	75.5	72.2	69.1	68.7	68.7	68.7
–35	79.7	76.3	73.0	69.8	69.5	69.5	69.5
–30	80.5	77.1	73.7	70.6	70.2	70.2	70.2
–25	81.3	77.9	74.5	71.3	70.9	70.9	70.9
–20	82.2	78.7	75.2	72.0	71.6	71.6	71.6
–15	83.0	79.5	76.0	72.7	72.3	72.3	72.3
–10	83.8	80.2	76.7	73.4	73.0	73.0	73.0
–5	84.5	81.0	77.4	74.1	73.7	73.7	73.7
0	85.3	81.7	78.2	74.8	74.3	74.3	74.3
5	86.1	82.5	78.9	75.5	75.0	75.0	75.0
10	86.9	83.2	79.6	76.2	75.7	75.7	75.7
15	87.6	84.0	80.3	76.8	76.4	76.4	76.4
20	88.4	84.7	81.0	77.5	77.0	77.0	77.0
25	89.2	85.4	81.7	78.1	77.7	77.7	77.7
30	–	86.1	82.3	78.8	77.7	77.7	77.7
35	–	86.8	83.0	79.4	76.5	76.5	76.5
40	–	–	83.7	80.1	76.5	75.2	75.2
45	–	–	84.3	80.7	77.1	74.0	74.0
53	–	–	–	81.7	78.1	74.4	71.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_1000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 1000 ft <72211001D>
Figure 05–02B–86

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	26	36	46	56	66	76	86
–54	77.1	73.9	70.6	67.5	67.3	67.3	67.3
–50	77.8	74.5	71.3	68.1	67.9	67.9	67.9
–45	78.7	75.4	72.1	68.8	68.6	68.6	68.6
–40	79.5	76.2	72.9	69.6	69.3	69.3	69.3
–35	80.3	77.0	73.6	70.3	70.1	70.1	70.1
–30	81.2	77.8	74.4	71.0	70.8	70.8	70.8
–25	82.0	78.6	75.2	71.8	71.5	71.5	71.5
–20	82.8	79.4	75.9	72.5	72.2	72.2	72.2
–15	83.7	80.2	76.7	73.2	72.9	72.9	72.9
–10	84.5	80.9	77.4	73.9	73.6	73.6	73.6
–5	85.2	81.7	78.1	74.6	74.3	74.3	74.3
0	86.0	82.5	78.9	75.3	75.0	75.0	75.0
5	86.8	83.2	79.6	76.0	75.7	75.7	75.7
10	87.6	84.0	80.3	76.7	76.4	76.4	76.4
15	88.4	84.7	81.0	77.3	77.0	77.0	77.0
20	89.1	85.4	81.7	78.0	77.7	77.7	77.7
25	89.9	86.2	82.4	78.7	78.4	78.4	78.4
30	–	86.9	83.1	79.3	77.7	77.7	77.7
35	–	87.6	83.8	80.0	76.5	76.5	76.5
40	–	–	84.5	80.6	76.8	75.2	75.2
45	–	–	85.1	81.3	77.4	74.0	74.0
53	–	–	–	82.3	78.4	74.5	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_2000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 2000 ft <72211001D>
Figure 05–02B–87

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 3000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	24	34	44	54	64	74	84
–54	77.7	74.5	71.2	68.0	67.8	67.8	67.8
–50	78.4	75.2	71.9	68.7	68.4	68.4	68.4
–45	79.2	76.0	72.7	69.4	69.2	69.2	69.2
–40	80.1	76.8	73.5	70.2	69.9	69.9	69.9
–35	81.0	77.7	74.3	70.9	70.6	70.6	70.6
–30	81.8	78.5	75.0	71.7	71.3	71.3	71.3
–25	82.7	79.3	75.8	72.4	72.1	72.1	72.1
–20	83.5	80.1	76.6	73.1	72.8	72.8	72.8
–15	84.3	80.8	77.3	73.8	73.5	73.5	73.5
–10	85.1	81.6	78.1	74.5	74.2	74.2	74.2
–5	85.9	82.4	78.8	75.3	74.9	74.9	74.9
0	86.7	83.2	79.5	76.0	75.6	75.6	75.6
5	87.5	83.9	80.3	76.7	76.3	76.3	76.3
10	88.3	84.7	81.0	77.3	77.0	77.0	77.0
15	89.1	85.4	81.7	78.0	77.6	77.6	77.6
20	89.8	86.2	82.4	78.7	78.3	78.3	78.3
25	–	86.9	83.1	79.4	78.8	78.8	78.8
30	–	87.6	83.8	80.0	77.7	77.7	77.7
35	–	–	84.5	80.7	76.9	76.5	76.5
40	–	–	85.2	81.3	77.5	75.2	75.2
45	–	–	–	82.0	78.1	74.2	73.9
53	–	–	–	83.0	79.1	75.2	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_3000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 3000 ft <72211001D>
Figure 05–02B–88

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 4000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	22	32	42	52	62	72	82
–54	78.3	75.1	71.9	68.6	68.3	68.3	68.3
–50	79.0	75.8	72.5	69.2	68.9	68.9	68.9
–45	79.9	76.6	73.3	70.0	69.7	69.7	69.7
–40	80.7	77.5	74.1	70.8	70.4	70.4	70.4
–35	81.6	78.3	74.9	71.5	71.2	71.2	71.2
–30	82.5	79.1	75.7	72.3	71.9	71.9	71.9
–25	83.3	79.9	76.5	73.0	72.6	72.6	72.6
–20	84.1	80.7	77.2	73.8	73.3	73.3	73.3
–15	85.0	81.5	78.0	74.5	74.1	74.1	74.1
–10	85.8	82.3	78.7	75.2	74.8	74.8	74.8
–5	86.6	83.1	79.5	75.9	75.5	75.5	75.5
0	87.4	83.9	80.2	76.6	76.2	76.2	76.2
5	88.2	84.6	81.0	77.3	76.9	76.9	76.9
10	89.0	85.4	81.7	78.0	77.6	77.6	77.6
15	89.8	86.1	82.4	78.7	78.2	78.2	78.2
20	90.5	86.9	83.1	79.4	78.9	78.9	78.9
25	–	87.6	83.8	80.0	78.8	78.8	78.8
30	–	88.3	84.5	80.7	77.7	77.7	77.7
35	–	–	85.2	81.4	77.5	76.4	76.4
40	–	–	85.9	82.0	78.2	75.2	75.2
45	–	–	–	82.7	78.8	74.9	73.8
53	–	–	–	–	79.8	75.8	71.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_4000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 4000 ft <72211001D>
Figure 05–02B–89

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 5000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	20	30	40	50	60	70	80
–54	78.8	75.7	72.4	69.2	68.8	68.8	68.8
–50	79.6	76.4	73.1	69.9	69.5	69.5	69.5
–45	80.5	77.2	73.9	70.7	70.2	70.2	70.2
–40	81.3	78.1	74.7	71.4	71.0	71.0	71.0
–35	82.2	78.9	75.5	72.2	71.7	71.7	71.7
–30	83.1	79.8	76.3	72.9	72.5	72.5	72.5
–25	83.9	80.6	77.1	73.7	73.2	73.2	73.2
–20	84.8	81.4	77.9	74.4	73.9	73.9	73.9
–15	85.6	82.2	78.6	75.2	74.6	74.6	74.6
–10	86.4	83.0	79.4	75.9	75.3	75.3	75.3
–5	87.2	83.8	80.1	76.6	76.0	76.0	76.0
0	88.0	84.5	80.9	77.3	76.8	76.8	76.8
5	88.8	85.3	81.6	78.0	77.5	77.5	77.5
10	89.6	86.1	82.3	78.7	78.2	78.2	78.2
15	90.4	86.8	83.1	79.4	78.8	78.8	78.8
20	91.2	87.6	83.8	80.1	79.5	79.5	79.5
25	–	88.3	84.5	80.8	78.8	78.8	78.8
30	–	89.0	85.2	81.4	77.7	77.6	77.6
35	–	–	85.9	82.1	78.3	76.3	76.3
40	–	–	86.6	82.8	79.0	75.1	75.1
45	–	–	–	83.4	79.6	75.7	73.8
53	–	–	–	–	80.6	76.7	72.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_5000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 5000 ft <72211001D>
Figure 05–02B–90

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 6000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	18	28	38	48	58	68	78
–54	79.4	76.3	73.0	69.9	69.3	69.3	69.3
–50	80.1	77.0	73.7	70.5	70.0	70.0	70.0
–45	81.0	77.9	74.5	71.3	70.7	70.7	70.7
–40	81.9	78.7	75.3	72.1	71.5	71.5	71.5
–35	82.8	79.6	76.2	72.8	72.2	72.2	72.2
–30	83.7	80.4	77.0	73.6	73.0	73.0	73.0
–25	84.5	81.2	77.7	74.3	73.7	73.7	73.7
–20	85.3	82.0	78.5	75.1	74.5	74.5	74.5
–15	86.2	82.8	79.3	75.8	75.2	75.2	75.2
–10	87.0	83.6	80.0	76.6	75.9	75.9	75.9
–5	87.8	84.4	80.8	77.3	76.6	76.6	76.6
0	88.7	85.2	81.5	78.0	77.3	77.3	77.3
5	89.5	86.0	82.3	78.7	78.0	78.0	78.0
10	90.3	86.8	83.0	79.4	78.7	78.7	78.7
15	91.1	87.5	83.8	80.1	79.4	79.4	79.4
20	–	88.3	84.5	80.8	79.7	79.7	79.7
25	–	89.0	85.2	81.5	78.8	78.8	78.8
30	–	–	85.9	82.2	78.4	77.6	77.6
35	–	–	86.6	82.8	79.1	76.3	76.3
40	–	–	–	83.5	79.7	75.9	75.1
45	–	–	–	84.2	80.3	76.5	73.7
53	–	–	–	–	81.3	77.5	73.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_6000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 6000 ft <72211001D>
Figure 05–02B–91

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 8000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	14	24	34	44	54	64	74
–54	80.5	77.5	74.1	70.8	70.2	70.2	70.2
–50	81.2	78.2	74.8	71.5	70.8	70.8	70.8
–45	82.1	79.1	75.7	72.3	71.6	71.6	71.6
–40	83.0	80.0	76.5	73.1	72.4	72.4	72.4
–35	83.9	80.8	77.3	73.8	73.1	73.1	73.1
–30	84.8	81.7	78.1	74.6	73.9	73.9	73.9
–25	85.6	82.5	78.9	75.4	74.7	74.7	74.7
–20	86.5	83.3	79.7	76.1	75.4	75.4	75.4
–15	87.3	84.1	80.5	76.9	76.1	76.1	76.1
–10	88.2	84.9	81.2	77.6	76.8	76.8	76.8
–5	89.0	85.7	82.0	78.4	77.6	77.6	77.6
0	89.8	86.5	82.8	79.1	78.3	78.3	78.3
5	90.7	87.3	83.5	79.8	79.0	79.0	79.0
10	91.5	88.1	84.3	80.5	79.7	79.7	79.7
15	–	88.9	85.0	81.2	80.4	80.4	80.4
20	–	89.7	85.8	81.9	79.7	79.7	79.7
25	–	–	86.5	82.6	78.8	78.7	78.7
30	–	–	87.2	83.3	79.5	77.4	77.4
35	–	–	–	84.0	80.1	76.2	76.1
40	–	–	–	84.7	80.8	76.8	74.6
45	–	–	–	–	81.4	77.4	73.5
53	–	–	–	–	82.4	78.4	74.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_8000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 8000 ft <72211001D>
Figure 05–02B–92

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 10000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	10	20	30	40	50	60	70
–54	81.5	78.6	75.2	72.0	71.0	71.0	71.0
–50	82.2	79.3	75.9	72.7	71.6	71.6	71.6
–45	83.1	80.2	76.7	73.5	72.4	72.4	72.4
–40	84.0	81.1	77.6	74.3	73.2	73.2	73.2
–35	84.9	81.9	78.4	75.1	73.9	73.9	73.9
–30	85.8	82.8	79.2	75.9	74.7	74.7	74.7
–25	86.7	83.6	80.0	76.6	75.5	75.5	75.5
–20	87.6	84.5	80.8	77.4	76.2	76.2	76.2
–15	88.4	85.3	81.6	78.2	77.0	77.0	77.0
–10	89.3	86.1	82.4	78.9	77.7	77.7	77.7
–5	90.1	87.0	83.2	79.7	78.4	78.4	78.4
0	91.0	87.8	84.0	80.4	79.2	79.2	79.2
5	91.8	88.5	84.7	81.1	79.9	79.9	79.9
10	92.6	89.3	85.5	81.9	80.6	80.6	80.6
15	–	90.1	86.2	82.6	80.4	80.4	80.4
20	–	90.9	87.0	83.3	79.6	79.5	79.5
25	–	–	87.7	84.0	80.3	78.4	78.4
30	–	–	88.4	84.7	81.0	77.2	77.1
35	–	–	–	85.4	81.6	77.8	75.7
40	–	–	–	86.1	82.3	78.5	74.7
45	–	–	–	–	82.9	79.1	75.3
53	–	–	–	–	–	80.1	76.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_10000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 10000 ft <72211001D>
Figure 05–02B–93

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 12000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	6	16	26	36	46	56	66
–54	82.5	79.8	76.4	73.1	71.7	71.7	71.7
–50	83.2	80.5	77.1	73.8	72.3	72.3	72.3
–45	84.1	81.4	78.0	74.6	73.2	73.2	73.2
–40	85.0	82.3	78.8	75.4	74.0	74.0	74.0
–35	86.0	83.2	79.7	76.2	74.7	74.7	74.7
–30	86.8	84.0	80.5	77.0	75.5	75.5	75.5
–25	87.7	84.9	81.3	77.8	76.3	76.3	76.3
–20	88.6	85.8	82.1	78.6	77.0	77.0	77.0
–15	89.5	86.6	83.0	79.4	77.8	77.8	77.8
–10	90.4	87.4	83.8	80.2	78.5	78.5	78.5
–5	91.2	88.3	84.5	80.9	79.3	79.3	79.3
0	92.1	89.1	85.3	81.7	80.0	80.0	80.0
5	92.9	89.9	86.1	82.4	80.7	80.7	80.7
10	–	90.7	86.9	83.1	80.9	80.9	80.9
15	–	91.5	87.6	83.9	80.3	80.3	80.3
20	–	–	88.4	84.6	80.8	79.3	79.3
25	–	–	89.1	85.3	81.5	78.2	78.2
30	–	–	–	86.0	82.2	78.3	76.9
35	–	–	–	86.7	82.8	78.9	75.4
40	–	–	–	–	83.5	79.6	75.7
45	–	–	–	–	84.2	80.2	76.3
53	–	–	–	–	–	81.2	77.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_12000FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 12000 ft <72211001D>
Figure 05–02B–94

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 14500 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	1	11	21	31	41	51	61
–54	83.6	81.3	78.2	74.8	72.5	72.5	72.5
–50	84.3	82.0	78.9	75.5	73.2	73.2	73.2
–45	85.3	82.9	79.8	76.3	74.0	74.0	74.0
–40	86.2	83.8	80.7	77.2	74.8	74.8	74.8
–35	87.1	84.7	81.5	78.0	75.6	75.6	75.6
–30	88.0	85.6	82.4	78.8	76.4	76.4	76.4
–25	88.9	86.5	83.2	79.6	77.1	77.1	77.1
–20	89.8	87.3	84.1	80.4	77.9	77.9	77.9
–15	90.7	88.2	84.9	81.2	78.6	78.6	78.6
–10	91.5	89.0	85.7	82.0	79.4	79.4	79.4
–5	92.4	89.9	86.5	82.8	80.2	80.2	80.2
0	93.2	90.7	87.3	83.5	80.9	80.9	80.9
5	–	91.5	88.1	84.3	81.2	81.2	81.2
10	–	92.4	88.9	85.0	81.2	80.9	80.9
15	–	–	89.7	85.8	81.9	80.4	80.4
20	–	–	90.5	86.5	82.6	79.5	79.5
25	–	–	–	87.3	83.3	79.4	78.2
30	–	–	–	88.0	84.0	80.0	76.7
35	–	–	–	–	84.7	80.7	76.7
40	–	–	–	–	85.4	81.3	77.3
45	–	–	–	–	–	82.0	77.9
53	–	–	–	–	–	–	78.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60000/60000_14500FT_qrh_n1.ps

TO FLEX – Engine bleeds closed – Pressure altitude 14500 ft <72211001D>
Figure 05–02B–95

S. Flexible N1 – TO FLEX – Packs on, anti-ice off – PW1521G-3 <72211001D>

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = –2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	34	44	54	64	74	84	94
–54	72.1	68.6	65.3	63.8	63.8	63.8	63.8
–50	72.8	69.2	65.9	64.4	64.4	64.4	64.4
–45	73.6	70.0	66.7	65.1	65.1	65.1	65.1
–40	74.4	70.8	67.4	65.8	65.8	65.8	65.8
–35	75.2	71.5	68.1	66.5	66.5	66.5	66.5
–30	76.0	72.2	68.8	67.2	67.2	67.2	67.2
–25	76.7	73.0	69.5	67.8	67.8	67.8	67.8
–20	77.5	73.7	70.2	68.5	68.5	68.5	68.5
–15	78.3	74.5	70.9	69.2	69.2	69.2	69.2
–10	79.0	75.2	71.6	69.8	69.8	69.8	69.8
–5	79.8	75.9	72.3	70.5	70.5	70.5	70.5
0	80.5	76.6	73.0	71.2	71.2	71.2	71.2
5	81.2	77.3	73.6	71.8	71.8	71.8	71.8
10	82.0	78.0	74.3	72.4	72.4	72.4	72.4
15	82.7	78.7	74.9	73.1	73.1	73.1	73.1
20	83.4	79.3	75.6	73.7	73.7	73.7	73.7
25	84.1	80.0	76.2	74.4	74.4	74.4	74.4
30	84.8	80.7	76.8	75.0	75.0	75.0	75.0
35	–	81.3	77.5	73.6	73.5	73.5	73.5
40	–	82.0	78.1	74.2	72.1	72.1	72.1
45	–	–	78.7	74.8	71.4	70.6	70.6
53	–	–	79.7	75.8	72.3	68.8	68.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_–2000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude –2000 ft <72211001D>
Figure 05–02B–96

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = Sea Level

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	30	40	50	60	70	80	90
–54	74.5	71.0	67.6	66.1	66.1	66.1	66.1
–50	75.1	71.6	68.2	66.7	66.7	66.7	66.7
–45	76.0	72.4	69.0	67.4	67.4	67.4	67.4
–40	76.8	73.2	69.7	68.2	68.2	68.2	68.2
–35	77.6	74.0	70.5	68.9	68.9	68.9	68.9
–30	78.4	74.8	71.2	69.6	69.6	69.6	69.6
–25	79.2	75.5	71.9	70.3	70.3	70.3	70.3
–20	80.0	76.3	72.7	71.0	71.0	71.0	71.0
–15	80.8	77.0	73.4	71.7	71.7	71.7	71.7
–10	81.6	77.8	74.1	72.4	72.4	72.4	72.4
–5	82.3	78.5	74.8	73.0	73.0	73.0	73.0
0	83.1	79.2	75.5	73.7	73.7	73.7	73.7
5	83.9	80.0	76.2	74.4	74.4	74.4	74.4
10	84.6	80.7	76.8	75.0	75.0	75.0	75.0
15	85.4	81.4	77.5	75.7	75.7	75.7	75.7
20	86.1	82.1	78.2	76.4	76.4	76.4	76.4
25	86.8	82.8	78.9	77.0	77.0	77.0	77.0
30	87.6	83.5	79.5	76.0	76.0	76.0	76.0
35	–	84.2	80.2	76.4	74.6	74.6	74.6
40	–	84.8	80.8	77.0	73.7	73.3	73.3
45	–	–	81.5	77.6	74.2	71.7	71.7
53	–	–	–	78.6	75.2	71.7	69.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_SL_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude Sea level <72211001D>
Figure 05–02B–97

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 1000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	28	38	48	58	68	78	88
–54	75.1	71.6	68.2	66.7	66.7	66.7	66.7
–50	75.8	72.3	68.8	67.3	67.3	67.3	67.3
–45	76.6	73.1	69.5	68.0	68.0	68.0	68.0
–40	77.5	73.9	70.3	68.8	68.8	68.8	68.8
–35	78.3	74.7	71.1	69.5	69.5	69.5	69.5
–30	79.1	75.5	71.8	70.2	70.2	70.2	70.2
–25	79.9	76.2	72.5	70.9	70.9	70.9	70.9
–20	80.7	77.0	73.3	71.6	71.6	71.6	71.6
–15	81.5	77.8	74.0	72.3	72.3	72.3	72.3
–10	82.3	78.5	74.7	73.0	73.0	73.0	73.0
–5	83.1	79.2	75.4	73.7	73.7	73.7	73.7
0	83.8	80.0	76.1	74.4	74.4	74.4	74.4
5	84.6	80.7	76.8	75.0	75.0	75.0	75.0
10	85.4	81.4	77.5	75.7	75.7	75.7	75.7
15	86.1	82.1	78.2	76.4	76.4	76.4	76.4
20	86.9	82.8	78.8	77.1	77.1	77.1	77.1
25	87.6	83.6	79.5	77.3	77.3	77.3	77.3
30	–	84.2	80.2	76.5	76.0	76.0	76.0
35	–	84.9	80.8	77.1	74.6	74.6	74.6
40	–	–	81.5	77.7	74.1	73.2	73.2
45	–	–	82.1	78.3	74.7	71.7	71.7
53	–	–	–	79.3	75.7	72.0	69.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_1000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 1000 ft <72211001D>
Figure 05–02B–98

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	26	36	46	56	66	76	86
–54	75.8	72.3	68.7	67.3	67.3	67.3	67.3
–50	76.5	73.0	69.3	67.9	67.9	67.9	67.9
–45	77.3	73.8	70.1	68.6	68.6	68.6	68.6
–40	78.2	74.6	70.9	69.4	69.4	69.4	69.4
–35	79.0	75.4	71.6	70.1	70.1	70.1	70.1
–30	79.8	76.2	72.4	70.8	70.8	70.8	70.8
–25	80.6	76.9	73.1	71.5	71.5	71.5	71.5
–20	81.4	77.7	73.9	72.2	72.2	72.2	72.2
–15	82.2	78.5	74.6	73.0	73.0	73.0	73.0
–10	83.0	79.2	75.3	73.7	73.7	73.7	73.7
–5	83.8	80.0	76.0	74.3	74.3	74.3	74.3
0	84.6	80.7	76.7	75.0	75.0	75.0	75.0
5	85.4	81.5	77.4	75.7	75.7	75.7	75.7
10	86.1	82.2	78.1	76.4	76.4	76.4	76.4
15	86.9	82.9	78.8	77.1	77.1	77.1	77.1
20	87.6	83.6	79.5	77.7	77.7	77.7	77.7
25	88.4	84.3	80.2	77.3	77.3	77.3	77.3
30	–	85.0	80.8	77.2	75.9	75.9	75.9
35	–	85.7	81.5	77.8	74.5	74.5	74.5
40	–	–	82.2	78.4	74.6	73.1	73.1
45	–	–	82.8	79.0	75.2	71.6	71.6
53	–	–	–	80.0	76.1	72.2	69.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_2000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 2000 ft <72211001D>
Figure 05–02B–99

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 3000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	24	34	44	54	64	74	84
–54	76.4	72.9	69.3	67.8	67.8	67.8	67.8
–50	77.1	73.6	69.9	68.4	68.4	68.4	68.4
–45	78.0	74.4	70.7	69.2	69.2	69.2	69.2
–40	78.8	75.2	71.5	69.9	69.9	69.9	69.9
–35	79.6	76.0	72.2	70.7	70.7	70.7	70.7
–30	80.5	76.8	73.0	71.4	71.4	71.4	71.4
–25	81.3	77.6	73.7	72.1	72.1	72.1	72.1
–20	82.1	78.4	74.5	72.8	72.8	72.8	72.8
–15	82.9	79.1	75.2	73.5	73.5	73.5	73.5
–10	83.7	79.9	75.9	74.2	74.2	74.2	74.2
–5	84.5	80.7	76.7	74.9	74.9	74.9	74.9
0	85.3	81.4	77.4	75.6	75.6	75.6	75.6
5	86.1	82.2	78.1	76.3	76.3	76.3	76.3
10	86.8	82.9	78.8	77.0	77.0	77.0	77.0
15	87.6	83.6	79.5	77.7	77.7	77.7	77.7
20	88.3	84.3	80.1	78.3	78.3	78.3	78.3
25	–	85.0	80.8	77.2	77.2	77.2	77.2
30	–	85.8	81.5	77.7	75.8	75.8	75.8
35	–	–	82.2	78.4	74.6	74.4	74.4
40	–	–	82.8	79.0	75.2	73.0	73.0
45	–	–	–	79.6	75.8	71.9	71.4
53	–	–	–	80.6	76.7	72.8	69.0

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_3000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 3000 ft <72211001D>
Figure 05–02B–100

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 4000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	22	32	42	52	62	72	82
–54	77.0	73.5	69.9	68.3	68.3	68.3	68.3
–50	77.7	74.2	70.5	69.0	69.0	69.0	69.0
–45	78.6	75.0	71.3	69.7	69.7	69.7	69.7
–40	79.5	75.8	72.1	70.5	70.5	70.5	70.5
–35	80.3	76.7	72.8	71.2	71.2	71.2	71.2
–30	81.1	77.5	73.6	71.9	71.9	71.9	71.9
–25	82.0	78.2	74.3	72.7	72.7	72.7	72.7
–20	82.8	79.0	75.1	73.4	73.4	73.4	73.4
–15	83.6	79.8	75.8	74.1	74.1	74.1	74.1
–10	84.4	80.6	76.5	74.8	74.8	74.8	74.8
–5	85.2	81.3	77.3	75.5	75.5	75.5	75.5
0	86.0	82.1	78.0	76.2	76.2	76.2	76.2
5	86.8	82.8	78.7	76.9	76.9	76.9	76.9
10	87.5	83.6	79.4	77.6	77.6	77.6	77.6
15	88.3	84.3	80.1	78.3	78.3	78.3	78.3
20	89.1	85.0	80.8	78.3	78.3	78.3	78.3
25	–	85.8	81.5	77.7	77.1	77.1	77.1
30	–	86.5	82.2	78.3	75.7	75.7	75.7
35	–	–	82.8	79.0	75.1	74.3	74.3
40	–	–	83.5	79.6	75.7	72.8	72.8
45	–	–	–	80.2	76.3	72.5	71.3
53	–	–	–	–	77.3	73.3	69.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_4000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 4000 ft <72211001D>
Figure 05–02B–101

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 5000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	20	30	40	50	60	70	80
–54	77.6	74.1	70.5	68.9	68.9	68.9	68.9
–50	78.3	74.8	71.1	69.5	69.5	69.5	69.5
–45	79.2	75.7	71.9	70.2	70.2	70.2	70.2
–40	80.1	76.5	72.7	71.0	71.0	71.0	71.0
–35	80.9	77.3	73.5	71.8	71.8	71.8	71.8
–30	81.8	78.1	74.2	72.5	72.5	72.5	72.5
–25	82.6	78.9	75.0	73.2	73.2	73.2	73.2
–20	83.4	79.7	75.8	74.0	74.0	74.0	74.0
–15	84.2	80.5	76.5	74.7	74.7	74.7	74.7
–10	85.1	81.2	77.2	75.4	75.4	75.4	75.4
–5	85.9	82.0	78.0	76.1	76.1	76.1	76.1
0	86.7	82.8	78.7	76.8	76.8	76.8	76.8
5	87.5	83.5	79.4	77.5	77.5	77.5	77.5
10	88.2	84.3	80.1	78.2	78.2	78.2	78.2
15	89.0	85.0	80.8	78.9	78.9	78.9	78.9
20	89.8	85.8	81.5	78.2	78.2	78.2	78.2
25	–	86.5	82.2	78.3	77.0	77.0	77.0
30	–	87.2	82.9	79.0	75.6	75.6	75.6
35	–	–	83.6	79.6	75.8	74.2	74.2
40	–	–	84.2	80.3	76.4	72.8	72.8
45	–	–	–	80.9	77.0	73.2	71.1
53	–	–	–	–	78.0	74.1	70.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_5000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 5000 ft <72211001D>
Figure 05–02B–102

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 6000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	18	28	38	48	58	68	78
–54	78.2	74.7	71.1	69.4	69.4	69.4	69.4
–50	78.9	75.4	71.8	70.0	70.0	70.0	70.0
–45	79.8	76.2	72.6	70.8	70.8	70.8	70.8
–40	80.7	77.1	73.3	71.5	71.5	71.5	71.5
–35	81.5	77.9	74.1	72.3	72.3	72.3	72.3
–30	82.4	78.7	74.9	73.0	73.0	73.0	73.0
–25	83.2	79.5	75.7	73.8	73.8	73.8	73.8
–20	84.1	80.3	76.4	74.5	74.5	74.5	74.5
–15	84.9	81.1	77.2	75.2	75.2	75.2	75.2
–10	85.7	81.9	77.9	76.0	76.0	76.0	76.0
–5	86.5	82.7	78.7	76.7	76.7	76.7	76.7
0	87.3	83.4	79.4	77.4	77.4	77.4	77.4
5	88.1	84.2	80.1	78.1	78.1	78.1	78.1
10	88.9	84.9	80.8	78.8	78.8	78.8	78.8
15	89.7	85.7	81.5	79.2	79.2	79.2	79.2
20	–	86.4	82.2	78.3	78.1	78.1	78.1
25	–	87.2	83.0	79.0	76.9	76.9	76.9
30	–	–	83.6	79.6	75.9	75.5	75.5
35	–	–	84.3	80.3	76.5	74.0	74.0
40	–	–	–	80.9	77.1	73.3	72.6
45	–	–	–	81.6	77.7	73.9	71.0
53	–	–	–	–	78.7	74.8	70.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_6000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 6000 ft <72211001D>
Figure 05–02B–103

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 8000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	14	24	34	44	54	64	74
–54	79.3	75.9	72.2	70.2	70.2	70.2	70.2
–50	80.0	76.6	72.9	70.9	70.9	70.9	70.9
–45	80.9	77.5	73.7	71.6	71.6	71.6	71.6
–40	81.8	78.3	74.5	72.4	72.4	72.4	72.4
–35	82.7	79.2	75.3	73.2	73.2	73.2	73.2
–30	83.5	80.0	76.1	73.9	73.9	73.9	73.9
–25	84.4	80.8	76.9	74.7	74.7	74.7	74.7
–20	85.2	81.6	77.7	75.4	75.4	75.4	75.4
–15	86.1	82.4	78.4	76.2	76.2	76.2	76.2
–10	86.9	83.2	79.2	76.9	76.9	76.9	76.9
–5	87.7	84.0	79.9	77.6	77.6	77.6	77.6
0	88.5	84.8	80.7	78.3	78.3	78.3	78.3
5	89.4	85.5	81.4	79.1	79.1	79.1	79.1
10	90.2	86.3	82.1	79.8	79.8	79.8	79.8
15	–	87.1	82.8	78.9	78.9	78.9	78.9
20	–	87.8	83.5	79.6	77.9	77.9	77.9
25	–	–	84.3	80.3	76.6	76.6	76.6
30	–	–	85.0	80.9	77.1	75.1	75.1
35	–	–	–	81.6	77.7	73.8	73.6
40	–	–	–	82.3	78.3	74.4	72.0
45	–	–	–	–	78.9	75.0	71.0
53	–	–	–	–	79.9	75.9	71.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_8000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 8000 ft <72211001D>
Figure 05–02B–104

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 10000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	10	20	30	40	50	60	70
–54	80.4	76.9	73.2	71.0	71.0	71.0	71.0
–50	81.1	77.6	73.9	71.6	71.6	71.6	71.6
–45	82.0	78.5	74.7	72.4	72.4	72.4	72.4
–40	82.9	79.4	75.5	73.2	73.2	73.2	73.2
–35	83.8	80.2	76.3	74.0	74.0	74.0	74.0
–30	84.7	81.0	77.1	74.8	74.8	74.8	74.8
–25	85.5	81.9	77.9	75.5	75.5	75.5	75.5
–20	86.4	82.7	78.7	76.3	76.3	76.3	76.3
–15	87.2	83.5	79.5	77.0	77.0	77.0	77.0
–10	88.1	84.3	80.2	77.7	77.7	77.7	77.7
–5	88.9	85.1	81.0	78.5	78.5	78.5	78.5
0	89.8	85.9	81.7	79.2	79.2	79.2	79.2
5	90.6	86.7	82.5	79.9	79.9	79.9	79.9
10	91.4	87.5	83.2	79.5	79.5	79.5	79.5
15	–	88.2	84.0	80.2	78.7	78.7	78.7
20	–	89.0	84.7	80.9	77.5	77.5	77.5
25	–	–	85.4	81.6	77.9	76.0	76.0
30	–	–	86.1	82.2	78.5	74.8	74.6
35	–	–	–	82.9	79.2	75.4	73.0
40	–	–	–	83.6	79.8	76.0	72.2
45	–	–	–	–	80.4	76.6	72.8
53	–	–	–	–	–	77.5	73.7

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_10000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 10000 ft <72211001D>
Figure 05–02B–105

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 12000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	6	16	26	36	46	56	66
–54	81.4	78.1	74.4	71.8	71.8	71.8	71.8
–50	82.1	78.8	75.1	72.4	72.4	72.4	72.4
–45	83.0	79.7	75.9	73.2	73.2	73.2	73.2
–40	83.9	80.6	76.8	74.0	74.0	74.0	74.0
–35	84.8	81.4	77.6	74.8	74.8	74.8	74.8
–30	85.7	82.3	78.4	75.6	75.6	75.6	75.6
–25	86.6	83.1	79.2	76.3	76.3	76.3	76.3
–20	87.5	84.0	80.0	77.1	77.1	77.1	77.1
–15	88.3	84.8	80.8	77.8	77.8	77.8	77.8
–10	89.2	85.6	81.6	78.6	78.6	78.6	78.6
–5	90.0	86.4	82.3	79.3	79.3	79.3	79.3
0	90.8	87.2	83.1	80.0	80.0	80.0	80.0
5	91.7	88.0	83.8	79.9	79.9	79.9	79.9
10	–	88.8	84.6	80.7	79.3	79.3	79.3
15	–	89.6	85.3	81.4	78.4	78.4	78.4
20	–	–	86.1	82.1	78.3	77.0	77.0
25	–	–	86.8	82.8	78.9	75.7	75.7
30	–	–	–	83.5	79.6	75.7	74.1
35	–	–	–	84.1	80.2	76.3	72.6
40	–	–	–	–	80.9	77.0	73.0
45	–	–	–	–	81.5	77.6	73.6
53	–	–	–	–	–	78.5	74.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_12000FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 12000 ft <72211001D>
Figure 05–02B–106

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 14500 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	1	11	21	31	41	51	61
–54	82.5	79.8	76.0	72.6	72.6	72.6	72.6
–50	83.3	80.6	76.7	73.2	73.2	73.2	73.2
–45	84.2	81.5	77.6	74.0	74.0	74.0	74.0
–40	85.1	82.3	78.4	74.8	74.8	74.8	74.8
–35	86.0	83.2	79.3	75.6	75.6	75.6	75.6
–30	86.9	84.1	80.1	76.4	76.4	76.4	76.4
–25	87.8	85.0	80.9	77.2	77.2	77.2	77.2
–20	88.7	85.8	81.7	78.0	78.0	78.0	78.0
–15	89.6	86.7	82.5	78.7	78.7	78.7	78.7
–10	90.4	87.5	83.3	79.5	79.5	79.5	79.5
–5	91.3	88.3	84.1	80.2	80.2	80.2	80.2
0	92.2	89.1	84.9	80.9	80.2	80.2	80.2
5	–	89.9	85.7	81.7	79.8	79.8	79.8
10	–	90.8	86.4	82.4	79.2	79.2	79.2
15	–	–	87.2	83.1	79.2	78.2	78.2
20	–	–	87.9	83.8	79.9	76.8	76.8
25	–	–	–	84.5	80.6	76.6	75.2
30	–	–	–	85.2	81.3	77.3	73.7
35	–	–	–	–	81.9	77.9	73.9
40	–	–	–	–	82.6	78.5	74.5
45	–	–	–	–	–	79.2	75.1
53	–	–	–	–	–	–	76.0

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/60100/60100_14500FT_qrh_n1.ps

TO FLEX – Packs on, anti–ice off – Pressure altitude 14500 ft <72211001D>
Figure 05–02B–107

T. Flexible N1 – TO-1 FLEX – Engine bleeds closed – PW1521G-3 <72211001D>

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = –2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	34	44	54	64	74	84	94
–54	70.7	67.6	64.6	63.8	63.8	63.8	63.8
–50	71.4	68.2	65.2	64.4	64.4	64.4	64.4
–45	72.2	69.0	66.0	65.1	65.1	65.1	65.1
–40	73.0	69.8	66.7	65.8	65.8	65.8	65.8
–35	73.8	70.5	67.4	66.5	66.5	66.5	66.5
–30	74.5	71.2	68.1	67.1	67.1	67.1	67.1
–25	75.3	72.0	68.8	67.8	67.8	67.8	67.8
–20	76.0	72.7	69.5	68.5	68.5	68.5	68.5
–15	76.8	73.4	70.2	69.1	69.1	69.1	69.1
–10	77.5	74.1	70.8	69.8	69.8	69.8	69.8
–5	78.2	74.8	71.5	70.5	70.5	70.5	70.5
0	79.0	75.5	72.2	71.1	71.1	71.1	71.1
5	79.7	76.2	72.8	71.8	71.8	71.8	71.8
10	80.4	76.9	73.5	72.4	72.4	72.4	72.4
15	81.1	77.5	74.1	73.0	73.0	73.0	73.0
20	81.8	78.2	74.8	73.7	73.7	73.7	73.7
25	82.5	78.9	75.4	74.3	74.3	74.3	74.3
30	83.2	79.5	76.0	74.9	74.9	74.9	74.9
35	–	80.2	76.6	75.3	75.3	75.3	75.3
40	–	80.8	77.3	74.0	74.0	74.0	74.0
45	–	–	77.9	74.4	72.7	72.7	72.7
53	–	–	78.8	75.4	71.9	70.9	70.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_–2000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude –2000 ft <72211001D>
Figure 05–02B–108

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = Sea Level

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	30	40	50	60	70	80	90
–54	73.0	69.8	66.8	66.1	66.1	66.1	66.1
–50	73.7	70.5	67.4	66.7	66.7	66.7	66.7
–45	74.5	71.2	68.2	67.4	67.4	67.4	67.4
–40	75.3	72.0	68.9	68.1	68.1	68.1	68.1
–35	76.1	72.8	69.6	68.8	68.8	68.8	68.8
–30	76.9	73.6	70.3	69.5	69.5	69.5	69.5
–25	77.7	74.3	71.1	70.2	70.2	70.2	70.2
–20	78.5	75.0	71.8	70.9	70.9	70.9	70.9
–15	79.2	75.8	72.5	71.6	71.6	71.6	71.6
–10	80.0	76.5	73.2	72.3	72.3	72.3	72.3
–5	80.7	77.2	73.9	73.0	73.0	73.0	73.0
0	81.5	78.0	74.6	73.7	73.7	73.7	73.7
5	82.2	78.7	75.2	74.3	74.3	74.3	74.3
10	82.9	79.4	75.9	75.0	75.0	75.0	75.0
15	83.7	80.1	76.6	75.7	75.7	75.7	75.7
20	84.4	80.8	77.2	76.3	76.3	76.3	76.3
25	85.1	81.5	77.9	77.0	77.0	77.0	77.0
30	85.9	82.1	78.5	77.6	77.6	77.6	77.6
35	–	82.8	79.2	76.5	76.5	76.5	76.5
40	–	83.5	79.8	76.5	75.2	75.2	75.2
45	–	–	80.5	77.1	74.0	74.0	74.0
53	–	–	–	78.0	74.6	71.8	71.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_SL_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude Sea level <72211001D>
Figure 05–02B–109

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 1000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	28	38	48	58	68	78	88
–54	73.7	70.5	67.4	66.7	66.7	66.7	66.7
–50	74.3	71.1	68.0	67.3	67.3	67.3	67.3
–45	75.2	71.9	68.8	68.0	68.0	68.0	68.0
–40	76.0	72.7	69.5	68.7	68.7	68.7	68.7
–35	76.8	73.5	70.3	69.5	69.5	69.5	69.5
–30	77.5	74.2	71.0	70.2	70.2	70.2	70.2
–25	78.3	75.0	71.7	70.9	70.9	70.9	70.9
–20	79.1	75.7	72.5	71.6	71.6	71.6	71.6
–15	79.9	76.5	73.2	72.3	72.3	72.3	72.3
–10	80.7	77.2	73.9	73.0	73.0	73.0	73.0
–5	81.4	78.0	74.6	73.7	73.7	73.7	73.7
0	82.2	78.7	75.3	74.3	74.3	74.3	74.3
5	82.9	79.4	75.9	75.0	75.0	75.0	75.0
10	83.7	80.1	76.6	75.7	75.7	75.7	75.7
15	84.4	80.8	77.3	76.4	76.4	76.4	76.4
20	85.1	81.5	78.0	77.0	77.0	77.0	77.0
25	85.9	82.2	78.6	77.7	77.7	77.7	77.7
30	–	82.9	79.3	77.7	77.7	77.7	77.7
35	–	83.6	79.9	76.5	76.5	76.5	76.5
40	–	–	80.6	77.0	75.2	75.2	75.2
45	–	–	81.2	77.6	74.0	74.0	74.0
53	–	–	–	78.6	74.9	71.8	71.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_1000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 1000 ft <72211001D>
Figure 05–02B–110

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	26	36	46	56	66	76	86
–54	74.3	71.1	68.0	67.3	67.3	67.3	67.3
–50	74.9	71.8	68.7	67.9	67.9	67.9	67.9
–45	75.8	72.6	69.4	68.6	68.6	68.6	68.6
–40	76.6	73.3	70.2	69.3	69.3	69.3	69.3
–35	77.4	74.1	70.9	70.1	70.1	70.1	70.1
–30	78.2	74.9	71.7	70.8	70.8	70.8	70.8
–25	79.0	75.7	72.4	71.5	71.5	71.5	71.5
–20	79.8	76.4	73.1	72.2	72.2	72.2	72.2
–15	80.6	77.2	73.8	72.9	72.9	72.9	72.9
–10	81.3	77.9	74.5	73.6	73.6	73.6	73.6
–5	82.1	78.7	75.2	74.3	74.3	74.3	74.3
0	82.9	79.4	76.0	75.0	75.0	75.0	75.0
5	83.6	80.1	76.6	75.7	75.7	75.7	75.7
10	84.4	80.8	77.3	76.4	76.4	76.4	76.4
15	85.1	81.5	78.0	77.0	77.0	77.0	77.0
20	85.9	82.2	78.7	77.7	77.7	77.7	77.7
25	86.6	83.0	79.3	78.4	78.4	78.4	78.4
30	–	83.6	80.0	77.7	77.7	77.7	77.7
35	–	84.3	80.7	76.9	76.5	76.5	76.5
40	–	–	81.3	77.5	75.2	75.2	75.2
45	–	–	82.0	78.1	74.3	74.0	74.0
53	–	–	–	79.1	75.2	71.6	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_2000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 2000 ft <72211001D>
Figure 05–02B–111

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 3000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	24	34	44	54	64	74	84
–54	74.8	71.7	68.6	67.8	67.8	67.8	67.8
–50	75.5	72.4	69.2	68.4	68.4	68.4	68.4
–45	76.4	73.2	70.0	69.2	69.2	69.2	69.2
–40	77.2	74.0	70.7	69.9	69.9	69.9	69.9
–35	78.0	74.8	71.5	70.6	70.6	70.6	70.6
–30	78.8	75.6	72.2	71.3	71.3	71.3	71.3
–25	79.6	76.3	73.0	72.1	72.1	72.1	72.1
–20	80.4	77.1	73.7	72.8	72.8	72.8	72.8
–15	81.2	77.8	74.4	73.5	73.5	73.5	73.5
–10	82.0	78.6	75.2	74.2	74.2	74.2	74.2
–5	82.7	79.3	75.9	74.9	74.9	74.9	74.9
0	83.5	80.1	76.6	75.6	75.6	75.6	75.6
5	84.3	80.8	77.3	76.3	76.3	76.3	76.3
10	85.0	81.5	78.0	77.0	77.0	77.0	77.0
15	85.8	82.2	78.7	77.6	77.6	77.6	77.6
20	86.5	83.0	79.3	78.3	78.3	78.3	78.3
25	–	83.7	80.0	78.8	78.8	78.8	78.8
30	–	84.4	80.7	77.7	77.7	77.7	77.7
35	–	–	81.3	77.5	76.5	76.5	76.5
40	–	–	82.0	78.1	75.2	75.2	75.2
45	–	–	–	78.8	74.9	73.9	73.9
53	–	–	–	79.8	75.8	71.9	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_3000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 3000 ft <72211001D>
Figure 05–02B–112

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 4000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	22	32	42	52	62	72	82
–54	75.4	72.3	69.2	68.3	68.3	68.3	68.3
–50	76.1	73.0	69.8	68.9	68.9	68.9	68.9
–45	77.0	73.8	70.5	69.7	69.7	69.7	69.7
–40	77.8	74.6	71.3	70.4	70.4	70.4	70.4
–35	78.6	75.4	72.1	71.2	71.2	71.2	71.2
–30	79.4	76.2	72.8	71.9	71.9	71.9	71.9
–25	80.2	77.0	73.6	72.6	72.6	72.6	72.6
–20	81.0	77.8	74.3	73.3	73.3	73.3	73.3
–15	81.8	78.5	75.0	74.1	74.1	74.1	74.1
–10	82.6	79.3	75.8	74.8	74.8	74.8	74.8
–5	83.4	80.0	76.5	75.5	75.5	75.5	75.5
0	84.2	80.8	77.2	76.2	76.2	76.2	76.2
5	84.9	81.5	77.9	76.9	76.9	76.9	76.9
10	85.7	82.2	78.6	77.6	77.6	77.6	77.6
15	86.4	83.0	79.3	78.2	78.2	78.2	78.2
20	87.2	83.7	80.0	78.9	78.9	78.9	78.9
25	–	84.4	80.7	78.8	78.8	78.8	78.8
30	–	85.1	81.3	77.7	77.7	77.7	77.7
35	–	–	82.0	78.2	76.4	76.4	76.4
40	–	–	82.7	78.8	75.2	75.2	75.2
45	–	–	–	79.4	75.5	73.8	73.8
53	–	–	–	–	76.5	72.5	71.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_4000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 4000 ft <72211001D>
Figure 05–02B–113

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 5000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	20	30	40	50	60	70	80
–54	76.0	72.9	69.7	68.8	68.8	68.8	68.8
–50	76.7	73.6	70.3	69.5	69.5	69.5	69.5
–45	77.5	74.4	71.1	70.2	70.2	70.2	70.2
–40	78.4	75.2	71.9	71.0	71.0	71.0	71.0
–35	79.2	76.0	72.7	71.7	71.7	71.7	71.7
–30	80.0	76.8	73.4	72.5	72.5	72.5	72.5
–25	80.8	77.6	74.2	73.2	73.2	73.2	73.2
–20	81.6	78.4	74.9	73.9	73.9	73.9	73.9
–15	82.4	79.2	75.7	74.6	74.6	74.6	74.6
–10	83.2	79.9	76.4	75.3	75.3	75.3	75.3
–5	84.0	80.7	77.1	76.0	76.0	76.0	76.0
0	84.8	81.4	77.8	76.8	76.8	76.8	76.8
5	85.5	82.2	78.5	77.5	77.5	77.5	77.5
10	86.3	82.9	79.2	78.2	78.2	78.2	78.2
15	87.1	83.6	79.9	78.8	78.8	78.8	78.8
20	87.8	84.4	80.6	79.5	79.5	79.5	79.5
25	–	85.1	81.3	78.8	78.8	78.8	78.8
30	–	85.8	82.0	78.2	77.6	77.6	77.6
35	–	–	82.7	78.9	76.3	76.3	76.3
40	–	–	83.3	79.5	75.7	75.1	75.1
45	–	–	–	80.1	76.3	73.8	73.8
53	–	–	–	–	77.2	73.3	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_5000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 5000 ft <72211001D>
Figure 05–02B–114

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 6000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	18	28	38	48	58	68	78
–54	76.5	73.5	70.3	69.3	69.3	69.3	69.3
–50	77.2	74.2	70.9	70.0	70.0	70.0	70.0
–45	78.1	75.0	71.7	70.7	70.7	70.7	70.7
–40	78.9	75.8	72.5	71.5	71.5	71.5	71.5
–35	79.8	76.7	73.3	72.2	72.2	72.2	72.2
–30	80.6	77.5	74.0	73.0	73.0	73.0	73.0
–25	81.4	78.2	74.8	73.7	73.7	73.7	73.7
–20	82.2	79.0	75.6	74.5	74.5	74.5	74.5
–15	83.0	79.8	76.3	75.2	75.2	75.2	75.2
–10	83.8	80.6	77.0	75.9	75.9	75.9	75.9
–5	84.6	81.3	77.8	76.6	76.6	76.6	76.6
0	85.4	82.1	78.5	77.3	77.3	77.3	77.3
5	86.2	82.8	79.2	78.0	78.0	78.0	78.0
10	86.9	83.6	79.9	78.7	78.7	78.7	78.7
15	87.7	84.3	80.6	79.4	79.4	79.4	79.4
20	–	85.0	81.3	79.7	79.7	79.7	79.7
25	–	85.8	82.0	78.8	78.8	78.8	78.8
30	–	–	82.7	78.9	77.6	77.6	77.6
35	–	–	83.4	79.6	76.3	76.3	76.3
40	–	–	–	80.2	76.4	75.1	75.1
45	–	–	–	80.9	77.0	73.7	73.7
53	–	–	–	–	78.0	74.1	71.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_6000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 6000 ft <72211001D>
Figure 05–02B–115

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 8000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	14	24	34	44	54	64	74
–54	77.5	74.7	71.4	70.2	70.2	70.2	70.2
–50	78.2	75.4	72.0	70.8	70.8	70.8	70.8
–45	79.1	76.2	72.8	71.6	71.6	71.6	71.6
–40	80.0	77.0	73.6	72.4	72.4	72.4	72.4
–35	80.8	77.9	74.4	73.1	73.1	73.1	73.1
–30	81.7	78.7	75.2	73.9	73.9	73.9	73.9
–25	82.5	79.5	76.0	74.7	74.7	74.7	74.7
–20	83.3	80.3	76.7	75.4	75.4	75.4	75.4
–15	84.1	81.1	77.5	76.1	76.1	76.1	76.1
–10	84.9	81.8	78.2	76.8	76.8	76.8	76.8
–5	85.7	82.6	79.0	77.6	77.6	77.6	77.6
0	86.5	83.4	79.7	78.3	78.3	78.3	78.3
5	87.3	84.1	80.4	79.0	79.0	79.0	79.0
10	88.1	84.9	81.2	79.7	79.7	79.7	79.7
15	–	85.6	81.9	80.4	80.4	80.4	80.4
20	–	86.4	82.6	79.7	79.7	79.7	79.7
25	–	–	83.3	79.4	78.7	78.7	78.7
30	–	–	84.0	80.1	77.4	77.4	77.4
35	–	–	–	80.8	76.8	76.1	76.1
40	–	–	–	81.4	77.5	74.6	74.6
45	–	–	–	–	78.1	74.1	73.1
53	–	–	–	–	79.1	75.0	71.0

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_8000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 8000 ft <72211001D>
Figure 05–02B–116

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 10000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	10	20	30	40	50	60	70
–54	78.5	75.7	72.5	71.0	71.0	71.0	71.0
–50	79.2	76.4	73.2	71.6	71.6	71.6	71.6
–45	80.1	77.3	74.0	72.4	72.4	72.4	72.4
–40	81.0	78.1	74.8	73.2	73.2	73.2	73.2
–35	81.8	79.0	75.6	73.9	73.9	73.9	73.9
–30	82.7	79.8	76.4	74.7	74.7	74.7	74.7
–25	83.5	80.6	77.1	75.5	75.5	75.5	75.5
–20	84.3	81.4	77.9	76.2	76.2	76.2	76.2
–15	85.1	82.2	78.7	77.0	77.0	77.0	77.0
–10	86.0	83.0	79.4	77.7	77.7	77.7	77.7
–5	86.8	83.8	80.2	78.4	78.4	78.4	78.4
0	87.5	84.5	80.9	79.2	79.2	79.2	79.2
5	88.3	85.3	81.7	79.9	79.9	79.9	79.9
10	89.1	86.1	82.4	80.6	80.6	80.6	80.6
15	–	86.8	83.1	80.4	80.4	80.4	80.4
20	–	87.6	83.8	80.2	79.5	79.5	79.5
25	–	–	84.5	80.8	78.4	78.4	78.4
30	–	–	85.3	81.5	77.8	77.1	77.1
35	–	–	–	82.2	78.4	75.7	75.7
40	–	–	–	82.8	79.0	75.2	74.3
45	–	–	–	–	79.7	75.8	72.9
53	–	–	–	–	–	76.8	72.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_10000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 10000 ft <72211001D>
Figure 05–02B–117

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 12000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	6	16	26	36	46	56	66
–54	79.4	76.8	73.7	71.7	71.7	71.7	71.7
–50	80.1	77.5	74.4	72.3	72.3	72.3	72.3
–45	81.0	78.4	75.2	73.2	73.2	73.2	73.2
–40	81.9	79.2	76.0	74.0	74.0	74.0	74.0
–35	82.8	80.1	76.8	74.7	74.7	74.7	74.7
–30	83.6	80.9	77.6	75.5	75.5	75.5	75.5
–25	84.5	81.7	78.4	76.3	76.3	76.3	76.3
–20	85.3	82.5	79.2	77.0	77.0	77.0	77.0
–15	86.1	83.4	80.0	77.8	77.8	77.8	77.8
–10	87.0	84.2	80.8	78.5	78.5	78.5	78.5
–5	87.8	85.0	81.5	79.3	79.3	79.3	79.3
0	88.6	85.8	82.3	80.0	80.0	80.0	80.0
5	89.4	86.5	83.0	80.7	80.7	80.7	80.7
10	–	87.3	83.8	80.9	80.9	80.9	80.9
15	–	88.1	84.5	80.7	80.3	80.3	80.3
20	–	–	85.2	81.4	79.3	79.3	79.3
25	–	–	86.0	82.1	78.3	78.2	78.2
30	–	–	–	82.8	79.0	76.9	76.9
35	–	–	–	83.5	79.6	75.7	75.4
40	–	–	–	–	80.2	76.3	73.9
45	–	–	–	–	80.9	76.9	73.0
53	–	–	–	–	–	77.9	73.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_12000FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 12000 ft <72211001D>
Figure 05–02B–118

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 14500 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	1	11	21	31	41	51	61
–54	80.5	78.2	75.4	72.5	72.5	72.5	72.5
–50	81.2	78.9	76.1	73.2	73.2	73.2	73.2
–45	82.1	79.8	76.9	74.0	74.0	74.0	74.0
–40	83.0	80.7	77.8	74.8	74.8	74.8	74.8
–35	83.8	81.5	78.6	75.6	75.6	75.6	75.6
–30	84.7	82.4	79.4	76.4	76.4	76.4	76.4
–25	85.6	83.2	80.2	77.1	77.1	77.1	77.1
–20	86.4	84.0	81.0	77.9	77.9	77.9	77.9
–15	87.3	84.9	81.8	78.6	78.6	78.6	78.6
–10	88.1	85.7	82.6	79.4	79.4	79.4	79.4
–5	89.0	86.5	83.4	80.2	80.2	80.2	80.2
0	89.8	87.3	84.2	80.9	80.9	80.9	80.9
5	–	88.1	84.9	81.2	81.2	81.2	81.2
10	–	88.9	85.7	81.8	80.9	80.9	80.9
15	–	–	86.4	82.5	80.4	80.4	80.4
20	–	–	87.2	83.3	79.5	79.5	79.5
25	–	–	–	84.0	80.0	78.2	78.2
30	–	–	–	84.7	80.7	76.7	76.7
35	–	–	–	–	81.3	77.3	75.2
40	–	–	–	–	82.0	78.0	73.9
45	–	–	–	–	–	78.6	74.5
53	–	–	–	–	–	–	75.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61000/61000_14500FT_qrh_n1.ps

TO–1 FLEX – Engine bleeds closed – Pressure altitude 14500 ft <72211001D>
Figure 05–02B–119

U. Flexible N1 – TO-1 FLEX – Packs on, anti-ice off – PW1521G-3 <72211001D>

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = –2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	34	44	54	64	74	84	94
–54	69.4	66.0	63.8	63.8	63.8	63.8	63.8
–50	70.0	66.6	64.4	64.4	64.4	64.4	64.4
–45	70.8	67.3	65.1	65.1	65.1	65.1	65.1
–40	71.5	68.1	65.8	65.8	65.8	65.8	65.8
–35	72.3	68.8	66.5	66.5	66.5	66.5	66.5
–30	73.1	69.5	67.2	67.2	67.2	67.2	67.2
–25	73.8	70.2	67.8	67.8	67.8	67.8	67.8
–20	74.5	70.9	68.5	68.5	68.5	68.5	68.5
–15	75.3	71.6	69.2	69.2	69.2	69.2	69.2
–10	76.0	72.3	69.8	69.8	69.8	69.8	69.8
–5	76.7	73.0	70.5	70.5	70.5	70.5	70.5
0	77.4	73.7	71.2	71.2	71.2	71.2	71.2
5	78.2	74.3	71.8	71.8	71.8	71.8	71.8
10	78.8	75.0	72.4	72.4	72.4	72.4	72.4
15	79.5	75.7	73.1	73.1	73.1	73.1	73.1
20	80.2	76.3	73.7	73.7	73.7	73.7	73.7
25	80.9	77.0	74.4	74.4	74.4	74.4	74.4
30	81.6	77.6	75.0	75.0	75.0	75.0	75.0
35	–	78.2	74.4	73.5	73.5	73.5	73.5
40	–	78.9	75.0	72.1	72.1	72.1	72.1
45	–	–	75.6	71.7	70.6	70.6	70.6
53	–	–	76.6	72.6	69.1	68.8	68.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g-3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_-2000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude –2000 ft <72211001D>
Figure 05–02B–120

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = Sea Level

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	30	40	50	60	70	80	90
–54	71.7	68.2	66.1	66.1	66.1	66.1	66.1
–50	72.3	68.8	66.7	66.7	66.7	66.7	66.7
–45	73.1	69.6	67.4	67.4	67.4	67.4	67.4
–40	73.9	70.4	68.2	68.2	68.2	68.2	68.2
–35	74.7	71.1	68.9	68.9	68.9	68.9	68.9
–30	75.5	71.9	69.6	69.6	69.6	69.6	69.6
–25	76.3	72.6	70.3	70.3	70.3	70.3	70.3
–20	77.0	73.3	71.0	71.0	71.0	71.0	71.0
–15	77.8	74.0	71.7	71.7	71.7	71.7	71.7
–10	78.5	74.8	72.4	72.4	72.4	72.4	72.4
–5	79.3	75.5	73.0	73.0	73.0	73.0	73.0
0	80.0	76.2	73.7	73.7	73.7	73.7	73.7
5	80.8	76.9	74.4	74.4	74.4	74.4	74.4
10	81.5	77.5	75.0	75.0	75.0	75.0	75.0
15	82.2	78.2	75.7	75.7	75.7	75.7	75.7
20	82.9	78.9	76.4	76.4	76.4	76.4	76.4
25	83.6	79.6	77.0	77.0	77.0	77.0	77.0
30	84.3	80.2	76.5	76.0	76.0	76.0	76.0
35	–	80.9	77.1	74.6	74.6	74.6	74.6
40	–	81.5	77.7	74.0	73.3	73.3	73.3
45	–	–	78.4	74.5	71.7	71.7	71.7
53	–	–	–	75.5	72.0	69.5	69.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_SL_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude Sea level <72211001D>
Figure 05–02B–121

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 1000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	28	38	48	58	68	78	88
–54	72.3	68.9	66.7	66.7	66.7	66.7	66.7
–50	73.0	69.5	67.3	67.3	67.3	67.3	67.3
–45	73.8	70.3	68.0	68.0	68.0	68.0	68.0
–40	74.6	71.1	68.8	68.8	68.8	68.8	68.8
–35	75.4	71.8	69.5	69.5	69.5	69.5	69.5
–30	76.2	72.6	70.2	70.2	70.2	70.2	70.2
–25	77.0	73.3	70.9	70.9	70.9	70.9	70.9
–20	77.7	74.0	71.6	71.6	71.6	71.6	71.6
–15	78.5	74.8	72.3	72.3	72.3	72.3	72.3
–10	79.2	75.5	73.0	73.0	73.0	73.0	73.0
–5	80.0	76.2	73.7	73.7	73.7	73.7	73.7
0	80.7	76.9	74.4	74.4	74.4	74.4	74.4
5	81.5	77.6	75.0	75.0	75.0	75.0	75.0
10	82.2	78.3	75.7	75.7	75.7	75.7	75.7
15	82.9	79.0	76.4	76.4	76.4	76.4	76.4
20	83.6	79.7	77.1	77.1	77.1	77.1	77.1
25	84.3	80.3	77.3	77.3	77.3	77.3	77.3
30	–	81.0	77.1	76.0	76.0	76.0	76.0
35	–	81.7	77.8	74.6	74.6	74.6	74.6
40	–	–	78.4	74.6	73.2	73.2	73.2
45	–	–	79.0	75.2	71.7	71.7	71.7
53	–	–	–	76.2	72.5	69.4	69.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_1000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 1000 ft <72211001D>
Figure 05–02B–122

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	26	36	46	56	66	76	86
–54	73.0	69.6	67.3	67.3	67.3	67.3	67.3
–50	73.6	70.2	67.9	67.9	67.9	67.9	67.9
–45	74.4	71.0	68.6	68.6	68.6	68.6	68.6
–40	75.2	71.7	69.4	69.4	69.4	69.4	69.4
–35	76.0	72.5	70.1	70.1	70.1	70.1	70.1
–30	76.8	73.3	70.8	70.8	70.8	70.8	70.8
–25	77.6	74.0	71.5	71.5	71.5	71.5	71.5
–20	78.4	74.8	72.2	72.2	72.2	72.2	72.2
–15	79.2	75.5	73.0	73.0	73.0	73.0	73.0
–10	79.9	76.2	73.7	73.7	73.7	73.7	73.7
–5	80.7	76.9	74.3	74.3	74.3	74.3	74.3
0	81.4	77.7	75.0	75.0	75.0	75.0	75.0
5	82.2	78.4	75.7	75.7	75.7	75.7	75.7
10	82.9	79.1	76.4	76.4	76.4	76.4	76.4
15	83.7	79.8	77.1	77.1	77.1	77.1	77.1
20	84.4	80.5	77.7	77.7	77.7	77.7	77.7
25	85.1	81.1	77.3	77.3	77.3	77.3	77.3
30	–	81.8	77.8	75.9	75.9	75.9	75.9
35	–	82.5	78.4	74.7	74.5	74.5	74.5
40	–	–	79.0	75.3	73.1	73.1	73.1
45	–	–	79.7	75.9	72.0	71.6	71.6
53	–	–	–	76.8	72.9	69.2	69.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_2000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 2000 ft <72211001D>
Figure 05–02B–123

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 3000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	24	34	44	54	64	74	84
–54	73.6	70.2	67.8	67.8	67.8	67.8	67.8
–50	74.2	70.8	68.4	68.4	68.4	68.4	68.4
–45	75.0	71.6	69.2	69.2	69.2	69.2	69.2
–40	75.9	72.4	69.9	69.9	69.9	69.9	69.9
–35	76.7	73.1	70.7	70.7	70.7	70.7	70.7
–30	77.5	73.9	71.4	71.4	71.4	71.4	71.4
–25	78.3	74.7	72.1	72.1	72.1	72.1	72.1
–20	79.1	75.4	72.8	72.8	72.8	72.8	72.8
–15	79.8	76.2	73.5	73.5	73.5	73.5	73.5
–10	80.6	76.9	74.2	74.2	74.2	74.2	74.2
–5	81.4	77.6	74.9	74.9	74.9	74.9	74.9
0	82.1	78.3	75.6	75.6	75.6	75.6	75.6
5	82.9	79.0	76.3	76.3	76.3	76.3	76.3
10	83.6	79.8	77.0	77.0	77.0	77.0	77.0
15	84.3	80.5	77.7	77.7	77.7	77.7	77.7
20	85.1	81.2	78.3	78.3	78.3	78.3	78.3
25	–	81.8	77.7	77.2	77.2	77.2	77.2
30	–	82.5	78.4	75.8	75.8	75.8	75.8
35	–	–	79.0	75.2	74.4	74.4	74.4
40	–	–	79.7	75.8	73.0	73.0	73.0
45	–	–	–	76.4	72.6	71.4	71.4
53	–	–	–	77.4	73.5	69.5	69.0

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_3000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 3000 ft <72211001D>
Figure 05–02B–124

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 4000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	22	32	42	52	62	72	82
–54	74.2	70.8	68.3	68.3	68.3	68.3	68.3
–50	74.8	71.4	69.0	69.0	69.0	69.0	69.0
–45	75.7	72.2	69.7	69.7	69.7	69.7	69.7
–40	76.5	73.0	70.5	70.5	70.5	70.5	70.5
–35	77.3	73.8	71.2	71.2	71.2	71.2	71.2
–30	78.1	74.5	71.9	71.9	71.9	71.9	71.9
–25	78.9	75.3	72.7	72.7	72.7	72.7	72.7
–20	79.7	76.1	73.4	73.4	73.4	73.4	73.4
–15	80.5	76.8	74.1	74.1	74.1	74.1	74.1
–10	81.3	77.5	74.8	74.8	74.8	74.8	74.8
–5	82.0	78.3	75.5	75.5	75.5	75.5	75.5
0	82.8	79.0	76.2	76.2	76.2	76.2	76.2
5	83.6	79.7	76.9	76.9	76.9	76.9	76.9
10	84.3	80.4	77.6	77.6	77.6	77.6	77.6
15	85.0	81.2	78.3	78.3	78.3	78.3	78.3
20	85.8	81.8	78.3	78.3	78.3	78.3	78.3
25	–	82.5	78.3	77.1	77.1	77.1	77.1
30	–	83.2	79.0	75.7	75.7	75.7	75.7
35	–	–	79.6	75.8	74.3	74.3	74.3
40	–	–	80.3	76.4	72.8	72.8	72.8
45	–	–	–	77.0	73.1	71.3	71.3
53	–	–	–	–	74.0	70.0	68.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_4000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 4000 ft <72211001D>
Figure 05–02B–125

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 5000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	20	30	40	50	60	70	80
–54	74.7	71.4	68.9	68.9	68.9	68.9	68.9
–50	75.4	72.0	69.5	69.5	69.5	69.5	69.5
–45	76.3	72.8	70.2	70.2	70.2	70.2	70.2
–40	77.1	73.6	71.0	71.0	71.0	71.0	71.0
–35	77.9	74.4	71.8	71.8	71.8	71.8	71.8
–30	78.7	75.2	72.5	72.5	72.5	72.5	72.5
–25	79.5	75.9	73.2	73.2	73.2	73.2	73.2
–20	80.3	76.7	74.0	74.0	74.0	74.0	74.0
–15	81.1	77.5	74.7	74.7	74.7	74.7	74.7
–10	81.9	78.2	75.4	75.4	75.4	75.4	75.4
–5	82.7	78.9	76.1	76.1	76.1	76.1	76.1
0	83.4	79.7	76.8	76.8	76.8	76.8	76.8
5	84.2	80.4	77.5	77.5	77.5	77.5	77.5
10	85.0	81.1	78.2	78.2	78.2	78.2	78.2
15	85.7	81.8	78.9	78.9	78.9	78.9	78.9
20	86.4	82.5	78.3	78.2	78.2	78.2	78.2
25	–	83.2	79.0	77.0	77.0	77.0	77.0
30	–	83.9	79.7	75.8	75.6	75.6	75.6
35	–	–	80.3	76.4	74.2	74.2	74.2
40	–	–	81.0	77.0	73.2	72.8	72.8
45	–	–	–	77.6	73.8	71.1	71.1
53	–	–	–	–	74.7	70.8	68.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_5000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 5000 ft <72211001D>
Figure 05–02B–126

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 6000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	18	28	38	48	58	68	78
–54	75.3	71.9	69.4	69.4	69.4	69.4	69.4
–50	76.0	72.6	70.0	70.0	70.0	70.0	70.0
–45	76.8	73.4	70.8	70.8	70.8	70.8	70.8
–40	77.7	74.2	71.5	71.5	71.5	71.5	71.5
–35	78.5	75.0	72.3	72.3	72.3	72.3	72.3
–30	79.3	75.8	73.0	73.0	73.0	73.0	73.0
–25	80.1	76.5	73.8	73.8	73.8	73.8	73.8
–20	80.9	77.3	74.5	74.5	74.5	74.5	74.5
–15	81.7	78.1	75.2	75.2	75.2	75.2	75.2
–10	82.5	78.8	76.0	76.0	76.0	76.0	76.0
–5	83.3	79.6	76.7	76.7	76.7	76.7	76.7
0	84.1	80.3	77.4	77.4	77.4	77.4	77.4
5	84.8	81.0	78.1	78.1	78.1	78.1	78.1
10	85.6	81.8	78.8	78.8	78.8	78.8	78.8
15	86.3	82.5	79.2	79.2	79.2	79.2	79.2
20	–	83.2	79.1	78.1	78.1	78.1	78.1
25	–	83.9	79.7	76.9	76.9	76.9	76.9
30	–	–	80.4	76.4	75.5	75.5	75.5
35	–	–	81.1	77.0	74.0	74.0	74.0
40	–	–	–	77.6	73.8	72.6	72.6
45	–	–	–	78.2	74.4	71.0	71.0
53	–	–	–	–	75.3	71.5	68.7

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_6000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 6000 ft <72211001D>
Figure 05–02B–127

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 8000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	14	24	34	44	54	64	74
–54	76.4	73.1	70.2	70.2	70.2	70.2	70.2
–50	77.1	73.8	70.9	70.9	70.9	70.9	70.9
–45	77.9	74.6	71.6	71.6	71.6	71.6	71.6
–40	78.8	75.4	72.4	72.4	72.4	72.4	72.4
–35	79.6	76.2	73.2	73.2	73.2	73.2	73.2
–30	80.4	77.0	73.9	73.9	73.9	73.9	73.9
–25	81.3	77.8	74.7	74.7	74.7	74.7	74.7
–20	82.1	78.6	75.4	75.4	75.4	75.4	75.4
–15	82.9	79.3	76.2	76.2	76.2	76.2	76.2
–10	83.7	80.1	76.9	76.9	76.9	76.9	76.9
–5	84.5	80.9	77.6	77.6	77.6	77.6	77.6
0	85.3	81.6	78.3	78.3	78.3	78.3	78.3
5	86.0	82.4	79.1	79.1	79.1	79.1	79.1
10	86.8	83.1	79.8	79.8	79.8	79.8	79.8
15	–	83.8	79.7	78.9	78.9	78.9	78.9
20	–	84.5	80.4	77.9	77.9	77.9	77.9
25	–	–	81.1	77.1	76.6	76.6	76.6
30	–	–	81.7	77.7	75.1	75.1	75.1
35	–	–	–	78.3	74.4	73.6	73.6
40	–	–	–	79.0	75.0	72.0	72.0
45	–	–	–	–	75.6	71.7	70.5
53	–	–	–	–	76.6	72.6	68.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_8000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 8000 ft <72211001D>
Figure 05–02B–128

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 10000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	10	20	30	40	50	60	70
–54	77.4	74.1	71.0	71.0	71.0	71.0	71.0
–50	78.1	74.8	71.6	71.6	71.6	71.6	71.6
–45	79.0	75.6	72.4	72.4	72.4	72.4	72.4
–40	79.8	76.4	73.2	73.2	73.2	73.2	73.2
–35	80.7	77.2	74.0	74.0	74.0	74.0	74.0
–30	81.5	78.0	74.8	74.8	74.8	74.8	74.8
–25	82.3	78.8	75.5	75.5	75.5	75.5	75.5
–20	83.2	79.6	76.3	76.3	76.3	76.3	76.3
–15	84.0	80.4	77.0	77.0	77.0	77.0	77.0
–10	84.8	81.2	77.7	77.7	77.7	77.7	77.7
–5	85.6	81.9	78.5	78.5	78.5	78.5	78.5
0	86.4	82.7	79.2	79.2	79.2	79.2	79.2
5	87.2	83.5	79.9	79.9	79.9	79.9	79.9
10	88.0	84.2	80.1	79.5	79.5	79.5	79.5
15	–	84.9	80.8	78.7	78.7	78.7	78.7
20	–	85.7	81.5	77.8	77.5	77.5	77.5
25	–	–	82.2	78.4	76.0	76.0	76.0
30	–	–	82.9	79.1	75.3	74.6	74.6
35	–	–	–	79.7	76.0	73.0	73.0
40	–	–	–	80.4	76.6	72.8	71.6
45	–	–	–	–	77.2	73.3	70.1
53	–	–	–	–	–	74.2	70.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_10000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 10000 ft <72211001D>
Figure 05–02B–129

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 12000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	6	16	26	36	46	56	66
–54	78.3	75.1	71.8	71.8	71.8	71.8	71.8
–50	79.0	75.8	72.4	72.4	72.4	72.4	72.4
–45	79.9	76.7	73.2	73.2	73.2	73.2	73.2
–40	80.8	77.5	74.0	74.0	74.0	74.0	74.0
–35	81.6	78.3	74.8	74.8	74.8	74.8	74.8
–30	82.5	79.2	75.6	75.6	75.6	75.6	75.6
–25	83.3	80.0	76.3	76.3	76.3	76.3	76.3
–20	84.2	80.8	77.1	77.1	77.1	77.1	77.1
–15	85.0	81.5	77.8	77.8	77.8	77.8	77.8
–10	85.8	82.3	78.6	78.6	78.6	78.6	78.6
–5	86.6	83.1	79.3	79.3	79.3	79.3	79.3
0	87.4	83.9	80.0	80.0	80.0	80.0	80.0
5	88.2	84.7	80.8	79.9	79.9	79.9	79.9
10	–	85.4	81.5	79.3	79.3	79.3	79.3
15	–	86.2	82.2	78.4	78.4	78.4	78.4
20	–	–	82.9	78.9	77.0	77.0	77.0
25	–	–	83.6	79.6	75.7	75.7	75.7
30	–	–	–	80.2	76.4	74.1	74.1
35	–	–	–	80.9	77.0	73.1	72.6
40	–	–	–	–	77.6	73.7	71.0
45	–	–	–	–	78.2	74.3	70.3
53	–	–	–	–	–	75.2	71.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_12000FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 12000 ft <72211001D>
Figure 05–02B–130

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–1 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 14500 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	1	11	21	31	41	51	61
–54	79.5	76.8	73.2	72.6	72.6	72.6	72.6
–50	80.2	77.5	73.9	73.2	73.2	73.2	73.2
–45	81.1	78.3	74.7	74.0	74.0	74.0	74.0
–40	82.0	79.2	75.5	74.8	74.8	74.8	74.8
–35	82.8	80.0	76.3	75.6	75.6	75.6	75.6
–30	83.7	80.9	77.1	76.4	76.4	76.4	76.4
–25	84.5	81.7	77.9	77.2	77.2	77.2	77.2
–20	85.4	82.5	78.7	78.0	78.0	78.0	78.0
–15	86.2	83.3	79.5	78.7	78.7	78.7	78.7
–10	87.1	84.1	80.2	79.5	79.5	79.5	79.5
–5	87.9	84.9	81.0	80.2	80.2	80.2	80.2
0	88.7	85.7	81.7	80.2	80.2	80.2	80.2
5	–	86.5	82.5	79.8	79.8	79.8	79.8
10	–	87.3	83.2	79.2	79.2	79.2	79.2
15	–	–	83.9	79.9	78.2	78.2	78.2
20	–	–	84.7	80.5	76.8	76.8	76.8
25	–	–	–	81.2	77.3	75.2	75.2
30	–	–	–	81.9	77.9	73.9	73.7
35	–	–	–	–	78.6	74.5	72.2
40	–	–	–	–	79.2	75.2	71.1
45	–	–	–	–	–	75.8	71.7
53	–	–	–	–	–	–	72.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/61100/61100_14500FT_qrh_n1.ps

TO–1 FLEX – Packs on, anti–ice off – Pressure altitude 14500 ft <72211001D>
Figure 05–02B–131

V. Flexible N1 – TO-2 FLEX – Engine bleeds closed – PW1521G-3 <72211001D>

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = –2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	34	44	54	64	74	84	94
–54	68.1	65.0	63.8	63.8	63.8	63.8	63.8
–50	68.7	65.6	64.4	64.4	64.4	64.4	64.4
–45	69.4	66.3	65.1	65.1	65.1	65.1	65.1
–40	70.2	67.1	65.8	65.8	65.8	65.8	65.8
–35	70.9	67.8	66.5	66.5	66.5	66.5	66.5
–30	71.7	68.5	67.1	67.1	67.1	67.1	67.1
–25	72.4	69.2	67.8	67.8	67.8	67.8	67.8
–20	73.1	69.9	68.5	68.5	68.5	68.5	68.5
–15	73.8	70.6	69.1	69.1	69.1	69.1	69.1
–10	74.5	71.2	69.8	69.8	69.8	69.8	69.8
–5	75.2	71.9	70.5	70.5	70.5	70.5	70.5
0	75.9	72.6	71.1	71.1	71.1	71.1	71.1
5	76.6	73.2	71.8	71.8	71.8	71.8	71.8
10	77.3	73.9	72.4	72.4	72.4	72.4	72.4
15	78.0	74.6	73.0	73.0	73.0	73.0	73.0
20	78.7	75.2	73.7	73.7	73.7	73.7	73.7
25	79.3	75.8	74.3	74.3	74.3	74.3	74.3
30	80.0	76.5	74.9	74.9	74.9	74.9	74.9
35	–	77.1	75.3	75.3	75.3	75.3	75.3
40	–	77.7	74.0	74.0	74.0	74.0	74.0
45	–	–	74.3	72.7	72.7	72.7	72.7
53	–	–	75.2	71.8	70.9	70.9	70.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_–2000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude –2000 ft <72211001D>
Figure 05–02B–132

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = Sea Level

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	30	40	50	60	70	80	90
–54	70.3	67.2	66.1	66.1	66.1	66.1	66.1
–50	70.9	67.9	66.7	66.7	66.7	66.7	66.7
–45	71.7	68.6	67.4	67.4	67.4	67.4	67.4
–40	72.5	69.4	68.1	68.1	68.1	68.1	68.1
–35	73.2	70.1	68.8	68.8	68.8	68.8	68.8
–30	74.0	70.8	69.5	69.5	69.5	69.5	69.5
–25	74.7	71.6	70.2	70.2	70.2	70.2	70.2
–20	75.5	72.3	70.9	70.9	70.9	70.9	70.9
–15	76.2	73.0	71.6	71.6	71.6	71.6	71.6
–10	76.9	73.7	72.3	72.3	72.3	72.3	72.3
–5	77.7	74.4	73.0	73.0	73.0	73.0	73.0
0	78.4	75.1	73.7	73.7	73.7	73.7	73.7
5	79.1	75.8	74.3	74.3	74.3	74.3	74.3
10	79.8	76.4	75.0	75.0	75.0	75.0	75.0
15	80.5	77.1	75.7	75.7	75.7	75.7	75.7
20	81.2	77.8	76.3	76.3	76.3	76.3	76.3
25	81.9	78.4	77.0	77.0	77.0	77.0	77.0
30	82.6	79.1	77.6	77.6	77.6	77.6	77.6
35	–	79.7	76.5	76.5	76.5	76.5	76.5
40	–	80.4	76.7	75.2	75.2	75.2	75.2
45	–	–	77.3	74.0	74.0	74.0	74.0
53	–	–	–	74.9	71.8	71.8	71.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_SL_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude Sea level <72211001D>
Figure 05–02B–133

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 1000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	28	38	48	58	68	78	88
–54	70.9	67.8	66.7	66.7	66.7	66.7	66.7
–50	71.5	68.5	67.3	67.3	67.3	67.3	67.3
–45	72.3	69.2	68.0	68.0	68.0	68.0	68.0
–40	73.1	70.0	68.7	68.7	68.7	68.7	68.7
–35	73.9	70.7	69.5	69.5	69.5	69.5	69.5
–30	74.6	71.5	70.2	70.2	70.2	70.2	70.2
–25	75.4	72.2	70.9	70.9	70.9	70.9	70.9
–20	76.1	72.9	71.6	71.6	71.6	71.6	71.6
–15	76.9	73.6	72.3	72.3	72.3	72.3	72.3
–10	77.6	74.3	73.0	73.0	73.0	73.0	73.0
–5	78.3	75.0	73.7	73.7	73.7	73.7	73.7
0	79.1	75.7	74.3	74.3	74.3	74.3	74.3
5	79.8	76.4	75.0	75.0	75.0	75.0	75.0
10	80.5	77.1	75.7	75.7	75.7	75.7	75.7
15	81.2	77.8	76.4	76.4	76.4	76.4	76.4
20	81.9	78.5	77.0	77.0	77.0	77.0	77.0
25	82.6	79.1	77.7	77.7	77.7	77.7	77.7
30	–	79.8	77.7	77.7	77.7	77.7	77.7
35	–	80.5	76.8	76.5	76.5	76.5	76.5
40	–	–	77.5	75.2	75.2	75.2	75.2
45	–	–	78.1	74.5	74.0	74.0	74.0
53	–	–	–	75.4	71.8	71.8	71.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_1000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 1000 ft <72211001D>
Figure 05–02B–134

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	26	36	46	56	66	76	86
–54	71.5	68.4	67.3	67.3	67.3	67.3	67.3
–50	72.2	69.1	67.9	67.9	67.9	67.9	67.9
–45	73.0	69.8	68.6	68.6	68.6	68.6	68.6
–40	73.7	70.6	69.3	69.3	69.3	69.3	69.3
–35	74.5	71.3	70.1	70.1	70.1	70.1	70.1
–30	75.3	72.1	70.8	70.8	70.8	70.8	70.8
–25	76.0	72.8	71.5	71.5	71.5	71.5	71.5
–20	76.8	73.6	72.2	72.2	72.2	72.2	72.2
–15	77.5	74.3	72.9	72.9	72.9	72.9	72.9
–10	78.3	75.0	73.6	73.6	73.6	73.6	73.6
–5	79.0	75.7	74.3	74.3	74.3	74.3	74.3
0	79.8	76.4	75.0	75.0	75.0	75.0	75.0
5	80.5	77.1	75.7	75.7	75.7	75.7	75.7
10	81.2	77.8	76.4	76.4	76.4	76.4	76.4
15	81.9	78.5	77.0	77.0	77.0	77.0	77.0
20	82.7	79.2	77.7	77.7	77.7	77.7	77.7
25	83.3	79.8	78.4	78.4	78.4	78.4	78.4
30	–	80.5	77.7	77.7	77.7	77.7	77.7
35	–	81.2	77.6	76.5	76.5	76.5	76.5
40	–	–	78.2	75.2	75.2	75.2	75.2
45	–	–	78.8	75.0	74.0	74.0	74.0
53	–	–	–	75.9	72.0	71.6	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_2000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 2000 ft <72211001D>
Figure 05–02B–135

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 3000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	24	34	44	54	64	74	84
–54	72.1	69.0	67.8	67.8	67.8	67.8	67.8
–50	72.7	69.7	68.4	68.4	68.4	68.4	68.4
–45	73.5	70.4	69.2	69.2	69.2	69.2	69.2
–40	74.3	71.2	69.9	69.9	69.9	69.9	69.9
–35	75.1	72.0	70.6	70.6	70.6	70.6	70.6
–30	75.9	72.7	71.3	71.3	71.3	71.3	71.3
–25	76.6	73.5	72.1	72.1	72.1	72.1	72.1
–20	77.4	74.2	72.8	72.8	72.8	72.8	72.8
–15	78.2	74.9	73.5	73.5	73.5	73.5	73.5
–10	78.9	75.6	74.2	74.2	74.2	74.2	74.2
–5	79.7	76.3	74.9	74.9	74.9	74.9	74.9
0	80.4	77.1	75.6	75.6	75.6	75.6	75.6
5	81.1	77.8	76.3	76.3	76.3	76.3	76.3
10	81.8	78.5	77.0	77.0	77.0	77.0	77.0
15	82.6	79.2	77.6	77.6	77.6	77.6	77.6
20	83.3	79.8	78.3	78.3	78.3	78.3	78.3
25	–	80.5	78.8	78.8	78.8	78.8	78.8
30	–	81.2	77.7	77.7	77.7	77.7	77.7
35	–	–	78.2	76.5	76.5	76.5	76.5
40	–	–	78.9	75.2	75.2	75.2	75.2
45	–	–	–	75.6	73.9	73.9	73.9
53	–	–	–	76.6	72.7	71.6	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_3000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 3000 ft <72211001D>
Figure 05–02B–136

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 4000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	22	32	42	52	62	72	82
–54	72.6	69.6	68.3	68.3	68.3	68.3	68.3
–50	73.3	70.2	68.9	68.9	68.9	68.9	68.9
–45	74.1	71.0	69.7	69.7	69.7	69.7	69.7
–40	74.9	71.8	70.4	70.4	70.4	70.4	70.4
–35	75.7	72.6	71.2	71.2	71.2	71.2	71.2
–30	76.5	73.3	71.9	71.9	71.9	71.9	71.9
–25	77.2	74.1	72.6	72.6	72.6	72.6	72.6
–20	78.0	74.8	73.3	73.3	73.3	73.3	73.3
–15	78.8	75.5	74.1	74.1	74.1	74.1	74.1
–10	79.5	76.3	74.8	74.8	74.8	74.8	74.8
–5	80.3	77.0	75.5	75.5	75.5	75.5	75.5
0	81.0	77.7	76.2	76.2	76.2	76.2	76.2
5	81.8	78.4	76.9	76.9	76.9	76.9	76.9
10	82.5	79.1	77.6	77.6	77.6	77.6	77.6
15	83.2	79.8	78.2	78.2	78.2	78.2	78.2
20	83.9	80.5	78.9	78.9	78.9	78.9	78.9
25	–	81.2	78.8	78.8	78.8	78.8	78.8
30	–	81.9	78.3	77.7	77.7	77.7	77.7
35	–	–	78.9	76.4	76.4	76.4	76.4
40	–	–	79.6	75.7	75.2	75.2	75.2
45	–	–	–	76.3	73.8	73.8	73.8
53	–	–	–	–	73.3	71.5	71.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_4000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 4000 ft <72211001D>
Figure 05–02B–137

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 5000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	20	30	40	50	60	70	80
–54	73.2	70.2	68.8	68.8	68.8	68.8	68.8
–50	73.8	70.8	69.5	69.5	69.5	69.5	69.5
–45	74.7	71.6	70.2	70.2	70.2	70.2	70.2
–40	75.5	72.4	71.0	71.0	71.0	71.0	71.0
–35	76.3	73.2	71.7	71.7	71.7	71.7	71.7
–30	77.0	73.9	72.5	72.5	72.5	72.5	72.5
–25	77.8	74.7	73.2	73.2	73.2	73.2	73.2
–20	78.6	75.4	73.9	73.9	73.9	73.9	73.9
–15	79.4	76.2	74.6	74.6	74.6	74.6	74.6
–10	80.1	76.9	75.3	75.3	75.3	75.3	75.3
–5	80.9	77.6	76.0	76.0	76.0	76.0	76.0
0	81.6	78.4	76.8	76.8	76.8	76.8	76.8
5	82.4	79.1	77.5	77.5	77.5	77.5	77.5
10	83.1	79.8	78.2	78.2	78.2	78.2	78.2
15	83.8	80.5	78.8	78.8	78.8	78.8	78.8
20	84.6	81.2	79.5	79.5	79.5	79.5	79.5
25	–	81.9	78.8	78.8	78.8	78.8	78.8
30	–	82.5	79.0	77.6	77.6	77.6	77.6
35	–	–	79.6	76.3	76.3	76.3	76.3
40	–	–	80.2	76.4	75.1	75.1	75.1
45	–	–	–	77.0	73.8	73.8	73.8
53	–	–	–	–	74.1	71.6	71.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_5000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 5000 ft <72211001D>
Figure 05–02B–138

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 6000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	18	28	38	48	58	68	78
–54	73.7	70.8	69.3	69.3	69.3	69.3	69.3
–50	74.4	71.4	70.0	70.0	70.0	70.0	70.0
–45	75.2	72.2	70.7	70.7	70.7	70.7	70.7
–40	76.0	73.0	71.5	71.5	71.5	71.5	71.5
–35	76.8	73.8	72.2	72.2	72.2	72.2	72.2
–30	77.6	74.6	73.0	73.0	73.0	73.0	73.0
–25	78.4	75.3	73.7	73.7	73.7	73.7	73.7
–20	79.2	76.1	74.5	74.5	74.5	74.5	74.5
–15	79.9	76.8	75.2	75.2	75.2	75.2	75.2
–10	80.7	77.6	75.9	75.9	75.9	75.9	75.9
–5	81.5	78.3	76.6	76.6	76.6	76.6	76.6
0	82.2	79.0	77.3	77.3	77.3	77.3	77.3
5	83.0	79.7	78.0	78.0	78.0	78.0	78.0
10	83.7	80.5	78.7	78.7	78.7	78.7	78.7
15	84.4	81.2	79.4	79.4	79.4	79.4	79.4
20	–	81.9	79.7	79.7	79.7	79.7	79.7
25	–	82.6	79.0	78.8	78.8	78.8	78.8
30	–	–	79.6	77.6	77.6	77.6	77.6
35	–	–	80.3	76.5	76.3	76.3	76.3
40	–	–	–	77.1	75.1	75.1	75.1
45	–	–	–	77.7	73.9	73.7	73.7
53	–	–	–	–	74.8	71.5	71.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_6000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 6000 ft <72211001D>
Figure 05–02B–139

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 8000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	14	24	34	44	54	64	74
–54	74.7	71.9	70.2	70.2	70.2	70.2	70.2
–50	75.4	72.6	70.8	70.8	70.8	70.8	70.8
–45	76.2	73.4	71.6	71.6	71.6	71.6	71.6
–40	77.0	74.2	72.4	72.4	72.4	72.4	72.4
–35	77.8	75.0	73.1	73.1	73.1	73.1	73.1
–30	78.6	75.8	73.9	73.9	73.9	73.9	73.9
–25	79.4	76.5	74.7	74.7	74.7	74.7	74.7
–20	80.2	77.3	75.4	75.4	75.4	75.4	75.4
–15	81.0	78.1	76.1	76.1	76.1	76.1	76.1
–10	81.8	78.8	76.8	76.8	76.8	76.8	76.8
–5	82.5	79.6	77.6	77.6	77.6	77.6	77.6
0	83.3	80.3	78.3	78.3	78.3	78.3	78.3
5	84.0	81.0	79.0	79.0	79.0	79.0	79.0
10	84.8	81.8	79.7	79.7	79.7	79.7	79.7
15	–	82.5	80.4	80.4	80.4	80.4	80.4
20	–	83.2	79.7	79.7	79.7	79.7	79.7
25	–	–	80.1	78.7	78.7	78.7	78.7
30	–	–	80.8	77.4	77.4	77.4	77.4
35	–	–	–	77.6	76.1	76.1	76.1
40	–	–	–	78.2	74.6	74.6	74.6
45	–	–	–	–	74.8	73.1	73.1
53	–	–	–	–	75.8	71.8	70.7

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_8000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 8000 ft <72211001D>
Figure 05–02B–140

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 10000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	10	20	30	40	50	60	70
–54	75.6	73.0	71.0	71.0	71.0	71.0	71.0
–50	76.3	73.6	71.6	71.6	71.6	71.6	71.6
–45	77.1	74.5	72.4	72.4	72.4	72.4	72.4
–40	78.0	75.3	73.2	73.2	73.2	73.2	73.2
–35	78.8	76.1	73.9	73.9	73.9	73.9	73.9
–30	79.6	76.9	74.7	74.7	74.7	74.7	74.7
–25	80.4	77.7	75.5	75.5	75.5	75.5	75.5
–20	81.2	78.4	76.2	76.2	76.2	76.2	76.2
–15	82.0	79.2	77.0	77.0	77.0	77.0	77.0
–10	82.8	80.0	77.7	77.7	77.7	77.7	77.7
–5	83.5	80.7	78.4	78.4	78.4	78.4	78.4
0	84.3	81.5	79.2	79.2	79.2	79.2	79.2
5	85.1	82.2	79.9	79.9	79.9	79.9	79.9
10	85.8	82.9	80.6	80.6	80.6	80.6	80.6
15	–	83.7	80.4	80.4	80.4	80.4	80.4
20	–	84.4	80.7	79.5	79.5	79.5	79.5
25	–	–	81.4	78.4	78.4	78.4	78.4
30	–	–	82.1	78.3	77.1	77.1	77.1
35	–	–	–	79.0	75.7	75.7	75.7
40	–	–	–	79.6	75.8	74.3	74.3
45	–	–	–	–	76.4	72.9	72.9
53	–	–	–	–	–	73.5	70.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_10000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 10000 ft <72211001D>
Figure 05–02B–141

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 12000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	6	16	26	36	46	56	66
–54	76.5	74.0	71.7	71.7	71.7	71.7	71.7
–50	77.1	74.7	72.3	72.3	72.3	72.3	72.3
–45	78.0	75.5	73.2	73.2	73.2	73.2	73.2
–40	78.8	76.4	74.0	74.0	74.0	74.0	74.0
–35	79.7	77.2	74.7	74.7	74.7	74.7	74.7
–30	80.5	78.0	75.5	75.5	75.5	75.5	75.5
–25	81.3	78.8	76.3	76.3	76.3	76.3	76.3
–20	82.1	79.6	77.0	77.0	77.0	77.0	77.0
–15	82.9	80.3	77.8	77.8	77.8	77.8	77.8
–10	83.7	81.1	78.5	78.5	78.5	78.5	78.5
–5	84.5	81.9	79.3	79.3	79.3	79.3	79.3
0	85.3	82.7	80.0	80.0	80.0	80.0	80.0
5	86.0	83.4	80.7	80.7	80.7	80.7	80.7
10	–	84.2	80.9	80.9	80.9	80.9	80.9
15	–	84.9	81.4	80.3	80.3	80.3	80.3
20	–	–	82.1	79.3	79.3	79.3	79.3
25	–	–	82.8	79.0	78.2	78.2	78.2
30	–	–	–	79.6	76.9	76.9	76.9
35	–	–	–	80.3	76.4	75.4	75.4
40	–	–	–	–	77.0	73.9	73.9
45	–	–	–	–	77.6	73.7	72.3
53	–	–	–	–	–	74.6	70.6

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_12000FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 12000 ft <72211001D>
Figure 05–02B–142

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, ENGINE BLEEDS CLOSED

PRESSURE ALTITUDE = 14500 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	1	11	21	31	41	51	61
–54	77.4	75.3	72.7	72.5	72.5	72.5	72.5
–50	78.2	76.0	73.3	73.2	73.2	73.2	73.2
–45	79.0	76.9	74.2	74.0	74.0	74.0	74.0
–40	79.9	77.7	75.0	74.8	74.8	74.8	74.8
–35	80.7	78.5	75.8	75.6	75.6	75.6	75.6
–30	81.5	79.3	76.6	76.4	76.4	76.4	76.4
–25	82.4	80.2	77.3	77.1	77.1	77.1	77.1
–20	83.2	81.0	78.1	77.9	77.9	77.9	77.9
–15	84.0	81.8	78.9	78.6	78.6	78.6	78.6
–10	84.8	82.5	79.6	79.4	79.4	79.4	79.4
–5	85.6	83.3	80.4	80.2	80.2	80.2	80.2
0	86.4	84.1	81.1	80.9	80.9	80.9	80.9
5	–	84.9	81.9	81.2	81.2	81.2	81.2
10	–	85.6	82.6	80.9	80.9	80.9	80.9
15	–	–	83.3	80.4	80.4	80.4	80.4
20	–	–	84.1	80.1	79.5	79.5	79.5
25	–	–	–	80.8	78.2	78.2	78.2
30	–	–	–	81.5	77.5	76.7	76.7
35	–	–	–	–	78.1	75.2	75.2
40	–	–	–	–	78.8	74.7	73.7
45	–	–	–	–	–	75.3	72.2
53	–	–	–	–	–	–	72.1

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62000/62000_14500FT_qrh_n1.ps

TO–2 FLEX – Engine bleeds closed – Pressure altitude 14500 ft <72211001D>
Figure 05–02B–143

W. Flexible N1 – TO-2 FLEX – Packs on, anti-ice off – PW1521G-3 <72211001D>

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = –2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	34	44	54	64	74	84	94
–54	66.7	63.8	63.8	63.8	63.8	63.8	63.8
–50	67.3	64.4	64.4	64.4	64.4	64.4	64.4
–45	68.1	65.1	65.1	65.1	65.1	65.1	65.1
–40	68.8	65.8	65.8	65.8	65.8	65.8	65.8
–35	69.5	66.5	66.5	66.5	66.5	66.5	66.5
–30	70.3	67.2	67.2	67.2	67.2	67.2	67.2
–25	71.0	67.8	67.8	67.8	67.8	67.8	67.8
–20	71.7	68.5	68.5	68.5	68.5	68.5	68.5
–15	72.4	69.2	69.2	69.2	69.2	69.2	69.2
–10	73.1	69.8	69.8	69.8	69.8	69.8	69.8
–5	73.8	70.5	70.5	70.5	70.5	70.5	70.5
0	74.5	71.2	71.2	71.2	71.2	71.2	71.2
5	75.2	71.8	71.8	71.8	71.8	71.8	71.8
10	75.8	72.4	72.4	72.4	72.4	72.4	72.4
15	76.5	73.1	73.1	73.1	73.1	73.1	73.1
20	77.2	73.7	73.7	73.7	73.7	73.7	73.7
25	77.8	74.4	74.4	74.4	74.4	74.4	74.4
30	78.5	75.0	75.0	75.0	75.0	75.0	75.0
35	–	75.2	73.5	73.5	73.5	73.5	73.5
40	–	75.8	72.1	72.1	72.1	72.1	72.1
45	–	–	72.0	70.6	70.6	70.6	70.6
53	–	–	72.9	69.0	68.8	68.8	68.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_–2000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude –2000 ft <72211001D>
Figure 05–02B–144

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = Sea Level

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	30	40	50	60	70	80	90
–54	68.9	66.1	66.1	66.1	66.1	66.1	66.1
–50	69.6	66.7	66.7	66.7	66.7	66.7	66.7
–45	70.3	67.4	67.4	67.4	67.4	67.4	67.4
–40	71.1	68.2	68.2	68.2	68.2	68.2	68.2
–35	71.9	68.9	68.9	68.9	68.9	68.9	68.9
–30	72.6	69.6	69.6	69.6	69.6	69.6	69.6
–25	73.3	70.3	70.3	70.3	70.3	70.3	70.3
–20	74.1	71.0	71.0	71.0	71.0	71.0	71.0
–15	74.8	71.7	71.7	71.7	71.7	71.7	71.7
–10	75.5	72.4	72.4	72.4	72.4	72.4	72.4
–5	76.2	73.0	73.0	73.0	73.0	73.0	73.0
0	77.0	73.7	73.7	73.7	73.7	73.7	73.7
5	77.7	74.4	74.4	74.4	74.4	74.4	74.4
10	78.3	75.0	75.0	75.0	75.0	75.0	75.0
15	79.0	75.7	75.7	75.7	75.7	75.7	75.7
20	79.7	76.4	76.4	76.4	76.4	76.4	76.4
25	80.4	77.0	77.0	77.0	77.0	77.0	77.0
30	81.1	77.2	76.0	76.0	76.0	76.0	76.0
35	–	77.8	74.6	74.6	74.6	74.6	74.6
40	–	78.5	74.6	73.3	73.3	73.3	73.3
45	–	–	75.2	71.7	71.7	71.7	71.7
53	–	–	–	72.3	69.5	69.5	69.5

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g-3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_SL_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude Sea level <72211001D>
Figure 05–02B–145

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 1000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	28	38	48	58	68	78	88
–54	69.6	66.7	66.7	66.7	66.7	66.7	66.7
–50	70.2	67.3	67.3	67.3	67.3	67.3	67.3
–45	71.0	68.0	68.0	68.0	68.0	68.0	68.0
–40	71.8	68.8	68.8	68.8	68.8	68.8	68.8
–35	72.5	69.5	69.5	69.5	69.5	69.5	69.5
–30	73.3	70.2	70.2	70.2	70.2	70.2	70.2
–25	74.0	70.9	70.9	70.9	70.9	70.9	70.9
–20	74.8	71.6	71.6	71.6	71.6	71.6	71.6
–15	75.5	72.3	72.3	72.3	72.3	72.3	72.3
–10	76.2	73.0	73.0	73.0	73.0	73.0	73.0
–5	76.9	73.7	73.7	73.7	73.7	73.7	73.7
0	77.7	74.4	74.4	74.4	74.4	74.4	74.4
5	78.4	75.0	75.0	75.0	75.0	75.0	75.0
10	79.1	75.7	75.7	75.7	75.7	75.7	75.7
15	79.8	76.4	76.4	76.4	76.4	76.4	76.4
20	80.5	77.1	77.1	77.1	77.1	77.1	77.1
25	81.1	77.3	77.3	77.3	77.3	77.3	77.3
30	–	77.9	76.0	76.0	76.0	76.0	76.0
35	–	78.6	74.7	74.6	74.6	74.6	74.6
40	–	–	75.3	73.2	73.2	73.2	73.2
45	–	–	75.9	72.1	71.7	71.7	71.7
53	–	–	–	73.0	69.4	69.4	69.4

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g-3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_1000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 1000 ft <72211001D>
Figure 05–02B–146

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 2000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	26	36	46	56	66	76	86
–54	70.2	67.3	67.3	67.3	67.3	67.3	67.3
–50	70.8	67.9	67.9	67.9	67.9	67.9	67.9
–45	71.6	68.6	68.6	68.6	68.6	68.6	68.6
–40	72.4	69.4	69.4	69.4	69.4	69.4	69.4
–35	73.2	70.1	70.1	70.1	70.1	70.1	70.1
–30	73.9	70.8	70.8	70.8	70.8	70.8	70.8
–25	74.7	71.5	71.5	71.5	71.5	71.5	71.5
–20	75.4	72.2	72.2	72.2	72.2	72.2	72.2
–15	76.2	73.0	73.0	73.0	73.0	73.0	73.0
–10	76.9	73.7	73.7	73.7	73.7	73.7	73.7
–5	77.6	74.3	74.3	74.3	74.3	74.3	74.3
0	78.4	75.0	75.0	75.0	75.0	75.0	75.0
5	79.1	75.7	75.7	75.7	75.7	75.7	75.7
10	79.8	76.4	76.4	76.4	76.4	76.4	76.4
15	80.5	77.1	77.1	77.1	77.1	77.1	77.1
20	81.2	77.7	77.7	77.7	77.7	77.7	77.7
25	81.9	78.0	77.3	77.3	77.3	77.3	77.3
30	–	78.7	75.9	75.9	75.9	75.9	75.9
35	–	79.3	75.3	74.5	74.5	74.5	74.5
40	–	–	75.9	73.1	73.1	73.1	73.1
45	–	–	76.5	72.7	71.6	71.6	71.6
53	–	–	–	73.6	69.8	69.2	69.2

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g-3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_2000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 2000 ft <72211001D>
Figure 05–02B–147

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 3000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	24	34	44	54	64	74	84
–54	70.8	67.8	67.8	67.8	67.8	67.8	67.8
–50	71.4	68.4	68.4	68.4	68.4	68.4	68.4
–45	72.2	69.2	69.2	69.2	69.2	69.2	69.2
–40	73.0	69.9	69.9	69.9	69.9	69.9	69.9
–35	73.8	70.7	70.7	70.7	70.7	70.7	70.7
–30	74.6	71.4	71.4	71.4	71.4	71.4	71.4
–25	75.3	72.1	72.1	72.1	72.1	72.1	72.1
–20	76.1	72.8	72.8	72.8	72.8	72.8	72.8
–15	76.8	73.5	73.5	73.5	73.5	73.5	73.5
–10	77.6	74.2	74.2	74.2	74.2	74.2	74.2
–5	78.3	74.9	74.9	74.9	74.9	74.9	74.9
0	79.0	75.6	75.6	75.6	75.6	75.6	75.6
5	79.8	76.3	76.3	76.3	76.3	76.3	76.3
10	80.5	77.0	77.0	77.0	77.0	77.0	77.0
15	81.2	77.7	77.7	77.7	77.7	77.7	77.7
20	81.9	78.3	78.3	78.3	78.3	78.3	78.3
25	–	78.7	77.2	77.2	77.2	77.2	77.2
30	–	79.3	75.8	75.8	75.8	75.8	75.8
35	–	–	75.9	74.4	74.4	74.4	74.4
40	–	–	76.5	73.0	73.0	73.0	73.0
45	–	–	–	73.3	71.4	71.4	71.4
53	–	–	–	74.2	70.3	69.0	69.0

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_3000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 3000 ft <72211001D>
Figure 05–02B–148

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 4000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	22	32	42	52	62	72	82
–54	71.4	68.3	68.3	68.3	68.3	68.3	68.3
–50	72.0	69.0	69.0	69.0	69.0	69.0	69.0
–45	72.8	69.7	69.7	69.7	69.7	69.7	69.7
–40	73.6	70.5	70.5	70.5	70.5	70.5	70.5
–35	74.4	71.2	71.2	71.2	71.2	71.2	71.2
–30	75.2	71.9	71.9	71.9	71.9	71.9	71.9
–25	76.0	72.7	72.7	72.7	72.7	72.7	72.7
–20	76.7	73.4	73.4	73.4	73.4	73.4	73.4
–15	77.5	74.1	74.1	74.1	74.1	74.1	74.1
–10	78.2	74.8	74.8	74.8	74.8	74.8	74.8
–5	79.0	75.5	75.5	75.5	75.5	75.5	75.5
0	79.7	76.2	76.2	76.2	76.2	76.2	76.2
5	80.4	76.9	76.9	76.9	76.9	76.9	76.9
10	81.2	77.6	77.6	77.6	77.6	77.6	77.6
15	81.9	78.3	78.3	78.3	78.3	78.3	78.3
20	82.6	78.7	78.3	78.3	78.3	78.3	78.3
25	–	79.3	77.1	77.1	77.1	77.1	77.1
30	–	80.0	75.9	75.7	75.7	75.7	75.7
35	–	–	76.6	74.3	74.3	74.3	74.3
40	–	–	77.2	73.3	72.8	72.8	72.8
45	–	–	–	73.9	71.3	71.3	71.3
53	–	–	–	–	70.8	68.9	68.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g-3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_4000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 4000 ft <72211001D>
Figure 05–02B–149

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 5000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	20	30	40	50	60	70	80
–54	72.0	68.9	68.9	68.9	68.9	68.9	68.9
–50	72.6	69.5	69.5	69.5	69.5	69.5	69.5
–45	73.4	70.2	70.2	70.2	70.2	70.2	70.2
–40	74.2	71.0	71.0	71.0	71.0	71.0	71.0
–35	75.0	71.8	71.8	71.8	71.8	71.8	71.8
–30	75.8	72.5	72.5	72.5	72.5	72.5	72.5
–25	76.6	73.2	73.2	73.2	73.2	73.2	73.2
–20	77.3	74.0	74.0	74.0	74.0	74.0	74.0
–15	78.1	74.7	74.7	74.7	74.7	74.7	74.7
–10	78.8	75.4	75.4	75.4	75.4	75.4	75.4
–5	79.6	76.1	76.1	76.1	76.1	76.1	76.1
0	80.3	76.8	76.8	76.8	76.8	76.8	76.8
5	81.1	77.5	77.5	77.5	77.5	77.5	77.5
10	81.8	78.2	78.2	78.2	78.2	78.2	78.2
15	82.5	78.9	78.9	78.9	78.9	78.9	78.9
20	83.2	79.4	78.2	78.2	78.2	78.2	78.2
25	–	80.0	77.0	77.0	77.0	77.0	77.0
30	–	80.7	76.6	75.6	75.6	75.6	75.6
35	–	–	77.3	74.2	74.2	74.2	74.2
40	–	–	77.9	73.9	72.8	72.8	72.8
45	–	–	–	74.5	71.1	71.1	71.1
53	–	–	–	–	71.5	68.8	68.8

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_5000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 5000 ft <72211001D>
Figure 05–02B–150

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 6000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	18	28	38	48	58	68	78
–54	72.5	69.4	69.4	69.4	69.4	69.4	69.4
–50	73.2	70.0	70.0	70.0	70.0	70.0	70.0
–45	74.0	70.8	70.8	70.8	70.8	70.8	70.8
–40	74.8	71.5	71.5	71.5	71.5	71.5	71.5
–35	75.6	72.3	72.3	72.3	72.3	72.3	72.3
–30	76.4	73.0	73.0	73.0	73.0	73.0	73.0
–25	77.1	73.8	73.8	73.8	73.8	73.8	73.8
–20	77.9	74.5	74.5	74.5	74.5	74.5	74.5
–15	78.7	75.2	75.2	75.2	75.2	75.2	75.2
–10	79.4	76.0	76.0	76.0	76.0	76.0	76.0
–5	80.2	76.7	76.7	76.7	76.7	76.7	76.7
0	80.9	77.4	77.4	77.4	77.4	77.4	77.4
5	81.7	78.1	78.1	78.1	78.1	78.1	78.1
10	82.4	78.8	78.8	78.8	78.8	78.8	78.8
15	83.1	79.3	79.2	79.2	79.2	79.2	79.2
20	–	80.0	78.1	78.1	78.1	78.1	78.1
25	–	80.7	76.9	76.9	76.9	76.9	76.9
30	–	–	77.3	75.5	75.5	75.5	75.5
35	–	–	78.0	74.0	74.0	74.0	74.0
40	–	–	–	74.5	72.6	72.6	72.6
45	–	–	–	75.1	71.3	71.0	71.0
53	–	–	–	–	72.2	68.7	68.7

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_6000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 6000 ft <72211001D>
Figure 05–02B–151

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 8000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	14	24	34	44	54	64	74
–54	73.5	70.3	70.2	70.2	70.2	70.2	70.2
–50	74.2	71.0	70.9	70.9	70.9	70.9	70.9
–45	75.0	71.8	71.6	71.6	71.6	71.6	71.6
–40	75.8	72.5	72.4	72.4	72.4	72.4	72.4
–35	76.7	73.3	73.2	73.2	73.2	73.2	73.2
–30	77.5	74.1	73.9	73.9	73.9	73.9	73.9
–25	78.2	74.8	74.7	74.7	74.7	74.7	74.7
–20	79.0	75.6	75.4	75.4	75.4	75.4	75.4
–15	79.8	76.3	76.2	76.2	76.2	76.2	76.2
–10	80.6	77.1	76.9	76.9	76.9	76.9	76.9
–5	81.3	77.8	77.6	77.6	77.6	77.6	77.6
0	82.1	78.5	78.3	78.3	78.3	78.3	78.3
5	82.8	79.2	79.1	79.1	79.1	79.1	79.1
10	83.6	80.0	79.8	79.8	79.8	79.8	79.8
15	–	80.7	78.9	78.9	78.9	78.9	78.9
20	–	81.3	77.9	77.9	77.9	77.9	77.9
25	–	–	77.9	76.6	76.6	76.6	76.6
30	–	–	78.6	75.1	75.1	75.1	75.1
35	–	–	–	75.2	73.6	73.6	73.6
40	–	–	–	75.8	72.0	72.0	72.0
45	–	–	–	–	72.4	70.5	70.5
53	–	–	–	–	73.3	69.3	68.0

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_8000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 8000 ft <72211001D>
Figure 05–02B–152

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 10000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	10	20	30	40	50	60	70
–54	74.5	71.3	71.0	71.0	71.0	71.0	71.0
–50	75.2	72.0	71.6	71.6	71.6	71.6	71.6
–45	76.0	72.8	72.4	72.4	72.4	72.4	72.4
–40	76.9	73.5	73.2	73.2	73.2	73.2	73.2
–35	77.7	74.3	74.0	74.0	74.0	74.0	74.0
–30	78.5	75.1	74.8	74.8	74.8	74.8	74.8
–25	79.3	75.9	75.5	75.5	75.5	75.5	75.5
–20	80.1	76.6	76.3	76.3	76.3	76.3	76.3
–15	80.9	77.4	77.0	77.0	77.0	77.0	77.0
–10	81.7	78.1	77.7	77.7	77.7	77.7	77.7
–5	82.4	78.9	78.5	78.5	78.5	78.5	78.5
0	83.2	79.6	79.2	79.2	79.2	79.2	79.2
5	84.0	80.3	79.9	79.9	79.9	79.9	79.9
10	84.7	81.1	79.5	79.5	79.5	79.5	79.5
15	–	81.8	78.7	78.7	78.7	78.7	78.7
20	–	82.5	78.4	77.5	77.5	77.5	77.5
25	–	–	79.1	76.0	76.0	76.0	76.0
30	–	–	79.7	75.9	74.6	74.6	74.6
35	–	–	–	76.5	73.0	73.0	73.0
40	–	–	–	77.1	73.3	71.6	71.6
45	–	–	–	–	73.9	70.1	70.1
53	–	–	–	–	–	70.9	67.7

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_10000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 10000 ft <72211001D>
Figure 05–02B–153

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 12000 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	6	16	26	36	46	56	66
–54	75.4	72.4	71.8	71.8	71.8	71.8	71.8
–50	76.0	73.0	72.4	72.4	72.4	72.4	72.4
–45	76.9	73.8	73.2	73.2	73.2	73.2	73.2
–40	77.7	74.6	74.0	74.0	74.0	74.0	74.0
–35	78.6	75.4	74.8	74.8	74.8	74.8	74.8
–30	79.4	76.2	75.6	75.6	75.6	75.6	75.6
–25	80.2	77.0	76.3	76.3	76.3	76.3	76.3
–20	81.0	77.8	77.1	77.1	77.1	77.1	77.1
–15	81.8	78.5	77.8	77.8	77.8	77.8	77.8
–10	82.6	79.3	78.6	78.6	78.6	78.6	78.6
–5	83.4	80.0	79.3	79.3	79.3	79.3	79.3
0	84.1	80.8	80.0	80.0	80.0	80.0	80.0
5	84.9	81.5	79.9	79.9	79.9	79.9	79.9
10	–	82.2	79.3	79.3	79.3	79.3	79.3
15	–	83.0	79.1	78.4	78.4	78.4	78.4
20	–	–	79.8	77.0	77.0	77.0	77.0
25	–	–	80.5	76.4	75.7	75.7	75.7
30	–	–	–	77.1	74.1	74.1	74.1
35	–	–	–	77.7	73.8	72.6	72.6
40	–	–	–	–	74.4	71.0	71.0
45	–	–	–	–	75.0	71.0	69.5
53	–	–	–	–	–	71.9	67.9

/data/engperf/CSeries/Docs/QRH_FCOM_CS300_1521g–3/derivation/pw1524g_ba_v05r2_status/FLEX/62100/62100_12000FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 12000 ft <72211001D>
Figure 05–02B–154

THRUST SETTING – %N1

REDUCED THRUST TAKEOFF – STATIC to 30 KIAS

TO–2 FLEX, PACKS ON, ANTI–ICE OFF

PRESSURE ALTITUDE = 14500 FT

PW1521G–3

OAT	ASSUMED TEMPERATURE (°C)						
(°C)	1	11	21	31	41	51	61
–54	76.4	73.9	72.6	72.6	72.6	72.6	72.6
–50	77.1	74.6	73.2	73.2	73.2	73.2	73.2
–45	78.0	75.4	74.0	74.0	74.0	74.0	74.0
–40	78.8	76.2	74.8	74.8	74.8	74.8	74.8
–35	79.7	77.0	75.6	75.6	75.6	75.6	75.6
–30	80.5	77.8	76.4	76.4	76.4	76.4	76.4
–25	81.3	78.7	77.2	77.2	77.2	77.2	77.2
–20	82.1	79.4	78.0	78.0	78.0	78.0	78.0
–15	82.9	80.2	78.7	78.7	78.7	78.7	78.7
–10	83.7	81.0	79.5	79.5	79.5	79.5	79.5
–5	84.5	81.8	80.2	80.2	80.2	80.2	80.2
0	85.3	82.5	80.2	80.2	80.2	80.2	80.2
5	–	83.3	79.8	79.8	79.8	79.8	79.8
10	–	84.0	80.1	79.2	79.2	79.2	79.2
15	–	–	80.8	78.2	78.2	78.2	78.2
20	–	–	81.5	77.4	76.8	76.8	76.8
25	–	–	–	78.1	75.2	75.2	75.2
30	–	–	–	78.7	74.8	73.7	73.7
35	–	–	–	–	75.4	72.2	72.2
40	–	–	–	–	76.0	71.9	70.6
45	–	–	–	–	–	72.5	69.0
53	–	–	–	–	–	–	69.3

/data/engperf/CSerIes/Docs/QRH_FCOM_CS300_1521g–3/derIvatIon/pw1524g_ba_v05r2_status/FLEX/62100/62100_14500FT_qrh_n1.ps

TO–2 FLEX – Packs on, anti–ice off – Pressure altitude 14500 ft <72211001D>
Figure 05–02B–155

X. AEO departure gradient – PW1521G-3

AEO DEPARTURE GRADIENT				
PW1521G-3 - TO FLAP 3 ENGINE BLEEDS OFF APU OFF		PRESSURE ALTITUDE 0 FT WIND CALM		STILL AIR GRADIENT (%)
WEIGHT (KG)	ISA DEVIATION (˚C)			
	+10 & BELOW	+15	+20	+25
68000	8.3	7.4	6.5	5.6
65000	9.3	8.3	7.2	6.3
60000	10.1	9.0	7.9	6.9
55000	11.5	10.3	9.0	7.8
50000	13.3	11.9	10.4	9.1
45000	15.5	13.9	12.2	10.7
40000	18.6	16.7	14.7	12.8
CORRECTION (%)	Pressure Altitude per 1000 ft above SL		ECS ON	ALL A/I + ECS ON
	-0.8		-0.1	-1.7

300_21K_FCOM_v02_AEO_DEPARTURE_GRADIENT_MET

NOTE

Average gross gradient given from 35 FT to 10000 FT AAE based on:
Normal take-off procedure and flap retraction
TO thrust until FLAP 0 then MCL
Flap retraction starts at 1500 FT AAE
ECS ON from 1500 FT AAE
Climb at FLAP 0 flown at 250 KIAS

AEO departure gradient <Metric> and <72211001D>
Figure 05–02B–156

ENROUTE

A. Net level-off weight – PW1521G-3

NET LEVEL OFF WEIGHT				
PW1521G-3 - MCT ONE ENGINE INOPERATIVE CLEAN CONFIGURATION				WEIGHT (1000 KG)
	ALTITUDE (FT)	TEMPERATURE (°C)		
		ISA and below	ISA + 10	ISA + 20
ENGINE BLEEDS ON APU ON	28000	41.6	40.3	-
	26000	45.0	43.0	40.5
	24000	48.5	46.0	43.3
ENGINE BLEEDS OFF APU ON	22000	52.3	52.2	49.3
	20000	56.1	56.0	52.8
	18000	58.5	58.5	55.7
	16000	60.0	59.9	57.8
	14000	62.8	62.7	60.3
	12000	66.2	66.1	63.0
	10000	69.2	69.0	65.7

CS300_21K_FCOM_MET_v01_ENR Net level off weight

NOTE

Bleed air must be supplied by the engine above 23000 ft.

Net level–off weight <Metric> and <72211001D>
Figure 05–02B–157

LANDING

A. Runway length corrections – Dry and wet

WIND CORRECTED RUNWAY LENGTH - LDG					
PW1521G-3 FLAP 4		DRY RUNWAY ISA			CORR'D LENGTH (M)
RWY LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	920	1200	1270	1340	1410
1300	1010	1300	1370	1450	1530
1400	1100	1400	1480	1560	1640
1500	1190	1500	1590	1670	1760
1600	1280	1600	1690	1790	1870
1700	1370	1700	1800	1900	1990
1800	1460	1800	1900	2010	2100
1900	1550	1900	2000	2110	2210
2000	1650	2000	2100	2210	2310
2100	1740	2100	2210	2320	2420
2200	1830	2200	2310	2420	2530
2300	1920	2300	2410	2530	2640
2400	2010	2400	2520	2630	2750
2500	2100	2500	2620	2740	2850
2600	2190	2600	2720	2840	2960

CS300_21K_FCOM_MET_v02_LDG_Wind_Corr_F4_Dry

Landing – Wind corrected runway length – FLAP 4 – Dry <Metric> and <72211001D>
Figure 05–02B–158

WIND CORRECTED RUNWAY LENGTH - LDG					
PW1521G-3 FLAP 5		DRY RUNWAY ISA			CORR'D LENGTH (M)
RWY LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	950	1200	1270	1350	1410
1300	1030	1300	1380	1450	1520
1400	1110	1400	1480	1560	1640
1500	1190	1500	1580	1670	1750
1600	1270	1600	1690	1780	1860
1700	1370	1700	1790	1890	1970
1800	1460	1800	1900	2000	2090
1900	1550	1900	2000	2110	2200
2000	1650	2000	2100	2210	2310
2100	1740	2100	2210	2320	2420
2200	1830	2200	2310	2420	2530
2300	1920	2300	2410	2530	2650
2400	2010	2400	2520	2630	2760
2500	2100	2500	2620	2740	2870
2600	2200	2600	2720	2840	2980

CS300_21K_FCOM_MET_v02_LDG_Wind_Corr_F5_Dry

Landing – Wind corrected runway length – FLAP 5 – Dry <Metric> and <72211001D>

Figure 05–02B–159

WIND CORRECTED RUNWAY LENGTH - LDG					
PW1521G-3 FLAP 4		WET RUNWAY ISA			CORR'D LENGTH (M)
RWY LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	890	1200	1270	1340	1420
1300	980	1300	1370	1450	1530
1400	1070	1400	1480	1560	1650
1500	1160	1500	1590	1670	1760
1600	1260	1600	1690	1790	1880
1700	1350	1700	1800	1900	1990
1800	1440	1800	1910	2010	2110
1900	1530	1900	2010	2120	2220
2000	1620	2000	2120	2230	2340
2100	1710	2100	2220	2340	2450
2200	1800	2200	2320	2440	2550
2300	1890	2300	2420	2540	2660
2400	1980	2400	2520	2650	2770
2500	2070	2500	2630	2750	2880
2600	2160	2600	2730	2860	2990

CS300_21K_FCOM_MET_v02_LDG_Wind_Corr_F4_Wet

Landing – Wind corrected runway length – FLAP 4 – Wet <Metric> and <72211001D>
Figure 05–02B–160

WIND CORRECTED RUNWAY LENGTH - LDG					
PW1521G-3 FLAP 5		WET RUNWAY ISA			CORR'D LENGTH (M)
RWY LENGTH (M)	WIND (KTS)				
	TAILWIND	CALM	HEADWIND		
	-10.0	0.0	10.0	20.0	30.0
1200	950	1200	1280	1360	1420
1300	1030	1300	1380	1460	1530
1400	1110	1400	1490	1570	1650
1500	1190	1500	1590	1680	1760
1600	1270	1600	1690	1790	1870
1700	1350	1700	1800	1890	1980
1800	1430	1800	1900	2000	2100
1900	1520	1900	2010	2110	2210
2000	1620	2000	2110	2220	2320
2100	1710	2100	2220	2330	2430
2200	1800	2200	2320	2440	2550
2300	1890	2300	2420	2540	2660
2400	1990	2400	2520	2650	2770
2500	2080	2500	2630	2750	2880
2600	2170	2600	2730	2860	2990

CS300_21K_FCOM_MET_v02_LDG_Wind_Corr_F5_Wet

Landing – Wind corrected runway length – FLAP 5 – Wet <Metric> and <72211001D>

Figure 05–02B–161

B. Runway limited weight – Dry and wet – PW1521G-3

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 4 MANUAL LANDING	DRY RUNWAY ISA					LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	43.5	42.3	41.2	40.0	--	--	--
1400	48.1	46.7	45.4	44.1	42.9	40.5	--
1500	52.7	51.3	49.8	48.4	47.0	44.3	41.6
1600	57.2	55.5	53.9	52.4	50.9	48.0	45.1
1700	62.0	60.1	58.1	56.3	54.6	51.2	48.2
1800	66.8	64.7	62.7	60.6	58.6	54.9	51.5
1900	71.0	69.4	67.2	65.0	62.9	58.7	55.0
2000	71.0	70.6	69.6	68.4	67.1	62.7	58.6
2100	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2200	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2300	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2400	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2500	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2600	71.0	70.6	69.6	68.4	67.3	64.6	61.9

CS300_21K_FCOM_MET_v03_LDG Rwy Limited weight_F4_DRY

Landing – Runway limited weight – FLAP 4 – Manual landing – Dry <Metric> and <72211001D>

Figure 05–02B–162

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 4 MANUAL LANDING		WET RUNWAY ISA				LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	--	--	--	--	--	--	--
1400	39.7	--	--	--	--	--	--
1500	43.7	42.5	41.4	40.2	39.1	--	--
1600	47.6	46.3	45.0	43.7	42.5	40.2	--
1700	51.7	50.3	48.9	47.5	46.1	43.4	40.8
1800	55.5	54.0	52.5	51.0	49.5	46.7	43.9
1900	59.7	57.8	56.1	54.3	52.7	49.6	46.7
2000	63.9	61.9	59.9	57.9	56.1	52.7	49.4
2100	68.1	66.0	63.8	61.7	59.7	55.9	52.4
2200	71.0	69.9	67.8	65.6	63.4	59.3	55.4
2300	71.0	70.6	69.6	68.4	67.1	62.7	58.6
2400	71.0	70.6	69.6	68.4	67.3	64.6	61.8
2500	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2600	71.0	70.6	69.6	68.4	67.3	64.6	61.9

CS300_21K_FCOM_MET_v03_LDG Rwy Limited weight_F4_WET

Landing – Runway limited weight – FLAP 4 – Manual landing – Wet <Metric> and <72211001D>

Figure 05–02B–163

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 5 MANUAL LANDING		DRY RUNWAY ISA				LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	43.7	42.5	41.3	--	--	--	--
1300	48.7	47.4	46.1	44.8	43.6	41.1	--
1400	53.9	52.5	51.0	49.5	48.1	45.3	42.7
1500	59.2	57.5	55.9	54.3	52.8	49.8	46.9
1600	65.6	63.5	61.5	59.5	57.5	54.0	50.9
1700	66.9	66.0	65.0	63.9	62.3	58.2	54.5
1800	66.9	66.0	65.0	63.9	62.9	60.3	57.5
1900	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2000	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2100	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2200	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2300	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2400	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2500	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2600	66.9	66.0	65.0	63.9	62.9	60.3	57.5

CS300_21K_FCOM_MET_v03_LDG Rwy Limited weight_F5_DRY

Landing – Runway limited weight – FLAP 5 – Manual landing – Dry <Metric> and <72211001D>

Figure 05–02B–164

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 5 MANUAL LANDING		WET RUNWAY ISA				LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	--	--	--	--	--	--	--
1400	44.6	43.4	42.2	--	--	--	--
1500	48.9	47.6	46.3	45.0	43.7	41.3	--
1600	53.5	52.0	50.6	49.1	47.7	44.9	42.4
1700	58.0	56.4	54.9	53.3	51.8	48.8	46.0
1800	63.3	61.4	59.4	57.5	55.8	52.6	49.5
1900	66.9	66.0	64.2	62.1	60.0	56.2	52.7
2000	66.9	66.0	65.0	63.9	62.9	60.0	56.0
2100	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2200	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2300	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2400	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2500	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2600	66.9	66.0	65.0	63.9	62.9	60.3	57.5

CS300_21K_FCOM_MET_v03_LDG Rwy Limited weight_F5_WET

Landing – Runway limited weight – FLAP 5 – Manual landing – Wet <Metric> and <72211001D>

Figure 05–02B–165

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 4 AUTOLAND ON		DRY RUNWAY ISA ILS GS 3.00° TCH 50'				LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	--	--	--	--	--	--	--
1400	42.9	41.7	40.5	39.3	–	--	–
1500	47.2	45.9	44.5	43.2	41.9	39.4	--
1600	51.6	50.1	48.6	47.2	45.8	43.0	40.4
1700	56.0	54.4	52.7	51.0	49.4	46.5	43.7
1800	60.9	58.9	57.0	55.2	53.5	50.1	46.9
1900	65.9	63.8	61.7	59.6	57.6	54.0	50.5
2000	70.8	68.6	66.4	64.2	62.0	57.9	54.2
2100	71.0	70.6	69.6	68.4	66.5	62.0	57.8
2200	71.0	70.6	69.6	68.4	67.3	64.6	61.7
2300	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2400	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2500	71.0	70.6	69.6	68.4	67.3	64.6	61.9
2600	71.0	70.6	69.6	68.4	67.3	64.6	61.9
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50'		PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		-6		-13		+8	

CS300_21K_FCOM_MET_v01_LDG Rwy Limited weight_ATLND_F4_DRY

NOTE

ILS GS and TCH corrections must be applied on corrected runway length

Landing – Runway limited weight – FLAP 4 – Autoland on – Dry <Metric> and <72211001D>

Figure 05–02B–166

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 4 AUTOLAND ON		WET RUNWAY ISA ILS GS 3.00° TCH 50'				LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	--	--	--	--	--	--	--
1400	--	--	--	--	--	--	--
1500	--	--	--	--	--	--	--
1600	--	--	--	--	--	--	--
1700	41.9	40.6	39.3	--	--	--	--
1800	44.8	43.5	42.1	40.8	39.4	--	--
1900	47.8	46.4	44.9	43.5	42.0	39.3	--
2000	50.7	49.2	47.7	46.1	44.6	41.8	--
2100	53.6	52.0	50.4	48.7	47.1	44.1	41.1
2200	56.3	54.6	52.9	51.2	49.5	46.3	43.3
2300	59.1	57.3	55.5	53.7	51.9	48.6	45.4
2400	62.0	60.0	58.1	56.1	54.3	50.8	47.5
2500	64.8	62.8	60.7	58.6	56.7	53.0	49.5
2600	67.7	65.5	63.4	61.2	59.1	55.2	51.6
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50'		PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		-6		-13		+8	

CS300_21K_FCOM_MET_v01_LDG Rwy Limited weight_ATLND_F4_WET

NOTE

ILS GS and TCH corrections must be applied on corrected runway length

Landing – Runway limited weight – FLAP 4 – Autoland on – Wet <Metric> and <72211001D>

Figure 05–02B–167

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 5 AUTOLAND ON	DRY RUNWAY ISA ILS GS 3.00° TCH 50'					LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	43.5	42.3	39.9	--	--	--	--
1400	48.2	46.8	45.5	44.1	42.8	--	--
1500	53.1	51.6	50.1	48.6	47.1	44.3	41.6
1600	58.2	56.4	54.7	53.0	51.5	48.4	45.5
1700	64.1	62.0	60.0	58.0	56.1	52.6	49.3
1800	66.9	66.0	65.0	63.1	61.0	56.9	53.3
1900	66.9	66.0	65.0	63.9	62.9	60.3	57.4
2000	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2100	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2200	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2300	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2400	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2500	66.9	66.0	65.0	63.9	62.9	60.3	57.5
2600	66.9	66.0	65.0	63.9	62.9	60.3	57.5
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50'		PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		-6		-13		+8	

CS300_21K_FCOM_MET_v01_LDG Rwy Limited weight_ATLND_F5_DRY

NOTE

ILS GS and TCH corrections must be applied on corrected runway length

Landing – Runway limited weight – FLAP 5 – Autoland on – Dry <Metric> and <72211001D>

Figure 05–02B–168

RUNWAY LIMITED WEIGHT - LDG							
PW1521G-3 FLAP 5 AUTOLAND ON		WET RUNWAY ISA ILS GS 3.00° TCH 50'				LANDING WEIGHT (1000 KG)	
CORR'D RWY LENGTH (M)	PRESSURE ALTITUDE (FT)						
	0	1000	2000	3000	4000	6000	8000
1200	--	--	--	--	--	--	--
1300	--	--	--	--	--	--	--
1400	--	--	--	--	--	--	--
1500	--	--	--	--	--	--	--
1600	44.2	42.8	41.5	--	--	--	--
1700	47.6	46.1	44.7	43.2	41.8	--	--
1800	50.9	49.4	47.9	46.3	44.8	41.9	--
1900	54.3	52.6	51.0	49.4	47.8	44.7	41.7
2000	57.6	55.9	54.2	52.4	50.7	47.5	44.3
2100	61.1	59.2	57.3	55.4	53.6	50.2	46.9
2200	64.6	62.6	60.6	58.5	56.5	52.9	49.4
2300	66.9	65.8	63.7	61.5	59.4	55.4	51.8
2400	66.9	66.0	65.0	63.9	62.2	58.0	54.1
2500	66.9	66.0	65.0	63.9	62.9	60.3	56.5
2600	66.9	66.0	65.0	63.9	62.9	60.3	57.5
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50'		PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		-6		-13		+8	

CS300_21K_FCOM_MET_v01_LDG Rwy Limited weight_ATLND_F5_WET

NOTE

ILS GS and TCH corrections must be applied on corrected runway length

Landing – Runway limited weight – FLAP 5 – Autoland on – Wet <Metric> and <72211001D>

Figure 05–02B–169

C. Approach/landing climb limited weight – PW1521G-3

APPROACH / LANDING CLIMB LIMITED WEIGHT									
PW1521G-3 - TO FLAP 4 ENGINE BLEEDS OFF APU ON									LANDING WEIGHT (1000 KG)
PRESSURE ALTITUDE (FT)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
0	71.0	71.0	71.0	71.0	71.0	71.0	71.0	70.8	63.9
1000	70.6	70.6	70.6	70.5	70.5	70.3	70.2	68.6	61.8
2000	69.5	69.5	69.5	69.4	69.3	69.2	69.1	66.3	59.6
3000	68.3	68.3	68.3	68.2	68.2	68.1	68.0	64.0	57.6
4000	67.2	67.2	67.2	67.1	67.1	67.0	66.8	61.8	55.5
6000	64.5	64.5	64.5	64.5	64.4	64.3	63.2	57.4	51.5
8000	61.7	61.7	61.7	61.7	61.6	61.5	58.5	53.0	47.4

CORRECTION		COWL A/I ON	ALL A/I ON
LANDING WEIGHT (1000 KG)	NO ICE ACCUMULATION	-6.6	-11.0
	WITH ICE ACCUMULATION	-9.1	-13.3

CS300_21K_FCOM_MET_v02_APPCL Weight_F4

Approach/landing climb limited weight – FLAP 4 <Metric> and <72211001D>
Figure 05–02B–170

APPROACH / LANDING CLIMB LIMITED WEIGHT									
PW1521G-3 - TO FLAP 5 ENGINE BLEEDS OFF APU ON								LANDING WEIGHT (1000 KG)	
PRESSURE ALTITUDE (FT)	TEMPERATURE (°C)								
	-40	-30	-20	-10	0	10	20	30	40
0	67.0	67.0	67.0	67.0	66.9	66.8	66.6	66.5	59.5
1000	66.0	66.0	66.0	66.0	65.9	65.8	65.6	64.2	57.5
2000	65.0	65.0	65.0	65.0	64.9	64.8	64.6	62.0	55.5
3000	63.9	63.9	63.9	63.9	63.8	63.7	63.6	59.7	53.6
4000	62.9	62.9	62.8	62.8	62.7	62.6	62.5	57.6	51.7
6000	60.3	60.3	60.3	60.2	60.2	60.1	59.0	53.4	47.9
8000	57.4	57.4	57.4	57.3	57.3	57.2	54.5	49.3	44.1
CORRECTION				COWL A/I ON			ALL A/I ON		
LANDING WEIGHT (1000 KG)	NO ICE ACCUMULATION			-4.3			-8.7		
	WITH ICE ACCUMULATION			-7.9			-11.9		

CS300_21K_FCOM_MET_v02_APPCL Weight_F5

Approach/landing climb limited weight – FLAP 5 <Metric> and <72211001D>
Figure 05–02B–171

D. Landing – Quick turn-around weight

(1) BTMS operative

- Maximum kinetic energy for RTO and landing:

  The procedure that follows must be done 15 minutes after a stop or when the temperatures have peaked:

  1. All BTMS digits within the GREEN band (digit 6 or lower):

No brake energy limitations.

2. BTMS reading in the WHITE band (7 to 14):

   Allow the brakes to cool down within the green band.

3. BTMS reading in RED band:

   No dispatch, cool down the brakes and do a wheel inspection.

- Landing gear maximum BTMS temperature for gear retraction:

  Maximum brake temperature (BTMS) for gear retraction is BTMS digit 07 and decreasing.

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INTRODUCTION

The flight planning section provides sufficient data to plan a complete mission under limited conditions if no other means are available. This section includes integrated flight planning tables for a quick determination of total fuel for flight. It also includes tables with individual segment-by-segment data.

The examples in this section show the steps to determine:

Total fuel for flight:

- Flight planning – Fuel reserves
- Flight planning to alternate
- Holding
- Simplified flight planning
- Total fuel for flight planning

Segment-by-segment data:

- Recommended and optimum altitude
- Climb
- Cruise (based on LRC and 0.78M)
- Descent
- Go-around

NOTE

The charts used in the examples are for illustrative purposes only and may not represent the actual performance of the aircraft. Always use the appropriate charts to execute the performance calculation.

Allowances for fuel consumption during taxi and for APU use are provided in the Allowances and corrections factors section. The same section provides corrections applicable to fuel consumption for CG position other than the reference 27% and for anti-ice use.

EXAMPLE – TOTAL FUEL FOR FLIGHT

A. Flight planning – Fuel reserves

To determine the total fuel required, the reserve fuel must be calculated and added to the simplified flight planning fuel.

Fuel reserves are composed of fuel to alternate plus holding fuel, as discussed in the paragraphs that follow.

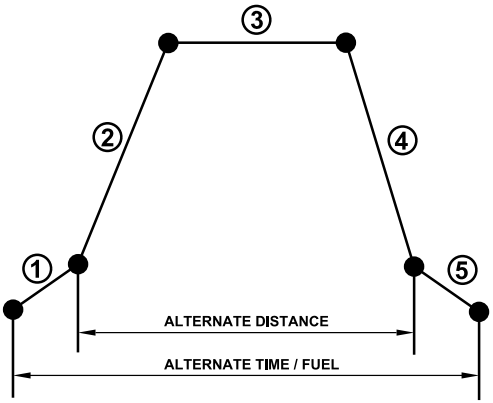
NOTE

Reserve may include additional fuel (e.g. contingency fuel).

B. Flight planning to alternate <Metric>

The Flight planning to alternate tables (refer to Flight planning to alternate) are used to calculate the fuel and time needed to reach the alternate airport, based on the profile as shown in figure Figure 05–03–1.

The profile includes go-around and acceleration from a sea level airport to 1500 ft AGL, climb, cruise, descent, approach and landing from 1500 ft AGL down to sea level.



LEGEND:

1. Go–around and acceleration (to 1500 ft)
2. Climb
3. Cruise
4. Descent
5. Approach and landing (from 1500 ft)

Profile to alternate <Metric>
Figure 05–03–1

NOTE

APU fuel, taxi fuel and holding fuel are not included in the fuel to alternate.

The fuel, time and associated flight level are found at the intersection of the alternate landing weight and the air distance to the alternate airport.

NOTE

Alternate landing weight = ZFW + contingency fuel (if applicable).

To account for average winds, still air distance (ground distance) must be adjusted to corrected air distance (refer to Ground to air distance) before entering the table.

Example:

Conditions:

- Ground distance to alternate = 75 nm
- Headwind = 0 kts
- Corrected air distance to alternate = 75 nm
- Alternate landing weight = 44000 kg
- Temperature = ISA

Use the Flight planning to alternate table (refer to Figure 05–03–2).

FLIGHT PLANNING TO ALTERNATE												
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				--		FUEL (KG)			
							FL		TIME (MIN)			
ALTERNATE LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE TO ALTERNATE (NM)											
	50		75		100		125		150			
40000	--	471	--	602	--	722	--	837	--	945		
	140	16	200	20	250	24	290	27	310	30		
42000	--	478	--	611	--	732	--	848	--	954		
	140	16	190	20	240	24	280	27	300	31		
44000	--	483	--	620	--	743	--	860	--	972		
	130	16	190	20	230	24	270	27	300	31		
46000	--	490	--	629	--	755	--	872	--	986		
	130	16	180	20	230	24	260	28	290	31		
48000	--	496	--	638	--	766	--	888	--	1006		
	120	16	180	20	220	24	260	28	290	31		

Example – Flight planning to alternate <Metric>
Figure 05–03–2

Result:

- Fuel to alternate = 620 kg
- Time to alternate = 20 min
- Flight level = FL190

C. Holding <Metric>

The Holding – AEO tables (refer to Holding) are used to calculate the recommended holding speed and associated fuel flow.

The holding speed and fuel flow are found at the intersection of the selected flight level and gross weight.

Example:

Conditions:

- Racetrack holding pattern for 30 min at 1500 ft
- Gross weight (from previous step) = 44000 + 620 = 44620 kg

Use the Holding – AEO table (refer to Figure 05–03–3).

HOLDING - AEO						
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON RACETRACK PATTERN			ISA CG 27% MAC		HOLDING SPEED (KIAS) TOTAL FUEL FLOW (KG/MIN)	
FL	GROSS WEIGHT (KG)					
	35000	40000	45000	50000	55000	60000
15	174	187	199	211	221	231
	20	22	25	27	29	32
50	175	188	201	211	221	231
	19	22	24	27	29	31
100	176	189	200	211	222	233
	19	21	24	26	29	31
150	177	190	202	213	224	234
	18	21	23	25	28	30
200	178	191	203	214	225	235
	18	20	23	25	27	30
250	179	192	205	216	227	237
	18	20	22	25	27	30
300	180	193	206	216	226	238
	17	20	22	25	27	30
CORRECTION	COWL A/I ON			ALL A/I ON		
TOTAL FUEL FLOW	5%			10%		

NOTE

In a linear holding
reduce the Fuel Flow by 5%

Example – Holding – AEO <Metric>
Figure 05–03–3

Result:

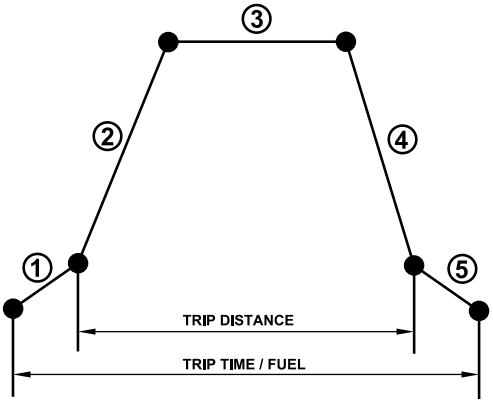
- Fuel flow = 25 kg/min

Conclusion:

Fuel to be used in holding = 30 min × 25 kg/min = 750 kg

D. Simplified flight planning <Metric>

The Simplified flight planning tables (refer to Simplified flight planning) are used to calculate the trip fuel and time, from brake release to touchdown at the destination airport, based on a mission profile as shown in Figure 05–03–4. It includes takeoff and acceleration from sea level up to 1500 ft AGL, climb, cruise, descent, approach and landing from 1500 ft AGL down to sea level.



LEGEND:

1. Takeoff and acceleration (to 1500 ft)
2. Climb
3. Cruise
4. Descent
5. Approach and landing (from 1500 ft)

Mission profile <Metric>
Figure 05–03–4

The trip fuel and time is found at the intersection of the air distance, selected flight level and applicable weight.

To account for average winds, ground distance must be corrected to air distance before entering the table.

Example:

Conditions:

- Temperature = ISA

- Climb schedule = 250/275 KIAS/0.78M
- Cruise speed = 0.78M
- Cruise altitude = 39000 ft (FL390)
- Descent schedule = 0.78M/275/250 KIAS
- Trip distance (ground distance) = 1800 nm
- Headwind = 30 kts

Use the Ground-to-air distance graph (refer to Conversion data – Ground-to-air distance) to correct the ground distance.

- Corrected air distance = 1936 nm

Next step conditions:

- Flight level = FL390
- Air distance = 1936 nm
- Landing weight = 44620 + 750 = 45370 kg

Use the Simplified flight planning table (refer to Figure 05–03–5) to calculate trip fuel and time.

SIMPLIFIED FLIGHT PLANNING

ALL ENGINES OPERATIVE	ISA CG 27% MAC	FUEL (KG) TIME (MIN)

CRUISE SPEED	CLIMB SCHEDULE	DESCENT SCHEDULE
0.78M	250KIAS / 275KIAS / 0.78M	0.78M / 275KIAS / 250KIAS

LANDING WEIGHT (KG)	FL	CORRECTED AIR DISTANCE (NM)							
		1800	2000	2200	2400	2600	2800	3000	3200
40000	290	8791 245	9750 272	10714 298	11681 324	12653 350	13629 376	14610 402	15597 427
	350	7408 251	8201 278	8999 395	9802 332	10610 358	11422 385	12240 412	13062 438
	390	6781 252	7499 279	8223 306	8952 333	9688 360	10429 387	11177 414	11931 440
45000	290	8979 246	9962 272	10951 298	11944 324	12943 351	13945 376	-- --	-- --
	350	7674 251	8499 279	9330 305	10169 332	11014 359	11864 386	12720 412	13582 439
	390	7132 253	7896 280	8667 307	9446 334	10236 361	11036 387	11845 414	13040 441
50000	290	9015 246	10014 272	-- --	-- --	-- --	-- --	-- --	-- --
	350	7863 252	8713 279	9569 306	10460 333	-- --	-- --	-- --	-- --
	390	7398 253	8201 280	9013 307	-- --	-- --	-- --	-- --	-- --

CORRECTIONS	PER 10°C ABOVE ISA	PER 10°C BELOW ISA
FUEL	+ 4%	- 4%
TIME	- 2%	+ 2%

Example – Simplified flight planning <Metric>
Figure 05–03–5

Result (by interpolation):

- Trip fuel = 7674 kg
- Trip time = 272 min

E. Total fuel for flight planning <Metric>

The total fuel required is equal to the sum of:

- The trip fuel calculated using the simplified flight planning,
- Holding fuel, and
- Fuel to alternate.

As previously calculated in the examples:

- Trip fuel from simplified flight planning = 7674 kg
- Fuel for holding = 750 kg
- Trip fuel from flight planning to alternate = 620 kg

Conclusion:

Total fuel required = 7674 + 750 + 620 = 9044 kg

EXAMPLE – SEGMENT–BY–SEGMENT DATA

A. Recommended and optimum cruise altitude <Metric>

The Recommended altitude table (refer to Recommended and optimum altitude) presents recommended altitudes for short trips and optimum altitudes for longer missions.

To account for average winds, ground distance must be corrected to air distance before entering the table.

Example:

Conditions:

- Air distance to destination = 150 nm
- Takeoff weight = 48000 kg

Use the Example – Recommended altitude table (refer to Figure 05–03–6).

RECOMMENDED ALTITUDE							
ALL ENGINE OPERATIVE CLEAN CONFIGURATION LRC			ISA				FL
TOW (KG)	CORRECTED AIR DISTANCE (NM)						
	50	100	150	200	250	300	>300
40000	130	230	310	350	410	410	410
42000	130	230	310	350	390	410	410
44000	130	230	290	350	390	410	410
46000	130	230	290	330	370	410	410
48000	110	210	290	330	370	390	400
50000	110	210	290	330	370	390	400
52000	--	--	--	310	350	390	390
54000	--	--	--	--	--	--	380
56000	--	--	--	--	--	--	370
58000	--	--	--	--	--	--	360
60000	--	--	--	--	--	--	360

Example – Recommended altitude
Figure 05–03–6

Result:

- Recommended cruise altitude = FL290

B. Climb <Metric>

The Flight planning – Climb from sea level tables (refer to Climb) are used to calculate the time, fuel, distance and average ground speed for the climb segment from sea level.

The tables are based on Maximum Climb Thrust (MCL) with a fixed speed schedule and include fuel and time allowances (distance allowance not considered).

The climb time, fuel, distance and average ground speed are found at the intersection of the selected flight level and weight at brake release.

Example:

Conditions:

- Takeoff weight = 54000 kg
- Selected flight level = FL370

Use the Example – Flight planning – Climb from sea level table to select an optimum flight level (refer to Figure 05–03–7).

FLIGHT PLANNING - CLIMB FROM SEA LEVEL										
ALL ENGINES OPERATIVE ENGINE BLEED:PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC				TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
MAX CLIMB THRUST							250KIAS / 275KIAS/ 0.78M			
FL	WEIGHT AT BRAKE RELEASE (KG)									
	52000		54000		56000		58000		60000	
410	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
390	25	1219	--	--	--	--	--	--	--	--
	166	403	--	--	--	--	--	--	--	--
370	21	1074	22	1147	24	1229	26	1321	--	--
	134	394	144	395	156	397	169	398	--	--
350	18	973	19	1033	20	1098	22	1169	23	1247
	113	386	121	387	129	388	139	389	149	390
330	16	881	17	932	18	986	19	1045	20	1107
	96	376	102	377	108	377	115	378	123	379
310	13	781	14	823	15	868	16	915	17	964
	78	363	83	364	88	364	93	365	98	366
290	12	698	12	735	13	773	13	812	14	854
	65	352	69	353	73	353	76	354	81	354
270	10	627	11	659	11	692	12	726	12	762
	55	342	58	343	61	343	64	343	67	344
250	9	564	9	592	10	621	10	650	11	681
	47	333	49	334	51	334	54	334	57	334
200	6	426	7	447	7	467	7	489	8	511
	31	313	32	313	34	313	36	313	37	314
150	5	306	5	320	5	335	5	350	5	366
	20	294	21	294	22	294	23	294	24	294
100	3	179	3	187	3	196	3	205	3	214
		269	11	270	11	270	12	270	12	270
50	1	74	1	77	1	80	2	84	2	88
	4	259	4	259	4	260	5	260	5	260
CORRECTION	PER 10°C ABOVE ISA		PER 10°C BELOW ISA				COWL A/I ON		ALL A/I ON	
FUEL	6%		– 6%				5%		10%	
TIME	3%		– 3%				5%		10%	
DISTANCE	6%		–6%				5%		10%	

Example – Flight planning – Climb from sea level <Metric>
Figure 05–03–7

Result:

- Climb time = 22 min
- Climb distance = 144 nm
- Required climb fuel = 1147 kg
- Average ground speed = 395 kts

C. Cruise <Metric>

The Flight planning – Cruise tables (refer to Cruise) are used to calculate the fuel flow, Specific Air Range (SAR), Mach and True Air Speed (TAS) for the cruise phase, which are found at the intersection of the selected flight level and weight at beginning of cruise.

Example:

Conditions:

- Weight at beginning of cruise = 52850 kg
- Flight level = FL370
- Temperature = ISA
- Cruise speed = 0.78M
- Cruise distance = 1732 nm

Use the Example – Flight planning – Cruise 0.78M table (refer to Figure 05–03–8).

FLIGHT PLANNING –CRUISE 0.78M												
ALL ENGINES OPERATIVE ENGINE BLEED : PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	52000		54000		56000		58000		60000	
410	29	0.78	--	--	--	--	--	--	--	--
	263	447	--	--	--	--	--	--	--	--
390	29	0.78	30	0.78	31	0.78	--	--	--	--
	263	447	255	447	246	447	--	--	--	--
370	30	0.78	30	0.78	31	0.78	32	0.78	33	0.78
	255	447	250	447	245	447	239	447	232	447
350	31	0.78	32	0.78	32	0.78	33	0.78	33	0.78
	244	450	241	450	237	450	233	450	228	450
330	33	0.78	34	0.78	34	0.78	34	0.78	35	0.78
	232	454	229	454	226	454	223	454	220	454
310	35	0.78	36	0.78	36	0.78	37	0.78	37	0.78
	219	458	217	458	214	458	212	458	209	458
290	38	0.78	38	0.78	39	0.78	39	0.78	39	0.78
	206	462	204	462	202	462	200	462	198	462
270	41	0.78	41	0.78	41	0.78	42	0.78	42	0.78
	194	466	192	466	190	466	189	466	187	466
250	44	0.78	44	0.78	44	0.78	45	0.78	45	0.78
	181	470	180	470	179	470	177	470	176	470
200	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
150	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
100	--	--	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--	--
50	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
CORRECTIONS			PER 10°C ABOVE ISA				PER 10°C BELOW ISA			
FUEL FLOW			+ 3.7%				- 3.7%			

NOTE
Max cruise thrust limits

Example – Flight planning – Cruise 0.78M <Metric>
Figure 05–03–8

Result (by interpolation):

- Fuel flow = 30 kg/min
- SAR = 252.8 nm/1000 kg
- Mach = 0.78
- TAS = 447 kts

Next step conditions:

- Total fuel required = Distance/SAR = 1732 nm / 252.8 nm/1000 kg = 6851 kg

Result (by interpolation):

- Final cruise weight = 52850 – 6851 = 45999 kg (rounded to 46000 kg).

D. Descent <Metric>

The Flight planning – Descent to sea level tables (refer to Descent) are used to calculate the time, fuel, distance and average true airspeed for the descent segment to a pressure altitude of zero.

The tables are based on a fixed speed schedule and include fuel and time allowances (distance allowance not considered).

The descent time, fuel, distance and average true airspeed are found at the intersection of the selected flight level and weight at the top of descent.

Example:

Conditions:

- Weight at the top of descent = 46000 kg
- Flight level = FL370
- Temperature = ISA
- CG = 22% MAC

Use the Example – Flight planning – Descent to sea level table (refer to Figure 05–03–9).

FLIGHT PLANNING - DESCENT TO SEA LEVEL										
ALL ENGINES OPERATIVE IDLE THRUST ENGINE BLEEDS:PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC				TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
DESCENT SPEED SCHEDULE							0.78M / 275KIAS / 250KIAS			
FL	WEIGHT AT TOP OF DESCENT (KG)									
	38000		40000		42000		44000		46000	
410	15 87.2	95 357	16 90.7	99 357	16 94	103 357	17 97.1	106 357	17 100.2	109 357
390	15 82.2	91 352	15 85.6	95 352	16 88.8	99 352	16 91.8	102 353	17 94.7	105 353
370	14 77.7	88 348	14 80.9	91 348	15 83.9	95 348	15 86.8	98 348	16 89.6	101 348
350	13 73.6	85 344	14 76.7	88 344	14 79.6	92 344	15 82.3	95 344	15 85	98 344
330	13 69.9	82 340	13 72.8	86 340	14 75.6	89 340	14 78.2	92 340	15 80.7	95 340
310	12 65.1	79 334	13 67.8	82 334	13 70.4	85 334	14 72.8	88 334	14 75.2	91 334
290	12 60.4	75 328	12 62.9	78 328	12 65.3	81 328	13 67.5	84 329	13 69.7	87 329
270	11 55.8	72 322	11 58.1	75 323	12 60.3	77 323	12 62.4	80 323	12 64.4	82 323
250	10 51.2	68 317	11 53.4	71 317	11 55.4	73 317	11 57.3	76 317	12 59.1	78 317
200	8 40.3	58 303	9 42	60 303	9 43.6	63 303	9 45.1	65 303	10 46.5	67 303
150	7 29.9	47 289	7 31.1	49 289	7 32.3	51 289	7 33.4	52 289	8 34.5	54 289
100	5	33 270	5 19.3	34 271	5 20	35 271	5 20.7	37 271	5 21.3	38 271
50	2 7.7	15 261	2 8	16 261	2 8.3	16 261	2 8.6	17 261	3 8.8	17 261
CORRECTION	PER 10°C ABOVE ISA		PER 10°C BELOW ISA				COWL A/I ON		ALL A/I ON	
FUEL	+ 5%		- 5%				5%		10%	
TIME	+ 2%		- 2%				5%		10%	
DISTANCE	+ 4%		- 4%				5%		10%	

Example – Flight planning – Descent to sea level <Metric>
Figure 05–03–9

Result (by interpolation):

- Descent time = 16 min
- Descent distance = 89.6 nm

Refer to Allowances and correction factors to calculate required descent fuel.

- Required descent fuel = 101 × 1.06 = 107 kg
- Average TAS = 348 kts

FLIGHT PLANNING TO ALTERNATE

FLIGHT PLANNING TO ALTERNATE										
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				-- FL		FUEL (KG) TIME (MIN)	
CRUISE SPEED	CLIMB SCHEDULE				DESCENT SCHEDULE					
LRC	250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS					
LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE (NM)									
	50		75		100		125		150	
40000	--	459	--	593	--	714	--	829	--	937
	140	16	210	20	260	24	300	27	330	31
42000	--	467	--	603	--	726	--	843	--	953
	140	16	200	20	250	24	290	27	320	31
44000	--	474	--	612	--	738	--	857	--	974
	130	16	190	20	240	24	280	27	320	31
46000	--	482	--	624	--	751	--	872	--	990
	130	16	190	20	230	24	270	28	310	31
48000	--	490	--	633	--	765	--	889	--	1007
	120	16	180	20	230	24	270	28	300	31
CORRECTION	10°C BELOW ISA OR LOWER				15°C ABOVE ISA				20°C ABOVE ISA	
FUEL	- 1%				+ 5%				+ 8%	
TIME	+ 2%				0%				0%	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP alternate - p1

Flight planning to alternate – page 1 <Metric>
Figure 05–03–10

FLIGHT PLANNING TO ALTERNATE										
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				-- FL		FUEL (KG) TIME (MIN)	
CRUISE SPEED	CLIMB SCHEDULE				DESCENT SCHEDULE					
LRC	250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS					
LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE (NM)									
	175		200		225		250		275	
40000	--	1042	--	1133	--	1222	--	1302	--	1383
	370	34	390	37	410	40	410	44	410	48
42000	--	1063	--	1158	--	1254	--	1337	--	1420
	360	34	380	37	410	41	410	44	410	48
44000	--	1083	--	1186	--	1281	--	1371	--	1457
	350	34	380	37	400	41	410	44	410	48
46000	--	1103	--	1210	--	1309	--	1402	--	1494
	340	34	370	38	390	41	400	44	410	48
48000	--	1123	--	1233	--	1336	--	1432	--	1531
	330	35	360	38	380	41	390	45	410	48
CORRECTION	10°C BELOW ISA OR LOWER				15°C ABOVE ISA		20°C ABOVE ISA			
FUEL	- 1%				+ 5%		+ 8%			
TIME	+ 2%				0%		0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP alternate - p2

Flight planning to alternate – page 2 <Metric>
Figure 05–03–11

FLIGHT PLANNING TO ALTERNATE										
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				-- FL		FUEL (KG) TIME (MIN)	
CRUISE SPEED	CLIMB SCHEDULE						DESCENT SCHEDULE			
LRC	250KIAS / 275KIAS / 0.78M						0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE (NM)									
	300		500		700		900		1100	
40000	--	1464	--	2115	--	2773	--	3437	--	4107
	410	51	410	80	410	108	410	136	410	165
42000	--	1503	--	2175	--	2853	--	3538	--	4230
	410	51	410	79	410	108	410	136	410	164
44000	--	1543	--	2236	--	2936	--	3643	--	4359
	410	51	410	79	410	107	410	135	410	162
46000	--	1583	--	2298	--	3020	--	3751	--	4490
	410	51	410	79	410	106	410	134	410	161
48000	--	1623	--	2361	--	3107	--	3869	--	4636
	410	51	410	79	410	106	400	134	400	161
CORRECTION	10°C BELOW ISA OR LOWER				15°C ABOVE ISA		20°C ABOVE ISA			
FUEL	- 1%				+ 5%		+ 8%			
TIME	+ 2%				0%		0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP alternate - p3

Flight planning to alternate – page 3 <Metric>
Figure 05–03–12

FLIGHT PLANNING TO ALTERNATE										
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				-- FL		FUEL (KG) TIME (MIN)	
CRUISE SPEED	CLIMB SCHEDULE						DESCENT SCHEDULE			
LRC	250KIAS / 275KIAS / 0.78M						0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE (NM)									
	50		75		100		125		150	
50000	--	498	--	645	--	778	--	904	--	1024
	120	16	180	20	220	24	260	28	290	31
52000	--	506	--	655	--	792	--	920	--	1044
	120	16	170	20	220	24	250	28	290	31
54000	--	515	--	667	--	805	--	937	--	1062
	110	16	170	20	210	24	250	28	280	32
56000	--	525	--	679	--	821	--	954	--	1081
	110	16	160	20	210	24	240	28	270	32
58700	--	539	--	696	--	841	--	979	--	1109
	110	16	160	20	200	24	240	28	270	32

CORRECTION	10°C BELOW ISA OR LOWER	15°C ABOVE ISA	20°C ABOVE ISA
FUEL	- 1%	+ 5%	+ 8%
TIME	+ 2%	0%	0%

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP alternate - p4

Flight planning to alternate – page 4 <Metric>
Figure 05–03–13

FLIGHT PLANNING TO ALTERNATE										
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				-- FL		FUEL (KG) TIME (MIN)	
CRUISE SPEED	CLIMB SCHEDULE						DESCENT SCHEDULE			
LRC	250KIAS / 275KIAS / 0.78M						0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE (NM)									
	175		200		225		250		275	
50000	--	1141	--	1257	--	1363	--	1467	--	1565
	320	35	350	38	370	41	390	45	400	48
52000	--	1161	--	1280	--	1390	--	1497	--	1599
	310	35	340	38	360	42	380	45	390	48
54000	--	1184	--	1302	--	1416	--	1526	--	1632
	310	35	330	38	350	42	370	45	380	49
56000	--	1205	--	1324	--	1443	--	1556	--	1669
	300	35	320	39	340	42	360	45	380	49
58700	--	1235	--	1357	--	1479	--	1598	--	1715
	290	36	310	39	330	42	350	46	370	49
CORRECTION	10°C BELOW ISA OR LOWER				15°C ABOVE ISA		20°C ABOVE ISA			
FUEL	- 1%				+ 5%		+ 8%			
TIME	+ 2%				0%		0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP alternate - p5

Flight planning to alternate – page 5 <Metric>
Figure 05–03–14

FLIGHT PLANNING TO ALTERNATE										
ALL ENGINES OPERATIVE CLEAN CONFIGURATION			ISA CG 27% MAC				-- FL		FUEL (KG) TIME (MIN)	
CRUISE SPEED	CLIMB SCHEDULE				DESCENT SCHEDULE					
LRC	250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS					
LANDING WEIGHT (KG)	CORRECTED AIR DISTANCE (NM)									
	300		500		700		900		1100	
50000	--	1660	--	2425	--	3198	--	3980	--	4781
	400	51	400	79	400	106	400	133	390	162
52000	--	1700	--	2489	--	3288	--	4097	--	4916
	400	52	400	79	390	107	390	134	390	161
54000	--	1737	--	2552	--	3376	--	4215	--	5062
	390	52	390	79	390	106	380	134	380	161
56000	--	1777	--	2615	--	3466	--	4328	--	5201
	390	52	380	79	380	107	380	134	380	161
58700	--	1828	--	2701	--	3588	--	4486	--	5395
	380	52	370	80	370	107	370	134	370	161
CORRECTION	10°C BELOW ISA OR LOWER				15°C ABOVE ISA		20°C ABOVE ISA			
FUEL	- 1%				+ 5%		+ 8%			
TIME	+ 2%				0%		0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP alternate - p6

Flight planning to alternate – page 6 <Metric>
Figure 05–03–15

HOLDING

HOLDING - AEO						
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON RACETRACK PATTERN			ISA CG 27% MAC		HOLDING SPEED (KIAS) TOTAL FUEL FLOW (KG/MIN)	
FL	GROSS WEIGHT (KG)					
	40000	45000	50000	55000	60000	65000
15	185 23	196 25	207 27	218 30	229 32	239 35
50	185 22	197 24	209 27	220 29	230 32	240 34
100	187 22	199 24	211 26	222 29	232 31	242 34
150	189 21	201 23	212 26	223 28	233 30	243 33
200	190 21	202 23	214 25	224 28	235 30	245 33
250	192 21	204 23	215 25	226 28	236 30	246 33
300	193 21	205 23	216 26	227 28	238 31	249 34
CORRECTION	COWL A/I ON			ALL A/I ON		
TOTAL FUEL FLOW	6%			14%		

CS300_ALL_NAMEPLATES_FCOM_MET_v01_AEO_Holding

NOTE

In a linear holding reduce the Fuel Flow by 5%

Holding – AEO <Metric>
Figure 05–03–16

SIMPLIFIED FLIGHT PLANNING

SIMPLIFIED FLIGHT PLANNING									
ALL ENGINES OPERATIVE				ISA CG 27% MAC				FUEL (KG) TIME (MIN)	
CRUISE SPEED		CLIMB SCHEDULE				DESCENT SCHEDULE			
0.78M		250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	FL	CORRECTED AIR DISTANCE (NM)							
		200	400	600	800	1000	1200	1400	1600
40000	290	1247	2223	3201	4181	5165	6151	7140	8132
		37	63	90	116	142	168	194	220
	350	1187	1980	2776	3575	4378	5185	5996	6811
		38	64	91	118	145	172	198	225
	390	1180	1888	2600	3316	4036	4761	5490	6222
		38	65	92	118	145	172	199	226
44000	290	1277	2264	3253	4245	5241	6240	7242	8248
		38	64	90	116	142	168	194	220
	350	1232	2043	2858	3677	4501	5330	6163	7001
		38	65	92	118	145	172	199	225
	390	–	1966	2701	3441	4186	4936	5692	6454
		–	65	92	119	146	173	199	226
48000	290	1312	2311	3314	4320	5330	6344	7361	8383
		38	64	90	116	143	169	195	221
	350	1281	2114	2952	3795	4642	5494	6352	7214
		39	65	92	119	146	172	199	226
	390	–	2051	2815	3587	4365	5150	5943	6743
		–	65	92	119	146	173	200	227
CORRECTIONS		10°C BELOW ISA OR LOWER				PER 10°C ABOVE ISA			
FUEL		– 1%				+ 3%			
TIME		+ 2%				0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_Simplified_FP–p1

Simplified flight planning – page 1 <Metric>
Figure 05–03–17

SIMPLIFIED FLIGHT PLANNING									
ALL ENGINES OPERATIVE				ISA CG 27% MAC			FUEL (KG) TIME (MIN)		
CRUISE SPEED		CLIMB SCHEDULE				DESCENT SCHEDULE			
0.78M		250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	FL	CORRECTED AIR DISTANCE (NM)							
		1800	2000	2200	2400	2600	2800	3000	3200
40000	290	9127	10126	11128	12133	13142	14156	15172	16194
		246	272	298	324	350	376	403	429
	350	7630	8454	9282	10115	10953	11796	12644	13496
		252	279	305	332	359	386	412	439
	390	6960	7701	8448	9200	9958	10722	11492	12270
		253	280	307	333	360	387	414	441
44000	290	9258	10271	11289	12310	13337	14367	15403	16444
		246	273	299	325	351	377	403	429
	350	7844	8692	9545	10403	11265	12132	13005	13883
		252	279	306	333	359	386	413	440
	390	7222	7997	8779	9568	10364	11169	11982	12803
		253	280	307	334	361	388	415	442
48000	290	9410	10441	11477	12519	13565	14617	15675	16739
		247	273	299	325	351	378	404	430
	350	8081	8953	9831	10714	11604	12500	13404	14316
		253	279	306	333	360	387	413	440
	390	7551	8367	9192	--	--	--	--	--
		254	281	308	--	--	--	--	--
CORRECTIONS		10°C BELOW ISA OR LOWER				PER 10°C ABOVE ISA			
FUEL		- 1%				+ 3%			
TIME		+ 2%				0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_Simplified_FP−p2

Simplified flight planning − page 2 <Metric>
Figure 05−03−18

SIMPLIFIED FLIGHT PLANNING									
ALL ENGINES OPERATIVE				ISA CG 27% MAC			FUEL (KG) TIME (MIN)		
CRUISE SPEED		CLIMB SCHEDULE				DESCENT SCHEDULE			
0.78M		250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	FL	CORRECTED AIR DISTANCE (NM)							
		200	400	600	800	1000	1200	1400	1600
52000	290	1351	2365	3383	4405	5432	6463	7499	8541
		39	65	91	117	143	169	195	221
	350	--	2191	3052	3918	4789	5665	6548	7436
		--	66	92	119	146	173	200	226
	390	--	2147	2949	3760	4578	5405	--	--
		--	66	93	120	147	173	--	--
56000	290	1395	2427	3463	4504	5551	6603	7660	8724
		39	65	91	117	144	170	196	222
	350	--	2272	3158	4051	4952	5860	6776	7700
		--	66	93	120	147	173	200	227
	390	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--
58700	290	1428	2473	3523	4578	5640	6706	7779	8857
		39	66	92	118	144	170	196	222
	350	--	2333	3242	4159	5084	6017	6959	7910
		--	66	93	120	147	174	200	227
	390	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--
CORRECTIONS		10°C BELOW ISA OR LOWER				PER 10°C ABOVE ISA			
FUEL		- 1%				+ 3%			
TIME		+ 2%				0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_Simplified_FP–p3

Simplified flight planning – page 3 <Metric>
Figure 05–03–19

SIMPLIFIED FLIGHT PLANNING									
ALL ENGINES OPERATIVE				ISA CG 27% MAC			FUEL (KG) TIME (MIN)		
CRUISE SPEED		CLIMB SCHEDULE				DESCENT SCHEDULE			
0.78M		250KIAS / 275KIAS / 0.78M				0.78M / 275KIAS / 250KIAS			
LANDING WEIGHT (KG)	FL	CORRECTED AIR DISTANCE (NM)							
		1800	2000	2200	2400	2600	2800	3000	3200
52000	290	9587	10640	11698	12761	13831	14905	--	--
		248	274	300	326	352	378	--	--
	350	8331	9234	10145	11063	11990	12925	13869	14821
		253	280	307	334	360	387	414	441
	390	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--
56000	290	9793	10867	--	--	--	--	--	--
		248	274	--	--	--	--	--	--
	350	8633	9573	10523	11482	--	--	--	--
		254	281	307	334	--	--	--	--
	390	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--
58700	290	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--
	350	8869	--	--	--	--	--	--	--
		254	--	--	--	--	--	--	--
	390	--	--	--	--	--	--	--	--
		--	--	--	--	--	--	--	--
CORRECTIONS		10°C BELOW ISA OR LOWER				PER 10°C ABOVE ISA			
FUEL		- 1%				+ 3%			
TIME		+ 2%				0%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_Simplified_FP–p4

Simplified flight planning – page 4 <Metric>
Figure 05–03–20

RECOMMENDED AND OPTIMUM ALTITUDE

RECOMMENDED ALTITUDE							
ALL ENGINE OPERATIVE CLEAN CONFIGURATION			ISA				FL
CRUISE SPEED				0.78M			
TOW (KG)	CORRECTED AIR DISTANCE (NM)						
	50	100	150	200	250	300	>300
40000	--	260	340	400	410	410	410
42000	--	250	330	390	410	410	410
44000	--	--	320	380	410	410	410
46000	--	--	310	370	410	410	410
48000	--	--	300	360	400	410	410
50000	--	--	300	350	390	410	410
52000	--	--	290	340	380	400	400
54000	--	--	280	330	380	400	400
56000	--	--	270	330	370	390	390
58000	--	--	270	320	360	390	390
60000	--	--	260	310	350	380	380
62000	--	--	260	310	350	370	370
64000	--	--	250	300	340	370	370

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_altitude_M

Recommended altitude – 0.78M <Metric>
Figure 05–03–21

RECOMMENDED ALTITUDE							
ALL ENGINE OPERATIVE CLEAN CONFIGURATION			ISA				FL
CRUISE SPEED				LRC			
TOW (KG)	CORRECTED AIR DISTANCE (NM)						
	50	100	150	200	250	300	>300
40000	140	260	340	400	410	410	410
42000	140	250	330	390	410	410	410
44000	130	240	320	380	410	410	410
46000	130	240	310	370	410	410	410
48000	130	230	300	360	400	410	410
50000	120	220	300	350	390	410	410
52000	120	220	290	340	380	400	400
54000	110	210	280	330	380	400	400
56000	110	210	280	330	370	390	390
58000	110	200	270	320	360	390	390
60000	110	200	260	310	350	380	380
62000	100	190	260	310	350	370	370
64000	100	190	250	300	340	370	370

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_altitude_LRC

Recommended altitude – LRC <Metric>
Figure 05–03–22

CLIMB

FLIGHT PLANNING - CLIMB FROM SEA LEVEL										
ALL ENGINES OPERATIVE MAX CLIMB THRUST ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
CLIMB SCHEDULE					250KIAS / 275KIAS/ 0.78M					
FL	WEIGHT AT BRAKE RELEASE (KG)									
	40000		42000		44000		46000		48000	
410	18	978	19	1042	21	1111	22	1185	24	1266
	115	382	124	384	134	385	144	386	156	388
390	16	908	17	964	18	1023	19	1086	21	1152
	99	374	106	375	113	376	121	377	130	378
370	14	847	15	897	16	950	17	1006	18	1063
	87	365	93	366	98	367	105	368	111	369
350	13	795	14	841	15	889	15	939	16	990
	77	357	82	357	87	358	92	359	98	360
330	12	745	13	787	13	830	14	876	15	923
	68	347	73	348	77	349	81	349	86	350
310	11	685	11	723	12	762	12	804	13	845
	59	335	62	336	66	337	70	337	74	338
290	9	633	10	667	11	703	11	741	12	779
	51	325	54	325	57	326	61	327	64	327
270	9	585	9	616	9	649	10	683	10	717
	45	314	47	315	50	316	53	316	55	317
250	8	539	8	567	8	597	9	628	9	659
	39	304	41	304	43	305	45	306	48	306
200	6	436	6	458	6	481	7	506	7	529
	27	278	28	279	30	279	31	280	33	280
150	4	345	5	361	5	379	5	398	5	416
	18	253	19	253	20	254	21	254	22	255
100	3	247	3	258	3	270	3	283	3	295
	11	219	11	219	12	220	12	220	13	221
50	2	167	2	174	2	181	2	189	2	197
	6	188	6	188	6	189	7	189	7	189
CORRECTION	ISA - 10°C		ISA + 10°C		ISA + 20°C		COWL A/I ON		ALL A/I ON	
FUEL	-6%		6%		33%		1%		5%	
TIME	-3%		3%		43%		0%		1%	
DISTANCE	-6%		6%		52%		0%		1%	

CS300_ALL_NAMEPLATES_FCOM_MET_v1_FP_Climb_p1

Flight planning – Climb from sea level – page 1 <Metric>
Figure 05–03–23

FLIGHT PLANNING - CLIMB FROM SEA LEVEL										
ALL ENGINES OPERATIVE MAX CLIMB THRUST ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
CLIMB SCHEDULE					250KIAS / 275KIAS/ 0.78M					
FL	WEIGHT AT BRAKE RELEASE (KG)									
	50000		52000		54000		56000		58000	
410	26	1359	--	--	--	--	--	--	--	--
	170	390	--	--	--	--	--	--	--	--
390	22	1223	23	1301	25	1384	27	1477	29	1584
	139	379	149	380.7	160	382.5	173	384	189	387
370	19	1124	20	1190	22	1258	23	1330	24	1409
	119	370	126	371	134	372	143	373	153	375
350	17	1045	18	1104	19	1164	20	1226	22	1293
	104	361	110	362	117	363	124	364	131	365
330	16	972	16	1025	17	1078	18	1134	19	1193
	91	351	96	352	102	353	108	354	114	354
310	14	890	15	936	15	983	16	1032	17	1083
	78	339	82	340	87	340	91	341	96	342
290	12	819	13	861	14	903	14	947	15	992
	67	328	71	329	75	330	79	330	83	331
270	11	753	12	791	12	829	13	869	13	910
	58	318	61	318	65	319	68	320	71	320
250	10	691	10	726	11	760	11	795	12	832
	50	307	53	307	55	308	58	309	61	309
200	7	554	8	580	8	606	8	633	9	662
	34	281	36	281	38	282	39	283	41	283
150	5	435	6	455	6	475	6	495	6	517
	23	255	24	256	25	257	27	257	28	258
100	4	308	4	322	4	335	4	349	4	365
	13	221	14	222	15	223	15	223	16	224
50	2	205	2	214	2	222	3	230	3	240
	7	190	8	190	8	191	8	192	9	192
CORRECTION	ISA - 10°C		ISA + 10°C		ISA + 20°C		COWL A/I ON		ALL A/I ON	
FUEL	-6%		6%		33%		1%		5%	
TIME	-3%		3%		43%		0%		1%	
DISTANCE	-6%		6%		52%		0%		1%	

CS300_ALL_NAMEPLATES_FCOM_MET_v1_FP_Climb_p2

Flight planning – Climb from sea level – page 2 <Metric>
Figure 05–03–24

FLIGHT PLANNING - CLIMB FROM SEA LEVEL										
ALL ENGINES OPERATIVE MAX CLIMB THRUST ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
CLIMB SCHEDULE					250KIAS / 275KIAS/ 0.78M					
FL	WEIGHT AT BRAKE RELEASE (KG)									
	60000		62000		64000		66000		67500	
410	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
390	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
370	26	1493	28	1588	30	1696	--	--	--	--
	163	376	176	378	190	380	--	--	--	--
350	23	1363	24	1438	26	1523	27	1616	29	1693
	139	366	148	367	158	368	169	370	178	371
330	20	1254	21	1319	23	1391	24	1468	25	1530
	120	355	127	356	135	357	143	358	150	359
310	18	1135	19	1191	20	1253	21	1318	22	1369
	101	342	107	343	113	344	119	345	124	346
290	16	1039	17	1088	17	1142	18	1199	19	1243
	87	331	91	332	96	333	101	333	106	334
270	14	951	15	995	15	1043	16	1093	17	1132
	75	321	78	321	83	322	87	323	90	323
250	12	869	13	908	14	950	14	994	15	1029
	64	310	67	310	70	311	74	311	76	312
200	9	690	10	719	10	751	10	783	11	809
	43	283	45	284	47	284	49	285	51	285
150	7	538	7	560	7	584	8	609	8	628
	29	258	30	258	32	259	33	259	34	260
100	4	379	5	394	5	411	5	428	5	441
	17	224	18	225	18	225	19	226	20	226
50	3	249	3	258	3	269	3	279	3	288
	9	193	9	193	10	193	10	195	11	195
CORRECTION	ISA - 10˚C		ISA + 10˚C		ISA + 20˚C		COWL A/I ON		ALL A/I ON	
FUEL	-6%		6%		33%		1%		5%	
TIME	-3%		3%		43%		0%		1%	
DISTANCE	-6%		6%		52%		0%		1%	

CS300_ALL_NAMEPLATES_FCOM_MET_v1_FP_Climb_p3

Flight planning – Climb from sea level – page 3 <Metric>
Figure 05–03–25

CRUISE

FLIGHT PLANNING - CRUISE										
ALL ENGINES OPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
CRUISE SPEED					0.78M					
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	40000		42000		44000		46000		48000	
410	25 303	0.78 447	25 298	0.78 447	26 292	0.78 447	26 285	0.78 447	27 278	0.78 447
390	26 289	0.78 447	26 284	0.78 447	27 280	0.78 447	27 275	0.78 447	28 270	0.78 447
370	27 274	0.78 447	28 270	0.78 447	28 266	0.78 447	28 262	0.78 447	29 258	0.78 447
350	29 257	0.78 450	29 254	0.78 450	30 251	0.78 450	30 248	0.78 450	31 245	0.78 450
330	32 240	0.78 454	32 238	0.78 454	32 236	0.78 454	32 234	0.78 454	33 231	0.78 454
310	34 223	0.78 458	34 222	0.78 458	35 220	0.78 458	35 219	0.78 458	35 217	0.78 458
290	37 208	0.78 462	37 207	0.78 462	37 206	0.78 462	38 205	0.78 462	38 203	0.78 462
270	40 194	0.78 466	40 193	0.78 466	40 192	0.78 466	41 191	0.78 466	41 190	0.78 466
250	43 180	0.78 470	44 180	0.78 470	44 179	0.78 470	44 178	0.78 470	44 177	0.78 470
200	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
150	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
100	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
50	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --	-- --
CORRECTION			PER 10°C BELOW ISA				PER 10°C ABOVE ISA			
FUEL FLOW			-3%				5%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_Cruise_M_ISA0 – p1

NOTE

Max cruise thrust limits

Flight planning – Cruise 0.78M – page 1 <Metric>
Figure 05–03–26

FLIGHT PLANNING - CRUISE										
ALL ENGINES OPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
CRUISE SPEED					0.78M					
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	50000		52000		54000		56000		58000	
410	28	0.78	29	0.78	30	0.78	--	--	--	--
	270	447	262	447	251	447	--	--	--	--
390	28	0.78	29	0.78	30	0.78	30	0.78	31	0.78
	264	447	258	447	252	447	246	447	238	447
370	29	0.78	30	0.78	30	0.78	31	0.78	32	0.78
	255	447	251	447	246	447	241	447	236	447
350	31	0.78	31	0.78	32	0.78	32	0.78	33	0.78
	242	450	239	450	235	450	232	450	229	450
330	33	0.78	33	0.78	34	0.78	34	0.78	35	0.78
	229	454	226	454	223	454	221	454	218	454
310	35	0.78	36	0.78	36	0.78	36	0.78	37	0.78
	216	458	214	458	211	458	209	458	207	458
290	38	0.78	38	0.78	39	0.78	39	0.78	39	0.78
	202	462	201	462	199	462	197	462	196	462
270	41	0.78	41	0.78	42	0.78	42	0.78	42	0.78
	189	466	188	466	187	466	186	466	184	466
250	44	0.78	45	0.78	45	0.78	45	0.78	45	0.78
	176	470	176	470	175	470	174	470	173	470
200	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
150	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
100	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
50	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
CORRECTION			PER 10°C BELOW ISA				PER 10°C ABOVE ISA			
FUEL FLOW			-3%				5%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_Cruise_M_ISA0 – p2

NOTE

Max cruise thrust limits

Flight planning – Cruise 0.78M – page 2 <Metric>
Figure 05–03–27

FLIGHT PLANNING - CRUISE										
ALL ENGINES OPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
CRUISE SPEED					0.78M					
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	60000		62000		64000		66000		67500	
410	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
390	33	0.78	34	0.78	--	--	--	--	--	--
	228	447	216	447	--	--	--	--	--	--
370	32	0.78	33	0.78	34	0.78	35	0.78	37	0.78
	231	447	225	447	219	447	211	447	203	447
350	33	0.78	34	0.78	35	0.78	35	0.78	36	0.78
	225	450	220	450	216	450	212	450	208	450
330	35	0.78	36	0.78	36	0.78	37	0.78	37	0.78
	215	454	213	454	210	454	206	454	204	454
310	37	0.78	38	0.78	38	0.78	39	0.78	39	0.78
	205	458	202	458	200	458	198	458	196	458
290	40	0.78	40	0.78	40	0.78	41	0.78	41	0.78
	194	462	192	462	190	462	188	462	187	462
270	42	0.78	43	0.78	43	0.78	43	0.78	44	0.78
	183	466	182	466	180	466	179	466	177	466
250	46	0.78	46	0.78	46	0.78	46	0.78	47	0.78
	172	470	171	470	170	470	169	470	168	470
200	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
150	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
100	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
50	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
CORRECTION			PER 10°C BELOW ISA				PER 10°C ABOVE ISA			
FUEL FLOW			-3%				5%			

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_Cruise_M_ISA0 – p3

NOTE

Max cruise thrust limits

Flight planning – Cruise 0.78M – page 3 <Metric>
Figure 05–03–28

FLIGHT PLANNING - CRUISE										
ALL ENGINES OPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
CRUISE SPEED					LRC					
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	40000		42000		44000		46000		48000	
410	22	0.73	23	0.74	24	0.75	25	0.76	26	0.76
	317	420	307	423	298	428	289	433	280	438
390	22	0.72	23	0.73	24	0.73	25	0.74	26	0.74
	308	413	300	416	292	419	284	423	276	426
370	22	0.70	23	0.71	24	0.72	25	0.72	26	0.73
	298	398	291	405	284	411	277	415	271	418
350	22	0.67	23	0.67	24	0.68	25	0.70	26	0.72
	288	387	282	387	275	394	268	404	262	413
330	23	0.65	23	0.65	24	0.65	25	0.67	26	0.68
	276	378	271	378	266	376	259	389	253	397
310	24	0.65	25	0.65	25	0.65	26	0.65	26	0.65
	261	381	257	381	253	381	249	381	245	381
290	22	0.58	23	0.59	24	0.60	26	0.63	26	0.63
	259	345	253	349	248	355	240	370	236	370
270	22	0.55	23	0.57	24	0.58	25	0.59	26	0.60
	251	329	245	339	239	345	234	352	229	359
250	22	0.53	23	0.54	24	0.56	25	0.57	26	0.58
	242	321	237	327	231	336	226	343	221	349
200	23	0.49	24	0.50	25	0.51	25	0.51	26	0.52
	218	303	214	307	210	311	206	314	203	316
150	24	0.45	25	0.46	26	0.47	27	0.48	28	0.49
	198	280	194	285	190	292	186	300	182	306
100	24	0.41	25	0.42	26	0.43	27	0.43	28	0.44
	178	261	175	267	171	272	168	276	165	280
50	26	0.38	26	0.39	27	0.39	28	0.39	29	0.40
	161	248	158	251	156	253	153	256	151	259
CORRECTION			PER 10°C BELOW ISA				PER 10°C ABOVE ISA			
FUEL FLOW			-3%				5%			

CS300_ALL_NAMEPLATES_FCOM_MET_v02_FP_Cruise_LRC_ISA0 – p1

NOTE

Flight planning – Cruise LRC – page 1 <Metric>
Figure 05–03–29

FLIGHT PLANNING - CRUISE										
ALL ENGINES OPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC				FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
CRUISE SPEED			LRC							
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	50000		52000		54000		56000		58000	
410	27	0.77	28	0.77	29	0.76	30	0.76	--	--
	271	443	262	440	252	437	241	436	--	--
390	27	0.75	28	0.76	29	0.77	30	0.78	31	0.76
	269	432	261	436	254	441	246	445	238	438
370	27	0.74	28	0.74	29	0.75	30	0.76	31	0.77
	264	421	257	425	250	430	244	435	238	439
350	27	0.72	28	0.73	29	0.73	30	0.74	31	0.74
	256	417	251	420	245	423	239	426	234	429
330	27	0.70	29	0.71	29	0.72	30	0.73	31	0.73
	248	406	242	415	237	419	233	422	228	425
310	27	0.67	28	0.68	30	0.69	31	0.71	32	0.72
	239	391	234	398	230	407	225	417	221	421
290	27	0.64	28	0.64	30	0.66	31	0.68	32	0.69
	231	376	226	381	222	393	218	400	213	408
270	27	0.62	28	0.63	29	0.63	30	0.64	32	0.66
	224	367	219	374	214	379	210	383	207	394
250	28	0.59	29	0.61	30	0.62	31	0.62	32	0.63
	216	357	212	365	208	370	204	376	200	381
200	27	0.53	29	0.54	30	0.56	31	0.57	32	0.58
	199	324	195	334	191	343	187	351	184	357
150	29	0.50	30	0.50	31	0.51	32	0.52	33	0.52
	179	310	176	315	174	320	171	324	168	329
100	30	0.45	31	0.46	32	0.47	33	0.48	34	0.49
	162	287	159	295	156	301	153	307	151	311
50	30	0.41	31	0.42	32	0.43	33	0.43	34	0.44
	148	264	145	271	143	276	140	280	138	284
CORRECTION			PER 10°C BELOW ISA				PER 10°C ABOVE ISA			
FUEL FLOW			-3%				5%			

CS300_ALL_NAMEPLATES_FCOM_MET_v02_FP_Cruise_LRC_ISA0 – p2

NOTE

Max cruise thrust limits

Flight planning – Cruise LRC – page 2 <Metric>
Figure 05–03–30

FLIGHT PLANNING - CRUISE										
ALL ENGINES OPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		FUEL FLOW (KG/MIN) SAR (NM/1000KG)		MACH TAS (KTS)	
CRUISE SPEED					LRC					
FL	WEIGHT AT BEGINNING OF CRUISE (KG)									
	60000		62000		64000		66000		67500	
410	--	--	--	--	--	--	--	--	--	--
	--	--	--	--	--	--	--	--	--	--
390	32	0.76	33	0.76	--	--	--	--	--	--
	230	437	221	436	--	--	--	--	--	--
370	32	0.77	33	0.78	34	0.77	34	0.76	35	0.76
	231	443	225	449	219	440	212	437	206	436
350	32	0.75	33	0.76	34	0.77	35	0.77	36	0.78
	228	434	223	437	218	441	213	445	209	448
330	32	0.74	33	0.74	34	0.75	35	0.75	36	0.76
	223	428	219	430	214	434	209	438	206	441
310	33	0.72	34	0.73	34	0.73	35	0.74	36	0.74
	217	425	213	427	209	431	205	433	202	434
290	33	0.71	34	0.72	35	0.72	36	0.73	37	0.73
	209	418	206	424	202	427	199	430	196	432
270	33	0.67	34	0.68	35	0.70	37	0.71	37	0.72
	203	401	199	408	196	415	192	423	190	427
250	33	0.64	34	0.65	35	0.67	36	0.67	37	0.68
	196	385	193	390	190	400	187	406	185	410
200	33	0.59	34	0.60	36	0.61	37	0.62	37	0.62
	181	362	178	367	175	374	172	378	170	381
150	33	0.53	35	0.54	36	0.55	37	0.57	38	0.57
	166	333	164	339	161	347	159	354	157	358
100	35	0.49	36	0.50	37	0.50	38	0.51	39	0.51
	149	314	147	318	145	321	143	325	142	328
50	36	0.45	37	0.46	38	0.47	40	0.48	41	0.48
	136	291	134	298	132	304	130	310	128	312
CORRECTION			PER 10°C BELOW ISA				PER 10°C ABOVE ISA			
FUEL FLOW			-3%				5%			

CS300_ALL_NAMEPLATES_FCOM_MET_v02_FP_Cruise_LRC_ISA0 – p3

NOTE

Max cruise thrust limits

Flight planning – Cruise LRC – page 3 <Metric>
Figure 05–03–31

DESCENT

FLIGHT PLANNING - DESCENT TO SEA LEVEL										
ALL ENGINES OPERATIVE IDLE THRUST ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
DESCENT SCHEDULE					0.78M / 275KIAS / 250KIAS					
FL	WEIGHT AT TOP OF DESCENT (KG)									
	38000		40000		42000		44000		46000	
410	18 93.9	156 305	19 97.4	160 308	19 100.8	164 310	20 104.1	168 313	20 107.2	172 315
390	18 89.1	152 300	18 92.5	156 303	19 95.7	160 305	19 98.8	164 308	20 101.8	168 310
370	17 84.7	148 295	18 87.9	152 298	18 91.0	156 301	19 94.0	160 303	19 96.8	164 305
350	17 80.8	145 291	17 83.9	149 293	18 86.9	153 296	18 89.7	157 298	18 92.4	161 300
330	16 77.3	142 286	17 80.2	146 289	17 83.0	150 291	18 85.7	154 294	18 88.2	157 296
310	16 72.7	139 280	16 75.4	143 282	16 78.0	146 285	17 80.5	150 287	17 82.9	153 290
290	15 68.2	135 273	15 70.7	139 276	16 73.2	142 279	16 75.5	146 281	16 77.7	149 283
270	14 63.8	131 267	15 66.2	135 270	15 68.4	138 273	15 70.5	141 275	16 72.6	144 277
250	14 59.5	128 261	14 61.7	131 264	14 63.7	134 266	15 65.7	137 269	15 67.6	140 271
200	12 49.2	118 245	12 50.9	121 247	13 52.5	123 250	13 54.0	126 252	13 55.5	129 255
150	10 39.3	107 227	11 40.6	109 230	11 41.8	112 233	11 42.9	114 235	11 44.0	116 237
100	8 28.1	90 203	8 28.9	92 206	9 29.6	93 208	9 30.3	95 211	9 30.9	96 213
50	6 17.2	71 173	6 17.5	72 176	6 17.8	73 179	6 18.1	74 181	6 18.4	75 184
CORRECTION	ISA - 10˚C		ISA + 15˚C		ISA + 20˚C		COWL A/I ON		ALL A/I ON	
FUEL	-2%		7%		18%		17%		61%	
TIME	0%		3%		5%		4%		10%	
DISTANCE	-2%		6%		10%		5%		12%	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_Descent_p1

Flight planning – Descent to sea level – page 1 <Metric>
Figure 05–03–32

FLIGHT PLANNING - DESCENT TO SEA LEVEL										
ALL ENGINES OPERATIVE IDLE THRUST ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
DESCENT SCHEDULE					0.78M / 275KIAS / 250KIAS					
FL	WEIGHT AT TOP OF DESCENT (KG)									
	48000		50000		52000		54000		56000	
410	21	176	21	180	22	183	22	186	22	189
	110.1	316	112.8	318	115.4	319	117.8	321	120.0	322
390	20	172	21	175	21	178	21	181	22	184
	104.6	312	107.3	313	109.8	315	112.1	316	114.3	318
370	19	168	20	171	20	174	21	177	21	179
	99.5	307	102.0	308	104.4	310	106.7	312	108.8	313
350	19	164	19	167	20	170	20	173	20	176
	95.0	302	97.4	304	99.6	305	101.8	307	103.8	309
330	18	161	19	164	19	167	19	169	20	172
	90.7	298	93.0	299	95.1	301	97.2	302	99.1	304
310	18	156	18	159	18	162	18	165	19	167
	85.2	291	87.3	293	89.3	295	91.2	296	93.0	298
290	17	152	17	155	17	157	18	160	18	162
	79.8	285	81.8	287	83.6	289	85.3	290	87.0	292
270	16	147	16	150	17	153	17	155	17	157
	74.5	279	76.3	281	78.0	282	79.6	284	81.1	285
250	15	143	16	145	16	148	16	150	16	152
	69.3	273	71.0	275	72.6	276	74.0	278	75.4	279
200	13	131	14	133	14	135	14	137	14	139
	56.9	257	58.3	259	59.5	260	60.6	262	61.7	263
150	11	118	11	120	12	122	12	123	12	125
	45.0	239	46.0	241	46.9	243	47.6	245	48.4	246
100	9	98	9	99	9	100	9	101	9	102
	31.5	215	32.1	217	32.6	219	33.0	221	33.4	222
50	6	76	6	76	6	77	6	78	6	78
	18.6	186	18.9	188	19.1	190	19.3	192	19.5	194
CORRECTION	ISA - 10 C		ISA + 15˚C		ISA + 20˚C		COWL A/I ON		ALL A/I ON	
FUEL	-2%		7%		18%		17%		61%	
TIME	0%		3%		5%		4%		10%	
DISTANCE	-2%		6%		10%		5%		12%	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_Descent_p2

Flight planning – Descent to sea level – page 2 <Metric>
Figure 05–03–33

FLIGHT PLANNING - DESCENT TO SEA LEVEL											
ALL ENGINES OPERATIVE IDLE THRUST ENGINE BLEED: PACKS ON, A/I OFF APU OFF					ISA CG 27% MAC		TIME (MIN) DISTANCE (NM)		FUEL (KG) AVG GS (KTS)	
DESCENT SCHEDULE					0.78M / 275KIAS / 250KIAS					
FL	WEIGHT AT TOP OF DESCENT (KG)									
	58000		60000		62000		64000		66000	
410	23	191	23	193	23	195	--	--	--	--
	122.1	323	124.0	324	126.0	325	--	--	--	--
390	22	186	22	189	22	191	23	193	23	194
	116.5	319	118.4	320	120.2	321	121.7	322	123.0	323
370	21	182	21	184	22	186	22	188	22	190
	110.9	314	112.8	316	114.6	317	116.1	318	117.5	319
350	20	178	21	180	21	182	21	184	21	186
	105.8	310	107.7	311	109.4	312	110.9	313	112.2	314
330	20	174	20	177	20	178	21	180	21	182
	101.0	305	102.8	307	104.4	308	105.8	309	107.1	310
310	19	169	19	171	19	173	20	175	20	177
	94.8	299	96.4	301	97.9	302	99.2	303	100.4	304
290	18	164	18	166	19	168	19	170	19	171
	88.6	293	90.1	294	91.5	296	92.7	297	93.8	298
270	17	159	17	161	18	163	18	164	18	166
	82.6	287	84.0	288	85.3	289	86.4	290	87.4	291
250	16	154	17	156	17	157	17	159	17	160
	76.8	281	78.0	282	79.2	283	80.2	284	81.1	285
200	14	141	14	142	14	144	15	145	15	146
	62.7	265	63.6	266	64.5	268	65.3	269	66.0	270
150	12	126	12	127	12	128	12	129	12	130
	49.1	248	49.7	249	50.4	250	50.9	252	51.4	253
100	9	103	9	103	9	104	9	105	9	105
	33.7	224	34.1	225	34.4	226	34.6	227	34.9	229
50	6	79	6	79	6	79	6	79	6	80
	19.6	196	19.7	198	19.9	199	20.0	201	20.0	202
CORRECTION	ISA - 10 C		ISA + 15°C		ISA + 20°C		COWL A/I ON		ALL A/I ON	
FUEL	-2%		7%		18%		17%		61%	
TIME	0%		3%		5%		4%		10%	
DISTANCE	-2%		6%		10%		5%		12%	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_FP_Descent_p3

Flight planning – Descent to sea level – page 3 <Metric>
Figure 05–03–34

ALLOWANCES AND CORRECTION FACTORS

Allowances and correction factors applicable to the flight planning tables are summarized as follows: <Metric>

- Average APU fuel flow rate under normal operation is approximately 136 kg per hour.
- Taxi fuel allowance is approximately 9.1 kg per minute.
- For every 5% CG variation from the 27% reference CG position, increase (forward CG) or decrease (aft CG) trip fuel by 2.5%.
- Increase total trip fuel by 2% with cowl anti-ice on and 6% with wing and cowl anti-ice on.

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INTRODUCTION

The operational data section provides data which is intended to be used in-flight when no FMS performance data is available.

This section contains All Engines Operating (AEO) and One Engine Inoperative (OEI) operational performance data for enroute:

- Green dot speed
- In-cruise quick check
- Holding
- MCT N1
- Maximum altitude and drift down data

The section also contains AEO and OEI operational performance data for landing:

- Operating speeds
- Runway condition assessment matrix
- Operational Landing Distances (OLD)
- Brake cooling time.

NOTE

The charts used in the examples are for illustrative purposes only and may not represent the actual performance of the aircraft. Always use the correct charts to derive the performance calculations.

EXAMPLE – ENROUTE – ALL ENGINES OPERATING (AEO)

A. Green dot speed – AEO <Metric>

The Green dot speed – AEO table (refer to Enroute – All engines operating – Green dot speed <72211001D>) is used to determine the green dot – AEO speed, which represents the best gradient speed for all engines operating.

The green dot – AEO speed is found at the intersection of the pressure altitude and corresponding weight (for any given instance).

Example:

Conditions:

- Weight = 50000 kg
- Pressure altitude = 29000 ft

Use the Example – Green dot speed – AEO table (refer to Figure 05–04–1).

GREEN DOT –AEO							
ALL ENGINES OPERATIVE CLEAN CONFIGURATION						GREEN DOT (KIAS)	
PRESS. ALT. (FT)	WEIGHT (1000 KG)						
	35	40	45	50	55	60	65
10000	166	179	190	199	209	219	229
15000	168	179	190	201	211	220	230
17000	168	179	190	201	211	221	230
19000	168	179	191	202	212	221	231
21000	168	180	191	202	212	222	231
23000	168	180	192	203	213	223	232
25000	169	181	192	203	213	223	233
27000	169	181	193	204	214	224	232
29000	170	182	193	204	215	223	232
31000	170	183	194	205	214	223	234
33000	171	183	195	204	214	225	237
35000	171	183	194	204	216	228	237
37000	172	184	194	206	218	227	238
39000	172	183	196	208	218	229	--
41000	171	184	198	208	--	--	--

Example – Green dot speed – AEO <Metric>
Figure 05–04–1

Result:

- Green dot speed = 204 KIAS

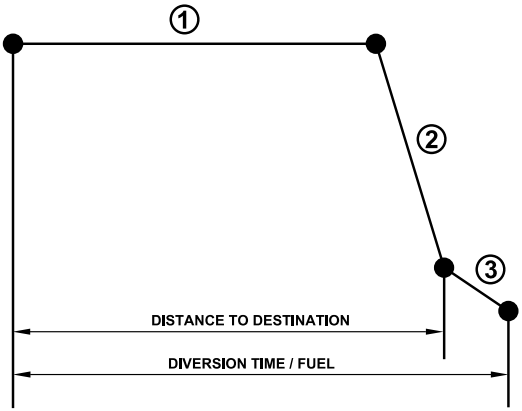
B. In-cruise quick check – AEO <Metric>

The In-cruise quick check tables (refer to Enroute – All engines operating – In-cruise quick check <72211001D>) are used to estimate the fuel required and time remaining from any point during cruise until landing (at destination airport or alternate airport) with all engines operating.

The profile shown in Figure 05–04–2 includes cruise, descent, approach and landing from 1500 ft down to sea level.

NOTE

This profile does not include reserve fuel.



LEGEND:

1. Cruise
2. Descent
3. Approach and landing (from 1500 ft)

In–cruise quick check profile <Metric>
Figure 05–04–2

The required fuel and time is found at the intersection of the relevant air distance to destination and the weight of the aircraft at that instance.

Example:

Conditions:

- Current weight = 50000 kg
- Wind = Still
- Air distance = 1200 nm
- Flight level = FL350

Use the Example – In-cruise quick check – 0.78M table (refer to Figure 05–04–3) to calculate required fuel and time.

IN CRUISE QUICK CHECK –0.78 M								
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED:PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC				FUEL (KG) TIME (MIN)	
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		400	600	800	1000	1200	1400	1600
40000	FL290	1708	2630	3550	4466	5380	--	--
		60	86	112	138	164	--	--
	FL350	1385	2135	2881	3624	4364	5102	--
		61	88	114	141	168	194	--
	FL390	1227	1892	2554	3213	3868	4520	5168
		61	88	115	142	168	195	222
45000	FL290	171	2655	3590	4522	5451	6377	7300
		60	86	112	138	164	190	216
	FL350	1405	2177	2946	3710	4472	5230	5984
		61	88	115	141	168	195	221
	FL390	1260	1956	2648	3335	4017	4696	5370
		61	88	115	142	169	195	222
50000	FL290	1730	2687	3639	4588	5534	6476	7415
		60	86	112	138	164	190	216
	FL350	1430	2231	3024	3814	4599	5380	6157
		61	88	115	141	168	195	221
	FL390	1296	2034	2760	3480	4195	4905	5610
		62	88	115	142	169	196	222
55000	FL290	1730	2693	3660	4631	5607	6587	7552
		6	86	112	138	164	190	216
	FL350	1430	2235	3045	3860	4681	5506	6337
		61	88	115	141	168	195	222
	FL390	1296	2036	2783	3536	4298	5068	5848
		62	88	115	142	169	196	223

Example – In–cruise quick check – 0.78M <Metric>
Figure 05–04–3

Result:

- Required fuel = 4599 kg
- Required time = 168 min

Conclusion:

The aircraft must have at least 4599 kg of fuel on board to complete the mission. This amount does not include reserves.

C. Holding – AEO <Metric>

The Holding – AEO table (refer to Enroute – All engines operating – Holding <72211001D>) is used to calculate the fuel flow during a hold and the corresponding holding speed.

The fuel flow and holding speed are found at the intersection of gross weight and altitude.

Example:

Conditions:

- Weight = 45000 kg
- Flight level = FL50
- Holding in a racetrack pattern

Use the Example – Holding – AEO table (refer to Figure 05–04–4) to calculate required fuel and time.

HOLDING – AEO						
ALL ENGINE OPERATIVE CLEAN CONFIGURATION RACETRACK PATTERN			ISA CG 27% MAC		HOLDING SPEED (KIAS) TOTAL FUEL FLOW (KG/MIN)	
FL	GROSS WEIGHT (KG)					
	35000	40000	45000	50000	55000	60000
15	174 21	187 23	199 25	211 28	221 31	230 33
50	175 20	188 22	201 25	211 27	221 30	231 33
100	176 20	189 22	200 24	211 27	222 30	232 32
150	177 19	189 21	201 24	213 26	223 29	233 31
200	178 19	191 21	202 23	214 26	225 28	235 31
250	179 19	192 21	204 23	215 26	226 28	237 31
300	180 18	193 21	205 23	216 26	225 28	237 32

NOTE

In a linear holding, use Green Dot speed and reduce the Fuel Flow by 5%

Example – Holding – AEO <Metric>
Figure 05–04–4

Result:

- Holding speed = 201 KIAS
- Fuel flow = 25 kg/min

Conclusion:

For the above conditions, a 30-minute hold at 201 KIAS will require 750 kg of fuel.

EXAMPLE – ENROUTE – ONE ENGINE INOPERATIVE (OEI)

A. Green dot speed – OEI <Metric>

The Green dot speed – OEI table (refer to Enroute – One engine inoperative – Green dot speed <72211001D>) is used to determine the green dot – OEI speed, which represents the best gradient speed and is also the recommended driftdown and holding speed for single engine operations.

The green dot – OEI speed is found at the intersection of the pressure altitude and corresponding weight (for any given instance).

Example:

Conditions:

- Weight = 47500 kg
- Pressure altitude = 17000 ft

Use the Example – Green dot speed – OEI table (refer to Figure 05–04–5).

GREEN DOT –OEI							
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION						GREEN DOT (KIAS)	
PRESS. ALT. (FT)	WEIGHT (1000 KG)						
	35	40	45	50	55	60	65
1500	154	165	175	184	193	202	210
5000	155	166	176	185	195	203	211
10000	156	167	177	187	196	205	214
15000	158	169	179	189	198	207	216
17000	159	170	180	190	200	209	217
19000	160	171	182	192	201	210	219
21000	161	172	183	193	203	212	221
23000	162	173	184	194	204	213	--
25000	163	175	186	196	206	--	--
27000	164	176	187	198	--	--	--
29000	166	177	189	--	--	--	--
31000	167	179	191	--	--	--	--
33000	169	181	--	--	--	--	--
35000	171	--	--	--	--	--	--
37000	172	--	--	--	--	--	--

Example – Green dot speed – OEI <Metric>
Figure 05–04–5

Result:

- Green dot speed = 185 KIAS

B. Maximum altitude and driftdown data <Metric>

The Maximum altitude and driftdown table (refer to Enroute – One engine inoperative – Maximum altitude and driftdown <72211001D>) is used to calculate the gross level-off altitude after an engine failure.

NOTE

Gross level-off altitude is not intended for obstacle clearance. For obstacle clearance altitude, refer to the net performance in the Enroute data of the dispatch section.

The level-off altitude and weight is found at the intersection of the initial weight and temperature.

Example:

Conditions:

- Weight = 50000 kg
- Temperature = ISA

Use the Example – Maximum altitude and driftdown table (refer to Figure 05–04–6) to calculate the gross level-off altitude and final weight.

MAXIMUM ALTITUDE AND DRIFTDOWN			
PW1524G –MCT ONE ENGINE INOPERATIVE ENGINE BLEED:PACKS ON, A/I OFF APU ON GREEN DOT		INITIAL ALITUDE 37000FT CG FWD	GROSS LEVEL OFF ALTITUDE (FT) FINAL WEIGHT (1000 KG)
INITIAL WEIGHT (KG)	TEMPERATURE (°C)		
	ISA	ISA +10	ISA +20
38000	36600	35500	34000
	37.6	37.4	37.3
42000	34600	33300	31700
	41.3	41.1	41.0
46000	32600	31200	29500
	44.1	44.9	44.9
50000	30700	29100	27400
	48.9	48.8	48.7
54000	28900	27300	25400
	52.6	52.6	52.5
58000	27000	25500	23600
	56.4	56.4	56.3

Example – Maximum altitude and driftdown <Metric>
Figure 05–04–6

Result:

- Level-off altitude = 30700 ft
- Final weight = 48900 kg

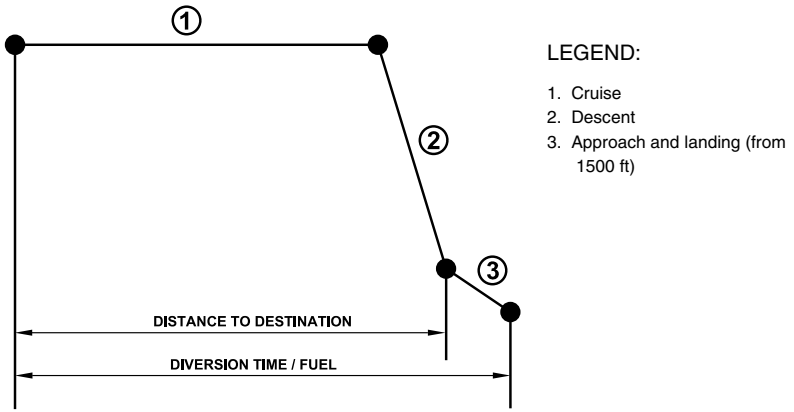
C. In-cruise quick check – OEI <Metric>

The In-cruise quick check – LRC table (refer to Enroute – One engine inoperative – In-cruise quick check <72211001D>) is used to estimate the fuel required and time remaining from any point during cruise until landing (at destination airport or alternate airport) with one engines inoperative at LRC speed.

The profile shown in Figure 05–04–7 includes cruise, descent and approach and landing from 1500 ft down to sea level.

NOTE

This profile does not include reserve fuel.



In–cruise quick check profile <Metric>
Figure 05–04–7

The required fuel and time is found at the intersection of the relevant air distance to destination and the weight of the aircraft at that instance.

Example:

Conditions:

- Weight = 48720 kg
- Air distance = 1200 nm
- Flight level = FL180

Use the Example – In-cruise quick check – LRC table (refer to Figure 05–04–8) to calculate required fuel and time.

IN CRUISE QUICK CHECK –LRC								
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED:PACKS ON, A/I OFF APU OFF		ISA CG 27% MAC				FUEL (KG) TIME (MIN)		
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		400	600	800	1000	1200	1400	1600
40000	FL100	1895 102	2822 152	3740 202	4648 252	5472 298	-- --	-- --
	FL180	1605 91	2414 136	3214 180	4005 225	4787 271	5486 313	-- --
	FL260	1391 83	2113 123	2826 164	3530 204	4225 245	4912 286	5518 323
45000	FL100	1993 99	2972 146	3941 194	4900 243	5848 292	6787 341	7715 390
	FL180	1694 88	2556 130	3409 172	4253 215	5087 258	5913 302	6729 346
	FL260	1491 81	2276 119	3050 158	3815 197	4569 236	5313 275	6048 315
50000	FL100	2095 94	3129 139	4151 186	5162 232	6161 279	7150 327	8128 374
	FL180	-- --	2701 125	3608 166	4504 207	5390 248	6266 290	7133 332
	FL260	-- --	2452 114	3293 151	4122 189	4940 226	5745 264	6540 303
55000	FL100	-- --	-- --	-- --	-- --	-- --	7528 310	8557 356
	FL180	-- --	-- --	-- --	-- --	-- --	-- --	7553 320
	FL260	-- --	-- --	-- --	-- --	-- --	-- --	-- --

Example – In–cruise quick check – LRC <Metric>
Figure 05–04–8

Result (by interpolation):

- Required fuel = 5313 kg
- Required time = 251 min

Conclusion:

The aircraft must have at least 5313 kg of fuel on board to complete the mission. This amount does not include reserves.

D. Holding – OEI <Metric>

The Holding – OEI table (refer to Enroute – One engine inoperative – Holding <72211001D>) is used to calculate the fuel flow during a hold and the corresponding holding speed.

The fuel flow and holding speed values are found at the intersection of gross weight and altitude.

Example:

Conditions:

- Weight = 50000 kg
- Flight level = FL150
- Holding in a racetrack pattern

Use the Example – Holding – OEI table (refer to Figure 05–04–9) to determine the required fuel flow and holding speed.

HOLDING – OEI						
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION RACETRACK PATTERN			ISA CG 27% MAC		HOLDING SPEED (KIAS) TOTAL FUEL FLOW (KG/MIN)	
FL	GROSS WEIGHT (KG)					
	35000	40000	45000	50000	55000	60000
15	161 16	174 18	185 21	195 23	205 25	214 27
50	163 15	176 18	186 20	196 22	206 24	215 27
100	165 15	177 18	188 20	198 22	208 25	217 27
150	167 15	179 17	190 20	200 22	210 25	220 27
200	170 15	182 18	193 20	204 23	214 26	224 29
250	173 15	185 18	197 21	208 24	-- --	-- --
300	176 16	189 19	-- --	-- --	-- --	-- --

CS100_FCOM-QRH_v002_OEI_holding_MET.dat

NOTE

In a linear holding, use Green Dot speed and reduce the Fuel Flow by 5%

Example – Holding – OEI <Metric>
Figure 05–04–9

Result:

- Holding speed = 200 KIAS
- Fuel flow = 22 kg/min

Conclusion:

For the above conditions, a 30-minute hold at 200 KIAS will require 660 kg of fuel.

EXAMPLE – LANDING

A. Operating speeds <Metric>

The Operating speed tables (refer to Landing – Operating speeds <72211001D>) are used to determine V_{REF} (reference speed at landing) for the selected landing FLAP, V_{AC} (OEI go-around speed) and V_{GA} (AEO go-around speed) based on the appropriate go-around FLAP.

The operational speeds are found at the intersection of the weight and pressure altitude.

For FLAP 5 only, during an approach and landing in icing conditions, or if there is evidence of ice accretion, V_{REF}, V_{AC} and V_{GA} speeds must be increased by 5 KIAS.

NOTE

The approach speed (V_{APP}) is equal to V_{REF} (increased by 5 kt for icing if applicable) plus any increment for use of autothrottle or wind gust factor.

Example:

Conditions:

- FLAP 2/FLAP 4 landing
- Landing weight = 45000 kg
- Pressure altitude = 1000 ft

Use the Example – Operating speeds table (refer to Figure 05–04–10) to determine V_{REF} and V_{AC} for selected FLAP settings.

VREF - VAC			
FLAP 2 APP FLAP 4 LDG			VREF (KIAS) VAC (KIAS)
WEIGHT (KG)	PRESSURE ALTITUDE (FT)		
	0	4000	8000
38000	113	113	113
	119	119	119
43000	120	120	120
	126	126	126
48000	127	127	128
	133	133	134
53000	133	134	134
	139	140	140
58000	139	140	141
	145	146	147
61500	143	144	145
	149	150	151

CS100_23K_v1_vref_vac_F2_4

Example – VREF – VAC – FLAP 2 approach – FLAP 4 landing <Metric>
Figure 05–04–10

Use the Example – VGA – FLAP 2 (refer to Figure 05–04–11) to determine V_{GA} for selected FLAP settings.

GO AROUND SPEED			
FLAP 2			VGA (KIAS)
WEIGHT (KG)	PRESSURE ALTITUDE (FT)		
	0	5000	10000
38000	175	158	137
40000	170	152	134
42000	165	148	135
44000	161	144	138
46000	157	142	141
48000	154	143	144
50000	151	146	147
52000	149	149	150
54000	150	151	152
56000	153	154	155
58000	155	156	157
60000	157	158	160
61500	160	161	162

CS100_23K_v1_VGA_F2

Example – VGA – FLAP 2 <Metric>
Figure 05–04–11

Results (by interpolation):

- V_{REF} = 123 KIAS
- V_{AC} = 129 KIAS
- V_{GA} = 158 KIAS

B. Runway Condition Assessment Matrix (RCAM) <Metric>

The Runway condition assessment matrix (refer to Landing – Runway Condition Assessment Matrix (RCAM) <72211001D>) shows the relationship between runway code, runway condition description and pilot report.

NOTE

Selection of the CAFM Runway Code must be based on the runway surface condition description. The Equivalent Pilot-reported braking action must only be considered if it downgrades the runway condition (i.e. reduce the CAFM Runway Code).

Example:

Conditions:

- Runway contaminant = Compacted snow
- OAT= –19°C

Use the Landing – Runway Condition Assessment Matrix (RCAM) table (refer to Landing – Runway Condition Assessment Matrix (RCAM) <72211001D>).

Result:

- Runway code = 4

C. Operational Landing Distance (OLD) <Metric>

The Operational landing distance tables (refer to Landing – Operational landing distance <72211001D>) are used to provide advisory data for in-flight assessment.

The operational landing distance is found at the intersection of the landing weight, pressure altitude and runway code from the Runway Condition Assessment Matrix (RCAM).

Corrections for speed above V_{REF}, wind, slope, reversers use, and temperature deviation from ISA are given in the Operational landing distance corrections tables (refer to Landing – Operational landing distance <72211001D>).

The correction on the OLD for speed increment above V_{REF} (given for every 5 kt increment) must be applied based on the actual approach speed (V_{APP}).

For FLAP 5 only, during an approach and landing in icing conditions, or if there is evidence of ice accretion, the correction on OLD for 5 kt speed increment above V_{REF} must be applied.

Example:

Conditions:

- FLAP 4 landing
- Landing weight = 45000 kg
- Runway code = 4
- Pressure altitude = 1000 ft
- Landing Distance Available (LDA) = 1800 m

Use the Example – Operational landing distance table (refer to Figure 05–04–12) to determine the operational landing distance.

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF 2 THRUST REVERSERS			WIND CALM SLOPE ZERO				OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
38000	6	1010	1030	1050	1070	1095	1140	1195
	5	1135	1160	1190	1220	1250	1320	1390
	4	1290	1315	1345	1375	1405	1470	1540
	3	1380	1410	1440	1475	1505	1580	1655
	2	1505	1545	1580	1625	1665	1760	1860
	1	1700	1740	1785	1825	1875	1970	2070
43000	6	1100	1120	1145	1170	1195	1250	1310
	5	1255	1290	1320	1355	1390	1465	1550
	4	1410	1440	1470	1505	1540	1610	1695
	3	1510	1545	1580	1615	1650	1730	1825
	2	1670	1710	1760	1810	1860	1970	2090
	1	1870	1920	1965	2015	2065	2175	2295
48000	6	1190	1215	1240	1265	1295	1355	1425
	5	1380	1415	1450	1490	1530	1620	1720
	4	1530	1560	1595	1635	1670	1755	1845
	3	1640	1675	1715	1755	1800	1890	1990
	2	1840	1890	1945	2000	2055	2185	2325
	1	2045	2095	2145	2200	2260	2385	2520

CS100_23K_FCOM_v5_Operational_LDG_Distances_F4_p1

Example – Operational landing distance <Metric>
Figure 05–04–12

Result:

- Uncorrected landing distance = 1488 m
- Approach speed = V_{REF} + 5
- Headwind = 5 kts
- Slope = 1%
- 2 thrust reversers
- Temperature = ISA−10°C

Use the Example – Operational landing distance corrections table (refer to Figure 05–04–13).

OPERATIONAL LANDING DISTANCES CORRECTIONS									
FLAP 4								OPERATIONAL LANDING DISTANCES CORRECTIONS (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
38000	6	70	230	10	-10	40	20	-30	30
	5	85	330	20	-20	90	40	-45	40
	4	75	320	25	-20	140	60	-40	40
	3	80	355	30	-30	200	85	-45	40
	2	100	485	45	-45	380	145	-60	55
	1	90	510	80	-75	610	230	-60	55
61500	6	90	325	15	-15	50	25	-50	50
	5	110	435	35	-35	200	90	-65	70
	4	95	375	40	-35	195	85	-55	60
	3	100	420	55	-45	280	125	-65	65
	2	120	610	90	-85	685	270	-95	90
	1	115	620	135	-115	760	305	-85	90

CS100_23K_QRH_v006_Operational_LDG_Distances_correction_F25

Example – Operational landing distance corrections <Metric>
Figure 05–04–13

Correction for speed = 81 m

Correction for wind = no corrections

Correction for slope = –24 m

Correction for reversers = no corrections

Correction for temperature = –44 m

Result:

- Operational landing distance = 1488 + 81 – 24 – 44 = 1501 m
- Factored operational landing distance = 1501 x 1.15 = 1727 m.

Conclusion:

The factored operational landing distance (1727 m) is shorter than LDA (1800 m).

ENROUTE – ALL ENGINES OPERATING

A. Green dot speed – AEO

GREEN DOT - AEO							
ALL ENGINES OPERATIVE CLEAN CONFIGURATION						GREEN DOT (KIAS)	
PRESS. ALT. (FT)	WEIGHT (1000 KG)						
	40	45	50	55	60	65	69
10000	177	189	200	210	220	230	237
15000	179	191	202	212	222	231	238
17000	180	191	202	213	223	232	239
19000	180	192	203	213	223	232	239
21000	181	192	204	214	223	233	240
23000	181	193	204	214	224	233	240
25000	182	193	204	215	224	233	241
27000	183	194	205	215	225	234	242
29000	183	194	205	215	225	235	243
31000	183	195	205	216	226	236	244
33000	184	195	206	217	228	238	244
35000	184	196	207	218	229	237	241
37000	184	197	208	219	227	233	237
39000	185	198	209	217	223	--	--
41000	186	199	207	213	--	--	--

CS300_ALL_NAMEPLATES_FCOM_MET_v01_AEO_GD

Green dot speed – AEO <Metric>
Figure 05–04B–1

B. Climb N1 – PW1521G-3 <72211001D>

THRUST SETTING– %N1

MAXIMUM CLIMB – 250 KIAS

CLB (ALL ENGINE OPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	73.2	75.0	75.6	76.2	76.9	77.5	78.2	78.9	79.6	80.3	81.0	81.7
–50	–58	74.1	75.8	76.5	77.1	77.7	78.4	79.1	79.8	80.5	81.2	81.9	82.6
–45	–49	74.9	76.7	77.3	77.9	78.6	79.3	80.0	80.7	81.4	82.1	82.8	83.5
–40	–40	75.7	77.5	78.2	78.8	79.4	80.1	80.8	81.6	82.3	83.0	83.7	84.4
–35	–31	76.5	78.3	79.0	79.6	80.3	81.0	81.7	82.4	83.1	83.9	84.6	85.3
–30	–22	77.2	79.1	79.8	80.4	81.1	81.8	82.5	83.2	84.0	84.7	85.5	86.2
–25	–13	78.0	79.9	80.6	81.2	81.9	82.6	83.3	84.1	84.8	85.6	86.3	87.1
–20	–4	78.8	80.7	81.4	82.1	82.7	83.4	84.2	84.9	85.7	86.4	87.2	87.9
–15	5	79.6	81.5	82.2	82.8	83.5	84.2	85.0	85.8	86.5	87.3	88.0	88.8
–10	14	80.3	82.3	83.0	83.6	84.3	85.1	85.8	86.6	87.3	88.1	88.8	89.6
–5	23	81.1	83.1	83.7	84.4	85.1	85.8	86.6	87.4	88.2	88.9	89.7	90.4
0	32	81.8	83.8	84.5	85.2	85.9	86.7	87.4	88.2	89.0	89.7	90.5	91.3
5	41	82.6	84.6	85.3	86.0	86.7	87.4	88.2	89.0	89.8	90.6	91.3	92.1
10	50	83.3	85.3	86.1	86.8	87.5	88.2	89.0	89.8	90.6	91.0	90.9	90.9
15	59	84.1	86.1	86.8	87.5	88.2	89.0	89.8	89.8	89.7	89.7	89.6	89.5
20	68	84.8	86.8	87.6	88.3	88.6	88.5	88.5	88.4	88.4	88.3	88.2	88.1
25	77	85.5	87.6	87.5	87.3	87.2	87.2	87.2	87.0	87.0	86.9	86.8	86.7
30	86	85.8	86.2	86.1	85.9	85.8	85.7	85.6	85.5	85.4	85.4	85.3	85.2
35	95	84.4	84.8	84.6	84.5	84.3	84.2	84.1	84.1	84.0	83.9	83.8	83.7
40	104	83.1	83.3	83.2	83.1	82.9	82.8	82.7	82.7	82.6	82.5	82.4	82.3
45	113	81.7	82.0	81.9	81.8	81.7	81.6	81.5	81.4	81.3	81.2	81.0	80.8
50	122	80.4	80.8	80.7	80.5	80.4	80.3	80.2	80.1	79.9	79.8	79.6	79.4
53	127	79.7	80.0	79.9	79.8	79.7	79.5	79.4	79.2	79.1	78.9	––	––

cs300_pw1521G_v05r2_status_mcl_avg_000_1.ch16

Maximum climb – 250 KIAS – Engine bleeds closed <72211001D>
Figure 05–04B–2

THRUST SETTING– %N1

MAXIMUM CLIMB – 275 KIAS / M0.78

CLB (ALL ENGINE OPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	–94	––	––	84.6	85.9	90.9	92.4	93.0	92.4
–65	–85	79.8	83.0	85.6	86.9	92.0	93.4	94.1	93.4
–60	–76	80.8	83.9	86.5	87.9	93.0	94.4	95.1	94.5
–55	–67	81.7	84.9	87.5	88.9	94.0	95.4	96.1	95.5
–50	–58	82.6	85.8	88.5	89.9	94.9	96.4	97.0	96.5
–45	–49	83.5	86.8	89.4	90.9	95.9	97.3	98.0	96.9
–40	–40	84.4	87.7	90.3	91.8	96.9	98.0	97.6	96.4
–35	–31	85.3	88.6	91.2	92.8	97.8	97.5	97.1	95.9
–30	–22	86.2	89.5	92.1	93.7	97.5	97.1	96.7	95.4
–25	–13	87.0	90.4	92.9	94.6	97.2	96.6	96.2	94.7
–20	–4	87.9	91.3	93.8	94.1	96.8	96.1	95.6	93.7
–15	5	88.7	92.1	94.7	93.2	96.2	95.2	94.6	––
–10	14	89.6	93.0	94.1	92.1	95.4	94.2	93.8	––
–5	23	90.4	93.8	93.0	90.9	94.3	93.3	93.0	––
0	32	91.2	92.8	91.9	89.8	93.4	––	––	––
5	41	92.1	91.5	90.8	88.7	92.4	––	––	––
10	50	90.9	90.1	89.7	87.6	––	––	––	––
15	59	89.5	88.8	88.6	86.5	––	––	––	––
20	68	88.1	87.4	87.5	––	––	––	––	––
25	77	86.8	86.2	86.5	––	––	––	––	––
30	86	85.3	85.0	––	––	––	––	––	––
35	95	83.9	83.7	––	––	––	––	––	––
40	104	82.5	––	––	––	––	––	––	––
45	113	81.2	––	––	––	––	––	––	––
50	122	79.8	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_mcl_avg_000_23.ch16

Maximum climb – 275 KIAS/M0.78 – Engine bleeds closed <72211001D>
Figure 05–04B–3

THRUST SETTING– %N1

MAXIMUM CLIMB – 250 KIAS

CLB (ALL ENGINE OPERATIVE)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	73.2	75.0	75.6	76.2	76.9	77.5	78.2	78.9	79.6	80.3	81.0	81.7
–50	–58	74.1	75.8	76.5	77.1	77.7	78.4	79.1	79.8	80.5	81.2	81.9	82.6
–45	–49	74.9	76.7	77.3	77.9	78.6	79.3	80.0	80.7	81.4	82.1	82.8	83.5
–40	–40	75.7	77.5	78.2	78.8	79.4	80.1	80.8	81.6	82.3	83.0	83.7	84.4
–35	–31	76.5	78.3	79.0	79.6	80.3	81.0	81.7	82.4	83.1	83.9	84.6	85.3
–30	–22	77.2	79.1	79.8	80.4	81.1	81.8	82.5	83.2	84.0	84.7	85.5	86.2
–25	–13	78.0	79.9	80.6	81.2	81.9	82.6	83.3	84.1	84.8	85.6	86.3	87.1
–20	–4	78.8	80.7	81.4	82.1	82.7	83.4	84.2	84.9	85.7	86.4	87.2	87.9
–15	5	79.6	81.5	82.2	82.8	83.5	84.2	85.0	85.8	86.5	87.3	88.0	88.8
–10	14	80.3	82.3	83.0	83.6	84.3	85.1	85.8	86.6	87.3	88.1	88.8	89.6
–5	23	81.1	83.1	83.7	84.4	85.1	85.8	86.6	87.4	88.2	88.9	89.7	90.4
0	32	81.8	83.8	84.5	85.2	85.9	86.7	87.4	88.2	89.0	89.7	90.5	91.3
5	41	82.6	84.6	85.3	86.0	86.7	87.4	88.2	89.0	89.8	90.6	91.3	92.1
10	50	83.3	85.3	86.1	86.8	87.5	88.2	89.0	89.8	90.6	91.0	90.9	90.9
15	59	84.1	86.1	86.8	87.5	88.2	89.0	89.8	89.8	89.7	89.7	89.6	89.5
20	68	84.8	86.8	87.6	88.3	88.6	88.5	88.5	88.4	88.4	88.3	88.2	88.1
25	77	85.5	87.6	87.5	87.3	87.2	87.2	87.2	87.0	87.0	86.9	86.8	86.7
30	86	85.8	86.2	86.1	85.9	85.8	85.7	85.6	85.5	85.4	85.4	85.3	85.2
35	95	84.4	84.8	84.6	84.5	84.3	84.2	84.1	84.1	84.0	83.9	83.8	83.7
40	104	83.1	83.3	83.2	83.1	82.9	82.8	82.7	82.7	82.6	82.5	82.4	82.3
45	113	81.7	82.0	81.9	81.8	81.7	81.6	81.5	81.4	81.3	81.2	81.0	80.8
50	122	80.4	80.8	80.7	80.5	80.4	80.3	80.2	80.1	79.9	79.8	79.6	79.4
53	127	79.7	80.0	79.9	79.8	79.7	79.5	79.4	79.2	79.1	78.9	––	––

cs300_pw1521G_v05r2_status_mcl_avg_100_1.ch16

Maximum climb – 250 KIAS – Packs on, anti–ice off <72211001D>
Figure 05–04B–4

THRUST SETTING– %N1

MAXIMUM CLIMB – 275 KIAS / M0.78

CLB (ALL ENGINE OPERATIVE)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	–94	––	––	84.6	85.9	90.9	92.4	93.0	92.4
–65	–85	79.8	83.0	85.6	86.9	92.0	93.4	94.1	93.4
–60	–76	80.8	83.9	86.5	87.9	93.0	94.4	95.1	94.5
–55	–67	81.7	84.9	87.5	88.9	94.0	95.4	96.1	95.5
–50	–58	82.6	85.8	88.5	89.9	94.9	96.4	97.0	96.5
–45	–49	83.5	86.8	89.4	90.9	95.9	97.3	98.0	96.9
–40	–40	84.4	87.7	90.3	91.8	96.9	98.0	97.6	96.4
–35	–31	85.3	88.6	91.2	92.8	97.8	97.5	97.1	95.9
–30	–22	86.2	89.5	92.1	93.7	97.5	97.1	96.7	95.4
–25	–13	87.0	90.4	92.9	94.6	97.2	96.6	96.2	94.7
–20	–4	87.9	91.3	93.8	94.1	96.8	96.1	95.6	93.7
–15	5	88.7	92.1	94.7	93.2	96.2	95.2	94.6	––
–10	14	89.6	93.0	94.1	92.1	95.4	94.2	93.8	––
–5	23	90.4	93.8	93.0	90.9	94.3	93.3	93.0	––
0	32	91.2	92.8	91.9	89.8	93.4	––	––	––
5	41	92.1	91.5	90.8	88.7	92.4	––	––	––
10	50	90.9	90.1	89.7	87.6	––	––	––	––
15	59	89.5	88.8	88.6	86.5	––	––	––	––
20	68	88.1	87.4	87.5	––	––	––	––	––
25	77	86.8	86.2	86.5	––	––	––	––	––
30	86	85.3	85.0	––	––	––	––	––	––
35	95	83.9	83.7	––	––	––	––	––	––
40	104	82.5	––	––	––	––	––	––	––
45	113	81.2	––	––	––	––	––	––	––
50	122	79.8	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_mcl_avg_100_23.ch16

Maximum climb – 275 KIAS/M0.78 – Packs on, anti–ice off <72211001D>
Figure 05–04B–5

THRUST SETTING– %N1

MAXIMUM CLIMB – 250 KIAS

CLB (ALL ENGINE OPERATIVE)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	**–67**	73.3	75.1	75.7	76.3	77.0	77.6	78.3	79.0	79.7	80.4	81.1	81.8
–50	**–58**	74.1	75.9	76.6	77.2	77.8	78.5	79.2	79.9	80.6	81.3	82.0	82.8
–45	**–49**	74.9	76.8	77.4	78.1	78.7	79.4	80.1	80.8	81.5	82.2	82.9	83.7
–40	**–40**	75.8	77.6	78.2	78.9	79.5	80.2	80.9	81.7	82.4	83.1	83.8	84.6
–35	**–31**	76.6	78.4	79.1	79.7	80.4	81.1	81.8	82.5	83.2	84.0	84.7	85.4
–30	**–22**	77.3	79.2	79.9	80.5	81.2	81.9	82.6	83.3	84.1	84.8	85.6	86.3
–25	**–13**	78.1	80.0	80.7	81.3	82.0	82.7	83.4	84.2	84.9	85.7	86.4	87.2
–20	**–4**	78.9	80.8	81.5	82.2	82.8	83.5	84.3	85.0	85.8	86.5	87.3	88.0
–15	**5**	79.7	81.6	82.3	82.9	83.6	84.3	85.1	85.9	86.6	87.4	88.1	88.9
–10	**14**	80.4	82.4	83.1	83.7	84.4	85.2	85.9	86.7	87.4	88.2	89.0	89.7
–5	**23**	81.2	83.2	83.8	84.5	85.2	85.9	86.7	87.5	88.3	89.0	89.8	90.6
0	**32**	81.9	83.9	84.6	85.3	86.0	86.8	87.5	88.3	89.1	89.9	90.6	91.4
5	**41**	82.7	84.7	85.4	86.1	86.8	87.5	88.3	89.1	89.9	90.7	90.7	90.6
10	**50**	83.4	85.4	86.2	86.9	87.6	88.3	89.1	89.5	89.5	89.4	89.3	89.2

cs300_pw1521G_v05r2_status_mcl_avg_110_1.ch16

Maximum climb – 250 KIAS – Packs on, cowl anti–ice on <72211001D>
Figure 05–04B–6

THRUST SETTING– %N1

MAXIMUM CLIMB – 275 KIAS / M0.78

CLB (ALL ENGINE OPERATIVE)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	–94	––	––	84.7	86.1	91.3	92.8	93.6	93.1
–65	–85	79.9	83.1	85.7	87.1	92.3	93.9	94.7	94.2
–60	–76	80.9	84.1	86.7	88.1	93.3	94.9	95.7	95.2
–55	–67	81.8	85.0	87.6	89.1	94.3	95.9	96.7	96.2
–50	–58	82.7	86.0	88.6	90.1	95.3	96.9	97.6	95.8
–45	–49	83.6	86.9	89.6	91.0	96.3	97.4	96.7	94.8
–40	–40	84.5	87.8	90.5	92.0	97.2	96.5	96.0	94.3
–35	–31	85.4	88.8	91.3	92.9	96.6	96.0	95.6	93.9
–30	–22	86.3	89.7	92.2	93.8	96.3	95.7	95.3	93.4
–25	–13	87.2	90.6	93.1	93.5	96.1	95.3	94.8	92.5
–20	–4	88.0	91.4	94.0	92.6	95.7	94.6	93.9	91.1
–15	5	88.9	92.3	93.4	91.4	95.0	93.5	92.7	––
–10	14	89.7	93.1	92.5	90.2	94.0	92.3	91.9	––
–5	23	90.5	92.5	91.2	88.9	92.7	91.5	91.1	––
0	32	91.4	91.2	90.0	87.8	91.7	––	––	––
5	41	90.7	89.7	88.7	86.6	90.8	––	––	––
10	50	89.2	88.2	87.6	85.5	––	––	––	––

cs300_pw1521G_v05r2_status_mcl_avg_110_23.ch16

Maximum climb – 275 KIAS/M0.78 – Packs, cowl anti–ice on <72211001D>
Figure 05–04B–7

THRUST SETTING– %N1

MAXIMUM CLIMB – 250 KIAS

CLB (ALL ENGINE OPERATIVE)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	**–67**	73.3	75.1	75.7	76.3	77.0	77.6	78.3	79.0	79.7	80.4	81.1	81.8
–50	**–58**	74.1	75.9	76.6	77.2	77.8	78.5	79.2	79.9	80.6	81.3	82.0	82.8
–45	**–49**	74.9	76.8	77.4	78.1	78.7	79.4	80.1	80.8	81.5	82.2	82.9	83.7
–40	**–40**	75.8	77.6	78.2	78.9	79.5	80.2	80.9	81.7	82.4	83.1	83.8	84.6
–35	**–31**	76.6	78.4	79.1	79.7	80.4	81.1	81.8	82.5	83.2	84.0	84.7	85.4
–30	**–22**	77.3	79.2	79.9	80.5	81.2	81.9	82.6	83.3	84.1	84.8	85.6	86.3
–25	**–13**	78.1	80.0	80.7	81.3	82.0	82.7	83.4	84.2	84.9	85.7	86.4	87.2
–20	**–4**	78.9	80.8	81.5	82.2	82.8	83.5	84.3	85.0	85.8	86.5	87.3	88.0
–15	**5**	79.7	81.6	82.3	82.9	83.6	84.3	85.1	85.9	86.6	87.4	88.1	88.9
–10	**14**	80.4	82.4	83.1	83.7	84.4	85.2	85.9	86.7	87.4	88.2	89.0	89.7
–5	**23**	81.2	83.2	83.8	84.5	85.2	85.9	86.7	87.5	88.3	89.0	89.8	90.6
0	**32**	81.9	83.9	84.6	85.3	86.0	86.8	87.5	88.3	89.1	89.9	90.6	90.5
5	**41**	82.7	84.7	85.4	86.1	86.8	87.5	88.3	89.1	89.4	89.3	89.2	89.1
10	**50**	83.4	85.4	86.2	86.9	87.6	88.1	88.1	88.0	87.9	87.8	87.7	87.5

cs300_pw1521G_v05r2_status_mcl_avg_111_1.ch16

Maximum climb – 250 KIAS – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–8

THRUST SETTING– %N1

MAXIMUM CLIMB – 275 KIAS / M0.78

CLB (ALL ENGINE OPERATIVE)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)						
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000
–70	–94	––	––	84.7	86.1	91.3	92.8	93.6
–65	–85	79.9	83.1	85.7	87.1	92.3	93.9	94.7
–60	–76	80.9	84.1	86.7	88.1	93.3	94.9	95.7
–55	–67	81.8	85.0	87.6	89.1	94.3	95.9	96.7
–50	–58	82.7	86.0	88.6	90.1	95.3	96.9	96.5
–45	–49	83.6	86.9	89.6	91.0	96.3	96.1	95.1
–40	–40	84.5	87.8	90.5	92.0	96.2	95.1	94.4
–35	–31	85.4	88.8	91.3	92.9	95.2	94.6	94.1
–30	–22	86.3	89.7	92.2	92.6	95.1	94.4	93.9
–25	–13	87.2	90.6	93.1	92.2	95.0	93.9	93.3
–20	–4	88.0	91.4	92.9	91.2	94.6	93.1	92.3
–15	5	88.9	92.3	92.1	89.7	93.8	91.9	90.8
–10	14	89.7	92.4	90.9	88.3	92.6	90.5	89.9
–5	23	90.5	91.1	89.3	87.0	91.1	89.6	89.1
0	32	90.6	89.6	88.0	85.8	90.1	––	––
5	41	89.2	88.0	86.6	84.5	89.1	––	––
10	50	87.6	86.3	85.6	83.4	––	––	––

cs300_pw1521G_v05r2_status_mcl_avg_111_23.ch16

Maximum climb – 275 KIAS/M0.78 – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–9

C. Derated climb N1 – CLB-1 – PW1521G-3 <72211001D>

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–1 (ALL ENGINE OPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	71.9	73.7	74.3	74.9	75.6	76.2	76.9	77.6	78.3	79.0	79.7	80.4
–50	–58	72.7	74.5	75.2	75.8	76.4	77.1	77.7	78.4	79.2	79.9	80.6	81.3
–45	–49	73.5	75.3	76.0	76.6	77.2	77.9	78.6	79.3	80.0	80.7	81.4	82.2
–40	–40	74.3	76.2	76.8	77.4	78.1	78.8	79.4	80.2	80.9	81.6	82.3	83.0
–35	–31	75.1	77.0	77.6	78.2	78.9	79.6	80.3	81.0	81.7	82.5	83.2	83.9
–30	–22	75.9	77.8	78.4	79.1	79.7	80.4	81.1	81.8	82.6	83.3	84.0	84.8
–25	–13	76.6	78.5	79.2	79.8	80.5	81.2	81.9	82.7	83.4	84.2	84.9	85.6
–20	–4	77.4	79.3	80.0	80.6	81.3	82.0	82.7	83.5	84.2	85.0	85.7	86.5
–15	5	78.2	80.1	80.8	81.4	82.1	82.8	83.5	84.3	85.1	85.8	86.6	87.3
–10	14	78.9	80.8	81.5	82.2	82.9	83.6	84.3	85.1	85.9	86.6	87.4	88.1
–5	23	79.6	81.6	82.3	83.0	83.7	84.4	85.1	85.9	86.7	87.4	88.2	89.0
0	32	80.4	82.4	83.1	83.7	84.4	85.2	85.9	86.7	87.5	88.2	89.0	89.8
5	41	81.1	83.1	83.8	84.5	85.2	85.9	86.7	87.5	88.3	89.0	89.8	90.6
10	50	81.8	83.9	84.6	85.3	86.0	86.7	87.5	88.3	89.1	89.5	89.4	89.4
15	59	82.6	84.6	85.3	86.0	86.7	87.5	88.2	88.3	88.2	88.2	88.2	88.1
20	68	83.3	85.3	86.1	86.8	87.1	87.0	87.0	87.0	86.9	86.8	86.8	86.7
25	77	84.0	86.1	85.9	85.8	85.7	85.7	85.7	85.6	85.5	85.4	85.3	85.3
30	86	84.3	84.7	84.6	84.5	84.3	84.2	84.1	84.1	84.0	83.9	83.9	83.8
35	95	82.9	83.3	83.2	83.0	82.9	82.8	82.7	82.6	82.5	82.5	82.4	82.3
40	104	81.6	81.9	81.8	81.6	81.5	81.4	81.3	81.3	81.2	81.1	81.0	80.8
45	113	80.2	80.6	80.5	80.4	80.2	80.1	80.2	80.0	79.9	79.7	79.6	79.4
50	122	79.0	79.4	79.2	79.0	78.9	78.9	78.8	78.7	78.5	78.3	78.1	77.9
53	127	78.3	78.5	78.3	78.2	78.2	78.1	78.0	77.8	77.7	77.5	––	––

cs300_pw1521G_v05r2_status_cl1_avg_000_1.ch16

Derated climb – CLB–1 – 250 KIAS – Engine bleeds closed <72211001D>
Figure 05–04B–10

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–1 (ALL ENGINE OPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	–94	––	––	83.2	84.5	90.9	92.4	93.0	92.4
–65	–85	78.5	81.6	84.2	85.5	92.0	93.4	94.1	93.4
–60	–76	79.4	82.6	85.2	86.5	93.0	94.4	95.1	94.5
–55	–67	80.3	83.5	86.1	87.5	94.0	95.4	96.1	95.5
–50	–58	81.2	84.4	87.1	88.5	94.9	96.4	97.0	96.5
–45	–49	82.1	85.4	88.0	89.5	95.9	97.3	98.0	96.9
–40	–40	83.0	86.3	88.9	90.4	96.9	98.0	97.6	96.4
–35	–31	83.9	87.2	89.8	91.3	97.8	97.5	97.1	95.9
–30	–22	84.7	88.1	90.6	92.2	97.5	97.1	96.7	95.4
–25	–13	85.6	88.9	91.4	93.2	97.2	96.6	96.2	94.7
–20	–4	86.4	89.8	92.3	92.9	96.8	96.1	95.6	93.7
–15	5	87.3	90.7	93.2	93.1	96.2	95.2	94.6	––
–10	14	88.1	91.5	92.5	92.1	95.4	94.2	93.8	––
–5	23	88.9	92.3	91.6	90.9	94.3	93.3	93.0	––
0	32	89.7	91.3	90.8	89.8	93.4	––	––	––
5	41	90.5	90.1	90.7	88.7	92.4	––	––	––
10	50	89.4	88.7	89.7	87.6	––	––	––	––
15	59	88.0	87.4	88.6	86.5	––	––	––	––
20	68	86.7	86.3	87.5	––	––	––	––	––
25	77	85.3	86.1	86.5	––	––	––	––	––
30	86	83.9	85.0	––	––	––	––	––	––
35	95	82.4	83.7	––	––	––	––	––	––
40	104	81.1	––	––	––	––	––	––	––
45	113	79.7	––	––	––	––	––	––	––
50	122	78.3	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_cl1_avg_000_23.ch16

Derated climb – CLB–1 – 275 KIAS/M0.78 – Engine bleeds closed <72211001D>
Figure 05–04B–11

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–1 (ALL ENGINE OPERATIVE)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	71.9	73.7	74.3	74.9	75.6	76.2	76.9	77.6	78.3	79.0	79.7	80.4
–50	–58	72.7	74.5	75.2	75.8	76.4	77.1	77.7	78.4	79.2	79.9	80.6	81.3
–45	–49	73.5	75.3	76.0	76.6	77.2	77.9	78.6	79.3	80.0	80.7	81.4	82.2
–40	–40	74.3	76.2	76.8	77.4	78.1	78.8	79.4	80.2	80.9	81.6	82.3	83.0
–35	–31	75.1	77.0	77.6	78.2	78.9	79.6	80.3	81.0	81.7	82.5	83.2	83.9
–30	–22	75.9	77.8	78.4	79.1	79.7	80.4	81.1	81.8	82.6	83.3	84.0	84.8
–25	–13	76.6	78.5	79.2	79.8	80.5	81.2	81.9	82.7	83.4	84.2	84.9	85.6
–20	–4	77.4	79.3	80.0	80.6	81.3	82.0	82.7	83.5	84.2	85.0	85.7	86.5
–15	5	78.2	80.1	80.8	81.4	82.1	82.8	83.5	84.3	85.1	85.8	86.6	87.3
–10	14	78.9	80.8	81.5	82.2	82.9	83.6	84.3	85.1	85.9	86.6	87.4	88.1
–5	23	79.6	81.6	82.3	83.0	83.7	84.4	85.1	85.9	86.7	87.4	88.2	89.0
0	32	80.4	82.4	83.1	83.7	84.4	85.2	85.9	86.7	87.5	88.2	89.0	89.8
5	41	81.1	83.1	83.8	84.5	85.2	85.9	86.7	87.5	88.3	89.0	89.8	90.6
10	50	81.8	83.9	84.6	85.3	86.0	86.7	87.5	88.3	89.1	89.5	89.4	89.4
15	59	82.6	84.6	85.3	86.0	86.7	87.5	88.2	88.3	88.2	88.2	88.2	88.1
20	68	83.3	85.3	86.1	86.8	87.1	87.0	87.0	87.0	86.9	86.8	86.8	86.7
25	77	84.0	86.1	85.9	85.8	85.7	85.7	85.7	85.6	85.5	85.4	85.3	85.3
30	86	84.3	84.7	84.6	84.5	84.3	84.2	84.1	84.1	84.0	83.9	83.9	83.8
35	95	82.9	83.3	83.2	83.0	82.9	82.8	82.7	82.6	82.5	82.5	82.4	82.3
40	104	81.6	81.9	81.8	81.6	81.5	81.4	81.3	81.3	81.2	81.1	81.0	80.8
45	113	80.2	80.6	80.5	80.4	80.2	80.1	80.2	80.0	79.9	79.7	79.6	79.4
50	122	79.0	79.4	79.2	79.0	78.9	78.9	78.8	78.7	78.5	78.3	78.1	77.9
53	127	78.3	78.5	78.3	78.2	78.2	78.1	78.0	77.8	77.7	77.5	––	––

cs300_pw1521G_v05r2_status_cl1_avg_100_1.ch16

Derated climb – CLB–1 – 250 KIAS – Packs on, anti–ice off <72211001D>
Figure 05–04B–12

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–1 (ALL ENGINE OPERATIVE)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	**–94**	––	––	83.2	84.5	90.9	92.4	93.0	92.4
–65	**–85**	78.5	81.6	84.2	85.5	92.0	93.4	94.1	93.4
–60	**–76**	79.4	82.6	85.2	86.5	93.0	94.4	95.1	94.5
–55	**–67**	80.3	83.5	86.1	87.5	94.0	95.4	96.1	95.5
–50	**–58**	81.2	84.4	87.1	88.5	94.9	96.4	97.0	96.5
–45	**–49**	82.1	85.4	88.0	89.5	95.9	97.3	98.0	96.9
–40	**–40**	83.0	86.3	88.9	90.4	96.9	98.0	97.6	96.4
–35	**–31**	83.9	87.2	89.8	91.3	97.8	97.5	97.1	95.9
–30	**–22**	84.7	88.1	90.6	92.2	97.5	97.1	96.7	95.4
–25	**–13**	85.6	88.9	91.4	93.2	97.2	96.6	96.2	94.7
–20	**–4**	86.4	89.8	92.3	92.9	96.8	96.1	95.6	93.7
–15	**5**	87.3	90.7	93.2	93.1	96.2	95.2	94.6	––
–10	**14**	88.1	91.5	92.5	92.1	95.4	94.2	93.8	––
–5	**23**	88.9	92.3	91.6	90.9	94.3	93.3	93.0	**––**
0	**32**	89.7	91.3	90.8	89.8	93.4	––	––	––
5	**41**	90.5	90.1	90.7	88.7	92.4	––	––	––
10	**50**	89.4	88.7	89.7	87.6	––	––	––	––
15	**59**	88.0	87.4	88.6	86.5	––	––	––	––
20	**68**	86.7	86.3	87.5	––	––	––	––	––
25	**77**	85.3	86.1	86.5	**––**	**––**	**––**	**––**	**––**
30	**86**	83.9	85.0	––	––	––	––	––	––
35	**95**	82.4	83.7	––	––	––	––	––	––
40	**104**	81.1	––	––	––	––	––	––	––
45	**113**	79.7	––	––	––	––	––	––	––
50	**122**	78.3	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_cl1_avg_100_23.ch16

Derated climb – CLB–1 – 275 KIAS/M0.78 – Packs on, anti–ice off <72211001D>
Figure 05–04B–13

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–1 (ALL ENGINE OPERATIVE)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	**–67**	72.0	73.8	74.4	75.0	75.6	76.3	77.0	77.7	78.4	79.1	79.8	80.5
–50	**–58**	72.8	74.6	75.2	75.9	76.5	77.2	77.8	78.6	79.3	80.0	80.7	81.4
–45	**–49**	73.6	75.4	76.1	76.7	77.3	78.0	78.7	79.4	80.1	80.8	81.6	82.3
–40	**–40**	74.4	76.3	76.9	77.5	78.2	78.8	79.5	80.3	81.0	81.7	82.4	83.2
–35	**–31**	75.2	77.1	77.7	78.3	79.0	79.7	80.4	81.1	81.8	82.6	83.3	84.0
–30	**–22**	76.0	77.8	78.5	79.2	79.8	80.5	81.2	81.9	82.7	83.4	84.2	84.9
–25	**–13**	76.7	78.6	79.3	79.9	80.6	81.3	82.0	82.8	83.5	84.3	85.0	85.8
–20	**–4**	77.5	79.4	80.1	80.7	81.4	82.1	82.8	83.6	84.3	85.1	85.8	86.6
–15	**5**	78.2	80.2	80.8	81.5	82.2	82.9	83.6	84.4	85.2	85.9	86.7	87.4
–10	**14**	79.0	80.9	81.6	82.3	83.0	83.7	84.4	85.2	86.0	86.7	87.5	88.3
–5	**23**	79.7	81.7	82.4	83.1	83.8	84.5	85.2	86.0	86.8	87.6	88.3	89.1
0	**32**	80.5	82.5	83.2	83.8	84.5	85.3	86.0	86.8	87.6	88.4	89.1	89.9
5	**41**	81.2	83.2	83.9	84.6	85.3	86.0	86.8	87.6	88.4	89.2	89.2	89.1
10	**50**	81.9	84.0	84.7	85.4	86.1	86.8	87.6	88.0	87.9	87.9	87.8	87.7

cs300_pw1521G_v05r2_status_cl1_avg_110_1.ch16

Derated climb – CLB–1 – 250 KIAS – Packs on, cowl anti–ice on <72211001D>
Figure 05–04B–14

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–1 (ALL ENGINE OPERATIVE)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	**–94**	––	––	83.3	84.7	91.3	92.8	93.6	93.1
–65	**–85**	78.6	81.8	84.3	85.7	92.3	93.9	94.7	94.2
–60	**–76**	79.5	82.7	85.3	86.7	93.3	94.9	95.7	95.2
–55	**–67**	80.4	83.7	86.2	87.7	94.3	95.9	96.7	96.2
–50	**–58**	81.3	84.6	87.2	88.7	95.3	96.9	97.6	95.8
–45	**–49**	82.2	85.5	88.1	89.6	96.3	97.4	96.7	94.8
–40	**–40**	83.1	86.4	89.0	90.6	97.2	96.5	96.0	94.3
–35	**–31**	84.0	87.3	89.9	91.5	96.6	96.0	95.6	93.9
–30	**–22**	84.9	88.2	90.7	92.4	96.3	95.7	95.3	93.4
–25	**–13**	85.7	89.1	91.6	92.0	96.1	95.3	94.8	92.5
–20	**–4**	86.6	90.0	92.4	91.4	95.7	94.6	93.9	91.1
–15	**5**	87.4	90.8	91.9	91.3	95.0	93.5	92.7	––
–10	**14**	88.2	91.6	90.9	90.2	94.0	92.3	91.9	––
–5	**23**	89.1	91.0	89.7	88.9	92.7	91.5	91.1	––
0	**32**	89.9	89.8	88.9	87.8	91.7	––	––	––
5	**41**	89.1	88.3	88.6	86.6	90.8	––	––	––
10	**50**	87.7	86.9	87.6	85.5	––	––	––	––

cs300_pw1521G_v05r2_status_cl1_avg_110_23.ch16

Derated climb – CLB–1 – 275 KIAS/M0.78 – Packs on, cowl anti–ice on <72211001D>

Figure 05–04B–15

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–1 (ALL ENGINE OPERATIVE)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	72.0	73.8	74.4	75.0	75.6	76.3	77.0	77.7	78.4	79.1	79.8	80.5
–50	–58	72.8	74.6	75.2	75.9	76.5	77.2	77.8	78.6	79.3	80.0	80.7	81.4
–45	–49	73.6	75.4	76.1	76.7	77.3	78.0	78.7	79.4	80.1	80.8	81.6	82.3
–40	–40	74.4	76.3	76.9	77.5	78.2	78.8	79.5	80.3	81.0	81.7	82.4	83.2
–35	–31	75.2	77.1	77.7	78.3	79.0	79.7	80.4	81.1	81.8	82.6	83.3	84.0
–30	–22	76.0	77.8	78.5	79.2	79.8	80.5	81.2	81.9	82.7	83.4	84.2	84.9
–25	–13	76.7	78.6	79.3	79.9	80.6	81.3	82.0	82.8	83.5	84.3	85.0	85.8
–20	–4	77.5	79.4	80.1	80.7	81.4	82.1	82.8	83.6	84.3	85.1	85.8	86.6
–15	5	78.2	80.2	80.8	81.5	82.2	82.9	83.6	84.4	85.2	85.9	86.7	87.4
–10	14	79.0	80.9	81.6	82.3	83.0	83.7	84.4	85.2	86.0	86.7	87.5	88.3
–5	23	79.7	81.7	82.4	83.1	83.8	84.5	85.2	86.0	86.8	87.6	88.3	89.1
0	32	80.5	82.5	83.2	83.8	84.5	85.3	86.0	86.8	87.6	88.4	89.1	89.0
5	41	81.2	83.2	83.9	84.6	85.3	86.0	86.8	87.6	87.9	87.8	87.7	87.6
10	50	81.9	84.0	84.7	85.4	86.1	86.6	86.5	86.5	86.4	86.3	86.2	86.0

cs300_pw1521G_v05r2_status_cl1_avg_111_1.ch16

Derated climb – CLB–1 – 250 KIAS – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–16

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–1 (ALL ENGINE OPERATIVE)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)						
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000
–70	**–94**	––	––	83.3	84.7	91.3	92.8	93.6
–65	**–85**	78.6	81.8	84.3	85.7	92.3	93.9	94.7
–60	**–76**	79.5	82.7	85.3	86.7	93.3	94.9	95.7
–55	**–67**	80.4	83.7	86.2	87.7	94.3	95.9	96.7
–50	**–58**	81.3	84.6	87.2	88.7	95.3	96.9	96.5
–45	**–49**	82.2	85.5	88.1	89.6	96.3	96.1	95.1
–40	**–40**	83.1	86.4	89.0	90.6	96.2	95.1	94.4
–35	**–31**	84.0	87.3	89.9	91.5	95.2	94.6	94.1
–30	**–22**	84.9	88.2	90.7	91.2	95.1	94.4	93.9
–25	**–13**	85.7	89.1	91.6	90.7	95.0	93.9	93.3
–20	**–4**	86.6	90.0	91.4	89.9	94.6	93.1	92.3
–15	**5**	87.4	90.8	90.5	89.6	93.8	91.9	90.8
–10	**14**	88.2	90.9	89.4	88.3	92.6	90.5	89.9
–5	**23**	89.1	89.6	87.8	87.0	91.1	89.6	89.1
0	**32**	89.1	88.2	86.9	85.8	90.1	––	––
5	**41**	87.7	86.6	86.5	84.5	89.1	––	––
10	**50**	86.1	85.0	85.6	83.4	––	––	––

cs300_pw1521G_v05r2_status_cl1_avg_111_23.ch16

Derated climb – CLB–1 – 275 KIAS/M0.78 – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–17

D. Derated climb N1 – CLB-2 – PW1521G-3 <72211001D>

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–2 (ALL ENGINE OPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	70.6	72.4	73.0	73.6	74.2	74.9	75.6	76.2	76.9	77.6	78.3	79.0
–50	–58	71.4	73.2	73.8	74.4	75.1	75.7	76.4	77.1	77.8	78.5	79.2	79.9
–45	–49	72.2	74.0	74.6	75.2	75.9	76.5	77.2	77.9	78.6	79.3	80.0	80.7
–40	–40	72.9	74.8	75.4	76.1	76.7	77.4	78.1	78.8	79.5	80.2	80.9	81.6
–35	–31	73.7	75.6	76.2	76.8	77.5	78.2	78.9	79.6	80.3	81.0	81.8	82.5
–30	–22	74.5	76.3	77.0	77.6	78.3	79.0	79.7	80.4	81.1	81.9	82.6	83.3
–25	–13	75.2	77.1	77.8	78.4	79.1	79.8	80.5	81.2	82.0	82.7	83.4	84.2
–20	–4	76.0	77.9	78.5	79.2	79.9	80.6	81.3	82.0	82.8	83.5	84.2	85.0
–15	5	76.7	78.6	79.3	80.0	80.6	81.4	82.1	82.8	83.6	84.3	85.1	85.8
–10	14	77.4	79.4	80.1	80.7	81.4	82.1	82.9	83.6	84.4	85.1	85.9	86.6
–5	23	78.2	80.1	80.8	81.5	82.2	82.9	83.7	84.4	85.2	85.9	86.7	87.4
0	32	78.9	80.9	81.6	82.2	82.9	83.7	84.4	85.2	86.0	86.7	87.5	88.2
5	41	79.6	81.6	82.3	83.0	83.7	84.4	85.2	86.0	86.7	87.5	88.3	89.0
10	50	80.3	82.3	83.0	83.7	84.4	85.2	86.0	86.7	87.5	87.9	87.9	87.8
15	59	81.0	83.1	83.8	84.5	85.2	85.9	86.7	86.7	86.7	86.6	86.6	86.5
20	68	81.7	83.8	84.5	85.2	85.5	85.5	85.5	85.4	85.3	85.3	85.2	85.2
25	77	82.4	84.5	84.4	84.3	84.2	84.2	84.1	84.0	84.0	83.9	83.8	83.8
30	86	82.7	83.1	83.0	82.9	82.8	82.7	82.6	82.6	82.4	82.4	82.4	82.3
35	95	81.3	81.7	81.6	81.5	81.3	81.3	81.1	81.1	81.1	81.0	80.9	80.8
40	104	80.0	80.4	80.3	80.2	80.0	79.9	79.9	79.8	79.8	79.7	79.5	79.4
45	113	78.7	79.1	79.0	78.8	78.7	78.6	78.7	78.6	78.4	78.3	78.1	77.9
50	122	77.5	77.8	77.5	77.3	77.2	77.3	77.3	77.2	77.0	76.8	76.7	76.4
53	127	76.6	76.6	76.4	76.5	76.5	76.5	76.5	76.4	76.2	76.0	––	––

cs300_pw1521G_v05r2_status_cl2_avg_000_1.ch16

Derated climb – CLB–2 – 250 KIAS – Engine bleeds closed <72211001D>
Figure 05–04B–18

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–2 (ALL ENGINE OPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	–94	––	––	81.8	83.1	90.9	92.4	93.0	92.4
–65	–85	77.1	80.2	82.8	84.1	92.0	93.4	94.1	93.4
–60	–76	78.0	81.2	83.7	85.1	93.0	94.4	95.1	94.5
–55	–67	78.9	82.1	84.7	86.0	94.0	95.4	96.1	95.5
–50	–58	79.8	83.0	85.6	87.0	94.9	96.4	97.0	96.5
–45	–49	80.7	83.9	86.5	87.9	95.9	97.3	98.0	96.9
–40	–40	81.6	84.8	87.4	88.8	96.9	98.0	97.6	96.4
–35	–31	82.4	85.7	88.2	89.8	97.8	97.5	97.1	95.9
–30	–22	83.3	86.6	89.0	90.7	97.5	97.1	96.7	95.4
–25	–13	84.1	87.4	89.8	91.6	97.2	96.6	96.2	94.7
–20	–4	84.9	88.3	90.7	92.7	96.8	96.1	95.6	93.7
–15	5	85.8	89.2	91.6	93.1	96.2	95.2	94.6	––
–10	14	86.6	90.0	91.0	92.1	95.4	94.2	93.8	––
–5	23	87.4	90.8	90.7	90.9	94.3	93.3	93.0	––
0	32	88.2	89.8	90.8	89.8	93.4	––	––	––
5	41	89.0	88.6	90.7	88.7	92.4	––	––	––
10	50	87.8	87.3	89.7	87.6	––	––	––	––
15	59	86.5	86.0	88.6	86.5	––	––	––	––
20	68	85.2	86.3	87.5	––	––	––	––	––
25	77	83.8	86.1	86.5	––	––	––	––	––
30	86	82.4	85.0	––	––	––	––	––	––
35	95	81.0	83.7	––	––	––	––	––	––
40	104	79.6	––	––	––	––	––	––	––
45	113	78.2	––	––	––	––	––	––	––
50	122	76.8	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_cl2_avg_000_23.ch16

Derated climb – CLB–2 – 275 KIAS/M0.78 – Engine bleeds closed <72211001D>
Figure 05–04B–19

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–2 (ALL ENGINE OPERATIVE)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	–67	70.6	72.4	73.0	73.6	74.2	74.9	75.6	76.2	76.9	77.6	78.3	79.0
–50	–58	71.4	73.2	73.8	74.4	75.1	75.7	76.4	77.1	77.8	78.5	79.2	79.9
–45	–49	72.2	74.0	74.6	75.2	75.9	76.5	77.2	77.9	78.6	79.3	80.0	80.7
–40	–40	72.9	74.8	75.4	76.1	76.7	77.4	78.1	78.8	79.5	80.2	80.9	81.6
–35	–31	73.7	75.6	76.2	76.8	77.5	78.2	78.9	79.6	80.3	81.0	81.8	82.5
–30	–22	74.5	76.3	77.0	77.6	78.3	79.0	79.7	80.4	81.1	81.9	82.6	83.3
–25	–13	75.2	77.1	77.8	78.4	79.1	79.8	80.5	81.2	82.0	82.7	83.4	84.2
–20	–4	76.0	77.9	78.5	79.2	79.9	80.6	81.3	82.0	82.8	83.5	84.2	85.0
–15	5	76.7	78.6	79.3	80.0	80.6	81.4	82.1	82.8	83.6	84.3	85.1	85.8
–10	14	77.4	79.4	80.1	80.7	81.4	82.1	82.9	83.6	84.4	85.1	85.9	86.6
–5	23	78.2	80.1	80.8	81.5	82.2	82.9	83.7	84.4	85.2	85.9	86.7	87.4
0	32	78.9	80.9	81.6	82.2	82.9	83.7	84.4	85.2	86.0	86.7	87.5	88.2
5	41	79.6	81.6	82.3	83.0	83.7	84.4	85.2	86.0	86.7	87.5	88.3	89.0
10	50	80.3	82.3	83.0	83.7	84.4	85.2	86.0	86.7	87.5	87.9	87.9	87.8
15	59	81.0	83.1	83.8	84.5	85.2	85.9	86.7	86.7	86.7	86.6	86.6	86.5
20	68	81.7	83.8	84.5	85.2	85.5	85.5	85.5	85.4	85.3	85.3	85.2	85.2
25	77	82.4	84.5	84.4	84.3	84.2	84.2	84.1	84.0	84.0	83.9	83.8	83.8
30	86	82.7	83.1	83.0	82.9	82.8	82.7	82.6	82.6	82.4	82.4	82.4	82.3
35	95	81.3	81.7	81.6	81.5	81.3	81.3	81.1	81.1	81.1	81.0	80.9	80.8
40	104	80.0	80.4	80.3	80.2	80.0	79.9	79.9	79.8	79.8	79.7	79.5	79.4
45	113	78.7	79.1	79.0	78.8	78.7	78.6	78.7	78.6	78.4	78.3	78.1	77.9
50	122	77.5	77.8	77.5	77.3	77.2	77.3	77.3	77.2	77.0	76.8	76.7	76.4
53	127	76.6	76.6	76.4	76.5	76.5	76.5	76.5	76.4	76.2	76.0	––	––

cs300_pw1521G_v05r2_status_cl2_avg_100_1.ch16

Derated climb – CLB–2 – 250 KIAS – Packs on, anti–ice off <72211001D>
Figure 05–04B–20

THRUST SETTING– %N1

DERATED CLIMB − 275 KIAS / M0.78

CLB−2 (ALL ENGINE OPERATIVE)

PACKS ON, ANTI−ICE OFF

PW1521G−3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
−70	−94	––	––	81.8	83.1	90.9	92.4	93.0	92.4
−65	−85	77.1	80.2	82.8	84.1	92.0	93.4	94.1	93.4
−60	−76	78.0	81.2	83.7	85.1	93.0	94.4	95.1	94.5
−55	−67	78.9	82.1	84.7	86.0	94.0	95.4	96.1	95.5
−50	−58	79.8	83.0	85.6	87.0	94.9	96.4	97.0	96.5
−45	−49	80.7	83.9	86.5	87.9	95.9	97.3	98.0	96.9
−40	−40	81.6	84.8	87.4	88.8	96.9	98.0	97.6	96.4
−35	−31	82.4	85.7	88.2	89.8	97.8	97.5	97.1	95.9
−30	−22	83.3	86.6	89.0	90.7	97.5	97.1	96.7	95.4
−25	−13	84.1	87.4	89.8	91.6	97.2	96.6	96.2	94.7
−20	−4	84.9	88.3	90.7	92.7	96.8	96.1	95.6	93.7
−15	5	85.8	89.2	91.6	93.1	96.2	95.2	94.6	––
−10	14	86.6	90.0	91.0	92.1	95.4	94.2	93.8	––
−5	23	87.4	90.8	90.7	90.9	94.3	93.3	93.0	––
0	32	88.2	89.8	90.8	89.8	93.4	––	––	––
5	41	89.0	88.6	90.7	88.7	92.4	––	––	––
10	50	87.8	87.3	89.7	87.6	––	––	––	––
15	59	86.5	86.0	88.6	86.5	––	––	––	––
20	68	85.2	86.3	87.5	––	––	––	––	––
25	77	83.8	86.1	86.5	––	––	––	––	––
30	86	82.4	85.0	––	––	––	––	––	––
35	95	81.0	83.7	––	––	––	––	––	––
40	104	79.6	––	––	––	––	––	––	––
45	113	78.2	––	––	––	––	––	––	––
50	122	76.8	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_cl2_avg_100_23.ch16

Derated climb – CLB–2 – 275 KIAS/M0.78 – Packs on, anti–ice off <72211001D>
Figure 05–04B–21

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–2 (ALL ENGINE OPERATIVE)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	**–67**	70.7	72.5	73.1	73.7	74.3	75.0	75.6	76.3	77.0	77.7	78.4	79.1
–50	**–58**	71.5	73.3	73.9	74.5	75.1	75.8	76.5	77.2	77.9	78.6	79.3	80.0
–45	**–49**	72.3	74.1	74.7	75.3	76.0	76.6	77.3	78.0	78.8	79.4	80.2	80.9
–40	**–40**	73.0	74.9	75.5	76.1	76.8	77.5	78.2	78.9	79.6	80.3	81.0	81.7
–35	**–31**	73.8	75.7	76.3	76.9	77.6	78.3	79.0	79.7	80.4	81.2	81.9	82.6
–30	**–22**	74.6	76.4	77.1	77.7	78.4	79.1	79.8	80.5	81.3	82.0	82.7	83.4
–25	**–13**	75.3	77.2	77.9	78.5	79.2	79.9	80.6	81.3	82.1	82.8	83.5	84.3
–20	**–4**	76.1	78.0	78.6	79.3	80.0	80.7	81.4	82.1	82.9	83.6	84.4	85.1
–15	**5**	76.8	78.7	79.4	80.1	80.7	81.4	82.2	82.9	83.7	84.4	85.2	85.9
–10	**14**	77.5	79.5	80.2	80.8	81.5	82.2	83.0	83.7	84.5	85.2	86.0	86.7
–5	**23**	78.3	80.2	80.9	81.6	82.3	83.0	83.8	84.5	85.3	86.1	86.8	87.6
0	**32**	79.0	81.0	81.7	82.3	83.0	83.8	84.5	85.3	86.1	86.8	87.6	88.4
5	**41**	79.7	81.7	82.4	83.1	83.8	84.5	85.3	86.1	86.9	87.6	87.6	87.6
10	**50**	80.4	82.4	83.2	83.8	84.6	85.3	86.1	86.5	86.4	86.3	86.2	86.2

cs300_pw1521G_v05r2_status_cl2_avg_110_1.ch16

Derated climb – CLB–2 – 250 KIAS – Packs on, cowl anti–ice on <72211001D>
Figure 05–04B–22

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–2 (ALL ENGINE OPERATIVE)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)							
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000	41000
–70	**–94**	––	––	81.9	83.3	91.3	92.8	93.6	93.1
–65	**–85**	77.3	80.4	82.9	84.3	92.3	93.9	94.7	94.2
–60	**–76**	78.2	81.3	83.8	85.2	93.3	94.9	95.7	95.2
–55	**–67**	79.1	82.2	84.8	86.2	94.3	95.9	96.7	96.2
–50	**–58**	79.9	83.2	85.7	87.2	95.3	96.9	97.6	95.8
–45	**–49**	80.8	84.1	86.7	88.1	96.3	97.4	96.7	94.8
–40	**–40**	81.7	85.0	87.5	89.0	97.2	96.5	96.0	94.3
–35	**–31**	82.5	85.9	88.3	89.9	96.6	96.0	95.6	93.9
–30	**–22**	83.4	86.7	89.1	90.8	96.3	95.7	95.3	93.4
–25	**–13**	84.2	87.6	89.9	90.4	96.1	95.3	94.8	92.5
–20	**–4**	85.1	88.5	90.8	91.2	95.7	94.6	93.9	91.1
–15	**5**	85.9	89.3	90.3	91.3	95.0	93.5	92.7	––
–10	**14**	86.7	90.1	89.4	90.2	94.0	92.3	91.9	––
–5	**23**	87.5	89.5	88.8	88.9	92.7	91.5	91.1	––
0	**32**	88.3	88.3	88.8	87.8	91.7	––	––	––
5	**41**	87.6	86.9	88.6	86.6	90.8	––	––	––
10	**50**	86.2	85.4	87.6	85.5	––	––	––	––

cs300_pw1521G_v05r2_status_cl2_avg_110_23.ch16

Derated climb – CLB–2 – 275 KIAS/M0.78 – Packs on, cowl anti–ice on <72211001D>

Figure 05–04B–23

THRUST SETTING– %N1

DERATED CLIMB – 250 KIAS

CLB–2 (ALL ENGINE OPERATIVE)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	7000	8000	9000	10000
–55	**–67**	70.7	72.5	73.1	73.7	74.3	75.0	75.6	76.3	77.0	77.7	78.4	79.1
–50	**–58**	71.5	73.3	73.9	74.5	75.1	75.8	76.5	77.2	77.9	78.6	79.3	80.0
–45	**–49**	72.3	74.1	74.7	75.3	76.0	76.6	77.3	78.0	78.8	79.4	80.2	80.9
–40	**–40**	73.0	74.9	75.5	76.1	76.8	77.5	78.2	78.9	79.6	80.3	81.0	81.7
–35	**–31**	73.8	75.7	76.3	76.9	77.6	78.3	79.0	79.7	80.4	81.2	81.9	82.6
–30	**–22**	74.6	76.4	77.1	77.7	78.4	79.1	79.8	80.5	81.3	82.0	82.7	83.4
–25	**–13**	75.3	77.2	77.9	78.5	79.2	79.9	80.6	81.3	82.1	82.8	83.5	84.3
–20	**–4**	76.1	78.0	78.6	79.3	80.0	80.7	81.4	82.1	82.9	83.6	84.4	85.1
–15	**5**	76.8	78.7	79.4	80.1	80.7	81.4	82.2	82.9	83.7	84.4	85.2	85.9
–10	**14**	77.5	79.5	80.2	80.8	81.5	82.2	83.0	83.7	84.5	85.2	86.0	86.7
–5	**23**	78.3	80.2	80.9	81.6	82.3	83.0	83.8	84.5	85.3	86.1	86.8	87.6
0	**32**	79.0	81.0	81.7	82.3	83.0	83.8	84.5	85.3	86.1	86.8	87.5	87.4
5	**41**	79.7	81.7	82.4	83.1	83.8	84.5	85.3	86.1	86.3	86.2	86.1	86.1
10	**50**	80.4	82.4	83.2	83.8	84.6	85.1	85.0	84.9	84.8	84.7	84.6	84.5

cs300_pw1521G_v05r2_status_cl2_avg_111_1.ch16

Derated climb – CLB–2 – 250 KIAS – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–24

THRUST SETTING– %N1

DERATED CLIMB – 275 KIAS / M0.78

CLB–2 (ALL ENGINE OPERATIVE)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)						
(°C)	(°F)	10000	15000	20000	25000	30000	33275	35000
–70	**–94**	––	––	81.9	83.3	91.3	92.8	93.6
–65	**–85**	77.3	80.4	82.9	84.3	92.3	93.9	94.7
–60	**–76**	78.2	81.3	83.8	85.2	93.3	94.9	95.7
–55	**–67**	79.1	82.2	84.8	86.2	94.3	95.9	96.7
–50	**–58**	79.9	83.2	85.7	87.2	95.3	96.9	96.5
–45	**–49**	80.8	84.1	86.7	88.1	96.3	96.1	95.1
–40	**–40**	81.7	85.0	87.5	89.0	96.2	95.1	94.4
–35	**–31**	82.5	85.9	88.3	89.9	95.2	94.6	94.1
–30	**–22**	83.4	86.7	89.1	89.6	95.1	94.4	93.9
–25	**–13**	84.2	87.6	89.9	89.1	95.0	93.9	93.3
–20	**–4**	85.1	88.5	89.8	89.8	94.6	93.1	92.3
–15	**5**	85.9	89.3	88.9	89.6	93.8	91.9	90.8
–10	**14**	86.7	89.4	87.8	88.3	92.6	90.5	89.9
–5	**23**	87.5	88.1	86.9	87.0	91.1	89.6	89.1
0	**32**	87.5	86.7	86.9	85.8	90.1	––	––
5	**41**	86.1	85.1	86.5	84.5	89.1	––	––
10	**50**	84.5	83.5	85.6	83.4	––	––	––

cs300_pw1521G_v05r2_status_cl2_avg_111_23.ch16

Derated climb – CLB–2 – 275 KIAS/M0.78 – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–25

E. In cruise quick check

IN CRUISE QUICK CHECK - AEO							
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC		FUEL (KG) TIME (MIN)	
CRUISE SPEED				DESCENT SCHEDULE			
0.78M				0.78M / 275KIAS / 250KIAS			
WEIGHT (KG)	FL	AIR DISTANCE (NM)					
		400	600	800	1000	1200	1400	1600
40000	290	1783	2744	–	--	–	–	–
		60	86	–	--	–	–	–
	350	1438	2214	2988	--	–	--	–
		61	88	114	--	–	--	–
	390	1273	1960	2644	--	–	--	--
		61	88	115	--	–	--	--
44000	290	1781	2752	3721	4688	5653	6615	--
		60	86	112	138	164	190	--
	350	1448	2239	3027	3812	4594	5373	6150
		61	88	115	141	168	195	221
	390	1293	2003	2709	3410	4109	4803	5493
		61	88	115	142	169	195	222
48000	290	1782	2763	3742	4718	5693	6665	7634
		60	86	112	138	164	190	216
	350	1464	2274	3080	3882	4680	5475	6266
		61	88	115	141	168	195	221
	390	1315	2048	2776	3500	4220	4936	5648
		61	88	115	142	169	196	222
52000	290	1788	2782	3772	4759	5744	6726	7705
		60	86	112	138	164	190	216
	350	1485	2317	3144	3966	4785	5598	6408
		61	88	115	141	168	195	221
	390	1351	2114	2871	3621	4366	5105	5839
		61	88	115	142	169	196	222

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_AEO_p1

In cruise quick check – 0.78M – page 1 <Metric>
Figure 05–04B–26

IN CRUISE QUICK CHECK - AEO								
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC			FUEL (KG) TIME (MIN)	
CRUISE SPEED				DESCENT SCHEDULE				
0.78M				0.78M / 275KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
40000	290	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	350	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	390	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
44000	290	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	350	6924	--	--	--	--	--	--
		248	--	--	--	--	--	--
	390	6179	6861	--	--	--	--	--
		249	276	--	--	--	--	--
48000	290	8601	9566	10529	--	--	--	--
		242	268	294	--	--	--	--
	350	7054	7839	8621	9400	10177	10951	--
		248	275	301	328	355	381	--
	390	6356	7060	7760	8456	9148	9836	10520
		249	276	303	330	356	383	410
52000	290	8682	9656	10628	11597	12565	13530	14492
		242	268	294	320	346	372	398
	350	7213	8014	8812	9606	10397	11185	11969
		248	275	301	328	355	381	408
	390	6569	7294	8015	8732	9445	10154	10860
		249	276	303	330	356	383	410

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_AEO_p2

In cruise quick check – 0.78M – page 2 <Metric>
Figure 05–04B–27

IN CRUISE QUICK CHECK - AEO								
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC		FUEL (KG) TIME (MIN)		
CRUISE SPEED				DESCENT SCHEDULE				
0.78M				0.78M / 275KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		400	600	800	1000	1200	1400	1600
56000	290	1799	2807	3810	4810	5807	6801	7792
		60	86	112	138	164	190	216
	350	1506	2360	3209	4053	4892	5728	6558
		61	88	115	141	168	195	221
	390	1397	2197	2989	3774	4551	5321	6085
		62	88	115	142	169	196	222
60000	290	1815	2840	3859	4874	5886	6893	7897
		60	86	112	138	164	190	216
	350	1537	2415	3288	4154	5015	5871	6723
		61	88	115	141	168	195	221
	390	1467	2315	3150	3974	4789	5595	6394
		62	88	115	142	169	196	222
64000	290	1836	2880	3918	4951	5979	7003	8022
		60	86	112	138	164	190	216
	350	1578	2489	3393	4288	5176	6058	6932
		61	88	115	141	168	195	221
	390	–	--	--	–	–	--	--
		–	–	--	–	–	--	--

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_AEO_p3

In cruise quick check – 0.78M – page 3 <Metric>
Figure 05–04B–28

IN CRUISE QUICK CHECK - AEO								
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC		FUEL (KG) TIME (MIN)		
CRUISE SPEED				DESCENT SCHEDULE				
0.78M				0.78M / 275KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
56000	290	8779	9763	10745	11724	12701	13675	14647
		242	268	294	320	346	372	398
	350	7384	8206	9023	9835	10643	11447	12248
		248	275	301	328	355	381	408
	390	6842	7592	8337	9076	9811	10540	11266
		249	276	303	330	356	383	410
60000	290	8896	9893	10887	11877	12864	13848	14829
		242	268	294	320	346	372	398
	350	7570	8412	9250	10083	10911	11735	12555
		248	275	301	328	355	382	408
	390	7184	7967	8742	9511	10272	11028	11777
		249	276	303	330	357	383	410
64000	290	9037	10047	11054	12057	13056	14052	15045
		242	268	294	320	346	372	398
	350	7801	8664	9522	10376	11225	12069	12908
		248	275	302	328	355	382	408
	390	--	--	--	--	--	--	--
		--	--	--	--	--	--	--

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_AEO_p4

In cruise quick check – 0.78M – page 4 <Metric>
Figure 05–04B–29

F. In cruise quick check – ETOPS <10109100C>

IN CRUISE QUICK CHECK - AEO (ETOPS)							
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC			LRC (KIAS) TIME (MIN) FUEL (KG)	
CRUISE SPEED			DESCENT SCHEDULE				
LRC			VMO / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)					
		400	600	800	1000	1200	1400	1600
40000	100	224	--	–	--	--	–	–
		97	--	–	--	--	–	–
		2240	--	–	--	--	–	–
	140	224	--	–	--	--	–	–
		91	--	–	--	--	–	–
		2055	--	–	--	--	–	–
44000	100	233	231	230	229	228	–	–
		94	139	185	231	278	–	–
		2311	3450	4577	5692	6797	–	–
	140	231	230	229	229	228	–	–
		89	132	175	219	262	–	–
		2125	3174	4213	5240	6258	–	–
48000	100	240	239	238	237	236	234	233
		91	135	179	224	269	315	361
		2388	3570	4738	5894	7037	8168	9287
	140	243	241	240	238	237	236	236
		85	126	168	210	253	296	339
		2197	3290	4372	5441	6498	7543	8577
52000	100	251	249	248	247	246	245	244
		87	130	173	216	260	304	348
		2469	3697	4910	6109	7293	8464	9623
	140	253	251	250	248	246	245	243
		82	121	161	201	242	283	325
		2263	3399	4525	5637	6737	7824	8899
CORRECTION	PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON		APU ON	
FUEL	-0.5%		1.1%		12.2%		6.0%	

CS300_21K_FCOM_MET_v01–In cruise_AEO – ETOPS – p1

ETOPS – In cruise quick check – AEO – page 1 <Metric> and <72211001D>
Figure 05–04B–30

IN CRUISE QUICK CHECK - AEO (ETOPS)								
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC			LRC (KIAS) TIME (MIN) FUEL (KG)	
CRUISE SPEED				DESCENT SCHEDULE				
LRC				VMO / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
40000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	140	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
		--	--	--	--	--	--	--
44000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	140	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
		--	--	--	--	--	--	--
48000	100	232	–	–	--	--	--	--
		408	–	–	--	--	--	--
		10396	–	–	--	--	--	--
	140	235	235	–	--	--	--	--
		383	426	–	--	--	--	--
		9601	10616	–	--	--	--	--
52000	100	242	241	239	239	--	--	--
		393	439	485	532	--	--	--
		10769	11903	13025	14136	--	--	--
	140	242	241	240	239	239	--	--
		368	411	454	498	541	--	--
		9962	11013	12053	13082	14101	--	--
CORRECTION	PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON		APU ON	
FUEL	-0.5%		0.9%		8.9%		5.6%	

CS300_21K_FCOM_MET_v01-In cruise_AEO - ETOPS - p2

ETOPS – In cruise quick check – AEO – page 2 <Metric> and <72211001D>
Figure 05–04B–31

IN CRUISE QUICK CHECK - AEO (ETOPS)							
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC			LRC (KIAS) TIME (MIN) FUEL (KG)	
CRUISE SPEED			DESCENT SCHEDULE				
LRC			VMO / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)					
		400	600	800	1000	1200	1400	1600
56000	100	263	261	259	257	255	254	253
		83.7	124	165	207	249	292	335
		2549	3822	5080	6324	7553	8768	9968
	140	260	259	258	257	256	254	253
		80	118	157	195	234	274	314
		2321	3493	4656	5807	6948	8078	9196
60000	100	271	270	268	266	264	262	260
		82	121	160	200	240	281	322
		2618	3933	5237	6525	7798	9057	10301
	140	267	266	265	264	262	261	260
		78	115	153	190	228	267	306
		2375	3581	4778	5964	7140	8306	9460
64000	100	277	276	275	274	273	271	269
		80	118	156	195	234	273	313
		2681	4033	5374	6702	8017	9319	10606
	140	274	273	272	271	271	269	268
		76	112	149	186	223	260	298
		2431	3671	4901	6120	7329	8527	9716
CORRECTION	PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON		APU ON	
FUEL	-0.6%		0.8%		5.6%		5.3%	

CS300_21K_FCOM_MET_v01-In cruise_AEO - ETOPS - p3

ETOPS – In cruise quick check – AEO – page 3 <Metric> and <72211001D>
Figure 05–04B–32

IN CRUISE QUICK CHECK - AEO (ETOPS)								
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF			ISA CG 27% MAC				LRC (KIAS) TIME (MIN) FUEL (KG)	
CRUISE SPEED			DESCENT SCHEDULE					
LRC			VMO / 250KIAS					
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
56000	100	252	251	249	248	246	245	--
		378.8	423	467	512	558	604	--
		11154	12327	13487	14634	15770	16893	--
	140	251	249	247	246	245	244	244
		355	396	437	480	523	566	609
		10301	11393	12473	13541	14596	15640	16674
60000	100	258	257	256	255	254	--	--
		365	408	451	495	539	--	--
		11531	12746	13946	15132	16305	--	--
	140	259	258	256	255	253	251	--
		345	384	424	464	505	547	--
		10605	11738	12860	13968	15064	16148	--
64000	100	267	265	263	261	260	--	--
		353	394	436	478	521	--	--
		11878	13136	14379	15608	16822	--	--
	140	267	266	265	264	263	261	--
		336	374	413	452	491	531	--
		10894	12062	13219	14365	15501	16625	--
CORRECTION	PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON		APU ON	
FUEL	-0.6%		0.8%		6.9%		5.3%	

CS300_21K_FCOM_MET_v01-In cruise_AEO - ETOPS - p4

ETOPS – In cruise quick check – AEO – page 4 <Metric> and <72211001D>
Figure 05–04B–33

G. Holding (GDAEO)

HOLDING - AEO						
ALL ENGINES OPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON RACETRACK PATTERN			ISA CG 27% MAC		HOLDING SPEED (KIAS) TOTAL FUEL FLOW (KG/MIN)	
FL	GROSS WEIGHT (KG)					
	40000	45000	50000	55000	60000	65000
15	185 23	196 25	207 27	218 30	229 32	239 35
50	185 22	197 24	209 27	220 29	230 32	240 34
100	187 22	199 24	211 26	222 29	232 31	242 34
150	189 21	201 23	212 26	223 28	233 30	243 33
200	190 21	202 23	214 25	224 28	235 30	245 33
250	192 21	204 23	215 25	226 28	236 30	246 33
300	193 21	205 23	216 26	227 28	238 31	249 34
CORRECTION	COWL A/I ON			ALL A/I ON		
TOTAL FUEL FLOW	6%			14%		

CS300_ALL_NAMEPLATES_FCOM_MET_v01_AEO_Holding

NOTE

In a linear holding reduce the Fuel Flow by 5%

Holding – AEO <Metric>
Figure 05–04B–34

ENROUTE – ONE ENGINE INOPERATIVE

A. Green dot speed – OEI

GREEN DOT - OEI							
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION						GREEN DOT (KIAS)	
PRESS. ALT. (FT)	WEIGHT (1000 KG)						
	40	45	50	55	60	65	69
1500	165	176	187	197	207	216	223
5000	166	178	189	200	209	218	225
10000	169	181	192	203	213	222	229
15000	172	184	195	206	216	226	233
17000	173	185	197	208	218	227	234
19000	174	186	198	209	219	228	235
21000	175	188	200	210	220	229	236
23000	177	189	201	211	221	230	238
25000	178	190	202	213	222	232	238
27000	179	191	203	214	223	232	239
29000	180	192	204	215	224	233	241
31000	181	194	205	216	225	234	242
33000	182	195	206	217	226	236	243
35000	184	195	207	218	228	237	--
37000	184	196	208	219	231	--	--

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OEI_GD

Green dot speed – OEI <Metric>
Figure 05–04B–35

B. Maximum Continuous Thrust (MCT) N1 – PW1521G-3 <72211001D>

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 160 KIAS

MCT (ONE ENGINE INOPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	86.0	87.8	89.9	90.0	92.6
–65	–85	72.8	74.7	78.5	81.0	82.2	86.9	88.9	90.9	91.1	93.6
–60	–76	73.7	75.6	79.4	81.9	83.2	87.8	89.9	91.9	92.1	94.7
–55	–67	74.5	76.4	80.3	82.9	84.1	88.7	90.9	92.9	93.1	95.7
–50	–58	75.3	77.3	81.2	83.8	85.1	89.6	91.9	93.9	94.1	96.6
–45	–49	76.2	78.2	82.1	84.7	86.0	90.4	92.9	94.9	95.1	96.9
–40	–40	77.0	79.0	83.0	85.7	86.9	91.3	93.8	95.8	96.0	95.9
–35	–31	77.8	79.8	83.9	86.6	87.8	92.3	94.8	96.8	96.3	95.2
–30	–22	78.6	80.7	84.8	87.4	88.7	93.2	95.7	97.7	95.9	94.8
–25	–13	79.4	81.5	85.6	88.3	89.6	94.1	96.7	98.2	95.6	94.3
–20	–4	80.2	82.3	86.4	89.2	90.5	95.1	96.9	98.0	95.4	93.8
–15	5	80.9	83.1	87.3	90.0	91.3	96.0	96.7	97.8	94.9	––
–10	14	81.7	83.8	88.1	90.9	92.2	96.8	96.5	97.6	94.6	––
–5	23	82.5	84.6	88.9	91.7	93.0	96.9	96.2	97.2	94.2	––
0	32	83.2	85.4	89.8	92.6	93.9	96.7	95.5	96.8	––	––
5	41	84.0	86.2	90.6	93.4	94.7	96.2	94.7	96.4	––	––
10	50	84.8	87.0	91.4	94.2	94.3	95.6	93.8	––	––	––
15	59	85.5	87.7	92.2	93.6	93.5	94.5	92.9	––	––	––
20	68	86.2	88.5	92.9	92.6	92.3	93.4	––	––	––	––
25	77	87.0	89.2	91.8	91.2	91.0	92.3	––	––	––	––
30	86	87.7	90.0	90.5	89.8	89.6	––	––	––	––	––
35	95	88.1	88.9	89.2	88.6	88.2	––	––	––	––	––
40	104	86.7	87.6	87.6	87.1	––	––	––	––	––	––
45	113	85.3	86.2	85.9	85.8	––	––	––	––	––	––
50	122	84.0	84.6	84.1	84.4	––	––	––	––	––	––
53	127	83.3	83.7	83.1	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_000–160.ch16

Maximum continuous thrust – OEI – 160 KIAS – Engine bleeds closed <72211001D>

Figure 05–04B–36

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 230 KIAS

MCT (ONE ENGINE INOPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	87.9	88.8	93.4	93.1	92.4
–65	–85	72.6	74.5	78.3	80.7	84.0	88.9	89.8	94.4	94.2	93.4
–60	–76	73.5	75.4	79.2	81.7	85.0	89.8	90.9	95.3	95.2	94.4
–55	–67	74.3	76.2	80.1	82.6	85.9	90.7	91.9	96.3	96.1	95.5
–50	–58	75.2	77.1	81.0	83.6	86.9	91.6	92.8	97.2	97.1	96.5
–45	–49	76.0	77.9	81.9	84.5	87.8	92.5	93.8	98.2	98.1	96.9
–40	–40	76.8	78.8	82.7	85.4	88.8	93.3	94.8	98.2	97.4	96.4
–35	–31	77.6	79.6	83.6	86.3	89.7	94.0	95.7	98.2	96.7	95.9
–30	–22	78.4	80.4	84.5	87.1	90.6	94.9	96.7	98.2	96.3	95.4
–25	–13	79.2	81.2	85.3	88.0	91.5	95.9	97.6	98.2	95.9	94.7
–20	–4	80.0	82.0	86.2	88.9	92.4	96.8	97.3	98.1	95.4	93.7
–15	5	80.8	82.8	87.0	89.7	93.2	97.7	97.0	97.7	94.7	––
–10	14	81.5	83.6	87.8	90.6	94.1	97.6	96.6	97.3	94.1	––
–5	23	82.3	84.4	88.6	91.4	94.9	97.2	95.9	96.7	93.5	––
0	32	83.0	85.2	89.5	92.3	95.7	96.6	95.0	96.1	––	––
5	41	83.8	85.9	90.3	93.1	95.1	95.8	93.9	95.3	––	––
10	50	84.5	86.7	91.1	93.9	94.2	94.7	92.7	––	––	––
15	59	85.3	87.5	91.9	93.0	93.1	93.5	91.4	––	––	––
20	68	86.0	88.2	92.3	91.9	91.7	92.3	––	––	––	––
25	77	86.8	89.0	91.2	90.6	90.6	91.0	––	––	––	––
30	86	87.5	89.7	89.8	89.3	89.4	––	––	––	––	––
35	95	88.0	88.7	88.7	88.1	88.2	––	––	––	––	––
40	104	86.7	87.4	87.0	86.6	––	––	––	––	––	––
45	113	85.4	86.1	85.3	85.2	––	––	––	––	––	––
50	122	84.1	84.5	83.5	83.8	––	––	––	––	––	––
53	127	83.3	83.6	82.5	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_000–230.ch16

Maximum continuous thrust – OEI – 230 KIAS – Engine bleeds closed <72211001D>
Figure 05–04B–37

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 290 KIAS

MCT (ONE ENGINE INOPERATIVE)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	87.3	88.7	92.9	92.6	92.8
–65	–85	72.2	74.0	79.1	83.4	86.2	88.3	89.7	93.9	93.6	93.9
–60	–76	73.0	74.9	80.0	84.4	87.2	89.3	90.7	94.9	94.6	94.9
–55	–67	73.9	75.8	80.9	85.3	88.2	90.3	91.7	95.8	95.6	96.0
–50	–58	74.7	76.6	81.8	86.3	89.2	91.3	92.7	96.8	96.6	97.0
–45	–49	75.5	77.5	82.7	87.2	90.2	92.3	93.7	97.7	97.6	97.6
–40	–40	76.3	78.3	83.6	88.1	91.1	93.2	94.7	98.2	97.4	97.4
–35	–31	77.1	79.1	84.4	89.1	92.1	94.1	95.6	98.2	97.0	97.0
–30	–22	77.9	79.9	85.3	90.0	93.0	94.9	96.6	98.2	96.7	96.4
–25	–13	78.7	80.7	86.2	90.9	93.9	95.7	97.5	98.3	96.1	95.4
–20	–4	79.5	81.5	87.0	91.8	94.8	96.6	97.3	98.3	95.3	94.2
–15	5	80.2	82.3	87.9	92.6	95.7	97.5	96.9	97.9	94.2	––
–10	14	81.0	83.1	88.7	93.5	96.6	97.2	96.2	97.2	93.3	––
–5	23	81.8	83.9	89.5	94.4	97.4	96.7	95.2	96.3	92.4	––
0	32	82.5	84.7	90.3	95.2	96.8	95.8	94.2	95.3	––	––
5	41	83.3	85.4	91.2	96.1	96.0	94.8	93.2	94.2	––	––
10	50	84.0	86.2	92.0	95.2	94.9	93.8	92.1	––	––	––
15	59	84.8	86.9	92.8	94.2	93.8	92.8	91.1	––	––	––
20	68	85.5	87.7	92.3	93.0	92.6	91.8	––	––	––	––
25	77	86.2	88.4	91.1	91.8	91.6	90.7	––	––	––	––
30	86	87.0	89.2	89.8	90.6	90.5	––	––	––	––	––
35	95	87.6	88.2	88.7	89.4	89.3	––	––	––	––	––
40	104	86.2	86.8	87.2	88.2	––	––	––	––	––	––
45	113	84.9	85.6	85.8	87.0	––	––	––	––	––	––
50	122	83.7	84.0	84.4	85.7	––	––	––	––	––	––
53	127	83.1	83.3	83.5	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_000–290.ch16

Maximum continuous thrust – OEI – 290 KIAS – Engine bleeds closed <72211001D>
Figure 05–04B–38

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 160 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	86.2	88.0	90.2	90.2	92.8
–65	–85	72.8	74.8	78.6	81.1	82.3	87.1	89.1	91.3	91.2	93.9
–60	–76	73.7	75.7	79.5	82.1	83.3	87.9	90.1	92.3	92.3	94.9
–55	–67	74.6	76.5	80.4	83.0	84.3	88.8	91.1	93.3	93.3	95.9
–50	–58	75.4	77.4	81.3	83.9	85.2	89.7	92.1	94.3	94.3	96.9
–45	–49	76.2	78.2	82.2	84.8	86.1	90.5	93.1	95.3	95.2	96.1
–40	–40	77.1	79.1	83.1	85.8	87.1	91.5	94.1	96.2	95.8	94.8
–35	–31	77.9	79.9	84.0	86.7	88.0	92.4	95.0	96.2	95.4	94.1
–30	–22	78.7	80.7	84.8	87.6	88.9	93.3	95.1	96.0	95.2	93.8
–25	–13	79.5	81.5	85.7	88.4	89.7	94.3	95.0	95.8	94.9	93.5
–20	–4	80.2	82.3	86.5	89.3	90.6	95.2	94.9	95.6	94.7	92.8
–15	5	81.0	83.1	87.4	90.2	91.5	95.5	94.6	95.4	94.2	––
–10	14	81.8	83.9	88.2	91.0	92.3	95.5	94.2	95.0	93.8	––
–5	23	82.6	84.7	89.0	91.8	93.2	95.3	93.4	94.3	93.5	––
0	32	83.3	85.5	89.8	92.7	93.2	94.7	92.4	93.9	––	––
5	41	84.1	86.3	90.7	93.2	92.6	93.9	90.8	93.5	––	––
10	50	84.8	87.0	91.5	92.3	91.5	92.4	89.8	––	––	––
15	59	85.6	87.8	91.8	91.1	90.2	90.6	88.8	––	––	––
20	68	86.3	88.6	90.7	89.8	88.8	89.4	––	––	––	––
25	77	87.1	89.0	89.3	88.2	87.4	88.2	––	––	––	––
30	86	87.0	87.8	87.8	86.6	86.0	––	––	––	––	––
35	95	85.6	86.4	86.3	85.1	84.5	––	––	––	––	––
40	104	84.1	84.8	84.3	83.6	––	––	––	––	––	––
45	113	82.7	83.3	82.5	82.3	––	––	––	––	––	––
50	122	81.3	81.7	80.7	80.9	––	––	––	––	––	––
53	127	80.5	80.7	79.6	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_300–160.ch16

Maximum continuous thrust – OEI – 160 KIAS – Pack(s) on, anti–ice off <72211001D>

Figure 05–04B–39

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 230 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	88.1	89.1	94.1	93.3	92.6
–65	–85	72.7	74.6	78.4	80.9	84.1	89.1	90.2	95.1	94.4	93.7
–60	–76	73.6	75.5	79.3	81.8	85.1	90.0	91.2	96.1	95.4	94.7
–55	–67	74.4	76.3	80.2	82.8	86.1	90.9	92.2	97.0	96.3	95.7
–50	–58	75.2	77.2	81.1	83.7	87.1	91.8	93.2	98.0	97.3	96.7
–45	–49	76.1	78.0	82.0	84.6	88.0	92.7	94.1	98.2	97.6	95.9
–40	–40	76.9	78.9	82.8	85.5	88.9	93.4	95.1	98.0	96.5	95.4
–35	–31	77.7	79.7	83.7	86.4	89.8	94.2	96.0	97.0	95.8	95.0
–30	–22	78.5	80.5	84.6	87.3	90.8	95.1	95.9	96.3	95.6	94.5
–25	–13	79.3	81.3	85.4	88.2	91.7	96.1	95.6	96.0	95.2	93.7
–20	–4	80.1	82.1	86.3	89.0	92.5	96.3	95.4	95.8	94.7	92.5
–15	5	80.8	82.9	87.1	89.9	93.4	96.2	95.0	95.4	93.8	––
–10	14	81.6	83.7	87.9	90.7	94.3	95.8	94.3	94.7	93.2	––
–5	23	82.4	84.5	88.8	91.6	94.3	95.2	93.2	93.7	92.7	––
0	32	83.1	85.3	89.6	92.4	93.6	94.3	91.8	92.9	––	––
5	41	83.9	86.0	90.4	92.8	92.7	93.0	90.5	92.2	––	––
10	50	84.6	86.8	91.2	91.8	91.5	91.6	89.2	––	––	––
15	59	85.4	87.6	91.3	90.7	90.1	90.1	87.9	––	––	––
20	68	86.1	88.3	90.2	89.3	88.7	88.8	––	––	––	––
25	77	86.9	88.8	88.8	87.8	87.4	87.5	––	––	––	––
30	86	86.9	87.7	87.4	86.3	86.2	––	––	––	––	––
35	95	85.7	86.3	85.8	84.8	84.9	––	––	––	––	––
40	104	84.3	84.9	84.0	83.3	––	––	––	––	––	––
45	113	82.8	83.4	82.1	81.9	––	––	––	––	––	––
50	122	81.4	81.7	80.4	80.5	––	––	––	––	––	––
53	127	80.7	80.7	79.3	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_300–230.ch16

Maximum continuous thrust – OEI – 230 KIAS – Pack(s) on, anti–ice off <72211001D>

Figure 05–04B–40

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 290 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	87.5	88.9	93.5	92.7	92.9
–65	–85	72.3	74.2	79.2	83.5	86.4	88.5	90.0	94.5	93.7	94.0
–60	–76	73.1	75.0	80.1	84.5	87.4	89.5	91.0	95.5	94.8	95.1
–55	–67	74.0	75.9	81.0	85.5	88.4	90.5	92.0	96.5	95.8	96.1
–50	–58	74.8	76.7	81.9	86.4	89.4	91.5	93.0	97.5	96.8	97.2
–45	–49	75.6	77.6	82.8	87.3	90.3	92.5	94.0	98.2	97.2	97.0
–40	–40	76.4	78.4	83.7	88.3	91.3	93.4	94.9	98.1	96.8	96.8
–35	–31	77.2	79.2	84.6	89.2	92.2	94.3	95.9	97.4	96.5	96.4
–30	–22	78.0	80.1	85.4	90.1	93.2	95.1	96.1	97.1	96.1	95.7
–25	–13	78.8	80.8	86.3	91.0	94.1	95.9	95.9	96.8	95.5	94.6
–20	–4	79.6	81.7	87.1	91.9	95.0	96.3	95.5	96.3	94.6	93.2
–15	5	80.4	82.4	88.0	92.8	95.9	96.0	94.8	95.6	93.4	––
–10	14	81.1	83.2	88.8	93.7	96.5	95.4	93.7	94.6	92.5	––
–5	23	81.9	84.0	89.7	94.5	95.9	94.5	92.5	93.4	91.5	––
0	32	82.6	84.8	90.5	95.4	95.0	93.4	91.4	92.4	––	––
5	41	83.4	85.5	91.3	94.5	93.9	92.3	90.3	91.3	––	––
10	50	84.1	86.3	92.1	93.4	92.6	91.2	89.2	––	––	––
15	59	84.9	87.1	91.5	92.1	91.3	90.1	88.1	––	––	––
20	68	85.6	87.8	90.3	90.7	90.1	89.0	––	––	––	––
25	77	86.4	88.4	88.9	89.4	88.9	87.9	––	––	––	––
30	86	86.4	87.2	87.6	88.1	87.7	––	––	––	––	––
35	95	85.4	85.9	86.1	86.6	86.6	––	––	––	––	––
40	104	84.0	84.5	84.6	85.4	––	––	––	––	––	––
45	113	82.6	83.0	83.0	84.1	––	––	––	––	––	––
50	122	81.4	81.5	81.5	82.8	––	––	––	––	––	––
53	127	80.7	80.7	80.6	––	––	––	––	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_300–290.ch16

Maximum continuous thrust – OEI – 290 KIAS – Pack(s) on, anti–ice off <72211001D>

Figure 05–04B–41

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 160 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	86.3	88.3	91.0	91.0	93.6
–65	–85	72.9	74.8	78.7	81.2	82.5	87.2	89.3	92.1	92.1	94.7
–60	–76	73.8	75.7	79.6	82.2	83.5	88.1	90.4	93.1	93.2	94.1
–55	–67	74.7	76.6	80.5	83.2	84.5	89.0	91.4	94.1	94.2	93.5
–50	–58	75.5	77.5	81.4	84.1	85.4	89.8	92.4	95.1	94.7	92.7
–45	–49	76.3	78.3	82.3	85.0	86.3	90.7	93.4	95.5	94.8	91.8
–40	–40	77.2	79.2	83.2	85.9	87.3	91.6	94.3	95.6	94.3	90.8
–35	–31	78.0	80.0	84.1	86.8	88.2	92.6	94.4	95.4	93.3	89.7
–30	–22	78.8	80.8	84.9	87.7	89.1	93.5	94.2	94.8	90.5	88.6
–25	–13	79.6	81.6	85.8	88.6	89.9	94.4	93.8	94.2	88.8	87.6
–20	–4	80.3	82.4	86.7	89.5	90.8	94.4	93.4	92.8	87.4	86.6
–15	5	81.1	83.2	87.5	90.3	91.7	94.2	91.8	90.7	86.4	––
–10	14	81.9	84.0	88.3	91.2	92.6	93.7	90.2	87.7	85.9	––
–5	23	82.7	84.8	89.2	92.0	92.8	92.4	87.9	86.2	85.5	––
0	32	83.4	85.6	90.0	92.9	91.7	91.1	85.4	85.7	––	––
5	41	84.2	86.4	90.8	92.1	90.4	89.4	82.2	85.2	––	––
10	50	84.9	87.1	91.6	90.8	89.0	87.2	81.0	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_310–160.ch16

Maximum continuous thrust – OEI – 160 KIAS – Pack(s) on, cowl anti–ice on <72211001D>

Figure 05–04B–42

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 230 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	88.4	89.6	94.3	94.4	93.6
–65	–85	72.8	74.7	78.5	81.1	84.3	89.3	90.6	95.3	95.5	94.7
–60	–76	73.7	75.6	79.4	82.0	85.3	90.3	91.6	96.3	96.5	95.2
–55	–67	74.5	76.4	80.3	82.9	86.3	91.2	92.6	97.3	96.3	94.9
–50	–58	75.4	77.3	81.2	83.9	87.2	92.1	93.6	97.1	96.1	94.3
–45	–49	76.2	78.2	82.1	84.8	88.2	92.9	94.6	96.8	95.9	93.1
–40	–40	77.0	79.0	83.0	85.7	89.1	93.7	95.5	96.7	95.3	91.8
–35	–31	77.8	79.8	83.9	86.6	90.0	94.5	95.9	96.2	94.2	90.8
–30	–22	78.6	80.6	84.7	87.5	90.9	95.4	95.2	95.3	92.8	89.8
–25	–13	79.4	81.4	85.6	88.3	91.8	96.0	94.4	94.3	91.4	88.9
–20	–4	80.2	82.2	86.4	89.2	92.7	95.6	93.4	93.2	89.7	88.0
–15	5	81.0	83.1	87.3	90.1	93.6	95.1	92.2	92.1	88.4	––
–10	14	81.7	83.8	88.1	90.9	94.2	94.2	90.8	90.6	87.7	––
–5	23	82.5	84.6	88.9	91.8	93.8	92.9	89.2	88.3	87.0	––
0	32	83.3	85.4	89.7	92.6	92.6	91.6	86.9	87.4	––	––
5	41	84.0	86.2	90.5	92.1	91.3	90.1	83.0	86.7	––	––
10	50	84.8	86.9	91.3	90.9	89.9	88.2	81.4	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_310–230.ch16

Maximum continuous thrust – OEI – 230 KIAS – Pack(s) on, cowl anti–ice on <72211001D>

Figure 05–04B–43

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 290 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	87.8	89.3	94.3	93.5	93.7
–65	–85	72.4	74.3	79.3	83.7	86.6	88.8	90.3	95.4	94.6	94.8
–60	–76	73.3	75.2	80.2	84.7	87.6	89.8	91.3	96.4	95.6	95.8
–55	–67	74.1	76.0	81.2	85.6	88.6	90.8	92.4	97.4	96.6	95.9
–50	–58	75.0	76.9	82.1	86.6	89.6	91.8	93.4	97.8	96.3	95.1
–45	–49	75.8	77.7	83.0	87.5	90.6	92.8	94.3	97.6	95.8	93.9
–40	–40	76.6	78.6	83.9	88.5	91.5	93.7	95.3	97.3	95.2	92.7
–35	–31	77.4	79.4	84.7	89.4	92.5	94.6	95.5	96.6	94.3	91.5
–30	–22	78.2	80.2	85.6	90.3	93.4	95.4	94.8	95.9	93.3	90.3
–25	–13	79.0	81.0	86.5	91.2	94.3	95.4	94.0	95.1	92.3	89.1
–20	–4	79.8	81.8	87.3	92.1	95.3	94.8	93.1	94.2	90.9	87.9
–15	5	80.5	82.6	88.2	93.0	95.9	94.0	92.1	93.2	89.1	––
–10	14	81.3	83.4	89.0	93.9	95.1	93.1	91.0	92.0	88.1	––
–5	23	82.1	84.2	89.8	94.7	94.2	92.0	89.5	90.5	87.1	––
0	32	82.8	84.9	90.7	94.2	93.0	90.8	87.8	89.4	––	––
5	41	83.6	85.7	91.5	93.1	91.7	89.3	86.0	88.3	––	––
10	50	84.3	86.5	91.9	91.8	90.2	87.8	84.8	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_310–290.ch16

Maximum continuous thrust – OEI – 290 KIAS – Pack(s) on, cowl anti–ice on <72211001D>

Figure 05–04B–44

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 160 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)								
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000
–70	–94	––	––	––	––	––	86.3	87.5	89.1	90.6
–65	–85	72.9	74.8	78.7	81.2	82.5	87.2	88.5	90.2	90.3
–60	–76	73.8	75.7	79.6	82.2	83.5	88.1	89.6	90.5	90.0
–55	–67	74.7	76.6	80.5	83.2	84.5	89.0	90.6	90.7	89.9
–50	–58	75.5	77.5	81.4	84.1	85.4	89.8	90.9	90.9	89.7
–45	–49	76.3	78.3	82.3	85.0	86.3	90.7	91.0	90.8	89.5
–40	–40	77.2	79.2	83.2	85.9	87.3	91.6	91.1	90.9	88.7
–35	–31	78.0	80.0	84.1	86.8	88.2	92.3	91.2	91.0	87.3
–30	–22	78.8	80.8	84.9	87.7	89.1	92.6	91.0	90.5	82.2
–25	–13	79.6	81.6	85.8	88.6	89.9	92.5	90.5	89.8	79.2
–20	–4	80.3	82.4	86.7	89.5	90.8	92.2	89.7	87.3	76.6
–15	5	81.1	83.2	87.5	90.3	91.2	91.6	86.6	83.1	74.8
–10	14	81.9	84.0	88.3	91.2	90.9	90.2	83.4	77.2	74.2
–5	23	82.7	84.8	89.2	91.2	89.9	87.4	79.1	74.6	73.6
0	32	83.4	85.6	90.0	90.1	87.6	84.8	74.5	73.9	––
5	41	84.2	86.4	89.8	88.4	85.2	81.8	68.7	73.3	––
10	50	84.9	87.1	88.2	86.3	82.8	77.7	67.1	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_312–160.ch16

Maximum continuous thrust – OEI – 160 KIAS – Pack(s) on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–45

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 230 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)								
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000
–70	–94	––	––	––	––	––	88.4	89.6	94.3	94.1
–65	–85	72.8	74.7	78.5	81.1	84.3	89.3	90.6	95.3	93.1
–60	–76	73.7	75.6	79.4	82.0	85.3	90.3	91.6	94.7	92.0
–55	–67	74.5	76.4	80.3	82.9	86.3	91.2	92.6	93.6	91.4
–50	–58	75.4	77.3	81.2	83.9	87.2	92.1	93.6	92.7	91.0
–45	–49	76.2	78.2	82.1	84.8	88.2	92.9	92.9	92.3	90.5
–40	–40	77.0	79.0	83.0	85.7	89.1	93.7	92.5	91.9	89.7
–35	–31	77.8	79.8	83.9	86.6	90.0	93.8	92.2	91.5	88.2
–30	–22	78.6	80.6	84.7	87.5	90.9	93.6	91.7	90.7	86.0
–25	–13	79.4	81.4	85.6	88.3	91.8	93.4	90.9	89.3	83.6
–20	–4	80.2	82.2	86.4	89.2	92.0	92.9	89.3	87.5	80.4
–15	5	81.0	83.1	87.3	90.1	91.9	92.1	87.2	85.6	77.9
–10	14	81.7	83.8	88.1	90.9	91.6	90.4	84.8	82.7	77.0
–5	23	82.5	84.6	88.9	91.6	91.1	88.1	82.2	78.5	76.2
0	32	83.3	85.4	89.7	90.7	89.0	86.1	78.5	77.2	––
5	41	84.0	86.2	90.2	88.9	87.0	83.8	71.6	76.4	––
10	50	84.8	86.9	88.6	87.1	84.9	81.1	69.6	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_312–230.ch16

Maximum continuous thrust – OEI – 230 KIAS – Pack(s) on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–46

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 290 KIAS

MCT (ONE ENGINE INOPERATIVE)

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)								
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000
–70	–94	––	––	––	––	––	87.8	89.3	94.3	93.5
–65	–85	72.4	74.3	79.3	83.7	86.6	88.8	90.3	95.4	94.0
–60	–76	73.3	75.2	80.2	84.7	87.6	89.8	91.3	95.9	93.4
–55	–67	74.1	76.0	81.2	85.6	88.6	90.8	92.4	94.9	93.0
–50	–58	75.0	76.9	82.1	86.6	89.6	91.8	93.4	94.2	92.7
–45	–49	75.8	77.7	83.0	87.5	90.6	92.8	93.5	93.8	92.2
–40	–40	76.6	78.6	83.9	88.5	91.5	93.7	93.2	93.5	91.4
–35	–31	77.4	79.4	84.7	89.4	92.5	94.3	92.8	93.0	90.1
–30	–22	78.2	80.2	85.6	90.3	93.4	93.8	92.1	92.1	88.4
–25	–13	79.0	81.0	86.5	91.2	94.3	93.2	91.0	90.8	86.8
–20	–4	79.8	81.8	87.3	92.1	94.4	92.4	89.7	89.3	84.7
–15	5	80.5	82.6	88.2	93.0	93.7	91.3	88.2	87.8	81.9
–10	14	81.3	83.4	89.0	93.9	92.8	89.9	86.7	86.0	80.6
–5	23	82.1	84.2	89.8	92.9	91.5	88.5	84.8	83.7	79.6
0	32	82.8	84.9	90.7	91.6	89.9	87.1	82.6	82.5	––
5	41	83.6	85.7	90.3	90.0	88.2	85.2	80.0	81.4	––
10	50	84.3	86.5	88.8	88.2	86.4	83.2	78.7	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_312–290.ch16

Maximum continuous thrust – OEI – 290 KIAS – Pack(s) on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–47

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 160 KIAS

MCT (ONE ENGINE INOPERATIVE)

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	86.2	88.2	90.6	90.5	93.3
–65	–85	72.9	74.8	78.6	81.2	82.4	87.1	89.2	91.6	91.6	94.4
–60	–76	73.8	75.7	79.6	82.1	83.4	88.0	90.2	92.6	92.6	95.4
–55	–67	74.6	76.6	80.5	83.1	84.3	88.9	91.2	93.6	93.7	96.3
–50	–58	75.5	77.4	81.4	84.0	85.3	89.8	92.2	94.6	94.7	96.0
–45	–49	76.3	78.3	82.3	84.9	86.2	90.6	93.2	95.6	95.6	94.7
–40	–40	77.1	79.1	83.2	85.8	87.1	91.6	94.2	96.6	94.9	93.1
–35	–31	77.9	79.9	84.0	86.7	88.1	92.5	95.2	97.5	94.6	92.3
–30	–22	78.7	80.8	84.9	87.6	88.9	93.4	95.9	97.4	94.4	92.3
–25	–13	79.5	81.6	85.8	88.5	89.8	94.3	95.8	97.1	94.2	92.1
–20	–4	80.3	82.4	86.6	89.4	90.7	95.3	95.7	96.8	93.9	91.4
–15	5	81.1	83.2	87.4	90.2	91.6	95.9	95.5	96.6	93.4	––
–10	14	81.8	84.0	88.3	91.1	92.4	96.0	95.1	96.3	93.1	––
–5	23	82.6	84.8	89.1	91.9	93.2	95.9	94.6	95.8	92.7	––
0	32	83.4	85.6	89.9	92.8	94.1	95.4	93.7	95.3	––	––
5	41	84.1	86.3	90.7	93.6	94.4	94.8	92.4	94.9	––	––
10	50	84.9	87.1	91.5	93.8	93.8	93.6	91.4	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_010–160.ch16

Maximum continuous thrust – OEI – 160 KIAS – Cowl anti–ice on <72211001D>
Figure 05–04B–48

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 230 KIAS

MCT (ONE ENGINE INOPERATIVE)

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	88.2	89.3	94.2	93.8	93.1
–65	–85	72.8	74.6	78.4	80.9	84.2	89.2	90.4	95.2	94.8	94.2
–60	–76	73.6	75.5	79.3	81.9	85.2	90.1	91.4	96.2	95.8	95.2
–55	–67	74.5	76.4	80.3	82.8	86.2	91.0	92.4	97.2	96.8	96.2
–50	–58	75.3	77.2	81.2	83.8	87.2	91.9	93.4	98.2	97.8	95.8
–45	–49	76.1	78.1	82.1	84.7	88.1	92.8	94.3	98.2	96.8	94.8
–40	–40	76.9	78.9	82.9	85.6	89.0	93.6	95.3	98.2	95.5	94.3
–35	–31	77.8	79.8	83.8	86.5	90.0	94.4	96.3	98.2	94.9	93.9
–30	–22	78.6	80.6	84.7	87.4	90.9	95.3	97.2	97.8	94.7	93.4
–25	–13	79.3	81.4	85.5	88.2	91.8	96.2	96.7	97.3	94.5	92.5
–20	–4	80.1	82.2	86.3	89.1	92.7	97.0	96.3	96.9	93.9	91.1
–15	5	80.9	83.0	87.2	90.0	93.5	96.8	96.0	96.6	92.9	––
–10	14	81.7	83.8	88.0	90.8	94.4	96.5	95.4	96.0	92.3	––
–5	23	82.4	84.6	88.8	91.7	95.2	96.0	94.6	95.2	91.7	––
0	32	83.2	85.3	89.7	92.5	94.8	95.2	93.4	94.4	––	––
5	41	84.0	86.1	90.5	93.3	94.0	94.1	92.2	93.7	––	––
10	50	84.7	86.9	91.3	92.8	93.0	92.8	90.9	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_010–230.ch16

Maximum continuous thrust – OEI – 230 KIAS – Cowl anti–ice on <72211001D>
Figure 05–04B–49

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 290 KIAS

MCT (ONE ENGINE INOPERATIVE)

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000	41000
–70	–94	––	––	––	––	––	87.6	89.1	93.9	93.0	93.3
–65	–85	72.3	74.2	79.2	83.6	86.5	88.7	90.1	94.9	94.1	94.4
–60	–76	73.2	75.1	80.2	84.6	87.5	89.7	91.2	95.9	95.1	95.5
–55	–67	74.1	76.0	81.1	85.6	88.5	90.7	92.2	96.9	96.1	96.5
–50	–58	74.9	76.8	82.0	86.5	89.5	91.7	93.2	97.8	97.1	96.3
–45	–49	75.7	77.7	82.9	87.4	90.4	92.7	94.2	98.2	96.5	96.2
–40	–40	76.5	78.5	83.8	88.4	91.4	93.6	95.1	98.2	96.1	96.1
–35	–31	77.3	79.3	84.7	89.3	92.3	94.4	96.1	98.2	95.9	95.7
–30	–22	78.1	80.1	85.5	90.2	93.3	95.2	96.9	98.0	95.5	94.8
–25	–13	78.9	80.9	86.4	91.1	94.2	96.1	96.6	97.7	94.8	93.5
–20	–4	79.7	81.7	87.2	92.0	95.1	96.8	96.3	97.2	93.7	92.1
–15	5	80.4	82.5	88.1	92.9	96.0	96.5	95.7	96.6	92.5	––
–10	14	81.2	83.3	88.9	93.8	96.9	96.0	94.8	95.7	91.6	––
–5	23	82.0	84.1	89.7	94.6	96.4	95.3	93.7	94.6	90.6	––
0	32	82.7	84.9	90.6	95.5	95.6	94.2	92.6	93.6	––	––
5	41	83.5	85.6	91.4	94.9	94.5	93.2	91.5	92.6	––	––
10	50	84.2	86.4	92.2	93.8	93.3	92.1	90.5	––	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_010–290.ch16

Maximum continuous thrust – OEI – 290 KIAS – Cowl anti–ice on <72211001D>

Figure 05–04B–50

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 160 KIAS

MCT (ONE ENGINE INOPERATIVE)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)								
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000
–70	–94	––	––	––	––	––	86.3	88.3	91.0	85.3
–65	–85	72.9	74.8	78.7	81.2	82.5	87.2	89.3	92.1	84.4
–60	–76	73.8	75.7	79.6	82.2	83.5	88.1	90.4	93.1	84.0
–55	–67	74.7	76.6	80.5	83.2	84.5	89.0	91.4	93.9	83.8
–50	–58	75.5	77.5	81.4	84.1	85.4	89.8	92.4	94.1	83.4
–45	–49	76.3	78.3	82.3	85.0	86.3	90.7	93.4	94.0	82.8
–40	–40	77.2	79.2	83.2	85.9	87.3	91.6	93.5	94.1	81.5
–35	–31	78.0	80.0	84.1	86.8	88.2	92.6	93.4	94.0	79.9
–30	–22	78.8	80.8	84.9	87.7	89.1	93.5	93.1	93.4	71.9
–25	–13	79.6	81.6	85.8	88.6	89.9	93.8	92.7	92.8	67.0
–20	–4	80.3	82.4	86.7	89.5	90.8	93.6	92.2	90.9	63.0
–15	5	81.1	83.2	87.5	90.3	91.6	93.3	90.1	88.1	60.2
–10	14	81.9	84.0	88.3	91.2	92.3	92.5	88.0	84.2	59.3
–5	23	82.7	84.8	89.2	92.0	91.7	90.6	85.0	82.5	58.6
0	32	83.4	85.6	90.0	91.8	90.1	88.8	81.8	81.9	––
5	41	84.2	86.4	90.8	90.5	88.4	86.7	77.7	81.3	––
10	50	84.9	87.1	90.2	88.9	86.6	83.8	76.4	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_012–160.ch16

Maximum continuous thrust – OEI – 160 KIAS – Wing and cowl anti–ice on <72211001D>
Figure 05–04B–51

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 230 KIAS

MCT (ONE ENGINE INOPERATIVE)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)								
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000
–70	–94	––	––	––	––	––	88.4	89.6	94.3	90.1
–65	–85	72.8	74.7	78.5	81.1	84.3	89.3	90.6	95.3	88.0
–60	–76	73.7	75.6	79.4	82.0	85.3	90.3	91.6	96.3	86.3
–55	–67	74.5	76.4	80.3	82.9	86.3	91.2	92.6	95.9	85.2
–50	–58	75.4	77.3	81.2	83.9	87.2	92.1	93.6	95.2	84.6
–45	–49	76.2	78.2	82.1	84.8	88.2	92.9	94.6	94.9	83.8
–40	–40	77.0	79.0	83.0	85.7	89.1	93.7	95.2	94.6	82.6
–35	–31	77.8	79.8	83.9	86.6	90.0	94.5	94.7	94.1	80.6
–30	–22	78.6	80.6	84.7	87.5	90.9	95.4	94.1	93.3	77.4
–25	–13	79.4	81.4	85.6	88.3	91.8	95.1	93.3	92.1	73.8
–20	–4	80.2	82.2	86.4	89.2	92.7	94.6	92.1	90.7	68.6
–15	5	81.0	83.1	87.3	90.1	93.4	94.0	90.6	89.2	64.8
–10	14	81.7	83.8	88.1	90.9	93.2	92.9	88.9	87.1	63.6
–5	23	82.5	84.6	88.9	91.8	92.7	91.3	87.0	83.9	62.7
0	32	83.3	85.4	89.7	92.2	91.2	89.7	84.3	82.9	––
5	41	84.0	86.2	90.5	90.8	89.6	88.0	79.4	82.0	––
10	50	84.8	86.9	90.3	89.3	88.0	85.8	77.7	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_012–230.ch16

Maximum continuous thrust – OEI – 230 KIAS – Wing and cowl anti–ice on <72211001D>
Figure 05–04B–52

THRUST SETTING– %N1

MAXIMUM CONTINUOUS THRUST– 290 KIAS

MCT (ONE ENGINE INOPERATIVE)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)								
(°C)	(°F)	–2000	0	5000	10000	15000	20000	25000	30000	35000
–70	–94	––	––	––	––	––	87.8	89.3	94.3	91.4
–65	–85	72.4	74.3	79.3	83.7	86.6	88.8	90.3	95.4	90.0
–60	–76	73.3	75.2	80.2	84.7	87.6	89.8	91.3	96.4	88.9
–55	–67	74.1	76.0	81.2	85.6	88.6	90.8	92.4	96.9	88.3
–50	–58	75.0	76.9	82.1	86.6	89.6	91.8	93.4	96.4	88.0
–45	–49	75.8	77.7	83.0	87.5	90.6	92.8	94.3	96.1	87.5
–40	–40	76.6	78.6	83.9	88.5	91.5	93.7	95.3	95.7	86.6
–35	–31	77.4	79.4	84.7	89.4	92.5	94.6	95.2	95.1	84.7
–30	–22	78.2	80.2	85.6	90.3	93.4	95.4	94.5	94.3	82.1
–25	–13	79.0	81.0	86.5	91.2	94.3	95.3	93.7	93.3	79.7
–20	–4	79.8	81.8	87.3	92.1	95.3	94.7	92.8	92.1	76.6
–15	5	80.5	82.6	88.2	93.0	95.6	93.9	91.7	90.9	72.5
–10	14	81.3	83.4	89.0	93.9	94.8	92.9	90.6	89.5	71.0
–5	23	82.1	84.2	89.8	94.5	93.8	91.9	89.0	87.6	69.9
0	32	82.8	84.9	90.7	93.4	92.6	90.7	87.3	86.4	––
5	41	83.6	85.7	91.5	92.1	91.2	89.2	85.3	85.3	––
10	50	84.3	86.5	90.5	90.6	89.7	87.6	84.2	––	––

cs300_pw1521G_v05r2_status_enroute_to_avg_012–290.ch16

Maximum continuous thrust – OEI – 290 KIAS – Wing and cowl anti–ice on <72211001D>
Figure 05–04B–53

C. Maximum altitude and driftdown – PW1521G-3

MAXIMUM ALTITUDE AND DRIFTDOWN			
PW1521G-3 - MCT ONE ENGINE INOPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU ON GREEN DOT		INITIAL ALTITUDE 37000FT CG FWD	GROSS LEVEL OFF ALTITUDE (FT) FINAL WEIGHT (1000 KG)
INITIAL WEIGHT (KG)	TEMPERATURE (°C)		
	ISA	ISA + 10	ISA + 20
40000	33700	33300	31900
	39.0	39.1	39.0
42000	32600	32200	30800
	41.0	41.0	40.9
46000	30600	29900	28200
	44.8	44.8	44.6
50000	28600	27500	25500
	48.6	48.5	48.4
54000	26500	25100	23200
	52.4	52.3	52.3
58000	24500	23100	21300
	56.3	56.2	56.2
60000	23500	22200	20300
	58.2	58.2	58.1
66000	-	-	-
	-	-	-
67500	-	-	-
	-	-	-
Correction for CAI ON	-300	-1000	-2100
	0.0	-0.1	-0.2
Correction for CAI & WAI ON	-3000	-4200	-9100
	-0.1	-0.8	-1.0

CS300_21K_QRH_MET_v01_Max alt - driftdown

Maximum altitude and driftdown <Metric> and <72211001D>
Figure 05–04B–54

D. Maximum altitude and driftdown – ETOPS <10109100C>

MAXIMUM ALTITUDE AND DRIFTDOWN (ETOPS)			
PW1521G-3 - MCT ONE ENGINE INOPERATIVE ENGINE BLEED: PACKS ON, A/I OFF APU ON 0.78M / 290KIAS	INITIAL ALTITUDE 37000FT CG 27% MAC	GROSS LEVEL OFF ALTITUDE (FT) FINAL WEIGHT (1000 KG)	
INITIAL WEIGHT (KG)	TEMPERATURE (°C)		
	ISA	ISA + 10	ISA + 20
40000	18000	16200	11200
	38.0	37.9	36.8
45000	17500	15600	10000
	42.8	42.6	41.4
50000	16900	14900	8800
	47.7	47.3	45.9
55000	16300	14100	7400
	52.5	52.2	50.6
60000	15400	13200	5600
	57.2	57.0	55.2
65000	14400	12400	4000
	62.0	61.7	60.0
CORRECTION FOR ALL A/I ON	-2800	-9300	--
	-0.2	-1.5	--
CORRECTION FOR ICE ACCRETION	-3200	-4100	-6100
	-0.5	-0.5	-0.5

CS300_21K_QRH-MET_v02_Max alt - driftdown - ETOPS

ETOPS – Maximum altitude and driftdown <Metric> and <72211001D>
Figure 05–04B–55

MAXIMUM DIVERSION DISTANCE (ETOPS)					
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU ON			ISA CG 27% MAC		AIR DISTANCE (NM)
DESCENT SCHEDULE			CRUISE SPEED		
0.78M / 290KIAS			290KIAS		
WEIGHT (KG)	ALTITUDE (FT)	DIVERSION TIME (MIN)			
		60	90	120	180
40000	18000	396	584	--	--
42000	17000	396	581	766	--
44000	17000	396	581	766	1136
46000	17000	395	581	766	1136
48000	17000	395	580	765	1135
50000	16000	394	577	759	1124
52000	16000	393	576	758	1123
54000	16000	392	574	757	1121
56000	16000	391	573	756	1120
58000	15000	389	570	749	1109
60000	15000	387	567	747	1106
62000	15000	386	566	746	1105
64000	14000	384	563	740	1094
66000	14000	384	561	738	1092

CS300_21K_FCOM-MET_v01_Max diversion dist - ETOPS

ETOPS – Maximum diversion distance <Metric> and <72211001D>
Figure 05–04B–56

E. LRC – OEI

LRC - OEI							
PW1521G-3 - ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF						LRC (KIAS)	
WEIGHT (KG)	PRESSURE ALTITUDE (FT)						
	0	5000	10000	15000	20000	25000	30000
42000	229	232	220	216	219	210	203
44000	236	234	224	218	224	214	205
46000	244	236	229	221	225	221	207
48000	250	238	234	224	228	226	--
50000	253	240	237	234	231	227	--
52000	255	242	238	240	234	227	--
54000	257	247	240	244	237	227	--
56000	259	251	243	248	242	--	--
58000	261	257	246	250	247	--	--
60000	262	259	253	253	251	--	--
62000	264	260	260	255	252	--	--
64000	266	261	264	257	254	--	--
66000	269	263	268	259	--	--	--

CS300_21K_QRH-MET_v01-LRC-OEI

LRC – OEI <Metric> and <72211001D>
Figure 05–04B–57

F. In cruise quick check

IN CRUISE QUICK CHECK - OEI							
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC		FUEL (KG) TIME (MIN)	
CRUISE SPEED				DESCENT SCHEDULE			
LRC				0.78M / 275KIAS / 250KIAS			
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		400	600	800	1000	1200	1400	1600
40000	100	2028	--	–	–	--	–	--
		100	--	–	–	--	–	--
	180	1737	2612	–	–	--	--	--
		92	137	–	–	--	--	--
	260	1509	2292	–	–	--	--	–
		83	123	–	–	--	--	–
44000	100	2116	3157	4186	5202	6206	--	–
		98	145	193	241	289	--	–
	180	1815	2737	3649	4549	5439	6318	–
		87	130	173	217	261	305	–
	260	1577	2405	3223	4032	4832	5622	6404
		80	119	158	197	236	276	316
48000	100	2206	3296	4373	5436	6486	7523	8547
		94	140	186	233	280	327	375
	180	1892	2862	3821	4768	5703	6627	7540
		84	124	165	206	248	290	333
	260	1650	2528	3394	4251	5095	5929	6753
		78	114	151	189	226	265	304
52000	100	2294	3434	4559	5671	6768	7851	8921
		92	136	180	225	271	317	363
	180	1964	2979	3985	4979	5960	6929	7886
		83	122	162	201	241	282	322
	260	1724	2650	3564	4467	5359	6240	7111
		77	114	150	187	223	260	297

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_OEI – p1

In cruise quick check – LRC – page 1 <Metric>
Figure 05–04B–58

IN CRUISE QUICK CHECK - OEI								
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC			FUEL (KG) TIME (MIN)	
CRUISE SPEED				DESCENT SCHEDULE				
LRC				0.78M / 275KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
40000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	180	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	260	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
44000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	180	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	260	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
48000	100	9558	10558	--	--	--	--	--
		423	471	--	--	--	--	--
	180	8442	9333	10213	--	--	--	--
		377	421	466	--	--	--	--
	260	7567	8372	9168	9955	10733	--	--
		343	382	421	461	501	--	--
52000	100	9977	11020	12050	13068	14073	--	--
		410	457	505	553	601	--	--
	180	8832	9767	10691	11603	12503	13393	14273
		363	405	447	491	535	579	623
	260	7971	8819	9657	10484	11301	12109	12908
		334	371	410	448	487	526	566

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_OEI – p2

In cruise quick check – LRC – page 2 <Metric>
Figure 05–04B–59

IN CRUISE QUICK CHECK - OEI								
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC		FUEL (KG) TIME (MIN)		
CRUISE SPEED				DESCENT SCHEDULE				
LRC				0.78M / 275KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		400	600	800	1000	1200	1400	1600
56000	100	2383 90	3570 134	4742 178	5900 221	7045 265	8175 310	9291 354
	180	2036 81	3095 120	4143 158	5179 197	6203 237	7217 276	8219 316
	260	– --	– --	-- --	-- --	– --	– –	-- --
60000	100	2474 88	3709 131	4929 173	6134 217	7323 260	8499 304	9660 348
	180	2108 80	3211 117	4302 155	5381 194	6448 232	7503 271	8546 310
	260	-- --	-- --	– –	-- --	-- --	-- --	– –
64000	100	2564 84	3848 125	5116 166	6368 208	7605 251	8826 294	10032 337
	180	2190 77	3340 114	4476 151	5598 188	6707 226	7803 264	8888 302
	260	– –	– –	– –	-- --	-- --	-- --	-- --

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_OEI - p3

In cruise quick check – LRC – page 3 <Metric>
Figure 05–04B–60

IN CRUISE QUICK CHECK - OEI								
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU OFF				ISA CG 27% MAC			FUEL (KG) TIME (MIN)	
CRUISE SPEED				DESCENT SCHEDULE				
LRC				0.78M / 275KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
56000	100	10393	11481	12555	13616	14663	15698	16720
		400	445	492	539	586	633	681
	180	9210	10188	11155	12109	13053	13985	14906
		355	395	436	477	518	560	602
	260	–	--	--	–	–	--	--
		–	--	--	–	–	--	--
60000	100	10807	11940	13059	14164	15255	16332	17396
		391	436	480	525	571	617	664
	180	9577	10597	11606	12604	13591	14564	15526
		349	388	427	467	507	547	588
	260	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
64000	100	11223	12399	13562	14710	15844	16965	--
		380	424	468	511	556	600	--
	180	9960	11020	12068	13105	14130	15145	16148
		341	379	418	457	496	535	575
	260	–	--	--	–	--	--	--
		–	--	--	–	--	--	--

CS300_ALL_NAMEPLATES_QRH_MET_v01_In_cruise_OEI - p4

In cruise quick check – LRC – page 4 <Metric>
Figure 05–04B–61

G. In cruise quick check – ETOPS <10109100C>

IN CRUISE QUICK CHECK - OEI (ETOPS)								
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU ON				ISA CG 27% MAC			TIME (MIN) FUEL (KG)	
CRUISE SPEED				DESCENT SCHEDULE				
290KIAS				0.78M / 290KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		400	600	800	1000	1200	1400	1600
40000	100	77 2617	-- --	-- --	-- --	-- --	-- --	-- --
	170	71 2301	-- --	-- --	-- --	-- --	-- --	-- --
44000	100	77 2639	113 3969	149 5293	185 6613	-- --	-- --	-- --
	170	71 2321	103 3517	136 4709	168 5896	-- --	-- --	-- --
48000	100	77 2665	113 4012	149 5352	185 6687	221 8017	257 9341	293 10660
	160	72 2379	104 3608	137 4831	170 6048	203 7260	236 8465	269 9666
52000	100	77 2694	113 4058	149 5416	185 6768	221 8114	257 9454	293 10789
	160	71 2405	104 3652	137 4894	170 6130	203 7359	236 8584	269 9802
CORRECTION			PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON	
FUEL			-0.5%		0.9%		5.1%	

CS300_21K_FCOM-MET_v01-In cruise_OEI - ETOPS - p1

ETOPS – In cruise quick check – OEI – page 1 <Metric> and <72211001D>
Figure 05–04B–62

IN CRUISE QUICK CHECK - OEI (ETOPS)

ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU ON	ISA CG 27% MAC	TIME (MIN) FUEL (KG)

CRUISE SPEED	DESCENT SCHEDULE
290KIAS	0.78M / 290KIAS / 250KIAS

WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
40000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	170	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
44000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	170	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
48000	100	--	--	--	--	--	--	--
		--	--	--	--	--	--	--
	160	302	--	--	--	--	--	--
		10862	--	--	--	--	--	--
52000	100	329	365	401	--	--	--	--
		12118	13441	14760	--	--	--	--
	160	302	335	368	401	--	--	--
		11014	12221	13423	14620	--	--	--

CORRECTION	PER 10°C BELOW ISA	PER 10°C ABOVE ISA	ALL A/I ON
FUEL	-0.6%	0.9%	4.8%

CS300_21K_FCOM-MET_v01-In cruise_OEI - ETOPS - p2

ETOPS – In cruise quick check – OEI – page 2 <Metric> and <72211001D>
Figure 05–04B–63

IN CRUISE QUICK CHECK - OEI (ETOPS)							
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU ON				ISA CG 27% MAC		TIME (MIN) FUEL (KG)	
CRUISE SPEED			DESCENT SCHEDULE				
290KIAS			0.78M / 290KIAS / 250KIAS				
WEIGHT (KG)	FL	AIR DISTANCE (NM)					
		400	600	800	1000	1200	1400	1600
56000	100	77 2731	113 4114	149 5491	185 6861	221 8225	257 9582	293 10933
	150	72 2479	106 3762	139 5038	172 6307	206 7571	239 8828	273 10079
60000	100	77 2777	113 4185	149 5585	185 6975	221 8357	257 9733	293 11101
	140	73 2563	107 3887	141 5202	175 6509	209 7808	243 9099	277 10384
64000	100	77 2824	113 4259	149 5686	185 7101	221 8507	257 9904	292 11293
	140	73 2604	107 3954	141 5296	175 6628	209 7952	243 9266	276 10573
CORRECTION			PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON	
FUEL			-0.5%		0.9%		5.1%	

CS300_21K_FCOM-MET_v01-In cruise_OEI - ETOPS - p3

ETOPS – In cruise quick check – OEI – page 3 <Metric> and <72211001D>
Figure 05–04B–64

IN CRUISE QUICK CHECK - OEI (ETOPS)								
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION ENGINE BLEED: PACKS ON, A/I OFF APU ON			ISA CG 27% MAC				TIME (MIN) FUEL (KG)	
CRUISE SPEED			DESCENT SCHEDULE					
290KIAS			0.78M / 290KIAS / 250KIAS					
WEIGHT (KG)	FL	AIR DISTANCE (NM)						
		1800	2000	2200	2400	2600	2800	3000
56000	100	329 12278	365 13618	401 14952	436 16280	-- --	-- --	-- --
	150	306 11325	340 12565	373 13799	406 15027	440 16250	-- --	-- --
60000	100	329 12464	364 13820	400 15170	436 16514	-- --	-- --	-- --
	140	310 11663	344 12936	378 14203	412 15464	446 16719	-- --	-- --
64000	100	328 12674	364 14047	400 15414	436 16776	-- --	-- --	-- --
	140	310 11871	344 13162	378 14447	412 15725	446 16998	-- --	-- --
CORRECTION			PER 10°C BELOW ISA		PER 10°C ABOVE ISA		ALL A/I ON	
FUEL			-0.6%		0.9%		4.8%	

CS300_21K_FCOM-MET_v01-In cruise_OEI - ETOPS - p4

ETOPS – In cruise quick check – OEI – page 4 <Metric> and <72211001D>
Figure 05–04B–65

H. Holding (GDOEI)

HOLDING - OEI						
ONE ENGINE INOPERATIVE CLEAN CONFIGURATION RACETRACK PATTERN			ISA CG 27% MAC		HOLDING SPEED (KIAS) TOTAL FUEL FLOW (KG/MIN)	
FL	GROSS WEIGHT (KG)					
	40000	45000	50000	55000	60000	65000
15	165	176	187	197	207	216
	19	21	23	25	28	30
50	166	178	189	200	209	219
	19	21	23	25	28	30
100	169	181	192	203	213	222
	18	21	23	26	28	31
150	172	184	195	206	216	226
	18	21	23	26	29	32
200	175	187	199	210	219	--
	19	21	24	27	30	--
250	178	190	202	--	--	--
	19	22	25	--	--	--
300	181	--	--	--	--	--
	20	--	--	--	--	--

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OEI_Holding

NOTE

In a linear holding reduce the Fuel Flow by 5%

Holding – OEI <Metric>
Figure 05–04B–66

LANDING

A. Operating speeds (recommended VREF, VAC, VGA)

VREF - VAC			
FLAP 2 APP FLAP 4 LDG			VREF (KIAS) VAC (KIAS)
WEIGHT (KG)	PRESSURE ALTITUDE (FT)		
	0	4000	8000
39000	114	114	114
	120	120	120
40000	115	115	116
	121	121	122
44000	121	121	122
	127	127	128
48000	126	127	127
	132	133	133
52000	132	132	133
	138	138	139
56000	137	138	139
	143	144	145
60000	142	143	144
	148	149	150
64000	146	147	148
	152	153	154
67500	150	151	152
	156	157	158

CS300_ALL_NAMEPLATES_FCOM_MET_v01_vref_vac_F2_4

VREF – VAC – FLAP 2 approach – FLAP 4 landing <Metric>
Figure 05–04B–67

VREF - VAC			
FLAP 4 APP FLAP 5 LDG			VREF (KIAS) VAC (KIAS)
WEIGHT (KG)	PRESSURE ALTITUDE (FT)		
	0	4000	8000
39000	110	110	110
	110	110	110
40000	110	110	110
	110	110	110
44000	114	114	114
	114	114	114
48000	119	119	119
	119	119	119
52000	124	124	124
	124	124	124
56000	128	128	129
	128	128	129
60000	133	133	134
	133	133	134
64000	137	137	138
	137	137	138
67500	140	141	142
	140	141	142

CS300_ALL_NAMEPLATES_FCOM_MET_v01_vref_vac_F4_5

VREF – VAC – FLAP 4 approach – FLAP 5 landing <Metric>
Figure 05–04B–68

GO AROUND SPEED			
PW1521G-3 FLAP 2			VGA(KIAS)
WEIGHT (KG)	PRESSURE ALTITUDE (FT)		
	0	4000	8000
39000	145	135	130
40000	143	134	132
44000	137	137	138
48000	142	143	143
52000	148	148	149
56000	153	154	155
60000	158	159	160
64000	162	163	164
67500	166	167	168

CS300_21K_FCOM_MET_v01_vga_F2

VGA – FLAP 2 <Metric> and <72211001D>
Figure 05–04B–69

GO AROUND SPEED			
PW1521G-3 FLAP 4			VGA (KIAS)
WEIGHT (KG)	PRESSURE ALTITUDE (FT)		
	0	4000	8000
39000	124	120	120
40000	122	120	120
44000	124	124	124
48000	129	129	129
52000	134	134	134
56000	138	138	139
60000	143	143	144
64000	147	147	148
67500	150	151	152

CS300_21K_FCOM_MET_v01_vga_F4

VGA – FLAP 4 <Metric> and <72211001D>
Figure 05–04B–70

B. N1 for go-around – PW1521G-3 <72211001D>

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO or OEI)

ENGINE BLEEDS CLOSED

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	–68	75.0	77.1	77.7	78.4	79.0	79.7	80.8	81.7	82.8	83.6	84.2	84.5
–50	–58	76.1	78.1	78.8	79.5	80.1	80.7	81.9	82.8	83.9	84.7	85.3	85.6
–45	–49	76.9	79.0	79.7	80.3	81.0	81.6	82.8	83.7	84.8	85.6	86.3	86.6
–40	–40	77.7	79.8	80.5	81.2	81.8	82.5	83.6	84.6	85.7	86.5	87.2	87.5
–35	–31	78.5	80.7	81.4	82.1	82.7	83.4	84.5	85.5	86.6	87.4	88.1	88.4
–30	–22	79.3	81.5	82.2	82.9	83.6	84.2	85.4	86.4	87.5	88.3	89.0	89.3
–25	–13	80.1	82.3	83.0	83.7	84.4	85.1	86.2	87.2	88.4	89.2	89.9	90.2
–20	–4	80.9	83.1	83.8	84.6	85.2	85.9	87.1	88.1	89.2	90.1	90.8	91.0
–15	5	81.7	83.9	84.7	85.4	86.1	86.8	87.9	89.0	90.1	90.9	91.6	91.9
–10	14	82.5	84.7	85.5	86.2	86.9	87.6	88.8	89.8	91.0	91.8	92.5	92.8
–5	23	83.3	85.5	86.3	87.0	87.7	88.4	89.6	90.6	91.8	92.7	93.3	93.6
0	32	84.0	86.3	87.1	87.8	88.5	89.2	90.4	91.5	92.6	93.5	94.2	94.5
5	41	84.8	87.1	87.8	88.6	89.3	90.0	91.2	92.3	93.5	94.3	94.7	94.7
10	50	85.5	87.9	88.6	89.4	90.1	90.8	92.1	93.1	94.3	94.4	94.3	94.4
15	59	86.3	88.7	89.4	90.2	90.9	91.6	92.9	93.8	93.7	93.7	93.7	93.8
20	68	87.1	89.4	90.2	90.9	91.7	92.4	93.1	93.0	93.0	92.8	92.9	93.0
25	77	87.8	90.2	91.0	91.7	92.1	92.2	92.2	92.1	91.9	91.7	91.8	92.0
30	86	88.5	90.9	91.0	91.1	91.1	91.2	91.1	91.0	90.7	90.5	90.6	91.0
35	95	88.9	89.8	89.9	89.9	90.0	90.0	90.0	89.8	89.4	89.2	89.3	––
40	104	87.7	88.7	88.7	88.8	88.8	88.9	88.9	88.6	88.2	87.9	88.0	––
45	113	86.5	87.5	87.6	87.6	87.7	87.7	87.7	87.4	86.9	86.6	––	––
53	127	84.6	85.6	85.7	85.7	85.8	85.8	85.8	85.3	––	––	––	––

cs300_pw1521G_v05r2_status_goaround_to_avg_000.ch16

Go–around – 140 KIAS – AEO or OEI – Engine bleeds closed <72211001D>
Figure 05–04B–71

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO)

PACKS ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.1	77.8	78.4	79.1	79.7	80.8	81.8	82.8	83.6	84.3	84.6
–50	**–58**	76.1	78.2	78.8	79.5	80.2	80.8	81.9	82.9	83.9	84.8	85.4	85.7
–45	**–49**	76.9	79.0	79.7	80.4	81.0	81.7	82.8	83.8	84.9	85.7	86.3	86.7
–40	**–40**	77.8	79.9	80.6	81.2	81.9	82.6	83.7	84.7	85.8	86.6	87.3	87.6
–35	**–31**	78.6	80.7	81.4	82.1	82.8	83.4	84.6	85.6	86.7	87.5	88.2	88.5
–30	**–22**	79.4	81.6	82.2	82.9	83.6	84.3	85.5	86.4	87.6	88.4	89.1	89.4
–25	**–13**	80.2	82.4	83.1	83.8	84.5	85.1	86.3	87.3	88.4	89.3	90.0	90.3
–20	**–4**	81.0	83.2	83.9	84.6	85.3	86.0	87.2	88.2	89.3	90.2	90.8	91.1
–15	**5**	81.8	84.0	84.7	85.4	86.1	86.8	88.0	89.0	90.2	91.0	91.7	92.0
–10	**14**	82.5	84.8	85.5	86.2	86.9	87.6	88.8	89.9	91.0	91.9	92.5	92.9
–5	**23**	83.3	85.6	86.3	87.1	87.8	88.5	89.7	90.7	91.9	92.7	93.4	93.7
0	**32**	84.1	86.4	87.1	87.8	88.6	89.3	90.5	91.6	92.7	93.6	93.9	93.8
5	**41**	84.8	87.2	87.9	88.7	89.4	90.1	91.3	92.4	93.6	93.7	93.6	93.6
10	**50**	85.6	87.9	88.7	89.4	90.2	90.9	92.1	93.2	93.2	93.1	93.1	93.1
15	**59**	86.4	88.7	89.5	90.2	91.0	91.7	92.7	92.6	92.5	92.3	92.2	92.2
20	**68**	87.1	89.5	90.2	91.0	91.8	91.9	91.8	91.7	91.4	91.0	90.8	90.8
25	**77**	87.9	90.2	90.7	90.8	90.8	90.8	90.7	90.5	90.0	89.6	89.4	89.5
30	**86**	88.6	89.5	89.6	89.6	89.6	89.6	89.5	89.2	88.6	88.3	88.2	88.4
35	**95**	87.4	88.3	88.3	88.3	88.3	88.3	88.2	87.9	87.3	87.0	86.9	––
40	**104**	86.1	87.0	87.0	87.0	87.0	87.0	86.8	86.5	86.1	85.7	85.6	––
45	**113**	84.7	85.6	85.7	85.7	85.7	85.6	85.5	85.3	84.7	84.4	––	––
53	**127**	82.7	83.5	83.5	83.5	83.5	83.6	83.6	83.2	––	––	––	––

cs300_pw1521G_v05r2_status_goaround_to_avg_100.ch16

Go–around – 140 KIAS – AEO – Packs on, anti–ice off <72211001D>
Figure 05–04B–72

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO)

PACKS ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.7
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.6	93.7	93.6
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	93.2	93.2	93.3	93.4
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	92.2	92.6	92.5	92.6	92.8	92.8

cs300_pw1521G_v05r2_status_goaround_to_avg_110.ch16

Go–around – 140 KIAS – AEO – Packs on, cowl anti–ice on <72211001D>
Figure 05–04B–73

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO)

PACKS ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.6
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.3	93.4	93.4
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	92.7	92.8	93.0	93.1
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	91.9	91.9	91.8	92.1	92.4	92.5

cs300_pw1521G_v05r2_status_goaround_to_avg_111.ch16

Go–around – 140 KIAS – AEO – Packs on, wing and cowl anti–ice on <72211001D>
Figure 05–04B–74

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO or OEI)

COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.8
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.7	94.3	94.6
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	93.6	94.5	94.4	94.4
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	92.2	93.3	93.9	93.8	94.0	94.1

cs300_pw1521G_v05r2_status_goaround_to_avg_010.ch16

Go–around – 140 KIAS – AEO or OEI – Cowl anti–ice on <72211001D>
Figure 05–04B–75

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.2	77.8	78.5	79.2	79.8	80.9	81.8	82.9	83.7	84.4	84.7
–50	**–58**	76.2	78.2	78.9	79.6	80.2	80.9	82.0	82.9	84.0	84.8	85.5	85.8
–45	**–49**	77.0	79.1	79.8	80.4	81.1	81.8	82.9	83.9	84.9	85.8	86.4	86.8
–40	**–40**	77.8	79.9	80.6	81.3	82.0	82.6	83.8	84.8	85.9	86.7	87.4	87.7
–35	**–31**	78.6	80.8	81.5	82.2	82.8	83.5	84.7	85.7	86.8	87.6	88.3	88.6
–30	**–22**	79.4	81.6	82.3	83.0	83.7	84.4	85.5	86.5	87.7	88.5	89.2	89.5
–25	**–13**	80.2	82.4	83.2	83.8	84.5	85.2	86.4	87.4	88.5	89.4	90.1	90.4
–20	**–4**	81.0	83.2	84.0	84.7	85.4	86.1	87.2	88.3	89.4	90.3	90.9	91.2
–15	**5**	81.8	84.1	84.8	85.5	86.2	86.9	88.1	89.1	90.3	91.1	91.8	92.1
–10	**14**	82.6	84.9	85.6	86.3	87.0	87.7	88.9	90.0	91.1	92.0	92.7	93.0
–5	**23**	83.4	85.7	86.4	87.1	87.8	88.5	89.8	90.8	92.0	92.8	93.5	93.8
0	**32**	84.1	86.4	87.2	87.9	88.6	89.3	90.6	91.6	92.8	93.7	94.2	94.5
5	**41**	84.9	87.2	88.0	88.7	89.4	90.2	91.4	92.4	93.6	94.2	94.1	94.2
10	**50**	85.7	88.0	88.8	89.5	90.2	91.0	92.2	92.9	93.2	93.2	93.6	93.8

cs300_pw1521G_v05r2_status_goaround_to_avg_011.ch16

Go–around – 140 KIAS – AEO – Wing and cowl anti–ice on <72211001D>
Figure 05–04B–76

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (OEI)

ENGINE BLEEDS CLOSED

PW1521G

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	1000	2000	4000	6000	8000	10000	12000	14000
–56	–68	75.0	77.1	77.7	78.4	79.7	80.8	81.7	82.8	83.6	84.0
–50	–58	76.1	78.1	78.8	79.5	80.7	81.9	82.8	83.9	84.7	85.1
–45	–49	76.9	79.0	79.7	80.3	81.6	82.8	83.7	84.8	85.6	86.1
–40	–40	77.7	79.8	80.5	81.2	82.5	83.6	84.6	85.7	86.5	87.0
–35	–31	78.5	80.7	81.4	82.1	83.4	84.5	85.5	86.6	87.4	87.9
–30	–22	79.3	81.5	82.2	82.9	84.2	85.4	86.4	87.5	88.3	88.8
–25	–13	80.1	82.3	83.0	83.7	85.1	86.2	87.2	88.4	89.2	89.7
–20	–4	80.9	83.1	83.8	84.6	85.9	87.1	88.1	89.2	90.1	90.5
–15	5	81.7	83.9	84.7	85.4	86.8	87.9	89.0	90.1	90.9	91.4
–10	14	82.5	84.7	85.5	86.2	87.6	88.8	89.8	91.0	91.8	92.2
–5	23	83.3	85.5	86.3	87.0	88.4	89.6	90.6	91.8	92.7	93.1
0	32	84.0	86.3	87.1	87.8	89.2	90.4	91.5	92.6	93.5	93.9
5	41	84.8	87.1	87.8	88.6	90.0	91.2	92.3	93.5	94.3	94.8
10	50	85.5	87.9	88.6	89.4	90.8	92.1	93.1	94.3	94.4	94.2
15	59	86.3	88.7	89.4	90.2	91.6	92.9	93.8	93.7	93.7	93.6
20	68	87.1	89.4	90.2	90.9	92.4	93.1	93.0	93.0	92.8	92.7
25	77	87.8	90.2	91.0	91.7	92.2	92.2	92.1	91.9	91.7	91.6
30	86	88.5	90.9	91.0	91.1	91.2	91.1	91.0	90.7	90.5	90.3
35	95	88.9	89.8	89.9	89.9	90.0	90.0	89.8	89.4	89.2	89.0
40	104	87.7	88.7	88.7	88.8	88.9	88.9	88.6	88.2	87.9	87.7
45	113	86.5	87.5	87.6	87.6	87.7	87.7	87.4	86.9	86.6	––
53	127	84.6	85.6	85.7	85.7	85.8	85.8	85.3	––	––	––

cs300_pw1524G_v05r2_status_goaround_to_avg_000_OEI.ch16

Go–around – 140 KIAS – OEI – Engine bleeds closed <72211001D>
Figure 05–04B–77

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (OEI)

PACK(S) ON, ANTI–ICE OFF

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.1	77.1	77.8	78.5	79.1	79.7	80.8	81.8	82.8	83.7	84.3	84.6
–50	**–58**	76.1	78.2	78.9	79.5	80.2	80.8	81.9	82.9	84.0	84.8	85.4	85.8
–45	**–49**	76.9	79.1	79.7	80.4	81.1	81.7	82.8	83.8	84.9	85.7	86.4	86.7
–40	**–40**	77.8	79.9	80.6	81.3	81.9	82.6	83.7	84.7	85.8	86.6	87.3	87.6
–35	**–31**	78.6	80.7	81.4	82.1	82.8	83.4	84.6	85.6	86.7	87.5	88.2	88.5
–30	**–22**	79.4	81.6	82.3	83.0	83.6	84.3	85.5	86.5	87.6	88.4	89.1	89.4
–25	**–13**	80.2	82.4	83.1	83.8	84.5	85.2	86.3	87.3	88.5	89.3	90.0	90.3
–20	**–4**	81.0	83.2	83.9	84.6	85.3	86.0	87.2	88.2	89.3	90.2	90.9	91.2
–15	**5**	81.8	84.0	84.7	85.4	86.1	86.8	88.0	89.1	90.2	91.1	91.7	92.0
–10	**14**	82.6	84.8	85.5	86.3	87.0	87.7	88.9	89.9	91.1	91.9	92.6	92.9
–5	**23**	83.3	85.6	86.3	87.1	87.8	88.5	89.7	90.7	91.9	92.8	93.4	93.7
0	**32**	84.1	86.4	87.1	87.9	88.6	89.3	90.5	91.6	92.7	93.6	93.5	93.4
5	**41**	84.8	87.2	87.9	88.7	89.4	90.1	91.3	92.4	93.4	93.2	93.2	93.1
10	**50**	85.6	87.9	88.7	89.5	90.2	90.9	92.2	92.9	92.7	92.6	92.5	92.5
15	**59**	86.4	88.7	89.5	90.2	91.0	91.7	92.2	92.1	91.9	91.7	91.5	91.5
20	**68**	87.1	89.5	90.3	91.0	91.4	91.4	91.3	91.1	90.7	90.1	89.8	89.8
25	**77**	87.9	90.3	90.3	90.3	90.3	90.2	90.2	89.8	89.1	88.6	88.3	88.3
30	**86**	88.2	89.1	89.1	89.1	89.0	88.9	88.8	88.5	87.7	87.3	87.0	87.3
35	**95**	87.0	87.8	87.8	87.8	87.7	87.6	87.4	87.0	86.3	86.1	85.7	––
40	**104**	85.7	86.4	86.4	86.4	86.3	86.2	86.0	85.7	85.0	84.7	84.4	––
45	**113**	84.2	85.0	85.0	84.9	84.8	84.7	84.7	84.4	83.7	83.4	––	––
53	**127**	82.2	82.9	82.8	82.7	82.7	82.6	82.7	82.3	––	––	––	––

cs300_pw1521G_v05r2_status_goaround_to_avg_300.ch16

Go–around – 140 KIAS – OEI – Pack(s) on, anti–ice off <72211001D>
Figure 05–04B–78

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (OEI)

PACK(S) ON, COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.2	77.3	78.0	78.6	79.3	79.9	81.0	81.9	83.0	83.9	84.5	84.8
–50	**–58**	76.3	78.3	79.0	79.7	80.3	81.0	82.1	83.1	84.2	85.0	85.7	86.0
–45	**–49**	77.1	79.2	79.9	80.6	81.2	81.9	83.0	84.0	85.1	85.9	86.6	86.9
–40	**–40**	77.9	80.1	80.7	81.4	82.1	82.8	83.9	84.9	86.0	86.8	87.5	87.8
–35	**–31**	78.8	80.9	81.6	82.3	82.9	83.6	84.8	85.8	86.9	87.8	88.4	88.8
–30	**–22**	79.6	81.7	82.4	83.1	83.8	84.5	85.6	86.7	87.8	88.7	89.3	89.7
–25	**–13**	80.4	82.6	83.3	84.0	84.7	85.3	86.5	87.5	88.7	89.5	90.2	90.5
–20	**–4**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	90.4	91.1	91.3
–15	**5**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	90.4	91.3	91.8	92.1
–10	**14**	82.7	85.0	85.7	86.4	87.1	87.8	89.0	90.1	91.2	92.1	92.7	93.0
–5	**23**	83.5	85.8	86.5	87.2	87.9	88.7	89.9	90.9	92.0	92.9	92.8	92.5
0	**32**	84.3	86.6	87.3	88.1	88.8	89.5	90.7	91.7	92.8	92.6	91.8	91.3
5	**41**	85.0	87.3	88.1	88.8	89.6	90.3	91.4	92.3	92.1	91.6	90.2	89.8
10	**50**	85.8	88.1	88.9	89.6	90.4	90.8	91.6	91.3	90.8	90.0	88.8	88.3

cs300_pw1521G_v05r2_status_goaround_to_avg_310.ch16

Go–around – 140 KIAS – OEI – Pack(s) on, cowl anti–ice on <72211001D>
Figure 05–04B–79

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (OEI)

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.2	77.3	78.0	78.6	79.3	79.9	81.0	81.9	83.0	83.9	84.5	84.8
–50	**–58**	76.3	78.3	79.0	79.7	80.3	81.0	82.1	83.1	84.2	85.0	85.7	86.0
–45	**–49**	77.1	79.2	79.9	80.6	81.2	81.9	83.0	84.0	85.1	85.9	86.6	86.9
–40	**–40**	77.9	80.1	80.7	81.4	82.1	82.8	83.9	84.9	86.0	86.8	87.5	87.8
–35	**–31**	78.8	80.9	81.6	82.3	82.9	83.6	84.8	85.8	86.9	87.8	88.4	88.8
–30	**–22**	79.6	81.7	82.4	83.1	83.8	84.5	85.6	86.7	87.8	88.7	89.3	89.7
–25	**–13**	80.4	82.6	83.3	84.0	84.7	85.3	86.5	87.5	88.7	89.5	90.2	90.5
–20	**–4**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	90.4	91.1	91.0
–15	**5**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	90.4	91.3	91.2	90.9
–10	**14**	82.7	85.0	85.7	86.4	87.1	87.8	89.0	90.1	91.2	91.4	90.9	90.6
–5	**23**	83.5	85.8	86.5	87.2	87.9	88.7	89.9	90.9	91.2	90.8	90.4	90.0
0	**32**	84.3	86.6	87.3	88.1	88.8	89.5	90.7	90.8	90.5	90.1	89.1	88.4
5	**41**	85.0	87.3	88.1	88.8	89.6	90.3	90.3	89.9	89.4	88.5	86.9	86.1
10	**50**	85.8	88.1	88.9	89.6	89.5	89.4	89.0	88.5	87.8	86.3	84.8	83.9

cs300_pw1521G_v05r2_status_goaround_to_avg_312.ch16

Go–around – 140 KIAS – OEI – Pack(s) on, wing and cowl anti–ice on <72211001D>

Figure 05–04B–80

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (OEI)

COWL ANTI–ICE ON

PW1521G

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	1000	2000	4000	6000	8000	10000	12000	14000
–56	**–68**	75.1	77.2	77.8	78.5	79.8	80.9	81.8	82.9	83.7	84.2
–50	**–58**	76.2	78.2	78.9	79.6	80.9	82.0	82.9	84.0	84.8	85.3
–45	**–49**	77.0	79.1	79.8	80.4	81.8	82.9	83.9	84.9	85.8	86.2
–40	**–40**	77.8	79.9	80.6	81.3	82.6	83.8	84.8	85.9	86.7	87.2
–35	**–31**	78.6	80.8	81.5	82.2	83.5	84.7	85.7	86.8	87.6	88.1
–30	**–22**	79.4	81.6	82.3	83.0	84.4	85.5	86.5	87.7	88.5	89.0
–25	**–13**	80.2	82.4	83.2	83.8	85.2	86.4	87.4	88.5	89.4	89.8
–20	**–4**	81.0	83.2	84.0	84.7	86.1	87.2	88.3	89.4	90.3	90.7
–15	**5**	81.8	84.1	84.8	85.5	86.9	88.1	89.1	90.3	91.1	91.6
–10	**14**	82.6	84.9	85.6	86.3	87.7	88.9	90.0	91.1	92.0	92.4
–5	**23**	83.4	85.7	86.4	87.1	88.5	89.8	90.8	92.0	92.8	93.3
0	**32**	84.1	86.4	87.2	87.9	89.3	90.6	91.6	92.8	93.7	94.1
5	**41**	84.9	87.2	88.0	88.7	90.2	91.4	92.4	93.6	94.5	94.4
10	**50**	85.7	88.0	88.8	89.5	91.0	92.2	93.3	93.9	93.8	93.8

cs300_pw1524G_v05r2_status_goaround_to_avg_010_OEI.ch16

Go–around – 140 KIAS – OEI – Cowl anti–ice on <72211001D>
Figure 05–04B–81

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (OEI)

WING AND COWL ANTI–ICE ON

PW1521G–3

SAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	6000	8000	10000	12000	14500	16000
–56	**–68**	75.2	77.3	78.0	78.6	79.3	79.9	81.0	81.9	83.0	83.9	84.5	84.8
–50	**–58**	76.3	78.3	79.0	79.7	80.3	81.0	82.1	83.1	84.2	85.0	85.7	86.0
–45	**–49**	77.1	79.2	79.9	80.6	81.2	81.9	83.0	84.0	85.1	85.9	86.6	86.9
–40	**–40**	77.9	80.1	80.7	81.4	82.1	82.8	83.9	84.9	86.0	86.8	87.5	87.8
–35	**–31**	78.8	80.9	81.6	82.3	82.9	83.6	84.8	85.8	86.9	87.8	88.4	88.8
–30	**–22**	79.6	81.7	82.4	83.1	83.8	84.5	85.6	86.7	87.8	88.7	89.3	89.7
–25	**–13**	80.4	82.6	83.3	84.0	84.7	85.3	86.5	87.5	88.7	89.5	90.2	90.5
–20	**–4**	81.2	83.4	84.1	84.8	85.5	86.2	87.4	88.4	89.5	90.4	91.1	91.4
–15	**5**	81.9	84.2	84.9	85.6	86.3	87.0	88.2	89.2	90.4	91.3	92.0	92.3
–10	**14**	82.7	85.0	85.7	86.4	87.1	87.8	89.0	90.1	91.2	92.1	92.8	93.2
–5	**23**	83.5	85.8	86.5	87.2	87.9	88.7	89.9	90.9	92.1	93.0	93.4	93.3
0	**32**	84.3	86.6	87.3	88.1	88.8	89.5	90.7	91.8	92.9	93.2	93.1	93.0
5	**41**	85.0	87.3	88.1	88.8	89.6	90.3	91.5	92.6	92.5	92.6	92.4	92.3
10	**50**	85.8	88.1	88.9	89.6	90.4	91.1	91.8	91.7	91.7	91.6	91.6	91.5

cs300_pw1521G_v05r2_status_goaround_to_avg_012.ch16

Go–around – 140 KIAS – OEI – Wing and cowl anti–ice on <72211001D>
Figure 05–04B–82

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO or OEI)

ENGINE BLEEDS CLOSED

PW1521G

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	1000	2000	4000	6000	8000	10000	12000	14000
–56	–68	75.0	77.1	77.7	78.4	79.7	80.8	81.7	82.8	83.6	84.0
–50	–58	76.1	78.1	78.8	79.5	80.7	81.9	82.8	83.9	84.7	85.1
–45	–49	76.9	79.0	79.7	80.3	81.6	82.8	83.7	84.8	85.6	86.1
–40	–40	77.7	79.8	80.5	81.2	82.5	83.6	84.6	85.7	86.5	87.0
–35	–31	78.5	80.7	81.4	82.1	83.4	84.5	85.5	86.6	87.4	87.9
–30	–22	79.3	81.5	82.2	82.9	84.2	85.4	86.4	87.5	88.3	88.8
–25	–13	80.1	82.3	83.0	83.7	85.1	86.2	87.2	88.4	89.2	89.7
–20	–4	80.9	83.1	83.8	84.6	85.9	87.1	88.1	89.2	90.1	90.5
–15	5	81.7	83.9	84.7	85.4	86.8	87.9	89.0	90.1	90.9	91.4
–10	14	82.5	84.7	85.5	86.2	87.6	88.8	89.8	91.0	91.8	92.2
–5	23	83.3	85.5	86.3	87.0	88.4	89.6	90.6	91.8	92.7	93.1
0	32	84.0	86.3	87.1	87.8	89.2	90.4	91.5	92.6	93.5	93.9
5	41	84.8	87.1	87.8	88.6	90.0	91.2	92.3	93.5	94.3	94.8
10	50	85.5	87.9	88.6	89.4	90.8	92.1	93.1	94.3	94.4	94.2
15	59	86.3	88.7	89.4	90.2	91.6	92.9	93.8	93.7	93.7	93.6
20	68	87.1	89.4	90.2	90.9	92.4	93.1	93.0	93.0	92.8	92.7
25	77	87.8	90.2	91.0	91.7	92.2	92.2	92.1	91.9	91.7	91.6
30	86	88.5	90.9	91.0	91.1	91.2	91.1	91.0	90.7	90.5	90.3
35	95	88.9	89.8	89.9	89.9	90.0	90.0	89.8	89.4	89.2	89.0
40	104	87.7	88.7	88.7	88.8	88.9	88.9	88.6	88.2	87.9	87.7
45	113	86.5	87.5	87.6	87.6	87.7	87.7	87.4	86.9	86.6	––
53	127	84.6	85.6	85.7	85.7	85.8	85.8	85.3	––	––	––

cs300_pw1524G_v05r2_status_goaround_to_avg_000_AEO_OEI.ch16

Go–around – 140 KIAS – AEO or OEI – Engine bleeds closed <72211001D>
Figure 05–04B–83

THRUST SETTING– %N1

GO–AROUND – 140 KIAS

GA (AEO or OEI)

COWL ANTI–ICE ON

PW1521G

SAT		PRESSURE ALTITUDE (Feet)									
(°C)	(°F)	–2000	0	1000	2000	4000	6000	8000	10000	12000	14000
–56	**–68**	75.1	77.2	77.8	78.5	79.8	80.9	81.8	82.9	83.7	84.2
–50	**–58**	76.2	78.2	78.9	79.6	80.9	82.0	82.9	84.0	84.8	85.3
–45	**–49**	77.0	79.1	79.8	80.4	81.8	82.9	83.9	84.9	85.8	86.2
–40	**–40**	77.8	79.9	80.6	81.3	82.6	83.8	84.8	85.9	86.7	87.2
–35	**–31**	78.6	80.8	81.5	82.2	83.5	84.7	85.7	86.8	87.6	88.1
–30	**–22**	79.4	81.6	82.3	83.0	84.4	85.5	86.5	87.7	88.5	89.0
–25	**–13**	80.2	82.4	83.2	83.8	85.2	86.4	87.4	88.5	89.4	89.8
–20	**–4**	81.0	83.2	84.0	84.7	86.1	87.2	88.3	89.4	90.3	90.7
–15	**5**	81.8	84.1	84.8	85.5	86.9	88.1	89.1	90.3	91.1	91.6
–10	**14**	82.6	84.9	85.6	86.3	87.7	88.9	90.0	91.1	92.0	92.4
–5	**23**	83.4	85.7	86.4	87.1	88.5	89.8	90.8	92.0	92.8	93.3
0	**32**	84.1	86.4	87.2	87.9	89.3	90.6	91.6	92.8	93.7	94.1
5	**41**	84.9	87.2	88.0	88.7	90.2	91.4	92.4	93.6	94.5	94.4
10	**50**	85.7	88.0	88.8	89.5	91.0	92.2	93.3	93.9	93.8	93.8

cs300_pw1524G_v05r2_status_goaround_to_avg_010_AEO_OEI.ch16

Go–around – 140 KIAS – AEO or OEI – Cowl anti–ice on <72211001D>
Figure 05–04B–84

C. Runway conditions assessment matrix

Runway condition code	Runway surface condition description	Pilot-reported braking action
6	Dry	—
5	• Frost	Good

Runway condition code	Runway surface condition description	Pilot-reported braking action
	• Wet (includes damp and 3 mm (0.12 in.) depth or less of water) 3 mm (0.12 in.) depth or less of: • Slush • Dry snow • Wet snow	
4	–15°C and colder outside air temperature: • Compacted snow	Good to medium
3	• Wet (“slippery when wet” runway) • Dry snow or wet snow (any depth) over compacted snow More than 3 mm (0.12 in.) depth, of: • Dry snow • Wet snow Warmer than –15°C outside air: • Compacted snow	Medium
2	More than 3 mm (0.12 in.) depth, of: • Water • Slush	Medium to poor
1	• Ice	Poor

D. Operational landing distance (OLD)

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH MANUAL LANDING		ISA WIND CALM SLOPE ZERO					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	901	920	938	958	979	1024	1072
	5	1025	1050	1076	1103	1130	1188	1250
	4	1172	1197	1223	1250	1278	1337	1399
	3	1254	1282	1310	1340	1371	1436	1505
	2	1345	1379	1414	1451	1488	1569	1662
	1	1555	1593	1632	1673	1713	1803	1898
40000	6	917	936	956	977	998	1044	1095
	5	1046	1072	1098	1125	1152	1212	1277
	4	1193	1219	1245	1273	1301	1360	1425
	3	1277	1305	1334	1364	1396	1462	1534
	2	1373	1408	1443	1480	1519	1603	1702
	1	1585	1624	1663	1704	1747	1837	1936
44000	6	986	1007	1030	1053	1077	1128	1185
	5	1128	1155	1184	1214	1245	1314	1391
	4	1276	1304	1333	1362	1393	1460	1534
	3	1367	1398	1430	1463	1497	1572	1654
	2	1484	1522	1562	1605	1652	1752	1862
	1	1703	1746	1789	1833	1880	1982	2094

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_F4_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Manual brakes or autobrake HI – page 1 <Metric>
Figure 05–04B–85

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1055	1078	1102	1127	1155	1212	1275
	5	1211	1241	1273	1307	1343	1421	1508
	4	1358	1389	1420	1452	1487	1562	1642
	3	1458	1492	1526	1562	1601	1684	1773
	2	1599	1644	1691	1740	1792	1902	2024
	1	1822	1868	1916	1965	2017	2129	2251
52000	6	1123	1149	1176	1205	1234	1296	1360
	5	1296	1330	1367	1405	1445	1532	1627
	4	1441	1474	1509	1546	1584	1664	1751
	3	1549	1586	1625	1665	1707	1796	1893
	2	1722	1771	1823	1878	1935	2056	2189
	1	1942	1992	2045	2099	2156	2278	2411
56000	6	1193	1221	1249	1278	1308	1372	1441
	5	1385	1423	1463	1505	1550	1645	1748
	4	1526	1562	1600	1639	1680	1766	1859
	3	1642	1683	1725	1768	1813	1909	2013
	2	1848	1902	1959	2018	2080	2210	2354
	1	2065	2120	2177	2236	2298	2428	2572

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_F4_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Manual brakes or autobrake HI – page 2 <Metric>
Figure 05–04B–86

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1255	1283	1313	1345	1377	1445	1519
	5	1472	1514	1558	1604	1652	1754	1867
	4	1608	1647	1687	1729	1772	1864	1963
	3	1733	1776	1821	1868	1915	2017	2128
	2	1971	2030	2092	2155	2220	2361	2516
	1	2186	2245	2306	2370	2434	2574	2727
64000	6	1314	1345	1377	1410	1444	1516	1595
	5	1559	1605	1652	1701	1753	1863	1984
	4	1688	1729	1772	1817	1862	1960	2065
	3	1822	1868	1915	1965	2015	2124	2242
	2	2094	2157	2222	2290	2360	2512	2679
	1	2305	2368	2433	2501	2570	2719	2882
67500	6	1366	1398	1431	1466	1502	1578	1661
	5	1636	1685	1735	1787	1842	1959	2089
	4	1758	1801	1846	1893	1941	2043	2154
	3	1899	1948	1997	2049	2103	2217	2340
	2	2202	2268	2336	2409	2483	2644	2820
	1	2410	2476	2543	2615	2688	2846	3016

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_F4_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Manual brakes or autobrake HI – page 3 <Metric>
Figure 05–04B–87

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1191	1218	1246	1275	1304	1367	1433
	5	1192	1219	1247	1276	1306	1369	1437
	4	1252	1280	1309	1340	1371	1437	1507
	3	1292	1322	1353	1384	1417	1486	1560
	2	1345	1379	1413	1448	1486	1565	1652
	1	1553	1590	1629	1670	1712	1800	1895
40000	6	1214	1242	1270	1300	1330	1394	1463
	5	1215	1243	1271	1301	1332	1396	1467
	4	1276	1305	1335	1365	1397	1464	1538
	3	1317	1347	1378	1411	1444	1514	1591
	2	1373	1407	1442	1478	1516	1598	1691
	1	1583	1621	1662	1702	1745	1835	1934
44000	6	1307	1337	1368	1400	1432	1505	1585
	5	1308	1339	1370	1402	1436	1509	1590
	4	1372	1403	1436	1469	1504	1579	1663
	3	1414	1447	1481	1516	1552	1631	1719
	2	1483	1520	1559	1601	1642	1742	1852
	1	1703	1744	1788	1833	1879	1980	2092

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_F4_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Autobrake MED – page 1 <Metric>
Figure 05–04B–88

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1398	1431	1464	1499	1538	1619	1706
	5	1401	1433	1467	1503	1542	1624	1712
	4	1466	1500	1535	1572	1612	1697	1788
	3	1511	1546	1582	1621	1663	1751	1846
	2	1595	1636	1682	1730	1782	1893	2014
	1	1823	1867	1915	1964	2016	2128	2251
52000	6	1489	1525	1564	1604	1645	1733	1827
	5	1492	1529	1568	1608	1650	1739	1835
	4	1560	1598	1638	1680	1723	1814	1913
	3	1606	1645	1687	1730	1775	1870	1973
	2	1713	1763	1814	1870	1926	2047	2179
	1	1942	1992	2044	2101	2158	2279	2412
56000	6	1583	1623	1665	1708	1752	1846	1948
	5	1587	1628	1670	1713	1759	1854	1957
	4	1657	1698	1742	1786	1833	1931	2037
	3	1704	1748	1792	1839	1888	1990	2101
	2	1839	1894	1950	2010	2071	2203	2346
	1	2066	2121	2178	2237	2299	2431	2573

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_F4_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Autobrake MED – page 2 <Metric>
Figure 05–04B–89

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1674	1716	1760	1806	1854	1954	2063
	5	1679	1722	1767	1814	1862	1963	2073
	4	1750	1794	1840	1888	1937	2042	2155
	3	1799	1846	1894	1944	1995	2105	2223
	2	1963	2023	2084	2147	2213	2354	2509
	1	2187	2246	2307	2371	2436	2578	2731
64000	6	1761	1807	1853	1902	1952	2059	2174
	5	1768	1814	1861	1911	1962	2070	2188
	4	1840	1887	1936	1986	2039	2150	2270
	3	1893	1941	1992	2045	2100	2216	2342
	2	2087	2149	2215	2283	2353	2504	2671
	1	2308	2369	2435	2503	2572	2722	2885
67500	6	1837	1885	1934	1985	2038	2150	2271
	5	1845	1893	1943	1995	2048	2163	2288
	4	1918	1968	2019	2072	2127	2243	2369
	3	1973	2025	2078	2133	2191	2313	2445
	2	2194	2260	2329	2401	2476	2637	2813
	1	2412	2478	2546	2617	2691	2849	3020

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_F4_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Autobrake MED – page 3 <Metric>
Figure 05–04B–90

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1496	1532	1570	1609	1649	1733	1824
	5	1496	1532	1570	1609	1649	1733	1824
	4	1496	1532	1570	1609	1649	1733	1824
	3	1498	1535	1573	1612	1652	1737	1828
	2	1500	1536	1575	1614	1655	1742	1835
	1	1661	1703	1746	1791	1837	1934	2039
40000	6	1527	1564	1603	1642	1683	1770	1865
	5	1527	1564	1603	1642	1683	1770	1865
	4	1527	1564	1603	1642	1683	1770	1865
	3	1530	1567	1606	1646	1687	1774	1869
	2	1531	1569	1608	1649	1691	1779	1881
	1	1695	1737	1782	1827	1874	1973	2082
44000	6	1652	1693	1735	1778	1823	1921	2031
	5	1652	1693	1735	1778	1823	1921	2031
	4	1652	1693	1735	1778	1823	1921	2031
	3	1656	1696	1738	1782	1827	1925	2035
	2	1658	1699	1742	1786	1832	1939	2051
	1	1829	1875	1923	1973	2023	2136	2260

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_F4_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Autobrake LO – page 1 <Metric>
Figure 05–04B–91

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1777	1820	1866	1914	1966	2077	2197
	5	1777	1820	1866	1914	1966	2077	2197
	4	1777	1820	1866	1914	1966	2077	2197
	3	1780	1824	1870	1918	1971	2082	2202
	2	1784	1828	1879	1930	1983	2096	2219
	1	1961	2011	2063	2117	2176	2301	2436
52000	6	1900	1949	2002	2056	2113	2233	2363
	5	1900	1949	2002	2056	2113	2233	2363
	4	1900	1949	2002	2056	2113	2233	2363
	3	1904	1953	2006	2061	2118	2238	2368
	2	1914	1965	2018	2074	2132	2254	2388
	1	2092	2147	2206	2268	2332	2467	2614
56000	6	2029	2083	2140	2199	2260	2390	2530
	5	2029	2083	2140	2199	2260	2390	2530
	4	2029	2083	2140	2199	2260	2390	2530
	3	2033	2088	2145	2204	2265	2395	2536
	2	2044	2100	2157	2217	2280	2413	2556
	1	2227	2289	2352	2418	2487	2634	2791

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_F4_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Autobrake LO – page 2 <Metric>
Figure 05–04B–92

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	2152	2211	2272	2334	2400	2539	2689
	5	2152	2211	2272	2334	2400	2539	2689
	4	2152	2211	2272	2334	2400	2539	2689
	3	2157	2216	2277	2340	2405	2545	2695
	2	2169	2228	2290	2354	2421	2563	2717
	1	2359	2424	2492	2563	2635	2792	2961
64000	6	2273	2335	2399	2466	2536	2684	2843
	5	2273	2335	2399	2466	2536	2684	2843
	4	2273	2335	2399	2466	2536	2684	2843
	3	2278	2341	2405	2472	2542	2690	2850
	2	2290	2353	2419	2488	2559	2710	2874
	1	2488	2556	2628	2704	2781	2947	3128
67500	6	2377	2443	2511	2581	2654	2810	2978
	5	2377	2443	2511	2581	2654	2810	2978
	4	2377	2443	2511	2581	2654	2810	2978
	3	2383	2449	2517	2587	2661	2816	2985
	2	2396	2462	2531	2603	2678	2837	3011
	1	2599	2672	2747	2827	2908	3083	3272

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_F4_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Manual landing – Autobrake LO – page 3 <Metric>

Figure 05–04B–93

OPERATIONAL LANDING DISTANCES CORRECTIONS

FLAP 4
MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH

OPERATIONAL LANDING DISTANCES CORRECTIONS (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
39000	6	100	290	40	0	70	50	-20	50
	5	150	490	70	0	330	130	-20	80
	4	120	420	70	-10	320	140	-20	70
	3	130	490	120	-20	470	190	-30	80
	2	190	860	220	-20	1110	380	-30	130
	1	160	930	390	-50	1460	500	-30	120
67500	6	130	360	40	0	150	70	-30	90
	5	180	670	120	-20	690	270	-40	140
	4	140	490	100	-20	430	190	-40	100
	3	150	570	130	-30	610	260	-40	110
	2	200	960	250	-50	1600	570	-60	160
	1	160	820	270	-80	1490	550	-60	120

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_corrections_F4

NOTE
Data does not include an operational factor

Operational landing distance corrections – FLAP 4 – Manual brakes or autobrake HI <Metric>
Figure 05–04B–94

OPERATIONAL LANDING DISTANCES CORRECTIONS									
FLAP 4 AUTOBRAKE LEVEL MEDIUM							OPERATIONAL LANDING DISTANCES CORRECTIONS (M)		
WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
39000	6	140	370	40	10	50	50	-30	70
	5	150	500	60	0	260	50	-30	90
	4	140	440	50	0	160	40	-30	70
	3	140	500	120	0	360	150	-30	80
	2	200	860	210	-20	1110	380	-30	130
	1	170	940	380	-50	1460	500	-30	120
67500	6	160	440	30	10	10	10	-40	100
	5	180	690	120	0	690	260	-50	140
	4	160	510	70	0	190	60	-50	110
	3	160	580	130	-10	450	150	-50	110
	2	210	960	240	-50	1600	570	-60	160
	1	160	820	260	-80	1490	540	-60	120

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_corrections_F4

NOTE

Data does not include an operational factor

Operational landing distance corrections – FLAP 4 – Autobrake MED <Metric>
Figure 05–04B–95

OPERATIONAL LANDING DISTANCES CORRECTIONS									
FLAP 4 AUTOBRAKE LEVEL LOW								OPERATIONAL LANDING DISTANCES CORRECTIONS (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
39000	6	180	500	40	10	130	130	-30	90
	5	180	500	40	10	130	130	-30	90
	4	180	500	40	10	130	130	-30	90
	3	180	550	50	0	180	150	-30	90
	2	200	860	210	0	860	190	-30	130
	1	180	940	380	-30	1180	350	-40	120
67500	6	200	590	30	10	100	100	-70	120
	5	200	690	30	10	100	100	-70	140
	4	200	590	30	10	100	100	-70	120
	3	200	620	60	0	120	110	-70	120
	2	210	960	240	-10	1390	420	-70	160
	1	200	820	260	-40	1140	330	-70	130

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_corrections_F4

NOTE

Data does not include an operational factor

Operational landing distance corrections – FLAP 4 – Autobrake LO <Metric>
Figure 05–04B–96

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF+5 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH AUTOLAND ON	ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1163	1186	1211	1236	1262	1316	1374
	5	1316	1345	1377	1410	1443	1515	1592
	4	1458	1488	1520	1552	1585	1656	1731
	3	1545	1578	1613	1648	1685	1762	1844
	2	1652	1692	1736	1781	1829	1928	2035
	1	1859	1903	1949	1994	2043	2145	2255
40000	6	1182	1206	1231	1257	1284	1339	1399
	5	1340	1371	1403	1436	1471	1544	1625
	4	1482	1513	1545	1578	1612	1684	1762
	3	1572	1606	1640	1677	1714	1792	1878
	2	1684	1727	1772	1819	1866	1968	2079
	1	1894	1938	1983	2032	2080	2184	2299
44000	6	1261	1287	1314	1341	1370	1432	1501
	5	1439	1473	1508	1545	1582	1666	1759
	4	1580	1614	1648	1684	1720	1800	1888
	3	1678	1714	1752	1791	1831	1919	2015
	2	1820	1868	1916	1966	2018	2131	2258
	1	2028	2077	2126	2179	2232	2347	2476

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50’	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_HI_F4_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Manual brakes or autobrake HI – page 1 <Metric>
Figure 05–04B–97

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF+5 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1338	1366	1394	1425	1458	1527	1601
	5	1538	1575	1614	1654	1699	1793	1895
	4	1677	1712	1749	1788	1830	1918	2014
	3	1783	1822	1863	1905	1951	2048	2153
	2	1956	2007	2059	2115	2174	2301	2439
	1	2164	2215	2270	2326	2386	2514	2654
52000	6	1414	1445	1477	1511	1546	1620	1699
	5	1638	1680	1724	1770	1818	1921	2033
	4	1772	1811	1853	1897	1942	2036	2138
	3	1887	1930	1976	2024	2073	2177	2289
	2	2092	2148	2208	2270	2335	2472	2622
	1	2298	2355	2416	2479	2544	2682	2832
56000	6	1491	1525	1560	1596	1633	1711	1796
	5	1743	1789	1837	1888	1940	2051	2174
	4	1870	1914	1958	2005	2053	2154	2263
	3	1994	2042	2091	2141	2194	2306	2427
	2	2233	2295	2360	2426	2496	2645	2808
	1	2437	2500	2565	2631	2702	2850	3012
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_HI_F4_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Manual brakes or autobrake HI – page 2 <Metric>
Figure 05–04B–98

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF+5 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH AUTOLAND ON	ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1565	1600	1637	1675	1715	1798	1887
	5	1846	1896	1948	2001	2057	2179	2311
	4	1966	2012	2059	2108	2159	2267	2383
	3	2099	2149	2201	2255	2311	2430	2558
	2	2372	2438	2507	2579	2653	2814	2989
	1	2573	2641	2709	2781	2855	3014	3186
64000	6	1636	1673	1712	1752	1794	1882	1976
	5	1947	2000	2056	2114	2175	2305	2447
	4	2058	2107	2157	2208	2262	2376	2499
	3	2200	2254	2309	2366	2425	2551	2687
	2	2508	2580	2653	2729	2810	2982	3169
	1	2707	2778	2851	2926	3006	3174	3357
67500	6	1697	1736	1777	1819	1862	1954	2053
	5	2036	2092	2151	2213	2278	2416	2567
	4	2138	2189	2241	2296	2352	2472	2601
	3	2289	2345	2402	2462	2524	2656	2799
	2	2628	2703	2781	2862	2947	3129	3328
	1	2823	2898	2975	3054	3137	3315	3507

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50’	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_HI_F4_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Manual brakes or autobrake HI – page 3 <Metric>
Figure 05–04B–99

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1514	1548	1582	1618	1654	1731	1813
	5	1515	1548	1583	1619	1655	1733	1815
	4	1578	1613	1649	1685	1724	1804	1889
	3	1617	1653	1690	1728	1768	1851	1940
	2	1662	1700	1741	1782	1828	1926	2031
	1	1862	1904	1950	1996	2044	2147	2257
40000	6	1542	1576	1611	1647	1684	1763	1848
	5	1543	1577	1612	1648	1686	1765	1851
	4	1606	1642	1678	1716	1755	1836	1925
	3	1646	1682	1720	1759	1800	1885	1977
	2	1692	1732	1773	1818	1865	1964	2074
	1	1895	1940	1985	2033	2082	2186	2301
44000	6	1651	1688	1726	1765	1805	1893	1990
	5	1652	1689	1727	1767	1807	1896	1994
	4	1719	1757	1796	1837	1879	1971	2072
	3	1760	1800	1840	1883	1926	2021	2126
	2	1820	1866	1913	1963	2014	2126	2253
	1	2032	2080	2129	2181	2234	2350	2479
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_MED_F4_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Autobrake MED – page 1 <Metric>
Figure 05–04B–100

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM AUTOLAND ON	ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1759	1798	1839	1882	1928	2027	2132
	5	1761	1800	1841	1885	1932	2031	2137
	4	1830	1871	1913	1958	2006	2108	2218
	3	1873	1915	1959	2005	2055	2161	2275
	2	1953	2003	2056	2110	2170	2297	2435
	1	2167	2220	2273	2329	2390	2519	2658
52000	6	1865	1909	1956	2004	2054	2160	2273
	5	1868	1912	1959	2008	2058	2165	2279
	4	1939	1984	2033	2083	2135	2244	2362
	3	1983	2030	2081	2132	2186	2300	2422
	2	2088	2144	2204	2266	2331	2468	2619
	1	2302	2359	2420	2483	2548	2687	2837
56000	6	1976	2024	2074	2125	2179	2292	2414
	5	1979	2027	2078	2130	2184	2298	2421
	4	2052	2102	2154	2207	2263	2380	2506
	3	2099	2150	2204	2260	2317	2438	2570
	2	2230	2292	2357	2424	2493	2642	2805
	1	2442	2505	2570	2638	2707	2856	3019

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50’	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_MED_F4_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Autobrake MED – page 2 <Metric>
Figure 05–04B–101

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	2081	2132	2185	2240	2297	2417	2547
	5	2085	2137	2190	2246	2303	2424	2555
	4	2160	2213	2268	2325	2384	2509	2643
	3	2209	2264	2321	2380	2441	2570	2710
	2	2369	2435	2504	2576	2651	2812	2987
	1	2579	2646	2714	2787	2861	3021	3193
64000	6	2183	2237	2293	2351	2411	2539	2676
	5	2188	2243	2299	2358	2419	2547	2686
	4	2265	2321	2379	2439	2501	2633	2775
	3	2317	2375	2435	2497	2562	2699	2847
	2	2506	2577	2650	2728	2807	2979	3167
	1	2713	2785	2857	2935	3013	3182	3366
67500	6	2271	2328	2387	2447	2510	2644	2788
	5	2277	2334	2394	2455	2519	2654	2799
	4	2355	2414	2475	2537	2603	2741	2890
	3	2410	2471	2533	2599	2667	2810	2965
	2	2626	2701	2779	2860	2945	3128	3327
	1	2831	2905	2982	3061	3146	3324	3516
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_MED_F4_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Autobrake MED – page 3 <Metric>
Figure 05–04B–102

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 4 **VREF+5** **2 THRUST REVERSERS** **AUTOBRAKE LEVEL LOW** **AUTOLAND ON**	**ISA** **WIND CALM** **SLOPE ZERO** **ILS GS 3.00°** **TCH 50'**	**OPERATIONAL LANDING DISTANCES (M)**

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1853	1897	1942	1989	2037	2139	2249
	5	1853	1897	1942	1989	2037	2139	2249
	4	1853	1897	1942	1989	2037	2139	2249
	3	1856	1900	1945	1992	2040	2143	2253
	2	1856	1900	1946	1993	2045	2149	2261
	1	2017	2066	2117	2169	2224	2339	2463
40000	6	1890	1934	1981	2029	2078	2183	2297
	5	1890	1934	1981	2029	2078	2183	2297
	4	1890	1934	1981	2029	2078	2183	2297
	3	1893	1937	1984	2032	2081	2186	2301
	2	1893	1938	1985	2036	2087	2193	2309
	1	2056	2106	2158	2212	2267	2384	2513
44000	6	2037	2086	2136	2188	2242	2359	2490
	5	2037	2086	2136	2188	2242	2359	2490
	4	2037	2086	2136	2188	2242	2359	2490
	3	2041	2089	2140	2192	2246	2363	2494
	2	2044	2094	2145	2198	2252	2372	2504
	1	2213	2267	2322	2381	2441	2572	2717

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50'	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_LO_F4_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Autobrake LO – page 1 <Metric>

Figure 05–04B–103

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	2183	2236	2290	2347	2409	2540	2682
	5	2183	2236	2290	2347	2409	2540	2682
	4	2183	2236	2290	2347	2409	2540	2682
	3	2187	2239	2294	2351	2413	2544	2686
	2	2192	2245	2300	2358	2421	2554	2699
	1	2366	2426	2485	2549	2618	2764	2921
52000	6	2327	2386	2448	2512	2579	2720	2873
	5	2327	2386	2448	2512	2579	2720	2873
	4	2327	2386	2448	2512	2579	2720	2873
	3	2332	2390	2452	2516	2583	2725	2878
	2	2337	2396	2459	2524	2592	2736	2892
	1	2518	2583	2651	2723	2797	2953	3123
56000	6	2476	2541	2607	2676	2748	2900	3064
	5	2476	2541	2607	2676	2748	2900	3064
	4	2476	2541	2607	2676	2748	2900	3064
	3	2481	2546	2612	2681	2753	2906	3070
	2	2487	2552	2620	2690	2763	2918	3086
	1	2675	2746	2820	2897	2975	3143	3326
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_LO_F4_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Autobrake LO – page 2 <Metric>
Figure 05–04B–104

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 4 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	2620	2689	2760	2833	2910	3072	3247
	5	2620	2689	2760	2833	2910	3072	3247
	4	2620	2689	2760	2833	2910	3072	3247
	3	2625	2694	2765	2839	2915	3078	3253
	2	2632	2701	2773	2848	2926	3092	3271
	1	2827	2903	2980	3062	3146	3325	3518
64000	6	2760	2832	2908	2986	3067	3239	3425
	5	2760	2832	2908	2986	3067	3239	3425
	4	2760	2832	2908	2986	3067	3239	3425
	3	2765	2838	2913	2992	3073	3245	3431
	2	2773	2846	2923	3003	3085	3261	3451
	1	2974	3054	3137	3224	3313	3502	3708
67500	6	2881	2957	3036	3118	3203	3384	3579
	5	2881	2957	3036	3118	3203	3384	3579
	4	2881	2957	3036	3118	3203	3384	3579
	3	2887	2963	3042	3124	3210	3391	3586
	2	2895	2972	3052	3136	3223	3407	3607
	1	3103	3186	3273	3363	3458	3658	3873
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_LO_F4_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 4 – Autoland on – Autobrake LO – page 3 <Metric>
Figure 05–04B–105

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	859	876	894	912	931	971	1016
	5	967	990	1015	1040	1066	1121	1180
	4	1118	1142	1166	1191	1216	1270	1329
	3	1193	1219	1246	1274	1303	1363	1428
	2	1271	1303	1335	1369	1403	1478	1559
	1	1476	1511	1547	1585	1623	1706	1796
40000	6	860	877	895	913	932	973	1018
	5	969	992	1017	1042	1068	1123	1182
	4	1121	1144	1169	1194	1219	1274	1333
	3	1197	1223	1250	1279	1307	1368	1433
	2	1277	1309	1341	1375	1410	1485	1567
	1	1484	1519	1556	1594	1632	1716	1806
44000	6	901	921	941	962	984	1029	1078
	5	1025	1050	1076	1103	1131	1189	1252
	4	1175	1201	1227	1254	1282	1341	1404
	3	1260	1287	1316	1346	1377	1442	1513
	2	1354	1388	1423	1460	1499	1580	1676
	1	1570	1606	1646	1687	1730	1819	1917

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_F5_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Manual brakes or autobrake HI – page 1 <Metric>
Figure 05–04B–106

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	965	986	1008	1031	1053	1102	1153
	5	1100	1126	1154	1183	1213	1277	1347
	4	1250	1277	1306	1335	1365	1428	1496
	3	1341	1371	1403	1435	1468	1539	1615
	2	1454	1492	1530	1570	1614	1711	1813
	1	1676	1718	1761	1804	1850	1947	2052
52000	6	1027	1049	1072	1096	1121	1173	1234
	5	1173	1202	1233	1265	1298	1368	1450
	4	1324	1354	1384	1415	1447	1515	1593
	3	1423	1455	1489	1523	1559	1635	1721
	2	1555	1596	1642	1690	1738	1840	1959
	1	1784	1829	1874	1922	1970	2074	2193
56000	6	1087	1112	1137	1162	1189	1248	1310
	5	1248	1280	1313	1348	1383	1465	1556
	4	1398	1429	1461	1495	1529	1607	1691
	3	1504	1539	1574	1612	1650	1736	1829
	2	1663	1711	1759	1810	1861	1979	2107
	1	1891	1939	1988	2039	2091	2209	2338

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_F5_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Manual brakes or autobrake HI – page 2 <Metric>
Figure 05–04B–107

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1146	1171	1195	1223	1252	1313	1379
	5	1321	1355	1391	1430	1471	1561	1660
	4	1469	1502	1536	1573	1612	1695	1785
	3	1582	1619	1656	1697	1741	1833	1933
	2	1770	1820	1871	1926	1986	2114	2251
	1	1995	2047	2098	2154	2213	2340	2477
64000	6	1196	1222	1251	1280	1311	1376	1447
	5	1393	1430	1471	1514	1559	1656	1763
	4	1537	1573	1611	1651	1693	1781	1876
	3	1658	1697	1740	1785	1830	1929	2035
	2	1874	1927	1986	2048	2111	2247	2395
	1	2099	2152	2211	2272	2334	2469	2616
67500	6	1241	1270	1300	1331	1363	1432	1506
	5	1457	1499	1543	1589	1637	1740	1854
	4	1598	1637	1677	1720	1763	1856	1956
	3	1725	1769	1813	1860	1909	2012	2123
	2	1968	2027	2088	2153	2220	2364	2521
	1	2190	2249	2309	2373	2440	2582	2736

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_F5_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Manual brakes or autobrake HI – page 3 <Metric>
Figure 05–04B–108

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1128	1153	1179	1206	1234	1292	1355
	5	1128	1153	1180	1207	1235	1294	1356
	4	1187	1213	1241	1269	1298	1360	1425
	3	1226	1253	1282	1312	1343	1407	1476
	2	1273	1304	1336	1369	1403	1476	1557
	1	1474	1509	1546	1584	1623	1705	1794
40000	6	1128	1153	1179	1206	1234	1292	1355
	5	1128	1154	1180	1207	1235	1294	1357
	4	1187	1214	1241	1269	1299	1360	1426
	3	1227	1255	1283	1313	1344	1408	1478
	2	1277	1308	1341	1374	1409	1483	1565
	1	1482	1517	1554	1592	1632	1714	1805
44000	6	1187	1214	1242	1270	1300	1362	1429
	5	1188	1215	1243	1272	1302	1365	1432
	4	1249	1277	1306	1336	1368	1433	1503
	3	1291	1320	1351	1382	1415	1484	1558
	2	1353	1387	1422	1458	1497	1577	1666
	1	1568	1606	1644	1685	1728	1817	1915

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_F5_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Autobrake MED – page 1 <Metric>
Figure 05–04B–109

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 **VREF** **2 THRUST REVERSERS** **AUTOBRAKE LEVEL MEDIUM** **MANUAL LANDING**	**ISA** **WIND CALM** **SLOPE ZERO**	**OPERATIONAL LANDING DISTANCES (M)**

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1269	1298	1328	1359	1391	1458	1530
	5	1270	1300	1330	1361	1394	1462	1534
	4	1334	1364	1396	1428	1462	1532	1608
	3	1377	1409	1442	1476	1511	1585	1665
	2	1453	1490	1529	1568	1610	1700	1804
	1	1675	1717	1760	1803	1849	1946	2051
52000	6	1351	1382	1414	1447	1481	1553	1637
	5	1353	1384	1417	1450	1485	1558	1643
	4	1418	1451	1484	1519	1555	1630	1718
	3	1463	1497	1532	1569	1607	1686	1778
	2	1554	1595	1636	1680	1730	1831	1951
	1	1783	1828	1873	1921	1971	2074	2195
56000	6	1431	1464	1499	1534	1570	1654	1744
	5	1434	1467	1502	1538	1575	1660	1751
	4	1501	1536	1572	1609	1647	1734	1829
	3	1548	1584	1622	1661	1701	1792	1891
	2	1657	1702	1750	1801	1852	1969	2099
	1	1893	1939	1988	2039	2091	2209	2339

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_F5_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Autobrake MED – page 2 <Metric>
Figure 05–04B–110

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1507	1542	1578	1618	1660	1750	1846
	5	1511	1546	1583	1623	1666	1757	1855
	4	1580	1616	1654	1696	1740	1833	1934
	3	1628	1667	1706	1750	1796	1894	1999
	2	1762	1812	1863	1918	1978	2106	2243
	1	1996	2047	2099	2155	2214	2342	2479
64000	6	1580	1618	1660	1703	1748	1843	1946
	5	1585	1623	1666	1709	1755	1852	1956
	4	1655	1695	1738	1783	1830	1929	2037
	3	1706	1748	1793	1840	1889	1993	2106
	2	1866	1920	1979	2040	2104	2239	2387
	1	2100	2153	2212	2273	2337	2471	2618
67500	6	1645	1688	1731	1777	1824	1924	2032
	5	1651	1694	1738	1785	1832	1934	2045
	4	1722	1766	1812	1859	1909	2013	2125
	3	1776	1822	1870	1919	1970	2080	2198
	2	1960	2019	2081	2145	2212	2356	2513
	1	2191	2250	2312	2375	2442	2584	2739

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_F5_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Autobrake MED – page 3 <Metric>
Figure 05–04B–111

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1411	1445	1480	1516	1554	1633	1717
	5	1411	1445	1480	1516	1554	1633	1717
	4	1411	1445	1480	1516	1554	1633	1717
	3	1414	1448	1483	1519	1557	1636	1720
	2	1414	1448	1483	1520	1558	1638	1725
	1	1569	1608	1648	1690	1733	1824	1921
40000	6	1411	1445	1480	1516	1554	1633	1717
	5	1411	1445	1480	1516	1554	1633	1717
	4	1411	1445	1480	1516	1554	1633	1717
	3	1414	1448	1483	1519	1557	1636	1720
	2	1414	1448	1484	1521	1559	1639	1726
	1	1571	1610	1651	1693	1736	1827	1925
44000	6	1491	1527	1564	1603	1643	1728	1818
	5	1491	1527	1564	1603	1643	1728	1818
	4	1491	1527	1564	1603	1643	1728	1818
	3	1494	1530	1568	1606	1647	1731	1822
	2	1495	1531	1570	1609	1650	1737	1830
	1	1660	1702	1744	1789	1835	1932	2038

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_F5_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Autobrake LO – page 1 <Metric>
Figure 05–04B–112

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1602	1641	1681	1723	1767	1858	1956
	5	1602	1641	1681	1723	1767	1858	1956
	4	1602	1641	1681	1723	1767	1858	1956
	3	1605	1644	1685	1727	1770	1862	1960
	2	1607	1647	1688	1731	1776	1872	1976
	1	1779	1824	1871	1918	1968	2073	2186
52000	6	1712	1754	1798	1843	1889	1987	2102
	5	1712	1754	1798	1843	1889	1987	2102
	4	1712	1754	1798	1843	1889	1987	2102
	3	1716	1758	1802	1847	1893	1992	2107
	2	1719	1762	1806	1852	1906	2007	2125
	1	1896	1945	1994	2046	2100	2212	2344
56000	6	1821	1866	1913	1961	2011	2125	2249
	5	1821	1866	1913	1961	2011	2125	2249
	4	1821	1866	1913	1961	2011	2125	2249
	3	1825	1871	1917	1966	2016	2130	2255
	2	1829	1879	1929	1978	2029	2146	2274
	1	2014	2065	2117	2173	2230	2359	2501

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_F5_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Autobrake LO – page 2 <Metric>
Figure 05–04B–113

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW MANUAL LANDING	ISA WIND CALM SLOPE ZERO	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1925	1972	2022	2076	2134	2257	2390
	5	1925	1972	2022	2076	2134	2257	2390
	4	1925	1972	2022	2076	2134	2257	2390
	3	1929	1977	2027	2081	2139	2262	2396
	2	1940	1989	2039	2095	2154	2280	2416
	1	2124	2179	2235	2296	2362	2501	2651
64000	6	2024	2076	2133	2193	2254	2385	2527
	5	2024	2076	2133	2193	2254	2385	2527
	4	2024	2076	2133	2193	2254	2385	2527
	3	2029	2081	2139	2198	2260	2391	2533
	2	2041	2094	2152	2213	2276	2410	2555
	1	2232	2290	2355	2422	2491	2639	2799
67500	6	2114	2172	2232	2294	2359	2497	2646
	5	2114	2172	2232	2294	2359	2497	2646
	4	2114	2172	2232	2294	2359	2497	2646
	3	2119	2177	2237	2300	2365	2503	2652
	2	2131	2190	2252	2315	2382	2523	2676
	1	2327	2393	2461	2530	2603	2759	2928

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_F5_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Manual landing – Autobrake LO – page 3 <Metric>
Figure 05–04B–114

OPERATIONAL LANDING DISTANCES CORRECTIONS									
FLAP 5 MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH							OPERATIONAL LANDING DISTANCES CORRECTIONS (M)		
WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
39000	6	100	280	40	0	60	40	-10	50
	5	140	470	60	0	280	110	-20	80
	4	120	410	60	-10	290	120	-20	70
	3	130	480	90	-10	420	170	-20	80
	2	180	800	190	-20	930	330	-30	130
	1	150	900	360	-40	1300	460	-30	110
67500	6	110	310	30	0	90	50	-30	70
	5	180	620	110	-10	510	210	-40	130
	4	140	470	90	-20	360	160	-30	90
	3	150	540	130	-30	520	220	-40	110
	2	200	940	250	-40	1330	490	-50	160
	1	160	840	310	-80	1280	500	-50	120

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_HI_corrections_F5

NOTE

Data does not include an operational factor

Operational landing distance corrections – FLAP 5 – Manual brakes or autobrake HI <Metric>
Figure 05–04B–115

OPERATIONAL LANDING DISTANCES CORRECTIONS									
FLAP 5 AUTOBRAKE LEVEL MEDIUM								OPERATIONAL LANDING DISTANCES CORRECTIONS (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
39000	6	130	360	40	10	40	40	-20	60
	5	150	480	60	0	210	40	-20	80
	4	140	430	50	0	150	40	-30	70
	3	140	490	90	0	310	150	-30	80
	2	190	800	180	-10	930	330	-30	130
	1	160	900	350	-40	1300	460	-30	110
67500	6	150	430	30	10	10	10	-40	90
	5	180	630	110	0	540	210	-40	130
	4	160	490	60	0	170	50	-40	100
	3	160	550	110	-10	400	140	-40	110
	2	210	940	240	-40	1330	480	-50	160
	1	170	850	300	-70	1280	500	-50	120

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_MED_corrections_F5

NOTE

Data does not include an operational factor

Operational landing distance corrections – FLAP 5 – Autobrake MED <Metric>
Figure 05–04B–116

OPERATIONAL LANDING DISTANCES CORRECTIONS									
FLAP 5 AUTOBRAKE LEVEL LOW							OPERATIONAL LANDING DISTANCES CORRECTIONS (M)		
WEIGHT (KG)	RUNWAY CONDITION CODE	VREF	TAIL WIND	SLOPE		REV		ISA DEVIATION	
		5kts	-10kts	-1%	1%	0	1	-10°C	+10°C
39000	6	180	490	40	10	130	130	-30	80
	5	180	490	40	10	130	130	-30	80
	4	180	490	40	10	130	130	-30	80
	3	180	540	50	0	180	150	-30	80
	2	190	800	180	0	690	180	-30	130
	1	180	910	350	-30	1050	330	-40	110
67500	6	200	580	30	10	60	60	-60	110
	5	200	630	30	10	60	60	-60	130
	4	200	580	30	10	60	60	-60	110
	3	200	620	60	0	90	70	-60	110
	2	210	940	240	0	1200	370	-60	160
	1	190	850	300	-40	1020	310	-60	120

CS300_ALL_NAMEPLATES_FCOM_MET_v04_OLD_LO_corrections_F5

NOTE

Data does not include an operational factor

Operational landing distance corrections – FLAP 5 – Autobrake LO <Metric>
Figure 05–04B–117

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 **VREF+5** **2 THRUST REVERSERS** **MANUAL BRAKES OR** **AUTOBRAKE LEVEL HIGH** **AUTOLAND ON**	**ISA** **WIND CALM** **SLOPE ZERO** **ILS GS 3.00°** **TCH 50'**	**OPERATIONAL LANDING DISTANCES (M)**

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1110	1132	1155	1179	1203	1254	1309
	5	1251	1278	1308	1338	1368	1435	1507
	4	1392	1421	1451	1481	1513	1578	1649
	3	1474	1505	1537	1570	1605	1677	1755
	2	1567	1604	1643	1682	1724	1817	1917
	1	1768	1809	1852	1895	1940	2035	2138
40000	6	1110	1132	1155	1179	1203	1254	1309
	5	1253	1281	1310	1340	1371	1438	1510
	4	1396	1425	1455	1485	1517	1583	1654
	3	1478	1510	1542	1575	1610	1683	1761
	2	1574	1611	1650	1690	1733	1827	1928
	1	1778	1819	1862	1905	1951	2047	2150
44000	6	1160	1184	1208	1233	1259	1314	1372
	5	1317	1347	1379	1412	1446	1518	1596
	4	1463	1494	1525	1558	1591	1662	1738
	3	1552	1586	1620	1656	1693	1770	1854
	2	1664	1704	1748	1794	1842	1942	2051
	1	1876	1921	1965	2013	2061	2164	2276

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50'	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_HI_F5_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Manual brakes or autobrake HI – page 1 <Metric>
Figure 05–04B–118

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF+5 2 THRUST REVERSERS MANUAL BRAKES OR AUTOBRAKE LEVEL HIGH AUTOLAND ON	ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1230	1255	1281	1308	1336	1394	1456
	5	1405	1438	1473	1509	1546	1624	1710
	4	1551	1583	1617	1652	1688	1764	1845
	3	1648	1684	1721	1759	1799	1882	1971
	2	1783	1830	1878	1928	1979	2088	2205
	1	1998	2046	2094	2146	2198	2310	2429
52000	6	1299	1326	1353	1382	1412	1474	1545
	5	1494	1530	1567	1606	1646	1732	1831
	4	1638	1672	1709	1746	1784	1865	1958
	3	1742	1781	1820	1861	1903	1993	2094
	2	1907	1956	2008	2061	2116	2234	2369
	1	2121	2171	2224	2278	2334	2454	2589
56000	6	1367	1395	1424	1454	1485	1556	1632
	5	1584	1622	1662	1704	1747	1846	1955
	4	1724	1761	1799	1839	1879	1971	2070
	3	1836	1877	1919	1963	2008	2108	2218
	2	2030	2082	2137	2195	2254	2388	2534
	1	2242	2296	2352	2411	2471	2604	2750

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50’	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_HI_F5_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Manual brakes or autobrake HI – page 2 <Metric>
Figure 05–04B–119

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 **VREF+5** **2 THRUST REVERSERS** **MANUAL BRAKES OR** **AUTOBRAKE LEVEL HIGH** **AUTOLAND ON**	**ISA** **WIND CALM** **SLOPE ZERO** **ILS GS 3.00°** **TCH 50'**	**OPERATIONAL LANDING DISTANCES (M)**

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1429	1459	1489	1523	1559	1634	1714
	5	1670	1711	1754	1801	1851	1958	2074
	4	1805	1845	1885	1929	1975	2073	2178
	3	1926	1969	2013	2062	2112	2220	2336
	2	2148	2205	2264	2328	2395	2539	2695
	1	2360	2417	2477	2541	2607	2752	2907
64000	6	1489	1521	1556	1592	1630	1709	1794
	5	1754	1799	1848	1900	1953	2068	2193
	4	1885	1927	1972	2019	2068	2172	2284
	3	2013	2059	2109	2161	2215	2329	2453
	2	2265	2326	2392	2462	2533	2687	2855
	1	2475	2537	2602	2672	2743	2895	3062
67500	6	1542	1577	1614	1652	1691	1774	1863
	5	1830	1880	1932	1987	2043	2165	2299
	4	1955	2001	2049	2098	2149	2258	2375
	3	2091	2141	2194	2248	2305	2424	2554
	2	2370	2436	2507	2579	2655	2817	2997
	1	2578	2644	2714	2786	2862	3022	3197

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50'	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_HI_F5_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Manual brakes or autobrake HI – page 3 <Metric>
Figure 05–04B–120

OPERATIONAL LANDING DISTANCES

ADVISORY DATA ONLY

FLAP 5 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM AUTOLAND ON	ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’	OPERATIONAL LANDING DISTANCES (M)

WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1440	1471	1503	1537	1571	1643	1720
	5	1440	1471	1504	1537	1572	1644	1721
	4	1501	1534	1568	1602	1638	1713	1793
	3	1539	1573	1608	1644	1681	1759	1843
	2	1576	1613	1651	1690	1730	1818	1916
	1	1771	1812	1854	1899	1943	2040	2143
40000	6	1440	1471	1503	1537	1571	1643	1720
	5	1440	1471	1504	1537	1572	1644	1721
	4	1502	1534	1568	1603	1639	1714	1794
	3	1540	1574	1609	1645	1682	1761	1844
	2	1581	1618	1656	1696	1736	1824	1925
	1	1780	1821	1864	1908	1953	2051	2154
44000	6	1510	1543	1577	1613	1649	1726	1807
	5	1510	1544	1578	1614	1650	1728	1810
	4	1574	1609	1645	1682	1720	1799	1885
	3	1614	1651	1687	1726	1765	1849	1938
	2	1667	1707	1748	1791	1837	1937	2046
	1	1878	1923	1967	2015	2063	2167	2279

ILS GS AND TCH CORRECTION (M)	PER FT ABOVE 50’	PER 0.1° BELOW 3.00°	PER 0.1° ABOVE 3.00°
	+7	+14	-7

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_MED_F5_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Autobrake MED – page 1 <Metric>
Figure 05–04B–121

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 5 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1607	1643	1679	1717	1756	1838	1926
	5	1608	1644	1681	1719	1758	1841	1930
	4	1674	1712	1750	1789	1830	1916	2007
	3	1716	1755	1794	1836	1878	1967	2062
	2	1781	1826	1874	1924	1975	2084	2201
	1	2001	2049	2097	2149	2201	2313	2433
52000	6	1703	1741	1780	1820	1862	1950	2051
	5	1704	1742	1782	1823	1865	1953	2056
	4	1773	1813	1853	1895	1939	2030	2136
	3	1817	1857	1900	1944	1989	2084	2194
	2	1903	1953	2004	2057	2113	2231	2366
	1	2124	2174	2228	2282	2338	2458	2594
56000	6	1798	1838	1879	1922	1967	2068	2177
	5	1799	1840	1882	1925	1970	2072	2182
	4	1870	1912	1956	2000	2046	2151	2265
	3	1916	1959	2005	2051	2099	2208	2326
	2	2026	2079	2135	2192	2251	2385	2532
	1	2247	2300	2358	2415	2475	2610	2758
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_MED_F5_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Autobrake MED – page 2 <Metric>
Figure 05–04B–122

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 5 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL MEDIUM AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50'					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	1886	1929	1973	2021	2072	2180	2296
	5	1889	1932	1976	2025	2076	2185	2302
	4	1962	2006	2052	2102	2155	2266	2387
	3	2009	2055	2103	2155	2210	2326	2452
	2	2146	2202	2261	2325	2393	2536	2694
	1	2365	2422	2482	2546	2614	2758	2915
64000	6	1972	2018	2068	2120	2174	2288	2411
	5	1975	2022	2073	2125	2179	2294	2419
	4	2050	2097	2149	2203	2259	2378	2505
	3	2100	2149	2203	2259	2318	2441	2574
	2	2263	2323	2389	2459	2531	2685	2853
	1	2481	2542	2608	2678	2750	2904	3069
67500	6	2048	2099	2151	2206	2262	2382	2511
	5	2053	2104	2157	2212	2269	2389	2520
	4	2128	2180	2235	2291	2350	2474	2608
	3	2180	2235	2292	2350	2411	2541	2680
	2	2367	2434	2504	2577	2653	2817	2995
	1	2583	2650	2721	2792	2869	3031	3205
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50'			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_MED_F5_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Autobrake MED – page 3 <Metric>
Figure 05–04B–123

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 5 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
39000	6	1756	1797	1839	1883	1928	2024	2126
	5	1756	1797	1839	1883	1928	2024	2126
	4	1756	1797	1839	1883	1928	2024	2126
	3	1759	1800	1842	1886	1931	2027	2129
	2	1759	1800	1842	1886	1932	2030	2134
	1	1912	1959	2006	2056	2106	2214	2330
40000	6	1760	1802	1844	1888	1933	2029	2132
	5	1760	1802	1844	1888	1933	2029	2132
	4	1760	1802	1844	1888	1933	2029	2132
	3	1763	1804	1847	1891	1936	2032	2135
	2	1763	1804	1847	1892	1937	2036	2142
	1	1919	1966	2014	2063	2114	2223	2339
44000	6	1859	1903	1948	1995	2043	2146	2255
	5	1859	1903	1948	1995	2043	2146	2255
	4	1859	1903	1948	1995	2043	2146	2255
	3	1862	1906	1951	1998	2047	2149	2259
	2	1862	1907	1953	2000	2052	2156	2268
	1	2027	2076	2127	2180	2234	2349	2474
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_LO_F5_p1

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Autobrake LO – page 1 <Metric>
Figure 05–04B–124

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 5 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
48000	6	1989	2037	2086	2136	2188	2298	2416
	5	1989	2037	2086	2136	2188	2298	2416
	4	1989	2037	2086	2136	2188	2298	2416
	3	1993	2040	2089	2140	2192	2302	2421
	2	1994	2043	2094	2145	2199	2311	2431
	1	2165	2219	2273	2330	2389	2513	2646
52000	6	2119	2169	2221	2275	2331	2449	2586
	5	2119	2169	2221	2275	2331	2449	2586
	4	2119	2169	2221	2275	2331	2449	2586
	3	2122	2173	2225	2280	2336	2454	2591
	2	2127	2178	2231	2286	2343	2464	2603
	1	2303	2359	2418	2478	2541	2674	2826
56000	6	2246	2300	2356	2414	2473	2609	2756
	5	2246	2300	2356	2414	2473	2609	2756
	4	2246	2300	2356	2414	2473	2609	2756
	3	2250	2305	2360	2418	2478	2614	2761
	2	2256	2310	2367	2426	2487	2625	2776
	1	2438	2498	2561	2625	2692	2842	3008
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_LO_F5_p2

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Autobrake LO – page 2 <Metric>
Figure 05–04B–125

OPERATIONAL LANDING DISTANCES								
ADVISORY DATA ONLY								
FLAP 5 VREF+5 2 THRUST REVERSERS AUTOBRAKE LEVEL LOW AUTOLAND ON		ISA WIND CALM SLOPE ZERO ILS GS 3.00° TCH 50’					OPERATIONAL LANDING DISTANCES (M)	
WEIGHT (KG)	RUNWAY CONDITION CODE	PRESSURE ALTITUDE (1000 FT)						
		0	1	2	3	4	6	8
60000	6	2367	2424	2483	2547	2616	2761	2918
	5	2367	2424	2483	2547	2616	2761	2918
	4	2367	2424	2483	2547	2616	2761	2918
	3	2371	2428	2488	2552	2621	2767	2924
	2	2377	2435	2495	2561	2631	2779	2940
	1	2566	2630	2696	2768	2844	3005	3180
64000	6	2483	2544	2612	2682	2755	2909	3076
	5	2483	2544	2612	2682	2755	2909	3076
	4	2483	2544	2612	2682	2755	2909	3076
	3	2488	2549	2617	2687	2761	2915	3082
	2	2494	2557	2626	2697	2772	2929	3100
	1	2690	2758	2832	2910	2992	3163	3348
67500	6	2586	2654	2725	2799	2876	3038	3213
	5	2586	2654	2725	2799	2876	3038	3213
	4	2586	2654	2725	2799	2876	3038	3213
	3	2591	2660	2731	2805	2881	3044	3220
	2	2599	2668	2740	2815	2893	3059	3239
	1	2799	2874	2953	3034	3120	3301	3496
ILS GS AND TCH CORRECTION (M)		PER FT ABOVE 50’			PER 0.1° BELOW 3.00°		PER 0.1° ABOVE 3.00°	
		+7			+14		-7	

CS300_ALL_NAMEPLATES_FCOM_MET_v01_OLD_ATLND_LO_F5_p3

NOTE

Data does not include an operational factor

Operational landing distances – FLAP 5 – Autoland on – Autobrake LO – page 3 <Metric>
Figure 05–04B–126

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INTRODUCTION

A. Introduction

To be issued later.

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GENERAL

A. Introduction

This conversion and correction section contains data, presented in tabular and chart form, which enable quick cross-checks and conversions. The data are to be used to determine such information as:

- Ground distance to air distance conversion,
- International Standard Atmosphere (ISA),
- Weight conversion,
- Wind component,
- Differential pressure versus airplane and cabin altitude,
- Airspeed and temperature conversion,
- Unit conversion,
- Pressure altitude versus true altitude,
- QNH versus pressure altitude, and
- Wind/altimeter correction.

B. Ground distance to air distance conversion

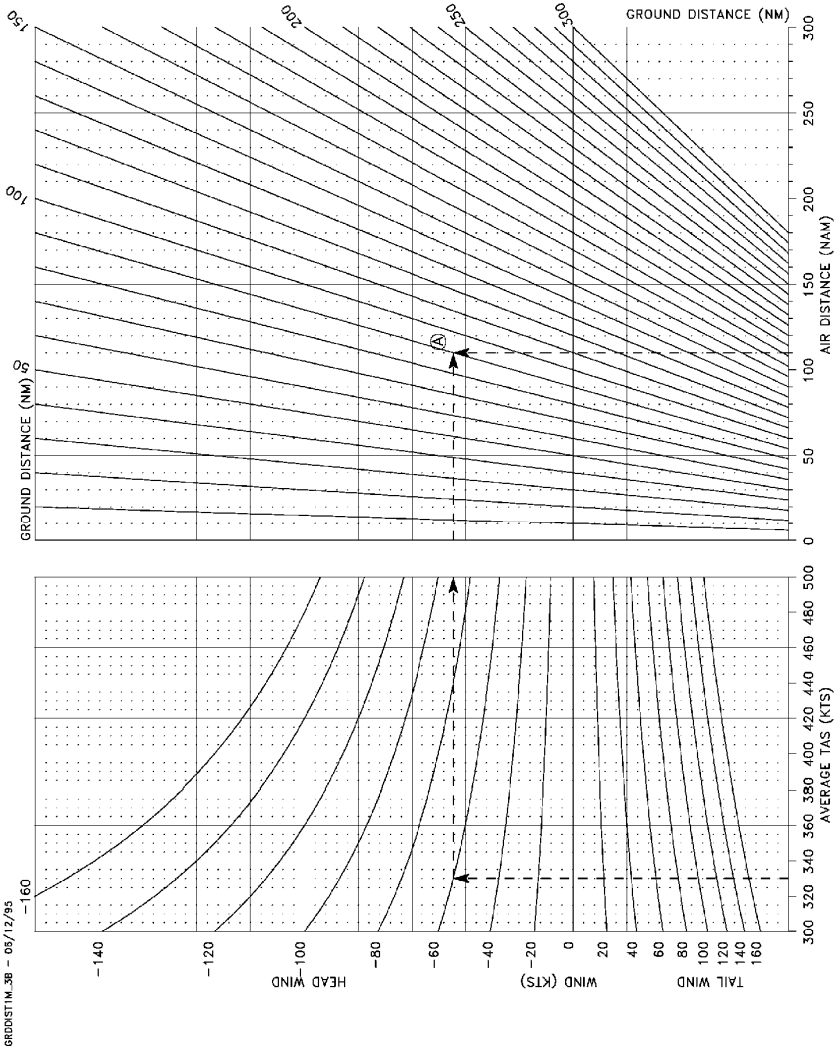
Ground distance to air distance conversion charts are provided to enable air distance correction for winds during flight. The charts show air to ground distance relationship for average true airspeed ranging from 300 to 500 kt and wind variation ranging from –160 kt to 160 kt in 20-knot increments. The following data are presented:

- Air distance from 0 to 300 nautical miles to ground distance (refer to Figure 05–06–1),
- Air distance from 300 to 1000 nautical miles to ground distance (refer to Figure 05–06–2), and
- Air distance from 1000 to 3000 nautical miles to ground distance (refer to Figure 05–06–3).

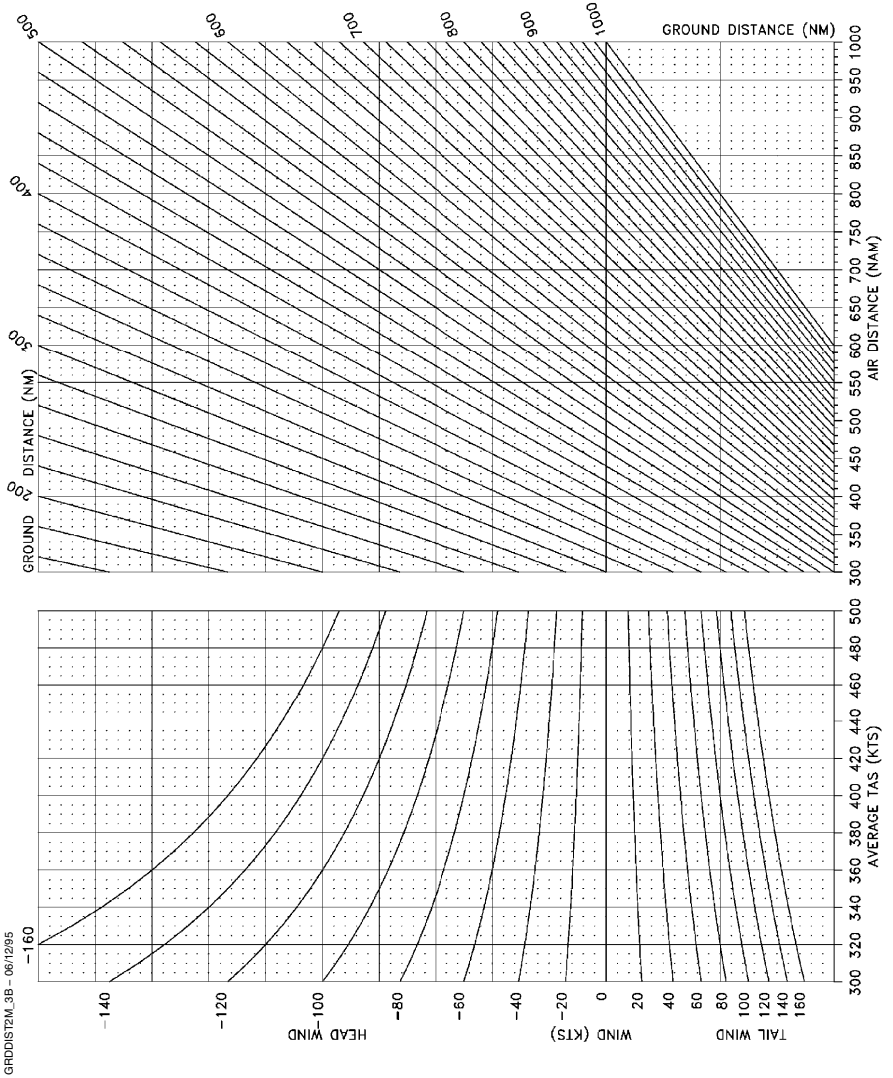
Example:

At a given air distance of 110 nautical miles (NM), at an average true airspeed of 330 kt with a 60 kt headwind, the equivalent ground distance is:

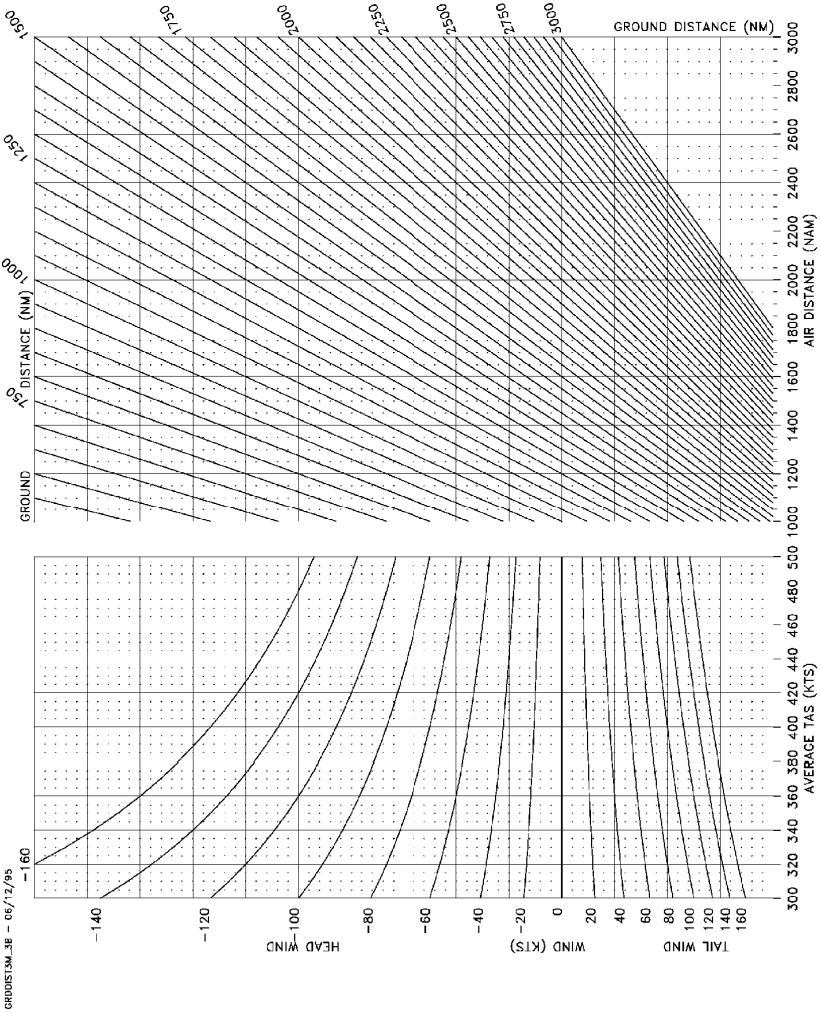
- 90 NM (A)



Ground to air distance – 0 to 300 nautical miles
Figure 05–06–1



Ground to air distance – 300 to 1000 nautical miles
Figure 05–06–2



Ground to air distance – 1000 to 3000 nautical miles
Figure 05–06–3

C. International Standard Atmosphere (ISA)

The International Standard Atmosphere tabulated data shows temperature, temperature ratio, pressure, pressure ratio, density, density ratio, coefficient of viscosity and speed of sound. The data are tabulated versus varying pressure altitudes, in 1000-foot and 500-meter increments. The data are presented in both imperial units (Figure 05–06–4) and metric units (Figure 05–06–5).

To convert °R to °F, subtract 459.67. To convert K to °C, subtract 273.15.

Alt. ft	Temp. deg R	Temp. Ratio	Press. psi	Press. Ratio	Density slug/ft3 E-03	Density Ratio	Coeff. of Viscosity lb-s/ft2 E-07	Speed of Sound ft/sec
0	518.7	1.0000	14.70	1.0000	2.3770	1.00000	3.737	1116.5
1000	515.1	0.9932	14.17	0.9644	2.3081	0.97106	3.717	1112.6
2000	511.6	0.9863	13.66	0.9298	2.2409	0.94277	3.697	1108.7
3000	508.0	0.9794	13.17	0.8962	2.1751	0.91512	3.677	1104.9
4000	504.4	0.9725	12.69	0.8637	2.1109	0.88809	3.656	1101.0
5000	500.8	0.9657	12.23	0.8320	2.0481	0.86167	3.636	1097.1
6000	497.3	0.9588	11.78	0.8014	1.9868	0.83359	3.616	1093.2
7000	493.7	0.9519	11.34	0.7716	1.9268	0.81064	3.596	1089.2
8000	490.2	0.9450	10.92	0.7428	1.8683	0.78602	3.575	1085.3
9000	486.6	0.9382	10.50	0.7148	1.8111	0.76196	3.555	1081.4
10000	483.0	0.9313	10.11	0.6877	1.7553	0.73848	3.534	1077.4
11000	479.5	0.9244	9.720	0.6614	1.7008	0.71555	3.513	1073.4
12000	475.9	0.9175	9.346	0.6360	1.6476	0.69317	3.493	1069.4
13000	472.3	0.9107	8.984	0.6113	1.5957	0.67133	3.472	1065.4
14000	468.8	0.9038	8.633	0.5875	1.5451	0.65003	3.451	1061.4
15000	465.2	0.8969	8.294	0.5643	1.4956	0.62926	3.430	1057.3
16000	461.6	0.8900	7.965	0.5420	1.4474	0.60896	3.409	1053.3
17000	458.1	0.8831	7.647	0.5203	1.4004	0.58919	3.388	1049.2
18000	454.5	0.8763	7.339	0.4994	1.3546	0.56991	3.366	1045.1
19000	450.9	0.8694	7.041	0.4791	1.3100	0.55112	3.345	1041.0
20000	447.3	0.8625	6.754	0.4595	1.2664	0.53281	3.324	1036.8
21000	443.8	0.8556	6.475	0.4406	1.2240	0.51497	3.302	1032.7
22000	440.2	0.8488	6.207	0.4223	1.1827	0.49758	3.281	1028.5
23000	436.7	0.8419	5.947	0.4046	1.1425	0.48065	3.259	1024.4
24000	433.1	0.8350	5.696	0.3876	1.1033	0.46417	3.238	1020.2
25000	429.5	0.8281	5.454	0.3711	1.0651	0.44812	3.216	1016.0
26000	426.0	0.8213	5.220	0.3552	1.0280	0.43250	3.190	1011.7
27000	422.4	0.8144	4.994	0.3398	0.9919	0.41730	3.172	1007.5
28000	418.8	0.8075	4.777	0.3250	0.9567	0.40251	3.150	1003.2
29000	415.3	0.8006	4.567	0.3107	0.9225	0.38812	3.128	999.0
30000	411.7	0.7938	4.364	0.2970	0.8893	0.37413	3.106	994.7
31000	408.1	0.7869	4.169	0.2837	0.8569	0.36053	3.084	990.3
32000	404.6	0.7800	3.981	0.2709	0.8255	0.34731	3.061	986.0
33000	401.0	0.7731	3.800	0.2586	0.7950	0.33447	3.039	981.6
34000	397.4	0.7663	3.626	0.2467	0.7653	0.32199	3.016	977.3
35000	393.9	0.7594	3.458	0.2353	0.7365	0.30987	2.994	972.9
36000	390.3	0.7525	3.297	0.2243	0.7086	0.29811	2.971	968.5
36089	390.0	0.7519	3.282	0.2234	0.7061	0.29708	2.969	968.1
37000	390.0	0.7519	3.142	0.2138	0.6759	0.28435	2.969	968.1
38000	390.0	0.7519	2.994	0.2038	0.6442	0.27101	2.969	968.1
39000	390.0	0.7519	2.854	0.1942	0.6139	0.25829	2.969	968.1
40000	390.0	0.7519	2.720	0.1851	0.5851	0.24617	2.969	968.1
41000	390.0	0.7519	2.592	0.1764	0.5577	0.23462	2.969	968.1

ISA-TAB - 08/04/92

International Standard Atmosphere (imperial units)
Figure 05–06–4

Alt. ft	Temp. deg R	Temp. Ratio	Press. psi	Press. Ratio	Density slug/ft3 E-03	Density Ratio	Coeff. of Viscosity lb-s/ft2 E-07	Speed of Sound ft/sec
0	518.7	1.0000	14.70	1.0000	2.3770	1.00000	3.737	1116.5
1000	515.1	0.9932	14.17	0.9644	2.3081	0.97106	3.717	1112.6
2000	511.6	0.9863	13.66	0.9298	2.2409	0.94277	3.697	1108.7
3000	508.0	0.9794	13.17	0.8962	2.1751	0.91512	3.677	1104.9
4000	504.4	0.9725	12.69	0.8637	2.1109	0.88809	3.656	1101.0
5000	500.8	0.9657	12.23	0.8320	2.0481	0.86167	3.636	1097.1
6000	497.3	0.9588	11.78	0.8014	1.9868	0.83359	3.616	1093.2
7000	493.7	0.9519	11.34	0.7716	1.9268	0.81064	3.596	1089.2
8000	490.2	0.9450	10.92	0.7428	1.8683	0.78602	3.575	1085.3
9000	486.6	0.9382	10.50	0.7148	1.8111	0.76196	3.555	1081.4
10000	483.0	0.9313	10.11	0.6877	1.7553	0.73848	3.534	1077.4
11000	479.5	0.9244	9.720	0.6614	1.7008	0.71555	3.513	1073.4
12000	475.9	0.9175	9.346	0.6360	1.6476	0.69317	3.493	1069.4
13000	472.3	0.9107	8.984	0.6113	1.5957	0.67133	3.472	1065.4
14000	468.8	0.9038	8.633	0.5875	1.5451	0.65003	3.451	1061.4
15000	465.2	0.8969	8.294	0.5643	1.4956	0.62926	3.430	1057.3
16000	461.6	0.8900	7.965	0.5420	1.4474	0.60896	3.409	1053.3
17000	458.1	0.8831	7.647	0.5203	1.4004	0.58919	3.388	1049.2
18000	454.5	0.8763	7.339	0.4994	1.3546	0.56991	3.366	1045.1
19000	450.9	0.8694	7.041	0.4791	1.3100	0.55112	3.345	1041.0
20000	447.3	0.8625	6.754	0.4595	1.2664	0.53281	3.324	1036.8
21000	443.8	0.8556	6.475	0.4406	1.2240	0.51497	3.302	1032.7
22000	440.2	0.8488	6.207	0.4223	1.1827	0.49758	3.281	1028.5
23000	436.7	0.8419	5.947	0.4046	1.1425	0.48065	3.259	1024.4
24000	433.1	0.8350	5.696	0.3876	1.1033	0.46417	3.238	1020.2
25000	429.5	0.8281	5.454	0.3711	1.0651	0.44812	3.216	1016.0
26000	426.0	0.8213	5.220	0.3552	1.0280	0.43250	3.190	1011.7
27000	422.4	0.8144	4.994	0.3398	0.9919	0.41730	3.172	1007.5
28000	418.8	0.8075	4.777	0.3250	0.9567	0.40251	3.150	1003.2
29000	415.3	0.8006	4.567	0.3107	0.9225	0.38812	3.128	999.0
30000	411.7	0.7938	4.364	0.2970	0.8893	0.37413	3.106	994.7
31000	408.1	0.7869	4.169	0.2837	0.8569	0.36053	3.084	990.3
32000	404.6	0.7800	3.981	0.2709	0.8255	0.34731	3.061	986.0
33000	401.0	0.7731	3.800	0.2586	0.7950	0.33447	3.039	981.6
34000	397.4	0.7663	3.626	0.2467	0.7653	0.32199	3.016	977.3
35000	393.9	0.7594	3.458	0.2353	0.7365	0.30987	2.994	972.9
36000	390.3	0.7525	3.297	0.2243	0.7086	0.29811	2.971	968.5
36089	390.0	0.7519	3.282	0.2234	0.7061	0.29708	2.969	968.1
37000	390.0	0.7519	3.142	0.2138	0.6759	0.28435	2.969	968.1
38000	390.0	0.7519	2.994	0.2038	0.6442	0.27101	2.969	968.1
39000	390.0	0.7519	2.854	0.1942	0.6139	0.25829	2.969	968.1
40000	390.0	0.7519	2.720	0.1851	0.5851	0.24617	2.969	968.1
41000	390.0	0.7519	2.592	0.1764	0.5577	0.23462	2.969	968.1

ISA-TAB - 08/04/92

International Standard Atmosphere (metric units) – Standard day
Figure 05–06–5

D. Weight conversion

The weight conversion factor is 2.2046 lb per kg.

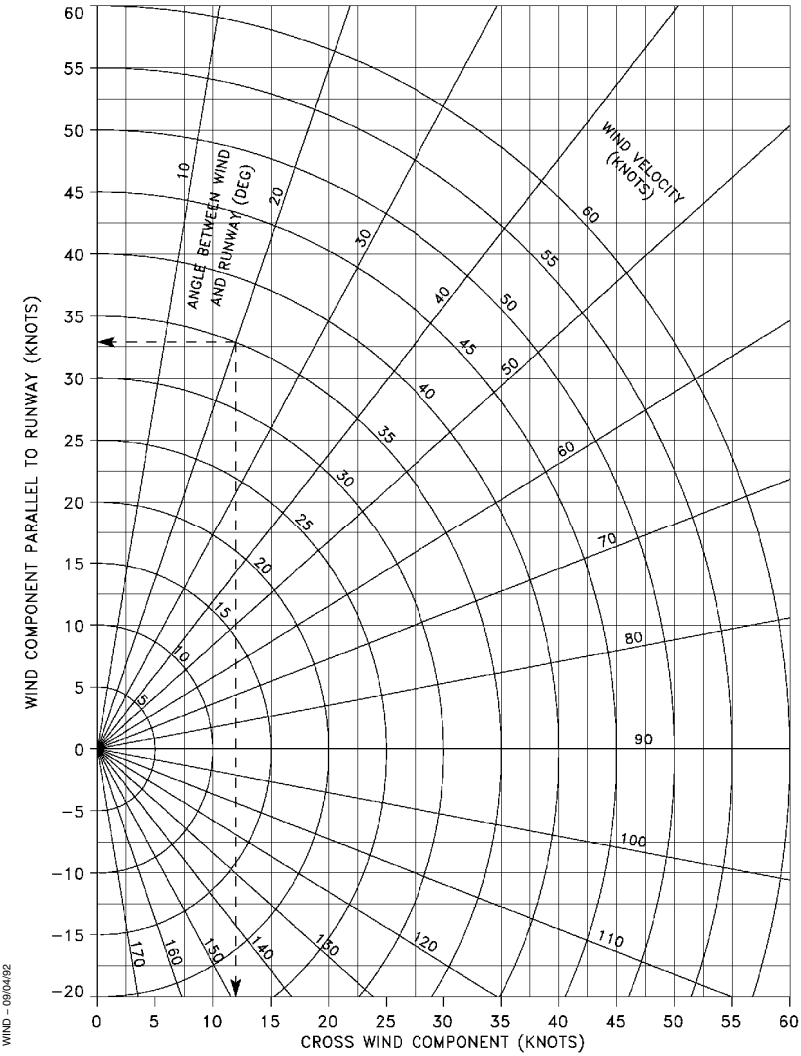
E. Wind component

A wind component chart to convert wind velocity into headwind or tailwind component is presented for wind velocities of up to 60 knots in 10-degree angle increments relative to the runway heading (refer to Figure 05–06–6).

Example:

For a given wind velocity of 35 kt at an angle of 20 degrees relative to the runway heading, the wind components are:

- Crosswind = 12.0 kt
- Headwind = 32.9 kt



Wind component
Figure 05–06–6

F. Differential pressure versus airplane and cabin altitudes

The differential pressure versus airplane and cabin altitudes chart shows the maximum allowable airplane pressure altitude for a given cabin pressure altitude and cabin differential pressure (refer to Figure 05–06–7).

Example:

At a given pressure altitude of 37000 ft, the maximum allowable cabin pressure altitude, with a differential pressure of 8.40 psi, is:

- ZA: aircraft altitude = 37000 ft
- ZCTH: Cabin pressure altitude = 6555 ft
- DP: Delta pressure = 578.58 mbar or 8.40 psi
- PA: aircraft ambient outside pressure = 216.57 mbar
- PCTH: Cabin pressure = 795.15 mbar

ZA	PA	ZCTH	PCTH	DP	
ft	mbar	ft	mbar	mbar	psi
-2000	1088.66	-2300.	1100.35	11.69	0.17
-1000	1050.41	-1300.	1061.77	11.36	0.16
0	1013.25	-300.	1024.28	11.03	0.16
1000	977.17	-201.	1020.63	43.47	0.63
2000	942.13	-100.	1016.92	74.79	1.09
3000	908.12	3.	1013.14	105.02	1.52
4000	875.10	107.	1009.34	134.23	1.95
5000	843.07	214.	1005.44	162.37	2.36
6000	811.99	322.	1001.51	189.52	2.75
7000	781.85	431.	997.57	215.72	3.13
8000	752.62	543.	993.52	240.90	3.50
9000	724.28	657.	989.42	265.14	3.85
10000	696.81	774.	985.23	288.41	4.19
11000	670.20	898.	980.80	310.60	4.51
12000	644.41	1026.	976.24	331.83	4.82
13000	619.43	1157.	971.60	352.17	5.11
14000	595.24	1291.	966.86	371.63	5.39
15000	571.82	1429.	962.01	390.19	5.66
16000	549.15	1572.	957.00	407.85	5.92
17000	527.22	1722.	951.76	424.55	6.16
18000	506.00	1878.	946.35	440.35	6.39
19000	485.47	2043.	940.65	455.17	6.61
20000	465.63	2215.	934.73	469.10	6.81
21000	446.45	2398.	928.47	482.02	7.00
22000	427.91	2592.	921.87	493.96	7.17
23000	410.00	2800.	914.84	504.83	7.33
24000	392.71	3023.	907.35	514.64	7.47
25000	376.01	3261.	899.40	523.40	7.60
26000	359.89	3512.	891.09	531.20	7.71
27000	344.33	3770.	882.61	538.28	7.81
28000	329.32	4036.	873.93	544.61	7.90
29000	314.85	4312.	865.01	550.16	7.98
30000	300.89	4604.	855.64	554.75	8.05
31000	287.45	4882.	846.80	559.36	8.12
32000	274.49	5121.	839.26	564.77	8.20
33000	262.01	5373.	831.37	569.36	8.26
34000	249.99	5637.	823.17	573.18	8.32
35000	238.42	5917.	814.54	576.12	8.36
36000	227.29	6214.	805.47	578.17	8.39
37000	216.57	6555.	795.15	578.58	8.40
38000	206.41	6895.	784.97	578.57	8.40
39000	196.72	7222.	775.28	578.56	8.40
40000	187.49	7537.	766.04	578.55	8.40
41000	178.69	7840.	757.24	578.55	8.40

Differential pressure versus airplane and cabin altitudes
Figure 05–06–7

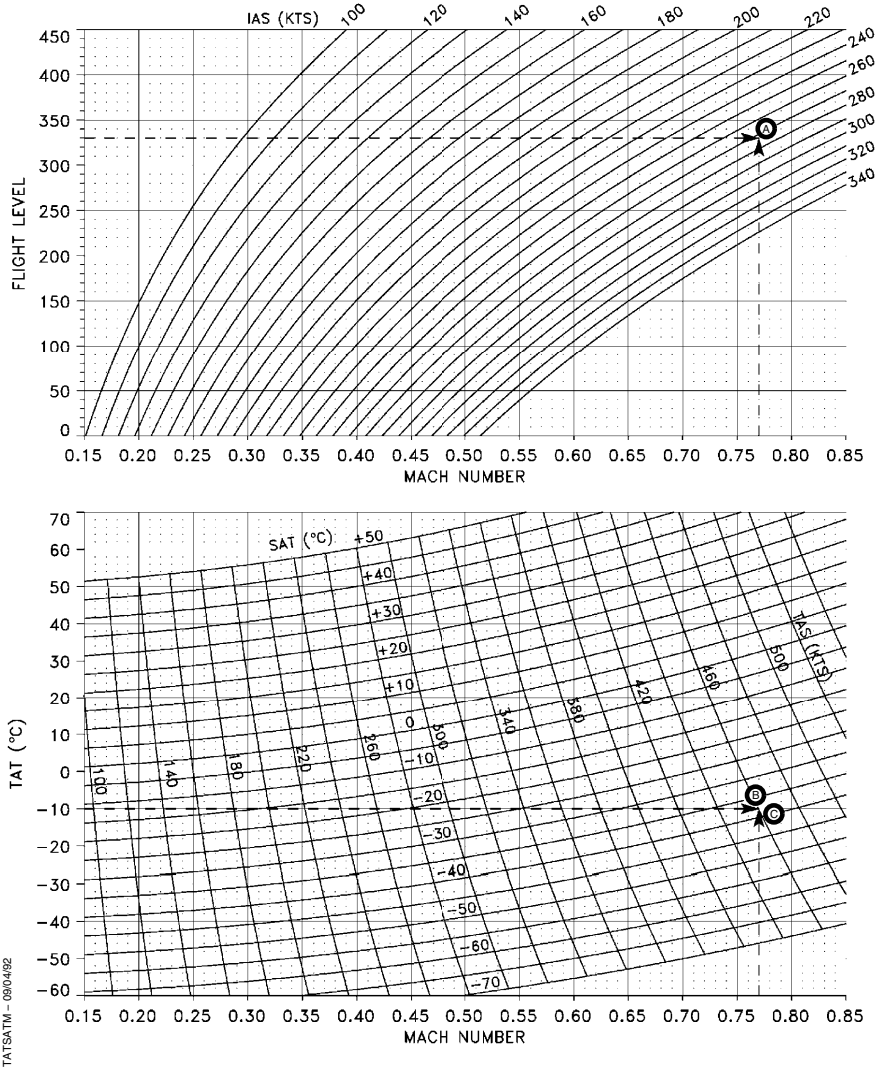
G. Airspeed and temperature conversion

The airspeed and temperature conversion chart provides the TAT/SAT/Mach relationship versus IAS/TAS for varying pressure altitudes (refer to Figure 05–06–8).

Example:

At a given altitude of 33000 ft, 0.77 Mach number and –10°C total air temperature:

- Indicated airspeed = 273 kt (A)
- True airspeed = 460 kt (B)
- Static air temperature = –38° C (C)



Airspeed and temperature conversion
Figure 05–06–8

H. Unit conversion

The following unit conversion tables convert imperial units to metric units and vice-versa:

- Foot units to meter units (refer to Figure 05–06–9),
- Meter units to foot units (refer to Figure 05–06–10),
- Nautical mile units to kilometer units (refer to Figure 05–06–11),
- Kilometer units to nautical mile units (refer to Figure 05–06–12), and
- Celsius temperature units to Fahrenheiht temperature units (refer to Figure 05–06–13).

Example:

The feet units to meter units conversion table shows that at a given runway length of 6785 ft, the conversion to meters is obtained by adding the metric value of 6700 ft and 85 ft:

- 6700 ft = 2042.16 m (A)
- + 85 ft = + 25.91 m (B)
- 6785 ft = 2068.07 m

FEET	0	1	2	3	4	5	6	7	8	9
		0.30	0.61	0.91	1.22	1.52	1.83	2.13	2.44	2.74
10	3.05	3.35	3.66	3.96	4.27	4.57	4.88	5.18	5.49	5.79
20	6.10	6.40	6.71	7.01	7.32	7.62	7.92	8.23	8.53	8.84
30	9.14	9.45	9.75	10.06	10.36	10.67	10.97	11.28	11.58	11.89
40	12.19	12.50	12.80	13.11	13.41	13.72	14.02	14.33	14.63	14.94
50	15.24	15.54	15.85	16.15	16.46	16.76	17.07	17.37	17.68	17.98
60	18.29	18.59	18.90	19.20	19.51	19.81	20.12	20.42	20.73	21.03
70	21.34	21.64	21.95	22.25	22.56	22.86	23.16	23.47	23.77	24.08
80	24.38	24.69	24.99	25.30	25.60	(B) 25.91	26.21	26.52	26.82	27.13
90	27.43	27.74	28.04	28.35	28.65	28.96	29.26	29.57	29.87	30.18
	0	10	20	30	40	50	60	70	80	90
100	30.48	33.53	36.58	39.62	42.67	45.72	48.77	51.82	54.86	57.91
200	60.96	64.01	67.06	70.10	73.15	76.20	79.25	82.30	85.34	88.39
300	91.44	94.49	97.54	100.58	103.63	106.68	109.73	112.78	115.82	118.87
400	121.92	124.97	128.02	131.06	134.11	137.16	140.21	143.26	146.30	149.35
500	152.40	155.45	158.50	161.54	164.59	167.64	170.69	173.74	176.78	179.83
600	182.88	185.93	188.98	192.02	195.07	198.12	201.17	204.22	207.26	210.31
700	213.36	216.41	219.46	222.50	225.55	228.60	231.65	234.70	237.74	240.79
800	243.84	246.89	249.94	252.98	256.03	259.08	262.13	265.18	268.22	271.27
900	274.32	277.37	280.42	283.46	286.51	289.56	292.61	295.66	298.70	301.75
	0	100	200	300	400	500	600	700	800	900
1000	304.80	335.28	365.76	396.24	426.72	457.20	487.68	518.16	548.64	579.12
2000	609.60	640.08	670.56	701.04	731.52	762.00	792.48	822.96	853.44	883.92
3000	914.40	944.88	975.36	1005.84	1036.32	1066.80	1097.28	1127.76	1158.24	1188.72
4000	1219.20	1249.68	1280.16	1310.64	1341.12	1371.60	1402.08	1432.56	1463.04	1493.52
5000	1524.00	1554.48	1584.96	1615.44	1645.92	1676.40	1706.88	1737.36	1767.84	1798.32
6000	1828.80	1859.28	1889.76	1920.24	1950.72	1981.20	2011.68	(A) 2042.16	2072.64	2103.12
7000	2133.60	2164.08	2194.56	2225.04	2255.52	2286.00	2316.48	2346.96	2377.44	2407.92
8000	2438.40	2468.88	2499.36	2529.84	2560.32	2590.80	2621.28	2651.76	2682.24	2712.72
9000	2743.20	2773.68	2804.16	2834.64	2865.12	2895.60	2926.08	2956.56	2987.04	3017.52
	0	1000	2000	3000	4000	5000	6000	7000	8000	9000
10000	3048.0	3352.8	3657.6	3962.4	4267.2	4572.0	4876.8	5181.6	5486.4	5791.2
20000	6096.0	6400.8	6705.6	7010.4	7315.2	7620.0	7924.8	8229.6	8534.4	8839.2
30000	9144.0	9448.8	9753.6	10058.4	10363.2	10668.0	10972.8	11277.6	11582.4	11887.2
40000	12192.0	12496.8								

UNITFT-M - 09/04/92

Units conversion – Feet to meters
Figure 05–06–9

METER	0	1	2	3	4	5	6	7	8	9
		3.3	6.6	9.8	13.1	16.4	19.7	23.0	26.2	29.5
10	32.8	36.1	39.4	42.7	45.9	49.2	52.5	55.8	59.1	62.3
20	65.6	68.9	72.2	75.5	78.7	82.0	85.3	88.6	91.9	95.1
30	98.4	101.7	105.0	108.3	111.5	114.8	118.1	121.4	124.7	128.0
40	131.2	134.5	137.8	141.1	144.4	147.6	150.9	154.2	157.5	160.8
50	164.0	167.3	170.6	173.9	177.2	180.4	183.7	187.0	190.3	193.6
60	196.9	200.1	203.4	206.7	210.0	213.3	216.5	219.8	223.1	226.4
70	229.7	232.9	236.2	239.5	242.8	246.1	249.3	252.6	255.9	259.2
80	262.5	265.7	269.0	272.3	275.6	278.9	282.2	285.4	288.7	292.0
90	295.3	298.6	301.8	305.1	308.4	311.7	315.0	318.2	321.5	324.8
	0	10	20	30	40	50	60	70	80	90
100	328.1	360.9	393.7	426.5	459.3	492.1	524.9	557.7	590.6	623.4
200	656.2	689.0	721.8	754.6	787.4	820.2	853.0	885.8	918.6	951.4
300	984.3	1017	1050	1083	1115	1148	1181	1214	1247	1280
400	1312	1345	1378	1411	1444	1476	1509	1542	1575	1608
500	1640	1673	1706	1739	1772	1804	1837	1870	1903	1936
600	1969	2001	2034	2067	2100	2133	2165	2198	2231	2264
700	2297	2329	2362	2395	2428	2461	2493	2526	2559	2592
800	2625	2657	2690	2723	2756	2789	2822	2854	2887	2920
900	2953	2986	3018	3051	3084	3117	3150	3182	3215	3248
	0	100	200	300	400	500	600	700	800	900
1000	3281	3609	3937	4265	4593	4921	5249	5577	5906	6234
2000	6562	6890	7218	7546	7874	8202	8530	8858	9186	9514
3000	9843	10171	10499	10827	11155	11483	11811	12139	12467	12795
4000	13123	13451	13780	14108	14436	14764	15092	15420	15748	16076
5000	16404	16732	17060	17388	17717	18045	18373	18701	19029	19357
6000	19685	20013	20341	20669	20997	21325	21654	21982	22310	22638
7000	22966	23294	23622	23950	24278	24606	24934	25262	25591	25919
8000	26247	26575	26903	27231	27559	27887	28215	28543	28871	29199
9000	29528	29856	30184	30512	30840	31168	31496	31824	32152	32480
10000	32808	33136	33465	33793	34121	34449	34777	35105	35433	35761
11000	36089	36417	36745	37073	37402	37730	38058	38386	38714	39042
12000	39370	39698	40026	40354	40682	41010				

UNITM-FT - 10/06/92

Units conversion – Meters to feet
Figure 05–06–10

N.M.	0	1	2	3	4	5	6	7	8	9
		1.85	3.70	5.56	7.41	9.26	11.11	12.96	14.82	16.67
10	18.52	20.37	22.22	24.08	25.93	27.78	29.63	31.48	33.34	35.19
20	37.04	38.89	40.74	42.60	44.45	46.30	48.15	50.00	51.86	53.71
30	55.56	57.41	59.26	61.12	62.97	64.82	66.67	68.52	70.38	72.23
40	74.08	75.93	77.78	79.64	81.49	83.34	85.19	87.04	88.90	90.75
50	92.60	94.45	96.30	98.16	100.01	101.86	103.71	105.56	107.42	109.27
60	111.12	112.97	114.82	116.68	118.53	120.38	122.23	124.08	125.94	127.79
70	129.64	131.49	133.34	135.20	137.05	138.90	140.75	142.60	144.46	146.31
80	148.16	150.01	151.86	153.72	155.57	157.42	159.27	161.12	162.98	164.83
90	166.68	168.53	170.38	172.24	174.09	175.94	177.79	179.64	181.50	183.35
	0	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**
100	185.20	203.72	222.24	240.76	259.28	277.80	296.32	314.84	333.36	351.88
200	370.40	388.92	407.44	425.96	444.48	463.00	481.52	500.04	518.56	537.08
300	555.60	574.12	592.64	611.16	629.68	648.20	666.72	685.24	703.76	722.28
400	740.80	759.32	777.84	796.36	814.88	833.40	851.92	870.44	888.96	907.48
500	926.00	944.52	963.04	981.56	1000.1	1018.6	1037.1	1055.6	1074.2	1092.7
600	1111.2	1129.7	1148.2	1166.8	1185.3	1203.8	1222.3	1240.8	1259.4	1277.9
700	1296.4	1314.9	1333.4	1352.0	1370.5	1389.0	1407.5	1426.0	1444.6	1463.1
800	1481.6	1500.1	1518.6	1537.2	1555.7	1574.2	1592.7	1611.2	1629.8	1648.3
900	1666.8	1685.3	1703.8	1722.4	1740.9	1759.4	1777.9	1796.4	1815.0	1833.5
	0	**100**	**200**	**300**	**400**	**500**	**600**	**700**	**800**	**900**
1000	1852.0	2037.2	2222.4	2407.6	2592.8	2778.0	2963.2	3148.4	3333.6	3518.8
2000	3704.0	3889.2	4074.4	4259.6	4444.8	4630.0	4815.2	5000.4	5185.6	5370.8

UNITNMKM - 14/05/92

Units conversion – Nautical miles to kilometers
Figure 05–06–11

KM	0	1	2	3	4	5	6	7	8	9
		0.5	1.1	1.6	2.2	2.7	3.2	3.8	4.3	4.9
10	5.4	5.9	6.5	7.0	7.6	8.1	8.6	9.2	9.7	10.3
20	10.8	11.3	11.9	12.4	13.0	13.5	14.0	14.6	15.1	15.7
30	16.2	16.7	17.3	17.8	18.4	18.9	19.4	20.0	20.5	21.1
40	21.6	22.1	22.7	23.2	23.8	24.3	24.8	25.4	25.9	26.5
50	27.0	27.5	28.1	28.6	29.2	29.7	30.2	30.8	31.3	31.9
60	32.4	32.9	33.5	34.0	34.6	35.1	35.6	36.2	36.7	37.3
70	37.8	38.3	38.9	39.4	40.0	40.5	41.0	41.6	42.1	42.7
80	43.2	43.7	44.3	44.8	45.4	45.9	46.4	47.0	47.5	48.1
90	48.6	49.1	49.7	50.2	50.8	51.3	51.8	52.4	52.9	53.5
	0	**10**	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**
100	54.0	59.4	64.8	70.2	75.6	81.0	86.4	91.8	97.2	102.6
200	108.0	113.4	118.8	124.2	129.6	135.0	140.4	145.8	151.2	156.6
300	162.0	167.4	172.8	178.2	183.6	189.0	194.4	199.8	205.2	210.6
400	216.0	221.4	226.8	232.2	237.6	243.0	248.4	253.8	259.2	264.6
500	270.0	275.4	280.8	286.2	291.6	297.0	302.4	307.8	313.2	318.6
600	324.0	329.4	334.8	340.2	345.6	351.0	356.4	361.8	367.2	372.6
700	378.0	383.4	388.8	394.2	399.6	405.0	410.4	415.8	421.2	426.6
800	432.0	437.4	442.8	448.2	453.6	459.0	464.4	469.8	475.2	480.6
900	486.0	491.4	496.8	502.2	507.6	513.0	518.4	523.8	529.2	534.6
	0	**100**	**200**	**300**	**400**	**500**	**600**	**700**	**800**	**900**
1000	540.0	594.0	647.9	701.9	755.9	809.9	863.9	917.9	971.9	1025.9
2000	1079.9	1133.9	1187.9	1241.9	1295.9	1349.9	1403.9	1457.9	1511.9	1565.9
3000	1619.9	1673.9	1727.9	1781.9	1835.9	1889.8	1943.8	1997.8	2051.8	2105.8
4000	2159.8	2213.8	2267.8	2321.8	2375.8	2429.8	2483.8	2537.8	2591.8	2645.8
5000	2699.8	2753.8	2807.8	2861.8	2915.8					

UNITKMNM - 14/05/92

Units conversion – Kilometers to nautical miles
Figure 05–06–12

Alt.	ISA - 30 C		ISA - 20 C		ISA - 10 C		ISA		ISA + 10 C		ISA + 20 C		ISA + 30 C	
ft	C	F	C	F	C	F	C	F	C	F	C	F	C	F
0	-15.0	5.0	-5.0	23.0	5.0	41.0	15.0	59.0	25.0	77.0	35.0	95.0	45.0	113.0
1000	-17.0	1.4	-7.0	19.4	3.0	37.4	13.0	55.4	23.0	73.4	33.0	91.4	43.0	109.4
2000	-18.9	-2.1	-8.9	15.9	1.1	33.9	11.1	51.9	21.1	69.9	31.1	87.9	41.1	105.9
3000	-20.9	-5.7	-10.9	12.3	-0.9	30.3	9.1	48.3	19.1	66.3	29.1	84.3	39.1	102.3
4000	-22.9	-9.3	-12.9	8.7	-2.9	26.7	7.1	44.7	17.1	62.7	27.1	80.7	37.1	98.7
5000	-24.9	-12.8	-14.9	5.2	-4.9	23.2	5.1	41.2	15.1	59.2	25.1	77.2	35.1	95.2
6000	-26.9	-16.4	-16.9	1.6	-6.9	19.6	3.1	37.6	13.1	55.6	23.1	73.6	33.1	91.6
7000	-28.9	-20.0	-18.9	-2.0	-8.9	16.0	1.1	34.0	11.1	52.0	21.1	70.0	31.1	88.0
8000	-30.8	-23.5	-20.8	-5.5	-10.8	12.5	-0.8	30.5	9.2	48.5	19.2	66.5	29.2	84.5
9000	-32.8	-27.1	-22.8	-9.1	-12.8	8.9	-2.8	26.9	7.2	44.9	17.2	62.9	27.2	80.9
10000	-34.8	-30.7	-24.8	-12.7	-14.8	5.3	-4.8	23.3	5.2	41.3	15.2	59.3	25.2	77.3
11000	-36.8	-34.2	-26.8	-16.2	-16.8	1.8	-6.8	19.8	3.2	37.8	13.2	55.8	23.2	73.8
12000	-38.8	-37.8	-28.8	-19.8	-18.8	-1.8	-8.8	16.2	1.2	34.2	11.2	52.2	21.2	70.2
13000	-40.8	-41.4	-30.8	-23.4	-20.8	-5.4	-10.8	12.6	-0.8	30.6	9.2	48.6	19.2	66.6
14000	-42.7	-44.9	-32.7	-26.9	-22.7	-8.9	-12.7	9.1	-2.7	27.1	7.3	45.1	17.3	63.1
15000	-44.7	-48.5	-34.7	-30.5	-24.7	-12.5	-14.7	5.5	-4.7	23.5	5.3	41.5	15.3	59.5
16000	-46.7	-52.1	-36.7	-34.1	-26.7	-16.1	-16.7	1.9	-6.7	19.9	3.3	37.9	13.3	55.9
17000	-48.6	-55.6	-38.6	-37.6	-28.6	-19.6	-18.6	-1.6	-8.6	16.4	1.4	34.4	11.4	52.4
18000	-50.7	-59.2	-40.7	-41.2	-30.7	-23.2	-20.7	-5.2	-10.7	12.8	-0.7	30.8	9.3	48.8
19000	-52.7	-62.8	-42.7	-44.8	-32.7	-26.8	-22.7	-8.8	-12.7	9.2	-2.7	27.2	7.3	45.2
20000	-54.6	-66.3	-44.6	-48.3	-34.6	-30.3	-24.6	-12.3	-14.6	5.7	-4.6	23.7	5.4	41.7
21000	-56.6	-69.9	-46.6	-51.9	-36.6	-33.9	-26.6	-15.9	-16.6	2.1	-6.6	20.1	3.4	38.1
22000	-58.6	-73.5	-48.6	-55.5	-38.6	-37.5	-28.6	-19.5	-18.6	-1.5	-8.6	16.5	1.4	34.5
23000	-60.5	-77.0	-50.5	-59.0	-40.5	-41.0	-30.5	-23.0	-20.5	-5.0	-10.5	13.0	-0.5	31.0
24000	-62.5	-80.6	-52.5	-62.6	-42.5	-44.6	-32.5	-26.6	-22.5	-8.6	-12.5	9.4	-2.5	27.4
25000	-64.5	-84.2	-54.5	-66.2	-44.5	-48.2	-34.5	-30.2	-24.5	-12.2	-14.5	5.8	-4.5	23.8
26000	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7	-16.5	2.3	-6.5	20.3
27000	-68.5	-91.3	-58.5	-73.3	-48.5	-55.3	-38.5	-37.3	-28.5	-19.3	-18.5	-1.3	-8.5	16.7
28000	-70.5	-94.9	-60.5	-76.9	-50.5	-58.9	-40.5	-40.9	-30.5	-22.9	-20.5	-4.9	-10.5	13.1
29000	-72.4	-98.4	-62.4	-80.4	-52.4	-62.4	-42.4	-44.4	-32.4	-26.4	-22.4	-8.4	-12.4	9.6
30000	-74.4	-102.0	-64.4	-84.0	-54.4	-66.0	-44.4	-48.0	-34.4	-30.0	-24.4	-12.0	-14.4	6.0
31000	-76.4	-105.6	-66.4	-87.6	-56.4	-69.6	-46.4	-51.6	-36.4	-33.6	-26.4	-15.6	-16.4	2.4
32000	-78.4	-109.1	-68.4	-91.1	-58.4	-73.1	-48.4	-55.1	-38.4	-37.1	-28.4	-19.1	-18.4	-1.1
33000	-80.4	-112.7	-70.4	-94.7	-60.4	-76.7	-50.4	-58.7	-40.4	-40.7	-30.4	-22.7	-20.4	-4.7
34000	-82.4	-116.3	-72.4	-98.3	-62.4	-80.3	-52.4	-62.3	-42.4	-44.3	-32.4	-26.3	-22.4	-8.3
35000	-84.3	-119.8	-74.3	-101.8	-64.3	-83.8	-54.3	-65.8	-44.3	-47.8	-34.3	-29.8	-24.3	-11.8
36000	-86.3	-123.4	-76.3	-105.4	-66.3	-87.4	-56.3	-69.4	-46.3	-51.4	-36.3	-33.4	-26.3	-15.4
37000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
38000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
39000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
40000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7
41000	-86.5	-123.7	-76.5	-105.7	-66.5	-87.7	-56.5	-69.7	-46.5	-51.7	-36.5	-33.7	-26.5	-15.7

UNIT-C-F - 09/04/92

Units conversion – Celcius to Fahrenheit
Figure 05–06–13

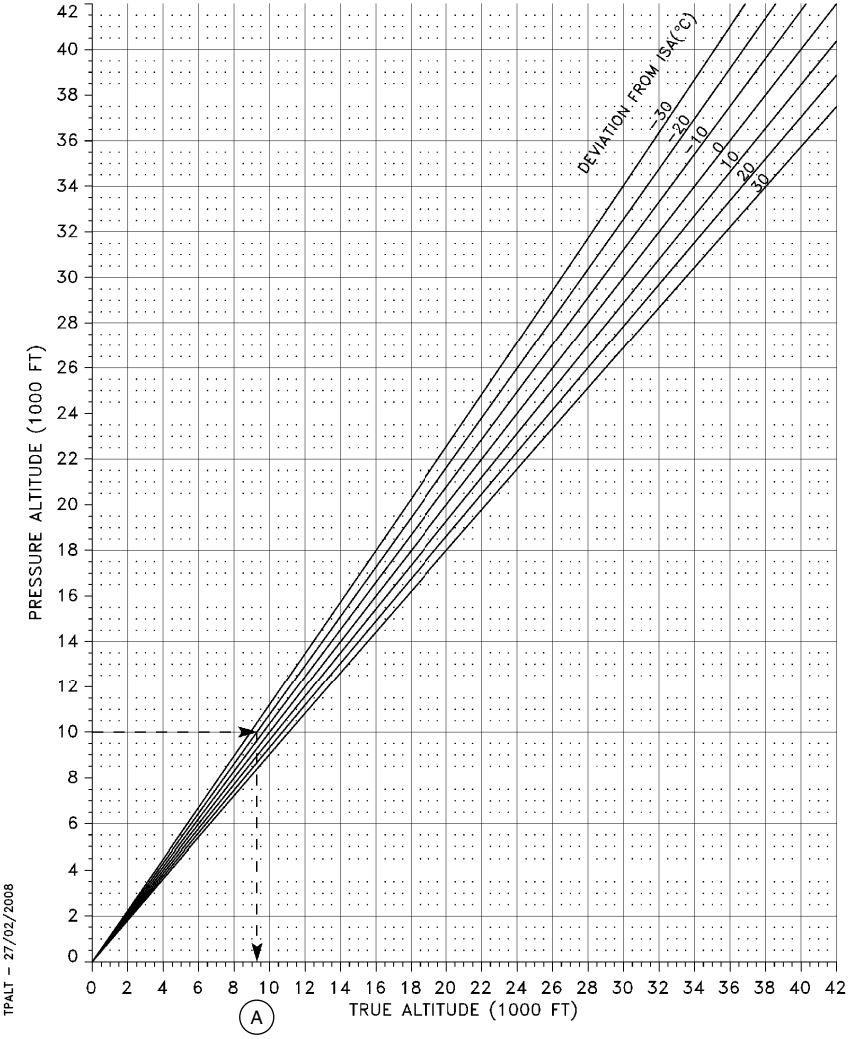
I. Pressure altitude versus true altitude

The pressure altitude versus true altitude chart (refer to Figure 05–06–14) shows the true altitude variation at reference pressure altitude for ±30°C temperature deviation from ISA.

Example:

At a given pressure altitude of 10000 ft and ISA–20°C, the true altitude is:

- 9280 ft



True altitude versus pressure altitude
Figure 05–06–14

J. QNH versus pressure altitude

When flying at levels with the altimeter set to standard, the minimum safe altitude must be corrected for deviations in pressure (refer to Figure 05–06–15).

Example:

Enter the table with the local QNH value and read the altitude correction.

- MEA = 16000 ft
- Altimeter setting = standard
- Local QNH = 983 hPa or 29.03 inHg
- Results: Altitude correction = 800 ft
- Minimum safe altitude = 16000 + 800 = 16800 ft

QNH altitude corrections

QNH (inHg)	QNH (hPa)	Altitude correction (ft)
31.21	1057	1200
31.12	1054	1100
31.01	1050	1000
30.89	1046	900
30.80	1043	800
30.68	1039	700
30.56	1035	600
30.48	1032	500
30.36	1028	400
30.24	1024	300
30.12	1020	200
30.03	1017	100
29.92	**1013**	0
29.80	1009	100
29.71	1006	200
29.59	1002	300
29.47	998	400
29.35	994	500
29.26	991	600
29.15	987	700
29.03	983	800
28.94	980	900
28.82	976	1000
28.70	972	1100
28.61	969	1200

QNH versus pressure altitude
Figure 05–06–15

K. Flight Path Angle (FPA) temperature correction

The flight path vector symbol shown on the PFD and HUD (if installed) is based on a flight path angle signal that uses barometric altitude. This can cause errors when the Outside Air Temperature (OAT) is lower than ISA conditions. The Flight Path Angle (FPA) temperature correction table (refer to Figure 05–06–16) gives correction data in degrees as a function of runway pressure altitude and OAT.

When OAT is higher than ISA conditions, the true geometric flight path is steeper than the indicated FPA.

For a QNH versus pressure altitude conversion table, refer to Figure 05–06–16.

Example:

Runway elevation: 3150 ft

QNH: 29.77 in Hg

Runway pressure altitude: 3000 ft

Temperature (OAT): –21°C

Result:

The FPA correction is an additional –0.3° (down).

Conclusion:

The actual aircraft trajectory is shallower than shown. When flying an effective –3.0° geometric path, the FPA must be selected to –3.3° (down).

Runway OAT [°C]	Runway Pressure Altitude [ft]									
	SL	1000 ft	2000 ft	3000 ft	4000 ft	5000 ft	6000 ft	7000 ft	8000 ft	FPA Correction [°]
	15	13	11	9	7	5	3	1	-1	0.0
	13	11	9	7	5	3	1	-1	-3	0.0
	11	9	7	5	3	1	-1	-3	-5	0.0
	9	7	5	3	1	-1	-3	-5	-7	-0.1
	7	5	3	1	-1	-3	-5	-7	-9	-0.1
	5	3	1	-1	-3	-5	-7	-9	-11	-0.1
	3	1	-1	-3	-5	-7	-9	-11	-13	-0.1
	1	-1	-3	-5	-7	-9	-11	-13	-15	-0.2
	-1	-3	-5	-7	-9	-11	-13	-15	-17	-0.2
	-3	-5	-7	-9	-11	-13	-15	-17	-19	-0.2
	-5	-7	-9	-11	-13	-15	-17	-19	-21	-0.2
	-7	-9	-11	-13	-15	-17	-19	-21	-23	-0.2
	-9	-11	-13	-15	-17	-19	-21	-23	-25	-0.3
	-11	-13	-15	-17	-19	-21	-23	-25	-27	-0.3
	-13	-15	-17	-19	-21	-23	-25	-27	-29	-0.3
	-15	-17	-19	-21	-23	-25	-27	-29	-31	-0.3
	-17	-19	-21	-23	-25	-27	-29	-31	-33	-0.4
	-19	-21	-23	-25	-27	-29	-31	-33	-35	-0.4
	-21	-23	-25	-27	-29	-31	-33	-35	-37	-0.4
	-23	-25	-27	-29	-31	-33	-35	-37	-39	-0.5
	-25	-27	-29	-31	-33	-35	-37	-39	-41	-0.5
	-27	-29	-31	-33	-35	-37	-39	-41	-43	-0.5

Notes: **-** Not applicable to approach angles greater than 3,5°

FPA temperature correction
Figure 05–06–16

L. Wind/altimeter correction

The combination of strong winds and mountainous terrain can cause local change in atmospheric pressure due to the Bernoulli Effect. When flying at a minimum altitude in a mountainous region, the pilot-in-command must correct altimeter error due to wind (regardless of wind direction).

Example:

- Minimum altitude = 16000 ft
- Wind speed = 50 kt
- Result: Add 330 ft to the minimum altitude to be flown. 16000 + 330 = 16330 ft

Wind speed (kt)	Altimeter error (ft)
20	53

Wind speed (kt)	Altimeter error (ft)
40	201
60	455
80	812

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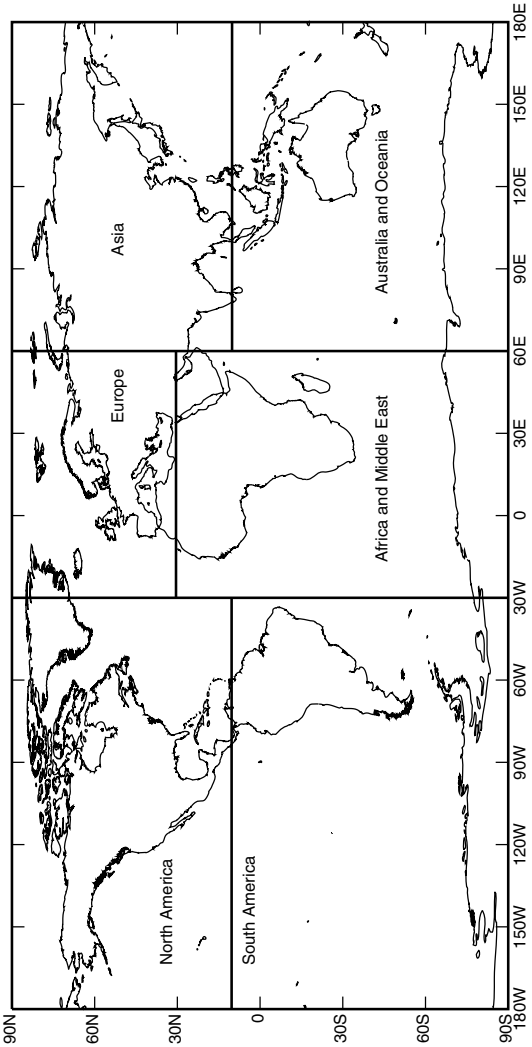
GEOGRAPHIC ZONES

A. Geographic zones



Geographical zones
Figure 05–07–1

MAXIMUM CRUISE TIME AT ALTITUDE – NO OZONE CONVERTER

A. North America – January

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 410

Latitude (N)	Longitude																
	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.5	0.0	0.0	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.3	1.0	0.5	0.0	0.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.7	2.2	1.5	1.1	0.0	0.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.4	3.5	1.4	1.5	0.7	0.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	6.4	6.3	1.2	1.9	3.0	0.2
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.2	7.0	7.0	1.3	2.4	7.0	1.6
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	5.9	7.0	7.0	3.0	4.3	7.0	5.2
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	0.1	0.0	0.0	0.0	0.0	0.0	0.6	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	0.5	0.0	0.0	0.9	0.2	0.3	1.4	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	0.9	0.0	0.1	1.9	0.9	1.1	2.4	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	1.4	0.4	0.7	3.2	1.9	2.1	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	2.0	0.9	3.7	5.4	3.3	3.5	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	2.7	6.4	5.6	7.0	5.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL410 – No ozone converter – p1
Figure 05–07–2

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.8
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.2
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	6.3
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	7.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	7.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	7.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	7.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.2	7.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	7.0
52N	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	6.7	7.0
51N	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	7.0	7.0
50N	2.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	7.0	7.0
49N	3.3	0.7	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	7.0	7.0
48N	4.7	3.3	0.8	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.0	7.0
47N	7.0	4.4	1.1	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.2	1.9	7.0	7.0
46N	7.0	6.1	1.3	0.3	0.9	0.2	0.0	0.0	0.0	0.0	0.4	2.3	7.0	7.0
45N	7.0	7.0	1.7	0.0	1.4	0.4	0.0	0.0	0.0	0.0	0.7	2.7	7.0	7.0
44N	7.0	7.0	2.3	0.0	2.3	0.7	0.0	0.0	0.0	0.0	1.0	3.2	7.0	7.0
43N	7.0	7.0	3.8	0.4	5.1	1.5	0.0	0.0	0.0	0.0	1.3	3.8	7.0	7.0
42N	7.0	7.0	7.0	2.0	7.0	3.4	0.0	0.0	0.0	0.1	1.7	4.5	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	0.5	0.4	0.3	0.4	2.1	5.4	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	1.9	1.0	1.1	0.6	2.9	6.3	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	3.7	1.6	1.6	1.8	3.6	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	2.3	2.2	2.4	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	2.9	3.1	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL410 – No ozone converter – p2
Figure 05–07–3

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	0.6	0.1	0.0	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	1.7	1.3	0.7	0.0	0.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.4	3.1	1.9	1.4	0.0	0.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	5.2	5.2	1.9	1.9	0.9	0.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	7.0	7.0	1.5	2.3	3.5	0.3
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	7.0	7.0	7.0	1.7	3.1	7.0	1.8
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	7.0	7.0	7.0	4.2	5.6	7.0	5.6
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	0.2	0.0	0.0	0.0	0.0	0.0	0.8	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	0.7	0.0	0.0	1.1	0.3	0.5	1.9	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	1.3	0.1	0.2	2.4	1.2	1.4	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	2.0	0.6	0.9	4.4	2.5	2.8	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	2.9	1.2	5.2	7.0	4.7	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL400 – No ozone converter – p1
Figure 05–07–4

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.7
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.3
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	5.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	7.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	7.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	7.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.9	7.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	7.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	4.8	7.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	5.3	7.0
52N	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	7.0	7.0
51N	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	7.0	7.0
50N	2.5	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	7.0	7.0
49N	3.8	0.9	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	7.0	7.0
48N	5.6	4.3	0.9	0.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.0	7.0
47N	7.0	6.0	1.3	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.3	2.5	7.0	7.0
46N	7.0	7.0	1.6	0.3	1.1	0.2	0.0	0.0	0.0	0.0	0.6	3.1	7.0	7.0
45N	7.0	7.0	2.0	0.1	1.6	0.4	0.0	0.0	0.0	0.0	0.9	3.7	7.0	7.0
44N	7.0	7.0	2.7	0.0	2.7	0.7	0.0	0.0	0.0	0.0	1.3	4.4	7.0	7.0
43N	7.0	7.0	4.5	0.4	6.2	1.5	0.0	0.0	0.0	0.0	1.6	5.3	7.0	7.0
42N	7.0	7.0	7.0	2.3	7.0	3.5	0.0	0.1	0.1	0.2	2.1	6.4	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	0.6	0.5	0.4	0.5	2.6	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	1.9	1.1	1.3	0.8	3.7	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	4.0	1.8	1.9	2.2	4.6	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.6	2.6	2.9	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.5	3.9	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL400 – No ozone converter – p2
Figure 05–07–5

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
89N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88N	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7
87N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
86N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
85N	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
84N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
83N	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
82N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
81N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
80N	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4
79N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4
78N	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
77N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2
76N	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2
75N	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.1
74N	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.2	0.2	0.1
73N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.2	0.2	0.2
72N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3	0.2	0.2
71N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2
70N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3	0.3
69N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.4	0.4	0.3
68N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.4	0.4	0.4
67N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.5	0.5	0.4
66N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.5	0.5
65N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.6	0.6	0.6	0.5
64N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.7	0.7	0.7	0.6
63N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	0.9	1.1	0.9	0.7	0.6
62N	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	1.2	1.4	1.2	0.9	0.6
61N	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.3	2.0	1.9	1.4	1.0	0.7
60N	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	1.8	2.6	2.4	2.0	1.2	0.7
59N	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	2.5	3.1	3.3	2.5	1.4	0.7
58N	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2	0.8	1.8	3.5	4.4	4.5	3.5	1.9	0.8
57N	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.1	0.4	1.1	2.6	5.4	6.5	6.0	4.6	2.5	1.1
56N	0.5	0.5	0.3	0.1	0.1	0.0	0.1	0.3	0.7	1.6	3.7	7.0	7.0	7.0	6.0	3.3	1.5
55N	0.8	0.6	0.4	0.3	0.2	0.2	0.3	0.5	1.0	2.2	5.7	7.0	7.0	7.0	7.0	4.9	2.4
54N	0.9	0.7	0.5	0.4	0.3	0.4	0.5	0.7	1.4	3.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8
53N	1.0	0.8	0.8	0.5	0.4	0.6	0.7	1.2	1.8	4.3	7.0	7.0	7.0	7.0	7.0	7.0	6.5
52N	1.1	0.9	0.9	0.6	0.7	0.8	1.0	1.6	2.9	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	1.2	1.0	1.1	0.8	0.9	1.0	1.3	2.0	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	1.4	1.4	1.3	1.0	1.1	1.3	1.7	2.7	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	1.6	1.7	1.5	1.2	1.3	1.6	2.1	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	1.8	1.9	1.8	1.4	1.6	2.0	2.7	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	3.1	2.2	2.1	2.1	2.4	2.5	3.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	3.6	2.5	2.5	2.6	2.9	3.1	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	4.3	2.9	3.0	4.6	3.7	3.9	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	5.1	3.5	3.6	6.3	4.8	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	6.1	4.1	4.5	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL390 – No ozone converter – p1
Figure 05–07–6

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
89N	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
88N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8
87N	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8
86N	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8
85N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.9	0.9
84N	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	0.9
83N	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0
82N	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	1.0
81N	0.4	0.4	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	1.0	1.1
80N	0.4	0.4	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.2
79N	0.4	0.4	0.4	0.5	0.6	0.8	0.9	0.9	0.9	0.9	1.0	1.1	1.2	1.4
78N	0.3	0.4	0.4	0.6	0.9	1.3	1.3	1.2	1.1	1.0	1.1	1.1	1.3	1.5
77N	0.2	0.3	0.4	0.7	1.3	1.9	1.8	1.4	1.1	1.1	1.1	1.3	1.5	1.8
76N	0.1	0.2	0.4	0.7	1.3	1.9	1.8	1.4	1.2	1.1	1.2	1.4	1.7	2.1
75N	0.1	0.1	0.3	0.6	1.1	1.5	1.5	1.3	1.1	1.1	1.3	1.5	1.9	2.5
74N	0.1	0.2	0.3	0.5	0.8	1.1	1.2	1.1	1.1	1.1	1.3	1.6	2.2	3.3
73N	0.1	0.2	0.3	0.5	0.7	0.8	1.0	1.0	1.0	1.1	1.3	1.7	2.5	4.5
72N	0.2	0.2	0.3	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.2	1.8	2.9	6.0
71N	0.2	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.2	1.9	3.1	7.0
70N	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.9	1.2	2.0	3.4	7.0
69N	0.3	0.3	0.4	0.4	0.3	0.3	0.3	0.4	0.6	0.8	1.1	1.9	3.3	7.0
68N	0.4	0.3	0.4	0.3	0.2	0.2	0.2	0.3	0.5	0.7	1.1	1.9	3.1	5.5
67N	0.4	0.3	0.4	0.3	0.1	0.1	0.1	0.2	0.4	0.7	1.2	1.8	2.8	5.9
66N	0.4	0.4	0.3	0.2	0.1	0.0	0.0	0.2	0.3	0.6	1.1	1.7	2.7	5.3
65N	0.5	0.5	0.3	0.2	0.0	0.0	0.0	0.1	0.3	0.6	1.1	1.6	2.5	5.7
64N	0.6	0.5	0.4	0.2	0.0	0.0	0.0	0.1	0.3	0.5	1.0	1.6	2.4	5.7
63N	0.6	0.5	0.4	0.2	0.0	0.0	0.0	0.1	0.3	0.5	1.0	1.5	2.4	7.0
62N	0.6	0.5	0.4	0.3	0.1	0.0	0.0	0.1	0.3	0.6	1.0	1.5	3.3	7.0
61N	0.5	0.5	0.5	0.3	0.1	0.0	0.1	0.2	0.4	0.6	1.0	1.5	5.5	7.0
60N	0.4	0.5	0.5	0.4	0.2	0.1	0.2	0.3	0.4	0.6	1.0	1.5	5.7	7.0
59N	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.5	0.5	0.7	1.1	1.5	5.9	7.0
58N	0.4	0.5	0.6	0.6	0.5	0.4	0.5	0.6	0.7	0.7	1.1	2.1	6.2	7.0
57N	0.5	0.6	0.7	0.7	0.6	0.5	0.6	0.7	0.7	0.9	1.2	2.9	7.0	7.0
56N	0.7	0.7	0.9	0.8	0.8	0.8	0.8	0.8	0.8	1.0	1.2	3.0	7.0	7.0
55N	1.1	1.0	1.0	1.1	1.0	0.9	0.8	0.8	0.9	1.2	1.6	3.4	7.0	7.0
54N	1.5	1.4	1.5	1.3	1.2	1.0	0.9	0.9	0.9	1.2	1.6	3.5	7.0	7.0
53N	2.6	1.8	1.9	1.9	1.5	1.2	1.0	0.9	0.9	1.3	1.7	3.6	7.0	7.0
52N	3.9	2.3	2.3	2.3	2.0	1.4	1.0	0.9	1.0	1.3	1.8	3.8	7.0	7.0
51N	5.6	3.0	2.8	2.8	2.4	1.6	1.2	1.0	1.1	1.4	1.8	5.3	7.0	7.0
50N	7.0	3.8	3.5	3.3	2.8	2.1	1.4	1.2	1.3	1.5	1.9	5.8	7.0	7.0
49N	7.0	4.7	4.1	3.8	3.3	2.5	1.7	1.4	1.4	1.6	2.0	6.4	7.0	7.0
48N	7.0	7.0	4.8	4.2	3.9	3.0	2.1	1.7	1.6	1.8	2.8	7.0	7.0	7.0
47N	7.0	7.0	5.5	4.2	4.5	3.3	2.6	2.0	1.8	1.9	3.8	7.0	7.0	7.0
46N	7.0	7.0	6.0	3.9	5.0	3.6	2.8	2.3	2.1	2.1	4.2	7.0	7.0	7.0
45N	7.0	7.0	6.9	3.5	6.0	3.9	2.9	2.6	2.3	2.7	4.7	7.0	7.0	7.0
44N	7.0	7.0	7.0	3.4	7.0	4.2	2.8	2.8	2.5	3.0	5.3	7.0	7.0	7.0
43N	7.0	7.0	7.0	4.1	7.0	5.2	2.9	3.1	2.8	3.3	6.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.4	3.5	3.7	6.9	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	4.0	4.0	3.9	4.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.8	5.2	4.5	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	6.1	6.8	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL390 – No ozone converter – p2
Figure 05–07–7

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
89N	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
88N	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
87N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
86N	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
85N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
84N	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7
83N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
82N	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6
81N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
80N	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
79N	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5
78N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
77N	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3
76N	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.3	0.3	0.2
75N	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2
74N	0.3	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.2
73N	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.2
72N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.3	0.3
71N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.3
70N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4
69N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.4	0.5	0.5	0.4
68N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.5	0.5
67N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.6	0.6	0.5
66N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.7	0.7	0.6
65N	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.7	0.8	0.7	0.7
64N	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.7	0.9	0.9	0.8	0.7
63N	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.1	1.3	1.1	0.9	0.7
62N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.9	1.4	1.7	1.4	1.1	0.8
61N	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.5	2.4	2.3	1.8	1.3	0.9
60N	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.0	2.1	3.4	3.1	2.5	1.4	0.9
59N	0.4	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.5	3.1	4.2	4.5	3.3	1.8	0.9
58N	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.3	0.8	2.1	4.8	6.6	6.6	5.0	2.5	1.0
57N	0.5	0.3	0.2	0.1	0.0	0.0	0.0	0.2	0.5	1.2	3.1	7.0	7.0	7.0	7.0	3.3	1.4
56N	0.6	0.5	0.4	0.2	0.1	0.1	0.2	0.3	0.7	1.8	5.0	7.0	7.0	7.0	7.0	4.9	1.9
55N	0.8	0.6	0.4	0.3	0.2	0.3	0.3	0.5	1.1	2.6	7.0	7.0	7.0	7.0	7.0	7.0	3.3
54N	0.9	0.7	0.6	0.4	0.4	0.4	0.6	0.8	1.5	3.7	7.0	7.0	7.0	7.0	7.0	7.0	6.2
53N	1.1	0.9	0.8	0.6	0.5	0.6	0.8	1.2	2.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	1.2	1.0	1.0	0.7	0.7	0.8	1.1	1.7	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	1.4	1.1	1.2	0.9	0.9	1.1	1.4	2.2	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	1.6	1.6	1.4	1.0	1.1	1.3	1.8	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	1.8	1.8	1.6	1.2	1.4	1.7	2.3	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	2.0	2.1	2.0	1.5	1.8	2.1	3.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	3.7	2.5	2.3	2.3	2.5	2.7	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	4.4	2.9	2.8	2.9	3.2	3.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	5.4	3.5	3.4	5.2	4.2	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	6.7	4.2	4.3	7.0	5.6	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	5.1	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL380 – No ozone converter – p1
Figure 05–07–8

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
89N	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
88N	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
87N	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.1
86N	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.1
85N	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.2
84N	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.1	1.2
83N	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.2	1.3
82N	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.4
81N	0.5	0.5	0.5	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.2	1.3	1.5
80N	0.5	0.5	0.5	0.5	0.7	0.9	0.9	1.0	1.0	1.1	1.2	1.3	1.5	1.7
79N	0.5	0.5	0.5	0.6	0.9	1.1	1.3	1.3	1.2	1.2	1.3	1.5	1.7	1.9
78N	0.4	0.5	0.6	0.8	1.3	2.0	2.0	1.7	1.5	1.4	1.4	1.6	1.9	2.2
77N	0.3	0.4	0.6	1.0	1.9	3.3	2.9	2.0	1.6	1.5	1.6	1.8	2.1	2.6
76N	0.2	0.3	0.5	1.0	1.9	3.3	2.9	2.1	1.7	1.6	1.7	1.9	2.5	3.2
75N	0.2	0.2	0.4	0.8	1.5	2.2	2.3	1.9	1.6	1.6	1.8	2.1	2.8	4.2
74N	0.2	0.2	0.4	0.7	1.1	1.5	1.7	1.6	1.5	1.5	1.8	2.4	3.4	6.1
73N	0.2	0.3	0.4	0.6	0.9	1.1	1.3	1.3	1.3	1.5	1.9	2.6	4.3	7.0
72N	0.3	0.3	0.5	0.6	0.8	0.9	1.0	1.1	1.2	1.4	1.7	2.7	5.1	7.0
71N	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	1.0	1.3	1.7	2.8	5.8	7.0
70N	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.9	1.2	1.6	3.0	6.6	7.0
69N	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.8	1.1	1.5	2.9	6.2	7.0
68N	0.5	0.4	0.5	0.4	0.3	0.3	0.3	0.4	0.7	1.0	1.4	2.8	5.6	7.0
67N	0.5	0.4	0.5	0.4	0.2	0.1	0.2	0.3	0.5	0.9	1.6	2.6	5.0	7.0
66N	0.6	0.6	0.4	0.3	0.1	0.0	0.1	0.2	0.4	0.8	1.5	2.5	4.5	7.0
65N	0.7	0.6	0.4	0.3	0.1	0.0	0.0	0.2	0.4	0.7	1.4	2.3	4.2	7.0
64N	0.7	0.6	0.5	0.3	0.1	0.0	0.0	0.2	0.4	0.7	1.4	2.3	3.9	7.0
63N	0.7	0.7	0.5	0.3	0.1	0.0	0.0	0.2	0.4	0.7	1.3	2.2	3.8	7.0
62N	0.7	0.7	0.5	0.3	0.1	0.0	0.0	0.2	0.4	0.7	1.3	2.2	6.3	7.0
61N	0.6	0.6	0.6	0.4	0.2	0.1	0.1	0.3	0.5	0.8	1.3	2.1	7.0	7.0
60N	0.6	0.6	0.6	0.5	0.3	0.2	0.2	0.4	0.6	0.8	1.4	2.1	7.0	7.0
59N	0.5	0.6	0.7	0.5	0.4	0.3	0.4	0.6	0.7	0.9	1.4	2.1	7.0	7.0
58N	0.5	0.7	0.8	0.8	0.6	0.5	0.6	0.8	0.9	1.0	1.5	3.1	7.0	7.0
57N	0.7	0.7	0.9	0.9	0.8	0.7	0.8	0.9	1.0	1.2	1.6	5.1	7.0	7.0
56N	0.9	0.9	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.3	1.7	5.3	7.0	7.0
55N	1.3	1.3	1.3	1.4	1.3	1.2	1.1	1.2	1.2	1.6	2.2	6.5	7.0	7.0
54N	2.0	1.7	2.0	1.7	1.6	1.4	1.2	1.2	1.2	1.7	2.3	6.7	7.0	7.0
53N	3.7	2.3	2.5	2.5	1.9	1.6	1.3	1.2	1.3	1.7	2.4	7.0	7.0	7.0
52N	6.3	3.2	3.2	3.2	2.7	1.9	1.4	1.2	1.3	1.8	2.5	7.0	7.0	7.0
51N	7.0	4.3	4.1	4.0	3.4	2.2	1.6	1.3	1.6	1.9	2.7	7.0	7.0	7.0
50N	7.0	5.8	5.3	5.0	4.2	3.0	1.9	1.6	1.7	2.1	2.8	7.0	7.0	7.0
49N	7.0	7.0	6.7	6.1	5.2	3.7	2.4	1.9	2.0	2.3	3.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	6.4	4.4	3.0	2.4	2.3	2.5	4.7	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	5.2	3.8	2.9	2.6	2.8	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	6.3	7.0	5.7	4.1	3.4	3.0	3.1	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	5.4	7.0	6.3	4.2	3.8	3.4	4.1	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	5.2	7.0	7.0	4.1	4.2	3.8	4.7	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	6.7	7.0	7.0	4.3	4.8	4.3	5.5	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	5.0	5.5	5.8	6.3	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.7	6.8	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL380 – No ozone converter – p2
Figure 05–07–9

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 370																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89N	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0
88N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
87N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8
86N	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
85N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7
84N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6
83N	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
82N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5
81N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80N	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4
79N	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4
78N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3
77N	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2
76N	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1
75N	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.1	1.1	1.0
74N	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.1	1.1	1.0
73N	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.9	1.0	1.1	1.1	1.2	1.2	1.1	1.1
72N	1.0	0.8	0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.9	1.1	1.1	1.2	1.2	1.2	1.1
71N	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.2	1.2	1.2
70N	0.9	0.8	0.7	0.7	0.6	0.5	0.5	0.5	0.6	0.7	0.9	1.0	1.1	1.2	1.3	1.3	1.2
69N	0.9	0.8	0.7	0.6	0.5	0.5	0.0	0.0	0.5	0.7	0.8	1.0	1.2	1.3	1.3	1.3	1.3
68N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.6	0.8	1.0	1.2	1.3	1.4	1.4	1.4
67N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.2	1.4	1.5	1.5	1.4
66N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.6	0.8	1.1	1.3	1.5	1.6	1.5	1.5
65N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.6	0.9	1.1	1.4	1.6	1.7	1.6	1.6
64N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.6	1.0	1.4	1.6	1.8	1.8	1.7	1.6
63N	1.0	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.7	1.1	1.6	2.0	2.3	2.1	1.9	1.7
62N	1.0	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.8	1.2	1.8	2.4	2.8	2.5	2.1	1.7
61N	1.1	0.9	0.8	0.7	0.6	0.5	0.0	0.5	0.6	0.9	1.5	2.5	3.7	3.6	3.0	2.3	1.9
60N	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.6	0.7	1.1	1.8	3.2	5.1	5.0	4.1	2.6	1.9
59N	1.2	1.0	0.8	0.7	0.7	0.6	0.6	0.7	0.8	1.3	2.3	4.5	6.6	7.0	5.5	3.1	1.9
58N	1.2	1.1	0.9	0.8	0.7	0.7	0.7	0.8	1.0	1.6	3.1	7.0	7.0	7.0	7.0	4.2	2.1
57N	1.3	1.1	1.0	0.9	0.8	0.8	0.8	0.9	1.2	2.0	4.4	7.0	7.0	7.0	7.0	6.0	2.6
56N	1.3	1.3	1.1	0.9	0.9	0.8	0.9	1.1	1.5	2.6	7.0	7.0	7.0	7.0	7.0	7.0	3.5
55N	1.6	1.4	1.2	1.1	1.0	1.0	1.1	1.3	1.9	3.6	7.0	7.0	7.0	7.0	7.0	7.0	6.5
54N	1.7	1.5	1.3	1.2	1.1	1.2	1.3	1.5	2.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	1.9	1.6	1.6	1.3	1.2	1.4	1.5	2.0	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	2.0	1.8	1.7	1.5	1.5	1.6	1.8	2.5	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	2.2	1.9	1.9	1.6	1.7	1.8	2.2	3.1	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	2.4	2.4	2.1	1.8	1.9	2.1	2.6	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	2.6	2.6	2.4	2.0	2.2	2.5	3.2	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	2.9	3.0	2.8	2.3	2.5	3.0	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	4.7	3.4	3.2	3.2	3.3	3.6	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	5.5	3.9	3.7	3.8	4.1	4.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	6.7	4.5	4.4	6.2	5.2	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL370 – No ozone converter – p1
Figure 05–07–10

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1
88N	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1
87N	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2
86N	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.0	2.0	2.1	2.2	2.2
85N	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.4
84N	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.4
83N	1.5	1.6	1.6	1.7	1.8	1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.3	2.5
82N	1.5	1.5	1.5	1.6	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.2	2.4	2.7
81N	1.4	1.4	1.4	1.5	1.6	1.8	1.8	1.9	2.0	2.0	2.1	2.3	2.6	2.9
80N	1.4	1.3	1.3	1.4	1.6	1.9	2.0	2.1	2.1	2.2	2.3	2.5	2.8	3.2
79N	1.4	1.4	1.4	1.5	1.9	2.3	2.5	2.5	2.5	2.5	2.5	2.8	3.1	3.6
78N	1.3	1.4	1.5	1.8	2.6	3.8	3.9	3.2	2.9	2.7	2.8	3.0	3.5	4.1
77N	1.2	1.3	1.5	2.0	3.7	7.0	6.3	4.0	3.1	2.9	3.0	3.3	3.9	4.9
76N	1.0	1.1	1.4	2.0	3.8	7.0	6.5	4.1	3.2	3.0	3.2	3.6	4.6	6.2
75N	1.0	1.0	1.3	1.9	3.0	4.5	4.6	3.6	3.1	3.0	3.3	4.0	5.4	7.0
74N	1.0	1.0	1.3	1.7	2.3	3.0	3.3	3.0	2.9	2.9	3.4	4.4	6.9	7.0
73N	1.0	1.1	1.3	1.6	1.9	2.3	2.6	2.6	2.6	2.8	3.5	4.8	7.0	7.0
72N	1.1	1.1	1.3	1.5	1.8	2.0	2.1	2.2	2.4	2.6	3.2	5.2	7.0	7.0
71N	1.2	1.2	1.4	1.5	1.6	1.7	1.8	1.9	2.1	2.5	3.1	5.4	7.0	7.0
70N	1.2	1.2	1.4	1.4	1.4	1.5	1.5	1.7	1.9	2.3	3.0	5.8	7.0	7.0
69N	1.2	1.2	1.4	1.3	1.3	1.2	1.3	1.4	1.7	2.1	2.8	5.6	7.0	7.0
68N	1.3	1.3	1.3	1.3	1.1	1.1	1.1	1.3	1.6	2.0	2.7	5.3	7.0	7.0
67N	1.4	1.3	1.3	1.2	1.0	0.9	1.0	1.1	1.4	1.9	2.9	4.9	7.0	7.0
66N	1.4	1.5	1.3	1.1	0.9	0.8	0.8	1.0	1.3	1.8	2.8	4.6	7.0	7.0
65N	1.6	1.5	1.3	1.1	0.9	0.7	0.8	1.0	1.3	1.7	2.7	4.3	7.0	7.0
64N	1.6	1.5	1.3	1.1	0.8	0.7	0.8	1.0	1.2	1.6	2.6	4.1	7.0	7.0
63N	1.7	1.6	1.3	1.1	0.9	0.7	0.8	1.0	1.2	1.6	2.5	4.0	7.0	7.0
62N	1.6	1.6	1.4	1.2	0.9	0.8	0.8	1.0	1.3	1.7	2.5	4.0	7.0	7.0
61N	1.5	1.5	1.5	1.2	1.0	0.9	0.9	1.1	1.4	1.7	2.6	3.9	7.0	7.0
60N	1.4	1.5	1.5	1.3	1.1	1.0	1.0	1.2	1.5	1.8	2.6	3.9	7.0	7.0
59N	1.4	1.5	1.6	1.4	1.3	1.2	1.3	1.5	1.6	1.9	2.7	4.0	7.0	7.0
58N	1.4	1.6	1.8	1.7	1.5	1.4	1.5	1.7	1.9	2.0	2.7	6.2	7.0	7.0
57N	1.6	1.7	1.9	1.9	1.7	1.6	1.8	2.0	2.0	2.4	3.1	7.0	7.0	7.0
56N	1.9	1.9	2.1	2.1	2.0	2.0	2.1	2.2	2.2	2.5	3.1	7.0	7.0	7.0
55N	2.5	2.5	2.4	2.7	2.5	2.4	2.3	2.4	2.4	3.1	4.2	7.0	7.0	7.0
54N	3.6	3.2	3.7	3.3	3.0	2.7	2.5	2.4	2.5	3.2	4.4	7.0	7.0	7.0
53N	7.0	4.3	4.8	5.0	3.7	3.1	2.6	2.4	2.6	3.3	4.6	7.0	7.0	7.0
52N	7.0	6.3	6.7	6.9	5.6	3.7	2.8	2.5	2.7	3.5	4.9	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	4.5	3.2	2.7	3.0	3.7	5.2	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	6.6	3.8	3.1	3.4	4.0	5.6	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.8	3.8	4.4	6.2	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.7	4.4	5.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.3	5.6	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	6.5	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL370 – No ozone converter – p2
Figure 05–07–11

North America - Maximum Flight duration in hour, JANUARY WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89N	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7
88N	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87N	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3
86N	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3
85N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.2
84N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.1
83N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0
82N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9
81N	1.6	1.6	1.6	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8
80N	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8
79N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.7
78N	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.6	1.6	1.6
77N	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.5
76N	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.4	1.4
75N	1.1	1.0	1.0	1.0	0.9	0.9	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.3
74N	1.1	1.0	0.9	0.9	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.3	1.4	1.4	1.4	1.4	1.3
73N	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.8	0.8	0.9	1.1	1.2	1.4	1.4	1.5	1.4	1.3
72N	1.0	0.9	0.8	0.7	0.7	0.6	0.6	0.7	0.7	0.9	1.0	1.2	1.3	1.4	1.5	1.5	1.4
71N	1.0	0.9	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.8	1.0	1.1	1.3	1.5	1.5	1.5	1.5
70N	0.9	0.8	0.7	0.7	0.6	0.5	0.0	0.5	0.6	0.7	0.9	1.1	1.3	1.5	1.6	1.6	1.6
69N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.7	0.9	1.1	1.3	1.5	1.6	1.7	1.7
68N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.6	0.8	1.1	1.4	1.6	1.7	1.7	1.7
67N	0.9	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.1	1.4	1.7	1.8	1.8	1.8
66N	0.9	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.1	1.5	1.8	1.9	2.0	1.9
65N	0.9	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.9	1.2	1.6	1.9	2.1	2.1	2.0
64N	0.9	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.6	1.0	1.5	1.8	2.2	2.3	2.2	2.1
63N	1.0	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.7	1.1	1.7	2.4	3.0	2.6	2.4	2.1
62N	1.0	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.8	1.2	2.0	3.0	3.7	3.4	2.8	2.2
61N	1.1	0.9	0.7	0.6	0.6	0.0	0.0	0.0	0.6	0.9	1.5	2.7	4.7	5.4	4.2	3.1	2.5
60N	1.1	0.9	0.8	0.7	0.6	0.5	0.5	0.5	0.7	1.1	1.9	3.7	7.0	7.0	6.7	3.5	2.4
59N	1.2	1.0	0.8	0.7	0.6	0.6	0.6	0.6	0.8	1.3	2.4	5.8	7.0	7.0	7.0	4.6	2.4
58N	1.2	1.0	0.9	0.8	0.7	0.7	0.7	0.7	1.0	1.6	3.4	7.0	7.0	7.0	7.0	7.0	2.7
57N	1.3	1.1	1.0	0.8	0.8	0.7	0.8	0.9	1.2	2.1	5.4	7.0	7.0	7.0	7.0	7.0	3.6
56N	1.4	1.3	1.1	0.9	0.8	0.8	0.9	1.1	1.5	2.8	7.0	7.0	7.0	7.0	7.0	7.0	5.6
55N	1.6	1.4	1.2	1.1	1.0	1.0	1.0	1.3	1.9	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	1.8	1.5	1.3	1.2	1.1	1.2	1.3	1.5	2.4	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	1.9	1.6	1.6	1.3	1.2	1.3	1.5	2.0	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	2.1	1.8	1.7	1.5	1.5	1.5	1.8	2.5	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	2.3	2.0	1.9	1.6	1.7	1.8	2.2	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	2.5	2.5	2.2	1.8	1.9	2.1	2.7	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	2.8	2.8	2.5	2.1	2.2	2.5	3.4	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	3.2	3.2	2.9	2.4	2.6	3.1	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	5.2	3.6	3.4	3.3	3.5	3.8	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	6.3	4.3	4.0	4.0	4.3	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	5.1	4.9	6.8	5.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	6.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL360 – No ozone converter – p1
Figure 05–07–12

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89N	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9
88N	2.5	2.5	2.5	2.5	2.5	2.7	2.7	2.8	2.8	2.9	2.9	3.0	2.9	3.0
87N	2.4	2.4	2.4	2.4	2.5	2.5	2.6	2.7	2.7	2.8	2.9	2.9	3.0	3.1
86N	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.6	2.6	2.7	2.8	2.9	3.0	3.1
85N	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.6	2.6	2.7	2.8	3.3	3.6
84N	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.6	2.7	3.0	3.3	3.6
83N	2.0	2.1	2.1	2.2	2.3	2.4	2.4	2.4	2.4	2.6	2.7	3.0	3.4	3.8
82N	1.9	1.9	2.0	2.1	2.2	2.4	2.4	2.4	2.5	2.6	2.8	3.1	3.6	4.2
81N	1.8	1.8	1.8	1.9	2.1	2.3	2.4	2.5	2.6	2.8	3.0	3.4	3.9	4.8
80N	1.8	1.7	1.7	1.8	2.1	2.5	2.7	2.9	3.0	3.1	3.4	3.9	4.5	5.6
79N	1.8	1.8	1.8	2.0	2.5	3.2	3.6	3.6	3.6	3.6	3.8	4.5	5.3	6.9
78N	1.7	1.8	1.9	2.4	3.7	6.2	6.6	5.1	4.4	4.2	4.4	5.1	6.6	7.0
77N	1.5	1.7	2.0	2.8	5.9	7.0	7.0	6.7	4.9	4.7	5.1	6.0	7.0	7.0
76N	1.3	1.4	1.8	2.8	6.2	7.0	7.0	7.0	5.3	4.9	5.7	7.0	7.0	7.0
75N	1.2	1.3	1.7	2.5	4.5	7.0	7.0	6.2	5.1	5.0	6.3	7.0	7.0	7.0
74N	1.2	1.3	1.7	2.3	3.4	4.6	5.5	5.1	4.7	5.0	6.9	7.0	7.0	7.0
73N	1.3	1.4	1.7	2.1	2.7	3.4	4.1	4.2	4.3	4.8	7.0	7.0	7.0	7.0
72N	1.4	1.5	1.8	2.2	2.6	3.0	3.4	3.6	3.9	4.6	6.6	7.0	7.0	7.0
71N	1.5	1.6	1.9	2.1	2.3	2.5	2.8	3.1	3.6	4.4	6.6	7.0	7.0	7.0
70N	1.5	1.6	1.9	2.0	2.1	2.3	2.4	2.7	3.2	4.1	6.3	7.0	7.0	7.0
69N	1.6	1.6	1.9	2.0	2.0	2.0	2.1	2.3	2.9	3.8	5.9	7.0	7.0	7.0
68N	1.7	1.7	1.9	1.9	1.8	1.7	1.8	2.0	2.6	3.5	5.5	7.0	7.0	7.0
67N	1.8	1.7	1.9	1.8	1.6	1.5	1.6	1.8	2.3	3.3	6.9	7.0	7.0	7.0
66N	1.9	2.1	1.9	1.8	1.5	1.3	1.4	1.7	2.1	3.1	6.4	7.0	7.0	7.0
65N	2.2	2.1	1.9	1.7	1.4	1.2	1.3	1.6	2.1	2.9	6.1	7.0	7.0	7.0
64N	2.2	2.0	1.9	1.7	1.4	1.2	1.3	1.6	2.0	2.8	5.8	7.0	7.0	7.0
63N	2.2	2.1	1.9	1.7	1.4	1.2	1.3	1.6	2.1	2.8	5.5	7.0	7.0	7.0
62N	2.0	2.0	2.0	1.8	1.5	1.3	1.4	1.7	2.1	2.8	5.5	7.0	7.0	7.0
61N	1.9	1.9	2.0	1.9	1.6	1.4	1.5	1.8	2.2	2.9	5.5	7.0	7.0	7.0
60N	1.7	1.8	2.1	2.0	1.8	1.6	1.7	2.0	2.4	3.0	5.7	7.0	7.0	7.0
59N	1.6	1.8	2.1	2.2	2.1	2.0	2.1	2.5	2.6	3.4	5.8	7.0	7.0	7.0
58N	1.7	1.9	2.4	2.7	2.5	2.3	2.5	2.8	3.1	3.5	5.9	7.0	7.0	7.0
57N	1.9	2.1	2.7	3.1	3.0	2.7	2.9	3.2	3.3	4.5	7.0	7.0	7.0	7.0
56N	2.4	2.4	3.2	3.5	3.5	3.6	3.5	3.5	3.6	4.7	7.0	7.0	7.0	7.0
55N	3.5	3.5	3.9	5.1	4.9	4.3	3.8	3.6	4.0	6.4	7.0	7.0	7.0	7.0
54N	6.0	5.1	7.0	7.0	6.5	5.2	4.1	3.6	4.1	6.7	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	6.5	4.3	3.6	4.2	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.8	4.4	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.2	5.5	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	6.5	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL360 – No ozone converter – p2
Figure 05–07–13

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 350																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	6.6	6.6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.6	6.6	6.6	6.7	6.7	6.8
88N	5.9	5.4	5.4	5.3	5.3	5.3	5.3	5.4	5.4	5.4	5.4	5.5	5.6	5.6	5.6	5.7	5.8
87N	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.9	4.9	5.0	5.0	5.1	5.2	5.3	5.4	5.5
86N	4.4	4.3	4.3	4.3	4.3	4.3	4.4	4.4	4.5	4.5	4.6	4.7	4.8	4.9	5.0	5.1	5.2
85N	4.0	3.9	3.9	3.9	3.9	3.9	4.0	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.7	4.9	5.0
84N	3.6	3.5	3.5	3.5	3.5	3.6	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.5	4.6	4.8
83N	3.2	3.2	3.1	3.1	3.2	3.2	3.3	3.4	3.4	3.6	3.7	3.8	4.0	4.1	4.2	4.4	4.5
82N	2.9	2.9	2.8	2.8	2.9	2.9	2.9	3.0	3.1	3.3	3.4	3.5	3.7	3.9	4.0	4.2	4.2
81N	2.6	2.6	2.5	2.5	2.5	2.6	2.6	2.7	2.8	3.0	3.1	3.3	3.5	3.7	3.8	4.0	4.0
80N	2.4	2.3	2.2	2.2	2.2	2.3	2.3	2.5	2.6	2.7	2.9	3.1	3.3	3.4	3.6	3.8	3.9
79N	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.5	2.7	2.9	3.0	3.2	3.4	3.5	3.7
78N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	2.1	2.2	2.4	2.6	2.8	3.0	3.1	3.2	3.3
77N	1.7	1.7	1.6	1.6	1.5	1.6	1.6	1.7	1.8	2.0	2.2	2.4	2.6	2.8	2.9	2.9	2.9
76N	1.6	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.6	1.8	2.1	2.3	2.5	2.7	2.7	2.7	2.5
75N	1.5	1.4	1.3	1.3	1.2	1.2	1.2	1.3	1.4	1.6	1.9	2.1	2.4	2.5	2.6	2.6	2.4
74N	1.5	1.3	1.2	1.1	1.1	1.0	1.1	1.1	1.2	1.4	1.7	2.0	2.3	2.5	2.6	2.5	2.4
73N	1.4	1.2	1.1	1.0	0.9	0.9	0.9	1.0	1.1	1.3	1.5	1.9	2.2	2.5	2.6	2.6	2.5
72N	1.3	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.9	1.1	1.4	1.7	2.1	2.5	2.6	2.7	2.6
71N	1.2	1.1	0.9	0.8	0.8	0.7	0.7	0.7	0.8	1.0	1.3	1.6	2.1	2.4	2.7	2.8	2.8
70N	1.2	1.0	0.9	0.8	0.7	0.6	0.6	0.6	0.7	0.9	1.2	1.6	2.0	2.4	2.8	2.9	3.0
69N	1.2	1.0	0.9	0.7	0.6	0.6	0.5	0.5	0.6	0.8	1.1	1.5	2.0	2.5	2.9	3.1	3.1
68N	1.1	1.0	0.8	0.7	0.6	0.5	0.0	0.0	0.5	0.7	1.0	1.5	2.1	2.6	3.0	3.3	3.4
67N	1.1	1.0	0.8	0.7	0.6	0.0	0.0	0.0	0.5	0.7	1.0	1.5	2.1	2.8	3.3	3.5	3.6
66N	1.1	0.9	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.7	1.0	1.6	2.3	3.1	3.6	3.9	3.9
65N	1.2	0.9	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.7	1.1	1.7	2.6	3.5	4.2	4.4	4.2
64N	1.2	1.0	0.8	0.7	0.6	0.0	0.0	0.0	0.0	0.7	1.2	2.1	3.0	4.2	5.0	5.0	4.5
63N	1.2	1.0	0.8	0.7	0.6	0.0	0.0	0.0	0.5	0.8	1.4	2.6	4.5	7.0	6.4	5.7	4.7
62N	1.3	1.0	0.9	0.7	0.6	0.5	0.0	0.0	0.6	0.9	1.6	3.2	6.7	7.0	7.0	7.0	5.1
61N	1.4	1.1	0.9	0.8	0.7	0.6	0.5	0.5	0.7	1.1	2.1	5.2	7.0	7.0	7.0	7.0	7.0
60N	1.5	1.2	1.0	0.8	0.7	0.6	0.6	0.6	0.8	1.3	2.8	7.0	7.0	7.0	7.0	7.0	6.8
59N	1.5	1.3	1.0	0.9	0.8	0.7	0.7	0.7	1.0	1.7	4.1	7.0	7.0	7.0	7.0	7.0	7.0
58N	1.6	1.3	1.1	1.0	0.9	0.8	0.8	0.9	1.2	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	1.7	1.4	1.2	1.0	0.9	0.9	0.9	1.1	1.6	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	1.9	1.7	1.4	1.1	1.0	1.0	1.1	1.3	2.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	2.3	1.9	1.5	1.4	1.2	1.3	1.3	1.6	2.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	2.6	2.1	1.7	1.5	1.4	1.5	1.7	2.1	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	2.9	2.3	2.1	1.7	1.6	1.8	2.1	3.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	3.2	2.6	2.4	2.0	2.0	2.1	2.6	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	3.7	2.9	2.8	2.3	2.3	2.6	3.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	4.3	3.9	3.3	2.6	2.8	3.2	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	5.0	4.7	4.0	3.1	3.4	4.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	6.1	5.8	4.9	3.8	4.4	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	6.4	6.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL350 – No ozone converter – p1
Figure 05–07–14

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 350														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	6.8	6.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	5.9	6.0	6.1	6.2	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	5.6	5.7	5.9	5.9	6.1	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	5.4	5.5	5.6	5.8	5.9	6.1	6.3	6.9	7.0	7.0	7.0	7.0	7.0	7.0
85N	5.2	5.3	5.5	5.6	5.9	6.0	6.1	6.3	6.8	7.0	7.0	7.0	7.0	7.0
84N	4.9	5.1	5.3	5.6	5.8	5.9	6.1	6.2	6.5	6.8	7.0	7.0	7.0	7.0
83N	4.6	4.8	5.0	5.3	5.7	6.0	6.1	6.1	6.2	7.0	7.0	7.0	7.0	7.0
82N	4.3	4.4	4.5	4.9	5.5	5.9	6.1	6.2	6.5	7.0	7.0	7.0	7.0	7.0
81N	4.1	4.1	4.1	4.4	5.1	5.8	6.3	6.5	7.0	7.0	7.0	7.0	7.0	7.0
80N	4.0	3.9	3.9	4.2	5.2	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	3.8	4.0	4.1	4.6	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	3.5	3.9	4.4	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	2.9	3.3	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	2.4	2.8	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	2.2	2.5	3.4	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.3	2.5	3.2	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	2.4	2.7	3.2	4.4	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	2.6	2.8	3.7	4.7	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	2.8	3.0	3.9	4.4	5.0	5.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	2.9	3.0	4.0	4.2	4.3	4.6	4.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0
69N	3.0	3.1	4.0	3.9	3.8	3.7	3.9	4.6	7.0	7.0	7.0	7.0	7.0	7.0
68N	3.4	3.1	3.9	3.6	3.2	2.9	3.1	3.8	5.9	7.0	7.0	7.0	7.0	7.0
67N	3.6	3.2	3.9	3.4	2.8	2.4	2.6	3.2	4.6	7.0	7.0	7.0	7.0	7.0
66N	3.7	4.6	3.8	3.2	2.5	2.1	2.2	2.9	4.1	7.0	7.0	7.0	7.0	7.0
65N	5.4	4.7	3.8	3.0	2.3	1.9	2.0	2.6	3.8	7.0	7.0	7.0	7.0	7.0
64N	5.4	4.3	3.8	3.0	2.2	1.8	1.9	2.6	3.7	6.7	7.0	7.0	7.0	7.0
63N	5.4	4.9	3.9	3.1	2.3	1.8	2.0	2.6	3.7	6.5	7.0	7.0	7.0	7.0
62N	4.8	4.7	4.2	3.4	2.4	2.0	2.1	2.8	3.9	6.6	7.0	7.0	7.0	7.0
61N	4.2	4.4	4.3	3.6	2.7	2.2	2.4	3.1	4.2	6.8	7.0	7.0	7.0	7.0
60N	3.7	4.1	4.5	4.0	3.1	2.7	2.8	3.6	4.6	7.0	7.0	7.0	7.0	7.0
59N	3.5	4.1	4.8	4.4	3.9	3.4	3.7	4.8	5.1	7.0	7.0	7.0	7.0	7.0
58N	3.6	4.3	6.1	6.5	5.2	4.4	4.8	5.8	6.9	7.0	7.0	7.0	7.0	7.0
57N	4.3	5.1	7.0	7.0	6.9	5.6	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	6.5	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL350 – No ozone converter – p2
Figure 05–07–15

	North America –Maximum Flight duration in hour, JANUARY WOUDC FL 340																
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	6.6	6.4	6.3	6.3	6.4	6.6	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	5.5	5.3	5.3	5.1	5.2	5.4	5.6	6.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	4.7	4.5	4.3	4.3	4.4	4.5	4.7	5.0	5.5	6.1	6.8	7.0	7.0	7.0	7.0	7.0	7.0
79N	4.0	3.8	3.7	3.6	3.7	3.8	3.9	4.2	4.6	5.2	5.9	6.7	7.0	7.0	7.0	7.0	7.0
78N	3.4	3.3	3.1	3.1	3.1	3.1	3.3	3.5	3.9	4.4	5.1	5.9	6.8	7.0	7.0	7.0	7.0
77N	3.0	2.8	2.7	2.6	2.6	2.6	2.7	2.9	3.2	3.7	4.3	5.2	6.1	7.0	7.0	7.0	7.0
76N	2.7	2.5	2.3	2.3	2.3	2.3	2.3	2.5	2.8	3.3	4.0	4.8	5.5	6.4	7.0	7.0	6.9
75N	2.4	2.2	2.1	2.0	1.9	1.9	1.9	2.1	2.4	2.8	3.4	4.2	5.2	6.0	6.7	6.9	6.4
74N	2.5	2.1	1.9	1.7	1.6	1.6	1.6	1.7	2.0	2.4	2.9	3.7	4.9	6.0	6.4	6.7	6.4
73N	2.3	1.9	1.7	1.5	1.4	1.3	1.3	1.4	1.6	2.0	2.6	3.5	4.6	5.7	6.7	7.0	6.7
72N	2.1	1.7	1.5	1.3	1.2	1.1	1.1	1.2	1.4	1.7	2.3	3.1	4.3	5.6	6.6	7.0	7.0
71N	2.0	1.7	1.4	1.2	1.1	1.0	0.9	1.0	1.2	1.5	2.0	2.9	4.1	5.5	6.7	7.0	7.0
70N	1.9	1.6	1.4	1.1	1.0	0.9	0.8	0.8	1.0	1.3	1.8	2.7	4.0	5.5	6.9	7.0	7.0
69N	1.8	1.5	1.3	1.1	0.9	0.8	0.7	0.7	0.9	1.2	1.7	2.6	3.9	5.7	7.0	7.0	7.0
68N	1.8	1.5	1.2	1.0	0.8	0.7	0.6	0.6	0.8	1.1	1.6	2.5	4.1	6.2	7.0	7.0	7.0
67N	1.7	1.4	1.2	1.0	0.8	0.7	0.6	0.6	0.7	1.0	1.6	2.6	4.3	7.0	7.0	7.0	7.0
66N	1.7	1.4	1.1	1.0	0.8	0.6	0.6	0.6	0.7	1.0	1.6	2.7	4.9	7.0	7.0	7.0	7.0
65N	1.9	1.4	1.2	1.0	0.8	0.6	0.5	0.5	0.7	1.0	1.8	3.0	6.1	7.0	7.0	7.0	7.0
64N	1.9	1.4	1.2	1.0	0.8	0.6	0.6	0.6	0.7	1.1	2.0	4.6	7.0	7.0	7.0	7.0	7.0
63N	1.9	1.5	1.2	1.0	0.8	0.7	0.6	0.6	0.8	1.2	2.3	6.4	7.0	7.0	7.0	7.0	7.0
62N	2.0	1.6	1.3	1.1	0.9	0.7	0.6	0.7	0.9	1.4	3.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	2.3	1.8	1.4	1.1	0.9	0.8	0.7	0.8	1.0	1.7	4.4	7.0	7.0	7.0	7.0	7.0	7.0
60N	2.5	1.9	1.4	1.2	1.0	0.9	0.8	0.9	1.2	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	2.7	2.0	1.5	1.3	1.1	1.0	1.0	1.1	1.5	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	2.9	2.2	1.8	1.4	1.3	1.2	1.1	1.3	2.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	3.2	2.4	1.9	1.6	1.4	1.3	1.4	1.7	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	3.5	3.1	2.4	1.8	1.6	1.6	1.7	2.2	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	5.1	3.6	2.7	2.3	2.0	2.1	2.1	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	6.2	4.2	3.2	2.7	2.4	2.6	3.1	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	5.1	4.4	3.2	2.9	3.3	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	6.5	5.6	4.0	4.0	4.5	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	5.1	5.4	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL340 – No ozone converter – p1
Figure 05–07–16

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 340														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	6.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	6.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	6.1	4.9	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	4.6	3.6	3.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	6.1	3.8	2.8	3.1	4.5	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	5.5	3.3	2.4	2.6	4.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	5.4	3.1	2.3	2.5	3.8	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	5.7	3.2	2.3	2.5	4.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	6.6	3.5	2.6	2.8	4.4	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	4.2	3.1	3.4	5.4	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	5.4	4.2	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL340 – No ozone converter – p2
Figure 05–07–17

	North America –Maximum Flight duration in hour, JANUARY WOUDC FL 330																
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	6.3	6.3	5.9	5.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	6.7	5.7	5.4	4.8	4.5	4.4	4.6	5.1	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	5.2	4.4	3.9	3.5	3.4	3.4	3.8	4.6	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	6.2	4.4	3.7	3.2	2.8	2.7	2.7	2.9	3.5	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	5.4	3.9	3.2	2.7	2.3	2.1	2.1	2.3	2.8	3.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0
71N	4.9	3.8	2.8	2.3	2.1	1.9	1.7	1.8	2.2	3.1	5.1	7.0	7.0	7.0	7.0	7.0	7.0
70N	4.5	3.4	2.8	2.2	1.8	1.6	1.4	1.5	1.8	2.6	4.4	7.0	7.0	7.0	7.0	7.0	7.0
69N	4.2	3.2	2.5	2.0	1.6	1.3	1.2	1.3	1.5	2.2	3.9	7.0	7.0	7.0	7.0	7.0	7.0
68N	4.1	3.1	2.3	1.9	1.5	1.2	1.1	1.1	1.3	2.0	3.6	7.0	7.0	7.0	7.0	7.0	7.0
67N	4.0	3.0	2.2	1.8	1.4	1.1	1.0	1.0	1.2	1.8	3.5	7.0	7.0	7.0	7.0	7.0	7.0
66N	4.0	2.9	2.2	1.8	1.4	1.1	0.9	0.9	1.2	1.9	3.5	7.0	7.0	7.0	7.0	7.0	7.0
65N	4.6	2.9	2.3	1.8	1.4	1.1	0.9	0.9	1.1	1.9	4.7	7.0	7.0	7.0	7.0	7.0	7.0
64N	4.8	3.0	2.4	1.8	1.4	1.1	0.9	0.9	1.2	2.1	5.9	7.0	7.0	7.0	7.0	7.0	7.0
63N	5.1	3.4	2.5	1.9	1.5	1.2	1.0	1.0	1.3	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	5.5	3.6	2.6	2.1	1.6	1.3	1.1	1.1	1.5	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	4.5	2.8	2.2	1.7	1.4	1.3	1.3	1.9	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	5.1	3.1	2.5	2.0	1.6	1.5	1.7	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	5.9	3.5	2.8	2.2	1.9	1.8	2.1	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	4.5	3.2	2.6	2.3	2.3	3.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	5.3	3.8	3.2	2.9	3.2	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	4.7	4.0	3.8	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	6.3	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL330 – No ozone converter – p1
Figure 05–07–18

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 330														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	5.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	4.7	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	5.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL330 – No ozone converter – p2
Figure 05–07–19

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 320																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	6.3	5.2	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	6.8	4.6	3.8	4.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	5.5	3.8	3.1	3.2	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	5.2	3.3	2.6	2.7	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	4.8	3.1	2.4	2.4	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	4.8	3.0	2.3	2.3	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	5.1	3.2	2.4	2.5	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	5.8	3.5	2.7	2.8	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	4.2	3.3	3.5	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	5.5	4.3	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL320 – No ozone converter – p1
Figure 05–07–20

North America –Maximum Flight duration in hour, JANUARY WOUDC FL 320														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – January – FL320 – No ozone converter – p2
Figure 05–07–21

B. North America – February

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	1.1	0.0	0.0	0.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.7	3.7	0.8	0.0	0.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.2	7.0	1.9	0.0	0.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.0	6.3	7.0	2.8	0.0	0.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	3.4	7.0	7.0	2.9	0.3	0.0
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	7.0	7.0	7.0	3.0	0.7	0.0
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.9	7.0	7.0	7.0	2.5	0.8	0.3
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9	2.2	7.0	7.0	7.0	2.3	0.8	0.5
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	2.4	7.0	7.0	7.0	2.3	0.9	0.7
48N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.4	3.9	7.0	7.0	7.0	3.3	1.2	1.0
47N	0.0	0.0	0.1	0.1	0.4	0.0	0.1	0.3	0.8	1.6	5.7	7.0	7.0	7.0	4.0	1.7	2.2
46N	1.0	0.2	0.3	0.7	0.7	0.2	0.3	0.6	1.0	3.5	5.8	7.0	7.0	7.0	5.0	2.7	3.2
45N	1.3	0.4	0.6	2.5	1.2	0.5	0.6	0.8	1.2	3.9	5.9	7.0	7.0	7.0	6.8	6.0	4.8
44N	1.7	0.7	0.9	3.3	1.7	0.9	1.0	1.2	1.5	4.3	5.9	6.4	7.0	7.0	7.0	7.0	7.0
43N	2.1	1.0	1.3	4.4	2.4	1.4	1.5	1.6	3.9	4.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0
42N	2.6	1.4	4.8	6.1	3.3	2.1	2.0	2.0	4.6	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	3.1	7.0	6.3	7.0	4.7	3.0	2.8	2.6	5.4	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	3.9	3.3	6.4	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL410 – No ozone converter – p1
Figure 05–07–22

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	5.9
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	7.0
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.0
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	7.0
48N	0.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	7.0
47N	2.2	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.7	7.0
46N	3.2	1.9	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	7.0
45N	4.4	2.7	0.4	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.6	7.0
44N	6.3	4.0	0.8	0.0	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.3	4.2	7.0
43N	7.0	6.3	1.4	0.0	2.2	0.5	0.0	0.0	0.0	0.0	0.0	0.5	4.9	7.0
42N	7.0	7.0	2.9	0.9	6.9	1.4	0.0	0.0	0.0	0.0	0.0	0.7	5.8	7.0
41N	7.0	7.0	6.8	3.9	7.0	3.4	0.0	0.0	0.0	0.0	0.0	1.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	0.6	0.0	0.0	0.0	0.2	1.3	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	1.3	0.2	0.0	0.0	0.5	1.7	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	2.2	0.5	0.3	0.2	2.1	3.7	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	3.3	1.2	0.6	0.5	2.8	5.7	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.4	0.9	2.3	3.6	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	1.3	2.9	4.6	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	2.4	3.8	5.9	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	7.0	4.9	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL410 – No ozone converter – p2
Figure 05–07–23

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.7	1.4	0.0	0.0	0.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.0	4.8	1.0	0.0	0.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.2	3.8	7.0	2.4	0.0	0.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.3	7.0	7.0	3.5	0.0	0.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	3.7	7.0	7.0	3.6	0.4	0.0
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.9	7.0	7.0	7.0	3.7	0.8	0.0
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.2	7.0	7.0	7.0	3.0	0.9	0.4
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.1	2.5	7.0	7.0	7.0	2.6	0.9	0.6
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.4	2.7	7.0	7.0	7.0	2.7	1.0	0.9
48N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	1.6	4.6	7.0	7.0	7.0	3.9	1.3	1.2
47N	0.0	0.1	0.1	0.2	0.5	0.0	0.1	0.4	0.9	1.9	6.8	7.0	7.0	7.0	4.8	2.0	2.8
46N	1.4	0.3	0.4	0.9	1.0	0.3	0.5	0.7	1.2	4.4	7.0	7.0	7.0	7.0	6.5	3.3	4.2
45N	1.8	0.6	0.8	3.3	1.5	0.7	0.8	1.1	1.6	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	2.3	0.9	1.2	4.6	2.2	1.2	1.3	1.5	1.9	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	2.8	1.3	1.8	6.3	3.2	1.9	1.9	2.0	5.2	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	3.6	1.8	7.0	7.0	4.8	2.8	2.7	2.6	6.2	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	4.4	7.0	7.0	7.0	7.0	4.2	3.8	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL400 – No ozone converter – p1
Figure 05–07–24

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.0
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	7.0
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	7.0
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.4	7.0
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	7.0
48N	0.5	1.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	7.0
47N	3.1	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.3	7.0
46N	4.6	2.9	0.3	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.1	7.0
45N	7.0	4.3	0.7	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	6.2	7.0
44N	7.0	6.9	1.2	0.0	1.4	0.1	0.0	0.0	0.0	0.0	0.0	0.4	7.0	7.0
43N	7.0	7.0	2.2	0.0	3.5	0.8	0.0	0.0	0.0	0.0	0.0	0.7	7.0	7.0
42N	7.0	7.0	4.9	1.3	7.0	2.2	0.0	0.0	0.0	0.0	0.0	1.1	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	6.2	0.1	0.0	0.0	0.0	0.0	1.5	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	1.0	0.0	0.0	0.0	0.4	1.9	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	2.1	0.4	0.1	0.0	0.7	2.5	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	3.7	0.8	0.5	0.3	3.4	6.5	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	1.8	0.9	0.8	4.7	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	1.4	3.7	6.4	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	2.0	5.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	6.9	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL400 – No ozone converter – p2
Figure 05–07–25

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1
86N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
85N	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
84N	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
83N	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82N	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0
81N	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0
80N	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
79N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
78N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
77N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0
76N	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
75N	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
74N	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0
73N	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0
72N	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0
71N	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0
70N	0.5	0.5	0.5	0.5	0.6	0.6	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0
69N	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.1
68N	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1
67N	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.2	0.1
66N	0.5	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.4	0.3	0.2	0.2
65N	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.4	0.3	0.2
64N	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.3	0.2
63N	0.7	0.6	0.6	0.7	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.6	0.4	0.3
62N	0.8	0.7	0.6	0.7	0.6	0.7	0.7	0.7	0.8	0.9	1.1	1.0	1.1	1.0	0.8	0.5	0.3
61N	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	1.0	1.2	1.2	1.3	1.3	1.0	0.6	0.3
60N	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.3	1.6	1.5	1.7	1.6	1.2	0.7	0.3
59N	0.8	0.7	0.7	0.7	0.8	0.8	0.8	0.9	1.1	1.4	1.9	2.4	2.4	2.2	1.5	0.9	0.4
58N	0.8	0.7	0.7	0.7	0.8	0.8	0.9	1.1	1.3	1.6	2.2	2.9	3.1	3.3	2.1	1.1	0.4
57N	1.1	1.1	0.7	0.7	0.8	0.9	1.1	1.2	1.4	1.9	2.6	3.6	4.1	4.9	3.3	1.4	0.5
56N	1.2	1.1	1.0	1.0	0.9	0.9	1.2	1.3	1.6	2.1	3.0	3.8	5.6	7.0	4.5	1.9	0.8
55N	1.3	1.2	1.3	1.1	1.2	1.5	1.2	1.4	1.8	2.4	3.5	4.7	7.0	7.0	6.1	2.4	1.1
54N	1.3	1.5	1.4	1.4	1.3	1.6	1.7	1.5	1.9	2.6	4.1	6.1	7.0	7.0	7.0	3.3	1.5
53N	1.4	1.5	1.5	1.6	1.4	1.8	1.9	2.1	2.1	2.9	4.7	7.0	7.0	7.0	7.0	4.0	2.2
52N	1.5	1.6	1.6	1.7	1.9	1.9	2.1	2.4	2.9	3.2	4.5	7.0	7.0	7.0	7.0	4.8	3.3
51N	1.6	1.8	2.4	1.8	2.0	2.1	2.3	2.6	3.2	4.4	6.2	7.0	7.0	7.0	7.0	5.2	4.0
50N	1.9	1.9	2.6	2.0	2.2	2.4	2.5	2.9	3.6	4.8	6.7	7.0	7.0	7.0	7.0	5.4	4.5
49N	2.7	2.9	2.9	2.2	2.5	2.6	2.8	3.2	3.9	5.3	7.0	7.0	7.0	7.0	7.0	5.5	4.9
48N	2.9	3.1	3.2	2.4	2.8	2.9	3.2	3.6	4.3	5.7	7.0	7.0	7.0	7.0	7.0	6.0	5.6
47N	3.2	3.5	3.6	3.7	4.2	3.3	3.5	4.0	4.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	5.6	3.8	4.0	4.7	4.9	3.8	4.0	4.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	6.4	4.3	4.6	7.0	5.9	4.4	4.6	5.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	4.8	5.4	7.0	7.0	5.2	5.4	5.7	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	5.6	6.4	7.0	7.0	6.5	6.5	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL390 – No ozone converter – p1
Figure 05–07–26

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
86N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2
85N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
84N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
83N	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3
81N	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3
80N	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.4
79N	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4
78N	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.4	0.5
77N	0.0	0.0	0.0	0.2	0.3	0.5	0.5	0.4	0.3	0.3	0.3	0.4	0.4	0.5
76N	0.0	0.0	0.0	0.2	0.3	0.5	0.5	0.4	0.3	0.3	0.3	0.4	0.5	0.6
75N	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.6	0.7
74N	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.6	0.9
73N	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.7	1.1
72N	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.8	1.3
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.3	0.5	0.9	1.4
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.6	0.9	1.4
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.9	1.4
68N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.8	1.2
67N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.8	1.3
66N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.8	1.3
65N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	1.3
64N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	1.4
63N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	2.0
62N	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	1.0	2.1
61N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	1.4	2.3
60N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	1.5	2.6
59N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.5	1.6	2.4
58N	0.2	0.2	0.2	0.1	0.0	0.0	0.0	0.1	0.2	0.2	0.4	0.7	1.7	6.3
57N	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.3	0.5	1.0	2.5	7.0
56N	0.4	0.3	0.4	0.3	0.2	0.2	0.3	0.4	0.3	0.4	0.5	1.1	2.7	7.0
55N	0.5	0.5	0.5	0.5	0.4	0.3	0.4	0.4	0.4	0.5	0.7	1.3	2.9	7.0
54N	0.8	0.7	0.8	0.7	0.5	0.5	0.5	0.5	0.5	0.6	0.7	1.3	3.2	7.0
53N	1.3	1.0	1.0	1.0	0.8	0.6	0.5	0.5	0.5	0.6	0.8	1.4	3.4	7.0
52N	1.8	1.3	1.3	1.3	1.1	0.7	0.6	0.5	0.5	0.7	0.8	1.5	5.0	7.0
51N	2.3	1.6	1.6	1.6	1.4	0.9	0.7	0.5	0.6	0.7	0.9	2.1	6.5	7.0
50N	2.8	2.0	2.0	2.0	1.8	1.3	0.8	0.7	0.7	0.8	0.9	2.3	7.0	7.0
49N	3.4	2.5	2.5	2.5	2.2	1.7	1.1	0.8	0.8	0.8	1.0	2.4	7.0	7.0
48N	4.1	5.1	2.9	2.9	2.6	2.1	1.5	1.0	0.9	0.9	1.3	2.7	7.0	7.0
47N	7.0	6.4	3.4	3.1	3.1	2.5	2.0	1.3	1.1	1.0	1.8	2.9	7.0	7.0
46N	7.0	7.0	3.9	3.1	3.6	2.8	2.4	1.6	1.2	1.1	2.0	3.2	7.0	7.0
45N	7.0	7.0	4.4	2.9	4.2	3.2	2.6	1.9	1.4	1.5	2.2	3.5	7.0	7.0
44N	7.0	7.0	5.3	2.8	5.5	3.5	2.7	2.1	1.6	1.7	2.5	3.9	7.0	7.0
43N	7.0	7.0	7.0	3.3	7.0	4.3	2.7	2.4	1.7	1.8	2.7	4.4	7.0	7.0
42N	7.0	7.0	7.0	5.6	7.0	6.3	3.0	2.5	2.2	2.0	3.0	4.9	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	3.4	2.9	2.4	2.2	3.3	5.5	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.3	3.1	2.4	3.9	6.3	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	6.1	3.8	3.5	3.4	4.3	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.0	3.8	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.5	4.4	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL390 – No ozone converter – p2
Figure 05–07–27

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
88N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
86N	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
85N	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
84N	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
83N	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1
82N	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
81N	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
80N	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
79N	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
78N	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
77N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0
76N	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.1	0.1	0.0	0.0	0.0
75N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0
74N	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0	0.0
73N	0.6	0.4	0.4	0.5	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.2	0.2	0.1	0.1	0.0	0.0
72N	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.2	0.1	0.1	0.0	0.0
71N	0.6	0.6	0.5	0.5	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.2	0.2	0.1	0.1	0.0
70N	0.6	0.6	0.7	0.7	0.7	0.8	0.7	0.7	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.1
69N	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.6	0.5	0.4	0.3	0.3	0.2	0.2	0.1
68N	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.8	0.7	0.6	0.5	0.4	0.3	0.3	0.2	0.2
67N	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.3	0.2
66N	0.7	0.7	0.8	0.8	0.9	0.9	1.0	1.0	0.9	0.8	0.7	0.6	0.6	0.5	0.4	0.3	0.2
65N	0.9	0.8	0.8	0.9	0.9	0.9	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.4	0.3
64N	0.9	0.8	0.8	0.9	0.8	0.9	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.7	0.6	0.4	0.3
63N	1.0	0.8	0.8	0.9	0.8	0.9	1.0	1.0	0.9	0.9	1.0	1.0	1.0	0.9	0.7	0.5	0.4
62N	1.0	0.9	0.9	0.9	0.8	1.0	1.0	1.0	1.1	1.2	1.4	1.4	1.4	1.3	1.0	0.7	0.4
61N	1.0	0.9	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.6	1.6	1.7	1.6	1.2	0.8	0.4
60N	1.0	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.7	2.2	2.0	2.2	2.1	1.5	0.9	0.4
59N	1.0	1.0	0.9	0.9	1.0	1.1	1.1	1.2	1.6	2.0	2.6	3.3	3.2	2.8	2.0	1.1	0.5
58N	1.0	1.0	0.9	1.0	1.1	1.1	1.2	1.5	1.7	2.2	3.1	4.2	4.4	4.5	2.8	1.4	0.5
57N	1.5	1.5	0.9	1.0	1.1	1.2	1.4	1.6	1.9	2.6	3.7	5.5	6.2	7.0	4.4	1.7	0.7
56N	1.6	1.6	1.4	1.3	1.1	1.2	1.5	1.8	2.2	3.0	4.5	5.9	7.0	7.0	6.4	2.4	1.0
55N	1.7	1.7	1.8	1.4	1.6	2.0	1.7	1.9	2.4	3.4	5.5	7.0	7.0	7.0	7.0	3.1	1.4
54N	1.8	2.0	1.9	2.0	1.7	2.2	2.4	2.1	2.7	3.9	6.8	7.0	7.0	7.0	7.0	4.5	2.0
53N	2.0	2.1	2.1	2.1	1.8	2.4	2.6	3.0	3.0	4.4	7.0	7.0	7.0	7.0	7.0	5.7	2.9
52N	2.1	2.3	2.2	2.3	2.6	2.7	2.9	3.4	4.4	4.9	7.0	7.0	7.0	7.0	7.0	7.0	4.6
51N	2.2	2.5	3.5	2.5	2.9	3.0	3.3	3.8	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
50N	2.8	2.7	3.9	2.7	3.2	3.4	3.7	4.3	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
49N	4.1	4.4	4.4	3.0	3.6	3.8	4.1	4.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	4.6	4.9	5.0	3.4	4.1	4.3	4.8	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	5.2	5.6	5.9	6.1	6.9	5.0	5.5	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	6.5	6.9	7.0	7.0	6.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL380 – No ozone converter – p1
Figure 05–07–28

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
88N	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
87N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3
86N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
85N	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3
84N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3
83N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3
82N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4
81N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4
80N	0.1	0.1	0.0	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.5
79N	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.6
78N	0.1	0.1	0.1	0.2	0.3	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.6
77N	0.0	0.0	0.1	0.2	0.5	0.7	0.6	0.5	0.4	0.4	0.4	0.5	0.6	0.7
76N	0.0	0.0	0.1	0.2	0.5	0.7	0.6	0.5	0.4	0.4	0.5	0.5	0.7	0.8
75N	0.0	0.0	0.1	0.2	0.4	0.5	0.5	0.5	0.4	0.4	0.5	0.6	0.8	1.0
74N	0.0	0.0	0.0	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.9	1.2
73N	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.5	0.7	1.0	1.5
72N	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.7	1.1	1.7
71N	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.7	1.1	1.9
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.7	1.2	1.9
69N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.7	1.2	1.9
68N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	1.1	1.7
67N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	1.1	1.8
66N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	1.0	1.8
65N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.9
64N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	1.0	2.0
63N	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	1.0	3.1
62N	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.4	3.5
61N	0.3	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	2.1	4.1
60N	0.3	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.7	2.2	4.7
59N	0.2	0.3	0.2	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.4	0.7	2.4	7.0
58N	0.3	0.3	0.3	0.2	0.1	0.0	0.1	0.2	0.3	0.3	0.5	1.0	2.6	7.0
57N	0.3	0.4	0.4	0.3	0.2	0.1	0.2	0.4	0.4	0.5	0.6	1.4	4.5	7.0
56N	0.5	0.4	0.5	0.4	0.3	0.3	0.4	0.5	0.5	0.5	0.7	1.5	5.0	7.0
55N	0.7	0.7	0.6	0.7	0.5	0.5	0.5	0.6	0.6	0.7	0.9	1.9	5.6	7.0
54N	1.0	0.9	1.0	0.9	0.7	0.6	0.6	0.6	0.6	0.8	1.0	2.0	6.3	7.0
53N	1.6	1.3	1.4	1.4	1.0	0.8	0.7	0.6	0.7	0.8	1.0	2.1	7.0	7.0
52N	2.3	1.7	1.7	1.8	1.5	1.0	0.8	0.7	0.7	0.9	1.1	2.3	7.0	7.0
51N	3.1	2.2	2.3	2.3	1.9	1.2	0.9	0.7	0.8	1.0	1.2	3.3	7.0	7.0
50N	3.9	2.8	3.0	3.1	2.5	1.7	1.1	0.9	0.9	1.0	1.3	3.6	7.0	7.0
49N	5.0	3.6	3.9	4.2	3.3	2.3	1.4	1.1	1.1	1.1	1.4	4.0	7.0	7.0
48N	6.4	7.0	5.2	5.5	4.3	2.8	1.9	1.4	1.2	1.3	1.9	4.5	7.0	7.0
47N	7.0	7.0	6.9	6.8	5.7	3.3	2.5	1.7	1.4	1.4	2.7	5.1	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	3.8	2.8	2.0	1.6	1.5	3.0	5.9	7.0	7.0
45N	7.0	7.0	7.0	6.9	7.0	4.2	3.0	2.4	1.9	2.0	3.4	6.8	7.0	7.0
44N	7.0	7.0	7.0	6.7	7.0	4.6	3.0	2.6	2.1	2.3	3.8	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	6.0	3.0	3.0	2.3	2.5	4.4	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	3.4	3.3	3.0	2.8	5.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	4.3	3.8	3.4	3.1	5.7	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.7	4.6	3.5	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.4	5.5	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.6	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL380 – No ozone converter – p2
Figure 05–07–29

North America –Maximum Flight duration in hour, FEBRUARY WOUDC FL 370																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89N	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88N	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
86N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
85N	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
84N	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
83N	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
82N	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9
81N	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
80N	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
79N	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
78N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8
77N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8
76N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7
75N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7
74N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.7
73N	1.5	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.7
72N	1.5	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.8
71N	1.5	1.6	1.4	1.4	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.9	0.9	0.8
70N	1.6	1.6	1.7	1.7	1.7	1.8	1.7	1.7	1.6	1.4	1.3	1.2	1.1	1.0	1.0	0.9	0.9
69N	1.6	1.6	1.7	1.8	1.8	1.9	1.8	1.8	1.7	1.5	1.4	1.3	1.2	1.1	1.0	1.0	0.9
68N	1.6	1.7	1.7	1.8	1.9	1.9	2.0	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0	1.0
67N	1.7	1.7	1.8	1.8	1.9	1.9	2.1	2.1	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0
66N	1.7	1.7	1.8	1.9	2.0	2.0	2.1	2.1	2.0	1.8	1.7	1.6	1.5	1.4	1.3	1.1	1.1
65N	2.0	1.8	1.8	1.9	2.0	2.0	2.2	2.2	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.2	1.1
64N	2.0	1.8	1.9	1.9	1.9	2.0	2.1	2.1	2.0	1.9	1.9	1.9	1.8	1.7	1.5	1.3	1.2
63N	2.1	1.8	1.9	1.9	1.9	2.0	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.6	1.4	1.2
62N	2.1	1.9	1.9	2.0	1.9	2.1	2.2	2.2	2.3	2.4	2.7	2.6	2.6	2.4	2.0	1.6	1.3
61N	2.2	2.0	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.6	3.0	3.0	3.1	2.9	2.3	1.7	1.3
60N	2.0	2.0	1.9	2.0	2.2	2.2	2.3	2.4	2.5	3.3	4.1	3.6	4.0	3.7	2.7	1.8	1.3
59N	2.1	2.0	2.0	2.0	2.2	2.3	2.3	2.5	3.0	3.7	4.9	6.6	6.0	5.1	3.4	2.1	1.3
58N	2.1	2.1	2.0	2.1	2.2	2.3	2.4	2.9	3.3	4.3	6.1	7.0	7.0	7.0	4.8	2.5	1.4
57N	2.9	2.8	2.0	2.1	2.3	2.4	2.8	3.1	3.7	5.0	7.0	7.0	7.0	7.0	7.0	3.0	1.6
56N	3.0	3.0	2.7	2.6	2.3	2.5	3.0	3.4	4.1	5.9	7.0	7.0	7.0	7.0	7.0	4.0	1.9
55N	3.2	3.1	3.4	2.7	3.1	3.8	3.2	3.7	4.7	7.0	7.0	7.0	7.0	7.0	7.0	5.2	2.4
54N	3.4	3.7	3.6	3.7	3.2	4.2	4.5	4.0	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2
53N	3.6	3.9	3.8	4.0	3.5	4.7	5.1	6.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6
52N	3.8	4.2	4.2	4.4	5.0	5.2	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	4.1	4.5	7.0	4.8	5.6	5.9	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	5.0	5.0	7.0	5.3	6.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL370 – No ozone converter – p1
Figure 05–07–30

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2
88N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.2
87N	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
86N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2
85N	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.1	1.1
84N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.2
83N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.2
82N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.2
81N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.2	1.3
80N	0.9	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.3	1.4
79N	0.9	0.9	0.9	0.9	1.0	1.1	1.2	1.1	1.1	1.1	1.2	1.2	1.3	1.5
78N	0.8	0.9	0.9	1.0	1.2	1.4	1.4	1.3	1.2	1.2	1.2	1.3	1.4	1.6
77N	0.8	0.8	0.9	1.1	1.4	1.7	1.7	1.4	1.3	1.3	1.3	1.4	1.5	1.7
76N	0.7	0.8	0.9	1.1	1.4	1.7	1.7	1.4	1.3	1.3	1.3	1.4	1.6	1.9
75N	0.7	0.7	0.8	1.0	1.3	1.5	1.5	1.4	1.3	1.3	1.4	1.5	1.7	2.1
74N	0.7	0.7	0.8	1.0	1.1	1.3	1.3	1.3	1.2	1.2	1.4	1.6	1.9	2.4
73N	0.7	0.8	0.8	0.9	1.0	1.1	1.2	1.2	1.2	1.2	1.4	1.6	2.1	2.9
72N	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.7	2.2	3.3
71N	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1	1.3	1.7	2.3	3.6
70N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.1	1.3	1.7	2.4	3.7
69N	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.9	1.0	1.2	1.7	2.3	3.6
68N	0.9	0.8	0.8	0.7	0.6	0.6	0.6	0.7	0.8	1.0	1.2	1.7	2.3	3.2
67N	0.9	0.8	0.8	0.7	0.6	0.5	0.5	0.6	0.7	0.9	1.2	1.6	2.2	3.6
66N	1.0	0.9	0.8	0.6	0.5	0.0	0.5	0.6	0.7	0.9	1.2	1.6	2.1	3.5
65N	1.0	0.9	0.8	0.6	0.5	0.0	0.0	0.5	0.7	0.9	1.2	1.6	2.1	3.7
64N	1.0	0.9	0.8	0.6	0.5	0.0	0.0	0.5	0.7	0.9	1.2	1.5	2.1	3.9
63N	1.1	1.0	0.8	0.6	0.5	0.0	0.0	0.5	0.7	0.9	1.2	1.5	2.1	6.9
62N	1.1	1.0	0.9	0.7	0.5	0.0	0.0	0.6	0.7	0.9	1.2	1.5	2.7	7.0
61N	1.1	1.1	0.9	0.7	0.5	0.5	0.5	0.6	0.8	0.9	1.2	1.6	4.0	7.0
60N	1.1	1.1	1.0	0.8	0.6	0.5	0.6	0.7	0.8	1.0	1.3	1.6	4.3	7.0
59N	1.0	1.1	1.0	0.9	0.7	0.7	0.7	0.8	0.9	1.1	1.3	1.6	4.7	7.0
58N	1.1	1.1	1.1	1.0	0.9	0.8	0.9	1.0	1.1	1.1	1.4	2.1	5.2	7.0
57N	1.1	1.2	1.2	1.1	1.0	0.9	1.0	1.2	1.2	1.3	1.5	2.7	7.0	7.0
56N	1.3	1.3	1.4	1.3	1.2	1.1	1.2	1.3	1.3	1.4	1.6	2.9	7.0	7.0
55N	1.6	1.6	1.5	1.6	1.4	1.3	1.4	1.5	1.4	1.6	1.9	3.5	7.0	7.0
54N	1.9	1.8	2.0	1.8	1.6	1.5	1.5	1.5	1.5	1.7	2.0	3.7	7.0	7.0
53N	2.8	2.3	2.4	2.5	2.0	1.7	1.6	1.5	1.5	1.8	2.1	3.9	7.0	7.0
52N	3.8	2.9	3.0	3.1	2.7	2.0	1.7	1.5	1.6	1.9	2.2	4.3	7.0	7.0
51N	5.0	3.6	3.9	4.0	3.4	2.4	1.9	1.6	1.8	1.9	2.3	6.7	7.0	7.0
50N	6.5	4.6	5.2	5.6	4.5	3.1	2.2	1.8	1.9	2.1	2.4	7.0	7.0	7.0
49N	7.0	6.2	7.0	7.0	6.2	4.0	2.7	2.1	2.1	2.2	2.6	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	5.2	3.4	2.6	2.4	2.4	3.5	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	6.7	4.7	3.1	2.7	2.6	5.1	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.7	3.0	2.9	5.9	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.4	3.4	3.7	6.9	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.0	3.9	4.2	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	4.4	4.7	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.8	5.3	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL370 – No ozone converter – p2
Figure 05–07–31

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
89N	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
88N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87N	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
86N	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2
85N	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
84N	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
83N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
82N	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1
81N	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
80N	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
79N	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
78N	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0
77N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0
76N	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9
75N	1.4	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.0	1.0	0.9	0.9
74N	1.6	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.9
73N	1.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.0	1.0	0.9
72N	1.7	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.0	0.9
71N	1.7	1.7	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.1	1.0	1.0
70N	1.7	1.7	1.7	1.7	1.7	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.0
69N	1.8	1.7	1.7	1.7	1.7	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.2	1.1	1.1
68N	1.8	1.8	1.7	1.7	1.7	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.3	1.2	1.1
67N	1.8	1.8	1.7	1.7	1.7	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.5	1.4	1.3	1.2
66N	1.8	1.8	1.8	1.7	1.7	1.5	1.5	1.5	1.6	1.6	1.7	1.8	1.7	1.6	1.5	1.4	1.2
65N	2.1	1.8	1.8	1.7	1.7	1.6	1.5	1.5	1.6	1.7	1.8	1.9	1.9	1.8	1.6	1.5	1.3
64N	2.2	1.8	1.8	1.8	1.6	1.6	1.5	1.5	1.6	1.8	2.0	2.1	2.1	2.0	1.8	1.6	1.4
63N	2.3	1.9	1.9	1.8	1.6	1.6	1.6	1.6	1.7	1.9	2.1	2.4	2.5	2.3	2.0	1.7	1.4
62N	2.3	2.0	1.9	1.8	1.6	1.7	1.7	1.7	1.9	2.3	2.9	3.1	3.3	3.1	2.5	1.9	1.5
61N	2.4	2.1	1.9	1.9	1.9	1.8	1.8	1.8	2.0	2.6	3.4	3.7	4.3	4.0	3.0	2.1	1.5
60N	2.3	2.1	2.0	1.9	2.0	1.9	1.9	2.0	2.2	3.5	5.4	4.8	6.1	5.8	3.8	2.3	1.5
59N	2.3	2.2	2.0	2.0	2.1	2.1	2.1	2.2	2.9	4.3	7.0	7.0	7.0	7.0	5.4	2.8	1.6
58N	2.4	2.3	2.1	2.0	2.2	2.2	2.3	2.7	3.5	5.3	7.0	7.0	7.0	7.0	7.0	3.4	1.7
57N	3.4	3.1	2.1	2.1	2.3	2.4	2.7	3.1	4.2	7.0	7.0	7.0	7.0	7.0	7.0	4.5	1.9
56N	3.7	3.3	2.9	2.6	2.5	2.5	3.1	3.6	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5
55N	3.9	3.6	3.7	2.8	3.3	3.9	3.4	4.2	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.5
54N	4.3	4.4	4.0	4.4	3.7	4.6	5.2	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4
53N	4.7	4.8	4.5	5.0	4.1	5.5	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	5.1	5.4	5.0	5.8	6.2	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	5.7	6.1	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL360 – No ozone converter – p1
Figure 05–07–32

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
89N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5
88N	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5
87N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5
86N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.5
85N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.5
84N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5
83N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.5
82N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.5	1.6
81N	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.5	1.7
80N	1.1	1.0	1.0	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.5	1.6	1.8
79N	1.1	1.1	1.1	1.1	1.3	1.4	1.5	1.4	1.4	1.4	1.5	1.6	1.7	1.9
78N	1.0	1.1	1.1	1.2	1.5	1.8	1.8	1.7	1.6	1.5	1.6	1.7	1.9	2.1
77N	1.0	1.0	1.1	1.3	1.8	2.3	2.2	1.8	1.6	1.6	1.6	1.8	2.0	2.3
76N	0.9	0.9	1.1	1.3	1.8	2.3	2.2	1.8	1.6	1.6	1.7	1.9	2.1	2.5
75N	0.8	0.9	1.0	1.3	1.6	1.9	1.9	1.7	1.6	1.6	1.7	1.9	2.3	2.9
74N	0.8	0.9	1.0	1.2	1.4	1.6	1.6	1.6	1.5	1.5	1.7	2.0	2.5	3.4
73N	0.9	0.9	1.0	1.1	1.2	1.3	1.4	1.4	1.4	1.5	1.7	2.1	2.8	4.3
72N	0.9	0.9	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.4	1.6	2.2	3.0	5.2
71N	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.6	2.2	3.1	5.8
70N	1.0	1.0	1.0	0.9	0.9	0.9	0.9	1.0	1.1	1.3	1.5	2.2	3.3	6.1
69N	1.0	1.0	0.9	0.9	0.8	0.7	0.8	0.8	1.0	1.2	1.5	2.1	3.2	5.8
68N	1.1	1.0	0.9	0.8	0.7	0.6	0.6	0.7	0.9	1.1	1.4	2.1	3.1	4.9
67N	1.1	1.0	0.9	0.7	0.6	0.5	0.5	0.7	0.8	1.0	1.5	2.0	2.9	5.7
66N	1.1	1.0	0.9	0.7	0.5	0.0	0.5	0.6	0.8	1.0	1.4	2.0	2.8	5.5
65N	1.2	1.0	0.9	0.7	0.5	0.0	0.0	0.6	0.7	1.0	1.4	1.9	2.8	6.1
64N	1.2	1.1	0.9	0.7	0.5	0.0	0.0	0.5	0.7	1.0	1.4	1.9	2.7	6.7
63N	1.3	1.2	0.9	0.7	0.5	0.0	0.0	0.6	0.7	1.0	1.4	1.9	2.7	7.0
62N	1.3	1.2	1.0	0.7	0.5	0.0	0.0	0.6	0.8	1.0	1.4	1.9	3.8	7.0
61N	1.3	1.2	1.1	0.8	0.6	0.5	0.5	0.7	0.8	1.0	1.4	1.9	6.6	7.0
60N	1.2	1.2	1.1	0.9	0.7	0.6	0.6	0.8	0.9	1.1	1.5	1.9	7.0	7.0
59N	1.2	1.3	1.2	1.0	0.8	0.7	0.8	0.9	1.0	1.2	1.5	2.0	7.0	7.0
58N	1.2	1.3	1.3	1.1	1.0	0.9	0.9	1.1	1.2	1.3	1.6	2.6	7.0	7.0
57N	1.3	1.4	1.4	1.3	1.1	1.0	1.1	1.3	1.3	1.5	1.8	3.7	7.0	7.0
56N	1.5	1.5	1.6	1.5	1.3	1.3	1.4	1.5	1.5	1.6	1.9	3.9	7.0	7.0
55N	1.9	1.9	1.8	1.9	1.6	1.5	1.6	1.7	1.7	1.9	2.3	5.1	7.0	7.0
54N	2.5	2.3	2.5	2.2	1.9	1.8	1.7	1.8	1.7	2.0	2.5	5.5	7.0	7.0
53N	4.1	3.0	3.2	3.2	2.5	2.1	1.8	1.8	1.8	2.1	2.6	6.0	7.0	7.0
52N	6.7	4.1	4.3	4.3	3.6	2.5	2.0	1.8	1.9	2.2	2.8	6.8	7.0	7.0
51N	7.0	5.7	6.2	6.5	5.0	3.1	2.2	1.9	2.1	2.4	2.9	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	4.4	2.7	2.2	2.3	2.6	3.1	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	6.7	3.7	2.7	2.6	2.8	3.4	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.4	3.0	3.1	5.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.6	3.5	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.3	3.9	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	5.5	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	6.7	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL360 – No ozone converter – p2
Figure 05–07–33

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 350																	
	Longitude																
Latitude (°N)	180°W	175°W	170°W	165°W	160°W	155°W	150°W	145°W	140°W	135°W	130°W	125°W	120°W	115°W	110°W	105°W	100°W
90°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89°N	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
88°N	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
87°N	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
86°N	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0
85°N	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
84°N	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9
83°N	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
82°N	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8
81°N	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
80°N	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7
79°N	2.0	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7
78°N	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6
77°N	1.9	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.5
76°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.4
75°N	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.5	1.4	1.4
74°N	2.1	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.5	1.4	1.4
73°N	2.1	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.7	1.7	1.6	1.5	1.4
72°N	2.1	1.8	1.7	1.7	1.6	1.6	1.5	1.6	1.6	1.7	1.8	1.8	1.8	1.7	1.6	1.5	1.5
71°N	2.1	2.0	1.7	1.6	1.7	1.6	1.5	1.5	1.6	1.7	1.8	1.8	1.8	1.8	1.7	1.6	1.5
70°N	2.1	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.5	1.7	1.8	1.9	1.9	1.9	1.8	1.7	1.6
69°N	2.1	1.9	1.8	1.7	1.5	1.4	1.3	1.4	1.5	1.6	1.8	1.9	2.0	2.0	1.9	1.8	1.7
68°N	2.1	1.9	1.8	1.6	1.5	1.3	1.3	1.3	1.4	1.6	1.8	2.0	2.1	2.1	2.0	1.9	1.8
67°N	2.1	1.9	1.8	1.6	1.5	1.3	1.2	1.2	1.3	1.6	1.9	2.1	2.3	2.3	2.2	2.0	1.9
66°N	2.1	1.9	1.8	1.6	1.4	1.3	1.2	1.2	1.3	1.6	2.0	2.3	2.5	2.5	2.4	2.2	2.0
65°N	2.4	1.9	1.8	1.6	1.4	1.3	1.2	1.2	1.3	1.6	2.1	2.5	2.8	2.8	2.6	2.3	2.1
64°N	2.5	2.0	1.8	1.6	1.4	1.3	1.2	1.2	1.4	1.7	2.2	2.8	3.3	3.3	2.9	2.5	2.1
63°N	2.5	2.0	1.9	1.7	1.4	1.3	1.2	1.2	1.4	1.8	2.5	3.3	4.0	4.0	3.4	2.7	2.2
62°N	2.6	2.2	1.9	1.7	1.5	1.4	1.3	1.3	1.6	2.2	3.3	4.5	5.9	6.0	4.6	3.2	2.3
61°N	2.7	2.2	2.0	1.8	1.7	1.5	1.4	1.5	1.8	2.5	4.1	6.0	7.0	7.0	6.1	3.5	2.4
60°N	2.6	2.3	2.0	1.9	1.8	1.7	1.6	1.7	2.0	3.4	7.0	7.0	7.0	7.0	7.0	4.1	2.4
59°N	2.7	2.4	2.1	2.0	1.9	1.8	1.8	1.9	2.6	4.4	7.0	7.0	7.0	7.0	7.0	5.5	2.4
58°N	2.8	2.5	2.2	2.0	2.1	2.0	2.0	2.4	3.2	5.9	7.0	7.0	7.0	7.0	7.0	7.0	2.7
57°N	4.0	3.4	2.3	2.2	2.2	2.2	2.4	2.8	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2
56°N	4.4	3.7	3.1	2.7	2.4	2.4	2.8	3.4	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9
55°N	4.8	4.0	3.9	2.9	3.2	3.5	3.3	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	5.3	5.2	4.4	4.2	3.7	4.3	4.9	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	6.0	5.9	5.0	4.9	4.3	5.3	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	6.9	6.8	5.8	5.9	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL350 – No ozone converter – p1
Figure 05–07–34

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 350														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4
88N	2.1	2.1	2.1	2.1	2.1	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4
87N	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.5
86N	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.3	2.4	2.5
85N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.2	2.4	2.5
84N	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.2	2.3	2.5
83N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.2	2.4	2.6
82N	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.2	2.4	2.8
81N	1.6	1.6	1.6	1.7	1.8	1.8	1.9	1.9	1.9	2.0	2.1	2.3	2.6	2.9
80N	1.6	1.6	1.6	1.6	1.8	1.9	2.0	2.1	2.1	2.2	2.3	2.5	2.8	3.2
79N	1.6	1.6	1.6	1.7	1.9	2.1	2.2	2.2	2.3	2.3	2.4	2.7	3.0	3.5
78N	1.5	1.6	1.7	1.9	2.2	2.7	2.7	2.5	2.4	2.5	2.6	2.8	3.3	3.9
77N	1.4	1.5	1.7	2.0	2.6	3.3	3.2	2.7	2.5	2.5	2.7	3.0	3.6	4.5
76N	1.3	1.4	1.6	2.0	2.6	3.3	3.2	2.7	2.5	2.5	2.8	3.2	4.0	5.2
75N	1.2	1.3	1.5	1.8	2.3	2.8	2.8	2.6	2.5	2.5	2.9	3.5	4.5	6.6
74N	1.2	1.3	1.5	1.7	2.1	2.3	2.4	2.4	2.4	2.5	3.0	3.7	5.3	7.0
73N	1.3	1.3	1.4	1.6	1.8	2.0	2.1	2.1	2.2	2.4	3.0	4.0	6.2	7.0
72N	1.3	1.4	1.5	1.6	1.7	1.8	1.9	1.9	2.0	2.3	2.7	4.2	7.0	7.0
71N	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.7	1.9	2.2	2.7	4.2	7.0	7.0
70N	1.4	1.4	1.4	1.4	1.4	1.3	1.4	1.5	1.7	2.0	2.6	4.4	7.0	7.0
69N	1.5	1.4	1.4	1.3	1.2	1.1	1.2	1.3	1.5	1.9	2.5	4.3	7.0	7.0
68N	1.6	1.4	1.4	1.2	1.0	1.0	1.0	1.1	1.4	1.8	2.3	4.2	7.0	7.0
67N	1.6	1.4	1.3	1.1	0.9	0.8	0.8	1.0	1.3	1.7	2.6	4.0	7.0	7.0
66N	1.7	1.5	1.3	1.1	0.8	0.7	0.7	0.9	1.2	1.6	2.5	3.9	7.0	7.0
65N	1.8	1.6	1.3	1.0	0.8	0.6	0.7	0.9	1.1	1.5	2.4	3.8	7.0	7.0
64N	1.8	1.6	1.3	1.0	0.7	0.6	0.6	0.8	1.1	1.5	2.4	3.7	7.0	7.0
63N	1.9	1.7	1.4	1.1	0.8	0.6	0.7	0.9	1.1	1.5	2.4	3.7	7.0	7.0
62N	1.9	1.8	1.5	1.1	0.8	0.7	0.7	0.9	1.2	1.6	2.5	3.8	7.0	7.0
61N	1.8	1.8	1.6	1.2	0.9	0.7	0.8	1.0	1.3	1.6	2.6	4.0	7.0	7.0
60N	1.7	1.7	1.7	1.3	1.0	0.9	0.9	1.2	1.4	1.7	2.7	4.1	7.0	7.0
59N	1.6	1.8	1.7	1.5	1.2	1.1	1.2	1.5	1.6	2.0	2.8	4.3	7.0	7.0
58N	1.7	1.8	2.0	1.8	1.5	1.4	1.5	1.8	1.9	2.1	2.9	7.0	7.0	7.0
57N	1.8	2.0	2.2	2.1	1.8	1.7	1.9	2.2	2.2	2.6	3.4	7.0	7.0	7.0
56N	2.2	2.2	2.6	2.5	2.2	2.2	2.3	2.5	2.5	2.8	3.6	7.0	7.0	7.0
55N	3.1	3.1	3.1	3.6	3.0	2.7	2.6	2.8	2.8	3.6	5.4	7.0	7.0	7.0
54N	4.7	4.2	5.5	4.8	3.9	3.3	3.0	2.8	2.9	3.9	5.9	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	6.1	4.2	3.2	2.8	3.1	4.2	6.6	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	5.7	3.6	2.9	3.3	4.6	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.3	3.9	5.2	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.2	4.7	6.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.9	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL350 – No ozone converter – p2
Figure 05–07–35

North America –Maximum Flight duration in hour, FEBRUARY WOUDC FL 340																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
89N	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
88N	3.8	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5
87N	3.5	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3
86N	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1
85N	3.2	3.1	3.1	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0
84N	3.0	3.0	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
83N	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
82N	2.8	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
81N	2.6	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
80N	2.5	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
79N	2.4	2.2	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.2	2.2	2.2
78N	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1
77N	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0
76N	2.0	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	2.0	2.1	2.1	2.1	2.1	2.0	1.9	1.8
75N	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.1	2.0	2.0	1.9	1.7
74N	2.2	1.8	1.7	1.7	1.6	1.6	1.6	1.6	1.7	1.8	1.9	2.0	2.1	2.1	2.0	1.9	1.7
73N	2.1	1.8	1.7	1.6	1.5	1.4	1.4	1.5	1.6	1.7	1.9	2.0	2.1	2.1	2.0	1.9	1.8
72N	2.0	1.7	1.6	1.5	1.4	1.3	1.3	1.3	1.5	1.6	1.8	2.0	2.1	2.2	2.1	2.0	1.9
71N	2.0	1.8	1.5	1.4	1.3	1.3	1.2	1.2	1.3	1.5	1.8	2.0	2.2	2.2	2.2	2.1	2.0
70N	1.9	1.7	1.6	1.4	1.2	1.1	1.0	1.1	1.2	1.4	1.7	2.0	2.2	2.3	2.3	2.2	2.2
69N	1.9	1.7	1.5	1.3	1.2	1.0	0.9	1.0	1.1	1.3	1.7	2.1	2.3	2.5	2.5	2.4	2.3
68N	1.9	1.7	1.4	1.3	1.1	0.9	0.9	0.9	1.0	1.3	1.7	2.1	2.5	2.7	2.7	2.6	2.5
67N	1.9	1.6	1.4	1.2	1.0	0.9	0.8	0.8	0.9	1.2	1.7	2.2	2.7	3.0	3.0	2.8	2.7
66N	1.9	1.6	1.4	1.2	1.0	0.9	0.8	0.8	0.9	1.2	1.7	2.4	3.0	3.4	3.4	3.2	2.9
65N	2.1	1.6	1.4	1.2	1.0	0.9	0.8	0.8	0.9	1.2	1.8	2.6	3.5	4.0	3.9	3.5	3.1
64N	2.1	1.7	1.4	1.2	1.0	0.9	0.8	0.8	0.9	1.3	2.0	3.0	4.2	5.0	4.7	4.0	3.3
63N	2.2	1.7	1.5	1.3	1.0	0.9	0.8	0.8	1.0	1.4	2.2	3.7	5.6	6.8	6.0	4.6	3.6
62N	2.3	1.8	1.5	1.3	1.1	1.0	0.9	0.9	1.1	1.7	3.0	5.3	7.0	7.0	7.0	5.9	3.9
61N	2.4	1.9	1.6	1.4	1.2	1.1	1.0	1.0	1.3	2.0	3.8	7.0	7.0	7.0	7.0	7.0	4.5
60N	2.3	2.0	1.7	1.4	1.3	1.2	1.1	1.2	1.5	2.7	6.9	7.0	7.0	7.0	7.0	7.0	4.4
59N	2.5	2.1	1.7	1.5	1.4	1.3	1.3	1.4	1.9	3.6	7.0	7.0	7.0	7.0	7.0	7.0	4.6
58N	2.6	2.2	1.8	1.6	1.6	1.5	1.5	1.7	2.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0	5.3
57N	3.5	2.8	1.9	1.7	1.7	1.7	1.8	2.1	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	3.9	3.1	2.5	2.1	1.9	1.9	2.1	2.6	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	4.4	3.4	3.1	2.4	2.5	2.6	2.5	3.3	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	5.0	4.4	3.5	3.3	2.9	3.1	3.6	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	5.7	5.0	4.1	3.8	3.4	3.9	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	6.6	5.9	4.8	4.6	4.7	5.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	5.7	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL340 – No ozone converter – p1
Figure 05–07–36

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 340														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
89N	3.9	3.9	3.9	4.0	4.0	4.0	4.1	4.1	4.1	4.2	4.2	4.3	4.3	4.3
88N	3.5	3.5	3.6	3.6	3.6	4.0	4.1	4.1	4.2	4.3	4.3	4.5	4.3	4.4
87N	3.3	3.3	3.4	3.4	3.4	3.5	3.8	3.9	3.9	4.1	4.2	4.3	4.5	4.7
86N	3.1	3.2	3.2	3.3	3.3	3.4	3.4	3.7	3.7	3.9	4.0	4.2	4.4	4.7
85N	3.0	3.0	3.1	3.1	3.2	3.3	3.3	3.4	3.6	3.7	3.8	4.1	4.7	5.1
84N	2.8	2.9	3.0	3.1	3.2	3.3	3.3	3.3	3.5	3.6	3.7	4.1	4.6	5.3
83N	2.6	2.7	2.8	2.9	3.1	3.3	3.3	3.3	3.4	3.5	3.7	4.1	4.7	5.6
82N	2.5	2.5	2.5	2.7	3.0	3.2	3.3	3.3	3.4	3.5	3.8	4.3	5.0	6.0
81N	2.3	2.2	2.3	2.4	2.7	3.1	3.3	3.3	3.5	3.7	4.0	4.5	5.4	6.8
80N	2.2	2.2	2.1	2.3	2.7	3.1	3.3	3.6	3.7	3.9	4.3	5.0	6.0	7.0
79N	2.2	2.2	2.2	2.4	2.9	3.4	3.8	3.9	4.1	4.3	4.6	5.5	6.9	7.0
78N	2.2	2.2	2.4	2.8	3.6	4.7	4.9	4.4	4.4	4.6	5.0	6.0	7.0	7.0
77N	2.0	2.1	2.4	3.0	4.5	6.6	6.1	5.0	4.5	4.8	5.5	6.8	7.0	7.0
76N	1.8	1.9	2.3	3.0	4.6	6.6	6.1	5.0	4.6	4.6	5.9	7.0	7.0	7.0
75N	1.7	1.8	2.1	2.8	3.9	5.0	5.2	4.7	4.4	4.6	6.2	7.0	7.0	7.0
74N	1.7	1.8	2.1	2.6	3.3	3.9	4.3	4.2	4.2	4.6	6.5	7.0	7.0	7.0
73N	1.8	1.9	2.1	2.4	2.8	3.2	3.6	3.7	3.9	4.4	6.7	7.0	7.0	7.0
72N	1.9	1.9	2.2	2.4	2.6	2.8	3.0	3.2	3.6	4.2	5.7	7.0	7.0	7.0
71N	2.0	2.0	2.2	2.3	2.3	2.4	2.6	2.8	3.2	3.9	5.5	7.0	7.0	7.0
70N	2.0	2.0	2.2	2.1	2.1	2.0	2.1	2.4	2.9	3.7	5.3	7.0	7.0	7.0
69N	2.1	2.1	2.1	2.0	1.8	1.7	1.8	2.0	2.5	3.3	5.0	7.0	7.0	7.0
68N	2.3	2.1	2.1	1.8	1.6	1.4	1.5	1.7	2.3	3.1	4.6	7.0	7.0	7.0
67N	2.5	2.1	2.1	1.7	1.4	1.2	1.3	1.5	2.0	2.8	5.6	7.0	7.0	7.0
66N	2.6	2.5	2.1	1.6	1.2	1.0	1.1	1.4	1.8	2.7	5.3	7.0	7.0	7.0
65N	3.0	2.6	2.1	1.6	1.1	0.9	1.0	1.3	1.8	2.6	5.1	7.0	7.0	7.0
64N	3.2	2.6	2.1	1.6	1.1	0.9	0.9	1.3	1.7	2.6	5.1	7.0	7.0	7.0
63N	3.4	3.0	2.2	1.6	1.1	0.9	1.0	1.3	1.8	2.6	5.2	7.0	7.0	7.0
62N	3.3	3.0	2.5	1.8	1.2	1.0	1.0	1.4	1.9	2.7	5.5	7.0	7.0	7.0
61N	3.1	3.1	2.7	2.0	1.4	1.1	1.2	1.6	2.1	2.9	5.7	7.0	7.0	7.0
60N	2.9	3.0	2.8	2.2	1.6	1.4	1.4	1.9	2.4	3.1	6.3	7.0	7.0	7.0
59N	2.8	3.1	3.1	2.5	2.0	1.7	1.9	2.5	2.7	3.7	6.9	7.0	7.0	7.0
58N	2.9	3.2	3.8	3.4	2.6	2.2	2.5	3.2	3.6	4.2	7.0	7.0	7.0	7.0
57N	3.3	3.7	4.4	4.2	3.4	2.9	3.4	4.2	4.4	6.1	7.0	7.0	7.0	7.0
56N	4.5	4.5	5.9	5.5	4.6	4.6	4.8	5.3	5.1	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	6.6	5.9	6.2	6.7	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL340 – No ozone converter – p2
Figure 05–07–37

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 330																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	6.8	6.7	6.5	6.4	6.3	6.2	6.2	6.1	6.1	6.1	6.1	6.2	6.2	6.3	6.4	6.5	6.6
85N	6.1	6.0	5.9	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.7	5.8	5.9	6.0
84N	5.6	5.4	5.3	5.1	5.1	5.1	5.0	5.0	5.0	5.1	5.1	5.1	5.1	5.2	5.3	5.3	5.4
83N	5.0	4.8	4.7	4.7	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.8	4.8	4.8	4.8	4.8
82N	4.5	4.4	4.3	4.2	4.2	4.2	4.0	4.0	4.1	4.2	4.2	4.3	4.3	4.4	4.4	4.5	4.4
81N	4.1	4.0	3.9	3.6	3.6	3.6	3.6	3.7	3.8	3.9	4.0	4.0	4.1	4.2	4.2	4.2	4.1
80N	3.7	3.6	3.3	3.3	3.3	3.3	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.0	4.0	3.9
79N	3.4	3.1	3.0	3.0	2.9	3.0	3.0	3.1	3.2	3.3	3.5	3.6	3.7	3.8	3.8	3.8	3.8
78N	2.9	2.8	2.7	2.7	2.7	2.7	2.7	2.8	2.9	3.1	3.3	3.4	3.5	3.6	3.6	3.6	3.6
77N	2.7	2.6	2.5	2.4	2.4	2.4	2.4	2.5	2.6	2.8	3.0	3.2	3.4	3.5	3.5	3.4	3.3
76N	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.3	2.5	2.7	2.9	3.2	3.2	3.3	3.3	3.2	3.0
75N	2.3	2.2	2.1	2.0	2.0	1.9	2.0	2.1	2.2	2.5	2.7	3.0	3.2	3.2	3.2	3.1	2.8
74N	2.6	2.1	2.0	1.8	1.7	1.7	1.7	1.8	2.0	2.2	2.5	2.9	3.2	3.3	3.2	3.1	2.9
73N	2.4	2.0	1.8	1.7	1.5	1.5	1.5	1.5	1.7	2.0	2.4	2.8	3.1	3.3	3.3	3.2	3.0
72N	2.3	1.8	1.7	1.5	1.4	1.3	1.3	1.3	1.5	1.8	2.2	2.7	3.1	3.4	3.4	3.3	3.2
71N	2.2	1.9	1.5	1.4	1.3	1.2	1.1	1.2	1.3	1.6	2.1	2.6	3.1	3.5	3.6	3.5	3.4
70N	2.1	1.8	1.6	1.3	1.2	1.0	1.0	1.0	1.2	1.5	1.9	2.5	3.1	3.6	3.8	3.8	3.7
69N	2.0	1.7	1.5	1.3	1.1	0.9	0.8	0.9	1.0	1.3	1.8	2.5	3.3	3.9	4.2	4.2	4.0
68N	2.0	1.7	1.4	1.2	1.0	0.8	0.8	0.8	0.9	1.2	1.8	2.6	3.5	4.2	4.6	4.6	4.4
67N	2.0	1.7	1.4	1.2	0.9	0.8	0.7	0.7	0.8	1.2	1.7	2.7	3.8	4.8	5.3	5.3	4.9
66N	2.0	1.7	1.4	1.1	0.9	0.8	0.7	0.7	0.8	1.1	1.8	2.9	4.4	5.9	6.5	6.2	5.6
65N	2.2	1.7	1.4	1.1	0.9	0.8	0.7	0.7	0.8	1.2	1.9	3.2	5.4	7.0	7.0	7.0	6.3
64N	2.3	1.7	1.4	1.1	0.9	0.8	0.7	0.7	0.8	1.2	2.1	3.9	7.0	7.0	7.0	7.0	7.0
63N	2.4	1.7	1.4	1.2	0.9	0.8	0.7	0.7	0.9	1.3	2.4	5.0	7.0	7.0	7.0	7.0	7.0
62N	2.5	1.8	1.5	1.2	1.0	0.9	0.8	0.8	1.0	1.6	3.3	7.0	7.0	7.0	7.0	7.0	7.0
61N	2.6	1.9	1.6	1.3	1.1	1.0	0.9	0.9	1.2	1.9	4.5	7.0	7.0	7.0	7.0	7.0	7.0
60N	2.6	2.0	1.6	1.4	1.2	1.1	1.0	1.1	1.4	2.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	2.7	2.2	1.7	1.5	1.3	1.2	1.2	1.3	1.8	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	2.9	2.3	1.8	1.6	1.5	1.4	1.3	1.6	2.4	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	4.1	3.0	2.0	1.7	1.6	1.6	1.6	2.0	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	4.7	3.4	2.5	2.1	1.8	1.8	2.0	2.5	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	5.5	3.8	3.2	2.4	2.4	2.4	2.4	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	6.5	5.0	3.7	3.3	2.8	3.0	3.5	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	6.2	4.4	4.0	3.4	3.9	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	5.4	4.9	4.8	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL330 – No ozone converter – p1
Figure 05–07–38

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 330														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	6.1	6.4	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	5.6	5.8	6.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	5.0	5.1	5.5	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	4.3	4.3	4.5	5.1	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	3.9	3.8	3.8	4.2	5.3	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	3.8	3.6	3.5	3.9	5.1	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	3.8	3.7	3.8	4.3	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	3.7	3.9	4.3	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	3.3	3.7	4.5	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	2.9	3.2	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	2.7	3.0	3.8	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.7	3.0	3.7	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	2.9	3.1	3.6	4.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	3.1	3.2	4.0	4.7	5.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	3.3	3.5	4.0	4.3	4.5	4.7	5.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0
70N	3.4	3.4	4.0	3.9	3.7	3.6	3.8	4.7	6.4	7.0	7.0	7.0	7.0	7.0
69N	3.5	3.4	3.8	3.4	3.0	2.8	2.9	3.5	5.1	7.0	7.0	7.0	7.0	7.0
68N	4.1	3.5	3.7	3.1	2.5	2.2	2.3	2.8	4.2	7.0	7.0	7.0	7.0	7.0
67N	4.4	3.6	3.6	2.8	2.1	1.7	1.8	2.4	3.4	6.4	7.0	7.0	7.0	7.0
66N	4.8	4.8	3.5	2.5	1.8	1.4	1.5	2.1	3.1	5.6	7.0	7.0	7.0	7.0
65N	6.8	5.1	3.6	2.4	1.6	1.3	1.4	1.9	2.9	5.2	7.0	7.0	7.0	7.0
64N	7.0	5.1	3.7	2.4	1.6	1.2	1.3	1.8	2.8	5.1	7.0	7.0	7.0	7.0
63N	7.0	6.3	4.0	2.5	1.6	1.2	1.3	1.9	2.9	5.2	7.0	7.0	7.0	7.0
62N	7.0	6.5	4.7	2.9	1.8	1.3	1.5	2.1	3.2	5.5	7.0	7.0	7.0	7.0
61N	6.7	6.5	5.2	3.3	2.0	1.6	1.7	2.4	3.6	6.0	7.0	7.0	7.0	7.0
60N	5.8	6.3	5.8	3.9	2.5	2.0	2.2	3.0	4.3	6.9	7.0	7.0	7.0	7.0
59N	5.3	6.5	6.6	4.7	3.4	2.8	3.2	4.5	5.3	7.0	7.0	7.0	7.0	7.0
58N	5.6	7.0	7.0	7.0	5.2	4.0	4.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL330 – No ozone converter – p2
Figure 05–07–39

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 320																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	6.7	6.6	6.6	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	6.9	5.9	5.5	5.4	5.4	5.5	5.7	6.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	5.3	4.9	4.7	4.5	4.5	4.5	4.7	5.0	5.5	6.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0
77N	4.6	4.2	3.9	3.8	3.7	3.7	3.8	4.1	4.5	5.1	5.8	6.7	7.0	7.0	7.0	7.0	7.0
76N	4.0	3.7	3.4	3.4	3.3	3.2	3.4	3.6	4.0	4.6	5.4	6.3	6.7	7.0	7.0	6.9	6.2
75N	3.6	3.2	3.1	2.9	2.7	2.7	2.8	3.0	3.3	3.9	4.7	5.7	6.6	6.8	6.9	6.5	5.6
74N	4.1	3.0	2.7	2.5	2.3	2.2	2.3	2.4	2.8	3.3	4.1	5.1	6.4	7.0	6.9	6.4	5.7
73N	3.7	2.7	2.4	2.2	2.0	1.9	1.9	2.0	2.3	2.9	3.7	4.9	6.1	7.0	7.0	6.9	6.1
72N	3.4	2.5	2.2	1.9	1.7	1.6	1.6	1.7	1.9	2.4	3.3	4.5	6.0	7.0	7.0	7.0	6.7
71N	3.2	2.6	2.0	1.7	1.6	1.4	1.3	1.4	1.6	2.1	2.9	4.2	5.9	7.0	7.0	7.0	7.0
70N	3.0	2.4	2.0	1.7	1.4	1.2	1.1	1.2	1.4	1.8	2.7	4.1	6.0	7.0	7.0	7.0	7.0
69N	2.9	2.3	1.9	1.5	1.3	1.1	1.0	1.0	1.2	1.6	2.5	4.0	6.4	7.0	7.0	7.0	7.0
68N	2.8	2.2	1.8	1.4	1.2	0.9	0.9	0.9	1.0	1.5	2.4	4.0	7.0	7.0	7.0	7.0	7.0
67N	2.7	2.2	1.7	1.4	1.1	0.9	0.8	0.8	1.0	1.4	2.3	4.3	7.0	7.0	7.0	7.0	7.0
66N	2.7	2.1	1.7	1.3	1.1	0.9	0.7	0.7	0.9	1.4	2.4	4.8	7.0	7.0	7.0	7.0	7.0
65N	3.2	2.1	1.7	1.3	1.1	0.8	0.7	0.7	0.9	1.4	2.5	5.9	7.0	7.0	7.0	7.0	7.0
64N	3.3	2.2	1.7	1.4	1.0	0.9	0.8	0.8	0.9	1.5	2.9	7.0	7.0	7.0	7.0	7.0	7.0
63N	3.4	2.2	1.8	1.4	1.1	0.9	0.8	0.8	1.0	1.6	3.5	7.0	7.0	7.0	7.0	7.0	7.0
62N	3.6	2.4	1.9	1.5	1.2	1.0	0.9	0.9	1.2	2.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0
61N	3.9	2.6	2.0	1.6	1.3	1.1	1.0	1.1	1.4	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	3.9	2.8	2.1	1.7	1.4	1.2	1.1	1.2	1.7	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	4.2	3.0	2.3	1.8	1.6	1.4	1.4	1.5	2.3	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	4.7	3.3	2.5	2.0	1.8	1.6	1.6	2.0	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	4.7	2.7	2.2	2.1	1.9	2.0	2.6	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	5.6	3.7	2.8	2.4	2.3	2.6	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	6.8	5.1	3.3	3.3	3.3	3.4	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	6.5	5.1	4.2	4.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	5.6	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL320 – No ozone converter – p1
Figure 05–07–40

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 320														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	5.2	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	5.3	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	5.8	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	5.5	4.7	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	5.7	3.9	3.1	3.4	4.7	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	4.7	2.9	2.3	2.4	3.5	6.5	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	4.1	2.4	1.8	1.9	2.9	5.3	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	3.8	2.1	1.5	1.7	2.5	4.8	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	3.8	2.0	1.4	1.6	2.4	4.7	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	4.0	2.1	1.5	1.6	2.6	5.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	5.0	2.3	1.6	1.8	2.9	5.7	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	6.3	2.8	2.0	2.2	3.6	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	3.9	2.8	3.1	5.3	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	6.4	4.5	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL320 – No ozone converter – p2
Figure 05–07–41

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 310																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	6.7	6.5	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	6.7	5.6	5.0	4.7	4.8	5.4	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	6.7	5.4	4.5	3.9	3.6	3.6	3.9	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	5.7	4.5	3.7	3.1	2.8	2.7	3.0	3.7	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	6.7	3.9	3.1	2.9	2.5	2.2	2.4	2.9	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	5.9	4.3	3.2	2.5	2.0	1.8	1.9	2.3	3.5	6.5	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	5.4	3.8	2.8	2.1	1.7	1.5	1.6	1.9	2.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	5.0	3.4	2.5	1.9	1.5	1.3	1.3	1.7	2.6	5.3	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	4.8	3.3	2.4	1.8	1.4	1.2	1.2	1.5	2.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	4.8	3.2	2.3	1.7	1.3	1.1	1.1	1.4	2.3	5.5	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	4.8	3.3	2.3	1.7	1.3	1.1	1.1	1.4	2.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	4.9	3.4	2.4	1.7	1.3	1.1	1.1	1.5	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	5.2	3.5	2.5	1.8	1.4	1.2	1.2	1.6	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	6.1	3.8	2.7	1.9	1.6	1.4	1.4	2.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	6.9	4.2	2.9	2.3	1.8	1.6	1.7	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	4.7	3.3	2.6	2.1	1.9	2.1	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	5.4	3.8	3.0	2.5	2.4	2.8	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	6.4	4.4	3.7	3.1	3.1	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	5.3	4.7	4.1	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	6.2	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL310 – No ozone converter – p1
Figure 05–07–42

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 310														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	4.8	3.5	3.8	6.2	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	6.7	3.3	2.3	2.5	4.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	5.2	2.5	1.7	1.9	3.1	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	4.6	2.1	1.4	1.6	2.6	6.2	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	4.6	2.0	1.3	1.5	2.5	5.8	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	5.0	2.0	1.4	1.5	2.6	6.5	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	6.8	2.3	1.6	1.7	3.1	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	3.0	2.0	2.2	4.1	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	4.5	2.8	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL310 – No ozone converter – p2
Figure 05–07–43

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 300																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	6.4	4.8	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	4.5	3.5	3.8	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	5.5	3.4	2.8	2.9	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	4.8	3.0	2.4	2.5	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	4.5	2.8	2.2	2.2	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	4.4	2.7	2.2	2.2	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	4.3	2.8	2.2	2.3	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	4.7	3.1	2.5	2.5	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	5.4	3.9	3.0	3.2	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	5.0	3.9	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL300 – No ozone converter – p1
Figure 05–07–44

North America - Maximum Flight duration in hour, FEBRUARY WOUDC FL 300														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	3.8	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	5.4	2.8	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	4.8	2.5	2.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	5.2	2.6	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	6.9	3.2	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	4.8	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – February – FL300 – No ozone converter – p2
Figure 05–07–45

C. North America – March

North America - Maximum Flight duration in hour, MARCH WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.3
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	1.0
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.3	1.8
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.9	2.1
48N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	2.5	2.3
47N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	2.3	2.6
46N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.2	2.3	3.2
45N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	2.5	4.0
44N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.0	2.6	5.2
43N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	2.4	2.4	6.7
42N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.3	2.7	1.9	7.0
41N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.8	3.0	3.1	1.3	7.0
40N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	4.0	3.5	1.0	7.0
39N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.7	4.0	5.3	4.5	1.5	7.0
38N	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.5	0.7	1.1	5.3	7.0	6.5	3.5	7.0
37N	1.2	0.4	0.1	0.0	0.0	0.1	0.5	2.0	1.2	0.9	1.1	1.4	7.0	7.0	7.0	7.0	7.0
36N	7.0	1.1	0.8	0.2	1.0	1.2	1.8	3.6	2.0	1.5	1.6	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	1.9	7.0	3.0	3.6	7.0	6.7	3.2	2.2	2.2	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.1	2.9	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	3.8	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.1	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL410 – No ozone converter – p1
Figure 05–07–46

North America - Maximum Flight duration in hour, MARCH WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.2
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.7
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.2
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	4.6
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.1
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	6.8
49N	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.1	7.0
48N	2.2	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.3	7.0
47N	3.3	3.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.6	7.0
46N	5.1	5.4	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.9	7.0
45N	7.0	7.0	1.8	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.7	3.2	7.0
44N	7.0	7.0	2.7	0.0	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.9	3.6	7.0
43N	7.0	7.0	5.3	0.0	2.2	0.4	0.0	0.0	0.0	0.0	0.1	1.1	4.0	7.0
42N	7.0	7.0	7.0	0.9	6.7	1.0	0.0	0.0	0.0	0.0	0.3	1.3	4.5	7.0
41N	7.0	7.0	7.0	7.0	7.0	2.3	0.1	0.1	0.1	0.0	0.4	1.5	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	5.1	0.5	0.3	0.2	0.0	1.1	1.7	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	1.2	0.6	0.7	2.3	1.4	2.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	2.0	1.3	1.2	3.0	3.5	3.9	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	2.9	1.8	1.6	3.8	5.1	5.9	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.3	3.7	5.0	6.5	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.9	5.0	6.6	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL410 – No ozone converter – p2
Figure 05–07–47

North America - Maximum Flight duration in hour, MARCH WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	0.5
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.8	1.5
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	6.8	2.9
49N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.6	3.4
48N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	4.4	3.7
47N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	3.8	4.3
46N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	3.7	5.4
45N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	2.2	3.9	7.0
44N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.1	4.0	7.0
43N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.5	3.7	3.7	7.0
42N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.7	3.5	4.3	2.7	7.0
41N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.2	4.8	4.9	1.9	7.0
40N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.7	6.8	5.8	1.4	7.0
39N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.5	1.0	6.7	7.0	7.0	2.2	7.0
38N	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.7	1.0	1.5	7.0	7.0	7.0	5.7	7.0
37N	1.6	0.5	0.1	0.0	0.0	0.1	0.8	2.8	1.6	1.3	1.5	2.1	7.0	7.0	7.0	7.0	7.0
36N	7.0	1.4	1.1	0.3	1.3	1.7	2.5	5.5	2.9	2.1	2.2	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	2.6	7.0	4.3	5.4	7.0	7.0	4.9	3.2	3.2	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.5	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL400 – No ozone converter – p1
Figure 05–07–48

North America - Maximum Flight duration in hour, MARCH WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	2.9
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	5.5
54N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	6.6
53N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	7.0
52N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	7.0
51N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	7.0
50N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	7.0
49N	2.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	3.5	7.0
48N	3.4	3.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	3.9	7.0
47N	5.3	5.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	4.5	7.0
46N	7.0	7.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	5.1	7.0
45N	7.0	7.0	2.1	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	1.0	5.8	7.0
44N	7.0	7.0	3.3	0.0	1.1	0.2	0.0	0.0	0.0	0.0	0.0	1.3	6.7	7.0
43N	7.0	7.0	6.8	0.0	2.8	0.6	0.0	0.0	0.0	0.0	0.2	1.6	7.0	7.0
42N	7.0	7.0	7.0	1.0	7.0	1.5	0.0	0.0	0.0	0.0	0.4	1.9	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	3.5	0.2	0.2	0.2	0.0	0.6	2.3	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	0.8	0.5	0.4	0.1	1.7	2.7	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	1.7	0.9	1.0	3.7	2.1	3.1	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	3.0	1.9	1.7	5.0	6.2	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	4.6	2.8	2.5	6.8	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL400 – No ozone converter – p2
Figure 05–07–49

North America - Maximum Flight duration in hour, MARCH WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
88N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
87N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
86N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
85N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
84N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
83N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.3	0.3	0.3
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.3
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.5	0.4	0.4
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.6	0.5	0.4
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.7	0.7	0.6	0.4
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.9	0.9	0.7	0.5
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.9	1.0	1.0	0.9	0.6
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.8	1.0	1.1	1.1	1.1	0.8
55N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.9	1.2	1.1	1.3	1.6	1.1
54N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	1.1	1.4	1.1	1.4	2.6	1.7
53N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.7	1.4	1.7	1.2	1.6	4.2	2.5
52N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.9	1.6	2.4	1.4	2.1	7.0	4.2
51N	0.2	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.3	0.6	1.1	2.0	3.0	1.8	2.9	7.0	6.0
50N	0.3	0.2	0.1	0.1	0.1	0.0	0.1	0.2	0.4	0.7	1.2	2.1	3.4	2.3	3.7	7.0	7.0
49N	0.4	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.8	1.4	2.2	3.2	2.6	4.1	7.0	7.0
48N	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.6	1.1	1.4	2.2	3.1	2.9	4.4	7.0	7.0
47N	0.5	0.3	0.3	0.3	0.2	0.3	0.3	0.5	0.6	1.2	1.6	2.3	2.9	3.0	5.8	7.0	7.0
46N	0.6	0.4	0.4	0.4	0.3	0.3	0.4	0.6	0.9	1.3	1.7	2.3	2.9	3.3	6.1	7.0	7.0
45N	0.7	0.5	0.5	0.5	0.4	0.4	0.5	0.6	1.1	1.4	1.8	2.5	3.0	3.5	6.6	7.0	7.0
44N	1.0	0.8	0.5	0.6	0.5	0.5	0.6	1.0	1.2	1.5	2.5	2.6	3.1	3.8	7.0	7.0	7.0
43N	1.1	1.0	0.7	0.8	0.6	0.6	0.8	1.1	1.3	1.6	2.6	3.2	3.3	7.0	7.0	7.0	7.0
42N	1.2	1.1	0.9	0.9	0.9	0.8	0.9	1.3	1.5	1.7	2.9	3.5	4.4	7.0	7.0	6.0	7.0
41N	1.7	1.3	1.0	1.1	1.2	1.0	1.5	1.5	1.6	2.8	3.2	3.8	4.9	7.0	7.0	5.0	7.0
40N	1.9	1.5	1.2	1.4	1.4	1.2	1.9	1.8	1.8	3.2	3.6	4.2	5.8	7.0	7.0	4.6	7.0
39N	2.1	1.7	1.5	1.7	1.8	1.9	2.4	2.2	3.6	3.7	4.1	4.8	7.0	7.0	7.0	5.3	7.0
38N	4.4	3.3	1.8	2.1	2.4	2.5	3.1	2.7	4.4	4.3	4.7	5.5	7.0	7.0	7.0	7.0	7.0
37N	5.4	4.1	3.5	2.8	3.4	3.5	4.3	7.0	5.5	5.1	5.4	6.3	7.0	7.0	7.0	7.0	7.0
36N	7.0	5.2	4.8	3.8	5.2	5.6	6.9	7.0	7.0	6.3	6.5	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL390 – No ozone converter – p1
Figure 05–07–50

North America - Maximum Flight duration in hour, MARCH WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2
88N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2
87N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
86N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
85N	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2
84N	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
83N	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
82N	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2
81N	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
80N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.3
79N	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.4
78N	0.0	0.1	0.1	0.2	0.4	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4
77N	0.0	0.0	0.1	0.2	0.5	0.8	0.8	0.5	0.4	0.3	0.3	0.4	0.4	0.5
76N	0.0	0.0	0.1	0.2	0.5	0.8	0.8	0.6	0.4	0.4	0.4	0.4	0.5	0.5
75N	0.0	0.0	0.0	0.2	0.4	0.6	0.6	0.5	0.4	0.4	0.4	0.4	0.5	0.6
74N	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.4	0.4	0.4	0.4	0.5	0.6	0.7
73N	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.8
72N	0.0	0.0	0.0	0.1	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.7	0.9
71N	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.6	0.7	0.9
70N	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.6	0.8	0.9
69N	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.6	0.8	0.9
68N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.3	0.4	0.6	0.8	0.9
67N	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.5	0.6	0.8	1.0
66N	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.6	0.8	1.1
65N	0.2	0.2	0.2	0.2	0.1	0.0	0.1	0.1	0.2	0.3	0.5	0.7	0.8	1.2
64N	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.1	0.2	0.3	0.5	0.7	0.8	1.3
63N	0.3	0.3	0.2	0.2	0.1	0.0	0.1	0.1	0.2	0.3	0.6	0.7	0.9	1.8
62N	0.3	0.3	0.3	0.2	0.1	0.1	0.1	0.2	0.3	0.4	0.6	0.7	1.2	2.0
61N	0.3	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.3	0.4	0.6	0.8	1.7	2.3
60N	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.3	0.4	0.5	0.7	0.8	1.8	2.6
59N	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.6	0.7	0.9	2.0	4.3
58N	0.3	0.3	0.4	0.5	0.4	0.4	0.5	0.6	0.6	0.6	0.7	1.2	2.2	6.5
57N	0.3	0.4	0.5	0.6	0.5	0.5	0.6	0.7	0.7	0.8	0.9	1.6	3.3	7.0
56N	0.4	0.4	0.6	0.6	0.6	0.7	0.8	0.9	0.8	0.9	0.9	1.6	3.6	7.0
55N	0.6	0.7	0.7	0.9	0.9	0.9	0.9	1.0	0.9	1.1	1.3	2.0	3.9	7.0
54N	0.9	0.8	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.3	2.1	4.2	7.0
53N	1.4	1.2	1.3	1.4	1.2	1.2	1.1	1.0	1.0	1.2	1.4	2.2	4.6	7.0
52N	2.0	1.5	1.6	1.7	1.6	1.3	1.1	1.0	1.0	1.2	1.4	2.4	6.4	7.0
51N	2.6	1.8	1.9	2.0	1.9	1.5	1.3	1.1	1.2	1.3	1.5	2.9	7.0	7.0
50N	3.2	2.2	2.2	2.2	2.3	2.0	1.4	1.3	1.3	1.4	1.6	3.2	7.0	7.0
49N	6.5	3.2	2.5	2.7	2.6	2.3	1.7	1.4	1.5	1.4	1.6	3.6	7.0	7.0
48N	7.0	7.0	3.2	2.8	2.9	2.6	2.2	1.7	1.6	1.7	2.2	3.9	7.0	7.0
47N	7.0	7.0	3.5	2.7	3.1	3.0	2.6	1.9	1.8	1.8	2.8	4.2	7.0	7.0
46N	7.0	7.0	5.2	2.4	3.3	3.2	2.7	2.2	1.9	1.9	3.0	4.5	7.0	7.0
45N	7.0	7.0	5.6	2.2	3.8	3.4	2.7	2.5	2.1	2.4	3.2	4.9	7.0	7.0
44N	7.0	7.0	6.8	2.1	4.5	3.6	2.7	2.9	2.3	2.6	3.4	5.3	7.0	7.0
43N	7.0	7.0	7.0	2.6	6.8	4.2	2.7	3.1	2.7	2.8	3.7	5.8	7.0	7.0
42N	7.0	7.0	7.0	4.3	7.0	5.6	3.0	3.3	2.9	3.0	4.0	6.4	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	3.6	3.6	3.6	3.2	4.3	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.1	3.9	3.5	6.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.6	4.8	7.0	6.7	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL390 – No ozone converter – p2
Figure 05–07–51

North America - Maximum Flight duration in hour, MARCH WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
86N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
85N	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
84N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
83N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
82N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2
81N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.1
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.3
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.3	0.3
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.3
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.5	0.5	0.4
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.6	0.5	0.5
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.7	0.6	0.5
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.8	0.8	0.7	0.5
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.9	1.0	1.0	0.9	0.6
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.7	1.0	1.2	1.2	1.1	0.7
56N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.9	1.2	1.3	1.3	1.3	1.0
55N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.1	1.4	1.3	1.5	1.9	1.4
54N	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.7	1.2	1.6	1.3	1.6	3.2	2.1
53N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.8	1.5	1.9	1.3	1.8	5.5	3.1
52N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.1	0.3	0.6	1.0	1.8	2.6	1.6	2.4	7.0	5.7
51N	0.3	0.2	0.1	0.0	0.1	0.0	0.1	0.2	0.4	0.7	1.3	2.2	3.4	2.0	3.5	7.0	7.0
50N	0.3	0.2	0.2	0.1	0.1	0.1	0.2	0.3	0.5	0.8	1.4	2.4	3.8	2.7	4.5	7.0	7.0
49N	0.5	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.6	0.9	1.5	2.4	3.6	3.0	5.1	7.0	7.0
48N	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.5	0.7	1.2	1.6	2.4	3.4	3.3	5.4	7.0	7.0
47N	0.6	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.7	1.3	1.8	2.6	3.3	3.5	7.0	7.0	7.0
46N	0.7	0.5	0.5	0.4	0.4	0.4	0.5	0.6	1.0	1.4	1.9	2.5	3.3	3.7	7.0	7.0	7.0
45N	0.8	0.6	0.5	0.6	0.5	0.5	0.6	0.7	1.2	1.5	2.0	2.8	3.4	4.0	7.0	7.0	7.0
44N	1.1	1.0	0.6	0.7	0.6	0.6	0.7	1.1	1.3	1.6	2.7	2.9	3.5	4.4	7.0	7.0	7.0
43N	1.3	1.1	0.9	0.9	0.7	0.7	0.9	1.3	1.4	1.7	2.9	3.6	3.7	7.0	7.0	7.0	7.0
42N	1.4	1.3	1.0	1.0	1.1	0.9	1.0	1.5	1.6	1.9	3.2	3.9	4.9	7.0	7.0	6.2	7.0
41N	2.0	1.5	1.2	1.3	1.3	1.1	1.7	1.7	1.8	3.1	3.5	4.3	5.6	7.0	7.0	5.1	7.0
40N	2.2	1.7	1.4	1.5	1.6	1.3	2.1	2.0	2.0	3.5	4.0	4.8	6.6	7.0	7.0	4.7	7.0
39N	2.6	2.0	1.7	1.9	2.1	2.1	2.6	2.4	3.9	4.0	4.5	5.4	7.0	7.0	7.0	5.4	7.0
38N	5.6	3.9	2.1	2.4	2.8	2.8	3.5	3.0	4.8	4.8	5.2	6.2	7.0	7.0	7.0	7.0	7.0
37N	7.0	5.1	4.2	3.2	4.0	4.1	5.0	7.0	6.2	5.7	6.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	6.9	6.0	4.6	6.5	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL380 – No ozone converter – p1
Figure 05–07–52

North America - Maximum Flight duration in hour, MARCH WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
86N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
85N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3
84N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3
83N	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3
82N	0.2	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3
81N	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4
80N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4
79N	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.4	0.5
78N	0.1	0.1	0.2	0.3	0.5	0.7	0.7	0.5	0.4	0.4	0.4	0.4	0.5	0.5
77N	0.0	0.1	0.2	0.3	0.7	1.1	1.0	0.7	0.5	0.5	0.5	0.5	0.5	0.6
76N	0.0	0.0	0.1	0.3	0.7	1.1	1.0	0.7	0.6	0.5	0.5	0.5	0.6	0.7
75N	0.0	0.0	0.1	0.3	0.6	0.8	0.8	0.7	0.6	0.5	0.5	0.6	0.7	0.8
74N	0.0	0.0	0.1	0.2	0.4	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.7	0.9
73N	0.0	0.0	0.1	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.6	0.7	0.8	1.1
72N	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.7	0.9	1.1
71N	0.0	0.0	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5	0.6	0.7	0.9	1.2
70N	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.8	1.0	1.2
69N	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.5	0.6	0.8	1.0	1.2
68N	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.6	0.8	1.0	1.2
67N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.7	0.9	1.0	1.4
66N	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.7	0.9	1.1	1.4
65N	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.3	0.4	0.7	0.9	1.1	1.6
64N	0.4	0.3	0.3	0.3	0.2	0.1	0.1	0.2	0.3	0.5	0.7	0.9	1.1	1.8
63N	0.4	0.4	0.3	0.3	0.2	0.1	0.1	0.2	0.4	0.5	0.8	0.9	1.2	2.7
62N	0.4	0.4	0.4	0.3	0.2	0.1	0.2	0.3	0.4	0.5	0.8	1.0	1.7	3.2
61N	0.4	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.5	0.6	0.8	1.1	2.5	3.8
60N	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.4	0.5	0.6	0.9	1.1	2.8	4.5
59N	0.3	0.4	0.5	0.5	0.5	0.4	0.5	0.6	0.6	0.8	0.9	1.2	3.2	7.0
58N	0.3	0.4	0.6	0.6	0.6	0.6	0.6	0.8	0.8	0.9	1.0	1.7	3.6	7.0
57N	0.4	0.5	0.6	0.7	0.7	0.7	0.8	0.9	0.9	1.0	1.2	2.4	7.0	7.0
56N	0.5	0.6	0.8	0.9	0.9	1.0	1.0	1.1	1.0	1.2	1.3	2.5	7.0	7.0
55N	0.8	0.8	0.9	1.2	1.2	1.2	1.1	1.2	1.2	1.4	1.8	3.2	7.0	7.0
54N	1.1	1.0	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.5	1.8	3.4	7.0	7.0
53N	1.8	1.5	1.8	2.0	1.7	1.6	1.3	1.2	1.3	1.6	1.9	3.6	7.0	7.0
52N	2.6	2.0	2.2	2.4	2.3	1.8	1.4	1.3	1.3	1.6	2.0	4.0	7.0	7.0
51N	3.4	2.5	2.7	2.9	2.8	2.1	1.6	1.3	1.6	1.7	2.1	5.6	7.0	7.0
50N	4.3	3.1	3.3	3.5	3.6	2.9	1.9	1.6	1.7	1.8	2.2	6.4	7.0	7.0
49N	7.0	4.9	4.0	4.4	4.2	3.4	2.3	1.9	1.9	2.0	2.3	7.0	7.0	7.0
48N	7.0	7.0	5.6	4.7	4.8	4.0	3.1	2.3	2.2	2.3	3.3	7.0	7.0	7.0
47N	7.0	7.0	6.4	4.6	5.3	5.0	3.8	2.7	2.5	2.5	4.7	7.0	7.0	7.0
46N	7.0	7.0	7.0	4.1	5.9	5.4	4.1	3.1	2.8	2.8	5.2	7.0	7.0	7.0
45N	7.0	7.0	7.0	3.6	7.0	5.7	4.1	3.7	3.1	3.7	5.8	7.0	7.0	7.0
44N	7.0	7.0	7.0	3.4	7.0	6.2	4.0	4.4	3.4	4.1	6.6	7.0	7.0	7.0
43N	7.0	7.0	7.0	4.4	7.0	7.0	4.1	4.9	4.2	4.6	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	4.7	5.5	4.6	5.1	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	6.1	6.3	6.4	5.8	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL380 – No ozone converter – p2
Figure 05–07–53

North America - Maximum Flight duration in hour, MARCH WOUDC FL 370																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
88N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
87N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
86N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9
85N	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
84N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
83N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0
82N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0
81N	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0
80N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.0
79N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9
78N	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9
77N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
76N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7
75N	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.7
74N	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.7
73N	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.7
72N	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8
71N	0.6	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8
70N	0.6	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8
69N	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.7	0.8	0.8	0.9	0.9	0.9
68N	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.8	0.9	0.9	0.9	0.9
67N	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.8	0.9	0.9	1.0	1.0
66N	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.9	0.9	1.0	1.0	1.0
65N	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.9	1.0	1.1	1.1	1.1
64N	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.9	1.1	1.1	1.1	1.1
63N	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.8	1.0	1.1	1.2	1.2	1.2
62N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.9	1.2	1.3	1.3	1.3	1.2
61N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.3	1.4	1.4	1.4	1.4
60N	0.7	0.6	0.5	0.5	0.0	0.0	0.0	0.0	0.5	0.6	0.9	1.1	1.4	1.6	1.6	1.5	1.4
59N	0.7	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.5	0.7	1.0	1.3	1.6	1.7	1.7	1.6	1.4
58N	0.7	0.6	0.6	0.5	0.5	0.0	0.0	0.5	0.6	0.8	1.1	1.4	1.7	1.9	1.9	1.8	1.4
57N	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.6	0.7	0.9	1.2	1.6	1.9	2.1	2.1	2.0	1.6
56N	0.8	0.7	0.7	0.6	0.6	0.5	0.6	0.6	0.7	0.9	1.3	1.7	2.1	2.2	2.3	2.3	1.9
55N	0.9	0.8	0.7	0.6	0.6	0.6	0.6	0.7	0.8	1.0	1.4	1.9	2.3	2.3	2.5	3.0	2.4
54N	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.9	1.1	1.5	2.1	2.6	2.3	2.6	4.8	3.3
53N	1.0	0.9	0.8	0.7	0.7	0.7	0.8	0.8	1.0	1.2	1.7	2.4	2.9	2.3	2.9	7.0	4.8
52N	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.9	1.1	1.4	1.9	2.8	3.6	2.6	3.6	7.0	7.0
51N	1.0	1.0	0.9	0.8	0.8	0.8	0.9	1.0	1.2	1.5	2.1	3.2	4.3	3.1	5.0	7.0	7.0
50N	1.1	1.0	1.0	0.9	0.9	0.9	1.0	1.1	1.3	1.6	2.2	3.3	4.6	3.7	6.3	7.0	7.0
49N	1.3	1.1	1.0	1.0	1.0	0.9	1.0	1.1	1.4	1.7	2.4	3.4	4.5	4.1	7.0	7.0	7.0
48N	1.4	1.2	1.1	1.1	1.0	1.0	1.1	1.3	1.5	2.0	2.5	3.4	4.4	4.4	7.0	7.0	7.0
47N	1.5	1.2	1.2	1.1	1.1	1.1	1.2	1.4	1.6	2.2	2.7	3.5	4.3	4.7	7.0	7.0	7.0
46N	1.5	1.3	1.3	1.2	1.2	1.2	1.3	1.4	1.9	2.3	2.8	3.5	4.4	5.0	7.0	7.0	7.0
45N	1.7	1.4	1.4	1.4	1.3	1.3	1.4	1.6	2.0	2.4	2.9	3.9	4.5	5.4	7.0	7.0	7.0
44N	2.0	1.8	1.5	1.6	1.4	1.4	1.6	2.0	2.2	2.5	3.8	4.0	4.8	5.9	7.0	7.0	7.0
43N	2.2	2.0	1.7	1.7	1.5	1.6	1.7	2.1	2.4	2.7	4.1	4.8	5.1	7.0	7.0	7.0	7.0
42N	2.3	2.2	1.9	1.9	1.9	1.7	1.9	2.4	2.5	2.8	4.4	5.2	6.6	7.0	7.0	7.0	7.0
41N	3.0	2.4	2.1	2.2	2.2	2.0	2.6	2.7	2.8	4.2	4.8	5.7	7.0	7.0	7.0	6.2	7.0
40N	3.3	2.7	2.3	2.5	2.6	2.3	3.1	3.0	3.1	4.8	5.3	6.5	7.0	7.0	7.0	5.7	7.0
39N	3.7	3.0	2.7	2.9	3.1	3.2	3.8	3.5	5.3	5.5	6.0	7.0	7.0	7.0	7.0	6.6	7.0
38N	7.0	5.4	3.1	3.5	4.0	4.1	4.9	4.2	6.6	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	5.8	4.5	5.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL370 – No ozone converter – p1
Figure 05–07–54

North America - Maximum Flight duration in hour, MARCH WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1
88N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
87N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
86N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
85N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1
84N	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.9	0.9	0.9	1.0	1.0	1.1
83N	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1
82N	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.1
81N	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.1	1.1	1.2
80N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.3
79N	1.0	1.0	1.0	1.0	1.1	1.2	1.2	1.2	1.2	1.1	1.2	1.2	1.3	1.4
78N	0.9	0.9	1.0	1.1	1.3	1.6	1.6	1.4	1.3	1.2	1.2	1.3	1.4	1.4
77N	0.8	0.9	1.0	1.2	1.6	2.0	1.9	1.6	1.4	1.3	1.3	1.4	1.4	1.5
76N	0.7	0.8	0.9	1.2	1.6	2.0	1.9	1.6	1.4	1.4	1.4	1.4	1.5	1.7
75N	0.7	0.7	0.9	1.1	1.4	1.7	1.7	1.6	1.4	1.4	1.4	1.5	1.6	1.8
74N	0.7	0.7	0.8	1.0	1.3	1.4	1.5	1.5	1.4	1.4	1.5	1.6	1.7	2.0
73N	0.7	0.7	0.8	1.0	1.2	1.3	1.4	1.4	1.4	1.4	1.5	1.6	1.8	2.2
72N	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.3	1.3	1.4	1.5	1.7	1.9	2.4
71N	0.8	0.8	0.9	1.0	1.1	1.2	1.2	1.3	1.3	1.4	1.5	1.7	2.0	2.5
70N	0.8	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.5	1.8	2.2	2.5
69N	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.2	1.3	1.4	1.5	1.9	2.2	2.5
68N	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.5	1.9	2.2	2.5
67N	1.0	1.0	1.1	1.1	1.0	1.0	1.0	1.1	1.2	1.3	1.6	1.9	2.2	2.7
66N	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.1	1.2	1.3	1.7	1.9	2.2	2.8
65N	1.2	1.1	1.1	1.1	1.0	0.9	1.0	1.1	1.2	1.3	1.7	1.9	2.3	3.3
64N	1.2	1.2	1.2	1.1	1.0	0.9	0.9	1.1	1.2	1.4	1.7	2.0	2.3	3.6
63N	1.3	1.2	1.2	1.1	1.0	0.9	1.0	1.1	1.2	1.4	1.8	2.0	2.4	5.9
62N	1.3	1.3	1.3	1.2	1.1	1.0	1.0	1.1	1.3	1.4	1.8	2.1	3.3	7.0
61N	1.2	1.2	1.3	1.2	1.1	1.0	1.1	1.2	1.3	1.5	1.9	2.2	5.2	7.0
60N	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.3	1.4	1.6	1.9	2.3	5.9	7.0
59N	1.2	1.2	1.3	1.4	1.4	1.3	1.4	1.6	1.5	1.8	2.0	2.4	7.0	7.0
58N	1.2	1.2	1.5	1.6	1.6	1.5	1.6	1.7	1.8	1.9	2.1	3.2	7.0	7.0
57N	1.2	1.3	1.6	1.7	1.7	1.7	1.8	1.9	1.9	2.1	2.4	4.8	7.0	7.0
56N	1.4	1.4	1.7	1.9	1.9	2.1	2.0	2.1	2.0	2.3	2.5	5.1	7.0	7.0
55N	1.7	1.8	1.9	2.4	2.4	2.4	2.2	2.2	2.3	2.7	3.3	7.0	7.0	7.0
54N	2.1	2.1	2.8	2.8	2.9	2.6	2.4	2.2	2.3	2.8	3.4	7.0	7.0	7.0
53N	3.0	2.8	3.4	4.0	3.4	3.0	2.5	2.2	2.4	2.9	3.6	7.0	7.0	7.0
52N	4.2	3.5	4.3	5.0	4.7	3.4	2.6	2.3	2.4	3.0	3.8	7.0	7.0	7.0
51N	5.6	4.6	5.6	6.7	6.1	4.0	2.9	2.4	2.8	3.2	3.9	7.0	7.0	7.0
50N	7.0	6.1	7.0	7.0	7.0	6.0	3.5	2.8	3.1	3.4	4.2	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	4.4	3.4	3.5	3.6	4.4	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.2	4.0	4.4	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.7	4.9	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.5	5.5	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL370 – No ozone converter – p2
Figure 05–07–55

North America - Maximum Flight duration in hour, MARCH WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
88N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
87N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
86N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
85N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
84N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
83N	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
82N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1
81N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2
80N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1
79N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1
78N	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0
77N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
76N	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.8
75N	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.8
74N	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.8	0.8
73N	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.8	0.9	0.9	0.9	0.8	0.8
72N	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.8
71N	0.7	0.6	0.6	0.6	0.5	0.0	0.0	0.0	0.5	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.9
70N	0.7	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.8	0.9	0.9	1.0	1.0	1.0
69N	0.7	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.8	0.9	1.0	1.0	1.0	1.0
68N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.6	0.8	0.9	1.0	1.0	1.1	1.1
67N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	0.9	1.0	1.1	1.1	1.1
66N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.1	1.2	1.2	1.2
65N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.1	1.2	1.3	1.3
64N	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.9	1.1	1.2	1.3	1.3	1.3
63N	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.7	0.9	1.2	1.3	1.4	1.4	1.4
62N	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.1	1.3	1.5	1.6	1.6	1.5
61N	0.7	0.6	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.6	0.9	1.2	1.5	1.7	1.7	1.7	1.7
60N	0.7	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.5	0.7	1.0	1.3	1.7	1.9	1.9	1.8	1.7
59N	0.8	0.7	0.6	0.6	0.5	0.0	0.0	0.0	0.6	0.8	1.1	1.5	1.9	2.1	2.1	2.0	1.7
58N	0.8	0.7	0.6	0.6	0.6	0.5	0.5	0.6	0.7	0.9	1.2	1.7	2.1	2.4	2.4	2.2	1.8
57N	0.9	0.8	0.7	0.6	0.6	0.6	0.6	0.6	0.7	1.0	1.3	1.9	2.4	2.7	2.7	2.5	2.0
56N	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.7	0.8	1.1	1.5	2.1	2.7	2.9	3.0	3.0	2.5
55N	1.0	0.9	0.8	0.7	0.7	0.7	0.7	0.7	0.9	1.2	1.7	2.4	3.0	2.9	3.3	4.2	3.2
54N	1.0	0.9	0.8	0.7	0.7	0.7	0.8	0.8	1.0	1.3	1.9	2.8	3.5	2.9	3.5	7.0	5.0
53N	1.1	1.0	0.9	0.8	0.8	0.8	0.8	0.9	1.1	1.4	2.0	3.3	4.2	2.9	4.0	7.0	7.0
52N	1.1	1.0	0.9	0.8	0.8	0.8	0.9	1.0	1.2	1.6	2.3	3.9	6.0	3.4	5.4	7.0	7.0
51N	1.2	1.1	1.0	0.9	0.9	0.9	1.0	1.1	1.3	1.8	2.7	4.8	7.0	4.4	7.0	7.0	7.0
50N	1.3	1.2	1.1	1.0	1.0	1.0	1.1	1.2	1.5	2.0	2.9	5.2	7.0	6.1	7.0	7.0	7.0
49N	1.5	1.2	1.2	1.1	1.1	1.0	1.1	1.3	1.6	2.1	3.2	5.3	7.0	7.0	7.0	7.0	7.0
48N	1.6	1.3	1.2	1.2	1.1	1.2	1.2	1.4	1.7	2.5	3.4	5.3	7.0	7.0	7.0	7.0	7.0
47N	1.7	1.4	1.3	1.3	1.2	1.3	1.3	1.6	1.8	2.7	3.7	5.6	7.0	7.0	7.0	7.0	7.0
46N	1.8	1.5	1.4	1.4	1.3	1.4	1.4	1.7	2.3	2.9	3.9	5.6	7.0	7.0	7.0	7.0	7.0
45N	1.9	1.6	1.5	1.6	1.4	1.5	1.7	1.8	2.5	3.1	4.0	6.5	7.0	7.0	7.0	7.0	7.0
44N	2.4	2.1	1.7	1.8	1.6	1.6	1.8	2.3	2.7	3.3	5.8	6.7	7.0	7.0	7.0	7.0	7.0
43N	2.6	2.3	2.0	2.0	1.8	1.8	2.0	2.6	2.9	3.5	6.4	7.0	7.0	7.0	7.0	7.0	7.0
42N	2.8	2.6	2.2	2.2	2.2	2.0	2.3	2.9	3.2	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	3.7	2.9	2.4	2.5	2.6	2.3	3.3	3.3	3.6	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	4.2	3.2	2.8	3.0	3.1	2.7	3.9	3.9	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	4.8	3.7	3.2	3.6	3.9	4.0	5.1	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	3.8	4.5	5.2	5.5	7.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL360 – No ozone converter – p1
Figure 05–07–56

North America - Maximum Flight duration in hour, MARCH WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3
88N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3
87N	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3
86N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3
85N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.3
84N	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.3
83N	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.2	1.3	1.3
82N	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.3	1.4
81N	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.1	1.1	1.2	1.3	1.4	1.5
80N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.6
79N	1.1	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.6	1.7
78N	1.0	1.1	1.2	1.3	1.7	2.0	2.0	1.8	1.6	1.6	1.5	1.6	1.7	1.9
77N	0.9	1.0	1.1	1.4	2.0	2.7	2.5	2.0	1.7	1.7	1.7	1.7	1.9	2.0
76N	0.8	0.9	1.0	1.4	2.0	2.7	2.6	2.1	1.8	1.7	1.8	1.8	2.0	2.2
75N	0.7	0.8	1.0	1.3	1.8	2.2	2.2	2.0	1.8	1.8	1.8	2.0	2.2	2.5
74N	0.7	0.8	1.0	1.2	1.5	1.8	1.9	1.9	1.8	1.8	1.9	2.1	2.4	2.8
73N	0.8	0.8	1.0	1.2	1.4	1.6	1.7	1.8	1.7	1.8	2.0	2.2	2.6	3.4
72N	0.8	0.9	1.0	1.2	1.4	1.5	1.6	1.7	1.7	1.8	1.9	2.3	2.8	3.8
71N	0.9	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.3	2.9	4.1
70N	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.5	1.6	1.8	2.0	2.6	3.2	4.2
69N	1.0	1.1	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.7	2.0	2.6	3.3	4.2
68N	1.1	1.1	1.2	1.3	1.3	1.3	1.4	1.4	1.6	1.7	1.9	2.7	3.3	4.1
67N	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.5	1.7	2.2	2.7	3.3	4.7
66N	1.2	1.3	1.3	1.3	1.3	1.2	1.3	1.4	1.5	1.7	2.2	2.7	3.4	4.9
65N	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.4	1.5	1.7	2.3	2.8	3.5	6.4
64N	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.4	1.5	1.7	2.3	2.8	3.6	7.0
63N	1.5	1.5	1.4	1.4	1.3	1.2	1.2	1.4	1.6	1.8	2.4	2.9	3.7	7.0
62N	1.5	1.5	1.5	1.5	1.3	1.2	1.3	1.4	1.6	1.8	2.5	3.0	6.3	7.0
61N	1.5	1.5	1.6	1.6	1.4	1.3	1.4	1.5	1.7	2.0	2.6	3.3	7.0	7.0
60N	1.4	1.5	1.6	1.6	1.5	1.5	1.5	1.7	1.8	2.0	2.7	3.4	7.0	7.0
59N	1.4	1.5	1.6	1.7	1.8	1.7	1.8	2.0	1.9	2.4	2.8	3.6	7.0	7.0
58N	1.4	1.5	1.8	2.0	2.0	1.9	2.0	2.2	2.3	2.5	2.9	5.8	7.0	7.0
57N	1.5	1.6	2.0	2.2	2.3	2.2	2.3	2.5	2.5	2.9	3.5	7.0	7.0	7.0
56N	1.7	1.8	2.2	2.5	2.6	2.8	2.6	2.6	2.6	3.1	3.7	7.0	7.0	7.0
55N	2.1	2.3	2.5	3.4	3.5	3.2	2.8	2.7	2.9	3.9	5.5	7.0	7.0	7.0
54N	2.7	2.7	4.0	4.2	4.2	3.7	3.0	2.7	3.0	4.0	5.8	7.0	7.0	7.0
53N	4.3	4.0	5.3	6.9	5.4	4.4	3.2	2.7	3.0	4.2	6.2	7.0	7.0	7.0
52N	7.0	5.6	7.0	7.0	7.0	5.3	3.5	2.8	3.2	4.5	6.7	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.1	3.8	4.9	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.9	4.4	5.4	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	5.4	6.1	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL360 – No ozone converter – p2
Figure 05–07–57

North America - Maximum Flight duration in hour, MARCH WOUDC FL 350																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
89N	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
88N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
87N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
86N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
85N	1.5	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
84N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5
83N	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5
82N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.5
81N	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6
80N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.5
79N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5
78N	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3
77N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.1
76N	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.1	1.1	1.0
75N	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0
74N	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.1	1.1	1.1	1.0	1.0
73N	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.0
72N	0.9	0.8	0.7	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.1	1.1
71N	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.7	0.9	1.0	1.1	1.2	1.2	1.2	1.1
70N	0.8	0.8	0.7	0.6	0.6	0.5	0.0	0.5	0.6	0.7	0.8	1.0	1.1	1.2	1.2	1.2	1.2
69N	0.8	0.7	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.6	0.8	1.0	1.1	1.2	1.3	1.3	1.3
68N	0.8	0.7	0.7	0.6	0.5	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.1	1.3	1.3	1.4	1.4
67N	0.8	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.2	1.3	1.4	1.5	1.5
66N	0.8	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.2	1.4	1.5	1.6	1.6
65N	0.8	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.0	1.3	1.5	1.6	1.7	1.7
64N	0.8	0.7	0.6	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.1	1.4	1.6	1.7	1.8	1.8
63N	0.9	0.7	0.7	0.6	0.0	0.0	0.0	0.0	0.0	0.6	0.9	1.2	1.5	1.8	1.9	1.9	1.9
62N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.5	0.7	1.0	1.4	1.8	2.1	2.3	2.2	2.1
61N	0.9	0.8	0.7	0.6	0.5	0.0	0.0	0.0	0.6	0.8	1.1	1.5	2.0	2.4	2.5	2.4	2.4
60N	0.9	0.8	0.7	0.6	0.6	0.5	0.0	0.5	0.6	0.8	1.2	1.8	2.4	2.8	2.9	2.6	2.5
59N	0.9	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.7	1.0	1.4	2.0	2.8	3.3	3.4	3.1	2.5
58N	1.0	0.9	0.8	0.7	0.7	0.6	0.6	0.7	0.8	1.1	1.6	2.4	3.4	4.0	4.1	3.5	2.7
57N	1.1	1.0	0.8	0.7	0.7	0.7	0.7	0.7	0.9	1.2	1.8	2.9	4.1	4.9	4.9	4.2	3.1
56N	1.1	1.0	0.9	0.8	0.8	0.7	0.7	0.8	1.0	1.4	2.1	3.4	4.9	5.5	5.7	5.5	4.2
55N	1.2	1.1	1.0	0.9	0.8	0.8	0.8	0.9	1.1	1.5	2.4	4.2	6.1	5.8	7.0	7.0	6.3
54N	1.3	1.1	1.0	0.9	0.9	0.9	0.9	1.1	1.2	1.7	2.8	5.3	7.0	5.7	7.0	7.0	7.0
53N	1.3	1.2	1.1	1.0	0.9	1.0	1.0	1.2	1.5	1.9	3.2	7.0	7.0	5.8	7.0	7.0	7.0
52N	1.4	1.3	1.2	1.0	1.0	1.0	1.1	1.3	1.6	2.3	4.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	1.5	1.4	1.2	1.1	1.1	1.1	1.2	1.4	1.8	2.8	5.4	7.0	7.0	7.0	7.0	7.0	7.0
50N	1.6	1.5	1.4	1.3	1.2	1.2	1.4	1.6	2.1	3.1	6.1	7.0	7.0	7.0	7.0	7.0	7.0
49N	1.9	1.6	1.5	1.4	1.3	1.3	1.5	1.7	2.3	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	2.0	1.7	1.6	1.5	1.5	1.5	1.6	2.0	2.6	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	2.2	1.8	1.7	1.6	1.6	1.6	1.8	2.2	2.8	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	2.4	1.9	1.9	1.8	1.8	1.8	1.9	2.5	3.8	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	2.6	2.1	2.0	2.2	1.9	2.0	2.4	2.7	4.3	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	3.4	2.9	2.3	2.4	2.2	2.2	2.7	3.9	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	3.8	3.3	2.7	2.8	2.5	2.6	3.1	4.6	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	4.2	3.8	3.1	3.2	3.3	3.0	3.7	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	6.3	4.4	3.6	3.9	4.1	3.5	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	5.3	4.3	4.8	5.3	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	6.4	5.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL350 – No ozone converter – p1
Figure 05–07–58

North America - Maximum Flight duration in hour, MARCH WOUDC FL 350														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
89N	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
88N	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87N	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7
86N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7
85N	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.7	1.8
84N	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.6	1.7	1.8
83N	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.4	1.5	1.6	1.7	1.9
82N	1.6	1.6	1.6	1.5	1.5	1.4	1.3	1.3	1.4	1.4	1.5	1.7	1.8	2.0
81N	1.6	1.7	1.7	1.6	1.6	1.5	1.4	1.4	1.5	1.6	1.6	1.8	1.9	2.1
80N	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.9	2.1	2.2
79N	1.5	1.6	1.7	1.7	1.9	2.0	2.1	2.0	1.9	1.9	2.0	2.1	2.2	2.4
78N	1.4	1.5	1.6	1.8	2.3	2.8	2.8	2.4	2.2	2.1	2.1	2.2	2.4	2.6
77N	1.2	1.3	1.5	1.9	2.8	3.9	3.6	2.8	2.4	2.3	2.3	2.4	2.6	2.9
76N	1.0	1.1	1.3	1.8	2.8	3.9	3.6	2.9	2.5	2.4	2.4	2.6	2.9	3.2
75N	0.9	1.0	1.2	1.7	2.4	3.1	3.1	2.8	2.5	2.4	2.5	2.7	3.1	3.6
74N	0.9	1.0	1.2	1.6	2.0	2.4	2.6	2.5	2.4	2.4	2.6	2.9	3.4	4.1
73N	1.0	1.0	1.2	1.5	1.8	2.1	2.3	2.3	2.3	2.4	2.7	3.1	3.7	5.2
72N	1.1	1.1	1.3	1.6	1.8	2.0	2.1	2.2	2.3	2.4	2.6	3.2	4.0	5.9
71N	1.1	1.2	1.4	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.7	3.3	4.2	6.4
70N	1.2	1.3	1.5	1.6	1.7	1.7	1.8	2.0	2.1	2.3	2.7	3.7	4.9	6.6
69N	1.3	1.3	1.5	1.6	1.6	1.6	1.7	1.8	2.0	2.3	2.6	3.8	5.0	6.7
68N	1.4	1.4	1.6	1.6	1.6	1.5	1.6	1.7	2.0	2.2	2.6	3.8	5.1	6.7
67N	1.5	1.5	1.6	1.6	1.5	1.4	1.5	1.6	1.9	2.2	3.1	3.9	5.2	7.0
66N	1.6	1.8	1.7	1.6	1.5	1.3	1.4	1.6	1.8	2.2	3.1	4.0	5.4	7.0
65N	1.9	1.8	1.8	1.6	1.4	1.3	1.3	1.5	1.8	2.2	3.1	4.1	5.7	7.0
64N	2.0	1.9	1.8	1.6	1.4	1.2	1.3	1.5	1.8	2.3	3.2	4.3	6.1	7.0
63N	2.2	2.1	1.9	1.7	1.4	1.3	1.3	1.6	1.9	2.3	3.5	4.5	6.7	7.0
62N	2.2	2.1	2.1	1.8	1.5	1.3	1.4	1.7	2.0	2.4	3.6	4.7	7.0	7.0
61N	2.1	2.1	2.1	2.0	1.6	1.4	1.5	1.8	2.2	2.6	3.8	5.4	7.0	7.0
60N	2.1	2.1	2.2	2.1	1.8	1.7	1.8	2.1	2.4	2.8	4.1	5.9	7.0	7.0
59N	2.0	2.1	2.3	2.3	2.2	2.1	2.2	2.7	2.6	3.4	4.4	6.4	7.0	7.0
58N	2.0	2.2	2.7	2.8	2.6	2.5	2.8	3.2	3.4	3.7	4.8	7.0	7.0	7.0
57N	2.2	2.4	2.9	3.2	3.1	3.0	3.4	4.0	3.9	4.8	6.3	7.0	7.0	7.0
56N	2.6	2.6	3.4	3.7	3.7	4.3	4.3	4.7	4.4	5.4	6.8	7.0	7.0	7.0
55N	3.4	3.6	4.0	5.7	5.8	5.4	5.0	5.3	5.4	7.0	7.0	7.0	7.0	7.0
54N	4.7	4.7	7.0	7.0	7.0	6.9	5.9	5.5	5.7	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.5	6.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	6.4	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL350 – No ozone converter – p2
Figure 05–07–59

North America - Maximum Flight duration in hour, MARCH WOUDC FL 340																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
89N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
88N	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87N	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4
86N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
85N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3
84N	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.3
83N	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2
82N	2.0	2.0	2.0	2.0	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2	2.2
81N	1.9	1.9	1.9	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.2
80N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.2
79N	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.1
78N	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.9
77N	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.7	1.7	1.7	1.6
76N	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.6	1.5	1.4
75N	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.6	1.6	1.5	1.4
74N	1.5	1.4	1.3	1.3	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.6	1.7	1.7	1.6	1.5	1.4
73N	1.5	1.3	1.3	1.2	1.2	1.1	1.1	1.2	1.2	1.4	1.5	1.6	1.7	1.7	1.6	1.5	1.4
72N	1.4	1.3	1.2	1.1	1.1	1.0	1.0	1.1	1.1	1.3	1.4	1.6	1.7	1.7	1.7	1.6	1.5
71N	1.4	1.3	1.2	1.1	1.0	1.0	0.9	1.0	1.1	1.2	1.4	1.5	1.7	1.7	1.7	1.7	1.6
70N	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.9	1.0	1.1	1.3	1.5	1.7	1.8	1.8	1.8	1.7
69N	1.4	1.2	1.1	1.0	0.9	0.8	0.8	0.8	0.9	1.1	1.3	1.5	1.7	1.8	1.9	1.9	1.8
68N	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.7	0.8	1.0	1.3	1.5	1.8	1.9	2.0	2.0	2.0
67N	1.3	1.2	1.1	1.0	0.8	0.7	0.7	0.7	0.8	1.0	1.2	1.6	1.8	2.0	2.1	2.1	2.1
66N	1.3	1.2	1.1	1.0	0.8	0.7	0.7	0.7	0.8	1.0	1.3	1.6	2.0	2.2	2.3	2.3	2.3
65N	1.4	1.2	1.1	0.9	0.8	0.7	0.7	0.7	0.8	1.0	1.3	1.7	2.1	2.4	2.5	2.5	2.5
64N	1.4	1.2	1.1	1.0	0.8	0.7	0.7	0.7	0.8	1.0	1.4	1.8	2.3	2.6	2.8	2.8	2.7
63N	1.5	1.2	1.1	1.0	0.8	0.8	0.7	0.7	0.8	1.1	1.5	2.0	2.6	3.0	3.1	3.0	2.9
62N	1.5	1.3	1.1	1.0	0.9	0.8	0.7	0.8	0.9	1.2	1.7	2.4	3.2	3.8	3.9	3.6	3.2
61N	1.5	1.3	1.2	1.0	0.9	0.8	0.8	0.8	1.0	1.3	1.9	2.8	3.8	4.5	4.6	4.0	3.9
60N	1.5	1.4	1.2	1.1	1.0	0.9	0.9	0.9	1.1	1.5	2.2	3.3	4.7	5.7	5.6	4.6	3.9
59N	1.6	1.4	1.2	1.1	1.0	1.0	0.9	1.0	1.2	1.7	2.5	4.0	6.0	7.0	7.0	5.9	4.1
58N	1.6	1.4	1.3	1.2	1.1	1.0	1.0	1.1	1.4	1.9	3.0	5.1	7.0	7.0	7.0	7.0	4.5
57N	2.0	1.7	1.3	1.2	1.2	1.1	1.2	1.3	1.6	2.3	3.6	6.8	7.0	7.0	7.0	7.0	5.6
56N	2.1	1.8	1.6	1.4	1.3	1.2	1.3	1.4	1.8	2.6	4.5	7.0	7.0	7.0	7.0	7.0	7.0
55N	2.2	1.9	1.8	1.5	1.4	1.4	1.4	1.6	2.0	3.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0
54N	2.4	2.1	1.9	1.6	1.5	1.6	1.7	2.0	2.3	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	2.5	2.3	2.0	1.7	1.7	1.7	1.9	2.2	3.0	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	2.7	2.5	2.2	1.9	2.0	1.9	2.1	2.5	3.4	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	2.9	2.7	2.4	2.0	2.2	2.1	2.4	2.9	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	3.4	3.0	2.7	2.5	2.4	2.4	2.7	3.2	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	4.4	3.3	3.0	2.8	2.7	2.6	3.1	3.7	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	5.1	3.6	3.4	3.1	3.0	3.1	3.5	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	5.8	4.0	3.8	3.6	3.5	3.6	4.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	6.9	4.6	4.4	4.2	4.0	4.2	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	5.3	5.1	6.1	4.8	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	6.2	7.0	5.9	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL340 – No ozone converter – p1
Figure 05–07–60

North America - Maximum Flight duration in hour, MARCH WOUDC FL 340														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
89N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7
88N	2.4	2.4	2.4	2.5	2.5	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7
87N	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.7	2.7	2.8
86N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.6	2.7	2.7
85N	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.8	2.9
84N	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.6	2.7	2.9
83N	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.4	2.6	2.8	3.0
82N	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.1	2.2	2.3	2.4	2.6	2.9	3.2
81N	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.3	2.4	2.6	2.8	3.1	3.4
80N	2.3	2.3	2.3	2.4	2.5	2.6	2.6	2.6	2.6	2.7	2.8	3.1	3.3	3.7
79N	2.2	2.3	2.3	2.4	2.8	3.1	3.2	3.2	3.1	3.0	3.1	3.4	3.7	4.1
78N	1.9	2.1	2.3	2.7	3.5	4.8	4.8	4.0	3.6	3.4	3.4	3.6	4.0	4.6
77N	1.6	1.8	2.2	2.9	4.6	7.0	6.8	4.8	3.8	3.6	3.7	3.9	4.5	5.2
76N	1.4	1.5	1.9	2.8	4.7	7.0	7.0	5.0	4.0	3.7	3.9	4.2	4.9	5.9
75N	1.3	1.4	1.8	2.5	3.8	5.3	5.4	4.5	3.9	3.7	4.0	4.5	5.5	7.0
74N	1.3	1.4	1.7	2.3	3.1	3.8	4.2	3.9	3.7	3.7	4.1	4.8	6.2	7.0
73N	1.4	1.5	1.7	2.1	2.6	3.0	3.4	3.4	3.4	3.5	4.2	5.1	7.0	7.0
72N	1.5	1.6	1.8	2.1	2.4	2.6	2.9	3.0	3.1	3.4	4.0	5.3	7.0	7.0
71N	1.6	1.7	1.9	2.0	2.2	2.3	2.5	2.6	2.9	3.2	3.9	5.5	7.0	7.0
70N	1.7	1.7	1.9	2.0	2.0	2.0	2.1	2.3	2.6	3.1	3.8	6.4	7.0	7.0
69N	1.8	1.8	2.0	1.9	1.8	1.8	1.8	2.0	2.4	2.9	3.7	6.4	7.0	7.0
68N	1.9	1.9	2.0	1.8	1.6	1.5	1.6	1.8	2.2	2.7	3.5	6.4	7.0	7.0
67N	2.1	1.9	2.0	1.7	1.5	1.3	1.4	1.6	2.0	2.6	4.2	6.4	7.0	7.0
66N	2.2	2.3	2.0	1.7	1.4	1.2	1.2	1.5	1.9	2.5	4.1	6.5	7.0	7.0
65N	2.7	2.4	2.1	1.7	1.3	1.1	1.1	1.4	1.8	2.5	4.1	6.7	7.0	7.0
64N	2.8	2.5	2.1	1.7	1.2	1.0	1.1	1.4	1.8	2.6	4.2	7.0	7.0	7.0
63N	3.2	2.9	2.3	1.7	1.3	1.0	1.1	1.4	1.9	2.6	4.6	7.0	7.0	7.0
62N	3.3	3.0	2.5	1.9	1.4	1.1	1.2	1.6	2.1	2.7	4.9	7.0	7.0	7.0
61N	3.3	3.1	2.7	2.1	1.5	1.3	1.4	1.8	2.3	3.0	5.3	7.0	7.0	7.0
60N	3.2	3.2	2.9	2.3	1.8	1.5	1.6	2.1	2.6	3.3	5.8	7.0	7.0	7.0
59N	3.1	3.3	3.1	2.6	2.2	2.0	2.2	2.9	3.1	4.2	6.6	7.0	7.0	7.0
58N	3.2	3.4	3.8	3.4	2.8	2.6	3.0	3.9	4.3	4.8	7.0	7.0	7.0	7.0
57N	3.5	3.7	4.3	4.2	3.6	3.4	4.2	5.5	5.5	7.0	7.0	7.0	7.0	7.0
56N	4.3	4.3	5.5	5.2	4.7	5.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	6.5	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL340 – No ozone converter – p2
Figure 05–07–61

North America - Maximum Flight duration in hour, MARCH WOUDC FL 330																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
89N	5.1	5.1	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9	4.8	4.8	4.8	4.8	4.8
88N	5.0	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
87N	4.5	4.5	4.4	4.4	4.4	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
86N	4.4	4.4	4.3	4.2	4.2	4.2	4.2	4.1	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0
85N	4.3	4.3	4.2	4.1	4.1	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8
84N	4.2	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.7
83N	4.1	4.1	4.0	3.9	3.9	3.8	3.8	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6
82N	4.0	3.9	3.9	3.8	3.8	3.7	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
81N	3.9	3.8	3.8	3.6	3.6	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
80N	3.8	3.7	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.3	3.4
79N	3.7	3.5	3.5	3.4	3.4	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.2
78N	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.0	3.0	2.9	2.8	2.8
77N	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	2.8	2.7	2.6	2.4
76N	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.0	2.9	2.7	2.6	2.3	2.1
75N	3.3	3.2	3.2	3.1	3.1	3.0	3.0	3.0	3.0	3.1	3.1	3.0	2.9	2.7	2.5	2.2	2.0
74N	3.7	3.2	3.1	3.0	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0	2.8	2.5	2.2	2.0
73N	3.6	3.2	3.0	2.9	2.8	2.8	2.7	2.8	2.8	3.0	3.1	3.1	3.1	2.9	2.6	2.3	2.1
72N	3.6	3.1	3.0	2.8	2.7	2.6	2.6	2.7	2.8	3.0	3.1	3.2	3.2	3.0	2.8	2.5	2.3
71N	3.5	3.3	2.9	2.7	2.8	2.6	2.5	2.5	2.7	2.9	3.1	3.3	3.3	3.2	3.0	2.7	2.6
70N	3.5	3.3	3.1	2.9	2.6	2.4	2.3	2.3	2.5	2.8	3.1	3.4	3.5	3.4	3.2	3.0	2.8
69N	3.5	3.2	3.0	2.8	2.5	2.3	2.1	2.2	2.4	2.7	3.2	3.5	3.7	3.7	3.5	3.3	3.2
68N	3.5	3.2	2.9	2.7	2.4	2.1	2.0	2.0	2.3	2.7	3.2	3.7	4.0	4.0	3.9	3.7	3.5
67N	3.5	3.2	2.9	2.6	2.3	2.1	1.9	1.9	2.2	2.6	3.3	3.9	4.4	4.5	4.4	4.2	3.9
66N	3.5	3.2	2.9	2.6	2.3	2.0	1.9	1.9	2.1	2.6	3.4	4.2	4.9	5.2	5.0	4.7	4.4
65N	4.1	3.2	3.0	2.6	2.3	2.0	1.9	1.9	2.1	2.7	3.6	4.7	5.7	6.1	5.9	5.4	5.0
64N	4.1	3.3	3.0	2.7	2.3	2.0	1.9	1.9	2.2	2.8	3.9	5.4	6.8	7.0	7.0	6.3	5.6
63N	4.3	3.3	3.1	2.7	2.3	2.1	1.9	2.0	2.3	3.0	4.4	6.4	7.0	7.0	7.0	7.0	6.1
62N	4.4	3.6	3.2	2.8	2.4	2.2	2.1	2.1	2.6	3.7	6.1	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.6	3.8	3.3	2.9	2.6	2.4	2.3	2.4	2.9	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	4.6	3.9	3.4	3.1	2.8	2.6	2.5	2.7	3.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	4.8	4.1	3.5	3.2	3.0	2.8	2.8	3.1	4.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	5.1	4.3	3.7	3.4	3.5	3.1	3.2	3.5	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	6.5	3.9	3.6	3.9	3.5	3.6	4.2	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	5.7	4.8	4.4	3.8	4.1	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	5.4	5.0	5.3	4.7	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	6.2	5.8	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL330 – No ozone converter – p1
Figure 05–07–62

North America - Maximum Flight duration in hour, MARCH WOUDC FL 330														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
89N	4.9	4.9	4.9	4.9	5.0	5.0	5.0	5.0	5.1	5.1	5.1	5.2	5.2	5.3
88N	4.4	4.4	4.4	4.4	4.4	4.8	4.9	5.0	5.0	5.1	5.2	5.3	5.1	5.2
87N	4.2	4.2	4.2	4.2	4.2	4.2	4.5	4.6	4.7	4.8	4.9	5.1	5.3	5.5
86N	4.0	4.0	3.9	3.9	3.9	4.0	4.0	4.2	4.3	4.4	4.6	4.8	5.1	5.3
85N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	4.0	4.1	4.3	4.6	5.1	5.6
84N	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.7	3.8	4.1	4.6	5.0	5.7
83N	3.6	3.6	3.6	3.6	3.6	3.5	3.4	3.4	3.5	3.7	4.0	4.5	5.1	5.9
82N	3.6	3.6	3.6	3.6	3.6	3.5	3.4	3.4	3.6	3.8	4.1	4.7	5.5	6.5
81N	3.5	3.5	3.5	3.6	3.7	3.8	3.7	3.7	3.9	4.2	4.6	5.3	6.1	7.0
80N	3.4	3.4	3.4	3.6	3.9	4.3	4.4	4.6	4.6	4.8	5.2	6.0	7.0	7.0
79N	3.3	3.4	3.5	3.8	4.7	5.7	6.1	5.8	5.8	5.8	6.0	6.9	7.0	7.0
78N	2.9	3.2	3.6	4.4	6.8	7.0	7.0	7.0	7.0	6.8	6.9	7.0	7.0	7.0
77N	2.4	2.7	3.4	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	2.0	2.2	3.0	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	1.8	2.0	2.7	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	1.9	2.0	2.6	3.8	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	2.0	2.2	2.7	3.5	4.7	5.8	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	2.2	2.4	2.9	3.5	4.2	4.8	5.5	5.9	6.5	7.0	7.0	7.0	7.0	7.0
71N	2.5	2.6	3.0	3.4	3.7	4.1	4.6	5.1	5.8	7.0	7.0	7.0	7.0	7.0
70N	2.7	2.8	3.1	3.3	3.4	3.5	3.8	4.4	5.2	6.6	7.0	7.0	7.0	7.0
69N	3.0	3.0	3.2	3.2	3.1	3.0	3.2	3.6	4.6	6.2	7.0	7.0	7.0	7.0
68N	3.4	3.2	3.3	3.0	2.7	2.6	2.7	3.2	4.2	5.8	7.0	7.0	7.0	7.0
67N	3.7	3.4	3.3	2.9	2.5	2.2	2.3	2.8	3.6	5.5	7.0	7.0	7.0	7.0
66N	4.1	4.0	3.5	2.8	2.3	1.9	2.0	2.6	3.5	5.2	7.0	7.0	7.0	7.0
65N	5.0	4.4	3.6	2.8	2.1	1.7	1.8	2.4	3.4	5.1	7.0	7.0	7.0	7.0
64N	5.5	4.6	3.8	2.8	2.1	1.6	1.8	2.4	3.4	5.7	7.0	7.0	7.0	7.0
63N	6.3	5.6	4.1	3.0	2.1	1.7	1.8	2.5	3.6	6.0	7.0	7.0	7.0	7.0
62N	6.4	5.9	4.9	3.5	2.3	1.8	2.0	2.8	4.0	6.7	7.0	7.0	7.0	7.0
61N	6.2	6.0	5.4	3.9	2.7	2.1	2.3	3.3	4.8	7.0	7.0	7.0	7.0	7.0
60N	5.8	6.1	5.9	4.6	3.3	2.7	3.0	4.3	6.0	7.0	7.0	7.0	7.0	7.0
59N	5.6	6.3	6.6	5.5	4.8	4.0	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	5.7	6.6	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL330 – No ozone converter – p2
Figure 05–07–63

North America - Maximum Flight duration in hour, MARCH WOUDC FL 320																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.6
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.5	6.4	6.3
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.1	5.8	5.8
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.1	5.5	5.2	5.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.7	5.0	4.4	4.1
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.6	4.7	3.9	3.4
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.5	3.7	3.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.7	3.7	3.1
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.2	4.1	3.4
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.7	3.9
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.7
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.7
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL320 – No ozone converter – p1
Figure 05–07–64

North America - Maximum Flight duration in hour, MARCH WOUDC FL 320														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	6.9	6.7	6.4	6.3	6.3	6.7	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	6.9	6.7	6.4	5.9	5.7	5.7	6.0	6.7	7.0	7.0	7.0	7.0
82N	6.8	6.7	6.7	6.7	6.5	6.1	5.8	5.8	6.1	6.9	7.0	7.0	7.0	7.0
81N	6.5	6.4	6.4	6.6	7.0	6.9	6.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0
80N	6.3	6.2	6.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	6.0	6.3	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	5.2	5.8	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	4.0	4.7	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	3.1	3.7	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	2.8	3.2	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.9	3.2	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	3.2	3.6	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	3.7	4.0	4.9	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	4.4	4.6	5.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	5.1	5.2	5.6	5.9	6.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	6.0	5.8	5.7	5.5	5.1	4.9	5.3	6.7	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	6.5	5.9	5.1	4.3	3.9	4.1	5.3	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	6.0	4.7	3.7	3.1	3.3	4.4	6.8	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	6.4	4.5	3.2	2.5	2.7	3.8	6.2	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	6.9	4.4	2.9	2.2	2.4	3.5	5.9	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	4.5	2.8	2.1	2.3	3.5	6.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	4.8	2.9	2.1	2.3	3.7	6.8	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	6.4	3.3	2.4	2.6	4.3	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	4.1	2.9	3.3	5.6	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	5.6	4.2	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – March – FL320 – No ozone converter – p2
Figure 05–07–65

D. North America – April

North America - Maximum Flight duration in hour, APRIL WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.8	0.7	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.0	1.1	1.2	1.1	0.7	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.0	1.3	1.5	1.5	1.4	1.1	0.2	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.7	1.8	2.2	2.3	2.1	1.8	1.6	1.1	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.7	2.2	2.6	2.6	2.3	1.9	2.0	1.6	0.2
56N	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	2.1	2.7	3.1	3.0	2.5	1.8	2.1	2.2	0.7
55N	0.0	0.0	0.0	0.6	0.7	0.2	0.5	1.9	2.6	3.2	3.7	3.5	2.6	1.6	2.2	3.1	1.6
54N	0.6	0.6	0.7	0.9	1.0	0.3	0.8	2.2	3.0	3.8	4.2	4.0	2.9	1.4	2.3	4.3	2.6
53N	0.8	0.9	1.0	1.2	1.4	2.4	1.8	2.6	3.5	4.4	5.0	4.6	3.3	1.5	2.9	6.6	5.3
52N	1.0	1.1	1.3	1.5	1.8	2.9	2.1	3.0	4.0	5.2	5.9	5.3	3.9	2.1	3.8	7.0	7.0
51N	1.3	1.4	1.6	2.7	3.0	3.4	4.0	3.3	4.6	6.1	7.0	6.3	4.0	3.6	5.1	7.0	7.0
50N	1.5	1.7	2.0	3.2	3.5	4.1	7.0	7.0	5.3	7.0	7.0	7.0	3.7	5.4	7.0	7.0	7.0
49N	5.1	2.1	3.5	3.9	4.2	4.8	7.0	7.0	6.0	7.0	7.0	7.0	5.1	7.0	7.0	7.0	7.0
48N	5.9	2.5	4.2	4.6	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	6.9	3.0	5.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	5.0	6.1	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	3.2	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.0	0.9	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.4	0.9	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.5	2.3	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.1	4.4	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL410 – No ozone converter – p1
Figure 05–07–66

North America - Maximum Flight duration in hour, APRIL WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
57N	0.0	0.0	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
56N	0.0	0.0	0.3	0.5	0.6	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.9	1.3
55N	0.1	0.4	0.7	1.8	1.5	0.8	0.0	0.0	0.0	0.0	0.2	0.4	1.1	1.4
54N	1.4	1.0	2.6	2.3	2.0	1.1	0.0	0.0	0.0	0.1	0.3	0.4	1.2	2.3
53N	3.1	2.5	3.5	4.4	2.9	1.4	0.0	0.0	0.0	0.2	0.3	0.5	1.3	2.4
52N	4.5	3.7	4.6	5.3	4.9	1.9	0.1	0.0	0.0	0.3	0.5	0.6	3.5	3.9
51N	6.1	5.0	5.8	6.1	6.4	3.3	0.6	0.0	0.2	0.4	0.6	0.7	3.9	4.4
50N	7.0	6.6	6.9	7.0	7.0	5.8	1.7	0.3	0.6	0.6	0.7	2.1	4.3	4.9
49N	7.0	7.0	7.0	7.0	7.0	7.0	2.9	1.2	1.1	0.8	0.8	4.0	4.8	5.5
48N	7.0	7.0	6.5	7.0	7.0	7.0	5.2	2.2	1.7	1.8	2.2	4.4	5.3	6.3
47N	7.0	7.0	7.0	5.4	7.0	7.0	6.6	3.8	2.3	2.2	4.1	5.2	6.0	7.0
46N	7.0	7.0	7.0	2.9	7.0	7.0	7.0	5.1	3.1	2.7	4.7	5.9	6.8	7.0
45N	7.0	7.0	7.0	0.9	7.0	7.0	6.7	7.0	4.7	5.5	5.4	6.7	7.0	7.0
44N	7.0	7.0	7.0	0.3	7.0	7.0	6.4	7.0	5.7	6.5	6.2	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	6.7	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL410 – No ozone converter – p2
Figure 05–07–67

North America - Maximum Flight duration in hour, APRIL WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	1.0	0.9	0.1	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.2	1.5	1.5	1.4	1.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.3	1.7	2.0	2.0	1.9	1.5	0.3	0.0
58N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	2.3	2.8	3.0	2.8	2.5	2.3	1.7	0.0
57N	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	2.2	2.9	3.4	3.5	3.1	2.7	2.8	2.3	0.3
56N	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.0	2.7	3.5	4.1	4.1	3.3	2.5	3.0	3.3	1.1
55N	0.0	0.0	0.0	0.7	0.9	0.2	0.7	2.3	3.3	4.3	4.9	4.7	3.6	2.3	3.1	4.7	2.3
54N	0.7	0.8	0.9	1.0	1.3	0.4	0.9	2.8	3.9	5.1	5.8	5.3	3.9	1.9	3.3	7.0	4.1
53N	1.0	1.0	1.2	1.4	1.7	3.0	2.3	3.3	4.7	6.1	6.9	6.1	4.3	2.0	4.3	7.0	7.0
52N	1.2	1.4	1.5	1.8	2.2	3.7	2.7	3.9	5.5	7.0	7.0	6.9	4.8	2.9	5.9	7.0	7.0
51N	1.5	1.7	2.0	3.3	3.8	4.5	5.5	4.5	6.6	7.0	7.0	7.0	4.5	4.9	7.0	7.0	7.0
50N	1.9	2.1	2.4	4.1	4.6	5.4	7.0	7.0	7.0	7.0	7.0	7.0	4.1	7.0	7.0	7.0	7.0
49N	6.6	2.6	4.4	5.0	5.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0
48N	7.0	3.1	5.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	3.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7	1.3	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0	0.1	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.6	1.4	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	3.9	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	7.0	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL400 – No ozone converter – p1
Figure 05–07–68

North America - Maximum Flight duration in hour, APRIL WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
61N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
60N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
59N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58N	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8
57N	0.0	0.0	0.0	0.3	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
56N	0.0	0.0	0.5	0.7	0.8	0.9	0.0	0.0	0.0	0.0	0.0	0.0	1.3	1.8
55N	0.2	0.7	1.0	2.5	2.0	1.1	0.0	0.0	0.0	0.1	0.3	0.5	1.4	1.9
54N	2.0	1.5	3.9	3.3	2.6	1.4	0.0	0.0	0.0	0.1	0.4	0.6	1.6	3.1
53N	4.9	3.8	5.4	6.6	3.9	1.8	0.0	0.0	0.0	0.2	0.5	0.7	1.7	3.3
52N	7.0	5.9	7.0	7.0	7.0	2.4	0.2	0.0	0.0	0.4	0.6	0.8	5.1	5.8
51N	7.0	7.0	7.0	7.0	7.0	4.5	0.8	0.0	0.3	0.5	0.7	0.9	5.6	6.6
50N	7.0	7.0	7.0	7.0	7.0	7.0	2.1	0.4	0.7	0.8	0.9	2.9	6.4	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	3.7	1.4	1.3	1.0	1.1	5.7	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.7	2.1	2.3	2.8	6.5	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.0	2.9	5.5	7.0	7.0	7.0
46N	7.0	7.0	7.0	3.6	7.0	7.0	7.0	7.0	4.0	3.5	6.4	7.0	7.0	7.0
45N	7.0	7.0	7.0	1.1	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	0.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL400 – No ozone converter – p2
Figure 05–07–69

North America - Maximum Flight duration in hour, APRIL WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
89N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
88N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
87N	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
86N	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
85N	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
84N	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
83N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
82N	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
81N	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
80N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4
79N	0.7	0.7	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4
78N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4
77N	0.8	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.5	0.5	0.5	0.4	0.4	0.3
76N	0.9	0.9	0.9	0.9	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.4	0.3	0.3
75N	0.9	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.5	0.4	0.3	0.3
74N	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.0	0.9	0.8	0.7	0.7	0.6	0.5	0.4	0.3	0.3
73N	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.5	0.5	0.4	0.3
72N	1.0	1.0	1.1	1.1	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.4
71N	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.5
70N	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.7	0.6	0.6
69N	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.0	0.9	0.8	0.8	0.7
68N	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.3	1.2	1.2	1.2	1.1	1.0	0.9	0.8
67N	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.0
66N	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.5	1.5	1.5	1.5	1.4	1.3	1.2
65N	1.1	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.8	1.7	1.6	1.5	1.4
64N	1.2	1.2	1.2	1.4	1.4	1.4	1.4	1.5	2.2	2.4	2.5	2.6	2.0	2.0	1.9	1.8	1.7
63N	1.4	1.4	1.4	1.4	1.5	1.5	1.9	2.2	2.4	2.7	2.9	3.1	3.1	3.0	2.2	2.0	1.9
62N	1.4	1.5	1.5	1.5	1.5	1.9	2.0	2.4	2.7	3.1	3.4	3.6	3.6	3.5	3.0	2.6	2.3
61N	1.5	1.5	1.5	1.6	1.9	2.0	2.2	2.7	3.1	3.5	3.9	4.2	5.0	4.8	3.4	2.9	2.4
60N	1.5	1.6	1.6	1.6	2.0	2.2	2.5	3.0	3.4	4.7	5.4	5.8	5.9	5.6	4.9	3.3	2.5
59N	1.6	1.6	1.7	1.9	2.2	2.4	2.7	3.3	4.2	5.5	6.3	6.8	6.8	6.5	5.7	3.8	2.7
58N	1.6	2.1	1.8	2.2	2.3	2.6	3.3	4.0	4.7	7.0	7.0	7.0	7.0	7.0	7.0	5.8	2.9
57N	2.2	2.2	1.9	2.3	2.5	3.2	3.7	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7
56N	2.3	2.3	2.8	2.5	2.7	3.5	4.1	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8
55N	2.4	2.4	3.1	4.7	5.0	3.8	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	4.6	4.7	4.9	5.3	5.7	4.1	4.9	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0
53N	5.0	5.2	5.5	6.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	5.5	5.9	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	6.1	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL390 – No ozone converter – p1
Figure 05–07–70

North America - Maximum Flight duration in hour, APRIL WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
89N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
88N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
87N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
86N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5
85N	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5
84N	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5
83N	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5
82N	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5
81N	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5
80N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6
79N	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
78N	0.4	0.4	0.4	0.5	0.6	0.6	0.6	0.6	0.5	0.5	0.6	0.6	0.7	0.7
77N	0.3	0.4	0.4	0.5	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.7	0.7	0.8
76N	0.3	0.3	0.4	0.5	0.6	0.7	0.7	0.6	0.6	0.6	0.7	0.7	0.8	0.9
75N	0.2	0.3	0.4	0.5	0.6	0.7	0.7	0.6	0.6	0.7	0.7	0.8	0.9	1.0
74N	0.2	0.3	0.4	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.2
73N	0.3	0.3	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.9	1.1	1.4
72N	0.3	0.4	0.4	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.2	1.6
71N	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.9	1.1	1.3	1.7
70N	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.9	1.0	1.1	1.4	1.7
69N	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.4	1.6
68N	0.8	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.2	1.4	1.6
67N	0.9	0.9	0.9	0.9	0.9	0.8	0.9	0.9	0.9	1.0	1.1	1.2	1.4	1.5
66N	1.1	1.1	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.1	1.2	1.3	1.5
65N	1.3	1.3	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.3	1.7
64N	1.6	1.5	1.4	1.3	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.3	1.5	1.9
63N	1.8	1.7	1.6	1.5	1.5	1.3	1.4	1.4	1.3	1.3	1.3	1.4	1.5	2.0
62N	2.1	2.0	1.9	1.9	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.9	2.1
61N	2.1	2.1	2.1	2.0	1.8	1.6	1.7	1.7	1.7	1.5	1.5	1.5	2.0	2.3
60N	2.1	2.1	2.2	2.2	2.2	2.2	1.9	1.9	1.8	1.6	1.6	1.5	2.4	2.4
59N	2.0	2.2	2.3	2.4	2.8	2.8	2.6	2.5	2.0	1.8	1.6	1.6	2.5	3.0
58N	2.1	2.2	2.9	3.4	3.6	3.1	2.7	2.6	2.6	2.2	1.7	1.8	2.6	4.4
57N	2.3	2.5	3.2	3.8	4.0	3.3	2.8	2.7	2.7	2.5	2.0	2.4	3.4	5.6
56N	2.8	2.8	4.0	4.2	4.4	4.5	3.1	2.7	2.7	3.1	2.5	2.8	5.1	5.9
55N	3.6	4.2	4.7	7.0	6.1	4.8	3.0	2.6	2.9	3.4	3.7	4.0	5.4	6.2
54N	6.2	5.4	7.0	7.0	7.0	5.2	3.2	2.5	2.9	3.5	3.8	4.1	5.7	7.0
53N	7.0	7.0	7.0	7.0	7.0	5.8	3.3	2.5	2.9	3.7	3.9	4.2	5.9	7.0
52N	7.0	7.0	7.0	7.0	7.0	6.8	3.6	2.7	3.0	3.8	4.1	4.4	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	4.4	3.0	3.7	4.0	4.3	4.5	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	3.9	4.3	4.4	4.5	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.1	4.7	4.8	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	6.7	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL390 – No ozone converter – p2
Figure 05–07–71

North America - Maximum Flight duration in hour, APRIL WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89N	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
88N	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
87N	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5
86N	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
85N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
84N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
83N	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5
82N	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5
81N	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5
80N	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5
79N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5
78N	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5
77N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5
76N	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	0.9	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.4
75N	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.5	0.4	0.4
74N	1.1	1.1	1.2	1.2	1.3	1.3	1.2	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.4
73N	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.7	0.6	0.5	0.4
72N	1.2	1.2	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5
71N	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6
70N	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7
69N	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.1	1.0	0.9
68N	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.5	1.5	1.4	1.3	1.2	1.0
67N	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.7	1.7	1.6	1.5	1.4	1.3
66N	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.8	1.9	2.0	2.0	2.0	1.9	1.8	1.7	1.6
65N	1.4	1.4	1.4	1.6	1.6	1.6	1.6	1.8	1.9	2.1	2.2	2.3	2.3	2.3	2.1	2.0	1.9
64N	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.9	2.9	3.2	3.6	3.8	2.8	2.7	2.5	2.3	2.2
63N	1.7	1.7	1.8	1.7	1.8	1.9	2.3	2.8	3.3	3.8	4.3	4.6	4.7	4.4	3.1	2.7	2.6
62N	1.7	1.8	1.8	1.8	1.9	2.4	2.6	3.2	3.8	4.5	5.2	5.7	5.9	5.6	4.4	3.7	3.1
61N	1.8	1.9	1.9	1.9	2.4	2.6	2.9	3.7	4.5	5.4	6.4	7.0	7.0	7.0	5.4	4.2	3.2
60N	1.9	2.0	2.0	2.1	2.6	2.9	3.3	4.3	5.3	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.3
59N	2.0	2.1	2.2	2.5	2.8	3.2	3.7	5.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	6.1	3.7
58N	2.1	2.7	2.3	2.8	3.1	3.5	4.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2
57N	2.9	2.9	2.4	3.0	3.4	4.6	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
56N	3.1	3.1	3.9	3.4	3.7	5.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	3.3	3.2	4.3	7.0	7.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL380 – No ozone converter – p1
Figure 05–07–72

North America - Maximum Flight duration in hour, APRIL WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
88N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
87N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6
86N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6
85N	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5
84N	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5
83N	0.5	0.5	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.6
82N	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6
81N	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6
80N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.7
79N	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.8
78N	0.5	0.5	0.6	0.6	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.9
77N	0.4	0.5	0.6	0.7	0.8	1.0	0.9	0.8	0.8	0.7	0.8	0.8	0.9	1.0
76N	0.4	0.4	0.5	0.7	0.8	1.0	0.9	0.9	0.8	0.8	0.8	0.9	1.0	1.1
75N	0.3	0.4	0.5	0.6	0.8	0.9	0.9	0.8	0.8	0.8	0.9	1.0	1.1	1.2
74N	0.3	0.4	0.5	0.6	0.8	0.8	0.8	0.8	0.8	0.9	0.9	1.1	1.2	1.4
73N	0.4	0.4	0.5	0.6	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.4	1.6
72N	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.5	1.8
71N	0.6	0.6	0.6	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.1	1.3	1.5	1.9
70N	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.1	1.2	1.3	1.6	1.9
69N	0.8	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.2	1.4	1.6	1.9
68N	1.0	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.3	1.4	1.6	1.8
67N	1.2	1.1	1.1	1.1	1.1	1.0	1.1	1.1	1.2	1.2	1.3	1.4	1.6	1.8
66N	1.4	1.4	1.3	1.2	1.2	1.3	1.2	1.2	1.3	1.3	1.3	1.4	1.6	1.8
65N	1.7	1.6	1.6	1.4	1.4	1.4	1.4	1.3	1.3	1.4	1.4	1.5	1.6	2.1
64N	2.0	1.9	1.8	1.7	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.6	1.8	2.4
63N	2.3	2.1	2.0	1.9	1.9	1.7	1.8	1.8	1.6	1.7	1.6	1.7	1.8	2.5
62N	2.7	2.6	2.6	2.5	2.1	1.9	2.0	2.0	2.0	1.8	1.7	1.7	2.4	2.6
61N	2.7	2.7	2.7	2.8	2.3	2.1	2.2	2.2	2.2	1.9	1.9	1.8	2.5	3.0
60N	2.7	2.7	2.9	3.0	3.1	3.0	2.5	2.5	2.4	2.1	2.0	1.9	3.2	3.2
59N	2.6	2.8	3.1	3.3	4.2	4.3	3.7	3.6	2.6	2.3	2.1	2.0	3.4	4.2
58N	2.7	2.9	4.1	5.3	5.9	4.7	4.0	3.8	3.8	3.0	2.2	2.4	3.6	7.0
57N	3.0	3.3	4.6	6.1	6.7	5.2	4.2	3.9	3.9	3.5	2.6	3.2	5.3	7.0
56N	3.9	3.9	6.3	7.0	7.0	7.0	4.7	3.9	4.0	4.5	3.4	4.0	7.0	7.0
55N	5.4	6.6	7.0	7.0	7.0	7.0	4.6	3.8	4.2	5.4	5.6	6.7	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.7	4.2	5.5	5.9	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.6	4.3	5.8	6.3	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	3.9	4.6	6.2	6.6	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	6.1	6.8	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL380 – No ozone converter – p2
Figure 05–07–73

North America - Maximum Flight duration in hour, APRIL WOUDC FL 370																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
89N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
88N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
87N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4
86N	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4
85N	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4
84N	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
83N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
82N	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
81N	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4
80N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4
79N	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4
78N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4
77N	1.8	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3
76N	1.9	1.9	1.9	1.9	2.0	1.9	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.2
75N	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.8	1.7	1.7	1.6	1.4	1.4	1.3	1.2
74N	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.0	1.9	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2
73N	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.7	1.6	1.4	1.3	1.2
72N	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	1.9	1.8	1.7	1.5	1.4	1.3
71N	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.0	1.8	1.7	1.5	1.4
70N	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.2	2.1	2.0	1.8	1.7	1.6
69N	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.3	2.2	2.0	1.9	1.8
68N	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.5	2.5	2.6	2.6	2.5	2.4	2.3	2.1	2.0
67N	2.1	2.1	2.2	2.3	2.2	2.3	2.3	2.4	2.6	2.7	2.8	2.9	2.8	2.7	2.6	2.4	2.3
66N	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.6	2.8	3.0	3.1	3.2	3.2	3.1	3.0	2.8	2.7
65N	2.3	2.3	2.3	2.5	2.5	2.5	2.6	2.7	3.0	3.2	3.5	3.7	3.7	3.7	3.5	3.3	3.1
64N	2.3	2.4	2.4	2.6	2.6	2.7	2.7	2.9	4.4	5.1	5.8	6.3	4.4	4.3	4.1	3.8	3.6
63N	2.7	2.8	2.7	2.7	2.8	2.9	3.5	4.3	5.1	6.1	7.0	7.0	7.0	7.0	4.9	4.4	4.1
62N	2.8	2.9	2.9	2.8	2.9	3.6	4.0	5.0	6.1	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.0
61N	2.9	3.0	3.0	3.0	3.6	3.9	4.5	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
60N	3.0	3.1	3.2	3.2	4.0	4.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4
59N	3.1	3.3	3.3	3.8	4.4	5.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2
58N	3.3	4.2	3.5	4.3	4.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	4.6	4.5	3.8	4.8	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	5.0	4.9	6.2	5.5	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	5.3	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.6	3.5	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	2.7	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.3	2.5	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	2.8	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.1	3.4	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	4.7	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	7.0	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL370 – No ozone converter – p1
Figure 05–07–74

North America - Maximum Flight duration in hour, APRIL WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
89N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
88N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5
87N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
86N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4
85N	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4
84N	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4
83N	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4
82N	1.4	1.4	1.4	1.3	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4
81N	1.4	1.5	1.5	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.4	1.5
80N	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6
79N	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.6	1.6
78N	1.4	1.4	1.4	1.5	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.6	1.7	1.7
77N	1.3	1.3	1.4	1.5	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.7	1.8	1.9
76N	1.2	1.2	1.4	1.5	1.6	1.7	1.7	1.6	1.6	1.6	1.7	1.8	1.9	2.0
75N	1.1	1.2	1.3	1.5	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.8	2.0	2.1
74N	1.2	1.2	1.3	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.9	2.1	2.3
73N	1.2	1.2	1.4	1.5	1.6	1.6	1.6	1.7	1.7	1.8	1.9	2.0	2.3	2.5
72N	1.3	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.9	2.1	2.4	2.7
71N	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.2	2.5	2.8
70N	1.6	1.5	1.6	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.1	2.3	2.5	2.8
69N	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.5	2.8
68N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.2	2.3	2.5	2.8
67N	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.4	2.6	2.8
66N	2.5	2.4	2.3	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.3	2.4	2.6	2.8
65N	2.9	2.8	2.7	2.4	2.4	2.4	2.5	2.3	2.3	2.3	2.4	2.5	2.6	3.2
64N	3.3	3.1	3.0	2.9	2.6	2.6	2.7	2.7	2.5	2.5	2.6	2.6	2.9	3.7
63N	3.7	3.5	3.3	3.1	3.1	2.9	2.9	3.0	2.6	2.7	2.7	2.7	3.0	3.9
62N	4.4	4.2	4.2	4.1	3.5	3.1	3.2	3.3	3.2	2.9	2.8	2.8	3.8	4.2
61N	4.4	4.4	4.5	4.5	3.8	3.4	3.6	3.6	3.5	3.1	3.0	2.9	4.0	4.8
60N	4.3	4.4	4.7	4.9	5.1	4.8	4.0	4.0	3.9	3.4	3.2	3.0	5.2	5.3
59N	4.1	4.5	5.0	5.4	7.0	7.0	6.3	6.2	4.3	3.6	3.4	3.2	5.6	7.0
58N	4.3	4.7	7.0	7.0	7.0	7.0	6.9	6.5	6.3	4.9	3.6	3.9	6.0	7.0
57N	4.9	5.4	7.0	7.0	7.0	7.0	7.0	6.7	6.7	5.7	4.1	5.3	7.0	7.0
56N	6.5	6.5	7.0	7.0	7.0	7.0	7.0	6.8	6.9	7.0	5.6	6.8	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL370 – No ozone converter – p2
Figure 05–07–75

North America - Maximum Flight duration in hour, APRIL WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
89N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
88N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
86N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.6	1.6
85N	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.6	1.6
84N	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.6
83N	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7
82N	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7
81N	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7
80N	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.7
79N	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.7
78N	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.7	1.7	1.7	1.6	1.6
77N	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.8	1.7	1.7	1.6	1.6	1.5
76N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	1.9	1.8	1.8	1.7	1.6	1.5	1.4
75N	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.1	2.0	1.8	1.7	1.6	1.5	1.3
74N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.0	1.9	1.8	1.6	1.5	1.3
73N	2.3	2.3	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.1	2.0	1.8	1.7	1.5	1.4
72N	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.4	2.5	2.5	2.4	2.3	2.2	2.0	1.8	1.6	1.5
71N	2.4	2.4	2.4	2.4	2.3	2.3	2.4	2.5	2.6	2.6	2.6	2.5	2.4	2.2	2.0	1.8	1.7
70N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.7	2.7	2.8	2.7	2.6	2.4	2.2	2.0	1.9
69N	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.6	2.8	2.9	3.0	3.0	2.9	2.7	2.5	2.3	2.1
68N	2.5	2.4	2.5	2.4	2.5	2.5	2.6	2.7	3.0	3.2	3.3	3.3	3.3	3.1	2.9	2.7	2.4
67N	2.5	2.5	2.5	2.6	2.6	2.6	2.7	2.9	3.2	3.4	3.7	3.8	3.8	3.6	3.4	3.2	3.0
66N	2.7	2.7	2.6	2.7	2.7	2.7	2.9	3.1	3.4	3.8	4.2	4.5	4.5	4.4	4.1	3.8	3.5
65N	2.8	2.8	2.7	2.9	2.9	2.9	3.1	3.4	3.8	4.3	4.9	5.4	5.6	5.4	5.1	4.6	4.3
64N	2.9	2.9	2.8	3.0	3.1	3.2	3.3	3.7	6.3	7.0	7.0	7.0	7.0	7.0	6.6	5.7	5.1
63N	3.3	3.4	3.3	3.2	3.3	3.5	4.6	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
62N	3.5	3.6	3.5	3.5	3.6	4.6	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	3.7	3.8	3.8	3.7	4.7	5.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	3.9	4.0	4.1	4.0	5.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	4.1	4.3	4.3	5.1	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	4.4	6.0	4.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	6.7	5.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	2.9	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.1	2.2	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.9	2.1	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.1	2.3	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	2.8	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.7	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	5.4	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL360 – No ozone converter – p1
Figure 05–07–76

North America - Maximum Flight duration in hour, APRIL WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
89N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
88N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7
86N	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7
85N	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.7
84N	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.4	1.4	1.4	1.5	1.6	1.6
83N	1.6	1.6	1.6	1.5	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.7
82N	1.7	1.7	1.7	1.6	1.4	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.6	1.7
81N	1.7	1.8	1.8	1.7	1.6	1.5	1.4	1.4	1.4	1.5	1.5	1.6	1.7	1.8
80N	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.5	1.6	1.6	1.6	1.7	1.8	1.9
79N	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.8	1.9	2.0
78N	1.6	1.7	1.7	1.8	1.9	2.0	2.0	1.9	1.9	1.8	1.9	1.9	2.0	2.1
77N	1.5	1.6	1.7	1.8	2.1	2.2	2.2	2.0	2.0	1.9	2.0	2.0	2.1	2.3
76N	1.3	1.4	1.6	1.8	2.1	2.2	2.2	2.1	2.0	2.0	2.1	2.1	2.3	2.4
75N	1.3	1.3	1.5	1.8	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.3	2.4	2.6
74N	1.3	1.4	1.5	1.7	1.9	2.0	2.1	2.1	2.1	2.1	2.2	2.4	2.6	2.8
73N	1.4	1.4	1.6	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.3	2.5	2.8	3.0
72N	1.5	1.5	1.6	1.8	1.9	2.0	2.0	2.1	2.2	2.2	2.4	2.6	2.9	3.2
71N	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.4	2.7	3.0	3.4
70N	1.8	1.8	1.9	2.0	2.1	2.2	2.2	2.2	2.3	2.4	2.6	2.8	3.1	3.4
69N	2.1	2.0	2.1	2.1	2.2	2.3	2.3	2.3	2.4	2.5	2.6	2.9	3.1	3.4
68N	2.3	2.3	2.3	2.4	2.4	2.3	2.4	2.4	2.5	2.6	2.7	2.9	3.2	3.4
67N	2.7	2.6	2.6	2.6	2.6	2.4	2.5	2.6	2.6	2.7	2.8	3.0	3.2	3.4
66N	3.2	3.2	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.8	2.9	3.0	3.3	3.5
65N	4.0	3.7	3.7	3.2	3.1	3.1	3.2	2.9	2.9	2.9	3.0	3.1	3.3	4.3
64N	4.7	4.4	4.3	4.0	3.4	3.5	3.5	3.6	3.2	3.1	3.3	3.4	3.9	5.3
63N	5.4	5.1	4.9	4.6	4.5	3.9	3.9	4.0	3.4	3.6	3.5	3.5	4.0	6.0
62N	6.9	6.7	6.7	6.8	5.2	4.3	4.5	4.5	4.3	3.8	3.7	3.7	5.9	6.7
61N	6.8	6.9	7.0	7.0	6.0	4.9	5.1	5.2	5.0	4.2	4.1	3.9	6.5	7.0
60N	6.5	6.9	7.0	7.0	7.0	7.0	6.0	6.0	5.6	4.7	4.3	4.1	7.0	7.0
59N	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.1	4.6	4.3	7.0	7.0
58N	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	5.9	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
29N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
28N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
27N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
26N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
25N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL360 – No ozone converter – p2
Figure 05–07–77

North America - Maximum Flight duration in hour, APRIL WOUDC FL 350																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
88N	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2
87N	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
86N	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1
85N	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1
84N	2.6	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1
83N	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.1
82N	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.1
81N	2.8	2.7	2.7	2.7	2.7	2.6	2.6	2.5	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.2
80N	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.6	2.6	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.2
79N	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.7	2.6	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.1
78N	2.9	2.9	3.0	3.0	3.0	2.9	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.0
77N	3.0	3.1	3.1	3.1	3.1	3.0	3.0	2.9	2.8	2.7	2.6	2.4	2.3	2.2	2.1	2.0	1.9
76N	3.1	3.1	3.2	3.2	3.2	3.1	3.1	3.0	2.9	2.7	2.6	2.5	2.3	2.2	2.1	1.9	1.8
75N	3.2	3.2	3.2	3.3	3.3	3.2	3.3	3.3	3.2	3.0	2.9	2.7	2.5	2.2	2.1	1.9	1.7
74N	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.3	3.3	3.2	3.0	2.8	2.6	2.4	2.2	1.9	1.7
73N	3.4	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.2	3.0	2.8	2.5	2.3	2.0	1.8
72N	3.4	3.4	3.5	3.4	3.4	3.4	3.4	3.6	3.7	3.8	3.7	3.5	3.2	2.9	2.4	2.2	2.0
71N	3.5	3.5	3.5	3.4	3.4	3.4	3.5	3.7	3.9	4.0	4.0	3.8	3.5	3.2	2.8	2.4	2.3
70N	3.5	3.5	3.5	3.5	3.4	3.4	3.5	3.8	4.1	4.4	4.5	4.4	4.1	3.7	3.3	2.9	2.6
69N	3.6	3.5	3.6	3.5	3.4	3.5	3.7	4.0	4.5	4.9	5.1	5.1	4.8	4.4	3.9	3.5	3.1
68N	3.7	3.6	3.7	3.6	3.7	3.7	3.9	4.3	4.9	5.6	6.1	6.2	6.1	5.5	4.9	4.3	3.7
67N	3.7	3.7	3.8	3.9	3.9	3.9	4.2	4.8	5.5	6.5	7.0	7.0	7.0	7.0	6.5	5.7	5.1
66N	4.2	4.1	4.1	4.2	4.2	4.3	4.6	5.4	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	4.3	4.4	4.2	4.6	4.6	4.8	5.2	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	4.5	4.5	4.5	5.0	5.1	5.4	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	5.7	5.9	5.7	5.5	5.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	6.2	6.4	6.3	6.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL350 – No ozone converter – p1
Figure 05–07–78

North America –Maximum Flight duration in hour, APRIL WOUDC FL 350														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4
88N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3
87N	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.3
86N	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.2	2.2
85N	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2
84N	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.2
83N	2.1	2.1	2.0	1.9	1.8	1.8	1.7	1.7	1.7	1.8	1.9	2.0	2.1	2.2
82N	2.1	2.1	2.1	2.0	1.9	1.8	1.7	1.7	1.8	1.8	1.9	2.0	2.2	2.3
81N	2.2	2.2	2.2	2.1	2.0	1.9	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.4
80N	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.1	2.1	2.2	2.4	2.5
79N	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2	2.2	2.3	2.4	2.5	2.7
78N	2.1	2.1	2.2	2.3	2.4	2.5	2.5	2.4	2.4	2.4	2.5	2.6	2.7	2.9
77N	1.9	2.0	2.1	2.3	2.5	2.7	2.7	2.6	2.5	2.5	2.6	2.7	2.9	3.1
76N	1.7	1.8	2.0	2.3	2.6	2.7	2.7	2.6	2.6	2.6	2.7	2.9	3.1	3.4
75N	1.6	1.7	2.0	2.3	2.5	2.6	2.6	2.6	2.6	2.7	2.8	3.0	3.3	3.7
74N	1.7	1.7	2.0	2.2	2.4	2.6	2.6	2.6	2.7	2.8	3.0	3.2	3.6	4.0
73N	1.8	1.8	2.0	2.3	2.4	2.6	2.6	2.6	2.8	2.9	3.1	3.5	3.9	4.3
72N	1.9	2.0	2.1	2.3	2.5	2.6	2.6	2.7	2.8	3.0	3.2	3.7	4.2	4.7
71N	2.2	2.2	2.4	2.4	2.5	2.6	2.7	2.9	2.9	3.1	3.4	3.8	4.3	5.0
70N	2.5	2.5	2.6	2.7	2.9	2.9	2.9	3.0	3.1	3.3	3.6	4.0	4.5	5.0
69N	2.9	2.8	2.9	3.0	3.1	3.1	3.1	3.2	3.3	3.5	3.8	4.1	4.6	5.1
68N	3.6	3.3	3.3	3.5	3.5	3.2	3.3	3.4	3.5	3.7	4.0	4.3	4.7	5.1
67N	4.4	4.2	4.1	4.0	4.0	3.5	3.6	3.7	3.8	3.9	4.2	4.5	4.9	5.3
66N	5.8	5.8	5.0	4.7	4.5	4.5	4.0	4.1	4.1	4.2	4.4	4.7	5.1	5.5
65N	7.0	7.0	7.0	5.6	5.3	5.1	5.2	4.6	4.5	4.6	4.7	4.9	5.3	7.0
64N	7.0	7.0	7.0	7.0	6.3	6.0	6.3	6.3	5.2	5.0	5.4	5.7	6.9	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	6.5	6.0	6.2	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.7	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL350 – No ozone converter – p2
Figure 05–07–79

North America –Maximum Flight duration in hour, APRIL WOUDC FL 340																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
89N	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3
88N	3.6	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.2	3.3	3.2	3.2
87N	3.6	3.6	3.5	3.5	3.5	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.1
86N	3.6	3.6	3.6	3.5	3.5	3.4	3.4	3.5	3.4	3.4	3.3	3.2	3.2	3.2	3.1	3.1	3.0
85N	3.7	3.7	3.8	3.7	3.7	3.6	3.6	3.5	3.5	3.4	3.3	3.3	3.2	3.2	3.1	3.0	3.0
84N	4.0	3.9	3.9	3.8	3.8	3.7	3.6	3.6	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.0
83N	4.0	4.0	4.0	3.9	3.8	3.8	3.7	3.6	3.6	3.5	3.4	3.3	3.3	3.2	3.2	3.1	3.1
82N	4.2	4.1	4.1	4.0	3.9	3.9	3.8	3.7	3.6	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.2
81N	4.3	4.3	4.2	4.1	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.3	3.2	3.2	3.3
80N	4.4	4.4	4.3	4.3	4.2	4.3	4.1	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.3	3.3	3.3
79N	4.5	4.5	4.5	4.6	4.5	4.4	4.3	4.2	4.0	3.9	3.7	3.5	3.4	3.3	3.2	3.2	3.2
78N	4.7	4.7	4.9	4.8	4.7	4.6	4.5	4.4	4.2	4.0	3.8	3.6	3.4	3.3	3.1	3.0	2.9
77N	4.8	5.0	5.0	5.0	5.0	4.9	4.7	4.6	4.4	4.1	3.9	3.6	3.4	3.2	3.0	2.8	2.6
76N	5.2	5.2	5.2	5.2	5.2	5.1	5.0	4.8	4.6	4.3	4.0	3.7	3.4	3.2	2.9	2.6	2.4
75N	5.3	5.3	5.3	5.3	5.3	5.3	5.6	5.5	5.4	5.1	4.7	4.3	3.9	3.2	2.9	2.5	2.2
74N	5.4	5.4	5.4	5.4	5.6	5.6	5.6	5.6	5.6	5.4	5.1	4.6	4.1	3.6	3.1	2.6	2.3
73N	5.7	5.5	5.5	5.6	5.5	5.6	5.6	5.8	6.0	5.9	5.6	5.1	4.5	3.9	3.3	2.8	2.4
72N	5.9	5.8	5.8	5.6	5.5	5.5	5.6	6.3	6.9	7.0	7.0	6.6	5.6	4.7	3.6	3.1	2.8
71N	6.1	5.9	5.9	5.6	5.5	5.5	5.8	6.5	7.0	7.0	7.0	7.0	7.0	5.7	4.6	3.7	3.2
70N	6.2	6.0	6.0	5.7	5.6	5.6	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.8	4.1
69N	6.4	6.2	6.2	6.0	5.7	6.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.4
68N	6.7	6.4	6.5	6.2	6.4	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	6.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.3	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.6	2.9	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.4	2.7	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.7	3.1	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.5	4.1	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	6.7	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL340 – No ozone converter – p1
Figure 05–07–80

North America - Maximum Flight duration in hour, APRIL WOUDC FL 340														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
89N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4
88N	3.2	3.2	3.2	3.2	3.2	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3
87N	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.2	3.2
86N	3.0	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.1
85N	2.9	2.8	2.8	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.8	2.9	3.1
84N	2.9	2.8	2.8	2.6	2.5	2.4	2.3	2.3	2.4	2.5	2.6	2.7	2.9	3.0
83N	3.0	3.0	2.8	2.7	2.4	2.3	2.2	2.2	2.3	2.4	2.5	2.7	2.9	3.1
82N	3.2	3.2	3.1	2.9	2.6	2.3	2.2	2.2	2.3	2.4	2.6	2.8	3.0	3.2
81N	3.3	3.4	3.4	3.2	2.9	2.6	2.4	2.4	2.5	2.6	2.8	2.9	3.2	3.5
80N	3.4	3.5	3.5	3.4	3.2	3.0	2.8	2.8	2.8	2.8	3.0	3.2	3.4	3.7
79N	3.3	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.3	3.4	3.7	4.0
78N	3.0	3.1	3.2	3.3	3.5	3.6	3.6	3.5	3.4	3.4	3.6	3.8	4.1	4.5
77N	2.6	2.8	3.0	3.3	3.7	3.9	3.8	3.7	3.6	3.7	3.9	4.2	4.5	5.2
76N	2.3	2.4	2.8	3.3	3.7	3.9	3.8	3.7	3.8	3.9	4.2	4.5	5.1	5.9
75N	2.1	2.3	2.7	3.2	3.6	3.8	3.8	3.8	3.9	4.1	4.4	5.0	5.8	7.0
74N	2.1	2.3	2.7	3.2	3.5	3.7	3.8	3.8	4.0	4.3	4.8	5.6	7.0	7.0
73N	2.3	2.4	2.8	3.2	3.5	3.7	3.8	4.0	4.2	4.6	5.2	6.3	7.0	7.0
72N	2.6	2.8	3.0	3.3	3.6	3.8	3.9	4.1	4.5	4.9	5.6	7.0	7.0	7.0
71N	3.1	3.2	3.5	3.6	3.8	4.0	4.1	4.6	4.7	5.3	6.1	7.0	7.0	7.0
70N	3.9	3.8	4.0	4.3	4.6	4.8	4.7	5.0	5.4	6.0	7.0	7.0	7.0	7.0
69N	5.0	4.6	4.8	5.0	5.3	5.4	5.2	5.5	6.0	6.5	7.0	7.0	7.0	7.0
68N	7.0	6.2	6.1	6.6	6.7	5.6	5.9	6.2	6.7	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL340 – No ozone converter – p2
Figure 05–07–81

North America –Maximum Flight duration in hour, APRIL WOUDC FL 330																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89N	5.6	5.5	5.5	5.5	5.5	5.4	5.4	5.3	5.3	5.3	5.2	5.2	5.2	5.2	5.2	5.1	5.1
88N	5.7	5.6	5.5	5.5	5.5	5.4	5.3	5.2	5.2	5.1	5.0	5.0	4.9	4.9	4.9	4.9	4.9
87N	5.8	5.7	5.6	5.5	5.5	5.4	5.2	5.2	5.1	5.0	5.0	4.9	4.9	4.8	4.7	4.6	4.5
86N	5.9	5.8	5.8	5.6	5.5	5.5	5.3	5.5	5.4	5.2	5.0	4.9	4.8	4.6	4.6	4.5	4.4
85N	6.1	6.0	6.4	6.3	6.1	5.9	5.8	5.6	5.5	5.3	5.2	5.0	4.9	4.8	4.6	4.4	4.3
84N	7.0	6.9	6.7	6.5	6.3	6.1	5.9	5.8	5.6	5.4	5.2	5.0	4.9	4.8	4.6	4.5	4.4
83N	7.0	7.0	7.0	6.9	6.7	6.4	6.2	5.9	5.7	5.5	5.3	5.1	5.0	4.8	4.7	4.6	4.5
82N	7.0	7.0	7.0	7.0	7.0	6.8	6.5	6.2	5.9	5.7	5.4	5.2	5.0	4.9	4.8	4.7	4.7
81N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.5	6.2	5.8	5.5	5.2	5.0	4.9	4.8	4.8	4.9
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	5.8	5.4	5.2	5.0	4.9	4.8	4.8
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.1	5.6	5.2	4.9	4.7	4.5	4.6
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8	5.2	4.9	4.4	4.2	4.1
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.9	5.2	4.8	4.2	3.8	3.5
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.4	4.8	4.1	3.5	3.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.8	4.0	3.3	2.8
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.4	3.4	2.9
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.9	3.8	3.1
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.5	3.8
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.8
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	5.8	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2	5.1	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	6.4	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL330 – No ozone converter – p1
Figure 05–07–82

North America - Maximum Flight duration in hour, APRIL WOUDC FL 330														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89N	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.2	5.3	5.3
88N	4.8	4.8	4.8	4.8	4.8	4.6	4.7	4.7	4.8	4.8	4.9	4.9	5.0	5.1
87N	4.5	4.4	4.4	4.4	4.3	4.3	4.3	4.4	4.3	4.4	4.5	4.6	4.7	4.9
86N	4.3	4.2	4.1	4.0	4.0	3.9	3.9	3.9	3.9	4.0	4.1	4.3	4.4	4.6
85N	4.2	4.0	3.9	3.8	3.6	3.5	3.5	3.5	3.5	3.6	3.8	4.0	4.2	4.5
84N	4.2	4.0	3.9	3.6	3.4	3.2	3.1	3.1	3.2	3.3	3.5	3.8	4.1	4.5
83N	4.4	4.3	4.0	3.7	3.3	3.0	2.9	2.9	3.0	3.2	3.4	3.7	4.1	4.6
82N	4.7	4.7	4.5	4.1	3.5	3.1	2.9	2.9	3.0	3.2	3.5	3.9	4.3	4.9
81N	5.0	5.2	5.2	4.8	4.1	3.5	3.3	3.2	3.3	3.5	3.8	4.2	4.7	5.3
80N	5.1	5.4	5.6	5.2	4.5	4.1	3.8	3.7	3.7	3.9	4.2	4.5	5.1	5.9
79N	4.8	5.1	5.2	4.9	4.6	4.4	4.3	4.2	4.2	4.4	4.7	5.1	5.8	6.8
78N	4.2	4.4	4.6	4.6	4.5	4.5	4.4	4.4	4.5	4.7	5.2	6.0	6.9	7.0
77N	3.4	3.7	4.1	4.4	4.5	4.5	4.5	4.6	4.8	5.2	5.8	6.8	7.0	7.0
76N	2.8	3.1	3.7	4.3	4.5	4.5	4.5	4.7	5.1	5.6	6.5	7.0	7.0	7.0
75N	2.6	2.8	3.5	4.2	4.5	4.6	4.7	4.9	5.3	6.1	7.0	7.0	7.0	7.0
74N	2.7	2.9	3.5	4.2	4.6	4.8	4.8	5.1	5.8	6.7	7.0	7.0	7.0	7.0
73N	3.0	3.1	3.7	4.4	4.8	5.0	5.1	5.5	6.4	7.0	7.0	7.0	7.0	7.0
72N	3.4	3.7	4.1	4.7	5.1	5.5	5.6	6.1	7.0	7.0	7.0	7.0	7.0	7.0
71N	4.4	4.6	5.2	5.3	5.7	6.1	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	6.3	6.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
34N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
33N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
32N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
31N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL330 – No ozone converter – p2
Figure 05–07–83

North America - Maximum Flight duration in hour, APRIL WOUDC FL 320																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.7
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.7
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.3
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.4
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL320 – No ozone converter – p1
Figure 05–07–84

North America - Maximum Flight duration in hour, APRIL WOUDC FL 320														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	6.8	6.6	6.5	6.5	6.5	6.7	6.8	7.0	7.0	7.0	7.0
85N	7.0	6.8	6.4	6.0	5.7	5.5	5.4	5.4	5.5	5.8	6.2	6.8	7.0	7.0
84N	7.0	6.7	6.2	5.6	5.1	4.7	4.6	4.5	4.7	5.0	5.5	6.2	7.0	7.0
83N	7.0	7.0	6.5	5.7	4.9	4.3	4.0	4.0	4.2	4.6	5.3	6.1	7.0	7.0
82N	7.0	7.0	7.0	6.5	5.3	4.5	4.1	4.0	4.3	4.8	5.5	6.5	7.0	7.0
81N	7.0	7.0	7.0	7.0	6.6	5.4	4.8	4.7	5.0	5.5	6.4	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.2	6.3	6.8	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	5.6	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	4.4	5.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	3.9	4.4	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	4.0	4.5	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	4.6	5.2	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	5.9	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – April – FL320 – No ozone converter – p2
Figure 05–07–85

E. North America – May

North America - Maximum Flight duration in hour, MAY WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.1	0.8	0.9	0.9	0.9	0.9	0.8	0.1	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.1	0.0	0.0	0.3	1.0	1.1	1.2	1.2	1.2	1.1	1.0	0.2	0.0	0.0	0.0
61N	0.1	0.1	0.2	0.0	0.3	1.1	1.2	1.4	1.5	1.5	1.5	1.4	1.3	1.0	0.2	0.0	0.0
60N	1.1	0.2	0.3	0.1	0.6	1.3	1.4	1.6	1.7	1.8	1.8	1.7	2.1	1.7	1.2	0.4	0.0
59N	1.3	1.3	0.4	0.6	1.3	1.4	1.6	1.8	2.0	2.1	3.0	2.8	2.4	1.9	1.3	0.5	0.2
58N	1.5	1.8	0.6	0.7	1.4	1.6	1.9	2.1	2.3	3.5	3.4	3.1	2.7	2.2	1.4	0.6	0.2
57N	1.7	2.0	0.7	0.8	1.6	1.8	2.1	2.4	3.9	3.9	3.7	3.4	2.9	2.4	1.4	0.6	0.3
56N	1.9	2.2	0.8	1.8	1.8	2.0	2.4	2.7	4.4	4.3	4.1	3.7	3.2	2.7	1.4	0.5	0.7
55N	7.0	7.0	5.0	1.9	1.9	2.2	2.6	4.6	4.7	4.8	4.5	4.1	3.5	3.2	1.4	0.6	0.8
54N	7.0	7.0	5.6	5.8	5.8	2.4	2.8	5.0	5.2	5.3	5.0	4.5	3.9	3.7	1.1	0.3	0.8
53N	7.0	7.0	6.4	6.7	6.7	7.0	5.0	5.4	5.7	5.9	5.6	5.1	4.4	3.7	0.6	0.0	1.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.8	6.4	6.6	6.2	5.6	5.4	3.2	0.3	0.2	1.1
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	6.2	6.2	2.9	0.3	1.5	1.3
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	2.6	0.0	2.3	1.5
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	2.0	0.0	1.7	1.7
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.5	0.0	1.4	1.9
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7	0.0	1.4	2.3
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8	0.0	2.2	3.3
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	0.2	5.6	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.3	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL410 – No ozone converter – p1
Figure 05–07–86

North America - Maximum Flight duration in hour, MAY WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.6	0.5	0.0	0.0	0.0	0.0	0.1
62N	0.0	0.0	0.0	0.2	0.7	1.7	0.9	1.1	1.0	0.1	0.0	0.0	0.2	0.2
61N	0.0	0.0	0.2	0.7	1.7	2.4	2.7	1.7	1.5	1.0	0.1	0.0	0.3	0.4
60N	0.0	0.0	0.5	1.3	3.0	3.4	3.7	3.8	2.2	1.4	0.3	0.0	0.9	0.6
59N	0.0	0.0	0.6	1.6	4.1	7.0	4.8	5.0	4.4	2.9	1.1	0.0	1.1	1.5
58N	0.0	0.1	1.3	3.8	5.2	7.0	7.0	7.0	5.4	5.1	1.7	1.7	1.3	2.8
57N	0.0	0.2	2.9	4.8	7.0	7.0	7.0	7.0	7.0	6.0	3.1	3.0	2.8	4.0
56N	0.5	0.8	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	3.3	4.8	5.0
55N	0.9	1.4	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.3	5.3	7.0
54N	1.3	2.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	6.5	7.0
53N	1.6	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0
52N	2.0	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	2.4	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	2.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL410 – No ozone converter – p2
Figure 05–07–87

North America - Maximum Flight duration in hour, MAY WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.1	0.0	0.0	0.2	1.1	1.2	1.2	1.2	1.2	1.1	0.1	0.0	0.0	0.0	0.0
62N	0.1	0.1	0.2	0.0	0.0	0.4	1.3	1.5	1.5	1.6	1.6	1.5	1.3	0.3	0.1	0.0	0.0
61N	0.2	0.2	0.3	0.0	0.4	1.4	1.6	1.8	1.9	2.0	2.0	1.9	1.7	1.3	0.3	0.0	0.0
60N	1.4	0.3	0.4	0.2	0.8	1.7	1.9	2.1	2.3	2.4	2.5	2.4	2.9	2.3	1.6	0.5	0.1
59N	1.7	1.6	0.6	0.7	1.7	1.9	2.2	2.5	2.7	2.9	4.4	3.9	3.4	2.6	1.8	0.7	0.3
58N	1.9	2.6	0.8	0.9	1.9	2.2	2.5	2.9	3.1	5.2	4.9	4.4	3.8	3.0	1.9	0.8	0.3
57N	2.2	2.9	0.9	1.1	2.1	2.4	2.8	3.3	5.9	5.9	5.6	5.0	4.2	3.4	2.0	0.8	0.4
56N	2.5	3.3	1.1	2.4	2.3	2.7	3.3	3.7	6.7	6.7	6.2	5.6	4.7	4.0	2.0	0.7	0.9
55N	7.0	7.0	7.0	2.6	2.6	3.1	3.6	7.0	7.0	7.0	7.0	6.2	5.3	4.8	1.9	0.8	1.0
54N	7.0	7.0	7.0	7.0	7.0	3.3	4.0	7.0	7.0	7.0	7.0	7.0	6.0	5.9	1.5	0.4	1.1
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	0.8	0.1	1.3
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	0.4	0.3	1.5
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	0.4	2.0	1.8
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.5	0.1	3.1	2.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	0.0	2.3	2.3
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7	0.0	1.8	2.6
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.9	0.0	1.8	3.1
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	0.0	2.8	4.7
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	0.2	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL400 – No ozone converter – p1
Figure 05–07–88

North America - Maximum Flight duration in hour, MAY WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.1
63N	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.7	0.6	0.0	0.0	0.0	0.0	0.2
62N	0.0	0.0	0.1	0.3	0.8	1.9	1.1	1.3	1.2	0.1	0.0	0.0	0.3	0.3
61N	0.0	0.0	0.3	0.8	2.1	2.8	3.3	2.0	1.8	1.2	0.1	0.0	0.4	0.6
60N	0.0	0.0	0.6	1.6	3.7	4.2	4.7	4.9	2.7	1.7	0.4	0.0	1.2	0.7
59N	0.0	0.1	0.8	2.1	5.5	7.0	6.4	6.8	5.8	3.6	1.3	0.1	1.4	1.9
58N	0.0	0.2	1.8	6.0	7.0	7.0	7.0	7.0	7.0	6.9	2.1	2.1	1.6	3.7
57N	0.1	0.4	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	4.0	3.8	5.6
56N	0.7	1.1	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	6.8	7.0
55N	1.2	2.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	1.8	2.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	2.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL400 – No ozone converter – p2
Figure 05–07–89

North America - Maximum Flight duration in hour, MAY WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0
86N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
85N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
84N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
83N	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0
82N	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
81N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
80N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1
79N	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	1.0
78N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0
77N	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9
76N	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.8	0.8
75N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7
74N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.1	1.0	0.8	0.7
73N	1.6	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.2	1.1	1.0	0.9	0.8
72N	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.8	1.7	1.5	1.5	1.4	1.3	1.2	1.1	1.0	0.9
71N	1.6	1.6	1.7	1.7	1.7	1.7	1.9	1.9	1.8	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0
70N	1.7	1.7	1.8	1.8	1.8	2.0	2.0	2.0	2.0	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.1
69N	1.7	1.7	1.8	1.9	1.9	2.1	2.1	2.1	2.1	2.1	1.8	1.7	1.7	1.6	1.5	1.4	1.3
68N	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.3	2.3	2.3	2.2	1.9	1.8	1.8	1.7	1.6	1.5
67N	1.8	1.8	1.9	2.0	2.1	2.1	2.1	2.2	2.4	2.5	2.4	2.1	2.0	1.9	1.9	1.8	1.7
66N	2.1	2.1	2.3	2.1	2.1	2.2	2.2	2.3	2.3	2.8	2.8	2.7	2.6	2.5	2.1	2.0	1.9
65N	2.7	2.4	2.4	2.1	2.2	2.3	2.3	2.4	2.9	3.0	3.0	3.0	2.9	2.8	2.6	2.2	2.2
64N	2.8	2.4	2.5	3.2	2.3	2.4	2.5	2.8	3.1	3.2	3.2	3.2	3.2	3.1	2.9	2.8	2.4
63N	3.0	3.3	3.5	3.4	3.2	3.6	4.6	4.7	4.8	4.8	4.8	4.6	3.5	3.4	3.2	3.0	2.9
62N	3.5	3.5	3.7	3.3	3.4	3.9	5.0	5.1	5.2	5.3	5.2	5.1	4.8	3.7	3.4	3.2	3.1
61N	3.6	3.7	3.8	3.4	3.9	5.1	5.3	5.6	5.8	5.8	5.8	5.6	5.3	4.9	3.7	3.4	3.2
60N	5.8	3.9	4.1	3.6	4.4	5.4	5.7	6.0	6.2	6.4	6.4	6.2	6.8	6.0	5.1	3.9	3.4
59N	6.2	6.1	4.1	4.3	5.4	5.7	6.1	6.5	6.8	7.0	7.0	7.0	7.0	6.3	5.3	4.1	3.7
58N	6.7	6.9	4.3	4.5	5.7	6.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.5	4.2	3.6
57N	7.0	7.0	4.5	4.7	6.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.2	3.8
56N	7.0	7.0	4.7	6.5	6.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.2	4.3
55N	7.0	7.0	7.0	6.8	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.2	4.4
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.8	4.6
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2	3.5	4.7
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	3.6	5.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	5.6	5.3
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	6.9	5.5
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	2.4	5.9	5.8
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	1.6	5.3	6.1
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	1.5	5.3	6.7
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.2	6.2	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.6	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL390 – No ozone converter – p1
Figure 05–07–90

North America - Maximum Flight duration in hour, MAY WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88N	1.1	1.1	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
86N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
85N	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0
84N	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0
83N	1.0	1.0	1.0	1.0	0.9	0.8	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.0
82N	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1
81N	1.1	1.1	1.1	1.1	1.0	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.1
80N	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.2
79N	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.2	1.3
78N	1.0	1.0	1.1	1.1	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.3	1.4
77N	0.9	0.9	1.0	1.2	1.3	1.5	1.4	1.4	1.3	1.3	1.3	1.4	1.4	1.5
76N	0.7	0.8	1.0	1.2	1.4	1.5	1.5	1.4	1.3	1.3	1.4	1.4	1.6	1.7
75N	0.7	0.7	0.9	1.1	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.7	1.9
74N	0.7	0.7	0.9	1.1	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.7	1.9	2.1
73N	0.7	0.8	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.5	1.6	1.8	2.1	2.4
72N	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.7	1.9	2.2	2.7
71N	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.5	1.5	1.6	1.7	2.0	2.3	2.9
70N	1.2	1.2	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	2.1	2.4	2.9
69N	1.3	1.3	1.4	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.9	2.1	2.4	2.9
68N	1.5	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9	2.0	2.1	2.4	2.8
67N	1.7	1.6	1.7	1.7	1.8	2.0	2.0	2.1	2.0	2.0	2.1	2.2	2.4	2.7
66N	1.9	1.8	2.0	1.9	2.0	2.2	2.2	2.3	2.2	2.2	2.1	2.2	2.4	2.6
65N	2.1	2.1	2.2	2.2	2.2	2.5	3.1	2.6	2.4	2.4	2.2	2.3	2.4	3.0
64N	2.4	2.3	2.5	2.4	2.6	3.3	3.6	3.8	3.0	2.6	2.6	2.6	2.7	3.5
63N	2.8	2.8	2.7	2.7	3.0	3.9	4.3	4.5	4.5	3.2	2.8	2.7	2.8	3.7
62N	3.0	3.0	3.5	3.8	4.7	7.0	5.3	5.6	5.4	3.6	3.1	2.9	3.8	3.9
61N	3.1	3.1	3.7	4.6	7.0	7.0	7.0	7.0	6.7	5.4	3.6	3.1	4.0	4.3
60N	3.2	3.4	4.1	5.7	7.0	7.0	7.0	7.0	7.0	6.4	3.9	3.2	5.4	4.5
59N	3.2	3.4	4.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.5	5.8	6.8
58N	3.2	3.5	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0
57N	3.4	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	4.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	4.6	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	5.3	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL390 – No ozone converter – p2
Figure 05–07–91

North America - Maximum Flight duration in hour, MAY WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
88N	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
87N	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
86N	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
85N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
84N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
83N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
82N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2
81N	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2
80N	1.4	1.4	1.4	1.4	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2
79N	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2
78N	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1
77N	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0
76N	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.0	0.9
75N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.4	1.3	1.2	1.1	1.0	0.9
74N	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.4	1.4	1.2	1.1	1.0	0.9
73N	1.8	1.7	1.7	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.1	0.9
72N	1.8	1.8	1.9	2.0	2.0	2.0	2.0	2.1	2.1	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.0
71N	1.9	1.9	2.0	2.0	2.1	2.1	2.3	2.3	2.2	2.2	1.8	1.7	1.6	1.5	1.4	1.3	1.2
70N	2.0	2.0	2.1	2.1	2.2	2.4	2.4	2.4	2.4	2.3	1.9	1.9	1.8	1.7	1.5	1.4	1.3
69N	2.0	2.0	2.2	2.2	2.2	2.6	2.6	2.6	2.6	2.6	2.1	2.0	2.0	1.8	1.7	1.6	1.5
68N	2.1	2.1	2.3	2.3	2.3	2.4	2.4	2.8	2.8	2.8	2.8	2.2	2.2	2.0	1.9	1.8	1.7
67N	2.2	2.2	2.4	2.4	2.5	2.5	2.6	2.6	3.1	3.1	3.1	2.4	2.4	2.3	2.2	2.1	2.0
66N	2.6	2.5	2.9	2.5	2.6	2.7	2.7	2.8	2.9	3.5	3.5	3.4	3.3	3.1	2.5	2.4	2.3
65N	3.5	2.9	3.0	2.6	2.7	2.8	2.9	3.0	3.8	3.8	3.9	3.8	3.7	3.5	3.3	2.7	2.6
64N	3.7	3.0	3.1	4.2	2.8	2.9	3.1	3.7	4.1	4.2	4.3	4.2	4.1	4.0	3.7	3.5	3.0
63N	3.9	4.5	4.6	4.5	4.2	5.1	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.4	4.1	3.8	3.7
62N	4.6	4.8	5.0	4.2	4.5	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.5	4.1	4.0
61N	4.9	5.0	5.4	4.5	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.4	4.2
60N	7.0	5.4	5.8	4.8	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	4.6
59N	7.0	7.0	6.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.0
58N	7.0	7.0	6.4	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	5.0
57N	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.1
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.9
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	6.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.5	6.1
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.9	6.4
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.2	6.9
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.5	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.5	6.9	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.2	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL380 – No ozone converter – p1
Figure 05–07–92

North America - Maximum Flight duration in hour, MAY WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
88N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
87N	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2
86N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2
85N	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1
84N	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1
83N	1.2	1.2	1.1	1.1	1.0	0.9	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.2
82N	1.2	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.9	1.0	1.0	1.1	1.1	1.2
81N	1.3	1.3	1.3	1.3	1.2	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.2	1.2
80N	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3
79N	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.4
78N	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5
77N	1.0	1.1	1.2	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.4	1.5	1.6	1.6
76N	0.9	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.4	1.4	1.5	1.6	1.7	1.8
75N	0.8	0.9	1.0	1.2	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.7	1.9	2.1
74N	0.8	0.9	1.0	1.2	1.3	1.4	1.4	1.4	1.4	1.5	1.6	1.8	2.1	2.4
73N	0.9	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.5	1.6	1.7	1.9	2.3	2.7
72N	1.0	1.1	1.1	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.8	2.1	2.5	3.0
71N	1.1	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.7	1.9	2.2	2.6	3.2
70N	1.3	1.3	1.4	1.5	1.5	1.5	1.6	1.7	1.8	1.9	2.0	2.3	2.7	3.3
69N	1.6	1.5	1.6	1.6	1.6	1.6	1.8	1.8	1.9	2.0	2.1	2.3	2.7	3.2
68N	1.8	1.7	1.7	1.8	1.8	1.9	2.1	2.0	2.1	2.1	2.2	2.4	2.7	3.1
67N	1.9	1.9	2.0	2.0	2.1	2.3	2.3	2.4	2.3	2.2	2.3	2.4	2.7	3.0
66N	2.2	2.2	2.4	2.2	2.3	2.6	2.6	2.7	2.5	2.5	2.4	2.5	2.7	2.9
65N	2.6	2.5	2.7	2.6	2.6	3.0	3.9	3.1	2.8	2.8	2.6	2.6	2.7	3.5
64N	2.9	2.8	3.0	2.9	3.2	4.3	4.8	5.0	3.7	3.1	3.1	3.1	3.2	4.4
63N	3.6	3.6	3.4	3.3	3.8	5.4	6.2	6.6	6.3	4.0	3.4	3.3	3.3	4.7
62N	4.0	3.9	4.7	5.1	7.0	7.0	7.0	7.0	7.0	4.6	3.8	3.5	4.9	5.1
61N	4.2	4.1	5.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.8	5.3	5.8
60N	4.4	4.6	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.1	7.0	6.4
59N	4.4	4.8	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	7.0	7.0
58N	4.4	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	4.7	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	5.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL380 – No ozone converter – p2
Figure 05–07–93

North America - Maximum Flight duration in hour, MAY WOUDC FL 370																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
89N	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
88N	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
87N	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
86N	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1
85N	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1
84N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1
83N	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1
82N	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
81N	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
80N	2.4	2.4	2.4	2.4	2.4	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
79N	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.1
78N	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.1
77N	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.2	2.1	2.1	2.0	1.9
76N	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.5	2.5	2.4	2.3	2.3	2.1	2.0	1.9	1.8
75N	2.8	2.8	2.8	2.8	2.8	2.7	2.8	2.7	2.7	2.6	2.5	2.4	2.3	2.2	2.0	1.9	1.8
74N	3.0	2.9	2.9	2.8	2.9	2.9	2.9	2.8	2.8	2.7	2.6	2.5	2.4	2.3	2.1	1.9	1.8
73N	3.0	2.9	2.9	3.2	3.2	3.0	3.0	3.0	2.9	2.8	2.7	2.6	2.5	2.3	2.2	2.0	1.8
72N	3.1	3.1	3.3	3.3	3.3	3.3	3.3	3.5	3.5	2.9	2.9	2.7	2.6	2.4	2.3	2.1	2.0
71N	3.2	3.2	3.4	3.4	3.5	3.5	3.8	3.8	3.7	3.6	3.0	2.9	2.8	2.6	2.4	2.3	2.2
70N	3.2	3.2	3.5	3.6	3.6	4.1	4.1	4.1	4.0	3.9	3.2	3.1	3.0	2.8	2.6	2.5	2.4
69N	3.4	3.4	3.6	3.7	3.7	4.4	4.4	4.4	4.4	4.3	3.4	3.3	3.2	3.1	2.9	2.8	2.6
68N	3.4	3.4	3.8	3.9	3.8	3.9	4.0	4.7	4.8	4.8	4.7	3.6	3.5	3.4	3.2	3.1	3.0
67N	3.5	3.6	3.9	4.0	4.0	4.1	4.2	4.3	5.3	5.3	5.3	3.9	3.9	3.7	3.6	3.5	3.4
66N	4.3	4.2	4.7	4.1	4.2	4.3	4.5	4.6	4.7	5.9	5.9	5.7	5.5	5.2	4.0	3.9	3.8
65N	5.8	4.8	5.0	4.2	4.4	4.6	4.8	4.9	6.4	6.5	6.6	6.5	6.3	5.9	5.5	4.4	4.4
64N	6.2	5.1	5.2	7.0	4.6	4.8	5.0	6.3	7.0	7.0	7.0	7.0	7.0	6.8	6.3	5.9	5.0
63N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.5
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL370 – No ozone converter – p1
Figure 05–07–94

North America –Maximum Flight duration in hour, MAY WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
89N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
88N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
87N	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2
86N	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.2
85N	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1
84N	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1
83N	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.2
82N	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1	2.2
81N	2.2	2.2	2.2	2.2	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.2	2.3
80N	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.3	2.4
79N	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5
78N	2.1	2.1	2.2	2.3	2.4	2.5	2.5	2.5	2.4	2.4	2.4	2.5	2.5	2.6
77N	1.9	2.0	2.1	2.3	2.6	2.7	2.7	2.6	2.5	2.5	2.5	2.6	2.7	2.8
76N	1.8	1.9	2.1	2.3	2.6	2.7	2.7	2.6	2.5	2.6	2.6	2.7	2.9	3.0
75N	1.7	1.8	2.0	2.3	2.5	2.6	2.6	2.6	2.6	2.6	2.7	2.9	3.1	3.3
74N	1.7	1.8	2.0	2.3	2.5	2.6	2.6	2.6	2.6	2.7	2.8	3.0	3.3	3.7
73N	1.8	1.9	2.1	2.3	2.4	2.6	2.6	2.6	2.7	2.8	2.9	3.2	3.6	4.1
72N	1.9	2.0	2.1	2.3	2.5	2.6	2.6	2.7	2.7	2.9	3.0	3.3	3.8	4.5
71N	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.9	2.8	3.0	3.1	3.5	4.0	4.8
70N	2.4	2.4	2.5	2.6	2.6	2.7	2.9	3.0	3.1	3.2	3.3	3.6	4.1	4.8
69N	2.7	2.6	2.7	2.8	2.8	2.9	3.1	3.2	3.3	3.3	3.5	3.7	4.1	4.8
68N	3.1	3.0	3.0	3.0	3.1	3.2	3.5	3.4	3.5	3.4	3.6	3.8	4.2	4.6
67N	3.3	3.2	3.3	3.3	3.5	3.9	3.9	4.1	3.8	3.6	3.8	3.9	4.2	4.5
66N	3.7	3.6	4.0	3.7	3.9	4.4	4.4	4.6	4.1	4.2	3.9	4.0	4.2	4.4
65N	4.3	4.1	4.6	4.5	4.4	5.1	7.0	5.4	4.6	4.6	4.2	4.2	4.2	5.4
64N	5.0	4.7	5.3	5.1	5.5	7.0	7.0	7.0	6.4	5.0	5.0	4.9	5.2	7.0
63N	6.5	6.3	6.0	5.8	7.0	7.0	7.0	7.0	7.0	6.8	5.6	5.2	5.4	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.6	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL370 – No ozone converter – p2
Figure 05–07–95

	North America - Maximum Flight duration in hour, MAY WOUDC FL 360																
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
88N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5
87N	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5
86N	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
85N	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4
84N	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4
83N	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4
82N	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4
81N	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.4	2.4	2.4	2.4
80N	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.4	2.4
79N	3.1	3.1	3.1	3.1	3.0	3.0	2.9	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.4	2.4
78N	3.2	3.2	3.2	3.2	3.1	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.4	2.4	2.3
77N	3.3	3.3	3.3	3.3	3.2	3.2	3.1	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2
76N	3.3	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.0	2.9	2.8	2.7	2.5	2.4	2.2	2.1
75N	3.5	3.5	3.5	3.5	3.5	3.4	3.5	3.4	3.3	3.2	3.1	2.9	2.8	2.6	2.4	2.2	2.1
74N	3.8	3.6	3.6	3.6	3.7	3.7	3.7	3.6	3.5	3.4	3.3	3.1	2.9	2.7	2.5	2.2	2.1
73N	3.9	3.7	3.7	4.1	4.1	3.9	3.9	3.8	3.7	3.6	3.5	3.3	3.1	2.8	2.6	2.4	2.2
72N	4.0	4.0	4.4	4.4	4.4	4.4	4.4	4.9	4.7	3.7	3.6	3.4	3.2	3.0	2.8	2.6	2.4
71N	4.2	4.2	4.6	4.6	4.7	4.7	5.5	5.4	5.3	5.0	3.9	3.7	3.5	3.3	3.0	2.8	2.7
70N	4.4	4.4	4.9	5.0	5.0	6.1	6.1	6.1	5.9	5.8	4.2	4.1	3.9	3.6	3.3	3.1	2.9
69N	4.5	4.6	5.1	5.3	5.0	6.8	6.9	6.9	6.9	6.7	4.7	4.6	4.3	4.1	3.8	3.5	3.3
68N	4.8	4.8	5.4	5.6	5.4	5.6	5.6	7.0	7.0	7.0	7.0	5.1	4.9	4.7	4.4	4.1	3.9
67N	5.0	5.0	5.8	5.6	5.8	6.0	6.2	6.4	7.0	7.0	7.0	5.9	5.7	5.5	5.1	4.8	4.6
66N	6.5	6.2	7.0	5.9	6.2	6.5	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.8	5.7
65N	7.0	7.0	7.0	6.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL360 – No ozone converter – p1
Figure 05–07–96

North America - Maximum Flight duration in hour, MAY WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
88N	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6
87N	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6
86N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5
85N	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.5	2.5
84N	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5
83N	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.5	2.5
82N	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.6
81N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.7
80N	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.6	2.7	2.8
79N	2.3	2.3	2.3	2.4	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.7	2.8	2.9
78N	2.3	2.3	2.4	2.5	2.6	2.6	2.7	2.6	2.6	2.7	2.8	2.9	3.0	3.1
77N	2.2	2.3	2.4	2.5	2.7	2.7	2.7	2.7	2.7	2.8	2.9	3.0	3.2	3.4
76N	2.1	2.2	2.3	2.5	2.7	2.7	2.7	2.7	2.8	2.9	3.0	3.2	3.4	3.7
75N	2.0	2.1	2.3	2.5	2.7	2.7	2.7	2.8	2.8	2.9	3.1	3.4	3.7	4.2
74N	2.0	2.1	2.3	2.5	2.7	2.7	2.8	2.8	2.9	3.1	3.3	3.6	4.2	4.8
73N	2.1	2.2	2.4	2.6	2.7	2.8	2.8	2.9	3.0	3.2	3.5	3.9	4.6	5.7
72N	2.3	2.4	2.5	2.7	2.8	2.9	2.9	3.0	3.1	3.3	3.6	4.2	5.1	6.5
71N	2.6	2.6	2.7	2.8	2.9	3.0	3.0	3.3	3.3	3.5	3.8	4.4	5.5	7.0
70N	3.0	2.9	3.0	3.1	3.1	3.2	3.4	3.5	3.7	3.8	4.2	4.6	5.6	7.0
69N	3.5	3.3	3.3	3.4	3.3	3.4	3.7	3.8	4.0	4.0	4.4	4.8	5.7	7.0
68N	4.2	3.8	3.8	3.8	3.9	3.9	4.5	4.2	4.4	4.3	4.7	4.9	5.8	6.8
67N	4.4	4.2	4.4	4.3	4.6	5.2	5.2	5.4	4.9	4.7	5.0	5.1	5.8	6.5
66N	5.5	5.0	5.9	5.0	5.4	6.3	6.3	6.6	5.7	5.8	5.3	5.3	5.8	6.3
65N	6.9	6.2	7.0	7.0	6.5	7.0	7.0	7.0	6.8	6.6	5.7	5.8	5.8	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL360 – No ozone converter – p2
Figure 05–07–97

North America - Maximum Flight duration in hour, MAY WOUDC FL 350																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
89N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2
88N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
87N	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1
86N	3.4	3.4	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0	3.0
85N	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0	3.0	3.0
84N	3.4	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.0	3.0	2.9
83N	3.5	3.5	3.5	3.4	3.4	3.4	3.3	3.3	3.3	3.2	3.2	3.1	3.1	3.0	3.0	2.9	2.9
82N	3.6	3.6	3.5	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.0	3.0	2.9	2.9
81N	3.7	3.6	3.6	3.6	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.1	3.1	3.0	3.0	2.9	2.9
80N	3.7	3.7	3.7	3.6	3.6	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9
79N	4.3	4.2	4.2	4.2	4.1	4.1	4.0	3.9	3.8	3.6	3.5	3.4	3.2	3.1	3.0	2.9	2.9
78N	4.4	4.4	4.5	4.4	4.4	4.3	4.1	4.0	3.9	3.8	3.6	3.4	3.3	3.1	3.0	2.9	2.8
77N	4.6	4.7	4.7	4.7	4.6	4.5	4.4	4.2	4.1	3.9	3.7	3.5	3.4	3.1	3.0	2.8	2.7
76N	4.8	4.9	4.9	4.9	4.8	4.7	4.6	4.5	4.3	4.1	3.9	3.7	3.4	3.1	2.9	2.8	2.6
75N	5.2	5.2	5.2	5.2	5.1	5.1	5.3	5.1	4.9	4.7	4.4	4.0	3.7	3.3	3.0	2.7	2.5
74N	5.7	5.5	5.5	5.5	6.0	5.9	5.8	5.6	5.4	5.1	4.7	4.4	4.0	3.6	3.2	2.8	2.5
73N	6.0	5.8	5.8	7.0	7.0	6.6	6.5	6.3	6.0	5.7	5.2	4.8	4.4	3.9	3.4	3.0	2.7
72N	6.6	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.4	4.8	4.3	3.7	3.4	3.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.6	4.9	4.3	3.8	3.5
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.9	5.1	4.5	4.1
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.7	5.1
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL350 – No ozone converter – p1
Figure 05–07–98

North America - Maximum Flight duration in hour, MAY WOUDC FL 350														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
89N	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3
88N	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
87N	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2
86N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.2
85N	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.1	3.1
84N	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.1	3.1
83N	2.9	2.9	2.9	2.8	2.8	2.8	2.7	2.7	2.8	2.8	2.9	3.0	3.1	3.2
82N	2.9	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.8	2.8	2.9	3.0	3.1	3.3
81N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.1	3.2	3.4
80N	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	3.0	3.0	3.1	3.2	3.4	3.5
79N	2.8	2.8	2.8	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.2	3.4	3.5	3.7
78N	2.8	2.8	2.9	2.9	3.0	3.1	3.1	3.1	3.2	3.3	3.4	3.6	3.8	4.0
77N	2.7	2.8	2.9	3.0	3.1	3.1	3.1	3.1	3.2	3.4	3.6	3.8	4.1	4.4
76N	2.5	2.6	2.8	3.0	3.1	3.1	3.1	3.2	3.3	3.5	3.7	4.1	4.5	4.9
75N	2.4	2.5	2.8	3.0	3.1	3.2	3.2	3.2	3.4	3.6	3.9	4.4	5.0	5.8
74N	2.4	2.6	2.8	3.1	3.2	3.2	3.2	3.4	3.5	3.8	4.2	4.8	5.8	7.0
73N	2.6	2.7	2.9	3.2	3.3	3.4	3.4	3.5	3.7	4.0	4.5	5.3	6.6	7.0
72N	2.8	3.0	3.1	3.3	3.5	3.6	3.6	3.7	4.0	4.3	4.8	5.7	7.0	7.0
71N	3.3	3.4	3.6	3.6	3.7	3.8	3.9	4.3	4.2	4.6	5.2	6.3	7.0	7.0
70N	4.1	3.9	4.1	4.2	4.1	4.2	4.5	4.7	5.1	5.2	5.9	6.7	7.0	7.0
69N	5.3	4.7	4.8	4.9	4.6	4.7	5.2	5.4	5.7	5.7	6.5	7.0	7.0	7.0
68N	7.0	6.0	5.9	5.9	5.9	5.8	7.0	6.3	6.7	6.4	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL350 – No ozone converter – p2
Figure 05–07–99

North America - Maximum Flight duration in hour, MAY WOUDC FL 340																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
89N	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.4
88N	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.4	4.4	4.4	4.4	4.3	4.3	4.3	4.3	4.3
87N	4.7	4.6	4.6	4.6	4.5	4.5	4.5	4.4	4.4	4.4	4.3	4.3	4.3	4.2	4.2	4.2	4.1
86N	4.7	4.7	4.7	4.6	4.6	4.5	4.5	4.4	4.4	4.3	4.3	4.2	4.2	4.1	4.1	4.1	4.1
85N	4.8	4.8	4.7	4.7	4.6	4.6	4.5	4.5	4.5	4.3	4.3	4.2	4.1	4.1	4.1	4.0	4.0
84N	4.9	4.9	5.0	4.9	4.9	4.8	4.7	4.6	4.6	4.5	4.4	4.3	4.2	4.1	4.1	3.9	3.9
83N	5.3	5.3	5.1	5.1	5.0	4.9	4.8	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.9
82N	5.5	5.4	5.3	5.3	5.1	5.0	4.9	4.8	4.7	4.6	4.4	4.3	4.2	4.1	3.9	3.9	3.8
81N	5.7	5.6	5.5	5.4	5.3	5.2	5.1	4.9	4.8	4.6	4.5	4.4	4.2	4.1	3.9	3.8	3.7
80N	5.8	5.8	5.7	5.6	5.5	6.4	6.1	5.8	5.6	5.3	5.0	4.8	4.5	4.2	4.0	3.9	3.7
79N	7.0	6.9	6.8	7.0	7.0	6.9	6.6	6.3	5.9	5.5	5.2	4.9	4.6	4.2	4.0	3.9	3.7
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.4	5.9	5.5	5.1	4.7	4.3	4.0	3.8	3.7
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.4	5.9	5.4	4.9	4.4	4.0	3.7	3.5
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.8	5.2	4.4	4.0	3.6	3.3
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.9	4.9	4.1	3.6	3.2
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.5	4.6	3.7	3.3
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.2	4.3	3.5
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.0	4.3
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.4
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL340 – No ozone converter – p1
Figure 05–07–100

North America - Maximum Flight duration in hour, MAY WOUDC FL 340														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
89N	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.5	4.5	4.5	4.5	4.5
88N	4.3	4.3	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.4	4.4	4.4
87N	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.2	4.2	4.2	4.3	4.3
86N	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.1	4.2	4.3
85N	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.9	3.9	4.0	4.1	4.1	4.2
84N	3.9	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.8	3.9	4.0	4.1	4.2
83N	3.8	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.7	3.7	3.9	4.0	4.1	4.3
82N	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.7	3.8	3.9	4.1	4.3	4.5
81N	3.6	3.5	3.5	3.6	3.7	3.7	3.7	3.8	3.8	3.9	4.1	4.3	4.5	4.7
80N	3.6	3.5	3.4	3.5	3.7	3.9	4.0	4.0	4.0	4.2	4.3	4.5	4.8	4.9
79N	3.6	3.6	3.5	3.7	3.9	4.2	4.2	4.3	4.3	4.4	4.6	4.9	5.1	5.4
78N	3.7	3.7	3.7	4.0	4.3	4.5	4.5	4.6	4.6	4.7	4.9	5.2	5.6	6.0
77N	3.5	3.6	3.8	4.1	4.5	4.8	4.7	4.7	4.8	5.0	5.3	5.7	6.4	7.0
76N	3.2	3.4	3.8	4.3	4.6	4.8	4.8	4.8	4.9	5.3	5.7	6.5	7.0	7.0
75N	3.1	3.3	3.8	4.3	4.6	4.8	4.8	4.9	5.2	5.6	6.4	7.0	7.0	7.0
74N	3.1	3.3	3.8	4.4	4.8	4.9	4.9	5.1	5.5	6.1	7.0	7.0	7.0	7.0
73N	3.4	3.6	4.1	4.6	5.0	5.3	5.3	5.5	6.0	6.7	7.0	7.0	7.0	7.0
72N	3.9	4.2	4.5	5.1	5.5	5.7	5.8	6.0	6.5	7.0	7.0	7.0	7.0	7.0
71N	4.9	5.1	5.7	5.8	6.2	6.5	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL340 – No ozone converter – p2
Figure 05–07–101

North America - Maximum Flight duration in hour, MAY WOUDC FL 330																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
89N	6.8	6.8	6.8	6.8	6.7	6.7	6.7	6.7	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.5
88N	6.9	6.9	6.8	6.8	6.7	6.7	6.6	6.6	6.5	6.5	6.4	6.4	6.4	6.3	6.3	6.3	6.2
87N	7.0	7.0	6.9	6.8	6.8	6.7	6.6	6.5	6.5	6.4	6.3	6.2	6.2	6.1	6.1	6.0	6.0
86N	7.0	7.0	7.0	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.2	6.1	6.0	5.9	5.8	5.8	5.7
85N	7.0	7.0	7.0	7.0	6.9	6.8	6.7	6.5	6.7	6.3	6.1	6.0	5.9	5.8	5.7	5.7	5.6
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8	6.6	6.4	6.2	6.0	5.8	5.7	5.4	5.4
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.4	6.2	5.9	5.7	5.6	5.4	5.3
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.5	6.2	5.9	5.7	5.4	5.3	5.2
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.6	6.2	5.9	5.7	5.4	5.2	5.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8	5.5	5.2	5.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.9	5.5	5.2	5.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.0	5.5	5.1	4.8
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.4	4.9	4.5
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.4	4.7	4.1
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.6	3.9
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.8	4.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.5
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL330 – No ozone converter – p1
Figure 05–07–102

North America - Maximum Flight duration in hour, MAY WOUDC FL 330														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
89N	6.5	6.5	6.5	6.5	6.5	6.6	6.6	6.6	6.6	6.6	6.6	6.7	6.7	6.7
88N	6.2	6.2	6.2	6.2	6.3	6.3	6.3	6.3	6.3	6.4	6.4	6.4	6.5	6.6
87N	5.9	5.9	5.9	5.9	5.9	5.9	5.9	6.0	6.0	6.1	6.2	6.2	6.3	6.4
86N	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.8	5.9	6.0	6.1	6.3
85N	5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.6	5.7	5.8	6.0	6.2
84N	5.4	5.3	5.3	5.3	5.2	5.2	5.2	5.2	5.3	5.4	5.5	5.7	6.0	6.2
83N	5.2	5.1	5.2	5.2	5.2	5.1	5.1	5.1	5.2	5.3	5.5	5.7	6.0	6.4
82N	5.0	5.0	5.0	5.0	5.1	5.1	5.1	5.1	5.2	5.3	5.6	5.8	6.2	6.6
81N	4.9	4.7	4.7	4.8	5.0	5.1	5.2	5.2	5.3	5.5	5.7	6.2	6.6	7.0
80N	4.9	4.7	4.6	4.7	4.9	5.1	5.2	5.3	5.5	5.7	6.1	6.6	7.0	7.0
79N	4.9	4.7	4.7	4.8	5.0	5.0	5.1	5.3	5.6	6.0	6.4	7.0	7.0	7.0
78N	4.8	4.8	4.8	5.0	4.9	4.9	5.0	5.3	5.6	6.2	7.0	7.0	7.0	7.0
77N	4.4	4.6	4.8	5.0	4.9	4.7	4.8	5.2	5.8	6.5	7.0	7.0	7.0	7.0
76N	3.9	4.2	4.7	5.0	4.9	4.7	4.8	5.2	6.0	7.0	7.0	7.0	7.0	7.0
75N	3.7	3.9	4.7	5.1	5.2	5.0	5.0	5.5	6.4	7.0	7.0	7.0	7.0	7.0
74N	3.7	4.1	4.8	5.4	5.5	5.5	5.5	6.1	7.0	7.0	7.0	7.0	7.0	7.0
73N	4.1	4.5	5.3	6.0	6.2	6.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	5.0	5.6	6.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL330 – No ozone converter – p2
Figure 05–07–103

North America - Maximum Flight duration in hour, MAY WOUDC FL 320																		
	Longitude																	
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL320 – No ozone converter – p1
Figure 05–07–104

North America - Maximum Flight duration in hour, MAY WOUDC FL 320														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.7	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	5.1	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	5.3	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – May – FL320 – No ozone converter – p2
Figure 05–07–105

F. North America – June

North America - Maximum Flight duration in hour, JUNE WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
89N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
86N	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
85N	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.4	0.4
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.4	0.4	0.5	0.5
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.5	0.5	0.5
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.5	0.5	0.5
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.5	0.6	0.6
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.5	0.6	0.6	0.6
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.4	0.6	0.6	0.6
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.6	0.7	0.7	0.6
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.7	0.8	0.7
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.8	0.9	1.0	0.9
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.9	1.2	1.2	1.1
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.9	1.1	1.5	1.5	1.5
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.1	1.4	1.9	2.0	2.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.2	1.8	2.4	2.4	2.5	2.6
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.5	2.2	2.9	3.4	3.3	3.4
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.9	1.8	2.8	3.7	4.3	4.1	4.4
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.1	2.2	3.4	4.5	5.4	6.0	5.6
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.4	2.7	4.3	5.7	6.9	7.0	7.0
63N	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	1.8	3.4	5.3	7.0	7.0	7.0	7.0
62N	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	2.3	4.3	6.7	7.0	7.0	7.0	7.0
61N	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.4	1.4	3.0	5.3	7.0	7.0	7.0	7.0	7.0
60N	0.9	0.5	0.1	0.0	0.0	0.0	0.0	0.2	0.7	1.8	3.7	6.5	7.0	7.0	7.0	7.0	7.0
59N	1.1	0.7	0.2	0.1	0.1	0.1	0.2	0.5	1.1	2.4	4.5	7.0	7.0	7.0	7.0	7.0	7.0
58N	1.4	0.8	0.3	0.2	0.5	0.3	0.5	0.8	1.6	3.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0
57N	2.9	2.0	0.5	0.4	0.7	0.5	0.7	1.2	2.0	3.7	6.4	7.0	7.0	7.0	7.0	7.0	7.0
56N	3.5	2.5	1.5	0.5	1.0	0.8	1.0	1.5	2.5	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	4.3	3.1	1.9	1.9	1.4	2.0	1.3	1.9	3.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	5.1	3.8	2.9	2.4	1.7	2.6	3.0	3.8	3.6	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	6.3	4.6	4.8	2.9	2.2	3.3	3.8	4.7	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	5.6	6.0	3.6	3.9	4.1	4.7	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	6.8	7.0	4.3	4.9	5.2	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	5.4	6.2	6.5	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL410 – No ozone converter – p1
Figure 05–07–106

North America - Maximum Flight duration in hour, JUNE WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
89N	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1
87N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
86N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2
85N	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1
84N	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
83N	0.3	0.3	0.3	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
82N	0.4	0.4	0.4	0.3	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2
81N	0.4	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4
80N	0.5	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5
79N	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.7	0.7
78N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.0
77N	0.6	0.5	0.5	0.5	0.5	0.5	0.6	0.7	0.8	0.8	1.0	1.2	1.6	1.8
76N	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.9	1.1	1.3	1.9	2.3	2.8
75N	0.6	0.6	0.6	0.7	0.7	0.8	0.8	1.0	1.1	1.3	1.9	2.4	3.1	4.1
74N	0.6	0.6	0.7	0.7	0.8	0.9	0.9	1.1	1.3	2.0	2.4	3.1	4.2	6.2
73N	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.3	1.6	2.3	2.9	3.8	5.5	7.0
72N	0.8	1.0	0.9	1.0	1.4	1.6	1.5	1.5	2.2	2.7	3.4	4.5	7.0	7.0
71N	1.2	1.2	1.4	1.5	1.7	1.9	2.3	2.6	2.6	3.1	3.8	5.1	7.0	7.0
70N	1.5	1.6	1.7	1.9	2.1	3.8	5.0	4.8	4.4	3.4	4.2	5.7	7.0	7.0
69N	2.0	2.1	2.2	2.3	3.9	5.8	4.8	6.0	5.2	5.8	4.6	5.9	7.0	7.0
68N	2.6	2.7	2.8	4.6	4.9	7.0	5.9	7.0	6.3	6.8	4.9	6.2	7.0	7.0
67N	3.5	3.5	5.6	5.7	5.9	6.9	7.0	7.0	7.0	7.0	7.0	6.3	7.0	7.0
66N	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL410 – No ozone converter – p2
Figure 05–07–107

North America - Maximum Flight duration in hour, JUNE WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3
86N	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
85N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3
84N	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.4
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.3	0.3	0.4	0.4	0.4	0.5
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.3	0.4	0.4	0.5	0.5
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.5	0.6	0.6
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.3	0.5	0.6	0.6	0.6
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	0.6	0.6	0.6
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.6	0.6	0.7	0.7
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.7	0.7
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.5	0.7	0.7	0.7
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	0.7	0.8	0.8	0.7
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.6	0.8	0.9	1.0	0.8
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.7	0.9	1.0	1.1	1.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.8	1.1	1.4	1.4	1.3
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.0	1.3	1.7	1.7	1.7
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	1.2	1.6	2.2	2.3	2.3
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.3	2.1	2.7	2.7	2.9	3.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.8	1.7	2.6	3.3	3.9	3.8	3.9
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.0	2.1	3.2	4.2	5.0	4.8	5.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	1.3	2.5	4.0	5.4	6.4	7.0	6.3
64N	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.7	3.2	5.1	6.8	7.0	7.0	7.0
63N	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	2.1	4.1	6.5	7.0	7.0	7.0	7.0
62N	0.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.2	1.1	2.7	5.1	7.0	7.0	7.0	7.0	7.0
61N	0.6	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.5	1.6	3.5	6.5	7.0	7.0	7.0	7.0	7.0
60N	1.0	0.6	0.2	0.0	0.0	0.0	0.0	0.3	0.9	2.1	4.4	7.0	7.0	7.0	7.0	7.0	7.0
59N	1.3	0.8	0.3	0.2	0.1	0.2	0.3	0.6	1.3	2.8	5.5	7.0	7.0	7.0	7.0	7.0	7.0
58N	1.6	1.0	0.4	0.3	0.6	0.4	0.6	0.9	1.8	3.6	6.8	7.0	7.0	7.0	7.0	7.0	7.0
57N	3.4	2.4	0.6	0.5	0.9	0.6	0.8	1.4	2.4	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	4.3	3.0	1.8	0.6	1.2	0.9	1.2	1.8	3.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	5.2	3.6	2.2	2.2	1.6	2.3	1.5	2.2	3.6	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	6.5	4.5	3.4	2.7	2.0	3.0	3.5	4.6	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	5.7	6.0	3.4	2.5	3.9	4.5	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	4.2	4.6	5.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	5.2	5.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL400 – No ozone converter – p1
Figure 05–07–108

North America - Maximum Flight duration in hour, JUNE WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
86N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2
85N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
84N	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.2
83N	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2
82N	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3
81N	0.5	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4
80N	0.6	0.6	0.6	0.6	0.5	0.4	0.4	0.3	0.4	0.4	0.5	0.5	0.6	0.5
79N	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.6	0.7	0.7	0.8	0.8
78N	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.6	0.7	0.8	0.8	1.0	1.0	1.1
77N	0.7	0.6	0.7	0.6	0.6	0.6	0.7	0.8	0.9	0.9	1.1	1.3	1.7	1.8
76N	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.0	1.2	1.4	2.0	2.3	2.7
75N	0.7	0.7	0.7	0.8	0.8	0.9	0.9	1.1	1.2	1.4	2.0	2.5	3.0	3.8
74N	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.3	1.4	2.1	2.5	3.1	3.9	5.3
73N	0.7	0.8	0.8	0.9	1.1	1.1	1.2	1.5	1.7	2.4	2.9	3.7	4.8	7.0
72N	0.9	1.1	1.0	1.1	1.6	1.7	1.6	1.7	2.4	2.8	3.4	4.3	6.3	7.0
71N	1.3	1.4	1.6	1.7	1.9	2.1	2.6	2.9	2.7	3.2	3.8	4.8	7.0	7.0
70N	1.7	1.8	2.0	2.1	2.3	4.3	5.8	5.5	4.8	3.5	4.2	5.2	7.0	7.0
69N	2.3	2.4	2.5	2.6	4.5	7.0	5.3	7.0	5.8	6.2	4.6	5.5	7.0	7.0
68N	3.0	3.1	3.1	5.3	5.7	7.0	6.8	7.0	7.0	7.0	4.9	5.8	7.0	7.0
67N	3.9	3.9	6.4	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	7.0	7.0
66N	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL400 – No ozone converter – p2
Figure 05–07–109

North America - Maximum Flight duration in hour, JUNE WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
89N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
88N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
87N	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7
86N	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7
85N	3.5	3.4	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.8	3.7	3.7
84N	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.7	3.7	3.8	3.8	3.8	3.8
83N	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.9
82N	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.5	3.6	3.7	3.7	3.8	3.8	3.9	3.9
81N	3.1	3.1	3.0	3.0	3.1	3.1	3.2	3.3	3.4	3.4	3.6	3.6	3.7	3.8	3.9	3.9	4.0
80N	3.0	2.9	2.9	2.9	2.9	3.0	3.0	3.2	3.3	3.4	3.5	3.6	3.8	3.9	4.0	4.0	4.0
79N	2.8	2.8	2.7	2.7	2.7	2.8	2.9	3.0	3.1	3.3	3.5	3.6	3.8	4.0	4.0	4.1	4.1
78N	2.7	2.7	2.6	2.6	2.6	2.6	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.1	4.1	4.1
77N	2.6	2.5	2.4	2.4	2.4	2.4	2.5	2.7	2.9	3.1	3.3	3.6	3.7	4.0	4.1	4.1	4.2
76N	2.5	2.4	2.3	2.2	2.2	2.2	2.3	2.5	2.7	3.0	3.3	3.5	3.7	4.1	4.2	4.2	4.2
75N	2.5	2.3	2.2	2.1	2.0	2.0	2.2	2.4	2.7	3.0	3.4	3.7	4.0	3.9	4.2	4.2	4.2
74N	2.4	2.3	2.1	2.0	1.9	1.9	2.0	2.3	2.6	3.0	3.4	3.7	4.0	4.2	4.3	4.3	4.2
73N	2.5	2.2	2.0	1.9	1.8	1.8	1.9	2.2	2.5	3.0	3.4	3.8	4.1	4.3	4.4	4.5	4.3
72N	2.5	2.3	2.1	1.9	1.7	1.7	1.9	2.2	2.6	3.0	3.4	3.9	4.2	4.5	4.6	4.7	4.6
71N	2.5	2.3	2.1	1.9	1.7	1.7	1.9	2.2	2.6	3.0	3.5	4.0	4.4	4.7	5.0	5.0	4.9
70N	2.5	2.3	2.1	1.9	1.8	1.7	2.0	2.3	2.7	3.1	3.6	4.1	4.7	5.0	5.5	5.5	5.5
69N	2.6	2.4	2.2	2.0	1.9	1.9	2.2	2.5	2.7	3.1	3.7	4.3	5.0	5.4	6.2	6.2	6.3
68N	2.7	2.4	2.3	2.1	2.1	2.1	2.4	2.6	2.8	3.2	4.2	5.1	6.1	7.0	6.9	7.0	7.0
67N	2.7	2.5	2.4	2.3	2.3	2.4	2.6	2.7	2.9	3.5	4.4	5.6	6.8	7.0	7.0	7.0	7.0
66N	2.8	2.6	2.5	2.4	2.4	2.5	2.7	2.7	3.0	3.6	4.7	6.1	7.0	7.0	7.0	7.0	7.0
65N	3.3	2.7	2.8	2.5	2.5	2.6	2.7	2.7	3.0	3.8	5.0	6.8	7.0	7.0	7.0	7.0	7.0
64N	3.5	2.9	2.9	2.8	2.7	2.7	2.7	2.8	3.1	4.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0
63N	3.7	3.0	3.1	2.9	2.8	2.9	2.8	2.9	3.3	4.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0
62N	3.9	3.6	3.2	3.1	3.0	3.0	3.0	3.0	3.6	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.2	3.9	3.4	3.2	3.2	3.2	3.2	3.3	4.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	4.8	4.1	3.6	3.4	3.3	3.4	3.4	3.7	4.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	5.2	4.4	3.7	3.6	3.5	3.6	3.7	4.1	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	5.6	4.7	3.9	3.8	4.1	3.9	4.1	4.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	4.1	4.0	4.5	4.2	4.4	5.1	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	5.9	4.2	4.9	4.5	4.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	6.6	6.5	5.5	6.6	5.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL390 – No ozone converter – p1
Figure 05–07–110

North America - Maximum Flight duration in hour, JUNE WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
89N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
88N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
87N	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6
86N	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6
85N	3.7	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6
84N	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.6	3.7	3.7	3.7	3.7	3.6	3.6
83N	3.9	3.9	3.8	3.8	3.7	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.6
82N	3.9	3.9	3.9	3.8	3.8	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7
81N	4.0	4.0	4.0	3.9	3.9	3.8	3.7	3.7	3.7	3.7	3.8	3.9	3.9	3.9
80N	4.0	4.0	4.0	4.0	3.9	3.9	3.8	3.8	3.9	3.9	4.0	4.0	4.0	4.0
79N	4.0	4.0	4.0	4.0	4.0	3.9	3.9	4.0	4.0	4.1	4.2	4.2	4.3	4.3
78N	4.1	4.0	4.0	4.1	4.0	4.0	4.0	4.1	4.2	4.3	4.4	4.5	4.6	4.6
77N	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.3	4.4	4.5	4.7	4.9	5.4	5.5
76N	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.5	4.6	4.8	5.0	5.7	6.0	6.6
75N	4.2	4.2	4.2	4.3	4.4	4.4	4.4	4.7	4.8	5.1	5.8	6.2	6.8	7.0
74N	4.2	4.2	4.3	4.4	4.5	4.6	4.6	4.9	5.1	5.9	6.3	7.0	7.0	7.0
73N	4.2	4.3	4.4	4.5	4.6	4.7	4.8	5.1	5.4	6.2	6.8	7.0	7.0	7.0
72N	4.4	4.7	4.5	4.7	5.3	5.5	5.3	5.4	6.2	6.7	7.0	7.0	7.0	7.0
71N	4.9	5.0	5.3	5.5	5.7	5.9	6.6	7.0	6.6	7.0	7.0	7.0	7.0	7.0
70N	5.5	5.6	5.8	6.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	6.3	6.4	6.5	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL390 – No ozone converter – p2
Figure 05–07–111

North America - Maximum Flight duration in hour, JUNE WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
89N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
88N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2
87N	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.2	4.3	4.3	4.3	4.3	4.3
86N	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
85N	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.4	4.4	4.3	4.3	4.3	4.3
84N	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.4	4.4	4.4	4.4	4.4	4.4
83N	4.1	4.1	4.1	4.1	4.1	4.1	4.2	4.2	4.2	4.3	4.3	4.4	4.4	4.4	4.5	4.4	4.4
82N	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1	4.2	4.3	4.3	4.4	4.4	4.5	4.5	4.5	4.5
81N	3.9	3.9	3.9	3.9	3.9	3.9	4.0	4.0	4.1	4.2	4.3	4.3	4.4	4.5	4.5	4.5	4.6
80N	3.8	3.8	3.8	3.8	3.8	3.8	3.9	4.0	4.1	4.2	4.2	4.3	4.4	4.6	4.7	4.6	4.6
79N	3.7	3.6	3.6	3.6	3.6	3.6	3.7	3.8	4.0	4.1	4.2	4.3	4.4	4.7	4.7	4.6	4.6
78N	3.6	3.5	3.5	3.4	3.4	3.5	3.6	3.7	3.8	4.0	4.2	4.3	4.4	4.7	4.7	4.6	4.6
77N	3.5	3.4	3.3	3.2	3.2	3.2	3.3	3.5	3.7	3.9	4.1	4.3	4.4	4.7	4.7	4.6	4.5
76N	3.4	3.3	3.2	3.1	3.0	3.1	3.2	3.3	3.6	3.9	4.1	4.3	4.4	4.8	4.7	4.5	4.4
75N	3.3	3.2	3.0	2.9	2.8	2.9	3.1	3.3	3.7	4.0	4.4	4.7	4.8	4.5	4.7	4.5	4.2
74N	3.3	3.1	2.9	2.8	2.7	2.7	2.9	3.2	3.6	4.0	4.4	4.7	5.0	5.0	4.8	4.6	4.3
73N	3.4	3.1	2.9	2.7	2.6	2.6	2.7	3.1	3.5	4.0	4.5	4.9	5.1	5.3	5.1	4.9	4.5
72N	3.4	3.1	2.9	2.7	2.5	2.5	2.6	3.0	3.5	4.0	4.5	5.0	5.4	5.5	5.4	5.3	4.9
71N	3.5	3.2	2.9	2.7	2.5	2.4	2.7	3.0	3.5	4.0	4.6	5.3	5.8	6.0	6.2	5.9	5.6
70N	3.5	3.2	3.0	2.7	2.6	2.5	2.8	3.1	3.5	4.0	4.8	5.6	6.2	6.6	7.0	6.8	6.6
69N	3.6	3.3	3.0	2.8	2.7	2.7	2.9	3.2	3.5	4.1	4.9	5.9	6.8	7.0	7.0	7.0	7.0
68N	3.7	3.4	3.1	3.0	2.9	2.9	3.0	3.2	3.5	4.2	5.7	7.0	7.0	7.0	7.0	7.0	7.0
67N	3.8	3.5	3.2	3.1	3.0	3.1	3.1	3.2	3.6	4.6	6.1	7.0	7.0	7.0	7.0	7.0	7.0
66N	3.9	3.6	3.4	3.3	3.2	3.1	3.1	3.1	3.6	4.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0
65N	4.7	3.7	3.8	3.4	3.3	3.2	3.1	3.1	3.6	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	5.0	3.9	4.0	3.7	3.4	3.3	3.1	3.2	3.8	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	5.4	4.1	4.2	4.0	3.6	3.5	3.3	3.4	4.1	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	5.7	5.2	4.5	4.2	3.9	3.7	3.5	3.7	4.5	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	6.2	5.6	4.8	4.4	4.1	4.0	3.9	4.1	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	6.0	5.0	4.6	4.4	4.3	4.3	4.7	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	6.5	5.3	5.0	4.7	4.7	4.8	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	5.7	5.3	5.8	5.2	5.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	6.0	5.7	6.4	5.8	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	6.1	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL380 – No ozone converter – p1
Figure 05–07–112

North America - Maximum Flight duration in hour, JUNE WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
89N	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
88N	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
87N	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
86N	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
85N	4.3	4.3	4.2	4.2	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.2	4.2
84N	4.3	4.3	4.3	4.2	4.2	4.1	4.1	4.0	4.1	4.1	4.1	4.1	4.2	4.2
83N	4.4	4.4	4.3	4.2	4.2	4.0	4.0	4.0	4.0	4.1	4.1	4.2	4.2	4.2
82N	4.5	4.5	4.5	4.4	4.2	4.1	4.0	4.0	4.0	4.1	4.2	4.2	4.3	4.2
81N	4.6	4.7	4.7	4.5	4.4	4.2	4.1	4.1	4.1	4.2	4.4	4.4	4.5	4.5
80N	4.6	4.7	4.7	4.7	4.5	4.4	4.3	4.2	4.4	4.4	4.5	4.7	4.7	4.7
79N	4.6	4.7	4.7	4.6	4.6	4.5	4.5	4.6	4.6	4.7	4.8	4.9	5.0	5.1
78N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.7	4.8	5.0	5.1	5.3	5.4	5.6
77N	4.4	4.5	4.6	4.6	4.7	4.7	4.7	5.0	5.1	5.3	5.5	5.8	6.5	6.6
76N	4.2	4.3	4.5	4.6	4.8	4.8	4.9	5.2	5.4	5.6	6.0	6.8	7.0	7.0
75N	4.2	4.2	4.5	4.7	4.9	5.0	5.1	5.5	5.7	6.0	7.0	7.0	7.0	7.0
74N	4.2	4.3	4.5	4.8	5.0	5.2	5.3	5.8	6.1	7.0	7.0	7.0	7.0	7.0
73N	4.4	4.4	4.7	5.0	5.2	5.5	5.6	6.1	6.5	7.0	7.0	7.0	7.0	7.0
72N	4.7	5.0	5.0	5.2	6.3	6.6	6.4	6.5	7.0	7.0	7.0	7.0	7.0	7.0
71N	5.5	5.6	6.1	6.5	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	6.5	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL380 – No ozone converter – p2
Figure 05–07–113

North America - Maximum Flight duration in hour, JUNE WOUDC FL 370																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
88N	5.7	5.7	5.7	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.5
87N	5.7	5.7	5.7	5.7	5.7	5.7	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.5	5.5
86N	5.7	5.7	5.7	5.7	5.7	5.6	5.8	5.8	5.8	5.7	5.6	5.6	5.6	5.6	5.5	5.5	5.5
85N	5.9	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.7	5.7	5.7	5.7	5.5	5.5
84N	5.9	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.7	5.7	5.7	5.7	5.6
83N	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.7	5.7	5.7
82N	5.8	5.8	5.7	5.7	5.7	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.7
81N	5.7	5.7	5.6	5.6	5.6	5.6	5.7	5.7	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8	5.8
80N	5.6	5.6	5.6	5.6	5.6	5.6	5.7	5.7	5.8	5.9	5.9	5.9	5.9	6.1	6.0	5.9	5.8
79N	5.6	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.7	5.8	5.9	5.9	5.9	6.1	6.0	5.9	5.8
78N	5.5	5.4	5.4	5.3	5.3	5.4	5.5	5.6	5.7	5.8	5.9	5.9	5.9	6.1	6.0	5.8	5.8
77N	5.4	5.3	5.3	5.2	5.2	5.2	5.3	5.4	5.6	5.8	5.9	6.0	5.9	6.2	6.0	5.8	5.6
76N	5.4	5.3	5.1	5.0	5.0	5.0	5.1	5.3	5.5	5.7	5.9	6.0	6.0	6.3	6.0	5.7	5.4
75N	5.3	5.1	5.0	4.9	4.8	4.8	5.1	5.4	5.8	6.1	6.5	6.7	6.7	6.0	6.1	5.7	5.3
74N	5.3	5.1	4.9	4.7	4.7	4.7	4.9	5.2	5.6	6.1	6.6	6.9	7.0	6.8	6.3	5.8	5.3
73N	5.6	5.0	4.8	4.7	4.5	4.5	4.7	5.1	5.6	6.1	6.7	7.0	7.0	7.0	6.7	6.3	5.6
72N	5.6	5.2	4.9	4.6	4.4	4.4	4.6	5.0	5.5	6.2	6.9	7.0	7.0	7.0	7.0	6.9	6.3
71N	5.6	5.2	4.9	4.6	4.4	4.4	4.6	5.0	5.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	5.7	5.3	5.0	4.7	4.5	4.4	4.6	5.0	5.4	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	5.8	5.4	5.1	4.8	4.6	4.6	4.7	4.9	5.3	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	6.0	5.5	5.2	4.9	4.8	4.6	4.6	4.7	5.2	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	6.1	5.7	5.2	5.1	4.9	4.7	4.5	4.5	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	6.3	5.8	5.4	5.2	4.9	4.6	4.3	4.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	6.0	6.3	5.4	5.0	4.7	4.3	4.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	6.3	6.6	6.0	5.2	4.7	4.4	4.4	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	6.5	7.0	6.2	5.4	5.1	4.6	4.7	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	6.6	5.9	5.4	5.0	5.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	6.4	5.9	5.6	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	6.8	6.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL370 – No ozone converter – p1
Figure 05–07–114

North America - Maximum Flight duration in hour, JUNE WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
88N	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
87N	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
86N	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4
85N	5.5	5.5	5.4	5.4	5.3	5.3	5.2	5.2	5.2	5.3	5.3	5.3	5.4	5.4
84N	5.5	5.5	5.4	5.3	5.2	5.2	5.1	5.1	5.2	5.2	5.2	5.3	5.4	5.4
83N	5.6	5.6	5.4	5.4	5.2	5.1	5.0	5.0	5.0	5.2	5.2	5.3	5.4	5.5
82N	5.7	5.7	5.6	5.5	5.3	5.1	5.0	5.0	5.1	5.2	5.3	5.4	5.5	5.5
81N	5.8	5.8	5.8	5.7	5.5	5.3	5.2	5.2	5.2	5.3	5.5	5.8	5.9	5.9
80N	5.8	5.8	5.8	5.8	5.7	5.5	5.4	5.4	5.5	5.7	5.8	6.1	6.3	6.4
79N	5.8	5.8	5.8	5.8	5.8	5.7	5.7	5.7	5.9	6.1	6.3	6.6	6.8	7.0
78N	5.7	5.8	5.8	5.8	5.8	5.8	5.8	6.1	6.3	6.6	6.9	7.0	7.0	7.0
77N	5.5	5.5	5.7	5.8	5.9	6.0	6.1	6.5	6.8	7.0	7.0	7.0	7.0	7.0
76N	5.3	5.3	5.6	5.9	6.1	6.2	6.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0
75N	5.1	5.3	5.6	5.9	6.3	6.6	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	5.1	5.3	5.7	6.1	6.5	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	5.4	5.6	5.9	6.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	5.9	6.4	6.3	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL370 – No ozone converter – p2
Figure 05–07–115

North America - Maximum Flight duration in hour, JUNE WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
89N	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
88N	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.0
87N	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.0	6.0	6.0	6.0
86N	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.0	6.0	6.0	6.0
85N	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.0	6.0
84N	6.1	6.0	6.0	6.0	6.0	6.1	6.1	6.1	6.2	6.1	6.1	6.2	6.2	6.2	6.2	6.1	6.1
83N	5.9	5.9	5.8	5.9	5.9	5.9	6.0	6.0	6.1	6.2	6.1	6.2	6.2	6.2	6.2	6.2	6.2
82N	5.8	5.7	5.7	5.7	5.7	5.8	5.8	5.9	6.0	6.1	6.2	6.2	6.2	6.3	6.3	6.3	6.3
81N	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.8	5.8	6.0	6.1	6.2	6.2	6.3	6.3	6.4	6.4
80N	5.4	5.3	5.2	5.2	5.2	5.4	5.5	5.7	5.8	6.0	6.2	6.2	6.3	6.6	6.6	6.6	6.5
79N	5.1	5.0	5.0	5.0	5.0	5.1	5.2	5.4	5.7	5.9	6.1	6.2	6.3	6.7	6.6	6.6	6.5
78N	5.0	4.8	4.8	4.7	4.7	4.7	4.9	5.1	5.5	5.8	6.1	6.3	6.4	6.7	6.6	6.5	6.4
77N	4.8	4.7	4.5	4.4	4.4	4.4	4.6	4.9	5.2	5.6	6.0	6.3	6.4	6.8	6.6	6.4	6.2
76N	4.7	4.5	4.3	4.1	4.0	4.1	4.2	4.6	5.0	5.5	5.9	6.4	6.5	6.9	6.6	6.3	6.0
75N	4.6	4.3	4.1	3.8	3.7	3.7	4.1	4.5	5.1	5.8	6.5	7.0	7.0	6.6	6.8	6.3	5.8
74N	4.5	4.2	3.9	3.6	3.5	3.5	3.7	4.2	4.9	5.7	6.6	7.0	7.0	7.0	7.0	6.4	5.9
73N	4.7	4.1	3.8	3.5	3.3	3.2	3.5	4.1	4.8	5.7	6.8	7.0	7.0	7.0	7.0	7.0	6.2
72N	4.7	4.2	3.8	3.4	3.1	3.1	3.4	4.0	4.8	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	4.8	4.2	3.8	3.4	3.1	3.1	3.4	4.1	4.9	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	4.9	4.3	3.9	3.5	3.3	3.2	3.6	4.3	5.1	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	5.0	4.5	4.1	3.7	3.5	3.5	4.0	4.5	5.2	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	5.2	4.7	4.2	4.0	3.8	4.0	4.4	4.7	5.3	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	5.4	4.9	4.5	4.3	4.2	4.4	4.7	4.8	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	5.7	5.2	4.7	4.5	4.5	4.6	4.7	4.8	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	5.5	5.6	4.9	4.8	4.8	4.7	4.7	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	5.8	6.1	5.6	5.1	5.0	4.8	4.9	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	6.2	6.5	6.0	5.3	5.4	5.1	5.2	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	6.6	6.1	5.9	5.5	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	6.6	6.4	6.3	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL360 – No ozone converter – p1
Figure 05–07–116

North America - Maximum Flight duration in hour, JUNE WOUDC FL 360													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
89N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
88N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.1
87N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
86N	6.0	5.9	5.9	5.9	5.8	5.8	5.8	5.8	5.8	5.8	5.9	5.9	5.9	5.9
85N	5.9	5.9	5.9	5.8	5.7	5.6	5.6	5.6	5.6	5.6	5.7	5.8	5.9	5.9
84N	6.0	5.9	5.9	5.7	5.5	5.5	5.4	5.4	5.4	5.5	5.6	5.7	5.8	5.9
83N	6.2	6.1	5.9	5.8	5.5	5.3	5.2	5.2	5.3	5.4	5.5	5.7	5.9	6.0
82N	6.3	6.3	6.2	6.0	5.7	5.4	5.2	5.2	5.3	5.5	5.6	5.9	6.0	6.1
81N	6.5	6.5	6.5	6.4	6.0	5.7	5.5	5.5	5.5	5.7	6.0	6.3	6.6	6.8
80N	6.6	6.6	6.6	6.5	6.3	6.0	5.9	5.8	6.0	6.2	6.5	6.8	7.0	7.0
79N	6.5	6.6	6.6	6.5	6.4	6.3	6.2	6.4	6.5	6.8	7.0	7.0	7.0	7.0
78N	6.4	6.5	6.5	6.6	6.5	6.5	6.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0
77N	6.1	6.2	6.4	6.6	6.7	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.8	6.0	6.3	6.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	5.6	5.8	6.3	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	5.6	5.9	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	6.1	6.1	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL360 – No ozone converter – p2
Figure 05–07–117

North America - Maximum Flight duration in hour, JUNE WOUDC FL 350																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	6.9	6.8	6.8	6.8	6.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	6.5	6.5	6.4	6.4	6.5	6.5	6.6	6.7	6.7	6.8	6.9	6.9	7.0	7.0	7.0	7.0	7.0
83N	6.2	6.2	6.1	6.1	6.1	6.1	6.2	6.4	6.5	6.6	6.8	6.9	6.9	7.0	7.0	7.0	6.9
82N	5.8	5.7	5.7	5.7	5.7	5.8	5.9	6.1	6.2	6.4	6.6	6.8	6.9	6.9	6.9	6.9	6.9
81N	5.4	5.3	5.2	5.2	5.3	5.3	5.5	5.7	6.0	6.2	6.4	6.7	6.8	6.9	6.9	6.9	6.8
80N	5.0	4.9	4.8	4.7	4.7	5.0	5.1	5.5	5.7	6.1	6.4	6.7	6.9	7.0	7.0	7.0	6.9
79N	4.7	4.5	4.4	4.4	4.4	4.5	4.7	5.0	5.4	5.8	6.3	6.7	6.9	7.0	7.0	7.0	7.0
78N	4.4	4.1	4.0	3.9	3.9	4.0	4.2	4.5	5.0	5.5	6.2	6.6	7.0	7.0	7.0	7.0	7.0
77N	4.1	3.9	3.7	3.5	3.4	3.5	3.7	4.1	4.6	5.3	6.0	6.6	7.0	7.0	7.0	7.0	7.0
76N	3.9	3.6	3.3	3.2	3.1	3.1	3.3	3.7	4.3	5.0	5.8	6.6	7.0	7.0	7.0	7.0	7.0
75N	3.8	3.4	3.1	2.9	2.7	2.7	3.0	3.5	4.2	5.2	6.4	7.0	7.0	7.0	7.0	7.0	7.0
74N	3.6	3.3	2.9	2.6	2.5	2.5	2.7	3.2	4.0	5.1	6.4	7.0	7.0	7.0	7.0	7.0	7.0
73N	3.7	3.2	2.8	2.5	2.3	2.3	2.5	3.1	3.9	5.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0
72N	3.7	3.2	2.8	2.4	2.2	2.1	2.4	3.0	3.9	5.2	6.9	7.0	7.0	7.0	7.0	7.0	7.0
71N	3.7	3.2	2.8	2.4	2.2	2.1	2.4	3.2	4.1	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	3.9	3.3	2.9	2.5	2.3	2.2	2.7	3.4	4.4	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	4.0	3.5	3.1	2.7	2.5	2.6	3.1	3.9	4.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	4.2	3.7	3.3	3.0	2.9	3.1	3.9	4.5	5.2	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	4.5	3.9	3.5	3.3	3.4	3.8	4.6	5.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	4.8	4.2	3.9	3.7	3.8	4.3	5.0	5.2	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	5.7	4.6	4.6	4.1	4.3	4.7	5.2	5.2	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	6.4	5.0	5.1	4.8	4.6	5.0	5.3	5.4	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	5.4	5.8	5.4	5.1	5.5	5.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	6.4	6.0	5.9	6.0	6.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	6.8	6.6	6.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL350 – No ozone converter – p1
Figure 05–07–118

North America - Maximum Flight duration in hour, JUNE WOUDC FL 350													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	6.9	6.9	6.9	6.8	6.7	6.7	6.7	6.7	6.7	6.9	7.0	7.0	7.0	7.0
83N	6.9	6.9	6.8	6.7	6.6	6.6	6.5	6.5	6.6	6.8	7.0	7.0	7.0	7.0
82N	6.8	6.7	6.7	6.8	6.6	6.6	6.5	6.5	6.6	6.8	7.0	7.0	7.0	7.0
81N	6.7	6.6	6.6	6.7	6.8	6.7	6.7	6.7	6.9	7.0	7.0	7.0	7.0	7.0
80N	6.7	6.5	6.5	6.6	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	6.8	6.7	6.6	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	6.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL350 – No ozone converter – p2
Figure 05–07–119

North America - Maximum Flight duration in hour, JUNE WOUDC FL 340																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	6.9	6.1	5.6	5.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	6.3	5.3	4.9	4.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	5.9	5.0	4.3	4.3	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	6.0	4.7	4.0	3.9	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	6.1	4.8	4.0	3.8	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	6.5	5.1	4.3	4.2	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	5.9	5.1	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL340 – No ozone converter – p1
Figure 05–07–120

North America - Maximum Flight duration in hour, JUNE WOUDC FL 340														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL340 – No ozone converter – p2
Figure 05–07–121

North America - Maximum Flight duration in hour, JUNE WOUDC FL 330																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	6.5	5.4	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	5.6	4.4	4.3	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	5.2	3.9	3.8	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	5.3	3.9	3.7	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	6.1	4.4	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL330 – No ozone converter – p1
Figure 05–07–122

North America - Maximum Flight duration in hour, JUNE WOUDC FL 330														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – June – FL330 – No ozone converter – p2
Figure 05–07–123

G. North America – July–August

In North America, for the months of July and August, there is no maximum cruise time at altitude limitation.

H. North America – September

North America - Maximum Flight duration in hour, SEPTEMBER WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	6.8	4.7	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	4.4	2.7	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	3.2	1.6	1.8	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	6.6	2.6	1.1	1.1	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	6.9	2.5	1.0	1.0	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	2.9	1.2	1.3	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	3.7	2.0	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	5.9	3.3	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – September – FL410 – No ozone converter – p1
Figure 05–07–124

North America - Maximum Flight duration in hour, SEPTEMBER WOUDC FL 410													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – September – FL410 – No ozone converter – p2
Figure 05–07–125

North America - Maximum Flight duration in hour, SEPTEMBER WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	4.4	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	5.4	2.4	2.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	4.3	1.6	1.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	4.1	1.4	1.5	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	4.8	1.8	1.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	6.6	3.0	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – September – FL400 – No ozone converter – p1
Figure 05–07–126

North America - Maximum Flight duration in hour, SEPTEMBER WOUDC FL 400													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – September – FL400 – No ozone converter – p2
Figure 05–07–127

North America - Maximum Flight duration in hour, SEPTEMBER WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	5.1	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – September – FL390 – No ozone converter – p1
Figure 05–07–128

North America - Maximum Flight duration in hour, SEPTEMBER WOUDC FL 390													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – September – FL390 – No ozone converter – p2
Figure 05–07–129

I. North America – October

	North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 410																
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	6.6	6.2	6.0	5.9	5.9	6.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	5.6	5.2	5.0	5.3	5.3	5.5	5.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	4.8	4.4	4.5	4.4	4.3	4.4	4.7	5.2	5.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	4.0	4.0	3.7	3.5	3.4	3.4	3.7	4.1	4.8	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	3.8	3.3	3.0	2.7	2.6	2.6	2.7	3.1	3.8	4.8	6.2	7.0	7.0	7.0	7.0	7.0	7.0
75N	3.2	2.8	2.3	2.0	1.8	1.8	2.0	2.4	3.0	4.1	5.7	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.8	2.2	1.8	1.4	1.3	1.2	1.2	1.5	2.2	3.2	4.8	7.0	7.0	7.0	7.0	7.0	7.0
73N	2.7	1.8	1.3	1.1	0.8	0.6	0.6	0.8	1.4	2.4	4.0	6.4	7.0	7.0	7.0	7.0	7.0
72N	2.4	1.7	1.1	0.6	0.3	0.1	0.1	0.2	0.7	1.6	3.2	5.8	7.0	7.0	7.0	7.0	7.0
71N	2.1	1.4	0.8	0.3	0.0	0.0	0.0	0.0	0.2	1.1	2.6	5.4	7.0	7.0	7.0	7.0	7.0
70N	2.0	1.2	0.5	0.1	0.0	0.0	0.0	0.0	0.0	0.7	2.5	5.0	7.0	7.0	7.0	7.0	7.0
69N	1.8	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.3	2.1	5.8	7.0	7.0	7.0	7.0	7.0
68N	1.8	0.9	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.9	6.1	7.0	7.0	7.0	7.0	7.0
67N	1.7	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	7.0	7.0	7.0	7.0	7.0	7.0
66N	1.8	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	7.0	7.0	7.0	7.0	7.0	7.0
65N	2.3	0.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.6	7.0	7.0	7.0	7.0	7.0	7.0
64N	2.5	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.4	7.0	7.0	7.0	7.0	7.0	7.0
63N	2.7	1.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	5.1	7.0	7.0	7.0	7.0	7.0	7.0
62N	3.1	1.7	0.8	0.0	0.0	0.0	0.0	0.0	0.0	1.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.6	2.5	1.0	0.2	0.0	0.0	0.0	0.0	0.0	2.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	5.5	2.9	1.3	0.5	0.0	0.0	0.0	0.0	0.6	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	6.6	3.6	1.6	0.8	0.3	0.0	0.0	0.2	1.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	4.3	2.2	1.2	0.7	0.4	0.4	1.2	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	5.3	2.8	2.1	1.2	1.0	1.4	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	5.3	2.9	1.8	1.7	2.6	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	5.9	3.7	4.6	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL410 – No ozone converter – p1
Figure 05–07–130

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	6.9	6.5	6.5	6.9	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	6.1	5.6	5.6	6.0	6.9	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	6.3	5.6	5.6	6.1	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL410 – No ozone converter – p2
Figure 05–07–131

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	6.4	5.9	5.7	5.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	6.5	5.5	4.8	4.3	4.0	4.0	4.3	5.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	5.4	4.4	3.7	3.1	2.8	2.7	3.1	3.7	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	4.5	3.5	2.7	2.1	1.9	1.7	1.8	2.3	3.3	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	4.3	2.8	2.0	1.5	1.1	0.9	0.9	1.2	2.0	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	3.7	2.5	1.6	0.9	0.5	0.2	0.1	0.4	1.0	2.5	5.4	7.0	7.0	7.0	7.0	7.0	7.0
71N	3.3	2.1	1.1	0.5	0.0	0.0	0.0	0.0	0.3	1.5	4.2	7.0	7.0	7.0	7.0	7.0	7.0
70N	3.0	1.7	0.8	0.1	0.0	0.0	0.0	0.0	0.0	1.1	3.9	7.0	7.0	7.0	7.0	7.0	7.0
69N	2.8	1.5	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.5	3.3	7.0	7.0	7.0	7.0	7.0	7.0
68N	2.7	1.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.2	3.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	2.6	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.9	7.0	7.0	7.0	7.0	7.0	7.0
66N	2.7	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	7.0	7.0	7.0	7.0	7.0	7.0
65N	3.5	1.3	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	3.9	1.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.3	5.8	7.0	7.0	7.0	7.0	7.0	7.0
63N	4.3	2.2	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	5.0	2.6	1.1	0.1	0.0	0.0	0.0	0.0	0.0	1.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	3.9	1.4	0.4	0.0	0.0	0.0	0.0	0.0	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	4.8	1.9	0.7	0.0	0.0	0.0	0.0	0.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	6.1	2.5	1.2	0.4	0.0	0.0	0.3	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	3.5	1.8	1.0	0.6	0.6	1.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	4.6	3.4	1.8	1.4	2.1	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	4.8	2.8	2.6	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL400 – No ozone converter – p1
Figure 05–07–132

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL400 – No ozone converter – p2
Figure 05–07–133

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	6.3	5.4	4.9	5.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	6.4	5.1	4.2	3.7	3.6	4.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	5.5	4.2	3.4	2.9	2.7	3.0	3.9	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	6.8	4.8	3.6	2.8	2.3	2.1	2.2	2.9	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	6.3	4.4	3.2	2.4	1.9	1.7	1.8	2.4	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	5.9	4.1	2.9	2.1	1.7	1.4	1.5	2.0	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	5.8	3.9	2.7	2.1	1.5	1.2	1.2	1.7	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	5.8	3.8	2.9	2.0	1.4	1.1	1.1	1.6	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	5.9	4.4	2.9	2.0	1.4	1.1	1.1	1.6	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	6.1	4.6	3.0	2.0	1.4	1.1	1.1	1.7	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	5.0	3.2	2.2	1.6	1.3	1.3	2.0	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	5.5	3.6	2.5	1.8	1.5	1.6	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	6.3	4.0	2.8	2.1	1.8	2.0	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	4.7	3.4	2.6	2.3	2.7	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	5.7	4.1	3.3	3.1	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	5.3	4.4	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL390 – No ozone converter – p1
Figure 05–07–134

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL390 – No ozone converter – p2
Figure 05–07–135

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	5.5	4.7	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	5.9	4.1	3.6	3.9	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	4.9	3.5	2.8	2.9	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	4.7	3.0	2.3	2.3	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	4.4	2.7	2.1	2.1	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	4.4	2.7	2.0	2.0	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	4.7	2.9	2.1	2.1	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	5.3	3.2	2.4	2.5	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	6.4	3.9	3.0	3.2	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	5.0	4.0	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL380 – No ozone converter – p1
Figure 05–07–136

North America - Maximum Flight duration in hour, OCTOBER WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – October – FL380 – No ozone converter – p2
Figure 05–07–137

J. North America – November

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
89N	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9
88N	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.5	2.4	2.4	2.4	2.3	2.3
87N	3.2	3.1	3.0	2.9	2.8	2.6	2.5	2.4	2.4	2.3	2.2	2.1	2.1	2.0	2.0	2.0	1.9
86N	3.2	3.0	2.9	2.7	2.6	2.5	2.2	2.1	2.0	1.9	1.8	1.8	1.7	1.8	1.7	1.6	1.6
85N	3.0	2.8	2.7	2.5	2.4	2.3	2.1	2.0	1.8	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.3
84N	3.0	2.8	2.7	2.5	2.3	2.2	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.1
83N	3.1	2.9	2.5	2.3	2.2	2.0	1.9	1.8	1.6	1.5	1.4	1.3	1.0	0.9	1.1	1.0	1.0
82N	3.1	2.7	2.5	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.2	1.1	0.8	0.8	0.9	0.9
81N	3.0	2.8	2.6	2.4	2.2	2.0	1.9	1.7	1.5	1.4	1.2	1.1	0.9	0.7	0.6	0.6	0.7
80N	3.1	2.9	2.7	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1	1.0	0.8	0.5	0.5	0.5	0.5
79N	3.2	3.0	2.8	2.6	2.3	2.1	1.9	1.7	1.5	1.3	1.1	0.9	0.7	0.3	0.2	0.2	0.3
78N	3.4	3.1	2.9	2.7	2.5	2.3	2.0	1.8	1.6	1.3	1.0	0.8	0.5	0.3	0.0	0.0	0.0
77N	3.5	3.3	3.1	2.8	2.6	2.4	2.2	1.9	1.6	1.4	1.1	0.8	0.4	0.1	0.0	0.0	0.0
76N	3.7	3.5	3.2	3.0	2.8	2.6	2.3	2.1	1.8	1.5	1.1	0.8	0.4	0.0	0.0	0.0	0.0
75N	4.0	3.7	3.5	3.3	3.1	2.8	2.6	2.3	2.0	1.6	0.7	0.4	0.4	0.0	0.0	0.0	0.0
74N	4.3	4.0	3.7	3.5	3.3	3.1	2.8	1.6	1.4	1.1	0.8	0.5	0.1	0.0	0.0	0.0	0.0
73N	4.7	4.3	4.0	3.9	3.7	2.2	2.0	1.8	1.6	1.3	1.0	0.6	0.3	0.0	0.0	0.0	0.0
72N	5.0	4.7	4.3	4.2	2.5	2.4	2.2	2.0	1.8	1.5	1.2	0.8	0.5	0.0	0.0	0.0	0.0
71N	5.5	5.7	5.3	2.8	2.8	2.7	2.5	2.4	2.2	1.9	1.5	1.1	0.7	0.3	0.0	0.0	0.0
70N	6.0	6.2	5.9	3.1	3.1	3.0	2.9	2.8	2.5	2.3	2.0	1.6	1.1	0.7	0.3	0.0	0.0
69N	7.0	6.9	6.6	3.4	3.4	3.4	3.3	3.2	3.1	2.9	2.5	2.1	1.6	1.2	0.8	0.4	0.2
68N	7.0	7.0	7.0	3.7	3.8	3.8	3.8	3.8	3.7	3.6	4.1	3.5	2.9	2.2	1.5	1.1	0.8
67N	7.0	7.0	7.0	4.1	4.2	4.3	4.4	4.5	5.9	5.9	5.5	5.0	4.2	3.3	2.5	1.9	1.6
66N	7.0	7.0	7.0	4.5	4.6	4.9	5.2	7.0	7.0	7.0	7.0	7.0	6.3	5.0	3.9	2.9	2.5
65N	7.0	7.0	7.0	7.0	5.2	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.5	3.6
64N	7.0	7.0	7.0	6.8	5.7	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.8
63N	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL410 – No ozone converter – p1
Figure 05–07–138

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
89N	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.1	3.1	3.2	3.2	3.3	3.4
88N	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.6	2.7	2.8	2.9	3.0	3.2
87N	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.1	2.3	2.4	2.6	2.8	3.0
86N	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.7	1.8	2.0	2.2	2.5	2.9
85N	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.4	1.7	1.9	2.3	2.8
84N	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9	1.0	1.1	1.4	1.8	2.2	2.8
83N	1.0	1.0	1.0	0.9	0.9	0.7	0.6	0.6	0.8	1.0	1.3	1.8	2.3	3.1
82N	0.8	0.8	0.8	0.9	0.9	0.8	0.7	0.7	0.8	1.1	1.5	2.0	2.7	3.6
81N	0.7	0.7	0.7	0.8	1.0	1.1	1.0	1.0	1.2	1.5	1.9	2.5	3.3	4.5
80N	0.6	0.6	0.6	0.8	1.2	1.7	1.9	1.9	2.0	2.3	2.7	3.3	4.3	5.8
79N	0.5	0.6	0.7	1.0	2.1	3.6	4.3	3.9	3.5	3.4	3.7	4.5	6.0	7.0
78N	0.0	0.3	0.8	1.7	5.2	7.0	7.0	7.0	5.8	5.0	5.1	5.8	7.0	7.0
77N	0.0	0.0	0.5	2.5	7.0	7.0	7.0	7.0	7.0	6.7	6.6	7.0	7.0	7.0
76N	0.0	0.0	0.0	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	0.0	0.0	0.0	1.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	0.0	0.0	0.0	1.2	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	0.0	0.0	0.0	0.9	3.1	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	0.0	0.0	0.0	0.9	2.4	4.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	0.0	0.0	0.1	0.9	2.2	3.7	5.3	6.8	7.0	7.0	7.0	7.0	7.0	7.0
70N	0.0	0.0	0.4	1.2	2.2	3.5	5.4	6.6	7.0	7.0	7.0	7.0	7.0	7.0
69N	0.2	0.3	0.8	1.5	2.4	3.6	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	0.8	0.8	1.2	1.9	2.8	4.4	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	1.5	1.6	1.7	2.3	3.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	2.3	2.3	2.7	2.9	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	3.3	3.2	3.6	4.4	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	4.4	4.4	4.6	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	6.9	6.9	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	0.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL410 – No ozone converter – p2
Figure 05–07–139

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
89N	6.4	6.2	6.1	6.0	5.8	5.8	5.6	5.6	5.5	5.4	5.3	5.3	5.3	5.2	5.2	5.2	5.2
88N	6.1	5.8	5.6	5.5	5.2	5.0	4.9	4.7	4.6	4.5	4.4	4.3	4.2	4.1	4.1	4.0	4.0
87N	5.9	5.6	5.3	5.1	4.8	4.6	4.4	4.2	4.0	3.9	3.7	3.6	3.5	3.4	3.3	3.2	3.2
86N	5.8	5.5	5.1	4.8	4.5	4.3	3.8	3.6	3.3	3.2	3.1	2.9	2.8	2.9	2.8	2.7	2.6
85N	5.3	5.0	4.6	4.3	4.1	3.8	3.5	3.3	3.1	2.9	2.7	2.6	2.5	2.4	2.3	2.2	2.2
84N	5.4	5.0	4.6	4.2	3.9	3.6	3.2	3.0	2.8	2.7	2.5	2.3	2.2	2.1	2.0	1.9	1.9
83N	5.4	5.0	4.3	4.0	3.7	3.4	3.1	2.9	2.6	2.4	2.2	2.1	1.5	1.5	1.7	1.7	1.6
82N	5.5	4.8	4.4	4.0	3.7	3.4	3.1	2.7	2.5	2.3	2.0	1.8	1.7	1.3	1.2	1.4	1.4
81N	5.3	4.9	4.5	4.1	3.7	3.4	3.0	2.7	2.4	2.1	1.9	1.7	1.5	1.0	1.0	1.0	1.2
80N	5.5	5.1	4.7	4.2	3.8	3.4	3.0	2.7	2.3	2.0	1.7	1.5	1.2	0.8	0.7	0.8	0.9
79N	5.8	5.3	4.8	4.4	3.9	3.5	3.1	2.7	2.3	2.0	1.7	1.3	1.0	0.5	0.4	0.4	0.5
78N	6.1	5.6	5.0	4.6	4.1	3.7	3.3	2.8	2.4	2.0	1.6	1.2	0.8	0.5	0.0	0.0	0.0
77N	6.4	5.9	5.4	4.8	4.4	3.9	3.5	3.0	2.6	2.1	1.6	1.1	0.7	0.2	0.0	0.0	0.0
76N	6.8	6.2	5.6	5.3	4.8	4.3	3.8	3.3	2.8	2.2	1.7	1.2	0.6	0.1	0.0	0.0	0.0
75N	7.0	6.7	6.1	5.7	5.3	4.8	4.2	3.7	3.1	2.5	1.0	0.6	0.6	0.0	0.0	0.0	0.0
74N	7.0	7.0	6.8	6.3	5.8	5.3	4.8	2.3	2.0	1.6	1.2	0.7	0.2	0.0	0.0	0.0	0.0
73N	7.0	7.0	7.0	7.0	6.5	3.3	3.0	2.6	2.3	1.8	1.4	0.9	0.4	0.0	0.0	0.0	0.0
72N	7.0	7.0	7.0	7.0	3.9	3.7	3.4	3.1	2.7	2.2	1.7	1.2	0.7	0.1	0.0	0.0	0.0
71N	7.0	7.0	7.0	4.5	4.3	4.2	3.9	3.5	3.2	2.7	2.2	1.6	1.0	0.5	0.0	0.0	0.0
70N	7.0	7.0	7.0	4.9	4.8	4.7	4.5	4.2	3.9	3.4	2.9	2.2	1.6	0.9	0.4	0.0	0.0
69N	7.0	7.0	7.0	5.4	5.4	5.3	5.2	5.0	4.7	4.3	3.7	3.1	2.3	1.6	1.1	0.6	0.4
68N	7.0	7.0	7.0	6.0	6.1	6.1	6.2	6.1	5.9	5.5	6.4	5.3	4.2	3.1	2.1	1.5	1.2
67N	7.0	7.0	7.0	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.0	3.7	2.6	2.2
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.2	3.6
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL400 – No ozone converter – p1
Figure 05–07–140

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
89N	5.2	5.2	5.2	5.3	5.3	5.4	5.4	5.5	5.6	5.8	5.8	6.0	6.2	6.3
88N	4.0	4.0	4.0	4.1	4.1	4.2	4.3	4.4	4.6	4.8	5.0	5.3	5.5	5.9
87N	3.2	3.1	3.1	3.2	3.2	3.2	3.3	3.5	3.7	3.9	4.2	4.5	4.9	5.4
86N	2.6	2.5	2.5	2.5	2.4	2.5	2.5	2.6	2.8	3.0	3.4	3.8	4.4	5.1
85N	2.1	2.1	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.4	2.8	3.2	4.0	4.9
84N	1.8	1.8	1.7	1.6	1.5	1.4	1.4	1.4	1.5	1.8	2.3	2.9	3.8	5.0
83N	1.6	1.6	1.6	1.5	1.4	1.2	1.0	1.0	1.2	1.5	2.1	2.9	4.0	5.6
82N	1.4	1.3	1.4	1.4	1.4	1.2	1.0	1.0	1.3	1.7	2.4	3.3	4.7	6.9
81N	1.2	1.1	1.2	1.3	1.6	1.7	1.6	1.6	1.9	2.4	3.2	4.3	6.2	7.0
80N	1.1	1.1	1.1	1.3	2.0	2.8	3.1	3.2	3.4	3.8	4.7	6.1	7.0	7.0
79N	0.7	1.0	1.2	1.7	3.6	6.9	7.0	7.0	6.5	6.3	7.0	7.0	7.0	7.0
78N	0.1	0.5	1.2	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	0.0	0.0	0.8	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	0.0	0.0	0.0	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	0.0	0.0	0.0	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	0.0	0.0	0.0	1.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	0.0	0.0	0.0	1.3	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	0.0	0.0	0.0	1.2	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	0.0	0.0	0.1	1.3	3.3	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	0.0	0.0	0.6	1.7	3.2	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	0.3	0.5	1.1	2.1	3.6	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	1.1	1.1	1.7	2.7	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	2.1	2.2	2.5	3.3	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	3.4	3.4	4.1	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	5.2	4.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	0.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	0.0	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	0.0	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	0.0	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	0.0	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	0.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL400 – No ozone converter – p2
Figure 05–07–141

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.9	6.5	6.4	6.3
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.4	5.5	5.4	5.9	5.9
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	5.9	5.0	5.0	5.1	5.5
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	5.5	4.6	4.5	4.6	4.8
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.6	5.1	4.1	3.9	3.9	4.2
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.4	4.7	4.1	3.3	3.2	3.1
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.3	4.4	3.7	2.8	2.5	2.2
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.3	4.3	3.5	2.5	2.0	1.6
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.2	4.4	3.4	2.4	1.8	1.4
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7	5.0	4.4	3.7	3.0	2.4	1.8	1.4
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.1	5.4	4.6	3.9	3.2	2.6	2.0	1.6
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.9	5.0	4.3	3.5	2.9	2.3	1.9
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.7	4.8	4.0	3.3	2.7	2.4
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.5	4.6	3.9	3.3	3.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.6	4.9	4.2	3.9
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.3	4.9
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.1
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.8
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.9
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.5
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL390 – No ozone converter – p1
Figure 05–07–142

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	6.9	6.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	6.7	6.6	6.5	6.3	6.1	5.9	5.7	5.8	6.1	6.7	7.0	7.0	7.0	7.0
83N	6.2	6.2	6.2	6.0	5.8	5.3	5.1	5.1	5.4	6.1	7.0	7.0	7.0	7.0
82N	5.8	5.8	5.9	6.0	5.9	5.5	5.1	5.1	5.6	6.5	7.0	7.0	7.0	7.0
81N	5.5	5.4	5.5	5.8	6.4	6.5	6.3	6.3	6.8	7.0	7.0	7.0	7.0	7.0
80N	5.3	5.3	5.3	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	4.6	5.1	5.5	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	3.5	4.2	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	2.2	2.8	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	1.4	1.8	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	1.2	1.5	2.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	1.2	1.5	2.6	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	1.5	1.8	2.7	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	1.8	2.2	3.1	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	2.3	2.7	3.6	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	3.0	3.3	4.2	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	3.8	4.0	4.8	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	4.8	4.9	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	6.1	6.3	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	1.5	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	0.7	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	0.3	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	0.2	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	0.2	2.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	0.4	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	0.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	2.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL390 – No ozone converter – p2
Figure 05–07–143

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.5	6.5	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.1	4.7	4.7
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.1	3.4	3.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.5	2.7	2.1
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	5.3	3.2	2.4	1.8
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.4	3.3	2.4	1.8
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.7	3.5	2.7	2.1
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.2	4.0	3.1	2.6
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.8	3.8	3.2
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.8	4.3
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.1
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.8
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.6
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.9
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL380 – No ozone converter – p1
Figure 05–07–144

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	3.0	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	1.8	2.4	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	1.5	1.9	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	1.6	1.9	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	1.9	2.3	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	2.4	2.9	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	3.1	3.7	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	4.2	4.7	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	5.5	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	1.6	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	0.8	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	0.4	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	0.2	2.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	0.2	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	0.4	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	0.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	2.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL380 – No ozone converter – p2
Figure 05–07–145

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 370																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.4
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.8	3.7
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.3	3.2
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.3	3.2
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.8	3.7
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.6
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.3
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.9
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL370 – No ozone converter – p1
Figure 05–07–146

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 370														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	3.3	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	2.7	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.8	3.4	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	3.4	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	4.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	3.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	1.8	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	1.2	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	1.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	1.1	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	1.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	2.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL370 – No ozone converter – p2
Figure 05–07–147

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL360 – No ozone converter – p1
Figure 05–07–148

North America - Maximum Flight duration in hour, NOVEMBER WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	1.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	1.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	1.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	2.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – November – FL360 – No ozone converter – p2
Figure 05–07–149

K. North America – December

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 410																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.1	0.1	0.2	0.3	0.2	0.3	0.5	0.6	0.7	0.8	0.9	0.4	0.3	0.2	0.0	0.0	0.0
64N	0.2	0.3	0.4	0.4	0.4	0.6	0.8	1.0	1.2	1.4	1.5	1.6	0.8	0.6	0.3	0.0	0.0
63N	0.4	0.4	0.5	0.6	0.6	0.9	1.1	1.4	1.7	2.1	2.4	2.5	2.7	2.2	0.8	0.3	0.0
62N	1.5	1.0	0.7	0.8	0.9	1.2	1.5	1.9	2.4	2.9	3.5	4.3	4.2	3.4	2.0	1.0	0.1
61N	1.7	1.2	0.9	1.1	1.1	1.5	1.9	2.5	3.2	4.1	7.0	7.0	7.0	6.6	3.0	1.3	0.1
60N	1.6	1.5	1.1	1.3	1.4	1.8	2.4	3.2	4.2	7.0	7.0	7.0	7.0	7.0	5.9	1.8	0.4
59N	1.8	1.7	1.3	1.5	1.7	2.2	2.9	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	0.4
58N	2.1	2.0	1.5	1.8	2.0	2.6	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	0.7
57N	5.8	5.7	1.7	2.0	2.3	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.5
56N	6.9	6.8	5.1	5.3	5.2	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.6
55N	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL410 – No ozone converter – p1
Figure 05–07–150

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 410														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
77N	0.0	0.0	0.0	0.0	0.0	1.3	1.0	0.1	0.0	0.0	0.0	0.0	0.1	0.5
76N	0.0	0.0	0.0	0.0	0.1	1.3	1.0	0.3	0.0	0.0	0.0	0.0	0.5	1.0
75N	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.1	0.0	0.0	0.0	0.3	0.8	1.8
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.6	1.4	2.9
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.9	2.0	4.7
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.2	2.7	6.9
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.4	3.2	7.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.7	3.7	7.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.6	1.8	3.7	7.0
68N	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2	0.2	0.3	0.7	1.9	3.6	7.0
67N	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.3	0.3	0.4	1.1	1.9	3.4	7.0
66N	0.0	0.0	0.0	0.0	0.3	0.6	0.6	0.5	0.4	0.4	1.1	1.9	3.3	7.0
65N	0.0	0.0	0.0	0.0	0.4	0.8	0.7	0.6	0.5	0.4	1.2	1.9	3.2	7.0
64N	0.0	0.0	0.0	0.1	0.5	0.8	0.8	0.6	0.5	0.7	1.2	1.9	3.2	7.0
63N	0.0	0.0	0.0	0.3	0.6	0.8	0.8	0.7	0.6	0.7	1.6	2.0	3.2	7.0
62N	0.0	0.0	0.0	0.3	0.7	0.8	0.8	0.7	0.6	0.8	1.7	2.0	5.9	7.0
61N	0.0	0.0	0.0	0.4	0.7	0.8	0.8	0.7	0.7	0.9	1.8	2.6	7.0	7.0
60N	0.0	0.0	0.4	0.9	0.7	0.8	0.8	0.8	0.7	1.0	1.9	2.8	7.0	7.0
59N	0.0	0.0	0.5	1.0	1.3	1.0	0.9	0.9	0.8	1.4	2.0	3.0	7.0	7.0
58N	0.0	0.0	0.6	1.2	1.6	1.5	1.4	1.4	1.3	1.5	2.6	5.6	7.0	7.0
57N	0.0	0.0	1.2	2.0	2.0	1.8	1.5	1.3	1.3	2.3	3.6	7.0	7.0	7.0
56N	0.3	0.4	1.7	2.6	2.6	2.2	1.5	1.0	1.5	2.7	3.7	7.0	7.0	7.0
55N	1.2	1.7	3.6	3.5	3.3	2.7	1.5	0.8	1.4	3.9	7.0	7.0	7.0	7.0
54N	3.5	2.8	6.0	7.0	6.1	5.0	1.5	0.5	1.3	4.1	7.0	7.0	7.0	7.0
53N	6.7	5.0	7.0	7.0	7.0	6.9	2.0	0.5	1.7	4.4	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	2.8	0.8	2.1	5.1	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	4.9	1.6	2.9	6.1	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.6	4.4	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL410 – No ozone converter – p2
Figure 05–07–151

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 400																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.1	0.1	0.2	0.1	0.2	0.4	0.5	0.6	0.6	0.1	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.2	0.2	0.4	0.4	0.4	0.6	0.7	0.9	1.1	1.3	1.3	0.6	0.5	0.3	0.0	0.0	0.0
64N	0.4	0.4	0.6	0.7	0.7	0.9	1.2	1.5	1.8	2.2	2.4	2.5	1.4	1.1	0.6	0.1	0.0
63N	0.6	0.6	0.8	1.0	1.0	1.3	1.7	2.2	2.8	3.4	4.0	4.4	5.5	4.1	1.4	0.5	0.0
62N	2.4	1.6	1.1	1.3	1.3	1.8	2.3	3.1	4.0	5.2	6.5	7.0	7.0	7.0	3.8	1.7	0.3
61N	2.9	2.0	1.4	1.7	1.7	2.3	3.1	4.2	5.8	7.0	7.0	7.0	7.0	7.0	6.4	2.4	0.3
60N	2.6	2.4	1.7	2.0	2.1	2.9	4.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	0.7
59N	3.1	2.8	2.0	2.4	2.6	3.6	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.7
58N	3.7	3.4	2.3	2.9	3.2	4.4	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.2
57N	7.0	7.0	2.7	3.4	3.7	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.6
56N	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL400 – No ozone converter – p1
Figure 05–07–152

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 400														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3
77N	0.0	0.0	0.0	0.0	0.0	1.9	1.4	0.3	0.0	0.0	0.0	0.0	0.2	0.8
76N	0.0	0.0	0.0	0.0	0.2	1.9	1.5	0.4	0.0	0.0	0.0	0.1	0.8	1.7
75N	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.3	0.0	0.0	0.1	0.5	1.3	3.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.3	1.0	2.3	5.2
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	1.5	3.5	7.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	2.0	5.0	7.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.8	2.4	6.1	7.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	1.0	3.2	7.0	7.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.5	1.1	3.5	7.0	7.0
68N	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5	0.5	0.7	1.2	3.6	7.0	7.0
67N	0.0	0.0	0.0	0.0	0.2	1.2	1.0	0.9	0.7	0.8	2.1	3.8	7.0	7.0
66N	0.0	0.0	0.0	0.0	0.8	2.2	2.0	1.3	0.9	0.9	2.2	3.9	7.0	7.0
65N	0.0	0.0	0.0	0.1	1.4	3.3	2.9	1.7	1.1	1.0	2.4	3.9	7.0	7.0
64N	0.0	0.0	0.0	0.2	1.7	3.9	3.4	2.0	1.3	1.4	2.5	4.0	7.0	7.0
63N	0.0	0.0	0.0	0.7	1.9	3.8	3.3	2.0	1.4	1.6	3.4	4.2	7.0	7.0
62N	0.0	0.0	0.1	0.7	2.2	3.4	2.9	2.0	1.5	1.7	3.7	4.3	7.0	7.0
61N	0.0	0.0	0.1	1.0	2.1	2.9	2.8	2.0	1.6	2.0	4.0	6.3	7.0	7.0
60N	0.0	0.0	0.8	2.1	2.0	2.6	2.5	1.9	1.7	2.1	4.2	6.8	7.0	7.0
59N	0.0	0.0	0.9	2.3	4.0	3.0	2.3	2.0	1.7	3.1	4.4	7.0	7.0	7.0
58N	0.0	0.0	1.1	2.6	4.6	4.5	3.6	3.0	2.6	3.2	6.6	7.0	7.0	7.0
57N	0.0	0.1	2.4	5.3	5.6	5.0	3.3	2.4	2.5	5.4	7.0	7.0	7.0	7.0
56N	0.6	0.8	3.4	7.0	7.0	5.8	2.9	1.7	2.6	6.3	7.0	7.0	7.0	7.0
55N	2.0	3.0	7.0	7.0	7.0	7.0	2.6	1.2	2.3	7.0	7.0	7.0	7.0	7.0
54N	5.6	5.2	7.0	7.0	7.0	7.0	2.4	0.8	2.2	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	3.3	0.7	2.9	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	5.1	1.2	3.6	7.0	7.0	7.0	7.0	7.0
51N	4.9	7.0	7.0	7.0	7.0	7.0	7.0	2.6	5.4	7.0	7.0	7.0	7.0	7.0
50N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL400 – No ozone converter – p2
Figure 05–07–153

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 390																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
89N	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
88N	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.4
87N	1.6	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
86N	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2
85N	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
84N	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	0.9
83N	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.8
82N	1.6	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.8	0.7
81N	1.6	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.7	0.6
80N	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.8	0.7	0.6
79N	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.8	0.7	0.6
78N	1.7	1.7	1.7	1.6	1.5	1.5	1.4	1.3	1.2	1.2	1.1	1.0	0.9	0.8	0.8	0.7	0.7
77N	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.7	0.6
76N	1.9	1.8	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.5
75N	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.7	0.6	0.5
74N	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.1	0.9	0.8	0.6	0.5
73N	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.5	1.4	1.3	1.1	1.0	0.8	0.7	0.6
72N	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.8	1.8	1.6	1.5	1.4	1.2	1.1	0.9	0.8	0.7
71N	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	1.8	1.8	1.7	1.5	1.4	1.2	1.1	0.9	0.9
70N	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.0	2.0	1.9	1.8	1.6	1.4	1.3	1.1	1.1
69N	2.4	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.1	2.0	1.9	1.7	1.5	1.4	1.3
68N	3.0	2.6	2.6	3.1	3.1	3.0	3.0	3.0	2.5	2.5	2.5	2.4	2.2	2.0	1.8	1.7	1.6
67N	3.2	2.8	2.8	3.3	3.4	3.3	3.4	3.5	3.5	2.9	2.9	2.8	2.7	2.4	2.2	2.0	1.9
66N	3.4	3.5	3.5	3.7	3.5	3.7	3.9	4.1	4.2	4.3	3.5	3.4	3.3	3.0	2.7	2.4	2.3
65N	3.7	3.7	3.9	4.0	3.9	4.2	4.5	4.8	5.1	5.4	5.4	4.3	4.1	3.8	3.3	2.9	2.6
64N	4.0	4.0	4.3	4.4	4.3	4.7	5.2	5.8	6.4	6.9	7.0	7.0	5.5	4.9	4.2	3.5	3.0
63N	4.3	4.3	4.6	4.9	4.8	5.4	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.1	3.3
62N	7.0	5.9	5.1	5.5	5.4	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.7
61N	7.0	6.6	5.6	6.1	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	3.7
60N	7.0	7.0	6.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1
59N	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL390 – No ozone converter – p1
Figure 05–07–154

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 390														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
89N	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8
88N	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.8
87N	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.8
86N	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.5	1.5	1.6	1.7
85N	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.6	1.7
84N	0.9	1.0	1.0	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.4	1.6	1.8
83N	0.8	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.6	1.9
82N	0.7	0.6	0.7	0.8	1.0	1.1	1.1	1.1	1.2	1.2	1.3	1.5	1.8	2.1
81N	0.6	0.5	0.5	0.6	0.8	1.0	1.1	1.2	1.3	1.3	1.5	1.7	1.9	2.3
80N	0.5	0.4	0.4	0.5	0.8	1.1	1.3	1.4	1.5	1.6	1.7	1.9	2.2	2.7
79N	0.6	0.5	0.5	0.7	1.1	1.6	1.9	1.9	1.9	1.9	2.0	2.2	2.6	3.1
78N	0.6	0.6	0.7	1.0	1.9	3.5	3.6	2.8	2.4	2.3	2.3	2.6	3.1	3.8
77N	0.6	0.7	0.9	1.5	3.4	7.0	7.0	3.9	2.8	2.6	2.7	3.0	3.8	4.8
76N	0.5	0.6	0.9	1.6	3.8	7.0	7.0	4.2	3.2	2.9	3.1	3.6	4.7	6.6
75N	0.4	0.5	0.8	1.5	2.9	5.0	5.0	3.9	3.2	3.1	3.5	4.3	5.9	7.0
74N	0.4	0.5	0.8	1.4	2.3	3.3	3.7	3.4	3.2	3.3	3.9	5.2	7.0	7.0
73N	0.5	0.6	0.9	1.4	2.0	2.7	3.0	3.2	3.2	3.4	4.4	6.3	7.0	7.0
72N	0.7	0.8	1.0	1.4	1.9	2.4	2.8	3.1	3.3	3.6	4.5	7.0	7.0	7.0
71N	0.8	0.9	1.2	1.5	2.0	2.4	2.7	3.1	3.4	3.8	4.9	7.0	7.0	7.0
70N	1.0	1.1	1.4	1.7	2.2	2.6	2.9	3.3	3.6	4.1	5.2	7.0	7.0	7.0
69N	1.2	1.3	1.6	2.0	2.5	3.0	3.4	3.7	3.8	4.3	5.5	7.0	7.0	7.0
68N	1.6	1.6	1.8	2.3	3.0	3.8	4.1	4.3	4.2	4.5	5.7	7.0	7.0	7.0
67N	1.9	1.9	2.1	2.6	3.8	5.6	5.4	5.0	4.6	4.8	7.0	7.0	7.0	7.0
66N	2.2	2.1	2.4	3.1	4.9	7.0	7.0	5.9	5.1	4.9	7.0	7.0	7.0	7.0
65N	2.5	2.4	2.7	3.5	6.1	7.0	7.0	7.0	5.4	5.1	7.0	7.0	7.0	7.0
64N	2.8	2.6	2.9	3.7	7.0	7.0	7.0	7.0	5.8	6.2	7.0	7.0	7.0	7.0
63N	3.0	3.0	3.4	4.5	7.0	7.0	7.0	7.0	6.2	6.4	7.0	7.0	7.0	7.0
62N	3.1	3.0	3.5	4.5	7.0	7.0	7.0	7.0	6.4	6.7	7.0	7.0	7.0	7.0
61N	2.8	2.9	3.5	5.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0
60N	2.6	3.0	4.5	6.8	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0
59N	2.4	2.9	4.6	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0
58N	2.5	3.0	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	3.0	3.5	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	4.0	4.2	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0
55N	5.6	7.0	7.0	7.0	7.0	7.0	7.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0
51N	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL390 – No ozone converter – p2
Figure 05–07–155

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 380																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
89N	2.8	2.7	2.7	2.7	2.7	2.6	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5
88N	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1
87N	2.4	2.4	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9
86N	2.4	2.3	2.2	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7
85N	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5
84N	2.3	2.3	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.4	1.3
83N	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.2
82N	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0
81N	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.0	0.9
80N	2.5	2.3	2.2	2.1	2.0	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.1	1.0	0.9	0.8
79N	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.2	1.1	1.0	0.9	0.9
78N	2.5	2.4	2.4	2.3	2.2	2.1	2.0	1.9	1.7	1.6	1.5	1.4	1.3	1.1	1.0	0.9	0.9
77N	2.6	2.6	2.5	2.4	2.3	2.2	2.1	1.9	1.8	1.7	1.5	1.4	1.3	1.1	1.0	0.9	0.8
76N	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.0	1.9	1.7	1.6	1.5	1.3	1.1	1.0	0.8	0.7
75N	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.2	1.0	0.8	0.6
74N	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.0	1.8	1.6	1.4	1.2	1.0	0.8	0.6
73N	3.3	3.0	2.9	2.9	2.8	2.7	2.6	2.5	2.3	2.2	1.9	1.7	1.5	1.3	1.1	0.9	0.7
72N	3.2	3.1	3.1	3.1	3.0	2.9	2.8	2.7	2.6	2.2	2.1	1.9	1.7	1.5	1.2	1.1	0.9
71N	3.4	3.3	3.3	3.3	3.2	3.2	3.1	3.0	2.6	2.5	2.3	2.1	1.9	1.7	1.5	1.3	1.1
70N	3.6	3.5	3.5	3.5	3.5	3.4	3.4	3.0	3.0	2.8	2.7	2.5	2.2	2.0	1.7	1.5	1.4
69N	3.8	4.1	4.0	3.7	3.8	3.8	3.4	3.4	3.4	3.3	3.1	2.9	2.6	2.4	2.1	1.9	1.7
68N	5.1	4.4	4.3	5.5	5.6	4.9	5.0	5.0	3.8	3.8	3.7	3.5	3.2	2.9	2.6	2.3	2.1
67N	5.6	4.6	4.6	6.2	6.4	5.7	5.9	6.1	6.2	4.5	4.5	4.3	4.0	3.6	3.2	2.8	2.6
66N	6.1	6.3	6.4	7.0	6.2	6.7	7.0	7.0	7.0	7.0	5.7	5.6	5.2	4.6	4.0	3.5	3.2
65N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.3	4.4	3.9
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.5
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL380 – No ozone converter – p1
Figure 05–07–156

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 380														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
89N	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.9
88N	2.1	2.1	2.2	2.2	2.2	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.8
87N	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.2	2.3	2.4	2.5	2.6	2.8
86N	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.9	2.0	2.1	2.3	2.4	2.6	2.7
85N	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.1	2.3	2.5	2.8
84N	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.8	1.9	2.0	2.2	2.5	2.8
83N	1.1	1.2	1.2	1.4	1.5	1.7	1.7	1.7	1.8	1.8	2.0	2.2	2.6	3.0
82N	0.9	0.9	0.9	1.1	1.4	1.6	1.7	1.7	1.8	1.9	2.1	2.4	2.8	3.4
81N	0.8	0.7	0.7	0.8	1.1	1.5	1.7	1.8	1.9	2.1	2.3	2.7	3.1	3.9
80N	0.7	0.6	0.6	0.7	1.1	1.6	1.9	2.1	2.2	2.4	2.6	3.1	3.7	4.7
79N	0.8	0.7	0.7	0.9	1.5	2.4	2.9	2.9	2.9	2.9	3.2	3.7	4.5	5.9
78N	0.8	0.9	1.0	1.4	2.9	6.3	6.7	4.8	3.9	3.6	3.8	4.4	5.7	7.0
77N	0.8	0.9	1.2	2.1	6.1	7.0	7.0	7.0	4.8	4.4	4.6	5.4	7.0	7.0
76N	0.6	0.8	1.2	2.3	7.0	7.0	7.0	7.0	5.6	4.9	5.5	6.9	7.0	7.0
75N	0.5	0.7	1.1	2.1	4.9	7.0	7.0	7.0	5.6	5.3	6.5	7.0	7.0	7.0
74N	0.6	0.7	1.1	1.9	3.5	5.7	6.8	6.1	5.5	5.8	7.0	7.0	7.0	7.0
73N	0.7	0.8	1.2	1.9	2.9	4.1	4.9	5.3	5.5	6.1	7.0	7.0	7.0	7.0
72N	0.9	1.0	1.3	1.9	2.7	3.6	4.3	5.1	5.6	6.6	7.0	7.0	7.0	7.0
71N	1.1	1.2	1.6	2.1	2.8	3.6	4.2	5.0	5.7	7.0	7.0	7.0	7.0	7.0
70N	1.3	1.5	1.8	2.3	3.0	3.8	4.4	5.3	6.1	7.0	7.0	7.0	7.0	7.0
69N	1.7	1.8	2.1	2.7	3.5	4.3	5.0	5.9	6.5	7.0	7.0	7.0	7.0	7.0
68N	2.1	2.2	2.5	3.1	4.2	5.4	6.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0
67N	2.6	2.6	2.9	3.7	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	3.1	3.0	3.3	4.3	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	3.6	3.4	3.7	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	4.0	3.7	4.1	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	4.5	4.3	4.9	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	4.5	4.3	5.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.1	4.2	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	3.8	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	3.5	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	3.7	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	4.4	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	6.1	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL380 – No ozone converter – p2
Figure 05–07–157

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 370																	
	Longitude																
Latitude (°N)	180°W	175°W	170°W	165°W	160°W	155°W	150°W	145°W	140°W	135°W	130°W	125°W	120°W	115°W	110°W	105°W	100°W
90°N	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
89°N	6.0	5.8	5.7	5.7	5.6	5.5	5.1	5.1	5.0	5.0	5.0	4.9	4.9	5.2	5.2	5.2	5.2
88°N	5.2	5.1	5.0	4.9	4.8	4.7	4.6	4.6	4.5	4.4	4.4	4.4	4.3	4.3	4.4	4.3	4.3
87°N	5.1	4.9	4.8	4.7	4.5	4.4	4.3	4.2	4.2	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.9
86°N	5.0	4.8	4.6	4.5	4.4	4.2	4.1	4.0	3.9	3.8	3.7	3.7	3.6	3.6	3.5	3.5	3.5
85°N	4.9	4.7	4.5	4.4	4.2	4.1	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.2	3.2	3.2
84°N	4.9	4.7	4.5	4.3	4.1	4.0	3.8	3.7	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.9
83°N	4.9	4.7	4.5	4.3	4.1	3.9	3.8	3.6	3.5	3.3	3.2	3.1	2.9	2.8	2.7	2.6	2.6
82°N	5.0	4.7	4.5	4.3	4.1	3.9	3.7	3.6	3.4	3.2	3.1	3.0	2.8	2.7	2.6	2.4	2.3
81°N	5.0	4.8	4.5	4.3	4.1	3.9	3.7	3.5	3.4	3.2	3.1	2.9	2.7	2.6	2.4	2.3	2.1
80°N	5.1	4.9	4.6	4.4	4.2	4.0	3.8	3.6	3.4	3.2	3.1	2.9	2.7	2.5	2.4	2.2	2.1
79°N	5.2	5.0	4.7	4.6	4.3	4.1	3.9	3.7	3.5	3.3	3.1	2.9	2.7	2.5	2.3	2.2	2.1
78°N	5.3	5.1	5.0	4.7	4.5	4.2	4.0	3.8	3.6	3.3	3.1	2.9	2.7	2.5	2.3	2.2	2.1
77°N	5.5	5.3	5.1	4.9	4.7	4.4	4.2	3.9	3.7	3.4	3.2	2.9	2.7	2.5	2.2	2.1	1.9
76°N	5.8	5.6	5.3	5.1	4.9	4.6	4.4	4.1	3.8	3.6	3.3	3.0	2.7	2.5	2.2	2.0	1.8
75°N	6.1	5.9	5.6	5.3	5.1	4.9	4.6	4.3	4.1	3.7	3.4	3.1	2.8	2.5	2.2	1.9	1.7
74°N	6.3	6.1	5.9	5.7	5.4	5.2	4.9	4.7	4.4	4.0	3.7	3.3	3.0	2.6	2.2	1.9	1.7
73°N	7.0	6.4	6.3	6.0	5.8	5.6	5.3	5.1	4.7	4.4	3.7	3.4	3.1	2.7	2.4	2.1	1.8
72°N	7.0	6.7	6.6	6.5	6.3	6.1	5.9	5.5	5.2	4.4	4.1	3.7	3.3	3.0	2.6	2.3	2.1
71°N	7.0	7.0	7.0	7.0	6.9	6.7	6.5	6.3	5.2	5.0	4.6	4.2	3.8	3.3	2.9	2.6	2.4
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.9	5.7	5.3	4.8	4.3	3.8	3.4	3.0	2.8
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8	6.6	6.3	5.7	5.2	4.6	4.0	3.6	3.4
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.6	5.0	4.4	4.2
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.5	5.1
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL370 – No ozone converter – p1
Figure 05–07–158

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 370													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
89N	5.1	5.1	5.1	5.1	5.2	5.2	5.2	5.3	5.4	5.4	5.6	5.6	5.7	5.8
88N	4.2	4.2	4.2	4.2	4.3	4.5	4.6	4.7	4.8	4.9	5.1	5.3	5.5	5.7
87N	3.7	3.7	3.7	3.8	3.8	3.9	4.0	4.1	4.3	4.5	4.7	4.9	5.2	5.6
86N	3.3	3.4	3.4	3.4	3.5	3.5	3.6	3.7	3.8	4.1	4.3	4.6	5.0	5.5
85N	3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.5	3.6	3.8	4.1	4.4	4.8	5.5
84N	2.7	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.4	3.5	3.9	4.3	4.8	5.6
83N	2.4	2.4	2.5	2.7	3.0	3.1	3.2	3.2	3.3	3.4	3.7	4.3	5.0	6.2
82N	2.1	2.0	2.1	2.3	2.7	3.1	3.2	3.2	3.3	3.5	3.9	4.6	5.5	7.0
81N	1.9	1.7	1.7	1.9	2.4	3.0	3.3	3.4	3.6	3.9	4.3	5.2	6.5	7.0
80N	1.8	1.6	1.6	1.8	2.4	3.2	3.8	4.1	4.3	4.6	5.2	6.4	7.0	7.0
79N	1.9	1.8	1.8	2.1	3.1	5.0	6.3	6.1	6.0	6.1	6.6	7.0	7.0	7.0
78N	1.9	2.0	2.2	3.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	1.8	2.0	2.5	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	1.6	1.8	2.4	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	1.5	1.6	2.3	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	1.5	1.7	2.3	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	1.6	1.8	2.4	3.6	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	1.9	2.1	2.6	3.6	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	2.2	2.5	3.0	3.9	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	2.6	2.8	3.4	4.3	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	3.1	3.3	3.9	5.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	3.9	4.0	4.6	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	4.8	4.7	5.3	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	5.8	5.5	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL370 – No ozone converter – p2
Figure 05–07–159

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 360																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.7	6.5	6.3	6.1	6.1	6.0	6.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.4	6.1	5.8	5.6	5.4	5.2	5.1	5.1	5.1
84N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	6.0	5.6	5.3	5.1	4.8	4.6	4.5	4.3	4.3
83N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.1	5.7	5.3	5.0	4.7	4.4	4.2	4.0	3.7	3.6
82N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.0	5.5	5.1	4.8	4.4	4.1	3.8	3.6	3.3	3.1
81N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.5	5.0	4.7	4.3	4.0	3.7	3.4	3.1	2.8
80N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.1	5.5	5.1	4.7	4.3	3.9	3.5	3.2	2.9	2.7
79N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2	5.7	5.1	4.7	4.3	3.9	3.5	3.2	2.9	2.7
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	5.3	4.8	4.3	3.9	3.5	3.1	2.9	2.7
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.1	5.5	4.9	4.4	3.9	3.5	3.0	2.7	2.5
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.8	5.1	4.6	4.0	3.5	3.0	2.6	2.3
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.5	4.8	4.2	3.5	3.0	2.5	2.1
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.3	4.5	3.8	3.0	2.5	2.2
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.2	4.5	3.9	3.3	2.7	2.4
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.0	5.1	4.3	3.7	3.1	2.7
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.0	4.3	3.7	3.3
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.2	4.4	4.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.6	5.1
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL360 – No ozone converter – p1
Figure 05–07–160

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 360														
	Longitude													
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	6.1	6.1	6.2	6.4	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	5.2	5.3	5.4	5.7	5.9	6.2	6.5	6.8	7.0	7.0	7.0	7.0	7.0	7.0
84N	4.3	4.5	4.7	5.1	5.5	5.9	6.2	6.3	6.7	7.0	7.0	7.0	7.0	7.0
83N	3.6	3.6	3.9	4.4	5.2	5.8	6.2	6.2	6.4	6.9	7.0	7.0	7.0	7.0
82N	2.9	2.8	2.9	3.5	4.5	5.6	6.2	6.2	6.5	7.0	7.0	7.0	7.0	7.0
81N	2.5	2.3	2.2	2.6	3.6	5.1	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0
80N	2.4	2.1	2.0	2.4	3.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	2.5	2.3	2.3	2.9	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	2.7	2.7	3.1	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	2.5	2.8	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	2.2	2.5	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	1.9	2.2	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.0	2.3	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	2.2	2.5	3.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	2.7	3.0	4.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	3.2	3.6	4.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	3.9	4.3	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	4.8	5.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	6.5	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL360 – No ozone converter – p2
Figure 05–07–161

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 350																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W	100W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.4
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.8
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL350 – No ozone converter – p1
Figure 05–07–162

North America - Maximum Flight duration in hour, DECEMBER WOUDC FL 350													
	Longitude												
Latitude (N)	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	6.3	5.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	5.6	4.6	4.3	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	6.3	5.4	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	4.3	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	4.4	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	5.3	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	6.6	4.9	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	5.6	4.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	5.3	3.7	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	5.7	3.8	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	4.5	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – North America – December – FL350 – No ozone converter – p2
Figure 05–07–163

L. Europe – January

Europe - Maximum Flight duration in hour, JANUARY WOUDC FL 410																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.3	0.3	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.4	0.4	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.2	0.2	0.1	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.4	0.6	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.3	0.2
75N	0.0	0.0	0.1	0.1	0.1	0.5	0.6	0.6	0.9	0.9	1.0	1.1	1.1	1.2	1.2	1.1	1.1	1.0	0.9
74N	0.0	0.4	0.7	0.6	0.9	0.8	1.3	1.2	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.4	1.3	1.2	1.1
73N	0.5	1.3	1.6	1.2	1.3	1.8	1.7	1.6	1.7	1.7	2.6	1.9	2.0	1.9	1.8	1.7	1.6	1.4	1.3
72N	1.0	2.5	2.7	2.3	2.5	2.3	2.3	2.2	3.1	3.1	3.2	3.9	4.0	4.1	4.2	2.8	2.6	1.7	1.5
71N	1.5	3.3	3.7	3.2	3.0	2.9	4.2	4.0	5.6	5.1	4.5	4.2	4.2	4.4	4.6	4.8	3.0	2.8	1.7
70N	1.5	3.3	3.7	3.5	3.5	5.9	7.0	7.0	7.0	5.9	4.7	4.2	4.2	4.6	5.0	5.3	5.5	3.2	2.9
69N	1.4	2.8	3.3	3.7	6.1	7.0	7.0	7.0	7.0	7.0	5.9	4.2	4.4	4.7	5.4	5.8	6.0	6.0	3.2
68N	0.9	2.7	3.5	5.6	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.6	4.0	5.9	7.0	6.4	6.7	6.7	6.5
67N	1.0	2.4	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	3.6	4.0	6.2	7.0	7.0	7.0	7.0	7.0
66N	0.8	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	4.7	7.0	7.0	7.0	7.0	7.0	7.0
65N	0.9	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0
64N	0.9	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	2.3	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	2.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – January – FL410 – No ozone converter
Figure 05–07–164

Europe - Maximum Flight duration in hour, JANUARY WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	0.2	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6	0.6	0.5	0.4	0.3	0.2	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.7	0.6	0.5	0.4	0.3	0.2	0.1	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.7	0.7	0.6	0.6	0.5	0.4	0.4	0.3	0.2	0.1	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.4	0.3	0.1
76N	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.7	0.7	1.0	1.1	1.2	1.3	1.4	1.4	1.4	1.3	0.4	0.3
75N	0.0	0.0	0.2	0.2	0.2	0.8	0.8	0.9	1.3	1.4	1.5	1.7	1.8	1.9	1.9	1.8	1.7	1.5	1.4
74N	0.0	0.6	1.0	0.9	1.4	1.2	2.0	1.9	1.9	1.9	2.1	2.3	2.5	2.5	2.4	2.2	2.1	1.9	1.7
73N	0.7	1.8	2.2	1.7	2.0	2.8	2.8	2.6	2.6	2.7	4.4	3.2	3.3	3.2	3.0	2.8	2.5	2.2	2.0
72N	1.4	3.5	3.9	3.3	3.9	3.7	3.8	3.5	5.5	5.7	5.8	7.0	7.0	7.0	7.0	4.9	4.6	2.7	2.3
71N	2.0	4.8	5.4	5.0	4.7	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.9	2.7
70N	2.1	4.9	5.4	5.4	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	5.1
69N	1.9	4.0	4.9	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9
68N	1.2	3.9	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	1.3	3.4	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	1.1	3.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	1.2	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	1.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – January – FL400 – No ozone converter
Figure 05–07–165

Europe - Maximum Flight duration in hour, JANUARY WOUDC FL 390																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
89N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
88N	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	0.9
87N	0.8	0.9	0.9	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.1	1.1	1.1	1.0
86N	0.8	1.0	1.0	1.1	1.1	1.2	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4
85N	0.9	1.0	1.1	1.2	1.3	1.3	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.5
84N	0.9	1.0	1.1	1.3	1.4	1.5	1.7	1.8	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.8	1.7
83N	1.0	1.1	1.2	1.4	1.6	1.8	2.0	2.2	2.4	2.4	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.0	1.9
82N	1.0	1.2	1.4	1.6	1.9	2.2	2.5	2.8	3.0	3.1	3.0	2.9	2.8	2.6	2.5	2.4	2.7	2.6	2.5
81N	1.1	1.3	1.5	1.8	2.1	2.5	3.0	3.4	3.7	3.8	3.6	3.4	3.5	3.3	3.2	3.0	2.9	2.8	2.7
80N	1.2	1.4	1.7	2.0	2.4	2.9	3.4	4.0	4.3	4.3	4.2	4.0	3.8	3.6	3.4	3.3	3.1	3.0	2.9
79N	1.4	1.6	1.9	2.2	2.6	3.1	3.7	4.3	4.6	4.6	4.4	4.2	4.0	3.8	3.7	3.5	3.4	3.2	3.1
78N	1.5	1.8	2.1	2.4	2.8	3.2	3.7	4.2	4.5	4.5	4.4	4.3	4.2	4.1	3.9	3.8	3.6	3.5	3.3
77N	1.8	2.1	2.4	2.7	3.0	3.3	3.7	4.4	4.4	4.5	4.5	4.4	4.4	4.4	4.3	4.1	3.9	3.8	3.6
76N	2.1	2.5	2.8	3.1	3.3	3.5	4.4	4.5	4.5	5.1	5.2	5.5	5.7	5.9	6.0	5.9	5.7	4.1	3.9
75N	2.5	3.2	3.6	3.8	3.8	4.7	4.8	4.9	5.8	5.8	6.1	6.4	6.7	6.9	6.9	6.7	6.5	6.1	5.9
74N	3.3	4.4	5.1	4.9	5.8	5.5	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.4
73N	4.5	6.9	7.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – January – FL390 – No ozone converter
Figure 05–07–166

Europe - Maximum Flight duration in hour, JANUARY WOUDC FL 380																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
89N	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88N	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.2
87N	1.1	1.1	1.2	1.4	1.4	1.5	1.5	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.4	1.4	1.4	1.4
86N	1.1	1.3	1.4	1.5	1.5	1.6	1.7	1.8	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	1.9	1.9
85N	1.2	1.3	1.4	1.6	1.7	1.9	2.0	2.2	2.3	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.1
84N	1.2	1.4	1.5	1.7	2.0	2.2	2.4	2.7	2.9	3.0	3.1	3.1	3.1	3.0	2.9	2.9	2.8	2.7	2.4
83N	1.3	1.5	1.7	2.0	2.3	2.7	3.1	3.4	3.8	4.0	4.0	4.0	3.8	3.7	3.5	3.3	3.2	3.0	2.9
82N	1.4	1.6	1.9	2.3	2.8	3.3	4.0	4.7	5.3	5.5	5.3	5.1	4.7	4.4	4.1	3.8	4.4	4.2	4.0
81N	1.5	1.8	2.1	2.6	3.3	4.2	5.3	6.6	7.0	7.0	7.0	6.4	6.7	6.2	5.7	5.3	5.0	4.7	4.5
80N	1.7	2.0	2.4	3.0	3.8	5.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.0	5.6	5.3	4.9
79N	1.9	2.3	2.7	3.4	4.2	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.3	5.8	5.4
78N	2.2	2.6	3.2	3.8	4.7	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.0
77N	2.6	3.1	3.8	4.5	5.2	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
76N	3.2	4.1	4.9	5.6	6.1	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	4.2	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – January – FL380 – No ozone converter
Figure 05–07–167

Europe - Maximum Flight duration in hour, JANUARY WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89N	2.1	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
88N	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
87N	2.2	2.3	2.3	2.7	2.7	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.3	3.3	3.3	2.7	2.6	2.6	2.6
86N	2.2	2.5	2.6	2.8	2.9	3.1	3.2	3.4	3.5	3.6	3.7	3.8	3.9	3.9	3.9	3.9	3.8	3.4	3.4
85N	2.4	2.6	2.7	3.0	3.2	3.4	3.7	4.0	4.2	4.4	4.6	4.7	4.7	4.7	4.6	4.6	4.4	4.4	3.8
84N	2.4	2.7	2.9	3.2	3.6	4.0	4.5	5.0	5.5	5.8	6.0	6.1	6.0	5.8	5.7	5.5	5.2	5.0	4.3
83N	2.5	2.8	3.2	3.6	4.3	5.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.1	5.8	5.5
82N	2.7	3.0	3.5	4.2	5.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	2.9	3.3	4.0	4.9	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	3.2	3.7	4.5	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	3.6	4.2	5.2	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	4.1	4.9	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	4.9	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – January – FL370 – No ozone converter
Figure 05–07–168

Europe - Maximum Flight duration in hour, JANUARY WOUDC FL 360																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89N	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
88N	3.0	3.0	3.1	3.1	3.2	3.2	3.3	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4
87N	3.1	3.2	3.3	4.2	4.4	4.7	4.9	5.1	5.3	5.6	5.8	6.0	6.1	6.2	6.3	4.1	4.0	4.0	3.9
86N	3.1	3.8	4.1	4.5	4.9	5.3	5.7	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.6
85N	3.6	3.9	4.4	5.0	5.7	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
84N	3.6	4.2	4.8	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	3.8	4.5	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	4.2	5.1	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	4.8	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – January – FL360 – No ozone converter
Figure 05–07–169

M. Europe – February

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 410																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.2	0.2	0.1	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	1.0	1.8	1.9	1.6	1.3	0.3	0.1	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	1.3	1.7	2.2	2.9	2.9	2.3	1.8	1.4	0.3	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.3	1.2	1.5	1.8	2.4	3.2	4.3	4.1	3.0	2.1	1.6	1.2	0.1	0.0
69N	0.0	0.0	0.0	0.0	0.0	1.2	2.0	3.7	3.5	3.8	5.0	6.6	6.1	3.6	2.4	1.8	1.4	1.1	0.0
68N	0.0	0.0	0.0	0.0	0.5	2.1	4.6	4.8	4.1	4.1	5.3	7.0	6.9	4.8	3.7	1.9	1.5	1.3	1.1
67N	0.0	0.0	0.0	0.2	1.7	5.2	7.0	6.4	4.7	4.1	5.0	7.0	6.9	4.6	3.7	3.3	1.6	1.3	1.1
66N	0.0	0.0	0.1	0.9	3.2	7.0	7.0	7.0	5.4	3.8	4.0	6.1	5.6	4.0	3.5	3.3	3.2	1.4	1.2
65N	0.0	0.0	0.8	2.8	7.0	7.0	7.0	7.0	6.1	3.3	2.5	3.3	3.7	3.3	3.2	3.2	2.9	2.9	1.2
64N	0.0	0.0	1.0	4.8	7.0	7.0	7.0	7.0	7.0	2.8	1.2	1.1	2.0	2.6	2.9	3.9	2.9	3.0	3.0
63N	0.0	0.3	3.9	7.0	7.0	7.0	7.0	7.0	7.0	2.4	0.1	0.0	0.9	2.0	3.2	3.9	4.4	3.1	3.2
62N	0.0	0.6	5.9	7.0	7.0	7.0	7.0	7.0	7.0	2.6	0.0	0.0	0.4	1.9	3.1	4.0	4.6	5.0	5.6
61N	0.0	1.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2	0.0	0.0	0.1	1.8	3.1	4.1	4.7	5.5	6.0
60N	0.0	1.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	0.0	0.0	0.2	1.9	3.3	4.3	5.0	5.9	6.5
59N	0.5	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	0.3	0.0	0.8	2.7	3.6	4.6	5.5	6.4	7.0
58N	1.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.7	0.5	1.5	3.3	4.0	5.0	6.1	7.0	7.0
57N	1.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	2.1	2.7	4.1	5.8	5.4	6.8	7.0	7.0
56N	2.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.1	5.2	6.6	7.0	7.0	7.0	7.0
55N	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	6.5	7.0	7.0	7.0	7.0	7.0
54N	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL410 – No ozone converter
Figure 05–07–170

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.3	0.4	0.2	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.8	1.4	2.4	2.5	2.2	1.8	0.5	0.2	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.5	1.7	2.4	3.0	3.9	3.9	3.2	2.4	1.8	0.4	0.1	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.4	1.7	2.0	2.5	3.2	4.4	6.1	5.8	4.2	2.9	2.2	1.7	0.2	0.0
69N	0.0	0.0	0.0	0.0	0.1	1.6	2.7	5.3	5.1	5.5	7.0	7.0	7.0	5.0	3.3	2.4	1.9	1.5	0.1
68N	0.0	0.0	0.0	0.0	0.7	2.8	6.9	7.0	6.1	5.9	7.0	7.0	7.0	7.0	5.3	2.6	2.0	1.7	1.4
67N	0.0	0.0	0.0	0.3	2.3	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	6.7	5.2	4.7	2.1	1.8	1.5
66N	0.0	0.0	0.2	1.2	4.6	7.0	7.0	7.0	7.0	5.4	5.5	7.0	7.0	5.7	4.8	4.6	4.6	1.9	1.7
65N	0.0	0.0	1.0	4.0	7.0	7.0	7.0	7.0	7.0	4.6	3.3	4.5	5.0	4.5	4.4	4.5	4.1	4.1	1.6
64N	0.0	0.0	1.3	7.0	7.0	7.0	7.0	7.0	7.0	3.8	1.5	1.4	2.6	3.4	4.0	5.8	4.2	4.3	4.4
63N	0.0	0.4	5.9	7.0	7.0	7.0	7.0	7.0	7.0	3.2	0.2	0.0	1.1	2.6	4.5	5.7	6.8	4.5	4.6
62N	0.0	0.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	0.0	0.0	0.5	2.5	4.3	5.9	7.0	7.0	7.0
61N	0.0	1.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	0.0	0.0	0.2	2.4	4.4	6.1	7.0	7.0	7.0
60N	0.0	2.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	0.0	0.0	0.3	2.5	4.7	6.6	7.0	7.0	7.0
59N	0.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	0.4	0.0	1.0	3.6	5.2	7.0	7.0	7.0	7.0
58N	1.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.2	0.6	2.0	4.6	5.9	7.0	7.0	7.0	7.0
57N	2.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	2.9	3.7	6.1	7.0	7.0	7.0	7.0	7.0
56N	2.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2	7.0	7.0	7.0	7.0	7.0	7.0
55N	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL400 – No ozone converter
Figure 05–07–171

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 390																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
88N	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
87N	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
86N	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6
85N	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.6	0.6	0.6	0.7
84N	0.2	0.3	0.3	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8
83N	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	0.9	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8
82N	0.3	0.4	0.4	0.6	0.7	0.8	1.0	1.1	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.1	1.0	1.0
81N	0.3	0.4	0.5	0.6	0.8	1.0	1.2	1.4	1.5	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1
80N	0.4	0.5	0.6	0.7	0.9	1.1	1.4	1.6	1.7	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.2
79N	0.4	0.5	0.6	0.8	1.0	1.2	1.5	1.7	1.8	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.2
78N	0.5	0.6	0.7	0.8	1.0	1.2	1.5	1.7	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.3
77N	0.5	0.7	0.8	0.9	1.1	1.2	1.4	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.6	1.5	1.4
76N	0.6	0.8	0.9	1.0	1.1	1.2	1.6	1.7	1.7	1.9	2.0	2.1	2.1	2.2	2.2	2.1	2.0	1.6	1.5
75N	0.7	0.9	1.0	1.1	1.2	1.5	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.5	2.5	2.4	2.2	2.1	2.0
74N	0.9	1.1	1.2	1.2	1.5	1.6	2.1	2.2	2.3	2.4	2.7	2.9	3.0	3.0	2.9	2.7	2.5	2.3	2.1
73N	1.1	1.3	1.4	1.4	1.7	2.1	2.3	2.5	2.7	2.9	4.2	3.8	3.9	3.7	3.4	3.1	2.7	2.5	2.3
72N	1.3	1.6	1.7	1.7	2.1	2.3	2.7	2.8	3.9	4.7	5.8	7.0	7.0	7.0	6.8	4.1	3.6	2.7	2.4
71N	1.4	1.7	1.8	1.9	2.2	2.6	3.8	4.1	6.6	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.0	3.5	2.6
70N	1.4	1.8	1.8	2.0	2.4	4.1	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	3.7	3.3
69N	1.4	1.7	1.8	2.2	3.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.2	3.5
68N	1.2	1.7	2.0	2.9	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9
67N	1.3	1.8	2.2	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2
66N	1.3	1.9	3.7	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4
65N	1.3	2.6	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2
64N	1.4	3.1	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	2.0	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	3.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0
62N	2.1	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.7	1.9	4.2	7.0	7.0	7.0	7.0	7.0	7.0
61N	2.3	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.3	1.6	3.7	7.0	7.0	7.0	7.0	7.0	7.0
60N	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.6	1.7	3.9	7.0	7.0	7.0	7.0	7.0	7.0
59N	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	2.5	5.1	7.0	7.0	7.0	7.0	7.0	7.0
58N	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL390 – No ozone converter
Figure 05–07–172

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 380																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89N	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88N	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5
87N	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
86N	0.3	0.4	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8
85N	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.9
84N	0.3	0.4	0.5	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	1.0
83N	0.3	0.4	0.5	0.6	0.8	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0
82N	0.4	0.5	0.6	0.7	0.9	1.1	1.4	1.6	1.7	1.8	1.8	1.7	1.6	1.5	1.4	1.3	1.5	1.4	1.4
81N	0.4	0.5	0.7	0.9	1.1	1.4	1.7	2.1	2.3	2.3	2.2	2.0	2.1	2.0	1.8	1.7	1.7	1.6	1.5
80N	0.5	0.6	0.8	1.0	1.3	1.6	2.1	2.5	2.8	2.8	2.7	2.5	2.3	2.2	2.0	1.9	1.8	1.7	1.6
79N	0.6	0.7	0.9	1.1	1.4	1.7	2.2	2.7	3.0	3.0	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.9	1.8
78N	0.6	0.8	0.9	1.1	1.4	1.8	2.2	2.6	2.9	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.1	2.0	1.9
77N	0.7	0.9	1.0	1.2	1.5	1.8	2.1	2.7	2.8	2.8	2.8	2.8	2.8	2.7	2.6	2.5	2.4	2.2	2.1
76N	0.8	1.0	1.2	1.4	1.5	1.8	2.4	2.7	2.7	3.1	3.2	3.4	3.5	3.6	3.6	3.4	3.3	2.4	2.2
75N	1.0	1.2	1.4	1.5	1.6	2.3	2.5	2.8	3.3	3.5	3.7	4.1	4.3	4.3	4.2	4.0	3.7	3.4	3.1
74N	1.2	1.5	1.7	1.7	2.2	2.4	3.4	3.5	3.9	4.1	4.7	5.3	5.7	5.6	5.2	4.7	4.2	3.8	3.4
73N	1.5	1.8	2.0	2.0	2.4	3.4	3.9	4.1	4.8	5.4	7.0	7.0	7.0	7.0	6.8	5.6	4.8	4.2	3.7
72N	1.7	2.3	2.3	2.4	3.2	3.8	4.6	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.0
71N	1.9	2.5	2.6	2.8	3.5	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4
70N	1.9	2.5	2.6	3.0	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3
69N	1.9	2.4	2.6	3.3	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
68N	1.7	2.5	2.9	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	1.8	2.6	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	1.8	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	1.9	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	2.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2	2.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0
60N	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	2.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL380 – No ozone converter
Figure 05–07–173

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3
88N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87N	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4
86N	1.2	1.2	1.2	1.3	1.3	1.4	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8
85N	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	2.0
84N	1.2	1.2	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.0	2.2
83N	1.2	1.3	1.4	1.6	1.7	2.0	2.2	2.4	2.6	2.7	2.7	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.1
82N	1.2	1.4	1.5	1.7	2.0	2.3	2.7	3.1	3.4	3.5	3.5	3.3	3.1	2.9	2.8	2.6	2.9	2.8	2.7
81N	1.3	1.4	1.6	1.9	2.3	2.7	3.4	4.0	4.5	4.6	4.4	4.0	4.1	3.8	3.6	3.4	3.2	3.1	2.9
80N	1.4	1.5	1.8	2.1	2.5	3.1	4.0	5.1	5.8	5.8	5.5	5.0	4.6	4.2	4.0	3.7	3.5	3.4	3.2
79N	1.5	1.6	1.9	2.2	2.7	3.4	4.4	5.6	6.4	6.3	5.9	5.4	5.0	4.6	4.3	4.1	3.9	3.7	3.4
78N	1.6	1.8	2.0	2.3	2.8	3.4	4.3	5.4	6.2	6.2	5.9	5.6	5.3	5.1	4.8	4.6	4.3	4.0	3.7
77N	1.7	1.9	2.2	2.5	2.9	3.4	4.1	5.5	5.8	5.9	5.9	5.9	5.8	5.7	5.4	5.1	4.8	4.4	4.1
76N	1.9	2.1	2.4	2.7	3.0	3.4	4.8	5.5	5.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.5
75N	2.1	2.4	2.7	2.9	3.2	4.5	5.2	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	2.4	2.9	3.2	3.3	4.5	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	2.9	3.5	3.8	3.8	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	3.3	4.4	4.6	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	3.6	4.9	5.2	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	3.7	4.9	5.2	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	3.6	4.7	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	3.2	5.1	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	3.6	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	3.5	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL370 – No ozone converter
Figure 05–07–174

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 360																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
89N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
88N	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87N	1.5	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9
86N	1.5	1.6	1.6	1.7	1.8	1.9	1.9	2.0	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.5	2.5
85N	1.5	1.6	1.7	1.8	1.9	2.0	2.2	2.3	2.4	2.5	2.6	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.8
84N	1.5	1.6	1.8	1.9	2.1	2.3	2.6	2.8	3.0	3.1	3.2	3.3	3.3	3.2	3.1	3.1	3.0	2.9	3.2
83N	1.5	1.7	1.9	2.1	2.4	2.8	3.2	3.6	4.0	4.2	4.3	4.3	4.1	3.9	3.7	3.6	3.4	3.2	3.1
82N	1.6	1.8	2.0	2.4	2.8	3.4	4.3	5.1	5.9	6.2	6.1	5.7	5.3	4.9	4.5	4.1	5.0	4.7	4.5
81N	1.7	1.9	2.2	2.6	3.3	4.3	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.8	5.5	5.1
80N	1.8	2.1	2.4	2.9	3.8	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.8
79N	1.9	2.2	2.6	3.2	4.1	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
78N	2.1	2.4	2.8	3.4	4.4	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	2.3	2.6	3.1	3.7	4.6	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	2.5	3.0	3.5	4.1	4.8	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	2.9	3.5	4.1	4.6	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	3.4	4.3	5.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	4.3	5.7	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL360 – No ozone converter
Figure 05–07–175

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 350																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89N	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
88N	2.4	2.4	2.5	2.5	2.6	2.6	2.6	2.7	2.7	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9
87N	2.5	2.6	2.6	2.8	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.8	3.9	3.3	3.3	3.2	3.2
86N	2.5	2.7	2.8	3.0	3.2	3.4	3.6	3.8	4.0	4.2	4.3	4.5	4.6	4.6	4.7	4.6	4.6	4.9	4.9
85N	2.5	2.7	2.9	3.2	3.5	3.8	4.2	4.6	5.0	5.3	5.6	5.8	5.9	5.9	5.9	5.8	5.6	5.5	5.9
84N	2.5	2.8	3.1	3.5	4.0	4.7	5.4	6.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0
83N	2.6	2.9	3.4	4.0	4.9	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	2.8	3.2	3.8	4.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	2.9	3.5	4.3	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	3.2	3.8	4.9	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	3.5	4.3	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	3.9	4.9	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	4.5	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL350 – No ozone converter
Figure 05–07–176

Europe - Maximum Flight duration in hour, FEBRUARY WOUDC FL 340																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
89N	4.3	4.4	4.4	4.5	4.5	4.6	4.6	4.7	4.7	4.8	4.8	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9
88N	4.4	4.5	4.6	4.7	4.9	5.0	5.1	5.3	5.4	5.5	5.6	5.7	5.8	5.8	5.9	5.9	5.9	5.8	5.8
87N	4.7	5.0	5.2	6.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	4.7	5.7	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	5.1	5.9	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	5.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	5.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – February – FL340 – No ozone converter
Figure 05–07–177

N. Europe – March

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 410																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.5	0.8	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	1.1	1.3	1.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.1	1.1	1.7	2.0	1.6	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.8	1.8	2.6	2.8	2.6	0.9	0.2	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
63N	0.0	0.0	0.8	1.9	2.7	3.4	3.9	3.2	1.9	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.0	0.0
62N	0.0	0.0	1.5	2.9	4.3	4.5	4.5	3.7	2.3	0.7	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.6	0.7
61N	0.0	0.3	3.0	4.8	5.4	4.9	4.6	4.3	3.5	1.2	0.0	0.0	0.0	0.2	0.4	0.5	0.6	0.7	0.8
60N	0.0	0.9	4.4	6.6	6.7	5.3	4.7	5.7	4.2	1.6	0.0	0.0	0.1	0.3	0.6	0.7	0.8	0.9	1.0
59N	0.4	2.9	7.0	7.0	7.0	6.4	5.3	6.6	5.0	2.2	0.3	0.0	0.4	0.8	0.7	0.8	0.9	1.1	1.2
58N	1.1	3.7	7.0	7.0	7.0	7.0	7.0	7.0	6.1	3.1	1.2	0.5	0.7	1.1	1.3	1.0	1.1	1.3	1.4
57N	1.5	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	2.3	1.3	1.2	1.4	1.5	1.6	1.3	1.5	1.6
56N	1.9	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.5	2.4	1.8	1.8	1.8	1.9	1.6	1.7	1.8
55N	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.7	3.5	2.6	2.3	2.1	2.7	1.8	2.0	2.0
54N	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.7	4.5	3.2	2.7	2.6	3.1	3.5	2.3	2.4
53N	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	6.6	5.2	3.7	3.1	3.3	3.5	3.9	2.6	2.7
52N	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	6.7	6.2	4.1	3.5	3.7	4.0	4.4	3.0	3.1
51N	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	6.4	6.3	4.4	3.8	4.2	4.5	5.0	5.5	3.6
50N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.9	6.1	6.5	4.7	4.1	4.3	4.7	5.8	6.4	4.2
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	6.3	6.7	6.5	4.5	4.8	5.3	6.2	7.0	5.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	6.7	7.0	6.9	5.1	5.3	6.1	7.0	7.0	6.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL410 – No ozone converter
Figure 05–07–178

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.7	1.1	1.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.1	1.5	1.9	1.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.2	1.5	2.5	2.9	2.3	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	1.1	2.7	3.7	4.1	3.9	1.3	0.3	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
63N	0.0	0.0	1.1	2.9	4.0	5.1	5.9	4.9	2.9	0.5	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.1	0.1
62N	0.0	0.0	2.2	4.6	7.0	6.8	6.6	5.9	3.6	1.1	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.9	1.0
61N	0.0	0.4	5.0	7.0	7.0	7.0	6.7	6.8	5.8	1.8	0.0	0.0	0.0	0.3	0.5	0.8	0.9	1.0	1.2
60N	0.0	1.3	7.0	7.0	7.0	7.0	6.6	7.0	7.0	2.4	0.0	0.0	0.2	0.5	0.8	1.0	1.1	1.3	1.4
59N	0.6	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.5	0.5	0.0	0.6	1.1	1.1	1.2	1.3	1.5	1.7
58N	1.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	1.8	0.7	1.1	1.6	1.9	1.5	1.6	1.8	1.9
57N	2.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.6	2.1	1.9	2.1	2.3	2.5	1.9	2.1	2.2
56N	2.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.9	2.8	2.7	2.8	2.9	2.3	2.4	2.6
55N	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.2	3.7	3.2	4.3	2.7	2.9	3.0
54N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.4	4.1	5.0	5.6	3.4	3.5
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.2	5.3	5.7	6.5	3.9	4.1
52N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	6.2	6.7	7.0	4.6	4.8
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	5.6
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
49N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL400 – No ozone converter
Figure 05–07–179

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 390																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
87N	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.3	0.3
86N	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
85N	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4
84N	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
83N	0.2	0.2	0.3	0.4	0.4	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6
82N	0.2	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
81N	0.3	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7
80N	0.3	0.4	0.5	0.5	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8
79N	0.4	0.4	0.5	0.6	0.7	0.8	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8
78N	0.4	0.5	0.6	0.6	0.7	0.8	0.9	1.0	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.8
77N	0.5	0.5	0.6	0.7	0.8	0.8	0.9	1.0	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9
76N	0.5	0.6	0.7	0.7	0.8	0.8	1.0	1.0	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.0	0.9
75N	0.6	0.7	0.7	0.8	0.8	1.0	1.0	1.0	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.2	1.2	1.2
74N	0.7	0.8	0.8	0.8	1.0	1.0	1.2	1.2	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.2
73N	0.8	0.9	0.9	0.9	1.0	1.3	1.3	1.3	1.4	1.4	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3
72N	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.4	1.7	1.7	1.7	1.8	1.8	1.8	1.9	1.6	1.6	1.4	1.4
71N	0.9	1.0	1.1	1.1	1.3	1.4	1.8	1.8	2.1	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.6	1.6	1.4
70N	0.9	1.0	1.1	1.2	1.4	1.9	2.3	2.3	2.3	2.2	1.9	1.9	1.9	1.9	2.0	2.0	2.0	1.7	1.6
69N	0.9	1.0	1.1	1.2	1.7	2.4	2.7	3.6	3.0	2.6	2.2	1.9	1.9	2.0	2.0	2.1	2.1	2.1	1.7
68N	0.9	1.1	1.2	1.5	2.0	2.8	4.2	4.2	3.3	2.7	2.1	1.8	1.9	2.2	2.5	2.2	2.2	2.2	2.1
67N	1.0	1.2	1.3	1.8	2.7	4.5	5.3	5.0	3.7	2.9	2.2	1.8	1.9	2.2	2.6	2.9	2.3	2.3	2.2
66N	1.1	1.3	1.8	2.3	3.5	6.1	6.9	6.2	4.2	3.1	2.4	1.9	2.0	2.3	2.7	3.0	3.2	2.4	2.3
65N	1.2	1.7	2.3	3.7	6.0	7.0	7.0	7.0	4.8	3.5	2.6	2.2	2.2	2.5	2.9	3.1	3.1	3.2	2.3
64N	1.3	2.0	2.9	5.2	7.0	7.0	7.0	7.0	5.7	3.8	2.9	2.5	2.5	2.7	3.0	3.7	3.2	3.3	3.4
63N	1.8	2.7	5.2	7.0	7.0	7.0	7.0	7.0	7.0	4.2	2.9	2.5	2.7	3.2	3.6	4.0	4.3	3.5	3.5
62N	2.0	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	2.9	2.4	3.0	3.5	3.9	4.2	4.5	4.8	4.9
61N	2.3	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	2.8	2.3	3.1	3.8	4.2	4.6	4.9	5.0	5.3
60N	2.6	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.1	2.4	3.6	4.2	4.7	5.0	5.2	5.4	5.7
59N	4.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.1	4.2	5.2	5.2	5.4	5.5	5.9	6.1
58N	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.5	5.1	6.0	6.7	5.9	6.0	6.4	6.7
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	6.6	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL390 – No ozone converter
Figure 05–07–180

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 380																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
88N	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
87N	0.2	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
86N	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.5	0.5
85N	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5
84N	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.6
83N	0.3	0.3	0.4	0.5	0.6	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.7
82N	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
81N	0.4	0.4	0.5	0.6	0.8	0.9	1.0	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9
80N	0.4	0.5	0.6	0.7	0.8	1.0	1.2	1.3	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0
79N	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0
78N	0.5	0.6	0.7	0.8	0.9	1.1	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1
77N	0.6	0.7	0.8	0.9	1.0	1.1	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.1
76N	0.7	0.8	0.9	0.9	1.0	1.1	1.3	1.3	1.3	1.5	1.5	1.5	1.5	1.6	1.6	1.5	1.5	1.2	1.2
75N	0.8	0.9	1.0	1.0	1.0	1.3	1.3	1.3	1.5	1.5	1.6	1.6	1.6	1.7	1.7	1.6	1.6	1.6	1.5
74N	0.9	1.0	1.1	1.1	1.3	1.3	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.6
73N	1.1	1.1	1.2	1.2	1.3	1.6	1.7	1.7	1.8	1.8	2.1	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.7
72N	1.1	1.3	1.3	1.4	1.6	1.8	1.9	1.9	2.2	2.3	2.3	2.5	2.5	2.5	2.5	2.1	2.1	1.8	1.8
71N	1.2	1.3	1.3	1.5	1.7	1.9	2.4	2.4	2.9	2.9	2.6	2.6	2.6	2.6	2.6	2.7	2.2	2.1	1.8
70N	1.2	1.3	1.3	1.5	1.8	2.7	3.4	3.3	3.3	3.1	2.7	2.6	2.6	2.7	2.7	2.8	2.8	2.2	2.1
69N	1.2	1.3	1.4	1.6	2.4	3.5	4.2	6.1	4.6	3.8	3.1	2.6	2.7	2.7	2.8	2.9	2.9	2.9	2.2
68N	1.2	1.4	1.5	2.0	2.9	4.5	7.0	7.0	5.3	4.0	3.0	2.5	2.6	3.1	3.6	3.0	3.1	3.0	3.0
67N	1.4	1.5	1.8	2.6	4.1	7.0	7.0	7.0	6.1	4.4	3.1	2.5	2.6	3.1	3.8	4.3	3.2	3.2	3.1
66N	1.4	1.7	2.6	3.4	6.1	7.0	7.0	7.0	7.0	4.8	3.3	2.6	2.8	3.3	3.9	4.5	5.0	3.3	3.3
65N	1.6	2.5	3.5	6.7	7.0	7.0	7.0	7.0	7.0	5.5	3.7	3.0	3.1	3.6	4.2	4.8	4.6	4.8	3.2
64N	1.8	3.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.0	3.3	3.4	3.9	4.6	6.0	4.9	5.1	5.3
63N	2.7	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	3.8	3.3	3.7	4.6	5.6	6.6	7.0	5.4	5.5
62N	3.2	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	2.9	4.0	5.1	6.2	7.0	7.0	7.0	7.0
61N	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.5	2.7	4.1	5.8	7.0	7.0	7.0	7.0	7.0
60N	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	2.9	5.0	6.6	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL380 – No ozone converter
Figure 05–07–181

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.1
87N	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.2	1.2	1.2	1.2
86N	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3
85N	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.5	1.5	1.5	1.4
84N	1.1	1.1	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.5
83N	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.7	1.8	1.8	1.9	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7
82N	1.1	1.2	1.3	1.4	1.6	1.7	1.9	2.0	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.9	1.9	1.8
81N	1.2	1.3	1.4	1.5	1.7	1.9	2.1	2.2	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9
80N	1.3	1.4	1.5	1.6	1.8	2.0	2.2	2.4	2.5	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.1	2.0	2.0
79N	1.4	1.5	1.6	1.7	1.9	2.1	2.3	2.5	2.5	2.5	2.5	2.4	2.4	2.3	2.2	2.2	2.2	2.1	2.1
78N	1.4	1.5	1.7	1.8	1.9	2.1	2.3	2.4	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1
77N	1.5	1.6	1.8	1.9	2.0	2.1	2.3	2.4	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.2
76N	1.7	1.8	1.9	2.0	2.1	2.2	2.4	2.4	2.5	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.4	2.3
75N	1.8	1.9	2.0	2.1	2.1	2.4	2.4	2.5	2.8	2.8	2.8	2.9	2.9	3.0	3.0	2.9	2.9	2.9	2.8
74N	2.0	2.1	2.2	2.3	2.5	2.5	3.0	2.9	2.9	3.0	3.1	3.1	3.2	3.2	3.2	3.1	3.1	3.0	2.9
73N	2.2	2.4	2.5	2.4	2.6	3.1	3.2	3.1	3.2	3.2	3.8	3.4	3.4	3.4	3.4	3.3	3.2	3.1	3.0
72N	2.4	2.7	2.7	2.8	3.1	3.4	3.6	3.4	4.0	4.1	4.2	4.5	4.5	4.6	4.6	3.8	3.7	3.3	3.2
71N	2.5	2.8	2.8	3.0	3.3	3.7	4.7	4.5	5.6	5.4	4.8	4.7	4.7	4.7	4.8	4.9	3.9	3.8	3.3
70N	2.5	2.8	2.8	3.1	3.6	5.5	7.0	6.8	6.5	5.9	5.0	4.7	4.7	4.9	5.1	5.2	5.2	3.9	3.8
69N	2.5	2.8	2.9	3.3	4.9	7.0	7.0	7.0	7.0	7.0	5.9	4.8	5.0	5.0	5.2	5.4	5.5	5.5	4.0
68N	2.5	3.0	3.2	4.2	6.3	7.0	7.0	7.0	7.0	7.0	5.7	4.5	4.7	5.8	7.0	5.7	5.8	5.8	5.7
67N	2.7	3.2	3.6	5.5	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.5	4.7	5.9	7.0	7.0	6.2	6.2	6.0
66N	2.8	3.5	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.8	5.1	6.4	7.0	7.0	7.0	6.6	6.5
65N	3.3	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.8	7.0	7.0	7.0	7.0	7.0	6.0
64N	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	6.6	7.0	7.0	7.0	7.0	7.0	7.0
63N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL370 – No ozone converter
Figure 05–07–182

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 360																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
88N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
87N	1.3	1.3	1.3	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.5	1.5	1.5	1.5
86N	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.6
85N	1.3	1.4	1.4	1.5	1.6	1.7	1.7	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.7
84N	1.3	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	1.8
83N	1.3	1.5	1.6	1.7	1.9	2.0	2.2	2.3	2.4	2.4	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.2
82N	1.4	1.5	1.7	1.8	2.0	2.2	2.4	2.6	2.8	2.8	2.8	2.7	2.7	2.6	2.5	2.4	2.6	2.5	2.4
81N	1.5	1.6	1.8	2.0	2.2	2.5	2.8	3.0	3.2	3.2	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.6	2.6
80N	1.6	1.7	1.9	2.1	2.4	2.7	3.0	3.3	3.5	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.8	2.7
79N	1.7	1.9	2.0	2.3	2.5	2.8	3.1	3.4	3.6	3.6	3.5	3.4	3.3	3.2	3.1	3.1	3.0	2.9	2.8
78N	1.9	2.0	2.2	2.4	2.6	2.9	3.2	3.4	3.6	3.6	3.5	3.4	3.4	3.3	3.3	3.2	3.1	3.0	3.0
77N	2.0	2.2	2.4	2.6	2.7	2.9	3.2	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.3	3.3	3.2	3.1
76N	2.2	2.4	2.6	2.8	2.9	3.0	3.4	3.5	3.5	3.8	3.9	4.0	4.1	4.2	4.3	4.3	4.2	3.3	3.2
75N	2.5	2.8	2.9	3.0	3.1	3.6	3.6	3.7	4.2	4.1	4.3	4.4	4.5	4.6	4.6	4.6	4.5	4.5	4.3
74N	2.8	3.2	3.4	3.4	3.9	3.9	4.9	4.6	4.7	4.6	4.8	5.0	5.1	5.1	5.1	5.0	4.9	4.7	4.6
73N	3.4	3.8	4.0	3.8	4.3	5.5	5.7	5.3	5.4	5.3	6.9	5.7	5.7	5.7	5.6	5.5	5.3	5.1	4.9
72N	3.8	4.6	4.6	4.8	5.8	6.4	6.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	5.5	5.2
71N	4.1	4.9	5.0	5.5	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.5
70N	4.2	4.9	5.1	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	4.2	4.9	5.2	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	4.1	5.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	4.7	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL360 – No ozone converter
Figure 05–07–183

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 350																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
89N	1.7	1.7	1.7	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
88N	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
87N	1.7	1.8	1.8	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.0	2.0	2.0	2.0
86N	1.7	1.9	2.0	2.1	2.1	2.2	2.3	2.4	2.4	2.5	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.3	2.3
85N	1.8	1.9	2.0	2.1	2.3	2.4	2.5	2.6	2.7	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.5
84N	1.8	2.0	2.1	2.3	2.4	2.6	2.8	3.0	3.1	3.2	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.1	2.7
83N	1.9	2.0	2.2	2.4	2.7	3.0	3.2	3.4	3.6	3.7	3.8	3.8	3.7	3.7	3.6	3.5	3.4	3.4	3.3
82N	2.0	2.1	2.4	2.6	3.0	3.4	3.7	4.1	4.4	4.5	4.5	4.4	4.2	4.1	4.0	3.8	4.1	4.0	3.9
81N	2.1	2.3	2.6	2.9	3.3	3.8	4.4	4.9	5.2	5.3	5.1	4.9	5.0	4.9	4.8	4.6	4.5	4.4	4.2
80N	2.2	2.5	2.8	3.2	3.6	4.2	4.9	5.5	5.9	5.9	5.8	5.6	5.4	5.2	5.1	5.0	4.8	4.7	4.5
79N	2.4	2.7	3.0	3.4	3.9	4.5	5.2	5.8	6.2	6.2	6.0	5.9	5.7	5.6	5.5	5.3	5.2	5.0	4.9
78N	2.6	2.9	3.2	3.6	4.1	4.6	5.2	5.8	6.1	6.1	6.1	6.0	6.0	6.0	5.9	5.9	5.7	5.5	5.3
77N	2.9	3.2	3.5	3.9	4.3	4.7	5.3	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.6	6.4	6.2	6.0	5.7
76N	3.2	3.6	3.9	4.3	4.6	5.0	6.2	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.2
75N	3.6	4.1	4.5	4.8	5.0	6.5	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	4.1	4.9	5.3	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	5.2	5.9	6.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL350 – No ozone converter
Figure 05–07–184

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 340																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
89N	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9
88N	2.7	2.7	2.8	2.8	2.8	2.9	2.9	2.9	3.0	3.0	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.0	3.0
87N	2.8	2.8	2.9	3.3	3.4	3.5	3.6	3.7	3.8	3.9	4.0	4.0	4.1	4.2	4.2	3.3	3.3	3.3	3.3
86N	2.7	3.1	3.2	3.4	3.6	3.7	3.9	4.1	4.2	4.4	4.5	4.6	4.7	4.7	4.8	4.8	4.8	4.4	4.4
85N	2.9	3.1	3.3	3.6	3.8	4.1	4.4	4.7	5.0	5.1	5.3	5.5	5.5	5.5	5.5	5.5	5.4	5.3	4.9
84N	2.9	3.2	3.5	3.9	4.2	4.7	5.1	5.6	6.0	6.4	6.6	6.7	6.7	6.6	6.5	6.4	6.3	6.1	5.4
83N	3.0	3.4	3.7	4.2	4.8	5.5	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7
82N	3.2	3.6	4.1	4.8	5.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	3.4	3.9	4.5	5.4	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	3.7	4.3	5.1	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	4.1	4.7	5.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	4.6	5.3	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	5.2	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL340 – No ozone converter
Figure 05–07–185

Europe - Maximum Flight duration in hour, MARCH WOUDC FL 330																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3
89N	5.3	5.3	5.4	5.4	5.5	5.6	5.6	5.6	5.7	5.7	5.8	5.8	5.9	5.9	5.9	5.9	5.9	6.0	6.0
88N	5.2	5.3	5.5	5.6	5.7	5.9	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.7	6.7	6.7	6.7	6.7
87N	5.5	5.7	6.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	5.3	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	5.6	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	5.7	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – March – FL330 – No ozone converter
Figure 05–07–186

O. Europe – April

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 410																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3
61N	0.0	0.0	0.2	0.5	0.1	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4
60N	0.0	0.3	0.4	0.6	0.2	0.0	0.0	0.3	1.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6
59N	0.0	1.1	1.4	1.2	0.4	0.0	0.0	0.7	1.6	1.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.7
58N	0.5	1.2	1.6	1.4	1.0	0.2	0.0	1.5	2.5	2.0	0.2	0.0	0.0	0.3	0.6	0.2	0.6	0.8	0.9
57N	1.1	2.0	1.7	1.5	1.3	0.9	1.3	3.3	4.7	3.5	1.6	0.6	0.4	0.7	0.8	1.0	0.8	1.0	1.1
56N	1.3	2.1	1.9	2.1	1.9	1.9	2.9	5.1	6.4	5.5	3.8	2.0	1.1	1.1	1.1	1.6	1.7	1.3	1.4
55N	1.4	2.3	2.6	2.0	1.8	3.1	4.6	7.0	7.0	7.0	7.0	4.1	2.6	2.1	1.4	2.7	2.1	2.4	1.7
54N	2.3	2.4	2.7	1.9	1.4	3.5	7.0	7.0	7.0	7.0	7.0	7.0	3.6	2.8	2.5	3.2	3.7	2.8	3.0
53N	2.4	2.6	2.8	1.8	1.0	3.6	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.4	3.5	3.8	4.3	3.4	3.6
52N	3.9	3.9	3.0	1.8	0.8	3.9	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.0	4.1	4.4	5.1	4.0	4.3
51N	4.4	4.4	3.2	2.0	1.0	4.5	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.6	4.8	5.3	6.1	7.0	5.1
50N	4.9	4.9	4.7	2.4	1.7	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	6.1	6.9	7.0	7.0	6.3
49N	5.5	5.6	5.7	3.8	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	7.0	7.0	7.0	7.0	7.0
48N	6.3	6.6	7.0	5.3	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL410 – No ozone converter
Figure 05–07–187

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
66N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
65N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
63N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
62N	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4
61N	0.0	0.0	0.4	0.7	0.2	0.0	0.0	0.0	0.9	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.6
60N	0.0	0.4	0.6	0.9	0.4	0.0	0.0	0.4	1.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.6	0.8
59N	0.0	1.5	2.0	1.6	0.6	0.0	0.0	1.0	2.3	1.4	0.0	0.0	0.0	0.1	0.0	0.2	0.6	0.8	1.0
58N	0.8	1.7	2.2	1.9	1.4	0.3	0.1	2.1	3.6	2.8	0.4	0.0	0.0	0.4	0.8	0.4	0.9	1.1	1.3
57N	1.6	2.7	2.4	2.1	1.8	1.2	1.8	4.9	7.0	5.1	2.2	0.8	0.6	0.9	1.2	1.3	1.2	1.4	1.6
56N	1.8	3.0	2.6	2.9	2.6	2.6	4.3	7.0	7.0	7.0	5.2	2.7	1.6	1.5	1.5	2.3	2.4	1.7	1.9
55N	1.9	3.2	3.7	2.8	2.5	4.5	7.0	7.0	7.0	7.0	7.0	5.5	3.5	3.0	2.0	3.8	3.0	3.4	2.3
54N	3.1	3.4	3.9	2.6	1.9	5.1	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.9	3.6	4.7	5.5	4.1	4.5
53N	3.3	3.7	4.1	2.4	1.3	5.4	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.9	5.0	5.6	6.7	5.0	5.4
52N	5.8	5.9	4.3	2.4	1.1	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	6.1	6.9	7.0	6.2	6.7
51N	6.6	6.6	4.7	2.7	1.3	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	3.2	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49N	7.0	7.0	7.0	5.6	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48N	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL400 – No ozone converter
Figure 05–07–188

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 390																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
89N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
88N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
87N	0.5	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
86N	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
85N	0.5	0.5	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
84N	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
83N	0.5	0.5	0.6	0.6	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8
82N	0.5	0.6	0.6	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8
81N	0.5	0.6	0.7	0.7	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9
80N	0.6	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
79N	0.6	0.7	0.8	0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
78N	0.7	0.8	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
77N	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0
76N	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1
75N	1.0	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3
74N	1.2	1.4	1.4	1.4	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.3	1.3	1.3
73N	1.4	1.6	1.7	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
72N	1.6	1.8	1.9	1.7	1.6	1.5	1.4	1.4	1.6	1.6	1.6	1.7	1.7	1.8	1.8	1.6	1.6	1.4	1.4
71N	1.7	2.0	2.0	1.9	1.7	1.6	1.7	1.7	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.7	1.6	1.4
70N	1.7	2.0	2.1	1.9	1.7	1.8	2.0	2.0	2.0	1.9	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.7	1.7
69N	1.6	1.9	2.0	1.9	1.9	2.1	2.1	2.4	2.3	2.1	1.9	1.8	1.8	1.8	1.9	2.0	2.0	2.0	1.7
68N	1.6	1.9	1.9	2.0	2.0	2.2	2.6	2.5	2.4	2.2	1.9	1.7	1.8	1.9	2.1	2.0	2.0	2.1	2.1
67N	1.5	1.8	2.0	2.0	2.3	2.7	2.7	2.6	2.5	2.2	1.9	1.7	1.8	2.0	2.2	2.3	2.1	2.1	2.1
66N	1.5	1.9	2.1	2.1	2.4	2.8	2.8	2.7	2.7	2.3	2.0	1.8	1.8	2.0	2.2	2.4	2.6	2.2	2.2
65N	1.7	2.1	2.1	2.6	2.9	2.8	2.8	2.8	2.8	2.4	2.0	1.8	1.9	2.1	2.3	2.5	2.6	2.7	2.2
64N	1.9	2.2	2.2	2.7	3.0	2.8	2.8	3.3	3.0	2.5	2.0	1.8	1.9	2.2	2.4	2.7	2.7	2.8	2.8
63N	2.0	2.3	2.8	3.3	3.0	2.7	2.8	3.3	3.4	2.6	1.9	1.7	1.9	2.4	2.6	2.9	3.0	2.9	2.9
62N	2.1	2.4	2.9	3.5	3.5	2.7	2.5	3.3	3.6	3.0	1.7	1.5	2.0	2.5	2.7	3.0	3.2	3.3	3.9
61N	2.3	3.1	3.8	4.3	3.6	2.6	2.3	3.3	4.6	3.5	1.7	1.4	2.0	2.6	2.9	3.2	3.3	3.9	4.2
60N	2.4	3.9	4.1	4.6	3.8	2.6	2.2	3.9	5.5	4.2	1.9	1.5	2.3	2.8	3.1	3.4	3.5	4.2	4.5
59N	3.0	5.5	6.4	5.9	4.2	3.0	2.5	4.8	7.0	5.4	2.5	1.9	2.7	3.5	3.4	3.6	4.2	4.5	4.8
58N	4.4	5.8	6.9	6.4	5.4	3.8	3.5	6.6	7.0	7.0	3.9	2.8	3.3	4.0	4.5	3.9	4.6	4.9	5.2
57N	5.6	7.0	7.0	7.0	6.3	5.1	6.1	7.0	7.0	7.0	6.8	4.5	4.3	4.7	5.0	5.3	5.0	5.4	5.7
56N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.5	5.6	6.8	7.0	5.9	6.3
55N	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL390 – No ozone converter
Figure 05–07–189

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 380																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89N	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88N	0.6	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
87N	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
86N	0.6	0.6	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
85N	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
84N	0.5	0.6	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9
83N	0.6	0.6	0.7	0.8	0.8	0.9	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
82N	0.6	0.7	0.7	0.8	0.9	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
81N	0.6	0.7	0.8	0.9	1.0	1.0	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
80N	0.7	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1
79N	0.8	0.9	0.9	1.0	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.3	1.2	1.2	1.2	1.1	1.1
78N	0.9	1.0	1.0	1.1	1.1	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2
77N	1.0	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
76N	1.1	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.4	1.3
75N	1.2	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
74N	1.4	1.6	1.6	1.6	1.5	1.4	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
73N	1.6	1.8	1.9	1.8	1.6	1.7	1.7	1.7	1.7	1.7	2.0	1.8	1.9	1.9	1.9	1.8	1.8	1.8	1.7
72N	1.8	2.1	2.1	1.9	1.9	1.8	1.8	1.8	2.1	2.1	2.1	2.3	2.3	2.4	2.4	2.1	2.1	1.8	1.8
71N	1.9	2.2	2.3	2.1	2.0	1.9	2.1	2.2	2.5	2.5	2.4	2.4	2.4	2.4	2.5	2.5	2.2	2.2	1.9
70N	1.9	2.2	2.3	2.2	2.1	2.3	2.6	2.7	2.7	2.6	2.5	2.4	2.4	2.5	2.6	2.6	2.7	2.2	2.2
69N	1.9	2.2	2.3	2.2	2.4	2.7	2.8	3.4	3.4	3.0	2.7	2.4	2.5	2.5	2.6	2.7	2.7	2.8	2.3
68N	1.8	2.2	2.2	2.4	2.5	2.9	3.6	3.6	3.6	3.1	2.6	2.3	2.4	2.7	3.0	2.8	2.8	2.9	2.9
67N	1.8	2.1	2.4	2.5	2.9	3.7	3.8	3.8	3.8	3.3	2.7	2.3	2.4	2.8	3.1	3.5	3.0	3.0	3.0
66N	1.8	2.3	2.5	2.7	3.2	3.9	4.0	4.1	4.1	3.4	2.8	2.4	2.5	2.8	3.2	3.6	3.9	3.1	3.1
65N	2.1	2.6	2.7	3.4	4.0	4.1	4.1	4.3	4.4	3.6	2.9	2.6	2.7	3.0	3.4	3.8	3.9	4.1	3.1
64N	2.4	2.7	2.8	3.7	4.3	4.1	4.1	5.2	4.8	3.9	3.0	2.7	2.8	3.2	3.6	4.3	4.1	4.3	4.4
63N	2.5	2.9	3.7	4.8	4.4	4.0	4.2	5.2	5.7	4.1	2.8	2.5	2.9	3.7	4.1	4.6	5.0	4.5	4.6
62N	2.6	3.1	4.1	5.3	5.6	3.9	3.6	5.2	6.5	5.1	2.7	2.2	3.1	4.0	4.4	5.0	5.3	5.7	7.0
61N	3.0	4.3	5.8	7.0	5.8	3.8	3.1	5.4	7.0	6.8	2.6	2.0	3.2	4.1	4.8	5.4	5.8	7.0	7.0
60N	3.2	5.9	6.4	7.0	6.2	3.8	3.0	7.0	7.0	7.0	3.0	2.2	3.8	4.6	5.4	5.9	6.2	7.0	7.0
59N	4.2	7.0	7.0	7.0	7.0	4.5	3.6	7.0	7.0	7.0	4.3	2.9	4.7	6.5	6.1	6.5	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	6.2	5.7	7.0	7.0	7.0	7.0	4.9	6.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL380 – No ozone converter
Figure 05–07–190

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
89N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6
88N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
87N	1.4	1.5	1.5	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7
86N	1.4	1.4	1.5	1.5	1.5	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
85N	1.4	1.4	1.5	1.5	1.6	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
84N	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8
83N	1.4	1.5	1.6	1.6	1.7	1.8	1.8	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9
82N	1.4	1.5	1.6	1.7	1.8	1.9	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0
81N	1.5	1.6	1.7	1.8	1.9	2.0	2.1	2.1	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0
80N	1.6	1.7	1.7	1.8	1.9	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.0
79N	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1
78N	1.7	1.9	1.9	2.0	2.1	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
77N	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.3
76N	2.0	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.6	2.7	2.7	2.7	2.7	2.4	2.4
75N	2.1	2.3	2.3	2.4	2.3	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8
74N	2.3	2.5	2.6	2.5	2.5	2.4	2.6	2.7	2.7	2.7	2.8	2.9	3.0	3.0	3.0	3.0	3.0	2.9	2.9
73N	2.5	2.7	2.8	2.7	2.6	2.8	2.8	2.9	2.9	3.0	3.4	3.2	3.2	3.2	3.2	3.2	3.1	3.0	3.0
72N	2.7	2.9	3.0	2.8	2.9	2.9	2.9	3.0	3.4	3.5	3.6	4.0	4.1	4.1	4.2	3.6	3.6	3.2	3.1
71N	2.8	3.1	3.1	3.0	3.0	3.0	3.4	3.6	4.2	4.2	4.2	4.3	4.3	4.3	4.4	4.4	3.8	3.7	3.2
70N	2.8	3.1	3.1	3.1	3.1	3.5	4.2	4.5	4.6	4.5	4.4	4.4	4.4	4.5	4.5	4.6	4.7	3.9	3.8
69N	2.8	3.0	3.1	3.1	3.5	4.3	4.5	5.9	6.0	5.5	4.9	4.5	4.6	4.5	4.7	4.8	4.9	4.9	3.9
68N	2.8	3.1	3.1	3.4	3.7	4.6	6.3	6.4	6.6	5.7	4.9	4.3	4.5	5.0	5.6	5.0	5.1	5.1	5.1
67N	2.8	3.1	3.4	3.7	4.5	6.3	6.9	7.0	7.0	6.0	4.9	4.3	4.5	5.1	5.8	6.6	5.3	5.4	5.3
66N	2.8	3.4	3.7	4.0	5.1	6.9	7.0	7.0	7.0	6.4	5.1	4.5	4.6	5.3	6.1	6.9	7.0	5.7	5.6
65N	3.2	3.8	4.0	5.3	7.0	7.0	7.0	7.0	7.0	6.9	5.3	4.7	4.9	5.5	6.5	7.0	7.0	7.0	5.5
64N	3.7	4.2	4.4	6.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	4.6	5.0	5.9	6.9	7.0	7.0	7.0	7.0
63N	3.9	4.5	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	4.2	5.0	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	4.3	3.5	5.2	7.0	7.0	7.0	7.0	7.0	7.0
61N	4.8	7.0	7.0	7.0	7.0	6.8	5.3	7.0	7.0	7.0	4.1	3.2	5.3	7.0	7.0	7.0	7.0	7.0	7.0
60N	5.3	7.0	7.0	7.0	7.0	6.8	4.9	7.0	7.0	7.0	4.8	3.4	6.6	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL370 – No ozone converter
Figure 05–07–191

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 360																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
89N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
88N	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0
87N	1.7	1.7	1.8	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
86N	1.7	1.7	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
85N	1.7	1.7	1.8	1.8	1.9	2.0	2.0	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
84N	1.6	1.7	1.8	1.9	2.0	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3
83N	1.7	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4
82N	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.6	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.4
81N	1.8	1.9	2.1	2.2	2.4	2.5	2.7	2.8	2.9	2.9	2.9	2.8	2.8	2.7	2.7	2.6	2.6	2.6	2.5
80N	1.9	2.0	2.2	2.3	2.5	2.7	2.9	3.0	3.1	3.1	3.0	3.0	3.0	2.9	2.9	2.7	2.7	2.6	2.6
79N	2.0	2.1	2.3	2.4	2.6	2.8	3.0	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	2.9	2.7	2.6
78N	2.1	2.3	2.4	2.6	2.7	2.8	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0
77N	2.3	2.4	2.5	2.7	2.8	2.9	3.0	3.1	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.1
76N	2.4	2.6	2.7	2.8	2.9	2.9	3.1	3.1	3.1	3.3	3.4	3.5	3.6	3.7	3.7	3.8	3.8	3.2	3.2
75N	2.6	2.8	2.9	3.0	3.0	3.0	3.2	3.2	3.5	3.5	3.6	3.7	3.9	3.9	4.0	4.0	4.0	3.9	3.9
74N	2.8	3.0	3.1	3.1	3.1	3.1	3.5	3.7	3.7	3.8	3.9	4.1	4.2	4.2	4.2	4.2	4.2	4.1	4.1
73N	3.0	3.3	3.4	3.3	3.3	3.7	3.7	3.9	4.0	4.2	4.9	4.5	4.6	4.6	4.6	4.5	4.4	4.3	4.2
72N	3.2	3.5	3.6	3.5	3.7	3.8	4.0	4.2	5.1	5.3	5.4	6.2	6.4	6.5	6.8	5.6	5.5	4.6	4.5
71N	3.4	3.6	3.7	3.7	3.9	4.0	4.9	5.4	6.9	6.9	6.6	6.6	6.6	6.9	7.0	7.0	5.9	5.8	4.7
70N	3.4	3.6	3.7	3.8	4.0	5.0	6.5	7.0	7.0	7.0	6.9	6.6	6.6	7.0	7.0	7.0	7.0	6.2	6.0
69N	3.4	3.6	3.7	3.9	4.8	6.5	7.0	7.0	7.0	7.0	7.0	6.7	6.9	7.0	7.0	7.0	7.0	7.0	6.5
68N	3.4	3.8	3.9	4.5	5.3	7.0	7.0	7.0	7.0	7.0	7.0	6.1	6.5	7.0	7.0	7.0	7.0	7.0	7.0
67N	3.4	3.9	4.5	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	6.5	7.0	7.0	7.0	7.0	7.0	7.0
66N	3.5	4.6	5.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	4.3	5.5	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64N	5.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL360 – No ozone converter
Figure 05–07–192

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 350																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
88N	2.3	2.3	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
87N	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8
86N	2.2	2.3	2.4	2.4	2.5	2.6	2.6	2.7	2.7	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9
85N	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.8	2.9	3.0	3.0	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.0
84N	2.2	2.3	2.4	2.6	2.7	2.8	2.9	3.1	3.1	3.2	3.2	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2
83N	2.2	2.4	2.5	2.7	2.9	3.0	3.2	3.3	3.4	3.5	3.6	3.5	3.5	3.5	3.4	3.4	3.4	3.3	3.3
82N	2.3	2.5	2.7	2.8	3.1	3.3	3.5	3.7	3.8	3.8	3.8	3.8	3.7	3.7	3.6	3.6	3.5	3.5	3.4
81N	2.4	2.6	2.8	3.0	3.3	3.5	3.8	4.0	4.1	4.2	4.1	4.0	3.9	3.8	3.8	3.7	3.6	3.6	3.5
80N	2.5	2.7	2.9	3.2	3.4	3.7	4.1	4.3	4.4	4.4	4.3	4.3	4.3	4.2	4.2	3.9	3.8	3.7	3.6
79N	2.7	2.9	3.1	3.4	3.6	3.9	4.2	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	3.8	3.7
78N	2.9	3.1	3.3	3.6	3.8	4.0	4.3	4.4	4.4	4.4	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.5
77N	3.1	3.3	3.6	3.7	3.9	4.1	4.4	4.4	4.4	4.5	4.6	4.6	4.7	4.8	4.9	4.9	4.9	4.8	4.7
76N	3.4	3.6	3.8	4.0	4.1	4.2	4.5	4.6	4.6	4.9	5.1	5.4	5.7	6.0	6.2	6.3	6.4	5.1	4.9
75N	3.7	4.0	4.2	4.2	4.3	4.4	4.7	4.8	5.4	5.5	5.7	6.1	6.4	6.7	7.0	7.0	7.0	7.0	6.8
74N	4.0	4.3	4.5	4.6	4.6	4.6	5.6	6.0	6.2	6.3	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	4.3	4.8	5.0	4.9	4.8	5.9	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	4.7	5.1	5.3	5.1	5.9	6.4	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	5.0	5.3	5.4	5.7	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	5.0	5.3	5.5	5.8	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69N	5.1	5.3	5.6	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68N	5.1	5.8	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67N	5.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66N	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL350 – No ozone converter
Figure 05–07–193

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 340																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
89N	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7
88N	3.3	3.3	3.4	3.4	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.9	3.9	3.9	3.9	3.9	3.9
87N	3.2	3.3	3.4	3.4	3.5	3.6	3.7	3.8	3.8	3.9	4.0	4.0	4.1	4.1	4.1	4.2	4.2	4.2	4.2
86N	3.1	3.2	3.4	3.5	3.6	3.7	3.9	4.0	4.1	4.2	4.3	4.3	4.4	4.4	4.4	4.4	4.5	4.5	4.5
85N	3.1	3.2	3.4	3.6	3.8	3.9	4.1	4.3	4.4	4.5	4.6	4.7	4.8	4.8	4.8	4.8	4.8	4.8	4.8
84N	3.0	3.3	3.5	3.7	4.0	4.3	4.5	4.7	4.9	5.0	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.1	5.1
83N	3.1	3.4	3.7	4.0	4.3	4.6	5.0	5.3	5.5	5.7	5.7	5.7	5.7	5.7	5.7	5.6	5.5	5.4	5.4
82N	3.2	3.6	3.9	4.3	4.7	5.2	5.6	6.0	6.2	6.4	6.4	6.3	6.3	6.2	6.1	6.0	5.9	5.8	5.7
81N	3.5	3.8	4.2	4.6	5.2	5.7	6.2	6.6	6.9	6.9	6.9	6.8	6.7	6.5	6.4	6.3	6.3	6.2	6.1
80N	3.7	4.1	4.5	5.0	5.6	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.5	6.3
79N	4.0	4.4	5.1	5.6	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
78N	4.5	5.1	5.6	6.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	5.2	5.7	6.3	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	5.9	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL340 – No ozone converter
Figure 05–07–194

Europe - Maximum Flight duration in hour, APRIL WOUDC FL 330																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89N	5.3	5.4	5.5	5.5	5.5	5.6	5.6	5.7	5.8	5.8	5.8	5.8	5.9	5.9	6.0	6.0	6.0	6.1	6.1
88N	5.1	5.2	5.3	5.4	5.5	5.6	5.8	5.9	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.7	6.7	6.8
87N	4.9	5.0	5.2	5.4	5.6	5.8	6.0	6.3	6.5	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	4.6	4.9	5.2	5.5	5.8	6.2	6.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	4.5	4.9	5.2	5.8	6.3	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	4.5	4.9	5.5	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	4.6	5.2	6.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	4.9	5.6	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	5.3	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – April – FL330 – No ozone converter
Figure 05–07–195

P. Europe – May

Europe - Maximum Flight duration in hour, MAY WOUDC FL 410																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4
66N	0.0	0.0	0.0	0.0	0.0	0.4	0.4	0.5	0.6	0.2	0.0	0.0	0.0	0.0	0.1	0.2	0.4	0.5	0.5
65N	0.0	0.1	0.1	0.0	0.5	0.3	0.3	0.5	0.8	0.5	0.0	0.0	0.0	0.0	0.4	0.8	0.6	0.7	0.7
64N	0.0	0.1	0.1	0.4	0.5	0.1	0.0	0.5	1.0	1.0	0.4	0.0	0.0	0.2	0.7	1.1	1.3	0.9	0.9
63N	0.1	0.2	0.2	0.9	0.4	0.0	0.0	0.4	1.3	1.5	1.2	0.6	0.5	0.7	1.1	1.4	1.7	1.8	2.9
62N	0.2	0.4	0.8	1.1	0.4	0.0	0.0	0.3	1.7	2.2	2.1	1.5	1.3	1.8	2.1	1.9	2.1	3.1	3.5
61N	0.4	0.9	1.1	1.3	0.4	0.0	0.0	0.4	2.7	4.0	3.5	3.2	2.8	2.7	2.9	3.1	4.2	4.7	4.1
60N	0.6	1.6	2.3	1.6	1.0	0.0	0.0	0.7	4.2	6.2	6.5	4.7	4.2	3.8	3.8	3.8	5.2	5.6	6.1
59N	1.5	3.3	3.8	3.1	1.4	0.0	0.0	1.7	5.5	7.0	7.0	7.0	5.9	5.1	4.8	4.6	6.3	6.9	7.0
58N	2.8	5.4	4.4	3.8	2.8	0.6	0.2	3.4	7.0	7.0	7.0	7.0	7.0	6.6	5.9	5.5	7.0	7.0	7.0
57N	4.0	6.0	5.6	5.2	3.9	2.1	2.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	5.0	6.7	6.7	5.9	5.2	5.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	6.5	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	6.8	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	4.6	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL410 – No ozone converter
Figure 05–07–196

Europe - Maximum Flight duration in hour, MAY WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
84N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
82N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
80N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
79N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
78N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
77N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
76N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
74N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
72N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71N	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70N	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
69N	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
67N	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.5
66N	0.0	0.0	0.1	0.0	0.0	0.6	0.5	0.7	0.8	0.3	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.7
65N	0.0	0.1	0.1	0.1	0.7	0.4	0.4	0.8	1.1	0.7	0.0	0.0	0.0	0.0	0.5	1.0	0.8	0.9	1.0
64N	0.1	0.2	0.2	0.6	0.6	0.1	0.0	0.7	1.4	1.3	0.5	0.0	0.0	0.3	0.9	1.4	1.8	1.2	1.2
63N	0.2	0.4	0.4	1.2	0.6	0.0	0.0	0.5	1.8	2.1	1.6	0.8	0.7	0.9	1.5	1.9	2.3	2.5	4.3
62N	0.3	0.5	1.1	1.4	0.6	0.0	0.0	0.4	2.3	3.2	2.9	2.0	1.7	2.4	2.9	2.6	2.9	4.6	5.2
61N	0.6	1.1	1.4	1.8	0.6	0.0	0.0	0.5	3.9	6.2	5.1	4.5	3.9	3.8	4.1	4.5	6.5	7.0	6.3
60N	0.7	2.0	3.3	2.2	1.3	0.0	0.0	0.9	6.6	7.0	7.0	7.0	6.4	5.7	5.7	5.7	7.0	7.0	7.0
59N	1.9	5.1	5.9	4.5	1.9	0.0	0.0	2.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	3.7	7.0	7.0	5.7	4.1	0.8	0.3	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	5.6	7.0	7.0	7.0	5.9	2.9	3.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52N	7.0	7.0	7.0	7.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL400 – No ozone converter
Figure 05–07–197

Europe - Maximum Flight duration in hour, MAY WOUDC FL 390																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2
87N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
86N	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
85N	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3
84N	1.0	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3
83N	1.0	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3
82N	1.1	1.1	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3
81N	1.1	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.4
80N	1.2	1.2	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4
79N	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.3	1.4	1.4	1.4	1.4
78N	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.1	1.1	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.4	1.5	1.5
77N	1.5	1.5	1.6	1.5	1.5	1.4	1.3	1.2	1.1	1.1	1.2	1.2	1.3	1.4	1.4	1.5	1.5	1.5	1.5
76N	1.7	1.7	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.2	1.3	1.4	1.5	1.5	1.5	1.5	1.6	1.6	1.6
75N	1.9	2.0	2.0	2.0	1.8	1.6	1.5	1.4	1.5	1.5	1.5	1.6	1.6	1.7	1.8	1.8	1.6	1.7	1.6
74N	2.1	2.3	2.4	2.3	2.0	1.8	1.7	1.7	1.6	1.6	1.7	1.7	1.8	1.8	1.9	1.9	2.0	2.0	1.7
73N	2.4	2.8	2.9	2.6	2.2	2.1	1.9	1.9	1.8	1.8	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.1	2.1
72N	2.7	3.3	3.3	2.9	2.7	2.3	2.1	2.1	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.2	2.2	2.2
71N	2.9	3.5	3.6	3.1	2.8	2.5	2.5	2.6	2.5	2.4	2.3	2.3	2.3	2.3	2.4	2.2	2.2	2.3	2.2
70N	2.9	3.5	3.6	3.3	2.9	2.9	2.7	2.9	2.8	2.6	2.4	2.3	2.2	2.4	2.5	2.6	2.7	2.3	2.3
69N	2.9	3.4	3.5	3.3	3.2	3.0	3.2	3.2	3.0	2.7	2.4	2.2	2.2	2.5	2.8	2.7	2.8	2.9	2.4
68N	2.8	3.1	3.4	3.2	3.2	3.1	3.4	3.4	3.2	2.9	2.4	2.1	2.1	2.5	2.9	3.2	3.5	3.0	3.0
67N	2.7	3.2	3.3	3.4	3.3	3.5	3.5	4.2	4.0	3.4	2.5	2.1	2.2	2.5	3.0	3.4	3.7	3.9	4.0
66N	2.6	3.2	3.5	3.4	3.3	4.1	4.1	4.3	4.4	3.7	2.8	2.2	2.3	2.8	3.5	3.7	4.0	4.2	4.3
65N	3.0	3.6	3.6	3.5	4.3	3.9	3.8	4.4	4.8	4.3	3.2	2.6	2.7	3.2	4.0	4.7	4.4	4.6	4.7
64N	3.5	3.7	3.7	4.3	4.2	3.5	3.4	4.3	5.3	5.1	4.0	3.3	3.3	3.8	4.6	5.3	5.9	5.0	5.0
63N	3.7	3.9	3.9	5.0	4.1	3.1	2.9	4.1	5.9	6.4	5.5	4.4	4.2	4.6	5.4	6.1	6.7	7.0	7.0
62N	3.9	4.1	5.1	5.4	4.1	2.7	2.3	3.8	6.9	7.0	7.0	6.2	5.7	6.9	7.0	7.0	7.0	7.0	7.0
61N	4.3	5.1	5.5	6.0	4.1	2.5	1.9	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	4.5	6.8	7.0	6.8	5.2	2.5	1.8	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	6.8	7.0	7.0	7.0	6.1	2.9	2.2	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	4.4	3.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL390 – No ozone converter
Figure 05–07–198

Europe - Maximum Flight duration in hour, MAY WOUDC FL 380																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
88N	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87N	1.2	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
86N	1.2	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4
85N	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
84N	1.1	1.2	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.5
83N	1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5
82N	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5
81N	1.2	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.4	1.5	1.5	1.5	1.6
80N	1.3	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.6	1.6
79N	1.4	1.4	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.6	1.7
78N	1.5	1.6	1.6	1.6	1.5	1.4	1.4	1.3	1.2	1.2	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.7
77N	1.6	1.7	1.8	1.7	1.7	1.5	1.4	1.4	1.3	1.3	1.4	1.4	1.5	1.6	1.6	1.7	1.7	1.8	1.8
76N	1.8	1.9	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.5	1.6	1.7	1.7	1.7	1.8	1.8	1.8	1.8
75N	2.1	2.2	2.3	2.2	2.0	1.9	1.7	1.6	1.7	1.7	1.7	1.8	1.9	2.0	2.1	2.1	1.9	1.9	1.9
74N	2.4	2.6	2.7	2.5	2.3	2.0	2.0	2.0	1.9	1.9	1.9	2.0	2.1	2.2	2.2	2.3	2.3	2.3	2.0
73N	2.7	3.1	3.2	2.9	2.5	2.4	2.2	2.2	2.1	2.1	2.2	2.2	2.3	2.3	2.4	2.4	2.4	2.5	2.5
72N	3.0	3.6	3.7	3.3	3.1	2.6	2.4	2.4	2.7	2.7	2.6	2.7	2.4	2.5	2.5	2.6	2.6	2.6	2.6
71N	3.2	3.9	4.0	3.5	3.3	3.0	3.0	3.1	3.0	2.9	2.8	2.7	2.7	2.8	3.0	2.7	2.7	2.7	2.7
70N	3.3	4.0	4.0	3.8	3.4	3.5	3.3	3.8	3.6	3.3	2.9	2.7	2.7	2.9	3.1	3.3	3.5	2.9	2.9
69N	3.2	3.8	4.0	3.8	3.8	3.7	4.3	4.2	3.9	3.4	2.9	2.6	2.6	3.0	3.5	3.5	3.7	3.8	3.0
68N	3.1	3.5	3.9	3.8	3.9	3.9	4.6	4.6	4.3	3.6	2.9	2.4	2.5	3.0	3.7	4.3	4.8	4.0	4.1
67N	3.0	3.8	3.9	4.1	4.0	4.8	4.8	6.3	5.9	4.6	3.1	2.4	2.6	3.1	3.9	4.7	5.3	5.7	6.0
66N	2.9	3.8	4.2	4.3	4.2	6.0	6.1	6.7	6.7	5.3	3.5	2.6	2.8	3.6	4.8	5.2	5.9	6.4	6.6
65N	3.5	4.4	4.4	4.5	6.3	5.7	5.7	6.9	7.0	6.6	4.3	3.2	3.3	4.2	5.7	7.0	6.7	7.0	7.0
64N	4.4	4.7	4.7	6.0	6.3	5.0	4.8	6.6	7.0	7.0	5.9	4.4	4.3	5.3	7.0	7.0	7.0	7.0	7.0
63N	4.7	5.0	5.1	7.0	6.2	4.2	3.9	6.3	7.0	7.0	7.0	6.7	6.2	7.0	7.0	7.0	7.0	7.0	7.0
62N	5.1	5.5	7.0	7.0	6.2	3.5	3.0	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	5.8	7.0	7.0	7.0	6.4	3.2	2.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	6.4	7.0	7.0	7.0	7.0	3.2	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	3.9	2.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL380 – No ozone converter
Figure 05–07–199

Europe - Maximum Flight duration in hour, MAY WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
89N	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
88N	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4
87N	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4
86N	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
85N	2.1	2.2	2.2	2.2	2.2	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5
84N	2.1	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5
83N	2.2	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.5	2.5	2.5	2.5	2.5	2.6
82N	2.2	2.2	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.4	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.6
81N	2.3	2.3	2.3	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.4	2.4	2.5	2.5	2.5	2.6	2.6	2.6
80N	2.4	2.4	2.5	2.5	2.4	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.5	2.5	2.6	2.6	2.7	2.7
79N	2.5	2.5	2.6	2.6	2.5	2.4	2.3	2.3	2.2	2.2	2.3	2.3	2.4	2.5	2.6	2.6	2.7	2.7	2.8
78N	2.6	2.7	2.7	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.3	2.4	2.5	2.6	2.6	2.7	2.8	2.8	2.8
77N	2.8	2.8	2.9	2.9	2.8	2.6	2.5	2.4	2.3	2.3	2.4	2.5	2.6	2.6	2.7	2.8	2.9	2.9	2.9
76N	3.0	3.1	3.2	3.1	3.0	2.8	2.6	2.5	2.5	2.5	2.6	2.7	2.9	2.8	2.8	2.9	3.0	3.0	3.0
75N	3.3	3.5	3.6	3.5	3.2	3.0	2.8	2.7	2.8	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.0	3.1	3.1
74N	3.7	4.0	4.1	3.9	3.6	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.7	3.2
73N	4.1	4.7	4.8	4.4	3.9	3.7	3.5	3.5	3.4	3.4	3.4	3.4	3.5	3.5	3.6	3.7	3.8	3.9	3.9
72N	4.5	5.3	5.4	4.8	4.7	4.0	3.7	3.8	4.2	4.1	4.0	3.9	3.6	3.7	3.8	3.9	4.0	4.1	4.1
71N	4.8	5.6	5.7	5.1	5.0	4.6	4.7	4.9	4.7	4.4	4.1	3.9	3.9	4.1	4.4	4.1	4.2	4.2	4.3
70N	4.8	5.6	5.8	5.6	5.2	5.4	5.2	6.0	5.5	4.8	4.2	3.8	3.7	4.1	4.5	5.0	5.4	4.5	4.5
69N	4.8	5.4	5.7	5.6	5.8	5.7	7.0	6.8	6.1	5.1	4.0	3.5	3.6	4.3	5.2	5.2	5.7	6.0	4.8
68N	4.6	5.2	5.7	5.7	6.0	6.0	7.0	7.0	6.8	5.3	4.0	3.3	3.4	4.2	5.4	6.6	7.0	6.6	6.8
67N	4.5	5.7	5.8	6.3	6.4	7.0	7.0	7.0	7.0	6.9	4.3	3.3	3.5	4.4	5.8	7.0	7.0	7.0	7.0
66N	4.4	5.9	6.6	6.8	6.8	7.0	7.0	7.0	7.0	7.0	4.8	3.6	3.8	5.1	7.0	7.0	7.0	7.0	7.0
65N	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.4	4.5	6.1	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	6.9	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	5.5	4.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	4.9	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	4.8	3.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	6.2	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL370 – No ozone converter
Figure 05–07–200

Europe - Maximum Flight duration in hour, MAY WOUDC FL 360																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
88N	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8
87N	2.6	2.6	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
86N	2.5	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9
85N	2.5	2.6	2.6	2.6	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9	3.0	3.0
84N	2.5	2.6	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	2.9	3.0	3.0	3.0	3.0
83N	2.5	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	2.9	3.0	3.0	3.1	3.1	3.1
82N	2.6	2.6	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.9	2.9	3.0	3.1	3.1	3.1	3.2
81N	2.7	2.7	2.8	2.9	2.9	2.8	2.8	2.8	2.7	2.7	2.8	2.8	2.9	3.0	3.0	3.1	3.2	3.2	3.2
80N	2.8	2.8	3.0	3.0	2.9	2.9	2.8	2.7	2.7	2.7	2.7	2.8	2.9	3.0	3.1	3.2	3.2	3.3	3.3
79N	2.9	3.0	3.1	3.1	3.0	2.9	2.8	2.7	2.6	2.6	2.7	2.8	2.9	3.0	3.2	3.2	3.3	3.4	3.4
78N	3.1	3.2	3.3	3.3	3.2	3.0	2.9	2.7	2.7	2.7	2.7	2.9	3.0	3.1	3.3	3.3	3.4	3.5	3.5
77N	3.4	3.5	3.6	3.6	3.4	3.2	3.0	2.9	2.8	2.8	2.9	3.0	3.1	3.3	3.4	3.5	3.6	3.6	3.7
76N	3.7	3.9	4.1	4.0	3.8	3.5	3.3	3.1	3.0	3.0	3.2	3.4	3.6	3.4	3.5	3.6	3.7	3.8	3.8
75N	4.2	4.5	4.8	4.6	4.2	3.8	3.6	3.4	3.5	3.5	3.6	3.8	3.9	4.1	4.3	4.5	3.9	3.9	3.9
74N	4.8	5.5	5.8	5.4	4.8	4.3	4.2	4.2	4.0	4.0	4.0	4.1	4.3	4.4	4.6	4.8	5.0	5.1	4.1
73N	5.7	7.0	7.0	6.4	5.4	5.1	4.6	4.7	4.5	4.5	4.5	4.5	4.6	4.7	5.0	5.1	5.3	5.5	5.6
72N	6.5	7.0	7.0	7.0	7.0	5.7	5.1	5.4	6.4	6.0	5.7	5.5	4.8	5.0	5.2	5.5	5.7	5.8	6.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.8	5.3	5.4	5.8	6.6	5.8	6.1	6.3	6.4
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.0	5.0	5.7	6.8	7.0	7.0	6.8	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.4	4.6	6.0	7.0	7.0	7.0	7.0	7.0
68N	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.1	4.3	6.0	7.0	7.0	7.0	7.0	7.0
67N	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.1	4.4	6.2	7.0	7.0	7.0	7.0	7.0
66N	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.9	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0
64N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60N	7.0	7.0	7.0	7.0	7.0	7.0	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL360 – No ozone converter
Figure 05–07–201

Europe - Maximum Flight duration in hour, MAY WOUDC FL 350																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3
89N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5
88N	3.2	3.2	3.3	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6
87N	3.2	3.2	3.2	3.3	3.3	3.4	3.4	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6	3.7	3.7	3.7
86N	3.2	3.2	3.2	3.3	3.4	3.4	3.5	3.5	3.5	3.6	3.6	3.6	3.7	3.7	3.7	3.7	3.7	3.8	3.8
85N	3.1	3.2	3.3	3.3	3.3	3.5	3.5	3.6	3.6	3.7	3.7	3.8	3.8	3.8	3.8	3.9	3.9	3.9	3.9
84N	3.1	3.2	3.3	3.3	3.4	3.5	3.6	3.7	3.7	3.7	3.8	3.8	3.8	3.9	3.9	3.9	4.0	4.0	4.1
83N	3.2	3.3	3.3	3.4	3.6	3.6	3.7	3.7	3.7	3.7	3.8	3.8	3.9	3.9	4.0	4.0	4.1	4.1	4.2
82N	3.3	3.3	3.4	3.6	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.8	3.9	3.9	4.0	4.1	4.2	4.3	4.3
81N	3.4	3.4	3.5	3.7	3.8	3.7	3.7	3.6	3.6	3.6	3.7	3.8	3.9	4.0	4.1	4.2	4.3	4.4	4.5
80N	3.5	3.6	3.8	3.9	3.9	3.8	3.7	3.6	3.5	3.5	3.6	3.7	3.9	4.0	4.2	4.3	4.5	4.6	4.6
79N	3.7	3.8	4.1	4.1	4.0	3.9	3.7	3.5	3.5	3.5	3.6	3.7	3.9	4.1	4.3	4.5	4.6	4.8	4.8
78N	4.0	4.1	4.4	4.4	4.3	4.1	3.8	3.6	3.5	3.5	3.7	3.8	4.1	4.3	4.5	4.7	4.9	5.0	5.1
77N	4.4	4.6	4.9	4.9	4.7	4.3	4.1	3.8	3.7	3.7	3.8	4.1	4.3	4.6	4.8	5.0	5.1	5.2	5.3
76N	4.9	5.3	5.7	5.6	5.2	4.8	4.4	4.2	4.0	4.0	4.5	4.9	5.3	4.9	5.1	5.3	5.5	5.6	5.7
75N	5.8	6.5	7.0	6.7	6.0	5.4	4.9	4.7	5.1	5.1	5.2	5.6	6.0	6.5	7.0	7.0	5.8	5.9	6.0
74N	7.0	7.0	7.0	7.0	7.0	6.2	6.2	6.3	6.1	6.0	6.2	6.5	6.9	7.0	7.0	7.0	7.0	7.0	6.5
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL350 – No ozone converter
Figure 05–07–202

Europe - Maximum Flight duration in hour, MAY WOUDC FL 340																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
89N	4.5	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.7	4.7	4.8	4.8	4.8	4.8	4.8	4.8
88N	4.4	4.4	4.5	4.5	4.5	4.5	4.7	4.7	4.7	4.8	4.8	4.8	4.8	4.9	4.9	4.9	4.9	4.9	4.9
87N	4.3	4.4	4.4	4.5	4.5	4.6	4.7	4.7	4.8	4.8	4.8	4.9	4.9	4.9	5.0	5.1	5.1	5.1	5.1
86N	4.3	4.3	4.4	4.5	4.6	4.7	4.7	4.8	4.8	4.9	4.9	4.9	5.0	5.1	5.1	5.1	5.2	5.3	5.3
85N	4.2	4.3	4.4	4.4	4.5	4.7	4.8	4.8	4.9	5.0	5.1	5.1	5.2	5.3	5.3	5.4	5.5	5.5	5.6
84N	4.2	4.4	4.4	4.5	4.6	4.8	4.9	4.9	4.9	5.0	5.1	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8
83N	4.3	4.5	4.5	4.6	4.8	4.8	4.8	4.8	4.8	4.9	5.0	5.0	5.1	5.3	5.5	5.6	5.8	5.9	6.0
82N	4.5	4.6	4.7	4.9	4.9	4.8	4.8	4.7	4.7	4.7	4.7	4.9	5.1	5.3	5.5	5.7	5.9	6.1	6.3
81N	4.7	4.8	4.8	5.1	5.0	4.8	4.7	4.5	4.4	4.4	4.5	4.7	5.0	5.3	5.5	5.9	6.1	6.4	6.6
80N	4.9	5.1	5.4	5.3	5.1	4.8	4.6	4.3	4.2	4.2	4.3	4.6	5.0	5.3	5.7	6.1	6.5	6.8	7.0
79N	5.4	5.6	5.8	5.8	5.5	5.0	4.6	4.2	4.1	4.1	4.3	4.6	5.1	5.6	6.0	6.5	6.9	7.0	7.0
78N	6.0	6.3	6.7	6.5	5.9	5.3	4.8	4.4	4.2	4.2	4.4	4.8	5.3	5.9	6.4	6.9	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	6.9	6.0	5.3	4.8	4.6	4.6	4.8	5.3	5.9	6.5	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.6	5.2	5.3	6.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL340 – No ozone converter
Figure 05–07–203

Europe - Maximum Flight duration in hour, MAY WOUDC FL 330																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
89N	6.7	6.7	6.8	6.8	6.8	6.8	6.9	6.9	6.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	6.6	6.6	6.7	6.7	6.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	6.4	6.5	6.6	6.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	6.3	6.4	6.6	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	6.2	6.4	6.6	6.6	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	6.2	6.5	6.6	6.8	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	6.4	6.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	6.6	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.2	6.2	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.9	6.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.2	6.2	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – May – FL330 – No ozone converter
Figure 05–07–204

Q. Europe – June

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 410																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
89N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
88N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
87N	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2	0.2
85N	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2
84N	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2
83N	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.2
82N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.2
81N	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.6
80N	0.5	0.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.6	0.7
79N	0.7	0.6	0.5	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.9
78N	1.0	1.0	1.1	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.9	0.8	1.0	1.1
77N	1.8	2.0	1.9	1.4	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	0.9	1.3	1.6	1.2	1.3
76N	2.8	3.0	2.9	2.3	1.5	0.7	0.1	0.0	0.0	0.0	0.0	0.2	0.6	1.0	1.4	1.7	2.0	2.2	1.6
75N	4.1	4.7	4.8	3.8	2.5	1.5	0.8	0.5	0.3	0.5	0.8	1.1	1.6	2.0	2.0	2.2	2.5	2.7	2.8
74N	6.2	7.0	7.0	6.0	3.9	2.5	1.6	1.6	1.6	1.5	1.8	2.1	2.5	2.9	3.2	3.5	3.0	3.2	3.2
73N	7.0	7.0	7.0	7.0	5.8	4.5	3.3	2.7	2.8	2.8	2.9	3.2	3.5	3.8	4.1	4.2	4.5	4.7	3.7
72N	7.0	7.0	7.0	7.0	7.0	6.2	4.6	3.9	4.1	4.0	4.1	4.2	4.4	4.5	4.8	5.0	5.2	5.4	5.6
71N	7.0	7.0	7.0	7.0	7.0	7.0	6.1	6.9	6.1	5.6	5.3	4.9	5.0	5.2	5.5	5.8	6.0	6.2	6.3
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.7	5.2	5.3	5.5	6.0	6.5	6.8	6.9	7.0
69N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.9	5.1	6.5	7.0	7.0	7.0	7.0	7.0
68N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.5	4.9	6.7	7.0	7.0	7.0	7.0	7.0
67N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	5.1	7.0	7.0	7.0	7.0	7.0	7.0
66N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.9	7.0	7.0	7.0	7.0	7.0	7.0
65N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL410 – No ozone converter
Figure 05–07–205

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
89N	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
88N	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
87N	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
86N	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2	0.2	0.2	0.2
85N	0.2	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.2	0.2
84N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.2	0.2
83N	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.2
82N	0.3	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.4	0.3
81N	0.4	0.3	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.4	0.5	0.6
80N	0.5	0.5	0.4	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.4	0.6	0.8
79N	0.8	0.7	0.6	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.4	0.6	0.8	1.0
78N	1.1	1.0	1.1	0.8	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.9	0.8	1.0	1.2
77N	1.8	1.9	1.8	1.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.5	1.0	1.3	1.7	1.3	1.4
76N	2.7	2.8	2.8	2.1	1.4	0.7	0.2	0.0	0.0	0.0	0.0	0.2	0.6	1.1	1.4	1.8	2.1	2.4	1.7
75N	3.8	4.1	4.2	3.4	2.3	1.5	0.8	0.6	0.4	0.6	0.8	1.2	1.7	2.2	2.1	2.4	2.7	2.9	3.1
74N	5.3	6.2	6.3	5.1	3.6	2.4	1.6	1.6	1.6	1.6	1.8	2.3	2.7	3.2	3.6	4.0	3.3	3.5	3.7
73N	7.0	7.0	7.0	7.0	5.2	4.3	3.3	2.7	2.9	3.0	3.2	3.6	4.0	4.3	4.7	5.0	5.3	5.6	4.2
72N	7.0	7.0	7.0	7.0	6.6	5.8	4.7	4.1	4.6	4.5	4.7	5.0	5.3	5.5	5.8	6.1	6.4	6.6	6.9
71N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	6.8	6.6	6.2	6.3	6.6	6.9	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL400 – No ozone converter
Figure 05–07–206

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 390																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
89N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.6	3.6	3.6	3.6	3.6
88N	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
87N	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.5
86N	3.6	3.6	3.6	3.5	3.5	3.5	3.4	3.4	3.4	3.3	3.3	3.3	3.3	3.5	3.6	3.6	3.6	3.6	3.7
85N	3.6	3.6	3.5	3.5	3.4	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.6	3.6
84N	3.6	3.5	3.5	3.4	3.3	3.2	3.2	3.2	3.1	3.2	3.2	3.2	3.2	3.3	3.4	3.4	3.5	3.6	3.6
83N	3.6	3.6	3.5	3.4	3.2	3.1	3.0	3.0	3.0	3.0	3.0	3.1	3.2	3.3	3.4	3.4	3.5	3.6	3.6
82N	3.7	3.6	3.5	3.5	3.2	3.0	2.9	2.8	2.7	2.7	2.7	2.9	3.0	3.2	3.4	3.6	3.7	3.9	3.7
81N	3.9	3.7	3.6	3.4	3.2	2.9	2.7	2.5	2.4	2.4	2.5	2.7	2.9	3.1	3.3	3.6	3.8	4.0	4.1
80N	4.0	3.9	3.8	3.5	3.2	2.8	2.6	2.4	2.2	2.3	2.4	2.6	2.8	3.1	3.4	3.7	3.9	4.1	4.3
79N	4.3	4.2	4.0	3.7	3.4	3.0	2.6	2.3	2.2	2.2	2.3	2.6	3.0	3.3	3.5	3.8	4.1	4.3	4.6
78N	4.6	4.6	4.7	4.3	3.7	3.2	2.7	2.4	2.2	2.3	2.4	2.8	3.1	3.6	4.1	4.5	4.4	4.6	4.8
77N	5.5	5.7	5.6	4.9	4.2	3.6	3.0	2.7	2.5	2.5	2.7	3.1	3.5	4.0	4.5	5.0	5.4	5.0	5.1
76N	6.6	6.7	6.7	5.8	5.0	4.2	3.5	3.2	3.0	3.0	3.2	3.6	4.1	4.6	5.1	5.6	6.1	6.5	5.5
75N	7.0	7.0	7.0	7.0	6.1	5.0	4.3	4.0	3.8	4.0	4.3	4.8	5.5	6.1	6.0	6.4	6.8	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	6.2	5.2	5.2	5.3	5.3	5.6	6.2	6.9	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL390 – No ozone converter
Figure 05–07–207

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 380																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
89N	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
88N	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.1	4.1	4.1	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2
87N	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.2	4.2
86N	4.2	4.2	4.1	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.3	4.3	4.4	4.5	4.5	4.5
85N	4.2	4.1	4.1	4.1	4.0	3.9	3.9	3.9	4.1	4.1	4.1	4.1	4.2	4.2	4.3	4.4	4.4	4.5	4.5
84N	4.2	4.1	4.1	4.0	3.9	3.8	3.9	3.9	3.9	3.8	3.9	3.9	4.0	4.1	4.2	4.3	4.4	4.5	4.6
83N	4.2	4.1	4.1	3.9	3.8	3.8	3.6	3.7	3.7	3.7	3.7	3.8	4.0	4.1	4.4	4.2	4.4	4.5	4.6
82N	4.2	4.2	4.2	4.1	3.9	3.7	3.5	3.3	3.3	3.3	3.3	3.5	3.7	4.0	4.3	4.5	4.8	5.0	4.8
81N	4.5	4.4	4.3	4.1	3.8	3.5	3.2	3.0	2.9	2.9	3.1	3.3	3.6	3.9	4.3	4.6	4.9	5.3	5.5
80N	4.7	4.7	4.6	4.3	3.8	3.4	3.1	2.9	2.7	2.7	2.9	3.2	3.5	3.9	4.3	4.8	5.1	5.5	5.8
79N	5.1	5.0	4.9	4.5	4.2	3.6	3.1	2.8	2.6	2.6	2.8	3.2	3.7	4.3	4.5	5.0	5.5	5.9	6.2
78N	5.6	5.6	5.8	5.3	4.6	3.9	3.3	2.9	2.7	2.7	3.0	3.4	4.0	4.6	5.5	6.2	6.0	6.5	6.8
77N	6.6	7.0	7.0	6.2	5.3	4.4	3.7	3.3	3.1	3.1	3.4	3.8	4.5	5.4	6.2	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	6.3	5.3	4.4	4.1	3.8	3.8	4.1	4.7	5.5	6.5	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	6.6	5.5	5.3	4.9	5.5	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL380 – No ozone converter
Figure 05–07–208

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
88N	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
87N	5.5	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.5	5.5	5.5	5.6	5.6
86N	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.4	5.3	5.3	5.3	5.3	5.4	5.9	5.9	6.0	6.0	6.1	6.1
85N	5.4	5.4	5.4	5.3	5.3	5.2	5.2	5.2	5.5	5.5	5.5	5.6	5.6	5.7	5.8	5.9	6.0	6.1	6.2
84N	5.4	5.4	5.3	5.3	5.2	5.1	5.2	5.2	5.2	5.2	5.2	5.2	5.4	5.5	5.6	5.8	6.0	6.1	6.2
83N	5.5	5.4	5.3	5.2	5.1	5.0	4.9	4.9	5.0	5.0	5.0	5.2	5.4	5.6	6.0	5.7	6.0	6.1	6.3
82N	5.5	5.6	5.6	5.6	5.2	4.9	4.8	4.5	4.5	4.5	4.6	4.8	5.1	5.4	5.8	6.2	6.6	7.0	6.5
81N	5.9	5.9	5.7	5.6	5.2	4.8	4.4	4.1	4.0	4.0	4.2	4.5	4.8	5.2	5.8	6.3	6.8	7.0	7.0
80N	6.4	6.4	6.3	5.8	5.2	4.7	4.2	3.9	3.7	3.8	4.0	4.4	4.7	5.2	5.9	6.5	7.0	7.0	7.0
79N	7.0	7.0	6.9	6.2	5.8	4.9	4.3	3.8	3.6	3.6	3.9	4.3	5.0	5.8	6.2	6.9	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	6.4	5.3	4.5	4.0	3.7	3.8	4.0	4.6	5.4	6.4	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	6.2	5.1	4.5	4.2	4.2	4.6	5.3	6.2	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.6	5.1	5.1	5.6	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL370 – No ozone converter
Figure 05–07–209

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 360																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1
89N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
88N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2
87N	6.0	6.0	6.0	6.0	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.2	6.2	6.2	6.2	6.3
86N	5.9	6.0	6.0	6.0	6.0	6.0	5.9	5.9	5.9	5.9	5.9	5.9	6.0	6.6	6.6	6.7	6.8	7.0	7.0
85N	5.9	5.9	5.9	5.9	5.9	5.8	5.8	5.7	6.2	6.2	6.2	6.2	6.3	6.4	6.5	6.7	6.8	7.0	7.0
84N	5.9	6.0	5.9	5.9	5.8	5.7	5.8	5.8	5.8	5.8	5.8	5.9	6.1	6.3	6.4	6.6	6.9	7.0	7.0
83N	6.0	6.0	6.0	5.9	5.7	5.7	5.5	5.6	5.6	5.6	5.7	5.9	6.2	6.5	7.0	6.5	6.9	7.0	7.0
82N	6.1	6.1	6.3	6.3	6.0	5.6	5.3	5.1	4.9	5.0	5.1	5.4	5.8	6.3	6.7	7.0	7.0	7.0	7.0
81N	6.8	6.7	6.6	6.5	5.9	5.4	5.0	4.6	4.4	4.4	4.6	5.0	5.5	6.1	6.7	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	6.9	6.1	5.3	4.7	4.3	4.0	4.0	4.3	4.9	5.3	6.1	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	5.7	4.7	4.1	3.9	3.9	4.2	4.8	5.8	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	6.4	5.1	4.4	4.0	4.0	4.5	5.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.1	4.6	4.7	5.2	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.0	6.1	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL360 – No ozone converter
Figure 05–07–210

Europe - Maximum Flight duration in hour, JUNE WOUDC FL 350																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.1	5.8	5.8	6.1	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.6	5.1	5.2	5.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.3	4.8	4.9	5.5	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.1	5.2	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – June – FL350 – No ozone converter
Figure 05–07–211

R. Europe – July–October

In Europe, for the months of July, August, September, and October, there is no maximum cruise time at altitude limitation.

S. Europe – November

Europe - Maximum Flight duration in hour, NOVEMBER WOUDC FL 410																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6
89N	3.4	3.5	3.5	3.6	3.7	3.8	3.8	3.9	4.0	4.1	4.1	4.2	4.3	4.3	4.4	4.4	4.5	4.5	4.5
88N	3.2	3.3	3.5	3.7	3.9	4.1	4.3	4.5	4.7	4.8	5.0	5.1	5.3	5.4	5.5	5.6	5.7	5.7	5.7
87N	3.0	3.3	3.5	3.9	4.2	4.6	4.9	5.3	5.6	6.0	6.4	6.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0
86N	2.9	3.3	3.7	4.2	4.8	5.4	6.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	2.8	3.3	4.0	4.8	5.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	2.8	3.6	4.6	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	3.1	4.1	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	3.6	5.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	4.5	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – November – FL410 – No ozone converter
Figure 05–07–212

Europe - Maximum Flight duration in hour, NOVEMBER WOUDC FL 400																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
89N	6.3	6.5	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	5.9	6.2	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	5.4	6.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	5.1	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	4.9	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	5.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – November – FL400 – No ozone converter
Figure 05–07–213

T. Europe – December

Europe - Maximum Flight duration in hour, DECEMBER WOUDC FL 410																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2
84N	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.5	0.7	0.8	0.9	1.0	0.9	0.9	0.8	0.8	0.7	0.6	0.5
83N	0.0	0.0	0.0	0.0	0.2	0.5	0.9	1.2	1.5	1.7	1.7	1.7	1.6	1.5	1.3	1.2	1.0	0.9	0.8
82N	0.0	0.0	0.0	0.2	0.6	1.1	1.7	2.3	2.7	2.8	2.8	2.6	2.3	2.1	1.8	1.6	1.7	1.5	1.3
81N	0.0	0.0	0.0	0.5	1.1	1.8	2.7	3.6	4.1	4.2	3.9	3.5	3.3	2.9	2.6	2.3	2.1	1.9	1.7
80N	0.0	0.0	0.3	0.8	1.5	2.5	3.6	4.8	5.5	5.5	5.1	4.5	3.9	3.5	3.1	2.8	2.5	2.2	2.0
79N	0.0	0.2	0.6	1.1	1.9	2.9	4.1	5.3	6.1	6.0	5.5	4.9	4.4	3.9	3.5	3.2	2.9	2.6	2.3
78N	0.1	0.5	1.0	1.5	2.2	3.0	4.1	5.2	5.9	5.9	5.5	5.0	4.7	4.3	4.0	3.6	3.3	3.0	2.7
77N	0.5	1.0	1.4	1.9	2.5	3.2	4.0	5.1	5.4	5.6	5.4	5.2	5.0	4.8	4.5	4.2	3.8	3.5	3.1
76N	1.0	1.6	2.1	2.6	3.0	3.4	4.5	5.0	5.3	6.4	6.7	7.0	7.0	7.0	7.0	7.0	6.7	4.0	3.5
75N	1.8	2.7	3.3	3.6	3.7	4.6	5.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
74N	2.9	4.5	5.4	5.1	5.7	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – December – FL410 – No ozone converter
Figure 05–07–214

Europe - Maximum Flight duration in hour, DECEMBER WOUDC FL 400																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
89N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
87N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.1	0.0
85N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.3	0.4	0.6	0.7	0.7	0.7	0.7	0.6	0.5	0.5	0.4
84N	0.0	0.0	0.0	0.0	0.0	0.2	0.5	0.9	1.2	1.4	1.5	1.6	1.6	1.5	1.4	1.3	1.1	1.0	0.9
83N	0.0	0.0	0.0	0.0	0.3	0.9	1.5	2.2	2.7	3.0	3.1	3.1	2.8	2.6	2.3	2.0	1.7	1.5	1.3
82N	0.0	0.0	0.0	0.3	1.0	2.0	3.1	4.4	5.5	6.0	5.8	5.2	4.5	3.9	3.3	2.8	2.9	2.5	2.2
81N	0.0	0.0	0.1	0.8	1.8	3.4	5.6	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.0	4.3	3.7	3.2	2.8
80N	0.0	0.0	0.5	1.4	2.7	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.4	4.6	4.0	3.5
79N	0.0	0.3	1.0	1.9	3.4	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.6	4.9	4.2
78N	0.3	0.8	1.6	2.6	4.1	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.9	5.0
77N	0.8	1.6	2.4	3.4	4.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
76N	1.7	2.7	3.8	4.8	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	3.0	4.9	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74N	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – December – FL400 – No ozone converter
Figure 05–07–215

Europe - Maximum Flight duration in hour, DECEMBER WOUDC FL 390																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
89N	1.8	1.8	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
88N	1.8	1.8	1.9	1.9	2.0	2.1	2.1	2.2	2.2	2.3	2.3	2.3	2.4	2.4	2.4	2.4	2.4	2.5	2.5
87N	1.8	1.8	1.9	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.8	2.9	2.9	2.9	2.9	2.9	2.9
86N	1.7	1.9	2.0	2.2	2.3	2.5	2.7	2.8	3.0	3.2	3.3	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.4
85N	1.7	1.9	2.1	2.4	2.6	2.9	3.2	3.6	3.8	4.1	4.3	4.4	4.5	4.5	4.4	4.4	4.2	4.2	4.0
84N	1.8	2.0	2.3	2.7	3.1	3.6	4.2	4.8	5.4	5.8	6.1	6.2	6.2	6.0	5.8	5.5	5.3	5.0	4.8
83N	1.9	2.2	2.6	3.1	3.9	4.8	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.1	5.6
82N	2.1	2.5	3.0	3.8	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	2.3	2.8	3.6	4.7	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	2.7	3.3	4.2	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	3.1	3.9	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	3.8	4.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	4.8	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – December – FL390 – No ozone converter
Figure 05–07–216

Europe - Maximum Flight duration in hour, DECEMBER WOUDC FL 380																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
89N	2.9	2.9	2.9	3.0	3.0	3.1	3.1	3.2	3.2	3.2	3.3	3.3	3.3	3.4	3.4	3.4	3.4	3.4	3.4
88N	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.8	3.8	3.9	4.0	4.0	4.1	4.1	4.1	4.2	4.2
87N	2.8	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.3	4.6	4.7	4.9	5.0	5.1	5.2	5.2	5.2	5.2	5.2
86N	2.7	3.0	3.2	3.6	3.9	4.3	4.7	5.2	5.6	6.0	6.3	6.6	6.9	7.0	7.0	7.0	7.0	6.8	6.6
85N	2.8	3.1	3.5	4.0	4.7	5.4	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	2.8	3.3	3.9	4.8	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	3.0	3.7	4.6	6.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	3.4	4.2	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	3.9	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	4.7	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79N	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – December – FL380 – No ozone converter
Figure 05–07–217

Europe - Maximum Flight duration in hour, DECEMBER WOUDC FL 370																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
89N	5.8	5.9	6.1	6.2	6.3	6.4	6.6	6.7	6.8	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88N	5.7	5.9	6.2	6.5	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87N	5.6	5.9	6.4	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86N	5.5	6.1	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85N	5.5	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84N	5.6	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83N	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
30N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Europe – December – FL370 – No ozone converter
Figure 05–07–218

U. Asia – January

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	--	–	–	--	–	--	–	--	--	–	--	–
89°N	--	–	–	--	–	--	–	--	--	–	--	–
88°N	--	–	–	--	–	--	–	--	--	–	--	–
87°N	--	–	–	--	–	--	–	--	--	–	--	–
86°N	--	–	–	--	–	--	–	--	--	–	--	–
85°N	--	–	–	--	–	--	–	--	--	–	--	–
84°N	--	–	–	--	–	--	–	--	--	–	--	–
83°N	--	–	–	--	–	--	–	--	--	–	--	–
82°N	--	–	–	--	–	--	–	--	--	–	--	–
81°N	--	–	–	--	–	--	–	--	--	–	--	–
80°N	--	–	–	--	–	--	–	--	--	–	--	–
79°N	--	–	–	--	–	--	–	--	--	–	--	–
78°N	--	–	–	--	–	--	–	--	--	–	--	–
77°N	--	–	–	--	–	--	–	--	--	–	--	–
76°N	0.3	–	–	--	–	--	–	--	--	–	--	–
75°N	1.0	0.3	–	--	–	--	–	--	--	–	--	–
74°N	1.2	1.1	0.3	--	–	--	–	--	--	–	--	–
73°N	1.4	1.3	1.1	--	–	--	–	--	--	–	--	–
72°N	1.6	1.4	1.2	1.1	–	--	–	--	--	–	--	–
71°N	1.8	1.6	1.4	1.2	1.0	--	–	--	--	–	--	–
70°N	3.1	2.8	1.5	1.3	1.1	--	–	--	--	–	--	–
69°N	3.4	3.1	2.8	1.5	1.2	1.1	–	--	--	–	--	–
68°N	6.7	3.4	3.0	1.6	1.4	1.2	0.6	--	--	–	--	–
67°N	7.0	3.7	3.3	2.9	1.5	1.2	0.7	--	--	–	--	–
66°N	7.0	6.5	3.5	3.1	2.8	1.3	0.7	--	--	–	--	–
65°N	7.0	7.0	6.6	3.3	3.0	1.4	0.8	0.6	0.5	–	--	–
64°N	7.0	7.0	7.0	6.5	3.0	1.6	0.7	0.6	0.5	–	--	0.7
63°N	7.0	7.0	7.0	7.0	6.2	1.8	1.5	0.7	1.1	2.6	1.1	1.0
62°N	7.0	7.0	7.0	7.0	7.0	2.1	1.6	1.5	6.9	7.0	7.0	2.9
61°N	7.0	7.0	7.0	7.0	7.0	2.3	1.8	3.3	7.0	7.0	7.0	3.7
60°N	7.0	7.0	7.0	7.0	7.0	6.4	2.2	3.8	7.0	7.0	7.0	4.8
59°N	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	6.2
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL410 – No ozone converter – page 1
Figure 05–07–219

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	–	–	--	--	–	--	–	–	--	--	–
89°N	–	--	–	–	--	--	–	--	–	–	--	--	–
88°N	–	--	–	–	--	--	–	--	–	–	--	--	–
87°N	–	--	–	–	--	--	–	--	–	–	--	--	–
86°N	–	--	–	–	--	--	–	--	–	–	--	--	–
85°N	–	--	–	–	--	--	–	--	–	–	--	--	–
84°N	–	--	–	–	--	--	–	--	–	–	--	--	–
83°N	–	--	–	–	--	--	–	--	–	–	--	--	–
82°N	–	--	–	–	--	--	–	--	–	–	--	--	–
81°N	–	--	–	–	--	--	–	--	–	–	--	--	–
80°N	–	--	–	–	--	--	–	--	–	–	--	--	–
79°N	–	--	–	–	--	--	–	--	–	–	--	--	–
78°N	–	--	–	–	--	--	–	--	–	–	--	--	–
77°N	–	--	–	–	--	--	–	--	–	–	--	--	–
76°N	–	--	–	–	--	--	–	--	–	–	--	--	–
75°N	–	--	–	–	--	--	–	--	–	–	--	--	–
74°N	–	--	–	–	--	--	–	--	–	–	--	--	–
73°N	–	--	–	–	--	--	–	--	–	–	--	--	–
72°N	–	--	–	–	--	--	–	--	–	–	--	--	–
71°N	–	--	–	–	--	--	–	--	–	–	--	--	–
70°N	–	--	–	–	--	--	–	--	–	–	--	--	–
69°N	–	--	–	–	--	--	–	--	–	–	--	--	–
68°N	–	--	–	–	--	--	–	--	–	–	--	--	–
67°N	–	--	–	–	--	--	–	--	–	–	--	--	–
66°N	–	--	–	–	--	--	–	--	–	–	--	--	–
65°N	–	--	–	–	--	--	–	--	–	–	--	--	–
64°N	0.3	--	–	–	--	--	–	--	–	–	--	--	–
63°N	0.6	--	–	–	--	--	–	--	–	–	--	--	–
62°N	2.7	--	–	–	--	--	–	--	–	–	--	--	–
61°N	3.4	--	2.5	0.8	--	--	–	--	–	–	--	--	–
60°N	4.4	--	3.1	1.2	0.8	--	–	--	–	–	--	--	–
59°N	5.6	--	3.7	1.6	1.1	0.6	–	--	–	–	--	--	–
58°N	7.0	--	4.5	2.1	1.5	1.0	–	--	–	–	--	--	–
57°N	7.0	--	5.3	2.6	1.9	1.3	0.7	--	–	–	--	--	–
56°N	7.0	--	6.1	3.0	2.2	1.6	1.0	--	–	–	--	--	–
55°N	7.0	--	6.9	3.4	2.5	1.8	1.3	0.6	–	–	--	--	–
54°N	7.0	--	7.0	3.7	2.7	2.1	1.6	0.9	–	–	--	--	–
53°N	7.0	--	7.0	3.9	2.7	2.2	1.8	1.2	0.4	–	--	--	–
52°N	7.0	--	7.0	4.0	2.7	2.2	2.0	1.5	1.4	–	--	--	–
51°N	7.0	--	7.0	3.9	2.6	2.2	2.1	1.8	1.8	0.5	--	--	–
50°N	7.0	--	7.0	3.8	2.3	2.0	2.2	2.0	2.2	0.8	0.4	--	–
49°N	7.0	--	7.0	3.5	2.0	1.8	2.2	3.0	2.6	1.1	0.7	--	–
48°N	7.0	--	7.0	3.6	1.6	1.6	2.2	3.2	3.0	1.5	1.1	--	–
47°N	7.0	--	7.0	3.5	1.2	1.3	2.2	3.5	3.5	4.2	2.5	0.4	–
46°N	7.0	--	7.0	3.2	0.9	1.1	2.6	3.9	4.0	5.0	5.4	0.8	0.3
45°N	7.0	--	7.0	3.0	0.6	0.9	2.6	4.2	4.6	5.9	6.5	4.5	0.7
44°N	7.0	--	7.0	3.2	0.4	0.8	2.8	4.8	5.3	6.9	7.0	5.6	1.1
43°N	7.0	--	7.0	4.0	0.3	0.9	3.2	5.5	6.2	7.0	7.0	7.0	1.6
42°N	7.0	--	7.0	5.6	0.5	1.3	3.8	6.4	7.0	7.0	7.0	7.0	2.2
41°N	7.0	--	7.0	7.0	1.4	2.1	4.9	7.0	7.0	7.0	7.0	7.0	2.9
40°N	7.0	--	7.0	7.0	4.7	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	--	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	--	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	--	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	--	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	--	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	--	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL410 – No ozone converter – page 2
Figure 05–07–220

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	--	--	--	–	–	--	--	--	--	–	–	--
89°N	--	--	--	–	–	--	--	--	--	–	–	--
88°N	--	--	--	–	–	--	--	--	--	–	–	--
87°N	--	--	--	–	–	--	--	--	--	–	–	--
86°N	--	--	--	–	–	--	--	--	--	–	–	--
85°N	--	--	--	–	–	--	--	--	--	–	–	--
84°N	--	--	--	–	–	--	--	--	--	–	–	--
83°N	--	--	--	–	–	--	--	--	--	–	–	--
82°N	--	--	--	–	–	--	--	--	--	–	–	--
81°N	--	--	--	–	–	--	--	--	--	–	–	--
80°N	--	--	--	–	–	--	--	--	--	–	–	--
79°N	--	--	--	–	–	--	--	--	--	–	–	--
78°N	--	--	--	–	–	--	--	--	--	–	–	--
77°N	0.3	--	--	–	–	--	--	--	--	–	–	--
76°N	0.5	0.3	--	–	–	--	--	--	--	–	–	--
75°N	1.6	0.5	0.3	–	–	--	--	--	--	–	–	--
74°N	1.9	1.7	0.4	0.3	–	--	--	--	--	–	–	--
73°N	2.2	1.9	1.7	0.4	–	--	--	--	--	–	–	--
72°N	2.5	2.2	1.9	1.6	0.3	--	--	--	--	–	–	--
71°N	2.9	2.5	2.2	1.9	1.6	--	--	--	--	–	–	--
70°N	5.4	4.8	2.4	2.1	1.7	0.3	--	--	--	–	–	--
69°N	6.2	5.4	4.8	2.3	1.9	1.6	--	--	--	–	–	--
68°N	7.0	6.1	5.3	2.5	2.1	1.8	1.0	--	--	–	–	--
67°N	7.0	6.9	5.9	5.0	2.3	1.9	1.1	--	--	–	–	--
66°N	7.0	7.0	6.5	5.5	4.8	2.1	1.1	--	--	–	–	--
65°N	7.0	7.0	7.0	6.0	5.2	2.2	1.2	0.8	0.7	–	–	--
64°N	7.0	7.0	7.0	7.0	5.1	2.5	1.0	0.9	0.8	–	–	1.1
63°N	7.0	7.0	7.0	7.0	7.0	2.8	2.3	1.0	1.8	4.4	1.6	1.5
62°N	7.0	7.0	7.0	7.0	7.0	3.4	2.5	2.4	7.0	7.0	7.0	4.8
61°N	7.0	7.0	7.0	7.0	7.0	3.8	2.9	6.2	7.0	7.0	7.0	6.7
60°N	7.0	7.0	7.0	7.0	7.0	7.0	3.6	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL400 – No ozone converter – page 1
Figure 05–07–221

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	--	--	--	–	–	--	--	--	--	–	–
89°N	–	--	--	--	--	–	–	--	--	--	--	–	–
88°N	–	--	--	--	--	–	–	--	--	--	--	–	–
87°N	–	--	--	--	--	–	–	--	--	--	--	–	–
86°N	–	--	--	--	--	–	–	--	--	--	--	–	–
85°N	–	--	--	--	--	–	–	--	--	--	--	–	–
84°N	–	--	--	--	--	–	–	--	--	--	--	–	–
83°N	–	--	--	--	--	–	–	--	--	--	--	–	–
82°N	–	--	--	--	--	–	–	--	--	--	--	–	–
81°N	–	--	--	--	--	–	–	--	--	--	--	–	–
80°N	–	--	--	--	--	–	–	--	--	--	--	–	–
79°N	–	--	--	--	--	–	–	--	--	--	--	–	–
78°N	–	--	--	--	--	–	–	--	--	--	--	–	–
77°N	–	--	--	--	--	–	–	--	--	--	--	–	–
76°N	–	--	--	--	--	–	–	--	--	--	--	–	–
75°N	–	--	--	--	--	–	–	--	--	--	--	–	–
74°N	–	--	--	--	--	–	–	--	--	--	--	–	–
73°N	–	--	--	--	--	–	–	--	--	--	--	–	–
72°N	–	--	--	--	--	–	–	--	--	--	--	–	–
71°N	–	--	--	--	--	–	–	--	--	--	--	–	–
70°N	–	--	--	--	--	–	–	--	--	--	--	–	–
69°N	–	--	--	--	--	–	–	--	--	--	--	–	–
68°N	–	--	--	--	--	–	–	--	--	--	--	–	–
67°N	–	--	--	--	--	–	–	--	--	--	--	–	–
66°N	–	--	--	--	--	–	–	--	--	--	--	–	–
65°N	–	--	--	--	--	–	–	--	--	--	--	–	–
64°N	0.5	--	--	--	--	–	–	--	--	--	--	–	–
63°N	0.9	--	--	--	--	–	–	--	--	--	--	–	–
62°N	4.4	3.8	--	--	--	–	–	--	--	--	--	–	–
61°N	6.0	5.0	4.0	1.2	--	–	–	--	--	--	--	–	–
60°N	7.0	6.8	5.2	1.8	1.1	–	–	--	--	--	--	–	–
59°N	7.0	7.0	6.8	2.5	1.7	0.9	–	--	--	--	--	–	–
58°N	7.0	7.0	7.0	3.3	2.3	1.4	–	--	--	--	--	–	–
57°N	7.0	7.0	7.0	4.2	2.9	1.9	1.0	--	--	--	--	–	–
56°N	7.0	7.0	7.0	5.1	3.6	2.4	1.5	--	--	--	--	–	–
55°N	7.0	7.0	7.0	6.0	4.1	2.9	1.9	0.9	--	--	--	–	–
54°N	7.0	7.0	7.0	6.9	4.6	3.3	2.4	1.4	--	--	--	–	–
53°N	7.0	7.0	7.0	7.0	4.8	3.6	2.8	1.8	0.7	--	--	–	–
52°N	7.0	7.0	7.0	7.0	4.7	3.7	3.2	2.3	2.1	0.4	--	–	–
51°N	7.0	7.0	7.0	7.0	4.4	3.7	3.4	2.7	2.7	0.8	--	–	–
50°N	7.0	7.0	7.0	7.0	3.9	3.4	3.6	3.2	3.4	1.2	0.6	–	–
49°N	7.0	7.0	7.0	6.7	3.3	3.0	3.7	5.2	4.2	1.7	1.0	–	–
48°N	7.0	7.0	7.0	7.0	2.6	2.6	3.8	5.8	5.0	2.2	1.5	–	–
47°N	7.0	7.0	7.0	6.7	1.9	2.1	3.8	6.6	6.1	7.0	3.8	0.6	–
46°N	7.0	7.0	7.0	5.9	1.3	1.7	4.4	7.0	7.0	7.0	7.0	1.0	0.4
45°N	7.0	7.0	7.0	5.6	0.9	1.4	4.6	7.0	7.0	7.0	7.0	7.0	0.9
44°N	7.0	7.0	7.0	5.9	0.6	1.3	5.1	7.0	7.0	7.0	7.0	7.0	1.5
43°N	7.0	7.0	7.0	7.0	0.5	1.4	5.9	7.0	7.0	7.0	7.0	7.0	2.2
42°N	7.0	7.0	7.0	7.0	0.8	2.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2
41°N	7.0	7.0	7.0	7.0	2.3	3.7	7.0	7.0	7.0	7.0	7.0	7.0	4.4
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL400 – No ozone converter – page 2
Figure 05–07–222

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
89°N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
88°N	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
87°N	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
86°N	1.5	1.5	1.5	1.4	1.4	1.4	1.1	1.1	1.1	1.0	1.0	1.0
85°N	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.1	1.1	1.0	1.0
84°N	1.8	1.8	1.7	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.0	1.0
83°N	2.1	1.9	1.8	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.0
82°N	2.7	2.0	1.9	1.9	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.3
81°N	2.9	2.8	2.7	2.0	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.3
80°N	3.1	2.9	2.8	2.7	1.9	1.8	1.7	1.6	1.5	1.4	1.4	1.3
79°N	3.3	3.1	3.0	2.9	2.7	1.9	1.8	1.7	1.6	1.5	1.4	1.3
78°N	3.5	3.4	3.2	3.0	2.9	1.9	1.8	1.7	1.6	1.5	1.4	1.2
77°N	3.8	3.6	3.4	3.2	3.0	2.8	1.9	1.7	1.6	1.5	1.3	1.2
76°N	4.1	3.8	3.6	3.4	3.2	3.0	1.9	1.8	1.6	1.5	1.3	1.2
75°N	6.2	4.1	3.8	3.5	3.3	3.1	2.9	1.8	1.7	1.4	1.3	1.2
74°N	6.7	6.3	4.0	3.7	3.5	3.2	3.0	1.8	1.5	1.4	1.3	1.2
73°N	7.0	6.9	6.3	3.9	3.6	3.4	3.1	1.8	1.5	1.4	1.3	1.2
72°N	7.0	7.0	6.8	6.2	3.8	3.5	3.2	3.0	1.5	1.4	1.3	1.2
71°N	7.0	7.0	7.0	6.7	6.1	3.6	3.3	2.6	1.5	1.4	1.3	1.2
70°N	7.0	7.0	7.0	7.0	6.4	3.7	3.4	2.7	1.5	1.4	1.3	1.3
69°N	7.0	7.0	7.0	7.0	6.8	6.2	3.5	2.7	1.6	1.5	1.5	1.4
68°N	7.0	7.0	7.0	7.0	7.0	6.5	5.0	2.8	1.6	1.5	1.5	1.4
67°N	7.0	7.0	7.0	7.0	7.0	6.8	5.2	2.8	2.6	2.6	1.5	1.5
66°N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	2.9	2.7	2.6	1.6	1.5
65°N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.7	4.5	2.7	1.6	1.6
64°N	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.8	4.7	3.1	3.0	5.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	6.6	7.0	5.9	5.8
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL390 – No ozone converter – page 1
Figure 05–07–223

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 390													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
89°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
88°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8
87°N	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7
86°N	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7
85°N	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7
84°N	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6
83°N	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6
82°N	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.6	0.6
81°N	1.0	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5
80°N	1.2	0.9	0.9	0.8	0.8	0.7	0.7	0.6	0.6	0.5	0.5	0.5	0.5
79°N	1.2	1.0	1.0	0.9	0.9	0.7	0.7	0.6	0.5	0.5	0.5	0.5	0.4
78°N	1.1	1.1	1.0	0.9	0.9	0.8	0.6	0.6	0.6	0.5	0.4	0.4	0.4
77°N	1.1	1.1	1.0	0.9	0.9	0.8	0.6	0.6	0.5	0.5	0.4	0.4	0.3
76°N	1.1	1.1	1.0	0.9	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.3	0.3
75°N	1.1	1.1	1.0	0.9	0.9	0.8	0.6	0.5	0.5	0.5	0.4	0.4	0.3
74°N	1.1	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.6	0.5	0.4	0.3	0.3
73°N	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.4	0.3	0.3
72°N	1.2	1.1	1.1	1.0	0.9	0.8	0.8	0.7	0.6	0.5	0.3	0.3	–
71°N	1.2	1.2	1.1	1.0	0.9	0.9	0.8	0.7	0.6	0.5	0.4	0.3	–
70°N	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	–
69°N	1.3	1.2	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.3	–
68°N	1.4	1.3	1.2	1.1	1.1	1.0	0.9	0.7	0.6	0.6	0.4	0.3	–
67°N	1.4	1.3	1.5	1.4	1.3	1.2	0.9	0.8	0.6	0.6	0.5	0.3	–
66°N	1.5	1.7	1.6	1.5	1.4	1.3	1.1	0.8	0.7	0.6	0.5	0.3	–
65°N	1.9	1.9	1.8	1.7	1.5	1.4	1.2	1.0	0.8	0.6	0.5	0.4	–
64°N	4.1	2.9	1.9	1.8	1.7	1.5	1.3	1.1	0.8	0.7	0.5	0.4	–
63°N	4.7	3.3	3.1	2.6	2.3	2.0	1.7	1.4	0.9	0.7	0.5	0.4	0.3
62°N	7.0	7.0	3.6	2.9	2.6	2.3	1.9	1.5	1.0	0.7	0.6	0.4	0.3
61°N	7.0	7.0	7.0	5.1	3.0	2.6	2.1	1.7	1.1	0.8	0.6	0.5	0.4
60°N	7.0	7.0	7.0	6.2	5.1	2.9	2.4	1.9	1.5	0.9	0.7	0.5	0.4
59°N	7.0	7.0	7.0	7.0	6.0	4.7	2.7	2.1	1.6	1.1	0.7	0.6	0.5
58°N	7.0	7.0	7.0	7.0	7.0	5.6	3.1	2.4	1.8	1.2	0.8	0.7	0.5
57°N	7.0	7.0	7.0	7.0	7.0	6.5	4.9	2.7	2.0	1.4	1.0	0.7	0.6
56°N	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.1	2.3	1.5	1.1	0.8	0.6
55°N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.7	2.5	2.0	1.2	1.1	0.9
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	2.9	2.4	1.7	1.2	1.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.3	3.4	1.9	1.4	1.1
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	3.8	2.1	1.5	1.3
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	2.3	1.7	1.4
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	4.1	2.8	1.6
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.7	3.2	1.7
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.5	3.6	1.9
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.3
46°N	7.0	7.0	7.0	7.0	5.9	6.7	7.0	7.0	7.0	7.0	7.0	4.7	3.9
45°N	7.0	7.0	7.0	7.0	5.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6
44°N	7.0	7.0	7.0	7.0	4.3	5.7	7.0	7.0	7.0	7.0	7.0	7.0	5.4
43°N	7.0	7.0	7.0	7.0	4.1	6.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
42°N	7.0	7.0	7.0	7.0	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL390 – No ozone converter – page 2
Figure 05–07–224

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89°N	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
88°N	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2
87°N	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2
86°N	2.1	2.0	2.0	1.9	1.9	1.8	1.5	1.4	1.4	1.3	1.3	1.3
85°N	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.4	1.4	1.3	1.3
84°N	2.6	2.5	2.4	2.2	2.2	2.1	2.0	1.9	1.8	1.7	1.3	1.3
83°N	3.1	2.7	2.5	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.3
82°N	4.2	2.9	2.7	2.6	2.4	2.3	2.2	2.0	1.9	1.8	1.7	1.6
81°N	4.7	4.5	4.2	2.7	2.6	2.4	2.2	2.1	2.0	1.9	1.7	1.6
80°N	5.2	4.9	4.6	4.3	2.7	2.5	2.3	2.2	2.0	1.9	1.8	1.7
79°N	5.7	5.3	5.0	4.7	4.4	2.6	2.4	2.2	2.1	1.9	1.8	1.7
78°N	6.3	5.9	5.4	5.0	4.7	2.7	2.4	2.3	2.1	1.9	1.8	1.5
77°N	7.0	6.4	5.9	5.4	5.0	4.6	2.5	2.3	2.1	2.0	1.6	1.5
76°N	7.0	7.0	6.4	5.9	5.3	4.9	2.6	2.4	2.2	2.0	1.6	1.5
75°N	7.0	7.0	7.0	6.3	5.7	5.2	4.8	2.4	2.2	1.8	1.6	1.5
74°N	7.0	7.0	7.0	6.8	6.1	5.5	5.0	2.5	1.9	1.8	1.7	1.5
73°N	7.0	7.0	7.0	7.0	6.5	5.8	5.2	2.5	2.0	1.8	1.7	1.6
72°N	7.0	7.0	7.0	7.0	6.9	6.1	5.5	5.0	2.0	1.8	1.7	1.6
71°N	7.0	7.0	7.0	7.0	7.0	6.4	5.7	4.1	2.0	1.9	1.7	1.6
70°N	7.0	7.0	7.0	7.0	7.0	6.7	6.0	4.2	2.0	1.9	1.7	1.7
69°N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.3	2.0	1.9	1.9	1.8
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	2.1	1.9	1.9	1.8
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.2	4.0	2.0	1.9
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.3	4.2	2.0	2.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	2.1	2.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.4	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL380 – No ozone converter – page 1
Figure 05–07–225

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 380													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
89°N	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88°N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0
87°N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9
86°N	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.9
85°N	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8
84°N	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.8
83°N	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7
82°N	1.2	1.2	1.1	1.0	1.0	1.0	0.9	0.8	0.8	0.7	0.7	0.7	0.7
81°N	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.6	0.6
80°N	1.5	1.1	1.1	1.0	0.9	0.9	0.8	0.7	0.7	0.7	0.6	0.6	0.6
79°N	1.5	1.3	1.2	1.2	1.1	0.9	0.8	0.8	0.7	0.6	0.6	0.6	0.5
78°N	1.4	1.3	1.2	1.2	1.1	1.0	0.8	0.7	0.7	0.6	0.5	0.5	0.5
77°N	1.4	1.3	1.2	1.1	1.1	1.0	0.8	0.7	0.6	0.6	0.5	0.4	0.4
76°N	1.4	1.3	1.2	1.1	1.0	1.0	0.7	0.7	0.6	0.6	0.5	0.4	0.4
75°N	1.4	1.3	1.2	1.1	1.0	1.0	0.7	0.7	0.6	0.6	0.5	0.4	0.3
74°N	1.4	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.4	0.4
73°N	1.4	1.3	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.4	0.4	0.3
72°N	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.8	0.7	0.6	0.4	0.4	0.3
71°N	1.5	1.5	1.4	1.3	1.2	1.0	0.9	0.8	0.7	0.6	0.4	0.4	0.3
70°N	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.8	0.7	0.6	0.5	0.3	--
69°N	1.7	1.6	1.5	1.4	1.2	1.1	1.0	0.9	0.7	0.6	0.5	0.3	--
68°N	1.7	1.6	1.5	1.4	1.3	1.2	1.0	0.9	0.7	0.6	0.5	0.4	--
67°N	1.8	1.7	2.0	1.8	1.6	1.4	1.1	0.9	0.7	0.7	0.5	0.4	--
66°N	1.9	2.2	2.1	1.9	1.8	1.5	1.3	0.9	0.8	0.7	0.5	0.4	--
65°N	2.6	2.5	2.3	2.1	1.9	1.7	1.4	1.2	0.9	0.7	0.6	0.4	0.3
64°N	6.6	4.1	2.6	2.4	2.1	1.9	1.6	1.3	0.9	0.8	0.6	0.4	0.3
63°N	7.0	4.9	4.4	3.5	3.1	2.6	2.1	1.7	1.1	0.8	0.6	0.5	0.3
62°N	7.0	7.0	5.3	4.2	3.6	3.0	2.4	1.9	1.2	0.9	0.7	0.5	0.3
61°N	7.0	7.0	7.0	7.0	4.3	3.5	2.7	2.1	1.3	0.9	0.7	0.5	0.4
60°N	7.0	7.0	7.0	7.0	7.0	4.1	3.2	2.4	1.8	1.0	0.8	0.6	0.5
59°N	7.0	7.0	7.0	7.0	7.0	7.0	3.7	2.8	2.0	1.3	0.8	0.7	0.5
58°N	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.2	2.3	1.5	0.9	0.8	0.6
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	2.6	1.6	1.2	0.8	0.6
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	2.9	1.8	1.3	0.9	0.7
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	2.5	1.4	1.3	1.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	3.0	2.0	1.4	1.1
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.5	2.2	1.5	1.2
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	2.5	1.7	1.4
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	2.8	1.9	1.6
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	3.3	1.7
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	3.8	2.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	2.2
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.7
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL380 – No ozone converter – page 2
Figure 05–07–226

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
89°N	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2
88°N	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.2
87°N	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.3
86°N	3.5	3.5	3.4	3.3	3.2	3.1	2.6	2.5	2.4	2.4	2.3	2.3
85°N	4.0	3.9	3.7	3.6	3.4	3.3	3.2	3.1	2.5	2.4	2.4	2.3
84°N	4.5	4.2	4.1	3.9	3.7	3.5	3.4	3.2	3.1	3.0	2.4	2.3
83°N	5.7	4.7	4.4	4.1	3.9	3.7	3.5	3.3	3.2	3.0	2.9	2.3
82°N	7.0	5.2	4.8	4.4	4.1	3.9	3.7	3.4	3.2	3.1	2.9	2.8
81°N	7.0	7.0	7.0	4.7	4.4	4.0	3.8	3.5	3.3	3.1	2.9	2.8
80°N	7.0	7.0	7.0	7.0	4.6	4.2	3.9	3.6	3.4	3.2	3.0	2.8
79°N	7.0	7.0	7.0	7.0	7.0	4.4	4.0	3.7	3.4	3.2	3.0	2.8
78°N	7.0	7.0	7.0	7.0	7.0	4.5	4.1	3.8	3.5	3.2	3.0	2.6
77°N	7.0	7.0	7.0	7.0	7.0	7.0	4.2	3.9	3.5	3.3	2.7	2.6
76°N	7.0	7.0	7.0	7.0	7.0	7.0	4.3	3.9	3.6	3.3	2.7	2.6
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	3.6	3.0	2.8	2.6
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	3.2	3.0	2.8	2.6
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.2	3.0	2.8	2.6
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2	3.0	2.8	2.6
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.0	2.8	2.6
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.1	2.8	2.8
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.1	3.0	2.9
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.1	3.1	2.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2	3.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	3.1
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	3.2
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL370 – No ozone converter – page 1
Figure 05–07–227

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 370													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
89°N	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
88°N	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
87°N	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	1.9
86°N	2.2	2.2	2.1	2.1	2.1	2.0	2.0	2.0	1.9	1.8	1.8	1.8	1.8
85°N	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.7
84°N	2.2	2.2	2.1	2.0	2.0	1.9	1.9	1.8	1.7	1.7	1.7	1.7	1.6
83°N	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.8	1.7	1.6	1.6	1.6	1.6
82°N	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.6	1.6	1.6	1.5	1.5
81°N	2.2	2.1	2.0	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.5	1.5	1.4
80°N	2.6	2.1	2.0	1.9	1.8	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.4
79°N	2.6	2.3	2.2	2.1	2.0	1.7	1.6	1.6	1.5	1.4	1.4	1.3	1.3
78°N	2.4	2.3	2.2	2.1	2.0	1.9	1.6	1.5	1.5	1.4	1.3	1.3	1.2
77°N	2.4	2.3	2.2	2.1	1.9	1.8	1.6	1.5	1.4	1.4	1.3	1.2	1.2
76°N	2.4	2.3	2.2	2.0	1.9	1.8	1.6	1.5	1.4	1.3	1.3	1.2	1.1
75°N	2.4	2.3	2.2	2.0	1.9	1.8	1.5	1.5	1.4	1.4	1.3	1.2	1.1
74°N	2.4	2.3	2.2	2.0	2.0	1.9	1.7	1.6	1.5	1.4	1.2	1.1	1.1
73°N	2.5	2.3	2.3	2.1	2.0	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1.1
72°N	2.5	2.4	2.3	2.2	2.0	1.9	1.7	1.6	1.5	1.3	1.2	1.1	1.0
71°N	2.5	2.5	2.3	2.2	2.1	1.9	1.8	1.6	1.5	1.3	1.2	1.1	1.0
70°N	2.6	2.5	2.4	2.2	2.1	1.9	1.8	1.6	1.5	1.4	1.3	1.1	1.0
69°N	2.7	2.6	2.5	2.3	2.1	2.0	1.8	1.7	1.5	1.4	1.3	1.1	1.0
68°N	2.8	2.6	2.5	2.4	2.2	2.0	1.9	1.7	1.5	1.4	1.3	1.1	1.0
67°N	2.9	2.7	3.1	2.8	2.6	2.3	1.9	1.7	1.5	1.4	1.3	1.1	0.9
66°N	3.0	3.5	3.3	3.0	2.8	2.5	2.2	1.7	1.6	1.5	1.3	1.1	0.9
65°N	4.0	3.8	3.6	3.3	3.0	2.7	2.3	2.0	1.7	1.5	1.3	1.1	1.0
64°N	7.0	6.3	3.9	3.6	3.2	2.9	2.5	2.1	1.7	1.5	1.3	1.2	1.0
63°N	7.0	7.0	6.6	5.2	4.5	3.8	3.1	2.6	1.9	1.6	1.4	1.2	1.0
62°N	7.0	7.0	7.0	6.3	5.2	4.3	3.5	2.8	2.0	1.6	1.4	1.2	1.1
61°N	7.0	7.0	7.0	7.0	6.3	5.0	3.9	3.1	2.1	1.7	1.5	1.3	1.2
60°N	7.0	7.0	7.0	7.0	7.0	5.9	4.5	3.4	2.6	1.8	1.5	1.3	1.2
59°N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.9	2.9	2.2	1.6	1.4	1.2
58°N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.5	3.2	2.3	1.7	1.5	1.3
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	3.6	2.5	2.0	1.6	1.4
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.1	2.7	2.1	1.7	1.4
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.5	2.2	2.0	1.7
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.0	2.8	2.2	1.8
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.1	2.3	2.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	2.5	2.1
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	2.7	2.3
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.2	2.5
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	2.8
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	3.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.9
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL370 – No ozone converter – page 2
Figure 05–07–228

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 360												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
89°N	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1
88°N	3.6	3.6	3.6	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.1
87°N	4.1	4.0	3.9	3.8	3.7	3.7	3.6	3.5	3.4	3.3	3.2	3.2
86°N	5.9	5.6	5.4	5.2	5.0	4.8	3.8	3.6	3.5	3.4	3.3	3.2
85°N	7.0	6.7	6.2	5.9	5.5	5.2	4.9	4.6	3.6	3.4	3.3	3.2
84°N	7.0	7.0	7.0	6.7	6.2	5.6	5.3	4.9	4.6	4.3	3.3	3.2
83°N	7.0	7.0	7.0	7.0	6.8	6.2	5.6	5.2	4.7	4.4	4.1	3.2
82°N	7.0	7.0	7.0	7.0	7.0	6.6	5.9	5.4	4.9	4.5	4.2	3.9
81°N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.6	5.0	4.6	4.2	3.9
80°N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.8	5.2	4.6	4.2	3.9
79°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.0	5.3	4.7	4.3	3.9
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.4	4.8	4.3	3.4
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.5	4.8	3.7	3.4
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.6	4.9	3.8	3.4
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.7	4.2	3.8	3.4
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.7	4.2	3.8	3.5
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.7	4.2	3.8	3.5
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	4.3	3.8	3.5
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	4.3	3.9	3.5
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.3	3.9	3.7
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.3	4.1	3.8
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.4	4.3	3.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.1
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.3
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL360 – No ozone converter – page 1
Figure 05–07–229

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 360													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
89°N	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8
88°N	3.1	3.0	3.0	2.9	2.9	2.9	2.8	2.8	2.8	2.7	2.7	2.7	2.7
87°N	3.1	3.0	3.0	2.9	2.8	2.8	2.7	2.7	2.7	2.6	2.5	2.4	2.4
86°N	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.6	2.5	2.4	2.3	2.3	2.3
85°N	3.1	3.0	2.8	2.8	2.7	2.6	2.5	2.5	2.3	2.2	2.2	2.2	2.2
84°N	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.4	2.2	2.1	2.1	2.1	2.0
83°N	3.0	2.9	2.7	2.6	2.5	2.4	2.4	2.3	2.1	2.0	2.0	2.0	1.9
82°N	3.0	2.8	2.7	2.6	2.5	2.4	2.3	2.1	2.0	1.9	1.9	1.9	1.8
81°N	3.0	2.8	2.6	2.5	2.4	2.3	2.2	2.0	1.9	1.8	1.8	1.7	1.7
80°N	3.6	2.7	2.6	2.4	2.3	2.2	2.1	1.9	1.8	1.7	1.7	1.6	1.6
79°N	3.6	3.0	2.8	2.6	2.5	2.1	2.0	1.9	1.7	1.7	1.6	1.5	1.5
78°N	3.2	3.0	2.8	2.6	2.4	2.3	1.9	1.8	1.7	1.6	1.5	1.5	1.4
77°N	3.2	2.9	2.7	2.5	2.4	2.2	1.9	1.8	1.7	1.6	1.4	1.4	1.3
76°N	3.2	2.9	2.7	2.5	2.3	2.2	1.8	1.7	1.6	1.5	1.4	1.3	1.2
75°N	3.2	2.9	2.7	2.5	2.3	2.1	1.8	1.7	1.6	1.6	1.4	1.3	1.2
74°N	3.2	2.9	2.7	2.5	2.4	2.2	2.0	1.8	1.6	1.5	1.3	1.2	1.2
73°N	3.2	2.9	2.8	2.6	2.4	2.2	2.0	1.8	1.7	1.5	1.3	1.2	1.1
72°N	3.2	3.1	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.2	1.1
71°N	3.2	3.1	2.9	2.7	2.4	2.2	2.0	1.8	1.6	1.4	1.2	1.1	1.0
70°N	3.4	3.2	3.0	2.7	2.5	2.3	2.0	1.8	1.6	1.5	1.3	1.1	1.0
69°N	3.5	3.3	3.1	2.8	2.6	2.3	2.1	1.8	1.6	1.5	1.3	1.1	1.0
68°N	3.6	3.4	3.2	2.9	2.6	2.4	2.1	1.9	1.6	1.5	1.3	1.2	1.0
67°N	3.8	3.5	3.9	3.5	3.1	2.7	2.2	1.9	1.7	1.5	1.3	1.2	1.0
66°N	4.0	4.7	4.3	3.8	3.4	2.9	2.5	1.9	1.8	1.5	1.3	1.2	0.9
65°N	5.6	5.2	4.7	4.2	3.7	3.2	2.7	2.3	1.8	1.6	1.4	1.2	1.0
64°N	7.0	7.0	5.3	4.7	4.1	3.5	2.9	2.4	1.9	1.6	1.4	1.2	1.0
63°N	7.0	7.0	7.0	7.0	5.9	4.7	3.7	2.9	2.1	1.7	1.4	1.2	1.0
62°N	7.0	7.0	7.0	7.0	7.0	5.6	4.2	3.2	2.2	1.8	1.5	1.3	1.1
61°N	7.0	7.0	7.0	7.0	7.0	6.8	4.9	3.6	2.4	1.8	1.5	1.3	1.2
60°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.1	3.0	1.9	1.6	1.3	1.2
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.3	2.3	1.7	1.5	1.3
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.7	2.5	1.8	1.6	1.3
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	2.8	2.1	1.7	1.4
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.0	2.2	1.7	1.5
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.0	2.4	2.1	1.7
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.1	2.3	1.9
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	2.5	2.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	2.7	2.2
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	3.0	2.4
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	2.7
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	3.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	3.3
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL360 – No ozone converter – page 2
Figure 05–07–230

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 350												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL350 – No ozone converter – page 1
Figure 05–07–231

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 350													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
88°N	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.6	6.5	6.4	6.2	6.2	6.1
87°N	7.0	7.0	7.0	6.9	6.6	6.4	6.2	6.1	5.9	5.8	5.2	5.1	5.1
86°N	7.0	7.0	6.8	6.5	6.1	5.9	5.7	5.5	5.4	4.8	4.7	4.6	4.6
85°N	7.0	6.9	6.5	6.1	5.8	5.5	5.2	5.1	4.5	4.3	4.3	4.2	4.1
84°N	7.0	6.6	6.1	5.8	5.4	5.1	4.9	4.6	4.1	4.0	3.9	3.8	3.7
83°N	7.0	6.4	5.8	5.4	5.1	4.8	4.5	4.3	3.8	3.6	3.5	3.4	3.4
82°N	6.8	6.1	5.6	5.1	4.8	4.4	4.2	3.6	3.5	3.3	3.2	3.1	3.0
81°N	6.5	5.8	5.3	4.9	4.5	4.2	3.9	3.4	3.2	3.0	2.9	2.8	2.8
80°N	7.0	5.6	5.1	4.6	4.2	3.9	3.6	3.1	3.0	2.8	2.7	2.6	2.5
79°N	7.0	6.5	5.7	5.1	4.6	3.6	3.3	3.1	2.8	2.6	2.5	2.4	2.3
78°N	7.0	6.3	5.6	4.9	4.4	3.9	3.2	2.9	2.7	2.4	2.3	2.2	2.0
77°N	7.0	6.2	5.4	4.8	4.2	3.8	3.0	2.8	2.6	2.4	2.1	2.0	1.8
76°N	7.0	6.1	5.3	4.6	4.1	3.6	2.9	2.6	2.4	2.2	2.1	1.8	1.7
75°N	7.0	6.0	5.2	4.5	4.0	3.5	2.8	2.5	2.3	2.3	1.9	1.8	1.6
74°N	7.0	5.9	5.1	4.4	4.1	3.6	3.2	2.8	2.4	2.2	1.8	1.7	1.6
73°N	7.0	5.9	5.4	4.7	4.1	3.6	3.2	2.8	2.4	2.1	1.8	1.6	1.5
72°N	7.0	6.4	5.5	4.8	4.2	3.6	3.1	2.7	2.4	2.0	1.7	1.6	1.4
71°N	7.0	6.6	5.7	4.9	4.2	3.7	3.2	2.7	2.4	2.0	1.7	1.5	1.3
70°N	7.0	6.9	5.9	5.1	4.4	3.7	3.2	2.7	2.3	2.1	1.8	1.5	1.3
69°N	7.0	7.0	6.2	5.3	4.5	3.9	3.3	2.8	2.3	2.1	1.8	1.4	1.2
68°N	7.0	7.0	6.6	5.6	4.7	4.0	3.4	2.8	2.3	2.1	1.8	1.5	1.2
67°N	7.0	7.0	7.0	7.0	6.2	4.9	3.5	2.9	2.4	2.1	1.8	1.5	1.2
66°N	7.0	7.0	7.0	7.0	7.0	5.5	4.2	2.9	2.6	2.2	1.8	1.5	1.2
65°N	7.0	7.0	7.0	7.0	7.0	6.2	4.7	3.6	2.7	2.2	1.8	1.5	1.3
64°N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.9	2.8	2.3	1.9	1.5	1.3
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.1	2.4	1.9	1.6	1.3
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.4	2.5	2.0	1.6	1.3
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	2.7	2.1	1.7	1.5
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	2.9	2.2	1.8	1.5
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	3.7	2.4	2.0	1.6
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	2.5	2.2	1.7
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.1	2.3	1.8
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.4	2.5	2.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	3.2	2.4
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	3.5	2.7
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.0	3.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.4
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.9
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL350 – No ozone converter – page 2
Figure 05–07–232

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 340												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL340 – No ozone converter – page 1
Figure 05–07–233

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 340													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.1	5.8
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.1	5.5	5.2	4.9
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.3	4.8	4.5	4.2
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.6	4.7	4.3	3.9	3.6
77°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.8	5.1	4.5	3.8	3.4	3.2
76°N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.4	4.7	4.1	3.8	3.1	2.8
75°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.1	4.3	4.3	3.5	3.1	2.6
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.8	4.0	3.2	2.8	2.7
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.8	3.8	3.0	2.7	2.4
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.7	3.6	2.8	2.6	2.2
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.6	3.6	2.9	2.4	2.1
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.6	3.8	3.1	2.4	2.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.5	3.8	3.1	2.3	1.9
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.6	3.9	3.1	2.4	1.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.7	4.0	3.1	2.4	1.8
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.6	4.1	3.2	2.5	1.8
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.3	3.2	2.5	2.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.6	3.4	2.6	2.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.5	2.7	2.1
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.8	2.8	2.1
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.0	2.9	2.4
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.4	3.1	2.6
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.8	2.8
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.2	3.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.3
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.7
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL340 – No ozone converter – page 2
Figure 05–07–234

Asia - Maximum Flight duration in hour, JANUARY WOUDC FL 330												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL330 – No ozone converter – page 1
Figure 05–07–235

Asia - MaxImum FIight duratIon In hour, JANUARY WOUDC FL 330													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.2
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.7
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.5
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – January – FL330 – No ozone converter – page 2
Figure 05–07–236

V. Asia – February

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	–	–	--	–	--	–	–	--	–	--	–
89°N	–	–	–	--	–	--	–	–	--	–	--	–
88°N	–	–	–	--	–	--	–	–	--	–	--	–
87°N	–	–	–	--	–	--	–	–	--	–	--	–
86°N	–	–	–	--	–	--	–	–	--	–	--	–
85°N	–	–	–	--	–	--	–	–	--	–	--	–
84°N	–	–	–	--	–	--	–	–	--	–	--	–
83°N	–	–	–	--	–	--	–	–	--	–	--	–
82°N	–	–	–	--	–	--	–	–	--	–	--	–
81°N	–	–	–	--	–	--	–	–	--	–	--	–
80°N	–	–	–	--	–	--	–	–	--	–	--	–
79°N	–	–	–	--	–	--	–	–	--	–	--	–
78°N	–	–	–	--	–	--	–	–	--	–	--	–
77°N	–	–	–	--	–	--	–	–	--	–	--	–
76°N	–	–	–	--	–	--	–	–	--	–	--	–
75°N	–	–	–	--	–	--	–	–	--	–	--	–
74°N	–	–	–	--	–	--	–	–	--	–	--	–
73°N	–	–	–	--	–	--	–	–	--	–	--	–
72°N	–	–	–	--	–	--	–	–	--	–	--	–
71°N	–	–	–	--	–	--	–	–	--	–	--	–
70°N	–	–	–	--	–	--	–	–	--	–	--	–
69°N	–	–	–	--	–	--	–	–	--	–	--	–
68°N	1.2	–	–	--	–	--	–	–	--	–	--	–
67°N	1.3	–	–	--	–	--	–	–	--	–	--	–
66°N	1.4	1.1	–	--	–	--	–	–	--	–	--	–
65°N	1.3	1.2	1.0	--	–	--	–	–	--	–	--	–
64°N	3.2	1.3	1.1	1.0	–	--	–	–	--	–	--	–
63°N	3.3	3.8	2.4	2.3	1.4	--	–	–	--	–	--	–
62°N	5.8	6.2	2.6	2.5	2.3	--	–	–	1.4	1.7	1.9	1.7
61°N	6.2	6.7	2.9	2.7	2.5	--	–	0.3	1.9	2.2	2.5	2.3
60°N	6.7	7.0	3.2	3.0	2.8	1.4	–	0.5	2.4	2.9	3.2	3.0
59°N	7.0	7.0	7.0	3.3	3.0	1.6	3.0	7.0	3.1	3.7	4.2	3.8
58°N	7.0	7.0	7.0	3.6	3.3	1.7	6.0	7.0	7.0	4.8	5.4	4.9
57°N	7.0	7.0	7.0	3.9	3.6	1.9	7.0	7.0	7.0	6.2	7.0	6.3
56°N	7.0	7.0	7.0	7.0	2.4	3.8	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL410 – No ozone converter – page 1
Figure 05–07–237

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	--	--	--	–	–	--	–	--	--	–	–
89°N	–	--	--	--	--	–	–	--	–	--	--	–	–
88°N	–	--	--	--	--	–	–	--	–	--	--	–	–
87°N	–	--	--	--	--	–	–	--	–	--	--	–	–
86°N	–	--	--	--	--	–	–	--	–	--	--	–	–
85°N	–	--	--	--	--	–	–	--	–	--	--	–	–
84°N	–	--	--	--	--	–	–	--	–	--	--	–	–
83°N	–	--	--	--	--	–	–	--	–	--	--	–	–
82°N	–	--	--	--	--	–	–	--	–	--	--	–	–
81°N	–	--	--	--	--	–	–	--	–	--	--	–	–
80°N	–	--	--	--	--	–	–	--	–	--	--	–	–
79°N	–	--	--	--	--	–	–	--	–	--	--	–	–
78°N	–	--	--	--	--	–	–	--	–	--	--	–	–
77°N	–	--	--	--	--	–	–	--	–	--	--	–	–
76°N	–	--	--	--	--	–	–	--	–	--	--	–	–
75°N	–	--	--	--	--	–	–	--	–	--	--	–	–
74°N	–	--	--	--	--	–	–	--	–	--	--	–	–
73°N	–	--	--	--	--	–	–	--	–	--	--	–	–
72°N	–	--	--	--	--	–	–	--	–	--	--	–	–
71°N	–	--	--	--	--	–	–	--	–	--	--	–	–
70°N	–	--	--	--	--	–	–	--	–	--	--	–	–
69°N	–	--	--	--	--	–	–	--	–	--	--	–	–
68°N	–	--	--	--	--	–	–	--	–	--	--	–	–
67°N	–	--	--	--	--	–	–	--	–	--	--	–	–
66°N	–	--	--	--	--	–	–	--	–	--	--	–	–
65°N	–	--	--	--	--	–	–	--	–	--	--	–	–
64°N	–	--	--	--	--	–	–	--	–	--	--	–	–
63°N	–	--	--	--	--	–	–	--	–	--	--	–	–
62°N	1.7	1.5	--	--	--	–	–	--	–	--	--	–	–
61°N	2.1	1.9	1.6	--	--	–	–	--	–	--	--	–	–
60°N	2.8	2.4	2.0	0.4	--	–	–	--	–	--	--	–	–
59°N	3.5	3.0	2.4	0.7	0.4	–	–	--	–	--	--	–	–
58°N	4.4	3.6	2.9	1.0	0.7	0.4	–	--	–	--	--	–	–
57°N	5.4	4.3	3.3	1.3	0.9	0.6	0.3	--	–	--	--	–	–
56°N	6.8	5.2	3.7	1.5	1.0	0.7	0.4	--	–	--	--	–	–
55°N	7.0	6.2	4.1	1.7	1.2	0.9	0.6	0.3	–	--	--	–	–
54°N	7.0	7.0	4.5	1.9	1.2	0.9	0.7	0.5	–	--	--	–	–
53°N	7.0	7.0	4.8	1.9	1.3	1.0	0.8	0.6	0.3	--	--	–	–
52°N	7.0	7.0	5.0	1.9	1.2	0.9	0.9	0.8	1.2	0.4	--	–	–
51°N	7.0	7.0	5.2	1.9	1.0	0.8	0.9	0.9	1.4	0.6	--	–	–
50°N	7.0	7.0	5.4	1.7	0.8	0.7	0.9	1.0	1.6	0.8	1.4	–	–
49°N	7.0	7.0	5.6	1.6	0.6	0.5	0.9	1.7	1.8	1.0	1.6	–	–
48°N	7.0	7.0	5.9	1.6	0.3	0.3	0.9	1.8	2.1	1.2	1.9	–	–
47°N	7.0	7.0	7.0	1.5	--	–	0.8	2.0	2.4	3.9	2.3	–	–
46°N	7.0	7.0	7.0	1.3	--	–	1.0	2.1	2.7	4.4	2.6	2.3	1.2
45°N	7.0	7.0	7.0	1.2	--	–	1.1	2.3	3.0	5.0	3.0	2.7	1.5
44°N	7.0	7.0	7.0	1.3	--	–	1.2	2.6	3.5	5.7	3.5	3.2	1.9
43°N	7.0	7.0	7.0	1.8	--	–	1.4	3.0	4.0	6.5	4.1	3.8	2.3
42°N	7.0	7.0	7.0	2.7	--	–	1.8	3.6	4.6	7.0	7.0	4.5	2.8
41°N	7.0	7.0	7.0	4.7	--	0.6	2.4	4.3	7.0	7.0	7.0	5.3	3.3
40°N	7.0	7.0	7.0	7.0	2.0	2.0	4.1	5.2	7.0	7.0	7.0	6.4	7.0
39°N	7.0	7.0	7.0	7.0	7.0	5.0	6.0	6.5	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL410 – No ozone converter – page 2
Figure 05–07–238

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	–	–	–	–	–	–	–	–	–	–	–
89°N	–	–	–	–	–	–	–	–	–	–	–	–
88°N	–	–	–	–	–	–	–	–	–	–	–	–
87°N	–	–	–	–	–	–	–	–	–	–	–	–
86°N	–	–	–	–	–	–	–	–	–	–	–	–
85°N	–	–	–	–	–	–	–	–	–	–	–	–
84°N	–	–	–	–	–	–	–	–	–	–	–	–
83°N	–	–	–	–	–	–	–	–	–	–	–	–
82°N	–	–	–	–	–	–	–	–	–	–	–	–
81°N	–	–	–	–	–	–	–	–	–	–	–	–
80°N	–	–	–	–	–	–	–	–	–	–	–	–
79°N	–	–	–	–	–	–	–	–	–	–	–	–
78°N	–	–	–	–	–	–	–	–	–	–	–	–
77°N	–	–	–	–	–	–	–	–	–	–	–	–
76°N	–	–	–	–	–	–	–	–	–	–	–	–
75°N	–	–	–	–	–	–	–	–	–	–	–	–
74°N	–	–	–	–	–	–	–	–	–	–	–	–
73°N	–	–	–	–	–	–	–	–	–	–	–	–
72°N	–	–	–	–	–	–	–	–	–	–	–	–
71°N	–	–	–	–	–	–	–	–	–	–	–	–
70°N	–	–	–	–	–	–	–	–	–	–	–	–
69°N	–	–	–	–	–	–	–	–	–	–	–	–
68°N	1.6	–	–	–	–	–	–	–	–	–	–	–
67°N	1.7	–	–	–	–	–	–	–	–	–	–	–
66°N	1.8	1.4	–	–	–	–	–	–	–	–	–	–
65°N	1.8	1.6	1.4	–	–	–	–	–	–	–	–	–
64°N	4.7	1.7	1.5	1.3	–	–	–	–	–	–	–	–
63°N	4.9	5.6	3.4	3.2	1.8	–	–	–	–	–	–	–
62°N	7.0	7.0	3.7	3.5	3.2	–	–	–	2.0	2.4	2.7	2.5
61°N	7.0	7.0	4.2	3.9	3.6	–	–	0.5	2.6	3.1	3.6	3.3
60°N	7.0	7.0	4.6	4.3	4.0	2.0	–	0.7	3.4	4.2	4.8	4.4
59°N	7.0	7.0	7.0	4.8	4.4	2.2	4.2	7.0	4.5	5.6	6.5	5.9
58°N	7.0	7.0	7.0	5.4	4.9	2.4	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	6.0	5.4	2.6	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	3.5	5.8	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL400 – No ozone converter – page 1
Figure 05–07–239

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	–	–	–	–	–	–	–	–	–	–	–	–
89°N	–	–	–	–	–	–	–	–	–	–	–	–	–
88°N	–	–	–	–	–	–	–	–	–	–	–	–	–
87°N	–	–	–	–	–	–	–	–	–	–	–	–	–
86°N	–	–	–	–	–	–	–	–	–	–	–	–	–
85°N	–	–	–	–	–	–	–	–	–	–	–	–	–
84°N	–	–	–	–	–	–	–	–	–	–	–	–	–
83°N	–	–	–	–	–	–	–	–	–	–	–	–	–
82°N	–	–	–	–	–	–	–	–	–	–	–	–	–
81°N	–	–	–	–	–	–	–	–	–	–	–	–	–
80°N	–	–	–	–	–	–	–	–	–	–	–	–	–
79°N	–	–	–	–	–	–	–	–	–	–	–	–	–
78°N	–	–	–	–	–	–	–	–	–	–	–	–	–
77°N	–	–	–	–	–	–	–	–	–	–	–	–	–
76°N	–	–	–	–	–	–	–	–	–	–	–	–	–
75°N	–	–	–	–	–	–	–	–	–	–	–	–	–
74°N	–	–	–	–	–	–	–	–	–	–	–	–	–
73°N	–	–	–	–	–	–	–	–	–	–	–	–	–
72°N	–	–	–	–	–	–	–	–	–	–	–	–	–
71°N	–	–	–	–	–	–	–	–	–	–	–	–	–
70°N	–	–	–	–	–	–	–	–	–	–	–	–	–
69°N	–	–	–	–	–	–	–	–	–	–	–	–	–
68°N	–	–	–	–	–	–	–	–	–	–	–	–	–
67°N	–	–	–	–	–	–	–	–	–	–	–	–	–
66°N	–	–	–	–	–	–	–	–	–	–	–	–	–
65°N	–	–	–	–	–	–	–	–	–	–	–	–	–
64°N	–	–	–	–	–	–	–	–	–	–	–	–	–
63°N	–	–	–	–	–	–	–	–	–	–	–	–	–
62°N	2.3	2.1	–	–	–	–	–	–	–	–	–	–	–
61°N	3.1	2.7	2.3	0.3	–	–	–	–	–	–	–	–	–
60°N	4.1	3.5	2.9	0.6	0.3	–	–	–	–	–	–	–	–
59°N	5.4	4.5	3.6	1.0	0.6	0.3	–	–	–	–	–	–	–
58°N	7.0	5.7	4.3	1.4	0.9	0.5	–	–	–	–	–	–	–
57°N	7.0	7.0	5.2	1.8	1.2	0.8	0.4	–	–	–	–	–	–
56°N	7.0	7.0	6.0	2.1	1.5	1.0	0.6	–	–	–	–	–	–
55°N	7.0	7.0	6.8	2.5	1.7	1.2	0.8	0.5	–	–	–	–	–
54°N	7.0	7.0	7.0	2.7	1.8	1.3	1.0	0.7	–	–	–	–	–
53°N	7.0	7.0	7.0	2.8	1.8	1.4	1.2	0.9	0.4	0.3	–	–	–
52°N	7.0	7.0	7.0	2.9	1.7	1.3	1.3	1.1	1.7	0.5	–	–	–
51°N	7.0	7.0	7.0	2.8	1.5	1.2	1.3	1.3	2.0	0.8	–	–	–
50°N	7.0	7.0	7.0	2.6	1.2	1.0	1.3	1.4	2.3	1.0	1.8	–	–
49°N	7.0	7.0	7.0	2.3	0.9	0.8	1.3	2.5	2.7	1.3	2.2	–	–
48°N	7.0	7.0	7.0	2.5	0.5	0.5	1.2	2.7	3.0	1.6	2.7	–	–
47°N	7.0	7.0	7.0	2.3	–	0.3	1.2	2.9	3.5	6.0	3.2	0.3	–
46°N	7.0	7.0	7.0	2.0	–	–	1.5	3.1	4.0	7.0	3.8	3.2	1.6
45°N	7.0	7.0	7.0	1.8	–	–	1.5	3.5	4.6	7.0	4.4	3.9	2.0
44°N	7.0	7.0	7.0	1.9	–	–	1.7	4.0	5.3	7.0	5.2	4.7	2.5
43°N	7.0	7.0	7.0	2.7	–	–	2.0	4.6	6.3	7.0	6.2	5.7	3.1
42°N	7.0	7.0	7.0	4.1	–	–	2.6	5.5	7.0	7.0	7.0	6.9	3.9
41°N	7.0	7.0	7.0	7.0	–	0.9	3.5	6.7	7.0	7.0	7.0	7.0	4.8
40°N	7.0	7.0	7.0	7.0	2.9	2.8	6.4	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL400 – No ozone converter – page 2
Figure 05–07–240

Asia - Maximum Flight duration In hour, FEBRUARY WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
87°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
86°N	0.7	0.7	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.5	0.5
85°N	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5	0.5	0.5
84°N	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.5	0.5
83°N	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.5
82°N	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7
81°N	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.7	0.7
80°N	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8	0.7
79°N	1.4	1.3	1.3	1.2	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8
78°N	1.5	1.4	1.3	1.3	1.2	1.0	1.0	0.9	0.9	0.9	0.8	0.7
77°N	1.6	1.5	1.4	1.3	1.3	1.2	1.0	1.0	0.9	0.9	0.8	0.7
76°N	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9	0.9	0.8	0.7
75°N	2.1	1.7	1.5	1.5	1.4	1.3	1.2	1.0	1.0	0.8	0.8	0.8
74°N	2.3	2.1	1.6	1.5	1.4	1.3	1.2	1.0	0.9	0.8	0.8	0.8
73°N	2.4	2.3	2.1	1.6	1.5	1.4	1.3	1.1	0.9	0.9	0.8	0.8
72°N	2.6	2.4	2.2	2.1	1.5	1.4	1.3	1.2	0.9	0.9	0.8	0.8
71°N	2.7	2.5	2.3	2.1	2.0	1.4	1.3	1.1	0.9	0.9	0.8	0.8
70°N	3.5	3.2	2.4	2.2	2.0	1.5	1.4	1.1	0.9	0.9	0.9	0.9
69°N	3.7	3.3	3.1	2.3	2.1	2.0	1.4	1.1	0.9	0.9	1.0	1.0
68°N	6.2	3.5	3.2	2.3	2.2	2.0	1.8	1.2	1.0	0.9	1.0	1.0
67°N	6.4	3.6	3.3	3.0	2.2	2.1	1.8	1.2	1.1	1.1	1.0	1.0
66°N	6.7	5.8	3.4	3.1	2.9	2.1	1.8	1.2	1.2	1.1	1.1	1.1
65°N	6.5	6.1	5.6	3.2	2.9	2.1	1.9	1.7	1.6	1.2	1.1	1.1
64°N	7.0	6.3	5.9	5.5	3.4	2.4	1.7	1.7	1.7	1.9	1.9	3.2
63°N	7.0	7.0	7.0	7.0	6.5	2.6	2.4	1.7	2.1	3.1	3.5	3.6
62°N	7.0	7.0	7.0	7.0	7.0	3.3	2.5	2.5	6.8	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	3.5	2.7	4.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	6.8	3.5	4.4	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL390 – No ozone converter – page 1
Figure 05–07–241

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 390													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
88°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
87°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
86°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
85°N	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
84°N	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
83°N	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
82°N	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
81°N	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
80°N	0.7	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
79°N	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3
78°N	0.7	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3
77°N	0.7	0.7	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4	0.3	0.3
76°N	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.4	0.5	0.4	0.4
75°N	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.4	0.4	0.6	0.5	0.5	0.4
74°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5
73°N	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6	0.5	0.5	0.5
72°N	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.5	0.6	0.6
71°N	0.8	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6
70°N	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.6	0.6
69°N	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.6	0.6
68°N	1.0	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.6
67°N	1.0	1.0	1.2	1.2	1.2	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.7
66°N	1.0	1.4	1.3	1.3	1.3	1.2	1.1	0.9	0.9	0.8	0.8	0.8	0.7
65°N	1.5	1.5	1.4	1.4	1.3	1.3	1.2	1.1	0.9	0.9	0.9	0.8	0.8
64°N	2.9	2.4	1.5	1.5	1.4	1.4	1.3	1.2	1.0	0.9	0.9	0.9	0.8
63°N	3.2	2.6	2.5	2.0	1.9	1.7	1.6	1.5	1.2	1.0	0.9	0.9	0.9
62°N	7.0	6.9	2.8	2.2	2.1	1.9	1.8	1.6	1.2	1.0	1.0	0.9	0.9
61°N	7.0	7.0	7.0	3.7	2.3	2.1	1.9	1.7	1.3	1.1	1.0	1.0	0.9
60°N	7.0	7.0	7.0	4.2	3.8	2.3	2.1	1.9	1.6	1.1	1.0	1.0	0.9
59°N	7.0	7.0	7.0	4.9	4.3	3.7	2.3	2.0	1.8	1.4	1.1	1.0	0.9
58°N	7.0	7.0	7.0	5.5	4.8	4.1	2.5	2.2	1.9	1.5	1.1	1.1	0.9
57°N	7.0	7.0	7.0	6.3	5.3	4.6	3.9	2.4	2.1	1.5	1.5	1.3	1.3
56°N	7.0	7.0	7.0	7.0	5.7	4.9	4.3	2.6	2.2	1.7	1.5	1.4	1.3
55°N	7.0	7.0	7.0	7.0	6.2	5.3	4.7	4.0	2.4	2.2	1.6	1.5	1.4
54°N	7.0	7.0	7.0	7.0	6.4	5.5	5.0	4.4	2.6	2.8	2.4	1.6	1.5
53°N	7.0	7.0	7.0	7.0	6.5	5.6	5.2	4.7	4.0	3.8	2.6	2.4	1.6
52°N	7.0	7.0	7.0	7.0	6.3	5.6	5.4	5.1	6.1	4.1	2.8	2.5	1.7
51°N	7.0	7.0	7.0	7.0	5.9	5.3	5.5	5.4	6.8	4.5	3.0	2.7	1.8
50°N	7.0	7.0	7.0	7.0	5.3	5.0	5.5	5.7	7.0	5.0	6.4	2.9	2.1
49°N	7.0	7.0	7.0	7.0	4.8	4.6	5.5	7.0	7.0	5.5	7.0	3.2	2.9
48°N	7.0	7.0	7.0	7.0	4.1	4.2	5.4	7.0	7.0	6.0	7.0	3.4	3.2
47°N	7.0	7.0	7.0	7.0	3.5	3.7	5.3	7.0	7.0	7.0	7.0	3.7	3.5
46°N	7.0	7.0	7.0	6.9	3.0	3.4	5.9	7.0	7.0	7.0	7.0	7.0	6.0
45°N	7.0	7.0	7.0	6.5	2.7	3.1	5.9	7.0	7.0	7.0	7.0	7.0	6.8
44°N	7.0	7.0	7.0	6.7	2.4	2.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	2.3	3.1	6.9	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	2.6	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	3.7	4.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL390 – No ozone converter – page 2
Figure 05–07–242

Asia - Maximum Flight duration In hour, FEBRUARY WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
89°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
88°N	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5
87°N	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
86°N	0.9	0.9	0.9	0.9	0.9	0.9	0.7	0.6	0.6	0.6	0.6	0.6
85°N	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.7	0.7	0.6	0.6
84°N	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.7	0.6
83°N	1.2	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.7
82°N	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9
81°N	1.6	1.6	1.5	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9
80°N	1.8	1.7	1.6	1.5	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0
79°N	1.9	1.8	1.7	1.6	1.5	1.3	1.3	1.2	1.1	1.1	1.0	1.0
78°N	2.1	1.9	1.8	1.7	1.6	1.4	1.3	1.2	1.2	1.1	1.1	0.9
77°N	2.2	2.1	1.9	1.8	1.7	1.6	1.4	1.3	1.2	1.2	1.0	0.9
76°N	2.4	2.2	2.1	1.9	1.8	1.7	1.4	1.3	1.3	1.2	1.0	1.0
75°N	3.3	2.4	2.2	2.0	1.9	1.7	1.6	1.4	1.3	1.1	1.0	1.0
74°N	3.6	3.3	2.3	2.1	2.0	1.8	1.7	1.4	1.1	1.1	1.0	1.0
73°N	3.9	3.5	3.2	2.2	2.0	1.9	1.7	1.4	1.2	1.1	1.1	1.0
72°N	4.3	3.8	3.4	3.1	2.1	1.9	1.8	1.7	1.2	1.1	1.1	1.0
71°N	4.6	4.0	3.6	3.2	3.0	2.0	1.8	1.5	1.2	1.1	1.1	1.1
70°N	6.6	5.7	3.8	3.4	3.1	2.1	1.9	1.5	1.2	1.2	1.1	1.2
69°N	7.0	6.2	5.4	3.5	3.2	2.9	1.9	1.5	1.2	1.2	1.3	1.3
68°N	7.0	6.5	5.7	3.6	3.3	3.0	2.5	1.5	1.3	1.2	1.3	1.3
67°N	7.0	6.8	5.9	5.2	3.4	3.1	2.6	1.6	1.5	1.5	1.4	1.3
66°N	7.0	7.0	6.2	5.4	4.9	3.2	2.6	1.6	1.5	1.5	1.4	1.4
65°N	7.0	7.0	7.0	5.7	5.0	3.2	2.7	2.4	2.3	1.5	1.5	1.4
64°N	7.0	7.0	7.0	7.0	6.0	3.7	2.4	2.4	2.3	2.7	2.8	5.2
63°N	7.0	7.0	7.0	7.0	7.0	4.1	3.7	2.5	3.0	5.1	5.8	5.9
62°N	7.0	7.0	7.0	7.0	7.0	5.7	3.8	3.9	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	6.2	4.3	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL380 – No ozone converter – page 1
Figure 05–07–243

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 380													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
89°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
88°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
87°N	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
86°N	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
85°N	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4
84°N	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
83°N	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
82°N	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4
81°N	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4
80°N	0.9	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4
79°N	0.9	0.8	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4
78°N	0.9	0.8	0.8	0.8	0.8	0.7	0.6	0.5	0.5	0.5	0.5	0.5	0.4
77°N	0.9	0.9	0.8	0.8	0.8	0.7	0.6	0.6	0.5	0.5	0.5	0.4	0.4
76°N	0.9	0.9	0.9	0.8	0.8	0.8	0.6	0.6	0.6	0.5	0.6	0.5	0.5
75°N	0.9	0.9	0.9	0.8	0.8	0.8	0.6	0.6	0.6	0.7	0.6	0.6	0.5
74°N	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.6	0.6	0.7
73°N	1.0	0.9	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7
72°N	1.0	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.7	0.7	0.7
71°N	1.0	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.8	0.7	0.7	0.8
70°N	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.8	0.8
69°N	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.8	0.8
68°N	1.3	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.8
67°N	1.3	1.3	1.7	1.6	1.6	1.5	1.1	1.1	1.1	1.1	1.0	1.0	0.9
66°N	1.4	1.8	1.8	1.7	1.7	1.6	1.5	1.2	1.1	1.1	1.1	1.1	0.9
65°N	2.0	2.0	1.9	1.9	1.8	1.7	1.6	1.5	1.2	1.2	1.1	1.1	1.1
64°N	4.5	3.4	2.1	2.0	2.0	1.9	1.7	1.6	1.3	1.2	1.2	1.1	1.1
63°N	5.2	3.9	3.7	2.7	2.6	2.4	2.2	2.0	1.5	1.3	1.2	1.2	1.1
62°N	7.0	7.0	4.3	3.1	2.9	2.7	2.4	2.1	1.6	1.3	1.3	1.2	1.2
61°N	7.0	7.0	7.0	6.1	3.2	3.0	2.7	2.4	1.8	1.4	1.3	1.2	1.2
60°N	7.0	7.0	7.0	7.0	6.3	3.3	3.0	2.6	2.2	1.5	1.4	1.3	1.1
59°N	7.0	7.0	7.0	7.0	7.0	6.1	3.3	2.9	2.4	1.9	1.4	1.3	1.2
58°N	7.0	7.0	7.0	7.0	7.0	7.0	3.7	3.2	2.7	2.0	1.5	1.4	1.2
57°N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	3.5	2.9	2.1	2.0	1.8	1.7
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	3.2	2.4	2.1	1.9	1.8
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	3.5	3.2	2.2	2.0	1.9
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.9	4.1	3.5	2.1	2.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	3.9	3.4	2.2
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2	3.7	2.3
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.0	2.4
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.4
48°N	7.0	7.0	7.0	7.0	6.2	6.4	7.0	7.0	7.0	7.0	7.0	5.5	5.0
47°N	7.0	7.0	7.0	7.0	5.0	5.4	7.0	7.0	7.0	7.0	7.0	6.2	5.6
46°N	7.0	7.0	7.0	7.0	4.1	4.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	3.4	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	3.0	3.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	2.9	4.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	3.3	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL380 – No ozone converter – page 2
Figure 05–07–244

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
88°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
87°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4
86°N	1.9	1.9	1.9	1.9	1.8	1.8	1.5	1.5	1.5	1.5	1.5	1.4
85°N	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.9	1.6	1.5	1.5	1.5
84°N	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.5	1.5
83°N	2.3	2.4	2.3	2.3	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.5
82°N	2.8	2.6	2.5	2.4	2.3	2.3	2.2	2.1	2.1	2.0	1.9	1.9
81°N	3.1	2.9	2.8	2.6	2.4	2.4	2.3	2.2	2.1	2.1	2.0	1.9
80°N	3.3	3.2	3.0	2.9	2.6	2.5	2.4	2.3	2.2	2.1	2.0	2.0
79°N	3.6	3.4	3.2	3.1	2.9	2.6	2.4	2.3	2.3	2.2	2.1	2.0
78°N	3.9	3.7	3.4	3.2	3.1	2.7	2.5	2.4	2.3	2.2	2.1	1.9
77°N	4.3	4.0	3.7	3.4	3.2	3.0	2.6	2.5	2.4	2.3	2.0	1.9
76°N	4.7	4.3	3.9	3.6	3.4	3.1	2.7	2.6	2.4	2.3	2.0	2.0
75°N	7.0	4.6	4.2	3.8	3.5	3.3	3.1	2.6	2.5	2.1	2.1	2.0
74°N	7.0	7.0	4.5	4.0	3.7	3.4	3.2	2.7	2.2	2.2	2.1	2.0
73°N	7.0	7.0	7.0	4.3	3.8	3.5	3.3	2.7	2.3	2.2	2.1	2.0
72°N	7.0	7.0	7.0	6.7	4.0	3.7	3.4	3.1	2.3	2.2	2.1	2.1
71°N	7.0	7.0	7.0	7.0	6.2	3.8	3.5	2.7	2.3	2.2	2.2	2.1
70°N	7.0	7.0	7.0	7.0	6.6	3.9	3.6	2.8	2.4	2.3	2.2	2.3
69°N	7.0	7.0	7.0	7.0	6.9	6.1	3.7	2.8	2.4	2.3	2.4	2.4
68°N	7.0	7.0	7.0	7.0	7.0	6.3	4.9	2.9	2.4	2.3	2.5	2.4
67°N	7.0	7.0	7.0	7.0	7.0	6.6	5.0	2.9	2.8	2.7	2.5	2.5
66°N	7.0	7.0	7.0	7.0	7.0	6.8	5.1	2.9	2.8	2.8	2.6	2.6
65°N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.4	4.2	2.8	2.7	2.6
64°N	7.0	7.0	7.0	7.0	7.0	7.0	4.6	4.5	4.3	5.0	5.1	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	5.7	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL370 – No ozone converter – page 1
Figure 05–07–245

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 370													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
88°N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2
87°N	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2
86°N	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2
85°N	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2
84°N	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2
83°N	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2
82°N	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2
81°N	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2
80°N	1.9	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2
79°N	2.0	1.8	1.7	1.7	1.7	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2
78°N	1.8	1.8	1.8	1.7	1.7	1.6	1.4	1.4	1.4	1.3	1.3	1.3	1.2
77°N	1.9	1.8	1.8	1.7	1.7	1.7	1.4	1.4	1.4	1.4	1.3	1.3	1.3
76°N	1.9	1.9	1.8	1.8	1.7	1.7	1.4	1.4	1.4	1.4	1.5	1.3	1.3
75°N	1.9	1.9	1.8	1.8	1.8	1.7	1.5	1.4	1.4	1.6	1.5	1.5	1.3
74°N	2.0	1.9	1.9	1.8	1.9	1.9	1.8	1.8	1.7	1.7	1.5	1.5	1.6
73°N	2.0	1.9	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.7	1.5	1.6	1.6
72°N	2.0	2.1	2.1	2.0	2.0	2.0	1.9	1.9	1.8	1.7	1.6	1.6	1.6
71°N	2.0	2.2	2.1	2.1	2.1	2.0	2.0	1.9	1.9	1.8	1.7	1.7	1.7
70°N	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	1.9	1.9	1.9	1.7	1.7
69°N	2.3	2.3	2.3	2.2	2.2	2.1	2.1	2.0	2.0	2.0	1.9	1.7	1.7
68°N	2.4	2.4	2.4	2.3	2.3	2.2	2.1	2.1	2.1	2.0	2.0	2.0	1.8
67°N	2.5	2.4	3.0	2.9	2.8	2.7	2.2	2.1	2.1	2.1	2.1	2.0	1.8
66°N	2.6	3.3	3.2	3.1	3.0	2.9	2.7	2.3	2.2	2.1	2.1	2.1	1.8
65°N	3.5	3.5	3.4	3.3	3.2	3.0	2.9	2.7	2.3	2.2	2.2	2.1	2.1
64°N	7.0	6.2	3.7	3.6	3.4	3.3	3.1	2.9	2.4	2.3	2.2	2.2	2.2
63°N	7.0	7.0	6.8	4.7	4.4	4.1	3.7	3.4	2.7	2.4	2.3	2.3	2.2
62°N	7.0	7.0	7.0	5.3	5.0	4.5	4.1	3.7	2.9	2.5	2.4	2.3	2.3
61°N	7.0	7.0	7.0	7.0	5.7	5.1	4.5	4.1	3.1	2.6	2.4	2.4	2.3
60°N	7.0	7.0	7.0	7.0	7.0	5.8	5.1	4.4	3.9	2.7	2.5	2.4	2.2
59°N	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.9	4.2	3.3	2.6	2.5	2.2
58°N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.4	4.6	3.5	2.7	2.6	2.3
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.1	3.7	3.4	3.2	3.1
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.6	4.1	3.6	3.4	3.2
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.6	3.9	3.6	3.4
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0	6.4	3.8	3.6
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	3.8
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.1
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	5.3	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	4.6	6.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	4.4	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL370 – No ozone converter – page 2
Figure 05–07–246

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 360												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
89°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
88°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7
87°N	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8
86°N	2.7	2.6	2.6	2.5	2.5	2.5	2.0	2.0	1.9	1.9	1.9	1.8
85°N	3.0	2.9	2.9	2.8	2.7	2.7	2.6	2.5	2.0	2.0	1.9	1.9
84°N	3.4	3.2	3.1	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.0	1.9
83°N	3.3	3.6	3.5	3.3	3.2	3.1	2.9	2.8	2.7	2.6	2.6	1.9
82°N	4.7	4.0	3.8	3.6	3.4	3.3	3.1	3.0	2.9	2.7	2.6	2.6
81°N	5.3	5.0	4.7	3.9	3.6	3.4	3.3	3.1	3.0	2.8	2.7	2.6
80°N	6.1	5.6	5.2	4.8	3.9	3.6	3.4	3.3	3.1	3.0	2.8	2.7
79°N	7.0	6.3	5.8	5.3	4.9	3.9	3.6	3.4	3.2	3.1	2.9	2.8
78°N	7.0	7.0	6.5	5.9	5.3	4.1	3.8	3.5	3.3	3.1	3.0	2.6
77°N	7.0	7.0	7.0	6.5	5.9	5.3	3.9	3.7	3.4	3.2	2.7	2.6
76°N	7.0	7.0	7.0	7.0	6.3	5.7	4.1	3.8	3.5	3.3	2.8	2.7
75°N	7.0	7.0	7.0	7.0	6.9	6.1	5.5	3.9	3.6	3.0	2.8	2.7
74°N	7.0	7.0	7.0	7.0	7.0	6.5	5.8	4.1	3.2	3.0	2.9	2.7
73°N	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.2	3.2	3.1	2.9	2.8
72°N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7	3.3	3.1	3.0	2.8
71°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.6	3.4	3.2	3.0	2.9
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.4	3.2	3.1	3.3
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.5	3.3	3.5	3.4
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.5	3.3	3.7	3.6
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	4.7	4.5	3.8	3.7
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	4.9	4.7	4.0	3.9
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.1	4.1
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL360 – No ozone converter – page 1
Figure 05–07–247

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 360													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
89°N	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
88°N	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5
87°N	1.8	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5
86°N	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.5	1.5	1.5	1.5
85°N	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
84°N	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
83°N	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
82°N	1.9	1.9	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
81°N	2.0	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
80°N	2.6	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
79°N	2.6	2.3	2.3	2.2	2.1	1.7	1.7	1.7	1.6	1.5	1.5	1.5	1.5
78°N	2.5	2.4	2.3	2.2	2.2	2.1	1.7	1.7	1.6	1.5	1.5	1.5	1.4
77°N	2.5	2.4	2.3	2.3	2.2	2.1	1.7	1.7	1.6	1.6	1.5	1.5	1.4
76°N	2.5	2.4	2.4	2.3	2.2	2.1	1.7	1.7	1.7	1.6	1.8	1.5	1.5
75°N	2.6	2.5	2.4	2.3	2.2	2.2	1.8	1.7	1.7	2.0	1.7	1.7	1.5
74°N	2.6	2.5	2.4	2.4	2.5	2.4	2.3	2.2	2.1	2.0	1.8	1.7	1.8
73°N	2.7	2.6	2.7	2.6	2.5	2.4	2.3	2.3	2.2	2.1	1.8	1.8	1.8
72°N	2.7	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1	1.8	1.8	1.8
71°N	2.8	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.1	1.9	1.9	1.8
70°N	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.3	2.3	2.2	1.9	1.9
69°N	3.3	3.2	3.1	3.1	2.9	2.8	2.7	2.5	2.5	2.4	2.3	1.9	1.9
68°N	3.5	3.4	3.3	3.2	3.1	2.9	2.8	2.6	2.6	2.4	2.3	2.2	1.9
67°N	3.6	3.5	4.5	4.3	4.1	3.8	2.9	2.7	2.7	2.5	2.4	2.3	2.0
66°N	3.8	5.2	5.0	4.8	4.5	4.2	3.8	3.0	2.8	2.6	2.5	2.4	2.0
65°N	5.9	5.9	5.6	5.3	5.0	4.6	4.1	3.7	2.9	2.7	2.6	2.4	2.3
64°N	7.0	7.0	6.4	6.1	5.6	5.1	4.5	4.0	3.0	2.8	2.7	2.5	2.4
63°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.0	3.7	3.0	2.8	2.6	2.4
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.0	3.1	2.9	2.7	2.5
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.3	3.3	3.0	2.8	2.6
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.5	3.1	2.9	2.4
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.5	3.3	3.0	2.5
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.5	3.1	2.6
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.7	4.0	3.6
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.1	4.3	3.9
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.7	4.2
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	4.5
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL360 – No ozone converter – page 2
Figure 05–07–248

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 350												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89°N	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.7
88°N	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.8	2.8	2.8
87°N	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.0	3.0	2.9	2.9
86°N	5.1	5.0	4.9	4.8	4.6	4.5	3.3	3.3	3.2	3.1	3.0	3.0
85°N	6.1	5.9	5.7	5.5	5.3	5.0	4.8	4.6	3.3	3.2	3.1	3.0
84°N	7.0	7.0	6.7	6.3	6.0	5.6	5.3	5.0	4.8	4.6	3.2	3.1
83°N	7.0	7.0	7.0	7.0	6.8	6.3	5.9	5.5	5.1	4.9	4.6	3.2
82°N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.0	5.5	5.1	4.8	4.5
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.4	5.0	4.7
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.7	5.3	4.9
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.0	5.5	5.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.7	4.3
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.7	4.4
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.8	4.4
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.9	4.5
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.5	5.0	4.6
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.6	5.1	4.7
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7	5.2	4.8
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.9	5.3	4.9
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.0	5.4	6.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.1	6.8	6.4
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.2	7.0	6.7
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL350 – No ozone converter – page 1
Figure 05–07–249

Asia - Maximum Flight duration In hour, FEBRUARY WOUDC FL 350													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89°N	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5
88°N	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4
87°N	2.8	2.8	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.4	2.3	2.3	2.3
86°N	2.9	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.5	2.3	2.3	2.3	2.2
85°N	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.3	2.3	2.2	2.2
84°N	3.0	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.3	2.3	2.2	2.2	2.2
83°N	3.1	2.9	2.8	2.7	2.7	2.6	2.5	2.5	2.3	2.3	2.2	2.2	2.1
82°N	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.3	2.3	2.2	2.2	2.1	2.1
81°N	3.1	3.0	2.9	2.8	2.7	2.6	2.5	2.3	2.2	2.2	2.1	2.1	2.1
80°N	4.5	3.0	2.9	2.8	2.7	2.6	2.5	2.3	2.2	2.2	2.1	2.1	2.0
79°N	4.6	3.7	3.5	3.3	3.2	2.6	2.5	2.4	2.2	2.1	2.1	2.0	2.0
78°N	4.0	3.8	3.6	3.4	3.2	3.1	2.5	2.4	2.3	2.1	2.0	2.0	1.9
77°N	4.1	3.8	3.6	3.4	3.2	3.1	2.5	2.4	2.3	2.2	2.0	1.9	1.9
76°N	4.1	3.9	3.7	3.5	3.3	3.1	2.5	2.4	2.3	2.2	2.3	1.9	1.8
75°N	4.2	4.0	3.7	3.5	3.3	3.1	2.5	2.4	2.3	2.6	2.2	2.1	1.8
74°N	4.3	4.0	3.8	3.6	3.7	3.5	3.3	3.1	2.8	2.6	2.2	2.1	2.1
73°N	4.4	4.1	4.4	4.1	3.8	3.6	3.3	3.1	2.9	2.6	2.2	2.2	2.1
72°N	4.4	4.9	4.6	4.3	4.0	3.7	3.4	3.2	2.9	2.6	2.2	2.2	2.1
71°N	4.5	5.1	4.7	4.4	4.1	3.8	3.5	3.3	3.0	2.6	2.3	2.2	2.1
70°N	5.6	5.4	5.0	4.6	4.3	4.0	3.7	3.3	3.1	2.9	2.7	2.2	2.1
69°N	5.9	5.5	5.3	4.9	4.6	4.2	3.8	3.5	3.3	2.9	2.7	2.2	2.1
68°N	6.3	5.9	5.6	5.2	4.8	4.4	4.0	3.6	3.4	3.0	2.8	2.5	2.1
67°N	6.7	6.3	7.0	7.0	7.0	6.2	4.2	3.8	3.5	3.1	2.8	2.6	2.1
66°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.2	3.6	3.2	2.9	2.6	2.1
65°N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.5	3.8	3.4	3.0	2.7	2.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.0	3.6	3.1	2.8	2.5
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.8	3.3	2.9	2.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.0	3.4	3.0	2.6
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.3	3.6	3.1	2.7
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.8	3.3	2.6
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	4.1	3.4	2.7
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	3.6	2.8
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.9	4.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.4
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.8
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.3
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL350 – No ozone converter – page 2
Figure 05–07–250

Asia - Maximum Flight duration In hour, FEBRUARY WOUDC FL 340												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
89°N	5.2	5.2	5.1	5.1	5.1	5.0	5.0	4.9	4.9	4.9	4.8	4.8
88°N	6.1	6.0	5.9	5.8	5.8	5.7	5.5	5.5	5.4	5.2	5.1	5.0
87°N	7.0	7.0	7.0	6.8	6.6	6.4	6.2	6.0	5.8	5.6	5.4	5.2
86°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.6	6.2	6.0	5.7	5.5
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.3	5.9	5.6
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.8
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL340 – No ozone converter – page 1
Figure 05–07–251

Asia - Maximum Flight duration In hour, FEBRUARY WOUDC FL 340													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
89°N	4.7	4.7	4.6	4.6	4.5	4.5	4.4	4.4	4.4	4.4	4.3	4.3	4.2
88°N	4.9	4.8	4.7	4.6	4.5	4.5	4.4	4.3	4.2	4.2	4.1	4.1	4.0
87°N	5.1	4.9	4.8	4.7	4.5	4.4	4.3	4.2	4.1	4.0	3.8	3.7	3.7
86°N	5.2	5.0	4.8	4.6	4.5	4.4	4.2	4.1	4.0	3.7	3.6	3.6	3.5
85°N	5.3	5.0	4.8	4.6	4.4	4.3	4.1	4.0	3.7	3.6	3.5	3.4	3.4
84°N	5.4	5.1	4.8	4.6	4.4	4.2	4.0	3.9	3.6	3.4	3.4	3.3	3.2
83°N	5.5	5.2	4.8	4.6	4.3	4.1	3.9	3.8	3.4	3.3	3.2	3.1	3.1
82°N	5.5	5.2	4.8	4.5	4.3	4.0	3.8	3.4	3.3	3.2	3.1	3.0	2.9
81°N	5.6	5.2	4.8	4.4	4.2	3.9	3.7	3.3	3.2	3.1	3.0	2.9	2.8
80°N	7.0	5.2	4.7	4.4	4.1	3.9	3.6	3.2	3.1	3.0	2.9	2.8	2.7
79°N	7.0	6.8	6.1	5.5	5.0	3.8	3.6	3.4	3.0	2.9	2.8	2.7	2.6
78°N	7.0	6.9	6.2	5.5	5.0	4.6	3.5	3.3	3.1	2.8	2.6	2.5	2.3
77°N	7.0	6.9	6.2	5.5	5.0	4.5	3.4	3.2	3.0	2.8	2.5	2.3	2.2
76°N	7.0	7.0	6.2	5.5	5.0	4.5	3.4	3.2	3.0	2.8	2.8	2.2	2.2
75°N	7.0	7.0	6.2	5.5	5.0	4.5	3.4	3.1	2.9	3.2	2.6	2.4	2.1
74°N	7.0	7.0	6.3	5.6	5.7	5.0	4.5	4.0	3.5	3.1	2.5	2.4	2.3
73°N	7.0	7.0	7.0	6.7	5.9	5.2	4.6	4.0	3.6	3.1	2.5	2.4	2.2
72°N	7.0	7.0	7.0	7.0	6.1	5.3	4.7	4.1	3.6	3.1	2.4	2.4	2.2
71°N	7.0	7.0	7.0	7.0	6.4	5.5	4.8	4.1	3.6	3.0	2.5	2.3	2.1
70°N	7.0	7.0	7.0	7.0	6.8	5.8	5.0	4.3	3.7	3.2	2.9	2.3	2.1
69°N	7.0	7.0	7.0	7.0	7.0	6.1	5.2	4.4	3.9	3.3	2.9	2.3	2.0
68°N	7.0	7.0	7.0	7.0	7.0	6.6	5.5	4.6	4.0	3.4	2.9	2.5	2.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.8	4.2	3.5	3.0	2.6	2.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.3	3.6	3.1	2.6	2.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.8	3.2	2.7	2.2
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.0	3.3	2.7	2.3
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.3	3.5	2.9	2.4
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.7	3.0	2.5
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.9	3.1	2.6
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.2	3.3	2.5
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.5	2.6
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.7	2.8
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.8
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.1
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.6
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL340 – No ozone converter – page 2
Figure 05–07–252

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 330												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL330 – No ozone converter – page 1
Figure 05–07–253

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 330													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.5
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.3	6.1	5.9
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.0	5.8	5.5	5.3
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.0	5.6	5.3	5.0	4.8
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.4	5.1	4.8	4.5	4.4
80°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.5	5.1	4.7	4.4	4.2	4.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7	4.7	4.4	4.0	3.8	3.6
78°N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.4	4.8	4.0	3.7	3.5	3.1
77°N	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.1	4.5	4.1	3.5	3.0	2.9
76°N	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.9	4.3	3.9	3.8	2.8	2.7
75°N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.7	4.2	4.6	3.3	3.0	2.5
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.1	4.4	3.2	2.9	2.8
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.4	4.2	3.0	2.9	2.6
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.3	4.1	2.9	2.8	2.4
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.3	3.9	3.1	2.7	2.3
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.2	3.5	2.6	2.3
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.3	3.5	2.6	2.2
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.5	3.6	2.9	2.2
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.7	3.6	2.9	2.1
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.9	3.8	2.9	2.1
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.9	3.0	2.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.1	3.1	2.4
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.4	3.3	2.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.5	2.6
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	3.7	2.8
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.0	2.7
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.3	2.9
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.1
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.3
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL330 – No ozone converter – page 2
Figure 05–07–254

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 320												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL320 – No ozone converter – page 1
Figure 05–07–255

Asia - Maximum Flight duration in hour, FEBRUARY WOUDC FL 320													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.6
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.3	4.8
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.3
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.2	3.8
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.7	4.4
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.7	3.9
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.4	3.6
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	4.2	3.4
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.0	3.2
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	3.9	3.1
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.5	3.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.5	2.9
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	2.9
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.5
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	3.6
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.9
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.2
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – February – FL320 – No ozone converter – page 2
Figure 05–07–256

W. Asia – March

	Asia - Maximum Flight duration in hour, MARCH WOUDC FL 410											
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	--	–	--	--	–	--	–	--	–	–	–
89°N	–	--	–	--	--	–	--	–	--	–	–	–
88°N	–	--	–	--	--	–	--	–	--	–	–	–
87°N	–	--	–	--	--	–	--	–	--	–	–	–
86°N	–	--	–	--	--	–	--	–	--	–	–	–
85°N	–	--	–	--	--	–	--	–	--	–	–	–
84°N	–	--	–	--	--	–	--	–	--	–	–	–
83°N	–	--	–	--	--	–	--	–	--	–	–	–
82°N	–	--	–	--	--	–	--	–	--	–	–	–
81°N	–	--	–	--	--	–	--	–	--	–	–	–
80°N	–	--	–	--	--	–	--	–	--	–	–	–
79°N	–	--	–	--	--	–	--	–	--	–	–	–
78°N	–	--	–	--	--	–	--	–	--	–	–	–
77°N	–	--	–	--	--	–	--	–	--	–	–	–
76°N	–	--	–	--	--	–	--	–	--	–	–	–
75°N	–	--	–	--	--	–	--	–	--	–	–	–
74°N	–	--	–	--	--	–	--	–	--	–	–	–
73°N	–	--	–	--	--	–	--	–	--	–	–	–
72°N	–	--	–	--	--	–	--	–	--	–	–	–
71°N	–	--	–	--	--	–	--	–	--	–	–	–
70°N	–	--	–	--	--	–	--	–	--	–	–	–
69°N	–	--	–	--	--	–	--	–	--	–	–	–
68°N	–	--	–	--	--	–	--	–	--	–	–	–
67°N	–	--	–	--	--	–	--	–	--	–	–	–
66°N	–	--	–	--	--	–	--	–	--	–	–	–
65°N	–	--	–	--	--	–	--	–	--	–	–	–
64°N	–	--	–	--	--	–	--	–	--	–	–	–
63°N	–	0.3	–	--	--	–	--	–	--	–	–	–
62°N	0.9	1.0	–	--	--	–	--	–	0.4	0.6	0.8	–
61°N	1.0	1.1	–	--	--	–	--	–	0.7	1.0	1.3	–
60°N	1.2	1.3	–	--	--	–	--	–	1.1	1.5	1.8	–
59°N	1.3	1.4	1.5	--	--	–	0.4	4.2	1.6	2.1	2.5	–
58°N	1.5	1.6	1.6	0.3	--	–	1.9	5.5	7.0	2.9	3.4	0.4
57°N	1.7	1.8	1.8	0.4	0.3	–	2.4	7.0	7.0	3.9	4.5	0.9
56°N	1.9	2.0	2.0	2.0	--	0.7	7.0	7.0	7.0	7.0	6.2	1.5
55°N	2.2	2.3	2.2	2.2	1.2	6.2	7.0	7.0	7.0	7.0	7.0	2.4
54°N	2.5	2.5	2.5	2.4	2.8	7.0	7.0	7.0	7.0	7.0	7.0	3.5
53°N	2.9	2.9	2.7	2.6	3.2	7.0	7.0	7.0	7.0	7.0	7.0	5.1
52°N	3.3	3.3	3.1	2.9	3.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	3.8	3.7	3.5	2.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	4.4	4.2	3.9	6.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	5.2	4.9	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	6.2	5.7	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	6.7	5.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL410 – No ozone converter – page 1
Figure 05–07–257

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	--	--	–	--	--	–	--	–	--	--	–	–	--
89°N	--	--	–	--	--	–	–	–	--	--	–	–	--
88°N	--	--	–	--	--	–	–	–	--	--	–	–	--
87°N	--	--	–	--	--	–	–	–	--	--	–	–	--
86°N	--	--	–	--	--	–	–	–	--	--	–	–	--
85°N	--	--	–	--	--	–	–	–	--	--	–	–	--
84°N	--	--	–	--	--	–	–	–	--	--	–	–	--
83°N	--	--	–	--	--	–	–	–	--	--	–	–	--
82°N	--	--	–	--	--	–	–	–	--	--	–	–	--
81°N	--	--	–	--	--	–	–	–	--	--	–	–	--
80°N	--	--	–	--	--	–	–	–	--	--	–	–	--
79°N	--	--	–	--	--	–	–	–	--	--	–	–	--
78°N	--	--	–	--	--	–	–	–	--	--	–	–	--
77°N	--	--	–	--	--	–	–	–	--	--	–	–	--
76°N	--	--	–	--	--	–	–	–	--	--	–	–	--
75°N	--	--	–	--	--	–	–	–	--	--	–	–	--
74°N	--	--	–	--	--	–	–	–	--	--	–	–	--
73°N	--	--	–	--	--	–	–	–	--	--	–	–	--
72°N	--	--	–	--	--	–	–	–	--	--	–	–	--
71°N	--	--	–	--	--	–	–	–	--	--	–	–	--
70°N	--	--	–	--	--	–	–	–	--	--	–	–	--
69°N	--	--	–	--	--	–	–	–	--	--	–	–	--
68°N	--	--	–	--	--	–	–	–	--	--	–	–	--
67°N	--	--	–	--	--	–	–	–	--	--	–	–	--
66°N	--	--	–	--	--	–	–	–	--	--	–	–	--
65°N	--	--	–	--	--	–	–	–	--	--	–	–	--
64°N	--	--	–	--	--	–	–	–	--	--	–	–	--
63°N	--	--	–	--	--	–	–	–	--	--	–	–	--
62°N	--	--	–	--	--	–	–	–	--	--	–	–	--
61°N	--	--	–	--	--	–	–	–	--	--	–	–	--
60°N	--	--	–	--	--	–	–	–	--	--	–	–	--
59°N	--	--	–	--	--	–	–	–	--	--	–	–	--
58°N	0.3	--	–	--	--	–	–	–	--	--	–	–	--
57°N	0.7	0.3	–	--	--	–	–	–	--	--	–	–	--
56°N	1.2	0.7	–	--	--	–	–	–	--	--	–	–	--
55°N	1.9	1.1	0.5	--	--	–	–	–	--	--	–	–	--
54°N	2.7	1.6	0.7	--	--	–	–	–	--	--	–	–	--
53°N	3.8	2.2	0.9	--	--	–	–	–	--	--	–	–	--
52°N	5.3	2.8	1.1	--	--	–	–	–	--	--	–	–	--
51°N	7.0	3.7	1.3	--	--	–	–	–	--	--	–	–	--
50°N	7.0	4.7	1.5	--	--	–	–	–	--	--	–	–	--
49°N	7.0	6.2	1.7	--	--	–	–	–	--	--	–	–	--
48°N	7.0	7.0	1.9	--	--	–	–	–	--	--	–	–	--
47°N	7.0	7.0	2.9	--	--	–	–	–	--	--	–	–	--
46°N	7.0	7.0	3.5	--	--	–	–	–	--	--	–	–	--
45°N	7.0	7.0	4.4	--	--	–	–	–	--	--	–	–	--
44°N	7.0	7.0	7.0	--	--	–	–	–	--	--	–	–	--
43°N	7.0	7.0	7.0	--	--	–	–	0.5	0.4	0.4	–	–	--
42°N	7.0	7.0	7.0	0.7	--	–	–	0.8	0.8	0.7	0.3	–	--
41°N	7.0	7.0	7.0	2.4	--	–	0.5	1.3	1.7	1.9	0.7	–	--
40°N	7.0	7.0	7.0	7.0	0.6	0.4	1.7	1.9	2.3	2.5	1.0	–	--
39°N	7.0	7.0	7.0	7.0	7.0	3.5	3.2	2.6	2.9	3.1	1.5	–	--
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	3.7	3.9	2.0	1.0	0.8
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.4
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL410 – No ozone converter – page 2
Figure 05–07–258

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	--	--	--	--	--	–	--	–	--	--	--	–
89°N	--	--	--	--	--	–	--	–	--	--	--	–
88°N	--	--	--	--	--	–	--	–	--	--	--	–
87°N	--	--	--	--	--	–	--	–	--	--	--	–
86°N	--	--	--	--	--	–	--	–	--	--	--	–
85°N	--	--	--	--	--	–	--	–	--	--	--	–
84°N	--	--	--	--	--	–	--	–	--	--	--	–
83°N	--	--	--	--	--	–	--	–	--	--	--	–
82°N	--	--	--	--	--	–	--	–	--	--	--	–
81°N	--	--	--	--	--	–	--	–	--	--	--	–
80°N	--	--	--	--	--	–	--	–	--	--	--	–
79°N	--	--	--	--	--	–	--	–	--	--	--	–
78°N	--	--	--	--	--	–	--	–	--	--	--	–
77°N	--	--	--	--	--	–	--	–	--	--	--	–
76°N	--	--	--	--	--	–	--	–	--	--	--	–
75°N	--	--	--	--	--	–	--	–	--	--	--	–
74°N	--	--	--	--	--	–	--	–	--	--	--	–
73°N	--	--	--	--	--	–	--	–	--	--	--	–
72°N	--	--	--	--	--	–	--	–	--	--	--	–
71°N	--	--	--	--	--	–	--	–	--	--	--	–
70°N	--	--	--	--	--	–	--	–	--	--	--	–
69°N	--	--	--	--	--	–	--	–	--	--	--	–
68°N	--	--	--	--	--	–	--	–	--	--	--	–
67°N	--	--	--	--	--	–	--	–	--	--	--	–
66°N	--	--	--	--	--	–	--	–	--	--	--	–
65°N	--	--	--	--	--	–	--	–	--	--	--	–
64°N	--	--	--	--	--	–	--	–	--	--	--	–
63°N	0.3	0.5	--	--	--	–	--	–	--	--	--	–
62°N	1.2	1.3	--	--	--	–	--	–	0.5	0.9	1.1	–
61°N	1.4	1.5	--	--	--	–	--	–	1.0	1.4	1.7	–
60°N	1.6	1.7	--	--	--	–	--	–	1.5	2.1	2.5	–
59°N	1.9	2.0	2.1	0.3	--	–	0.5	–	2.2	3.0	3.6	–
58°N	2.1	2.3	2.3	0.4	0.3	–	2.7	–	7.0	4.2	5.0	0.6
57°N	2.4	2.6	2.6	0.6	0.4	–	3.4	–	7.0	6.0	7.0	1.2
56°N	2.8	2.9	2.9	2.8	--	0.9	7.0	–	7.0	7.0	7.0	2.1
55°N	3.2	3.3	3.2	3.1	1.6	7.0	7.0	–	7.0	7.0	7.0	3.3
54°N	3.8	3.7	3.6	3.5	4.3	7.0	7.0	–	7.0	7.0	7.0	5.0
53°N	4.4	4.3	4.0	3.9	4.9	7.0	7.0	–	7.0	7.0	7.0	7.0
52°N	5.1	5.0	4.8	4.3	5.6	7.0	7.0	–	7.0	7.0	7.0	7.0
51°N	6.0	5.8	5.4	4.3	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
50°N	7.0	6.8	6.2	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	–	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL400 – No ozone converter – page 1
Figure 05–07–259

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	–	–	--	–	–	--	--	–	–	–	--
89°N	–	--	–	–	--	–	–	--	--	–	–	–	--
88°N	–	--	–	–	--	–	–	--	--	–	--	–	--
87°N	–	--	–	–	--	--	–	–	–	--	--	–	--
86°N	–	--	–	–	--	--	–	–	–	--	--	–	--
85°N	–	--	–	–	--	--	–	–	–	--	--	–	--
84°N	–	--	–	–	--	--	–	–	–	--	--	–	--
83°N	–	--	–	–	--	--	–	–	–	--	--	–	--
82°N	–	--	–	–	--	--	–	–	–	--	--	–	--
81°N	–	--	–	–	--	--	–	–	–	--	--	–	--
80°N	–	--	–	–	--	--	–	–	–	--	--	–	--
79°N	–	--	–	–	--	--	–	–	–	--	--	–	--
78°N	–	--	–	–	--	--	–	–	–	--	--	–	--
77°N	–	--	–	–	--	--	–	–	–	--	--	–	--
76°N	–	--	–	–	--	--	–	–	–	--	--	–	--
75°N	–	--	–	–	--	--	–	–	–	--	--	–	--
74°N	–	--	–	–	--	--	–	–	–	--	--	–	--
73°N	–	--	–	–	--	--	–	–	–	--	--	–	--
72°N	–	--	–	–	--	--	–	–	–	--	--	–	--
71°N	–	--	–	–	--	--	–	–	–	--	--	–	--
70°N	–	--	–	–	--	--	–	–	–	--	--	–	--
69°N	–	--	–	–	--	--	–	–	–	--	--	–	--
68°N	–	--	–	–	--	--	–	–	–	--	--	–	--
67°N	–	--	–	–	--	--	–	–	–	--	--	–	--
66°N	–	--	–	–	--	--	–	–	–	--	--	–	--
65°N	–	--	–	–	--	--	–	–	–	--	--	–	--
64°N	–	--	–	–	--	--	–	–	–	--	--	–	--
63°N	–	--	–	–	--	--	–	–	–	--	--	–	--
62°N	–	--	–	–	--	--	–	–	–	--	--	–	--
61°N	–	--	–	–	--	--	–	–	–	--	--	–	--
60°N	–	--	–	–	--	--	–	–	–	--	--	–	--
59°N	–	--	–	–	--	--	–	–	–	--	--	–	--
58°N	0.4	--	–	–	--	--	–	–	–	--	--	–	--
57°N	0.9	0.5	–	–	--	--	–	–	–	--	--	–	--
56°N	1.6	1.0	0.3	–	--	--	–	–	–	--	--	–	--
55°N	2.5	1.5	0.6	–	--	--	–	–	–	--	--	–	--
54°N	3.8	2.2	0.9	–	--	--	–	–	–	--	--	–	--
53°N	5.6	3.0	1.2	–	--	--	–	–	–	--	--	–	--
52°N	7.0	4.1	1.5	–	--	--	–	–	–	--	--	–	--
51°N	7.0	5.5	1.8	–	--	--	–	–	–	--	--	–	--
50°N	7.0	7.0	2.1	–	--	--	–	–	–	--	--	–	--
49°N	7.0	7.0	2.4	–	--	--	–	–	–	--	--	–	--
48°N	7.0	7.0	2.7	–	--	--	–	–	–	--	--	–	--
47°N	7.0	7.0	4.3	–	--	--	–	–	–	--	--	–	--
46°N	7.0	7.0	5.3	–	--	--	–	–	–	--	--	–	--
45°N	7.0	7.0	7.0	–	--	--	–	–	–	--	--	–	--
44°N	7.0	7.0	7.0	–	--	--	–	0.3	0.3	--	--	–	--
43°N	7.0	7.0	7.0	–	--	--	–	0.6	0.6	0.6	--	–	--
42°N	7.0	7.0	7.0	1.0	--	--	–	1.1	1.0	1.0	0.4	–	--
41°N	7.0	7.0	7.0	3.4	--	--	0.7	1.7	2.3	2.6	0.9	–	--
40°N	7.0	7.0	7.0	7.0	0.9	0.6	2.3	2.5	3.1	3.4	1.3	–	--
39°N	7.0	7.0	7.0	7.0	7.0	4.9	4.6	3.6	4.1	4.4	1.9	–	--
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.5	5.7	2.6	1.4	1.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	1.8
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL400 – No ozone converter – page 2
Figure 05–07–260

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
88°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
87°N	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
86°N	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3
85°N	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.3
84°N	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3	0.3
83°N	0.7	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.3
82°N	0.8	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
81°N	0.8	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4
80°N	0.9	0.9	0.8	0.8	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4
79°N	0.9	0.9	0.9	0.8	0.8	0.6	0.5	0.5	0.5	0.4	0.4	0.4
78°N	1.0	0.9	0.9	0.9	0.8	0.6	0.6	0.5	0.5	0.5	0.4	0.4
77°N	1.0	1.0	0.9	0.9	0.9	0.8	0.6	0.5	0.5	0.5	0.4	0.4
76°N	1.1	1.0	1.0	0.9	0.9	0.9	0.6	0.5	0.5	0.5	0.4	0.4
75°N	1.3	1.1	1.0	1.0	0.9	0.9	0.9	0.5	0.5	0.4	0.4	0.4
74°N	1.4	1.3	1.1	1.0	1.0	0.9	0.9	0.6	0.5	0.4	0.4	0.4
73°N	1.4	1.4	1.3	1.0	1.0	0.9	0.9	0.6	0.5	0.4	0.4	0.4
72°N	1.5	1.4	1.4	1.3	1.0	1.0	0.9	0.9	0.5	0.4	0.4	0.4
71°N	1.5	1.5	1.4	1.4	1.3	1.0	0.9	0.8	0.5	0.4	0.4	0.4
70°N	1.7	1.7	1.5	1.4	1.4	1.0	1.0	0.8	0.5	0.4	0.4	0.4
69°N	1.8	1.7	1.7	1.5	1.4	1.3	1.0	0.8	0.5	0.4	0.5	0.5
68°N	2.3	1.8	1.7	1.5	1.4	1.4	1.2	0.9	0.5	0.5	0.5	0.5
67°N	2.4	1.9	1.8	1.7	1.5	1.4	1.2	0.9	0.9	0.8	0.5	0.5
66°N	2.5	2.3	1.8	1.7	1.7	1.4	1.2	0.9	0.9	0.9	0.5	0.5
65°N	2.5	2.4	2.3	1.8	1.7	1.5	1.2	1.2	1.2	0.9	0.6	0.5
64°N	3.6	2.5	2.4	2.3	1.9	1.5	1.2	1.3	1.3	1.0	1.0	1.3
63°N	3.7	4.0	3.2	3.1	2.6	1.6	1.6	1.3	1.6	2.4	1.5	1.5
62°N	5.2	5.5	3.3	3.2	3.1	1.9	1.6	1.6	4.1	4.5	4.9	2.2
61°N	5.5	5.8	3.5	3.4	3.3	2.0	1.7	2.5	4.7	5.3	5.9	2.6
60°N	6.0	6.2	3.7	3.6	3.4	2.7	2.1	2.7	5.5	6.4	7.0	2.9
59°N	6.4	6.7	6.8	3.8	3.6	2.8	4.1	7.0	6.7	7.0	7.0	3.4
58°N	7.0	7.0	7.0	3.9	3.8	2.9	7.0	7.0	7.0	7.0	7.0	4.1
57°N	7.0	7.0	7.0	4.1	3.9	3.0	7.0	7.0	7.0	7.0	7.0	5.0
56°N	7.0	7.0	7.0	7.0	3.4	4.6	7.0	7.0	7.0	7.0	7.0	6.1
55°N	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL390 – No ozone converter – page 1
Figure 05–07–261

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 390													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
89°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
88°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	--	--	--
87°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	--	--	--	--	--
86°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	--	--	--	--	--	--
85°N	0.3	0.3	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--
84°N	0.3	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--
83°N	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
82°N	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
81°N	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--	--
80°N	0.4	0.3	0.3	--	--	--	--	--	--	--	--	--	--
79°N	0.4	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
78°N	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
77°N	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
76°N	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
75°N	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--	--
74°N	0.3	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--
73°N	0.3	0.3	0.3	0.3	0.3	--	--	--	--	--	--	--	--
72°N	0.3	0.4	0.3	0.3	0.3	--	--	--	--	--	--	--	--
71°N	0.3	0.4	0.3	0.3	0.3	--	--	--	--	--	--	--	--
70°N	0.4	0.4	0.4	0.3	0.3	0.3	--	--	--	--	--	--	--
69°N	0.4	0.4	0.4	0.3	0.3	0.3	--	--	--	--	--	--	--
68°N	0.5	0.4	0.4	0.4	0.3	0.3	--	--	--	--	--	--	--
67°N	0.5	0.5	0.5	0.5	0.5	0.4	0.3	--	--	--	--	--	--
66°N	0.5	0.6	0.6	0.5	0.5	0.4	0.4	--	--	--	--	--	--
65°N	0.7	0.7	0.6	0.6	0.5	0.5	0.4	0.3	--	--	--	--	--
64°N	1.2	1.0	0.7	0.6	0.6	0.5	0.4	0.4	--	--	--	--	--
63°N	1.4	1.1	1.0	0.9	0.8	0.7	0.6	0.5	0.3	--	--	--	--
62°N	2.2	2.0	1.1	1.0	0.9	0.8	0.7	0.5	0.3	--	--	--	--
61°N	2.5	2.3	2.1	1.5	1.0	0.9	0.8	0.6	0.4	--	--	--	--
60°N	2.8	2.6	2.4	1.7	1.5	1.0	0.8	0.7	0.5	--	--	--	--
59°N	3.3	3.0	2.7	1.9	1.6	1.4	0.9	0.8	0.6	0.3	--	--	--
58°N	3.8	3.4	3.0	2.1	1.8	1.6	1.1	0.8	0.6	0.4	--	--	--
57°N	4.6	3.9	3.3	2.3	2.0	1.7	1.4	0.9	0.7	0.4	0.3	--	--
56°N	5.5	4.6	3.7	2.5	2.2	1.9	1.6	1.0	0.8	0.5	0.3	--	--
55°N	6.8	5.3	4.1	2.8	2.3	2.0	1.7	1.4	0.9	0.7	0.4	--	--
54°N	7.0	6.3	4.5	2.9	2.4	2.1	1.9	1.5	1.0	0.7	0.5	0.3	--
53°N	7.0	7.0	4.9	3.1	2.5	2.2	2.0	1.7	1.3	1.0	0.6	0.4	--
52°N	7.0	7.0	5.3	3.1	2.5	2.3	2.1	1.8	1.7	1.1	0.7	0.5	0.3
51°N	7.0	7.0	5.7	3.2	2.4	2.2	2.2	2.0	1.9	1.2	0.7	0.5	0.3
50°N	7.0	7.0	6.1	3.1	2.3	2.2	2.2	2.1	2.1	1.4	1.2	0.6	0.4
49°N	7.0	7.0	6.5	3.0	2.1	2.1	2.3	2.6	2.3	1.5	1.3	0.7	0.5
48°N	7.0	7.0	7.0	3.0	1.9	1.9	2.3	2.7	2.5	1.7	1.4	0.7	0.6
47°N	7.0	7.0	7.0	3.0	1.7	1.8	2.3	2.9	2.7	2.6	1.6	0.8	0.6
46°N	7.0	7.0	7.0	2.8	1.5	1.6	2.5	3.1	3.0	2.9	1.7	1.3	0.7
45°N	7.0	7.0	7.0	2.8	1.3	1.5	2.6	3.4	3.3	3.2	1.9	1.5	0.8
44°N	7.0	7.0	7.0	2.9	1.2	1.5	2.7	3.7	3.6	3.6	2.1	1.6	1.1
43°N	7.0	7.0	7.0	3.4	1.2	1.5	3.0	4.1	4.1	4.0	2.3	1.8	1.2
42°N	7.0	7.0	7.0	4.6	1.3	1.8	3.4	4.7	4.6	4.5	3.9	2.0	1.4
41°N	7.0	7.0	7.0	7.0	1.9	2.3	4.2	5.5	6.4	6.8	4.4	2.2	1.8
40°N	7.0	7.0	7.0	7.0	4.4	4.0	6.4	6.7	7.0	7.0	5.1	2.4	2.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	2.7	2.3
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.1	4.6
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL390 – No ozone converter – page 2
Figure 05–07–262

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
87°N	0.5	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4
86°N	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.4	0.4	0.4	0.4
85°N	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4
84°N	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.4	0.4
83°N	0.9	0.7	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5	0.4
82°N	1.0	0.8	0.7	0.7	0.7	0.6	0.6	0.6	0.6	0.5	0.5	0.5
81°N	1.1	1.0	1.0	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5	0.5
80°N	1.1	1.1	1.1	1.0	0.7	0.7	0.7	0.6	0.6	0.6	0.5	0.5
79°N	1.2	1.1	1.1	1.1	1.0	0.7	0.7	0.6	0.6	0.6	0.5	0.5
78°N	1.2	1.2	1.1	1.1	1.1	0.7	0.7	0.6	0.6	0.6	0.5	0.5
77°N	1.3	1.2	1.2	1.1	1.1	1.1	0.7	0.7	0.6	0.6	0.5	0.5
76°N	1.3	1.3	1.2	1.2	1.1	1.1	0.7	0.7	0.6	0.6	0.5	0.5
75°N	1.7	1.3	1.3	1.2	1.2	1.1	1.1	0.7	0.6	0.5	0.5	0.5
74°N	1.8	1.7	1.3	1.3	1.2	1.2	1.1	0.7	0.6	0.5	0.5	0.5
73°N	1.9	1.8	1.7	1.3	1.2	1.2	1.1	0.7	0.6	0.5	0.5	0.5
72°N	1.9	1.9	1.8	1.7	1.3	1.2	1.2	1.1	0.6	0.5	0.5	0.5
71°N	2.0	1.9	1.8	1.8	1.7	1.2	1.2	1.0	0.6	0.5	0.5	0.5
70°N	2.3	2.2	1.9	1.8	1.8	1.3	1.2	1.0	0.6	0.6	0.5	0.6
69°N	2.4	2.3	2.2	1.9	1.8	1.7	1.2	1.1	0.6	0.6	0.6	0.6
68°N	3.2	2.4	2.3	1.9	1.8	1.8	1.5	1.1	0.6	0.6	0.6	0.6
67°N	3.3	2.5	2.3	2.2	1.9	1.8	1.5	1.1	1.1	1.1	0.6	0.6
66°N	3.5	3.2	2.4	2.3	2.2	1.8	1.6	1.1	1.1	1.1	0.7	0.6
65°N	3.4	3.3	3.2	2.4	2.2	1.9	1.6	1.6	1.6	1.1	0.7	0.7
64°N	5.6	3.4	3.3	3.2	2.5	1.9	1.6	1.6	1.6	1.2	1.2	1.6
63°N	5.8	6.3	4.7	4.5	3.6	2.1	2.0	1.6	2.0	3.3	1.8	1.8
62°N	7.0	7.0	5.0	4.8	4.6	2.5	2.1	2.1	6.3	7.0	7.0	2.9
61°N	7.0	7.0	5.3	5.1	4.9	2.7	2.3	3.5	7.0	7.0	7.0	3.3
60°N	7.0	7.0	5.6	5.4	5.2	3.8	2.7	3.8	7.0	7.0	7.0	4.0
59°N	7.0	7.0	7.0	5.8	5.5	4.0	6.4	7.0	7.0	7.0	7.0	4.8
58°N	7.0	7.0	7.0	6.2	5.8	4.2	7.0	7.0	7.0	7.0	7.0	5.9
57°N	7.0	7.0	7.0	6.7	6.2	4.4	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	5.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL380 – No ozone converter – page 1
Figure 05–07–263

	Asia - Maximum Flight duration in hour, MARCH WOUDC FL 380												
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3
88°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3
87°N	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
86°N	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
85°N	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
84°N	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	--
83°N	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	--	–	–	--
82°N	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	--	--	–	–	--
81°N	0.4	0.4	0.4	0.3	0.3	0.3	0.3	--	--	--	–	–	--
80°N	0.5	0.4	0.3	0.3	0.3	0.3	0.3	--	--	--	–	–	--
79°N	0.5	0.4	0.4	0.3	0.3	0.3	–	--	--	--	–	–	--
78°N	0.4	0.4	0.4	0.3	0.3	0.3	–	--	--	--	–	–	--
77°N	0.4	0.4	0.4	0.3	0.3	0.3	–	--	--	--	–	–	--
76°N	0.4	0.4	0.4	0.3	0.3	0.3	–	--	--	--	–	–	--
75°N	0.4	0.4	0.4	0.3	0.3	0.3	–	--	--	--	–	–	--
74°N	0.4	0.4	0.4	0.3	0.3	0.3	0.3	--	--	--	–	–	--
73°N	0.4	0.4	0.4	0.4	0.3	0.3	0.3	--	--	--	–	–	--
72°N	0.4	0.4	0.4	0.4	0.3	0.3	0.3	--	--	--	–	–	--
71°N	0.4	0.5	0.4	0.4	0.4	0.3	0.3	--	--	--	–	–	--
70°N	0.5	0.5	0.4	0.4	0.4	0.3	0.3	--	--	--	–	–	--
69°N	0.5	0.5	0.5	0.4	0.4	0.3	0.3	--	--	--	–	–	--
68°N	0.6	0.5	0.5	0.5	0.4	0.4	0.3	0.3	--	--	–	–	--
67°N	0.6	0.6	0.7	0.6	0.6	0.5	0.3	0.3	--	--	–	–	--
66°N	0.6	0.8	0.7	0.7	0.6	0.5	0.5	0.3	--	--	–	–	--
65°N	0.8	0.8	0.8	0.7	0.7	0.6	0.5	0.4	--	--	–	–	--
64°N	1.5	1.2	0.8	0.8	0.7	0.6	0.5	0.4	0.3	--	–	–	--
63°N	1.7	1.3	1.3	1.1	1.0	0.9	0.7	0.6	0.4	--	–	–	--
62°N	2.8	2.6	1.4	1.2	1.1	1.0	0.8	0.7	0.4	--	–	–	--
61°N	3.2	3.0	2.7	1.8	1.3	1.1	0.9	0.7	0.4	0.3	–	–	--
60°N	3.8	3.4	3.1	2.1	1.8	1.2	1.0	0.8	0.6	0.3	–	–	--
59°N	4.5	4.0	3.5	2.4	2.0	1.7	1.1	0.9	0.7	0.4	–	–	--
58°N	5.4	4.8	4.0	2.7	2.3	1.9	1.3	1.0	0.8	0.5	–	–	--
57°N	6.8	5.7	4.6	3.0	2.6	2.1	1.8	1.1	0.9	0.5	0.4	–	--
56°N	7.0	6.9	5.3	3.4	2.8	2.4	1.9	1.3	1.0	0.6	0.4	0.3	--
55°N	7.0	7.0	6.1	3.7	3.0	2.6	2.2	1.7	1.1	0.8	0.4	0.3	--
54°N	7.0	7.0	6.9	4.0	3.3	2.8	2.4	1.9	1.2	0.9	0.6	0.3	--
53°N	7.0	7.0	7.0	4.3	3.4	2.9	2.6	2.1	1.6	1.2	0.7	0.5	0.3
52°N	7.0	7.0	7.0	4.5	3.4	3.0	2.7	2.3	2.1	1.3	0.8	0.6	0.3
51°N	7.0	7.0	7.0	4.5	3.3	3.0	2.9	2.5	2.4	1.5	0.9	0.6	0.4
50°N	7.0	7.0	7.0	4.5	3.2	2.9	3.0	2.7	2.7	1.6	1.4	0.7	0.5
49°N	7.0	7.0	7.0	4.3	2.9	2.8	3.0	3.5	2.9	1.8	1.5	0.8	0.6
48°N	7.0	7.0	7.0	4.4	2.6	2.6	3.1	3.7	3.2	2.0	1.7	0.9	0.7
47°N	7.0	7.0	7.0	4.3	2.3	2.4	3.1	4.0	3.6	3.3	1.8	1.0	0.8
46°N	7.0	7.0	7.0	4.1	2.0	2.2	3.4	4.3	4.0	3.7	2.1	1.5	0.8
45°N	7.0	7.0	7.0	4.0	1.7	2.0	3.5	4.8	4.5	4.2	2.3	1.7	0.9
44°N	7.0	7.0	7.0	4.2	1.6	1.9	3.8	5.4	5.2	4.8	2.5	1.9	1.3
43°N	7.0	7.0	7.0	5.2	1.5	2.0	4.2	6.2	5.9	5.5	2.8	2.1	1.4
42°N	7.0	7.0	7.0	7.0	1.7	2.4	5.0	7.0	6.9	6.4	5.0	2.3	1.6
41°N	7.0	7.0	7.0	7.0	2.5	3.2	6.4	7.0	7.0	7.0	5.9	2.6	2.1
40°N	7.0	7.0	7.0	7.0	7.0	6.3	7.0	7.0	7.0	7.0	7.0	2.9	2.4
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	2.8
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.9
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL380 – No ozone converter – page 2
Figure 05–07–264

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89°N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
88°N	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
87°N	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2
86°N	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.2	1.2
85°N	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4	1.3	1.2	1.2	1.2
84°N	1.6	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.3	1.2	1.2
83°N	1.8	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.2
82°N	2.0	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3
81°N	2.0	2.0	2.0	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.3	1.3
80°N	2.1	2.1	2.0	2.0	1.6	1.5	1.5	1.5	1.4	1.4	1.3	1.3
79°N	2.2	2.1	2.1	2.1	2.0	1.6	1.5	1.5	1.4	1.4	1.3	1.3
78°N	2.3	2.2	2.2	2.1	2.1	1.6	1.5	1.5	1.4	1.4	1.3	1.3
77°N	2.3	2.3	2.2	2.2	2.1	2.1	1.6	1.5	1.4	1.4	1.3	1.3
76°N	2.4	2.4	2.3	2.2	2.2	2.1	1.6	1.5	1.5	1.4	1.3	1.3
75°N	2.9	2.4	2.4	2.3	2.2	2.1	2.1	1.5	1.5	1.3	1.3	1.3
74°N	3.1	3.0	2.4	2.3	2.3	2.2	2.1	1.5	1.4	1.3	1.3	1.3
73°N	3.2	3.1	3.0	2.4	2.3	2.2	2.2	1.5	1.4	1.4	1.3	1.3
72°N	3.3	3.2	3.1	3.0	2.4	2.3	2.2	2.1	1.4	1.4	1.3	1.3
71°N	3.5	3.3	3.2	3.1	3.0	2.3	2.2	2.0	1.4	1.4	1.3	1.3
70°N	4.0	3.8	3.3	3.2	3.0	2.4	2.3	2.0	1.4	1.4	1.3	1.4
69°N	4.2	4.0	3.8	3.3	3.1	3.0	2.3	2.0	1.4	1.4	1.4	1.4
68°N	6.0	4.1	4.0	3.3	3.2	3.1	2.7	2.1	1.4	1.4	1.4	1.4
67°N	6.3	4.3	4.1	3.9	3.3	3.1	2.7	2.1	2.0	2.0	1.5	1.4
66°N	6.7	5.8	4.3	4.0	3.8	3.2	2.8	2.1	2.1	2.0	1.5	1.5
65°N	6.3	6.1	5.8	4.1	3.9	3.3	2.8	2.7	2.7	2.1	1.5	1.5
64°N	7.0	6.4	6.1	5.8	4.5	3.3	2.8	2.8	2.8	2.1	2.1	2.7
63°N	7.0	7.0	7.0	7.0	6.8	3.7	3.5	2.8	3.3	5.2	2.9	2.9
62°N	7.0	7.0	7.0	7.0	7.0	4.4	3.6	3.6	7.0	7.0	7.0	4.4
61°N	7.0	7.0	7.0	7.0	7.0	4.6	3.9	6.1	7.0	7.0	7.0	5.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	4.6	6.7	7.0	7.0	7.0	6.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL370 – No ozone converter – page 1
Figure 05–07–265

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 370													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
89°N	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
88°N	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
87°N	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
86°N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
85°N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
84°N	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
83°N	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
82°N	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0
81°N	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	0.9
80°N	1.3	1.2	1.1	1.1	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.9
79°N	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9
78°N	1.2	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.8
77°N	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8
76°N	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.9	0.8	0.8
75°N	1.2	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.9	0.8	0.8	0.8
74°N	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.8
73°N	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.8	0.7
72°N	1.2	1.2	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.8	0.8	0.7	0.7
71°N	1.2	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.7	0.7
70°N	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8	0.7	0.7
69°N	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.7	0.7
68°N	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	0.9	0.9	0.8	0.8	0.7
67°N	1.4	1.4	1.5	1.4	1.4	1.3	1.1	1.0	1.0	0.9	0.8	0.8	0.7
66°N	1.4	1.6	1.5	1.5	1.4	1.3	1.2	1.0	1.0	0.9	0.8	0.8	0.7
65°N	1.7	1.7	1.6	1.5	1.5	1.4	1.3	1.2	1.0	0.9	0.8	0.8	0.7
64°N	2.5	2.1	1.7	1.6	1.5	1.4	1.3	1.2	1.0	0.9	0.9	0.8	0.7
63°N	2.7	2.3	2.2	2.0	1.9	1.7	1.5	1.4	1.1	1.0	0.9	0.8	0.7
62°N	4.2	3.9	2.4	2.2	2.0	1.8	1.6	1.5	1.2	1.0	0.9	0.8	0.7
61°N	4.8	4.5	4.0	2.9	2.2	2.0	1.8	1.5	1.2	1.0	0.9	0.8	0.7
60°N	5.6	5.1	4.6	3.2	2.9	2.1	1.9	1.6	1.4	1.0	0.9	0.8	0.7
59°N	6.8	6.0	5.2	3.6	3.2	2.8	2.0	1.8	1.5	1.2	1.0	0.9	0.8
58°N	7.0	7.0	6.0	4.0	3.5	3.0	2.2	1.9	1.6	1.2	1.0	0.9	0.8
57°N	7.0	7.0	7.0	4.5	3.9	3.3	2.8	2.0	1.7	1.3	1.1	1.0	0.9
56°N	7.0	7.0	7.0	5.1	4.2	3.6	3.0	2.2	1.8	1.4	1.2	1.0	0.9
55°N	7.0	7.0	7.0	5.6	4.6	3.9	3.3	2.7	1.9	1.6	1.2	1.1	0.9
54°N	7.0	7.0	7.0	6.1	4.9	4.2	3.6	3.0	2.1	1.7	1.4	1.1	1.0
53°N	7.0	7.0	7.0	6.6	5.1	4.4	3.9	3.2	2.6	2.1	1.5	1.3	1.0
52°N	7.0	7.0	7.0	6.9	5.2	4.6	4.1	3.5	3.3	2.2	1.6	1.3	1.1
51°N	7.0	7.0	7.0	7.0	5.1	4.6	4.3	3.8	3.6	2.4	1.7	1.4	1.1
50°N	7.0	7.0	7.0	7.0	4.9	4.5	4.5	4.1	3.9	2.6	2.2	1.5	1.2
49°N	7.0	7.0	7.0	6.7	4.5	4.3	4.6	5.1	4.3	2.8	2.4	1.6	1.4
48°N	7.0	7.0	7.0	6.9	4.1	4.1	4.7	5.6	4.7	3.0	2.6	1.7	1.5
47°N	7.0	7.0	7.0	6.9	3.7	3.8	4.8	6.0	5.3	4.7	2.8	1.8	1.5
46°N	7.0	7.0	7.0	6.4	3.2	3.5	5.3	6.5	5.9	5.2	3.1	2.4	1.6
45°N	7.0	7.0	7.0	6.3	3.0	3.3	5.5	7.0	6.7	5.9	3.3	2.6	1.8
44°N	7.0	7.0	7.0	6.6	2.7	3.2	5.8	7.0	7.0	6.8	3.6	2.9	2.1
43°N	7.0	7.0	7.0	7.0	2.6	3.3	6.4	7.0	7.0	7.0	4.0	3.1	2.3
42°N	7.0	7.0	7.0	7.0	2.9	3.8	7.0	7.0	7.0	7.0	6.9	3.4	2.5
41°N	7.0	7.0	7.0	7.0	4.0	5.0	7.0	7.0	7.0	7.0	7.0	3.7	3.1
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.5
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	3.9
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL370 – No ozone converter – page 2
Figure 05–07–266

	Asia - Maximum Flight duration in hour, MARCH WOUDC FL 360											
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
89°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
88°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
87°N	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4
86°N	1.8	1.7	1.7	1.7	1.7	1.7	1.5	1.5	1.5	1.5	1.5	1.4
85°N	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.6	1.5	1.5	1.5	1.4
84°N	2.0	1.9	1.9	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.4
83°N	2.3	2.0	2.0	1.9	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.4
82°N	2.6	2.1	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.6	1.6
81°N	2.7	2.7	2.6	2.0	2.0	1.9	1.8	1.8	1.7	1.7	1.6	1.6
80°N	2.8	2.8	2.7	2.6	2.0	1.9	1.9	1.8	1.7	1.7	1.6	1.6
79°N	3.0	2.9	2.8	2.7	2.7	2.0	1.9	1.8	1.7	1.7	1.6	1.6
78°N	3.1	3.0	2.9	2.8	2.8	2.0	1.9	1.8	1.8	1.7	1.6	1.5
77°N	3.2	3.2	3.1	2.9	2.8	2.8	1.9	1.9	1.8	1.7	1.5	1.5
76°N	3.4	3.3	3.2	3.1	2.9	2.8	2.0	1.9	1.8	1.7	1.5	1.5
75°N	4.5	3.4	3.3	3.2	3.0	2.9	2.8	1.9	1.8	1.6	1.5	1.5
74°N	4.8	4.6	3.4	3.3	3.1	3.0	2.9	1.9	1.7	1.6	1.6	1.5
73°N	5.1	4.9	4.7	3.4	3.2	3.1	2.9	1.9	1.7	1.6	1.6	1.5
72°N	5.4	5.2	4.9	4.7	3.3	3.1	3.0	2.9	1.7	1.6	1.6	1.5
71°N	5.8	5.4	5.2	4.9	4.7	3.2	3.1	2.6	1.7	1.6	1.6	1.5
70°N	7.0	7.0	5.4	5.1	4.9	3.3	3.1	2.6	1.7	1.6	1.6	1.6
69°N	7.0	7.0	7.0	5.3	5.0	4.8	3.2	2.7	1.7	1.6	1.7	1.6
68°N	7.0	7.0	7.0	5.6	5.2	4.9	4.0	2.7	1.7	1.7	1.7	1.7
67°N	7.0	7.0	7.0	7.0	5.4	5.1	4.1	2.7	2.7	2.6	1.7	1.7
66°N	7.0	7.0	7.0	7.0	7.0	5.3	4.1	2.8	2.7	2.7	1.8	1.7
65°N	7.0	7.0	7.0	7.0	7.0	5.4	4.2	3.9	3.9	2.7	1.8	1.8
64°N	7.0	7.0	7.0	7.0	7.0	5.6	4.1	4.0	4.0	2.7	2.6	3.5
63°N	7.0	7.0	7.0	7.0	7.0	6.1	5.6	4.1	5.1	7.0	3.9	3.8
62°N	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.7	7.0	7.0	7.0	6.4
61°N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL360 – No ozone converter – page 1
Figure 05–07–267

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 360													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
89°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3
88°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3
87°N	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
86°N	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2
85°N	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2
84°N	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2
83°N	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1
82°N	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.1
81°N	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
80°N	1.5	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.1	1.0	1.0
79°N	1.5	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.1	1.0	1.0	1.0
78°N	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.1	1.1	1.0	1.0	1.0	0.9
77°N	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.1	1.1	1.0	1.0	0.9	0.9
76°N	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	1.0	0.9	0.9
75°N	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.1	1.0	1.0	0.9	0.9	0.8
74°N	1.4	1.4	1.3	1.3	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.9	0.8
73°N	1.4	1.4	1.4	1.3	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.8	0.8
72°N	1.4	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.0	0.9	0.9	0.8	0.8
71°N	1.5	1.5	1.4	1.4	1.3	1.2	1.2	1.1	1.0	1.0	0.9	0.8	0.8
70°N	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.7
69°N	1.6	1.5	1.5	1.4	1.3	1.3	1.2	1.1	1.0	1.0	0.9	0.8	0.7
68°N	1.6	1.6	1.5	1.4	1.4	1.3	1.2	1.1	1.1	1.0	0.9	0.8	0.7
67°N	1.7	1.6	1.7	1.7	1.6	1.5	1.3	1.2	1.1	1.0	0.9	0.8	0.7
66°N	1.7	1.9	1.8	1.7	1.6	1.5	1.4	1.2	1.1	1.0	0.9	0.8	0.7
65°N	2.0	2.0	1.9	1.8	1.7	1.6	1.5	1.3	1.1	1.0	0.9	0.8	0.8
64°N	3.2	2.6	2.0	1.9	1.8	1.7	1.5	1.4	1.1	1.0	0.9	0.8	0.8
63°N	3.5	2.8	2.7	2.4	2.2	2.0	1.8	1.6	1.3	1.1	1.0	0.9	0.8
62°N	6.0	5.4	2.9	2.6	2.4	2.2	1.9	1.7	1.3	1.1	1.0	0.9	0.8
61°N	7.0	6.5	5.6	3.7	2.6	2.4	2.1	1.8	1.4	1.1	1.0	0.9	0.8
60°N	7.0	7.0	6.7	4.2	3.6	2.6	2.2	1.9	1.6	1.2	1.0	0.9	0.8
59°N	7.0	7.0	7.0	4.8	4.1	3.4	2.4	2.1	1.7	1.3	1.1	0.9	0.8
58°N	7.0	7.0	7.0	5.6	4.6	3.9	2.6	2.2	1.8	1.4	1.1	1.0	0.8
57°N	7.0	7.0	7.0	6.6	5.3	4.3	3.5	2.4	2.0	1.5	1.2	1.1	1.0
56°N	7.0	7.0	7.0	7.0	6.0	4.9	3.9	2.6	2.1	1.5	1.3	1.1	1.0
55°N	7.0	7.0	7.0	7.0	6.8	5.4	4.3	3.4	2.3	1.8	1.4	1.2	1.0
54°N	7.0	7.0	7.0	7.0	7.0	5.9	4.8	3.8	2.5	2.0	1.6	1.2	1.1
53°N	7.0	7.0	7.0	7.0	7.0	6.4	5.3	4.2	3.1	2.5	1.7	1.4	1.1
52°N	7.0	7.0	7.0	7.0	7.0	6.7	5.8	4.6	4.1	2.7	1.8	1.5	1.2
51°N	7.0	7.0	7.0	7.0	7.0	6.8	6.2	5.1	4.7	2.9	1.9	1.6	1.2
50°N	7.0	7.0	7.0	7.0	7.0	6.7	6.6	5.7	5.3	3.2	2.6	1.7	1.4
49°N	7.0	7.0	7.0	7.0	6.8	6.4	6.9	7.0	6.0	3.5	2.9	1.8	1.5
48°N	7.0	7.0	7.0	7.0	5.9	5.9	7.0	7.0	6.9	3.9	3.1	1.9	1.6
47°N	7.0	7.0	7.0	7.0	5.1	5.3	7.0	7.0	7.0	6.5	3.4	2.1	1.8
46°N	7.0	7.0	7.0	7.0	4.4	4.9	7.0	7.0	7.0	7.0	3.8	2.9	1.9
45°N	7.0	7.0	7.0	7.0	3.9	4.5	7.0	7.0	7.0	7.0	4.2	3.2	2.0
44°N	7.0	7.0	7.0	7.0	3.5	4.3	7.0	7.0	7.0	7.0	4.7	3.5	2.5
43°N	7.0	7.0	7.0	7.0	3.3	4.5	7.0	7.0	7.0	7.0	5.2	3.8	2.7
42°N	7.0	7.0	7.0	7.0	3.8	5.3	7.0	7.0	7.0	7.0	7.0	4.3	3.0
41°N	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.9
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.4
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL360 – No ozone converter – page 2
Figure 05–07–268

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 350												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
89°N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8
88°N	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9
87°N	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9
86°N	2.5	2.4	2.4	2.4	2.3	2.3	2.1	2.0	2.0	2.0	1.9	1.9
85°N	2.6	2.6	2.5	2.5	2.4	2.4	2.3	2.3	2.0	2.0	1.9	1.9
84°N	2.8	2.7	2.7	2.6	2.5	2.5	2.4	2.3	2.3	2.2	1.9	1.9
83°N	3.5	2.9	2.8	2.7	2.6	2.5	2.5	2.4	2.3	2.2	2.2	1.9
82°N	4.1	3.1	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.3	2.2	2.1
81°N	4.4	4.3	4.2	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.1
80°N	4.8	4.6	4.4	4.3	2.9	2.8	2.6	2.5	2.4	2.3	2.2	2.1
79°N	5.1	4.9	4.8	4.6	4.4	2.8	2.7	2.5	2.4	2.3	2.2	2.1
78°N	5.5	5.3	5.0	4.8	4.6	2.9	2.7	2.6	2.5	2.3	2.2	2.0
77°N	6.0	5.7	5.4	5.2	4.9	4.6	2.8	2.6	2.5	2.4	2.1	2.0
76°N	6.5	6.1	5.7	5.5	5.2	4.9	2.8	2.7	2.5	2.4	2.1	2.0
75°N	7.0	6.7	6.2	5.8	5.4	5.1	4.8	2.7	2.5	2.2	2.1	2.0
74°N	7.0	7.0	6.7	6.1	5.7	5.3	5.0	2.7	2.3	2.2	2.1	2.0
73°N	7.0	7.0	7.0	6.5	6.0	5.6	5.2	2.7	2.3	2.2	2.1	2.0
72°N	7.0	7.0	7.0	7.0	6.3	5.8	5.4	5.0	2.3	2.2	2.1	2.0
71°N	7.0	7.0	7.0	7.0	7.0	6.0	5.6	4.2	2.3	2.2	2.1	2.0
70°N	7.0	7.0	7.0	7.0	7.0	6.3	5.8	4.2	2.3	2.2	2.1	2.2
69°N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.3	2.3	2.2	2.3	2.2
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	2.3	2.2	2.3	2.2
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.2	4.1	2.4	2.3
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.2	4.2	2.4	2.3
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	2.5	2.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	4.0	6.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL350 – No ozone converter – page 1
Figure 05–07–269

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 350													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
89°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
88°N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7
87°N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7
86°N	1.9	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6
85°N	1.9	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6
84°N	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5
83°N	1.9	1.8	1.8	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.5	1.5
82°N	1.8	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.4	1.4	1.4
81°N	1.8	1.8	1.7	1.7	1.6	1.6	1.5	1.5	1.4	1.4	1.4	1.4	1.3
80°N	2.0	1.8	1.7	1.7	1.6	1.6	1.5	1.4	1.4	1.4	1.3	1.3	1.3
79°N	2.0	1.8	1.8	1.7	1.6	1.5	1.5	1.4	1.4	1.3	1.3	1.3	1.2
78°N	1.9	1.8	1.8	1.7	1.6	1.6	1.4	1.4	1.3	1.3	1.2	1.2	1.2
77°N	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.3	1.3	1.2	1.1	1.1
76°N	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.1
75°N	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.2	1.1	1.1	1.0
74°N	1.9	1.8	1.7	1.6	1.6	1.5	1.5	1.4	1.3	1.2	1.1	1.1	1.0
73°N	1.9	1.8	1.8	1.7	1.6	1.5	1.5	1.4	1.3	1.2	1.1	1.0	1.0
72°N	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9
71°N	1.9	1.9	1.8	1.7	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9
70°N	2.1	1.9	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9
69°N	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9
68°N	2.2	2.1	1.9	1.9	1.8	1.6	1.5	1.4	1.3	1.2	1.1	1.0	0.9
67°N	2.2	2.1	2.3	2.2	2.0	1.9	1.6	1.4	1.3	1.2	1.1	1.0	0.9
66°N	2.2	2.6	2.4	2.3	2.1	2.0	1.8	1.5	1.3	1.2	1.1	1.0	0.9
65°N	2.8	2.7	2.6	2.4	2.3	2.1	1.9	1.7	1.4	1.3	1.1	1.0	0.9
64°N	5.1	3.8	2.7	2.6	2.4	2.2	2.0	1.7	1.4	1.3	1.1	1.0	0.9
63°N	5.8	4.3	4.0	3.4	3.1	2.7	2.4	2.0	1.6	1.3	1.2	1.0	0.9
62°N	7.0	7.0	4.4	3.8	3.4	3.0	2.6	2.2	1.7	1.3	1.2	1.1	0.9
61°N	7.0	7.0	7.0	6.1	3.8	3.3	2.8	2.3	1.7	1.4	1.2	1.1	1.0
60°N	7.0	7.0	7.0	7.0	5.8	3.6	3.0	2.5	2.1	1.4	1.3	1.1	1.0
59°N	7.0	7.0	7.0	7.0	7.0	5.4	3.4	2.8	2.2	1.7	1.3	1.1	1.0
58°N	7.0	7.0	7.0	7.0	7.0	6.3	3.7	3.0	2.4	1.8	1.4	1.2	1.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.3	2.6	1.9	1.5	1.3	1.2
56°N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	3.7	2.8	2.0	1.6	1.4	1.2
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	3.1	2.4	1.7	1.5	1.3
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.4	2.7	2.1	1.5	1.3
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.5	2.2	1.8	1.4
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	3.9	2.4	1.9	1.5
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	2.6	2.1	1.6
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.8	2.2	1.7
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	4.2	2.4	2.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.8	2.6	2.2
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	2.8	2.3
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.3	2.5
45°N	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	4.8	2.8
44°N	7.0	7.0	7.0	7.0	5.1	6.8	7.0	7.0	7.0	7.0	7.0	5.5	3.5
43°N	7.0	7.0	7.0	7.0	4.9	7.0	7.0	7.0	7.0	7.0	7.0	6.5	3.9
42°N	7.0	7.0	7.0	7.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL350 – No ozone converter – page 2
Figure 05–07–270

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 340												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89°N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9
88°N	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0	3.0
87°N	3.5	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1	3.0	3.0
86°N	4.6	4.5	4.4	4.3	4.2	4.2	3.3	3.3	3.2	3.2	3.1	3.1
85°N	5.1	4.9	4.8	4.7	4.5	4.4	4.3	4.2	3.3	3.2	3.1	3.1
84°N	5.7	5.5	5.3	5.1	4.9	4.7	4.5	4.3	4.2	4.0	3.2	3.1
83°N	7.0	6.0	5.7	5.5	5.2	4.9	4.7	4.5	4.3	4.1	4.0	3.1
82°N	7.0	6.6	6.3	5.9	5.6	5.2	5.0	4.7	4.5	4.2	4.1	3.8
81°N	7.0	7.0	7.0	6.3	5.9	5.5	5.2	4.8	4.6	4.3	4.1	3.9
80°N	7.0	7.0	7.0	7.0	6.3	5.8	5.4	5.1	4.7	4.4	4.2	4.0
79°N	7.0	7.0	7.0	7.0	7.0	6.1	5.6	5.2	4.8	4.5	4.3	4.0
78°N	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.4	5.0	4.6	4.3	3.5
77°N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.5	5.1	4.7	3.7	3.5
76°N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.6	5.2	4.8	3.7	3.5
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.3	4.0	3.7	3.5
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.3	4.0	3.8	3.6
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.3	4.1	3.8	3.6
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.1	3.8	3.6
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	4.1	3.8	3.6
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.1	3.9	4.1
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.2	4.4	4.2
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	4.2	4.6	4.3
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.5
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	4.6
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.8
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL340 – No ozone converter – page 1
Figure 05–07–271

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 340													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89°N	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
88°N	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7
87°N	3.0	2.9	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.7	2.6	2.5	2.5
86°N	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.7	2.6	2.5	2.5	2.5	2.5
85°N	3.0	2.9	2.9	2.8	2.7	2.7	2.7	2.6	2.5	2.4	2.4	2.4	2.4
84°N	3.0	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.4	2.4	2.3	2.3	2.3
83°N	3.0	2.9	2.8	2.8	2.7	2.6	2.5	2.5	2.3	2.3	2.3	2.2	2.2
82°N	3.0	2.9	2.8	2.7	2.6	2.6	2.5	2.3	2.3	2.2	2.2	2.2	2.1
81°N	3.0	2.9	2.8	2.7	2.6	2.5	2.4	2.3	2.2	2.2	2.1	2.1	2.1
80°N	3.7	2.9	2.8	2.6	2.6	2.5	2.4	2.2	2.2	2.1	2.1	2.0	2.0
79°N	3.8	3.1	3.0	2.9	2.8	2.4	2.3	2.2	2.1	2.0	2.0	1.9	1.9
78°N	3.3	3.2	3.0	2.9	2.7	2.6	2.2	2.2	2.1	2.0	1.9	1.9	1.8
77°N	3.3	3.2	3.0	2.9	2.7	2.6	2.2	2.1	2.0	2.0	1.8	1.8	1.7
76°N	3.3	3.2	3.0	2.8	2.7	2.6	2.2	2.1	2.0	1.9	1.9	1.7	1.6
75°N	3.3	3.2	3.0	2.8	2.7	2.5	2.1	2.0	1.9	2.0	1.8	1.7	1.6
74°N	3.3	3.2	3.0	2.8	2.8	2.6	2.5	2.3	2.1	2.0	1.8	1.7	1.6
73°N	3.3	3.2	3.1	3.0	2.8	2.6	2.5	2.3	2.2	1.9	1.7	1.7	1.6
72°N	3.4	3.3	3.2	3.0	2.8	2.7	2.5	2.3	2.2	1.9	1.7	1.6	1.5
71°N	3.4	3.4	3.2	3.1	2.9	2.7	2.5	2.3	2.2	1.9	1.7	1.6	1.5
70°N	3.9	3.5	3.3	3.1	3.0	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.5
69°N	4.0	3.8	3.4	3.2	3.0	2.8	2.6	2.4	2.2	2.0	1.8	1.6	1.4
68°N	4.1	3.9	3.5	3.3	3.1	2.9	2.7	2.4	2.2	2.0	1.8	1.7	1.4
67°N	4.3	4.0	4.7	4.4	4.0	3.6	2.7	2.5	2.2	2.1	1.9	1.7	1.4
66°N	4.4	5.5	5.1	4.7	4.3	3.8	3.4	2.6	2.3	2.1	1.9	1.7	1.4
65°N	6.4	6.0	5.7	5.1	4.7	4.1	3.6	3.1	2.4	2.1	1.9	1.7	1.5
64°N	7.0	7.0	6.3	5.7	5.1	4.5	3.9	3.3	2.5	2.2	2.0	1.7	1.5
63°N	7.0	7.0	7.0	7.0	7.0	6.6	5.3	4.2	2.9	2.3	2.0	1.8	1.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.6	3.1	2.4	2.1	1.8	1.6
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	3.3	2.5	2.1	1.9	1.6
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.4	2.6	2.2	1.9	1.6
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.2	2.3	2.0	1.7
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	3.5	2.4	2.0	1.7
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	3.8	2.9	2.4	2.1
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.1	2.6	2.2
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	3.3	2.7	2.3
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.7	2.9	2.5
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.9	2.7
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.3	2.9
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.9	3.1
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	3.6
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.7
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL340 – No ozone converter – page 2
Figure 05–07–272

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 330												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89°N	6.3	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.0	6.0	6.0	6.0
88°N	7.0	7.0	7.0	7.0	6.9	6.8	6.8	6.7	6.6	6.5	6.4	6.3
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.6
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL330 – No ozone converter – page 1
Figure 05–07–273

Asia - Maximum Flight duration in hour, MARCH WOUDC FL 330													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
89°N	5.9	5.9	5.8	5.8	5.7	5.6	5.6	5.6	5.6	5.5	5.5	5.4	5.4
88°N	6.2	6.0	6.0	5.9	5.8	5.7	5.7	5.6	5.5	5.4	5.4	5.3	5.2
87°N	6.4	6.3	6.1	6.0	5.9	5.7	5.7	5.5	5.4	5.3	5.0	4.9	4.8
86°N	6.6	6.4	6.2	6.0	5.9	5.7	5.6	5.4	5.4	4.9	4.8	4.7	4.7
85°N	6.8	6.6	6.3	6.1	5.9	5.7	5.6	5.4	4.9	4.8	4.7	4.6	4.6
84°N	7.0	6.7	6.4	6.1	6.0	5.7	5.5	5.4	4.9	4.7	4.6	4.6	4.5
83°N	7.0	6.8	6.5	6.2	5.9	5.7	5.5	5.3	4.7	4.6	4.6	4.4	4.4
82°N	7.0	6.9	6.5	6.2	5.9	5.7	5.5	4.8	4.7	4.6	4.4	4.3	4.2
81°N	7.0	6.9	6.5	6.2	5.9	5.6	5.4	4.8	4.6	4.5	4.3	4.3	4.1
80°N	7.0	7.0	6.6	6.2	5.9	5.6	5.3	4.7	4.5	4.4	4.3	4.1	4.0
79°N	7.0	7.0	7.0	7.0	6.9	5.2	5.0	4.8	4.4	4.3	4.1	4.0	3.9
78°N	7.0	7.0	7.0	7.0	6.9	6.5	5.0	4.8	4.5	4.2	4.1	3.9	3.7
77°N	7.0	7.0	7.0	7.0	6.9	6.5	4.9	4.7	4.5	4.3	4.0	3.7	3.6
76°N	7.0	7.0	7.0	7.0	7.0	6.5	4.9	4.7	4.4	4.2	4.4	3.6	3.5
75°N	7.0	7.0	7.0	7.0	7.0	6.5	4.9	4.6	4.4	4.7	4.1	3.9	3.4
74°N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.0	5.0	4.7	4.1	3.9	3.9
73°N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.1	5.6	4.7	4.0	4.1	3.8
72°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.7	4.6	4.0	4.0	3.8
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8	4.9	4.2	4.0	3.7
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.9	5.5	5.0	4.0	3.7
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.1	5.6	5.1	4.0	3.7
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.2	4.6	3.7
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.1	5.3	4.7	3.7
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.5	4.8	3.7
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.7	4.9	4.3
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.1	4.4
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.3	4.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.6	4.7
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.9
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.8
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – March – FL330 – No ozone converter – page 2
Figure 05–07–274

X. Asia – April

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	--	–	--	–	--	–	--	–	--	--	–
89°N	–	--	–	--	–	--	–	--	–	--	--	–
88°N	–	--	–	--	–	--	–	--	–	--	--	–
87°N	–	--	–	--	–	--	–	--	–	--	--	–
86°N	–	--	–	--	–	--	–	--	–	--	--	–
85°N	–	--	–	--	–	--	–	--	–	--	--	–
84°N	–	--	–	--	–	--	–	--	–	--	--	–
83°N	–	--	–	--	–	--	–	--	–	--	--	–
82°N	–	--	–	--	–	--	–	--	–	--	--	–
81°N	–	--	–	--	–	--	–	--	–	--	--	–
80°N	–	--	–	--	–	--	–	--	–	--	--	–
79°N	–	--	–	--	–	--	–	--	–	--	--	–
78°N	–	--	–	--	–	--	–	--	–	--	--	–
77°N	–	--	–	--	–	--	–	--	–	--	--	–
76°N	–	--	–	--	–	--	–	--	–	--	--	–
75°N	–	--	–	--	–	--	–	--	–	--	--	–
74°N	–	--	–	--	–	--	–	--	–	--	--	–
73°N	–	--	–	--	–	--	–	--	–	--	--	–
72°N	–	--	–	--	–	--	–	--	–	--	--	–
71°N	–	--	–	--	–	--	–	--	–	--	--	–
70°N	–	--	–	--	–	--	–	--	–	--	--	–
69°N	–	--	–	--	–	--	–	--	–	--	--	–
68°N	–	--	–	--	–	--	–	--	–	--	--	–
67°N	–	--	–	--	–	--	–	--	–	--	--	–
66°N	–	--	–	--	–	--	–	--	–	--	--	–
65°N	–	--	–	--	–	--	–	--	–	--	--	–
64°N	–	--	–	--	–	--	–	--	–	--	--	–
63°N	–	--	–	--	–	--	–	--	–	--	--	2.2
62°N	0.4	0.5	–	--	–	--	–	--	–	0.3	2.6	2.9
61°N	0.6	0.7	–	--	–	0.5	–	--	0.3	3.3	3.4	3.8
60°N	0.7	0.8	–	--	–	0.7	–	2.8	3.1	4.2	7.0	7.0
59°N	0.9	1.0	1.1	0.3	–	0.8	1.1	7.0	7.0	7.0	7.0	7.0
58°N	1.1	1.2	1.3	0.4	0.3	1.0	3.2	7.0	7.0	7.0	7.0	7.0
57°N	1.3	1.4	1.5	0.6	1.5	1.2	7.0	7.0	7.0	7.0	7.0	7.0
56°N	1.6	1.7	1.7	1.7	1.8	6.1	7.0	7.0	7.0	7.0	7.0	7.0
55°N	1.9	1.9	2.0	1.9	3.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	3.2	2.3	2.2	2.1	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	3.8	3.8	2.6	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	4.5	4.4	4.3	4.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	5.4	5.3	5.0	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	6.5	6.2	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL410 – No ozone converter – page 1
Figure 05–07–275

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	--	–	–	--	--	--	--	–	–	--	--
89°N	–	--	--	–	–	--	--	--	--	–	–	--	--
88°N	–	--	--	–	–	--	--	--	--	–	–	--	--
87°N	–	--	--	–	–	--	--	--	--	–	–	--	--
86°N	–	--	--	–	–	--	--	--	--	–	–	--	--
85°N	–	--	--	–	–	--	--	--	--	–	–	--	--
84°N	–	--	--	–	–	--	--	--	--	–	–	--	--
83°N	–	--	--	–	–	--	--	--	--	–	–	--	--
82°N	–	--	--	–	–	--	--	--	--	–	–	--	--
81°N	–	--	--	–	–	--	--	--	--	–	–	--	--
80°N	–	--	--	–	–	--	--	--	--	–	–	--	--
79°N	–	--	--	–	–	--	--	--	--	–	–	--	--
78°N	–	--	--	–	–	--	--	--	--	–	–	--	--
77°N	–	--	--	–	–	--	--	--	--	–	–	--	--
76°N	–	--	--	–	–	--	--	--	--	–	–	--	--
75°N	–	--	--	–	–	--	--	--	--	–	–	--	--
74°N	–	--	--	–	–	--	--	--	--	–	–	--	--
73°N	–	--	--	–	–	--	--	--	--	–	–	--	--
72°N	–	--	--	–	–	--	--	--	--	–	–	--	--
71°N	–	--	--	–	–	--	--	--	--	–	–	--	--
70°N	–	--	--	–	–	--	--	--	--	–	–	--	--
69°N	–	--	--	–	–	--	--	--	--	–	–	--	--
68°N	–	--	--	–	–	--	--	--	--	–	–	--	--
67°N	–	--	--	–	–	--	--	--	--	–	–	--	--
66°N	–	--	--	–	–	--	--	--	--	–	–	--	--
65°N	–	--	--	–	–	--	--	--	--	–	–	--	--
64°N	1.7	--	--	–	–	--	--	--	--	–	–	--	--
63°N	2.3	2.3	2.2	1.3	–	--	--	--	--	–	–	--	--
62°N	3.1	3.1	2.8	1.7	1.4	--	--	--	--	–	–	--	--
61°N	4.0	3.9	7.0	2.3	1.8	1.4	--	--	--	–	–	--	--
60°N	7.0	7.0	7.0	7.0	2.3	1.8	1.3	--	--	–	–	--	--
59°N	7.0	7.0	7.0	7.0	7.0	2.2	1.6	1.1	--	–	–	--	--
58°N	7.0	7.0	7.0	7.0	7.0	2.7	2.0	1.4	--	–	–	--	--
57°N	7.0	7.0	7.0	7.0	7.0	7.0	2.4	1.8	1.2	–	–	--	--
56°N	7.0	7.0	7.0	7.0	7.0	7.0	5.2	2.1	1.5	–	–	--	--
55°N	7.0	7.0	7.0	7.0	7.0	7.0	5.6	2.5	1.8	1.5	–	--	--
54°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.1	2.1	1.9	0.4	--	0.8
53°N	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.6	4.6	2.2	1.5	0.3	1.0
52°N	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.9	5.2	4.2	1.9	1.5	1.2
51°N	7.0	7.0	7.0	7.0	6.6	5.5	5.7	6.2	5.7	4.8	2.2	2.1	1.5
50°N	7.0	7.0	7.0	7.0	5.2	4.6	5.4	6.5	6.4	5.6	7.0	2.4	1.7
49°N	7.0	7.0	7.0	7.0	4.0	3.7	5.1	6.7	7.0	6.4	7.0	7.0	5.4
48°N	7.0	7.0	7.0	7.0	2.8	2.9	4.7	7.0	7.0	7.0	7.0	7.0	6.2
47°N	7.0	7.0	7.0	7.0	1.9	2.2	4.4	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	6.1	1.2	1.6	5.1	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	6.4	0.6	1.2	4.9	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	6.6	0.3	1.0	5.1	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	–	1.1	5.6	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	0.5	1.5	6.7	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	1.6	2.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	5.3	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
39°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
38°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
37°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
36°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
35°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL410 – No ozone converter – page 2
Figure 05–07–276

Asia - MaxImum FIight duratIon In hour, APRIL WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	–	–	–	--	--	–	–	--	--	–	--
89°N	–	–	–	–	--	--	–	–	--	--	–	--
88°N	–	–	–	–	--	--	–	–	--	--	–	--
87°N	–	–	–	–	--	--	–	–	--	--	–	--
86°N	–	–	–	–	--	--	–	–	--	--	–	--
85°N	–	–	–	–	--	--	–	–	--	--	–	--
84°N	–	–	–	–	--	--	–	–	--	--	–	--
83°N	–	–	–	–	--	--	–	–	--	--	–	--
82°N	–	–	–	–	--	--	–	–	--	--	–	--
81°N	–	–	–	–	--	--	–	–	--	--	–	--
80°N	–	–	–	–	--	--	–	–	--	--	–	--
79°N	–	–	–	–	--	--	–	–	--	--	–	--
78°N	–	–	–	–	--	--	–	–	--	--	–	--
77°N	–	–	–	–	--	--	–	–	--	--	–	--
76°N	–	–	–	–	--	--	–	–	--	--	–	--
75°N	–	–	–	–	--	--	–	–	--	--	–	--
74°N	–	–	–	–	--	--	–	–	--	--	–	--
73°N	–	–	–	–	--	--	–	–	--	--	–	--
72°N	–	–	–	–	--	--	–	–	--	--	–	--
71°N	–	–	–	–	--	--	–	–	--	--	–	--
70°N	–	–	–	–	--	--	–	–	--	--	–	--
69°N	–	–	–	–	--	--	–	–	--	--	–	--
68°N	–	–	–	–	--	--	–	–	--	--	–	--
67°N	–	–	–	–	--	--	–	–	--	--	–	--
66°N	–	–	–	–	--	--	–	–	--	--	–	--
65°N	–	–	–	–	--	--	–	–	--	--	–	--
64°N	–	–	–	–	--	--	–	–	--	--	–	0.3
63°N	–	–	–	–	--	--	–	–	--	--	0.3	2.8
62°N	0.6	0.7	–	–	--	--	–	–	--	0.4	3.3	3.8
61°N	0.8	0.9	–	–	--	0.7	–	–	0.4	4.6	4.5	5.1
60°N	1.0	1.1	0.3	0.3	--	0.9	0.3	4.0	4.3	6.1	7.0	7.0
59°N	1.2	1.4	1.5	0.4	0.3	1.1	1.5	7.0	7.0	7.0	7.0	7.0
58°N	1.5	1.6	1.7	0.6	0.5	1.4	4.6	7.0	7.0	7.0	7.0	7.0
57°N	1.8	1.9	2.0	0.8	2.0	1.6	7.0	7.0	7.0	7.0	7.0	7.0
56°N	2.2	2.3	2.3	2.3	2.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	2.6	2.7	2.7	2.7	4.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	4.8	3.2	3.2	3.0	5.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	5.7	5.9	3.7	3.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	6.8	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL400 – No ozone converter – page 1
Figure 05–07–277

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	–	--	--	--	--	–	–	--	--	–	–	--
89°N	–	–	--	--	--	--	–	–	--	--	–	–	--
88°N	–	–	--	--	--	--	–	–	--	--	–	–	--
87°N	–	–	--	--	--	--	–	–	--	--	–	–	--
86°N	–	–	--	--	--	--	–	–	--	--	–	–	--
85°N	–	–	--	--	--	--	–	–	--	--	–	–	--
84°N	–	–	--	--	--	--	–	–	--	--	–	–	--
83°N	–	–	--	--	--	--	–	–	--	--	–	–	--
82°N	–	–	--	--	--	--	–	–	--	--	–	–	--
81°N	–	–	--	--	--	--	–	–	--	--	–	–	--
80°N	–	–	--	--	--	--	–	–	--	--	–	–	--
79°N	–	–	--	--	--	--	–	–	--	--	–	–	--
78°N	–	–	--	--	--	--	–	–	--	--	–	–	--
77°N	–	–	--	--	--	--	–	–	--	--	–	–	--
76°N	–	–	--	--	--	--	–	–	--	--	–	–	--
75°N	–	–	--	--	--	--	–	–	--	--	–	–	--
74°N	–	–	--	--	--	--	–	–	--	--	–	–	--
73°N	–	–	--	--	--	--	–	–	--	--	–	–	--
72°N	–	–	--	--	--	--	–	–	--	--	–	–	--
71°N	–	–	--	--	--	--	–	–	--	--	–	–	--
70°N	–	–	--	--	--	--	–	–	--	--	–	–	--
69°N	–	–	--	--	--	--	–	–	--	--	–	–	--
68°N	–	–	--	--	--	--	–	–	--	--	–	–	--
67°N	–	–	--	--	--	--	–	–	--	--	–	–	--
66°N	–	–	--	--	--	--	–	–	--	--	–	–	--
65°N	–	–	--	--	--	--	–	–	--	--	–	–	--
64°N	2.2	–	--	--	--	--	–	–	--	--	–	–	--
63°N	3.0	2.9	2.8	1.6	--	--	–	–	--	--	–	–	--
62°N	4.0	4.0	3.7	2.2	1.7	--	–	–	--	--	–	–	--
61°N	5.4	5.3	7.0	2.9	2.3	1.7	–	–	--	--	–	–	--
60°N	7.0	7.0	7.0	7.0	3.0	2.2	1.6	–	--	--	–	–	--
59°N	7.0	7.0	7.0	7.0	7.0	2.8	2.1	1.4	--	--	–	–	--
58°N	7.0	7.0	7.0	7.0	7.0	3.4	2.6	1.8	--	--	–	–	--
57°N	7.0	7.0	7.0	7.0	7.0	7.0	3.1	2.2	1.4	--	–	–	--
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.7	1.8	0.3	–	–	--
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.2	2.2	1.9	0.3	–	--
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.7	2.2	0.5	–	0.9
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	2.7	1.8	0.4	1.2
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	2.2	1.8	1.4
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	2.7	2.6	1.7
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.0	2.1
49°N	7.0	7.0	7.0	7.0	5.9	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	4.1	4.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	2.7	3.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	1.6	2.2	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	0.9	1.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	0.4	1.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	0.3	1.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	0.7	2.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	2.3	3.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL400 – No ozone converter – page 2
Figure 05–07–278

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
87°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
86°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
85°N	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
84°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8
83°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8
82°N	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
81°N	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
80°N	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9
79°N	1.1	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9
78°N	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
77°N	1.2	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
76°N	1.2	1.2	1.1	1.1	1.0	1.0	1.0	1.0	1.0	0.9	1.0	0.9
75°N	1.4	1.2	1.2	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
74°N	1.5	1.4	1.2	1.3	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0
73°N	1.5	1.5	1.5	1.3	1.3	1.0	1.0	1.0	1.0	1.0	1.0	1.0
72°N	1.6	1.5	1.5	1.5	1.3	1.1	1.0	1.0	1.0	1.0	1.0	1.0
71°N	1.6	1.6	1.5	1.5	1.3	1.3	1.1	1.0	1.0	1.0	1.0	1.0
70°N	1.8	1.8	1.6	1.5	1.3	1.3	1.1	1.1	1.0	1.0	1.0	1.2
69°N	1.9	1.9	1.8	1.6	1.5	1.3	1.2	1.1	1.1	1.1	1.3	1.2
68°N	2.2	1.9	1.9	1.6	1.5	1.3	1.3	1.3	1.1	1.4	1.8	1.6
67°N	2.3	2.0	1.9	1.9	1.6	1.4	1.4	1.3	1.6	1.8	1.9	1.7
66°N	2.4	2.3	2.0	1.9	1.9	1.6	1.4	1.6	1.8	1.9	2.0	2.1
65°N	2.4	2.4	2.3	1.9	1.9	1.6	1.4	1.9	1.9	2.0	2.1	2.2
64°N	3.0	2.4	2.4	2.4	2.2	1.7	1.9	2.0	2.0	2.1	2.3	3.7
63°N	3.1	3.7	3.2	3.2	2.8	2.3	2.0	2.4	2.1	3.6	3.8	7.0
62°N	4.2	4.4	3.3	3.3	3.3	2.5	2.7	2.5	3.5	3.9	7.0	7.0
61°N	4.4	4.6	3.5	3.5	3.4	4.3	2.9	2.6	3.9	7.0	7.0	7.0
60°N	4.7	4.9	3.7	3.7	3.6	4.6	3.7	7.0	7.0	7.0	7.0	7.0
59°N	5.1	5.3	5.4	3.9	3.8	4.9	5.5	7.0	7.0	7.0	7.0	7.0
58°N	5.5	5.7	5.9	4.1	4.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0
57°N	6.0	6.2	6.4	4.4	6.4	5.7	7.0	7.0	7.0	7.0	7.0	7.0
56°N	6.6	6.9	6.9	6.9	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL390 – No ozone converter – page 1
Figure 05–07–279

Asia - Maximum Flight duration In hour, APRIL WOUDC FL 390													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
89°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
88°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
87°N	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
86°N	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
85°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7
84°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7
83°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
82°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
81°N	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
80°N	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.9	0.9
79°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
78°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
77°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0
76°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0
75°N	1.0	0.9	0.9	0.9	0.9	0.9	1.0	0.9	0.9	1.0	1.0	1.0	1.1
74°N	1.0	1.0	1.0	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1
73°N	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.1	1.1
72°N	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.1	1.1
71°N	1.0	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
70°N	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.1	1.1	1.2	1.2	1.1	1.2
69°N	1.6	1.6	1.6	1.6	1.5	1.5	1.4	1.4	1.2	1.2	1.2	1.2	1.2
68°N	1.7	1.7	1.7	1.7	1.6	1.6	1.5	1.5	1.5	1.3	1.2	1.2	1.2
67°N	1.8	1.8	1.8	1.8	1.7	1.7	1.6	1.5	1.5	1.3	1.3	1.3	1.2
66°N	1.9	1.9	1.9	1.9	1.9	1.8	1.7	1.6	1.6	1.5	1.3	1.3	1.3
65°N	2.0	2.1	2.1	2.1	2.0	2.5	2.3	2.1	1.7	1.6	1.4	1.3	1.3
64°N	6.9	3.4	3.4	3.1	2.9	2.7	2.5	2.3	1.8	1.7	1.4	1.4	1.3
63°N	7.0	7.0	7.0	5.8	3.3	3.0	2.8	2.5	2.2	1.7	1.4	1.4	1.5
62°N	7.0	7.0	7.0	6.9	6.0	3.4	3.0	2.7	2.4	1.8	1.5	1.4	1.6
61°N	7.0	7.0	7.0	7.0	7.0	6.0	3.4	3.0	2.6	1.9	1.9	1.5	1.6
60°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	3.3	2.8	2.1	2.0	1.7	1.7
59°N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.5	3.1	2.7	2.1	1.8	1.7
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	3.4	2.9	2.3	1.8	1.8
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	3.1	2.4	2.6	2.4
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	3.7	2.5	2.7	2.5
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	3.8	2.8	2.6
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	3.7	4.9
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	3.9	5.3
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
49°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
48°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
47°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
46°N	7.0	7.0	7.0	7.0	5.8	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
45°N	7.0	7.0	7.0	7.0	4.6	5.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0
44°N	7.0	7.0	7.0	7.0	4.0	5.3	7.0	7.0	7.0	7.0	7.0	7.0	7.0
43°N	7.0	7.0	7.0	7.0	3.8	5.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0
42°N	7.0	7.0	7.0	7.0	4.3	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
41°N	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
40°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL390 – No ozone converter – page 2
Figure 05–07–280

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
89°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
88°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
87°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
86°N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9
85°N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
84°N	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
83°N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0
82°N	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0
81°N	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0
80°N	1.2	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1
79°N	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1	1.1
78°N	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1	1.1
77°N	1.5	1.4	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.1	1.1	1.1
76°N	1.5	1.5	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.1	1.2	1.1
75°N	1.8	1.5	1.5	1.3	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2
74°N	1.8	1.8	1.5	1.6	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2
73°N	1.9	1.9	1.8	1.6	1.6	1.3	1.3	1.2	1.2	1.2	1.2	1.2
72°N	2.0	1.9	1.9	1.8	1.6	1.4	1.3	1.2	1.3	1.2	1.2	1.2
71°N	2.0	2.0	1.9	1.9	1.6	1.6	1.4	1.3	1.3	1.3	1.3	1.2
70°N	2.4	2.3	2.0	1.9	1.7	1.6	1.4	1.3	1.3	1.3	1.3	1.4
69°N	2.5	2.4	2.3	2.0	1.9	1.7	1.4	1.3	1.3	1.3	1.7	1.5
68°N	3.1	2.5	2.4	2.0	2.0	1.7	1.7	1.7	1.3	1.7	2.4	2.2
67°N	3.2	2.6	2.5	2.4	2.0	1.7	1.7	1.7	2.0	2.5	2.6	2.3
66°N	3.3	3.1	2.6	2.5	2.4	2.0	1.7	2.0	2.5	2.6	2.8	2.9
65°N	3.3	3.3	3.2	2.6	2.5	2.1	1.8	2.5	2.6	2.8	3.0	3.2
64°N	4.6	3.4	3.3	3.2	2.9	2.3	2.6	2.7	2.8	3.0	3.3	6.1
63°N	4.9	5.9	4.8	4.8	3.9	3.1	2.7	3.4	3.0	5.8	6.5	7.0
62°N	7.0	7.0	5.1	5.1	5.0	3.6	4.0	3.6	5.7	6.9	7.0	7.0
61°N	7.0	7.0	5.6	5.4	5.3	7.0	4.3	3.9	6.6	7.0	7.0	7.0
60°N	7.0	7.0	6.0	5.9	5.7	7.0	6.4	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	6.4	6.1	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL380 – No ozone converter – page 1
Figure 05–07–281

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 380													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
89°N	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
88°N	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8
87°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8
86°N	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8
85°N	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
84°N	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
83°N	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
82°N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	1.0	1.0	1.0
81°N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
80°N	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
79°N	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.1	1.1
78°N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
77°N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
76°N	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.2	1.2
75°N	1.2	1.1	1.1	1.1	1.1	1.1	1.2	1.1	1.1	1.2	1.2	1.2	1.2
74°N	1.2	1.2	1.2	1.2	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.3
73°N	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.3
72°N	1.2	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.3	1.3
71°N	1.2	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.4	1.3	1.3	1.4
70°N	1.9	1.9	1.9	1.9	1.8	1.8	1.7	1.4	1.4	1.5	1.4	1.4	1.4
69°N	2.0	2.1	2.0	2.0	2.0	1.9	1.8	1.7	1.5	1.5	1.5	1.4	1.4
68°N	2.2	2.2	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.5	1.5	1.5	1.4
67°N	2.4	2.4	2.4	2.4	2.3	2.2	2.1	2.0	1.9	1.6	1.6	1.5	1.4
66°N	2.6	2.6	2.6	2.6	2.5	2.4	2.3	2.1	2.1	1.9	1.6	1.6	1.5
65°N	2.8	2.9	2.9	2.9	2.8	3.5	3.2	2.9	2.2	2.0	1.7	1.6	1.6
64°N	7.0	5.4	5.4	4.8	4.4	4.0	3.6	3.2	2.3	2.1	1.7	1.7	1.6
63°N	7.0	7.0	7.0	7.0	5.2	4.6	4.0	3.5	3.1	2.3	1.8	1.7	1.9
62°N	7.0	7.0	7.0	7.0	7.0	5.4	4.7	3.9	3.4	2.4	1.8	1.8	1.9
61°N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.5	3.7	2.6	2.5	1.8	2.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	4.2	2.8	2.7	2.2	2.1
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.8	2.9	2.3	2.2
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.2	3.1	2.4	2.3
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	3.3	3.6	3.1
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	3.6	3.8	3.3
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.1	3.5
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL380 – No ozone converter – page 2
Figure 05–07–282

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
89°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
88°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
87°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
86°N	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
85°N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8
84°N	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8
83°N	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9
82°N	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9
81°N	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9
80°N	2.2	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9
79°N	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0
78°N	2.4	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0
77°N	2.5	2.4	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0
76°N	2.5	2.5	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.0	2.1	2.0
75°N	2.9	2.6	2.5	2.3	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1
74°N	3.0	3.0	2.6	2.6	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1
73°N	3.1	3.1	3.0	2.7	2.6	2.2	2.2	2.1	2.2	2.1	2.1	2.1
72°N	3.3	3.2	3.1	3.0	2.7	2.4	2.2	2.2	2.2	2.2	2.2	2.1
71°N	3.4	3.3	3.2	3.1	2.7	2.6	2.4	2.2	2.2	2.2	2.2	2.2
70°N	4.0	3.9	3.3	3.2	2.7	2.7	2.4	2.2	2.2	2.2	2.2	2.4
69°N	4.1	4.0	3.9	3.3	3.2	2.7	2.4	2.3	2.2	2.2	2.8	2.5
68°N	5.3	4.2	4.1	3.3	3.2	2.8	2.8	2.7	2.3	2.9	3.9	3.5
67°N	5.6	4.3	4.2	4.1	3.3	2.8	2.8	2.8	3.3	4.0	4.2	3.8
66°N	5.9	5.4	4.3	4.2	4.0	3.3	2.8	3.3	4.0	4.3	4.5	4.8
65°N	5.7	5.6	5.5	4.3	4.1	3.4	2.9	4.2	4.3	4.6	5.0	5.3
64°N	7.0	5.9	5.7	5.6	4.9	3.8	4.3	4.5	4.6	5.0	5.5	7.0
63°N	7.0	7.0	7.0	7.0	7.0	5.2	4.5	6.0	5.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	6.7	7.0	6.6	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL370 – No ozone converter – page 1
Figure 05–07–283

Asia - Maximum Flight duration In hour, APRIL WOUDC FL 370													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
89°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6
88°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6
87°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
86°N	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
85°N	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7
84°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7
83°N	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
82°N	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
81°N	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
80°N	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.9	1.9	1.9	1.9	1.9
79°N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
78°N	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9
77°N	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0
76°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
75°N	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.1
74°N	2.1	2.1	2.0	2.0	2.2	2.1	2.1	2.1	2.0	2.0	2.0	2.1	2.1
73°N	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1
72°N	2.1	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.2
71°N	2.2	2.4	2.4	2.4	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2
70°N	3.1	3.1	3.1	3.1	3.0	2.9	2.8	2.3	2.3	2.4	2.3	2.2	2.2
69°N	3.3	3.3	3.3	3.3	3.2	3.1	2.9	2.8	2.4	2.4	2.4	2.2	2.2
68°N	3.6	3.6	3.6	3.5	3.4	3.3	3.1	3.0	2.9	2.5	2.4	2.4	2.2
67°N	3.9	3.9	3.9	3.8	3.7	3.5	3.3	3.1	3.0	2.5	2.5	2.4	2.3
66°N	4.2	4.3	4.3	4.2	4.1	3.8	3.6	3.3	3.2	3.0	2.5	2.5	2.4
65°N	4.7	4.8	4.8	4.7	4.5	5.7	5.0	4.4	3.4	3.1	2.6	2.5	2.5
64°N	7.0	7.0	7.0	7.0	7.0	6.7	5.8	5.0	3.6	3.3	2.7	2.6	2.5
63°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.6	4.7	3.5	2.8	2.6	2.8
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.3	3.7	2.9	2.7	3.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.0	3.9	2.8	3.1
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	4.1	3.3	3.2
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.5	3.5	3.3
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.6	3.5
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	5.8	4.9
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	6.3	5.2
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL370 – No ozone converter – page 2
Figure 05–07–284

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 360												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
88°N	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
87°N	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1
86°N	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
85°N	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2
84°N	2.5	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.2
83°N	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3
82°N	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3
81°N	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.3
80°N	2.7	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.4	2.4
79°N	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.4	2.4	2.4
78°N	3.2	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.4	2.4
77°N	3.2	3.2	2.8	2.8	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5
76°N	3.4	3.3	2.9	2.8	2.7	2.7	2.6	2.6	2.5	2.5	2.5	2.5
75°N	4.1	3.4	3.3	2.8	2.8	2.7	2.7	2.6	2.6	2.6	2.6	2.5
74°N	4.3	4.2	3.4	3.5	2.8	2.7	2.7	2.6	2.6	2.6	2.6	2.6
73°N	4.5	4.4	4.3	3.6	3.5	2.8	2.7	2.6	2.7	2.7	2.6	2.6
72°N	4.7	4.6	4.4	4.3	3.6	3.1	2.7	2.7	2.7	2.7	2.7	2.6
71°N	4.9	4.7	4.6	4.5	3.6	3.6	3.0	2.8	2.7	2.7	2.7	2.7
70°N	6.3	6.1	4.7	4.6	3.7	3.6	3.1	2.8	2.8	2.8	2.7	3.1
69°N	6.8	6.6	6.3	4.7	4.5	3.7	3.1	2.8	2.8	2.8	3.7	3.3
68°N	7.0	7.0	6.7	4.9	4.7	3.7	3.8	3.7	2.8	3.9	5.9	5.1
67°N	7.0	7.0	7.0	6.7	4.8	3.8	3.8	3.8	4.5	6.2	6.6	5.6
66°N	7.0	7.0	7.0	7.0	6.6	4.7	3.9	4.6	6.2	6.8	7.0	7.0
65°N	7.0	7.0	7.0	7.0	6.9	4.9	4.0	6.8	6.9	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	5.9	6.9	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL360 – No ozone converter – page 1
Figure 05–07–285

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 360													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
88°N	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
87°N	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
86°N	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0
85°N	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0
84°N	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.1
83°N	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
82°N	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.2	2.1	2.1
81°N	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2
80°N	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2	2.2
79°N	2.3	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2
78°N	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
77°N	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
76°N	2.5	2.5	2.4	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3	2.3	2.4
75°N	2.5	2.5	2.5	2.4	2.4	2.4	2.5	2.4	2.3	2.4	2.4	2.4	2.4
74°N	2.6	2.5	2.5	2.5	2.7	2.6	2.6	2.5	2.5	2.4	2.4	2.4	2.4
73°N	2.6	2.6	2.8	2.8	2.8	2.7	2.7	2.6	2.6	2.5	2.4	2.5	2.5
72°N	2.6	2.9	2.9	2.9	2.8	2.8	2.7	2.7	2.6	2.5	2.5	2.5	2.5
71°N	2.7	3.0	3.0	3.0	2.9	2.9	2.8	2.8	2.7	2.7	2.6	2.6	2.5
70°N	4.3	4.3	4.2	4.1	4.0	3.8	3.6	2.8	2.8	2.9	2.8	2.6	2.6
69°N	4.7	4.7	4.7	4.5	4.3	4.1	3.9	3.6	3.0	3.0	2.9	2.6	2.6
68°N	5.2	5.2	5.2	5.0	4.8	4.5	4.2	3.9	3.7	3.1	3.0	2.8	2.6
67°N	5.8	5.9	5.8	5.7	5.4	5.0	4.6	4.2	4.0	3.2	3.0	2.9	2.7
66°N	6.7	6.9	6.8	6.6	6.1	5.6	5.1	4.6	4.3	3.9	3.1	3.0	2.9
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.7	4.1	3.3	3.1	3.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	4.5	3.4	3.2	3.1
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.6	3.3	3.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.7	3.5	3.7
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.6	3.6	3.9
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2	4.4	4.1
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.7	4.4
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.6
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL360 – No ozone converter – page 2
Figure 05–07–286

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 350												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89°N	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
88°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7
87°N	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8
86°N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9
85°N	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0	2.9
84°N	3.4	3.3	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.0	3.0	3.0
83°N	3.5	3.4	3.4	3.4	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.0
82°N	3.6	3.5	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.1	3.1
81°N	3.7	3.7	3.6	3.5	3.5	3.4	3.4	3.3	3.3	3.2	3.2	3.1
80°N	3.8	3.8	3.7	3.6	3.6	3.5	3.4	3.4	3.3	3.3	3.2	3.2
79°N	4.0	3.9	3.8	3.7	3.7	3.6	3.5	3.4	3.4	3.3	3.3	3.2
78°N	4.7	4.0	3.9	3.8	3.7	3.6	3.6	3.5	3.4	3.4	3.3	3.3
77°N	5.0	4.8	4.0	3.9	3.8	3.7	3.6	3.5	3.5	3.4	3.4	3.4
76°N	5.2	5.1	4.1	4.0	3.8	3.8	3.7	3.6	3.5	3.5	3.5	3.4
75°N	7.0	5.3	5.2	4.1	3.9	3.8	3.7	3.6	3.6	3.6	3.5	3.5
74°N	7.0	7.0	5.4	5.6	4.0	3.9	3.8	3.7	3.7	3.6	3.6	3.5
73°N	7.0	7.0	7.0	5.9	5.6	3.9	3.8	3.7	3.7	3.7	3.7	3.6
72°N	7.0	7.0	7.0	7.0	5.8	4.6	3.8	3.7	3.8	3.7	3.7	3.7
71°N	7.0	7.0	7.0	7.0	6.0	5.8	4.6	3.9	3.8	3.8	3.8	3.7
70°N	7.0	7.0	7.0	7.0	6.3	5.9	4.6	3.9	3.9	3.9	3.8	4.6
69°N	7.0	7.0	7.0	7.0	7.0	6.1	4.7	4.0	4.0	3.9	5.8	4.9
68°N	7.0	7.0	7.0	7.0	7.0	6.3	6.3	6.0	4.1	6.1	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	6.4	6.4	6.3	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL350 – No ozone converter – page 1
Figure 05–07–287

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 350													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
89°N	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
88°N	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6
87°N	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6
86°N	2.9	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.6	2.6
85°N	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.7	2.7	2.6
84°N	3.0	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.7	2.7	2.7	2.8
83°N	3.0	3.0	3.0	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8
82°N	3.1	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.8	2.8	2.9	2.9	2.9
81°N	3.1	3.1	3.0	3.0	2.9	2.9	2.9	2.9	2.9	3.0	2.9	2.9	2.9
80°N	3.1	3.1	3.1	3.1	3.0	3.0	2.9	2.9	3.0	3.0	3.0	3.0	3.0
79°N	3.2	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0	3.1	3.0	3.0	3.0
78°N	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
77°N	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.2	3.1	3.1	3.2	3.2	3.2
76°N	3.4	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.3
75°N	3.5	3.4	3.4	3.3	3.3	3.3	3.5	3.2	3.2	3.3	3.3	3.3	3.4
74°N	3.5	3.5	3.5	3.4	3.8	3.7	3.6	3.6	3.4	3.4	3.4	3.4	3.4
73°N	3.6	3.6	4.0	4.0	3.9	3.8	3.8	3.7	3.6	3.5	3.5	3.6	3.6
72°N	3.7	4.2	4.2	4.2	4.1	4.0	3.9	3.8	3.7	3.5	3.5	3.6	3.6
71°N	3.7	4.4	4.4	4.4	4.3	4.2	4.1	3.9	3.8	3.9	3.7	3.7	3.7
70°N	7.0	7.0	7.0	7.0	6.7	6.2	5.7	4.1	3.9	4.3	4.2	3.8	3.7
69°N	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7	4.5	4.5	4.3	3.8	3.8
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.3	4.7	4.5	4.3	3.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.7	4.4	3.9
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.9	4.6	4.4
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	4.8	4.5
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.1	4.7
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.4	6.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.7	6.5
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL350 – No ozone converter – page 2
Figure 05–07–288

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 340												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
89°N	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
88°N	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.2	4.1	4.1	4.1	4.1
87°N	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.3	4.3	4.3	4.3	4.2
86°N	4.8	4.7	4.7	4.7	4.6	4.6	4.6	4.6	4.5	4.5	4.4	4.4
85°N	5.0	5.0	5.0	4.9	4.9	4.9	4.8	4.7	4.7	4.6	4.6	4.6
84°N	5.4	5.3	5.3	5.2	5.1	5.1	5.0	4.9	4.9	4.8	4.7	4.6
83°N	5.7	5.6	5.5	5.5	5.4	5.3	5.2	5.1	5.0	5.0	4.9	4.8
82°N	6.0	5.9	5.8	5.7	5.6	5.5	5.4	5.3	5.2	5.1	5.0	4.9
81°N	6.4	6.2	6.1	6.0	5.8	5.7	5.6	5.5	5.3	5.2	5.1	5.0
80°N	6.7	6.6	6.4	6.2	6.0	5.9	5.7	5.6	5.5	5.3	5.3	5.1
79°N	7.0	6.9	6.7	6.5	6.3	6.1	6.0	5.8	5.6	5.5	5.3	5.2
78°N	7.0	7.0	7.0	6.8	6.6	6.3	6.1	6.0	5.7	5.6	5.4	5.4
77°N	7.0	7.0	7.0	7.0	6.8	6.6	6.3	6.0	5.9	5.7	5.7	5.6
76°N	7.0	7.0	7.0	7.0	7.0	6.8	6.5	6.2	6.0	5.8	5.9	5.7
75°N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.4	6.1	6.1	6.0	5.9
74°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.5	6.5	6.3	6.2	6.1
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.7	6.5	6.4	6.3
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.9	6.7	6.6	6.5
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8	6.8
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL340 – No ozone converter – page 1
Figure 05–07–289

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 340													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
89°N	3.9	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7
88°N	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.9	3.9	3.8	3.8	3.8	3.8
87°N	4.2	4.2	4.2	4.1	4.1	4.0	4.0	3.9	3.9	3.9	3.9	3.8	3.8
86°N	4.3	4.3	4.3	4.2	4.2	4.2	4.1	4.1	4.0	4.0	3.9	3.9	3.8
85°N	4.5	4.4	4.4	4.3	4.3	4.2	4.2	4.1	4.1	4.0	4.0	3.9	3.9
84°N	4.6	4.6	4.5	4.4	4.4	4.3	4.2	4.2	4.2	4.1	4.1	4.0	4.2
83°N	4.7	4.6	4.6	4.5	4.5	4.4	4.3	4.2	4.2	4.2	4.1	4.3	4.3
82°N	4.8	4.7	4.6	4.6	4.6	4.4	4.4	4.3	4.3	4.2	4.5	4.5	4.4
81°N	4.9	4.9	4.7	4.7	4.6	4.5	4.5	4.4	4.4	4.6	4.6	4.6	4.6
80°N	5.0	4.9	4.9	4.8	4.8	4.7	4.5	4.5	4.8	4.7	4.7	4.7	4.7
79°N	5.1	5.1	5.0	5.0	4.9	4.8	4.7	4.8	4.7	4.9	4.9	4.9	4.8
78°N	5.3	5.3	5.2	5.1	5.0	4.9	4.8	4.9	4.9	4.8	5.0	5.0	5.0
77°N	5.5	5.4	5.3	5.2	5.1	5.1	5.0	5.0	5.0	4.9	5.1	5.1	5.1
76°N	5.7	5.5	5.4	5.4	5.3	5.2	5.1	5.1	5.1	5.0	5.0	5.2	5.4
75°N	5.8	5.7	5.6	5.5	5.4	5.3	6.0	5.3	5.2	5.6	5.5	5.4	5.6
74°N	6.0	5.9	5.8	5.7	6.7	6.5	6.3	6.0	5.8	5.7	5.7	5.6	5.7
73°N	6.2	6.1	7.0	7.0	7.0	6.9	6.7	6.4	6.1	5.9	5.8	6.2	6.0
72°N	6.4	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.4	6.0	6.0	6.4	6.2
71°N	6.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	7.0	6.8	6.6	6.4
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL340 – No ozone converter – page 2
Figure 05–07–290

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 330												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
89°N	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.4
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL330 – No ozone converter – page 1
Figure 05–07–291

Asia - Maximum Flight duration in hour, APRIL WOUDC FL 330												
	Longitude											
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
89°N	6.4	6.4	6.3	6.3	6.3	6.2	6.2	6.1	6.1	6.0	6.0	6.0	5.9
88°N	6.9	6.7	6.7	6.6	6.5	6.5	6.4	6.4	6.3	6.2	6.2	6.1	6.0
87°N	7.0	7.0	7.0	7.0	6.9	6.7	6.6	6.6	6.5	6.5	6.4	6.3	6.2
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.6	6.5	6.5	6.3
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.6	6.5
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – April – FL330 – No ozone converter – page 2
Figure 05–07–292

Y. Asia – May

Asia - Maximum Flight duration in hour, MAY WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	--	–	--	–	--	–	--	–	--	--	–
89°N	–	--	–	--	–	--	–	--	–	--	--	–
88°N	–	--	–	--	–	--	–	--	–	--	--	–
87°N	–	--	–	--	–	--	–	--	–	--	--	–
86°N	–	--	–	--	–	--	–	--	–	--	--	–
85°N	–	--	–	--	–	--	–	--	–	--	--	–
84°N	–	--	–	--	–	--	–	--	–	--	--	–
83°N	–	--	–	--	–	--	–	--	–	--	--	–
82°N	–	--	–	--	–	--	–	--	–	--	--	–
81°N	–	--	–	--	–	--	–	--	–	--	--	–
80°N	–	--	–	--	–	--	–	--	–	--	--	–
79°N	–	--	–	--	–	--	–	--	–	--	--	–
78°N	–	--	–	--	–	--	–	--	–	--	--	–
77°N	–	--	–	--	–	--	–	--	–	--	--	–
76°N	–	--	–	--	–	--	–	--	–	--	--	–
75°N	–	--	–	--	–	--	–	--	–	--	--	–
74°N	–	--	–	--	–	--	–	--	–	--	--	–
73°N	–	--	–	--	–	--	–	--	–	--	--	–
72°N	–	--	–	--	–	--	–	--	–	--	--	–
71°N	–	--	–	--	–	--	–	--	–	--	--	–
70°N	–	--	–	--	–	--	–	--	–	--	--	–
69°N	–	--	–	--	–	--	–	--	–	--	--	–
68°N	–	--	–	--	–	--	–	--	–	--	--	–
67°N	0.5	--	–	--	–	--	–	--	–	--	--	–
66°N	0.7	--	–	--	–	--	–	--	–	--	--	0.4
65°N	0.9	0.9	–	0.5	0.4	--	–	0.6	0.8	0.3	1.9	2.4
64°N	1.1	1.5	1.5	0.7	0.6	--	–	0.8	1.1	2.7	2.5	3.1
63°N	3.1	1.8	1.8	0.9	0.8	--	1.7	1.0	1.3	7.0	7.0	7.0
62°N	3.7	2.2	2.1	2.1	1.0	1.3	2.0	3.5	7.0	7.0	7.0	7.0
61°N	4.3	2.6	2.5	2.4	1.2	3.6	3.6	7.0	7.0	7.0	7.0	7.0
60°N	6.4	5.3	3.0	2.8	1.5	4.8	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	3.5	3.2	4.6	5.5	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	5.6	3.7	6.2	6.5	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	4.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL410 – No ozone converter – page 1
Figure 05–07–293

Asia - Maximum Flight duration in hour, MAY WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	–	--	--	--	--	–	–	--	--	–	–	--
89°N	–	–	--	--	--	--	–	–	--	--	–	–	--
88°N	–	–	--	--	--	--	–	–	--	--	–	–	--
87°N	–	–	--	--	--	--	–	–	--	--	–	–	--
86°N	–	–	--	--	--	--	–	–	--	--	–	–	--
85°N	–	–	--	--	--	--	–	–	--	--	–	–	--
84°N	–	–	--	--	--	--	–	–	--	--	–	–	--
83°N	–	–	--	--	--	--	–	–	--	--	–	–	--
82°N	–	–	--	--	--	--	–	–	--	--	–	–	--
81°N	–	–	--	--	--	--	–	–	--	--	–	–	--
80°N	–	–	--	--	--	--	–	–	--	--	–	–	--
79°N	–	–	--	--	--	--	–	–	--	--	–	–	--
78°N	–	–	--	--	--	--	–	–	--	--	–	–	--
77°N	–	–	--	--	--	--	–	–	--	--	–	–	--
76°N	–	–	--	--	--	--	–	–	--	--	–	–	--
75°N	–	–	--	--	--	--	–	–	--	--	–	–	--
74°N	–	–	--	--	--	--	–	–	--	--	–	–	--
73°N	–	–	--	--	--	--	–	–	--	--	–	–	--
72°N	–	–	--	--	--	--	–	–	--	--	–	–	--
71°N	–	–	--	--	--	--	–	–	--	--	–	–	--
70°N	–	–	--	--	--	--	–	–	--	--	–	–	--
69°N	–	–	--	--	--	--	–	–	--	--	–	–	--
68°N	–	–	--	--	--	--	–	–	--	--	–	–	--
67°N	0.3	0.4	1.7	1.7	1.6	1.4	–	–	--	--	–	–	--
66°N	2.0	2.2	2.3	2.3	2.2	2.0	1.7	0.4	0.5	0.3	–	–	--
65°N	2.7	3.0	3.1	3.1	2.9	2.6	2.2	1.8	0.7	0.5	0.3	–	--
64°N	3.6	4.0	4.1	4.1	3.8	3.4	2.9	2.3	1.0	0.7	0.5	–	--
63°N	4.8	5.2	5.5	5.3	5.0	4.4	3.7	3.0	2.7	1.0	0.7	–	--
62°N	7.0	7.0	7.0	7.0	6.4	5.7	4.7	4.4	3.4	1.2	0.9	–	--
61°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.4	4.1	1.5	1.1	–	0.3
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.0	1.9	1.4	0.4	1.3
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.7	1.6	2.0	1.5
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	1.9	2.2	1.7
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.4	2.5	1.9
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8	2.1
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL410 – No ozone converter – page 2
Figure 05–07–294

Asia - Maximum Flight duration in hour, MAY WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	–	--	--	--	--	--	–	--	--	--	–	--
89°N	–	--	--	--	--	--	–	--	--	--	–	--
88°N	–	--	--	--	--	--	–	--	--	--	–	--
87°N	–	--	--	--	--	--	–	--	--	--	–	--
86°N	–	--	--	--	--	--	–	--	--	--	–	--
85°N	–	--	--	--	--	--	–	--	--	--	–	--
84°N	–	--	--	--	--	--	–	--	--	--	–	--
83°N	–	--	--	--	--	--	–	--	--	--	–	--
82°N	–	--	--	--	--	--	–	--	--	--	–	--
81°N	–	--	--	--	--	--	–	--	--	--	–	--
80°N	–	--	--	--	--	--	–	--	--	--	–	--
79°N	–	--	--	--	--	--	–	--	--	--	–	--
78°N	–	--	--	--	--	--	–	--	--	--	–	--
77°N	–	--	--	--	--	--	–	--	--	--	–	--
76°N	–	--	--	--	--	--	–	--	--	--	–	--
75°N	–	--	--	--	--	--	–	--	--	--	–	--
74°N	–	--	--	--	--	--	–	--	--	--	–	--
73°N	–	--	--	--	--	--	–	--	--	--	–	--
72°N	–	--	--	--	--	--	–	--	--	--	–	--
71°N	–	--	--	--	--	--	–	--	--	--	–	--
70°N	–	--	--	--	--	--	–	--	--	--	–	--
69°N	–	--	--	--	--	--	–	--	--	--	–	--
68°N	–	--	--	--	--	--	–	--	--	--	–	--
67°N	0.7	--	--	--	--	--	–	--	--	--	–	0.3
66°N	1.0	--	--	--	--	--	–	--	--	--	0.3	0.6
65°N	1.2	1.2	0.3	0.7	0.6	--	–	0.8	1.0	0.4	2.5	3.0
64°N	1.5	2.0	2.1	0.9	0.8	--	–	1.0	1.3	3.6	3.3	4.2
63°N	4.6	2.5	2.5	1.2	1.1	0.4	2.2	1.2	1.7	7.0	7.0	7.0
62°N	5.6	3.0	3.0	2.9	1.3	1.7	2.7	5.4	7.0	7.0	7.0	7.0
61°N	6.8	3.7	3.6	3.5	1.6	5.4	5.4	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	4.3	4.1	1.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	5.3	4.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	5.7	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL400 – No ozone converter – page 1
Figure 05–07–295

Asia - Maximum Flight duration in hour, MAY WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	--	–	–	--	--	–	--	--	–	--	--
89°N	–	--	--	–	–	--	--	–	--	--	–	--	--
88°N	–	--	--	–	–	--	--	–	--	--	–	--	--
87°N	–	--	--	–	–	--	--	–	--	--	–	--	--
86°N	–	--	--	–	–	--	--	–	--	--	–	--	--
85°N	–	--	--	–	–	--	--	–	--	--	–	--	--
84°N	–	--	--	–	–	--	--	–	--	--	–	--	--
83°N	–	--	--	–	–	--	--	–	--	--	–	--	--
82°N	–	--	--	–	–	--	--	–	--	--	–	--	--
81°N	–	--	--	–	–	--	--	–	--	--	–	--	--
80°N	–	--	--	–	–	--	--	–	--	--	–	--	--
79°N	–	--	--	–	–	--	--	–	--	--	–	--	--
78°N	–	--	--	–	–	--	--	–	--	--	–	--	--
77°N	–	--	--	–	–	--	--	–	--	--	–	--	--
76°N	–	--	--	–	–	--	--	–	--	--	–	--	--
75°N	–	--	--	–	–	--	--	–	--	--	–	--	--
74°N	–	--	--	–	–	--	--	–	--	--	–	--	--
73°N	–	--	--	–	–	--	--	–	--	--	–	--	--
72°N	–	--	--	–	–	--	--	–	--	--	–	--	--
71°N	–	--	--	–	–	--	--	–	--	--	–	--	--
70°N	–	--	--	–	–	--	--	–	--	--	–	--	--
69°N	–	--	--	–	–	--	--	–	--	--	–	--	--
68°N	–	--	0.3	0.3	0.3	--	--	–	--	--	–	--	--
67°N	0.4	0.5	2.2	2.2	2.0	1.8	0.3	–	--	--	–	--	--
66°N	2.6	2.9	3.0	3.0	2.8	2.5	2.1	0.5	0.6	0.4	–	--	--
65°N	3.6	4.1	4.2	4.2	3.9	3.4	2.9	2.3	0.9	0.6	0.4	--	--
64°N	5.0	5.6	5.9	5.8	5.3	4.7	3.8	3.0	1.3	0.9	0.6	--	--
63°N	7.0	7.0	7.0	7.0	7.0	6.4	5.2	4.0	3.5	1.2	0.8	--	--
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	4.6	1.6	1.1	--	--
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	2.0	1.4	0.3	0.4
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.5	1.8	0.5	1.7
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.1	2.5	1.9
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.6	2.9	2.2
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.3	2.5
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	2.8
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL400 – No ozone converter – page 2
Figure 05–07–296

Asia - Maximum Flight duration in hour, MAY WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
88°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
86°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
85°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
84°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
83°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
82°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
81°N	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5
80°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
79°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
78°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6
77°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6
76°N	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7
75°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7	1.7	1.7	1.8
74°N	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
73°N	2.3	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.9	2.4
72°N	2.4	2.4	2.0	2.0	1.9	1.9	1.9	1.8	1.8	1.8	2.4	2.5
71°N	2.5	2.5	2.4	2.0	2.0	1.9	1.9	1.9	1.9	2.1	2.6	2.7
70°N	2.6	2.5	2.5	2.0	2.0	2.0	1.9	1.9	1.9	2.7	2.8	2.9
69°N	2.7	2.6	2.6	2.5	2.0	2.0	2.0	1.9	2.5	2.8	3.0	3.1
68°N	3.3	2.7	2.7	2.6	2.1	2.0	2.0	2.0	2.7	3.0	3.2	3.4
67°N	4.3	3.4	3.4	2.8	2.7	2.4	2.4	2.7	3.0	3.3	3.5	3.7
66°N	4.6	3.6	3.5	2.9	2.8	2.4	2.4	2.8	3.2	3.5	3.8	4.1
65°N	5.0	5.0	3.7	4.2	4.1	2.5	3.1	4.5	4.9	3.9	7.0	7.0
64°N	5.3	6.0	6.1	4.5	4.4	3.6	3.7	4.8	5.4	7.0	7.0	7.0
63°N	7.0	6.7	6.7	4.8	4.7	3.8	6.3	5.2	6.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	5.0	5.6	6.9	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	5.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	5.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL390 – No ozone converter – page 1
Figure 05–07–297

	Asia - Maximum Flight duration in hour, MAY WOUDC FL 390												
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
89°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
88°N	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
87°N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
86°N	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
85°N	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3
84°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.3
83°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
82°N	1.5	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
81°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
80°N	1.5	1.5	1.5	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.4
79°N	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
78°N	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
77°N	1.6	1.7	1.7	1.5	1.5	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5
76°N	1.7	1.7	1.7	1.7	1.8	1.8	1.6	1.6	1.6	1.6	1.5	1.5	1.6
75°N	1.8	1.8	1.8	2.1	1.8	1.8	1.8	1.6	1.6	1.6	1.6	1.7	1.6
74°N	1.8	2.3	2.3	2.3	2.3	2.2	1.9	1.8	1.6	1.6	1.6	1.7	1.7
73°N	2.4	2.4	2.4	2.4	2.4	2.4	2.3	2.0	1.9	1.7	1.8	1.8	1.8
72°N	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.1	2.0	2.0	1.8	1.8	1.8
71°N	2.8	2.8	2.8	2.8	2.8	2.7	2.6	2.6	2.1	2.0	1.9	1.8	1.8
70°N	3.0	3.1	3.1	3.1	3.0	3.0	2.9	2.7	2.2	2.3	2.3	1.9	1.9
69°N	3.2	3.3	3.4	3.4	3.4	3.3	3.1	3.0	2.9	2.5	2.4	2.3	1.9
68°N	3.6	3.7	3.7	3.8	3.7	3.6	3.4	3.2	3.1	3.3	2.5	2.4	2.0
67°N	4.0	4.1	6.8	6.8	6.5	6.1	3.8	3.6	3.4	3.6	2.6	2.5	2.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	4.1	4.3	3.9	2.8	2.6	2.3
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	4.3	3.9	3.0	2.9
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.7	4.2	3.2	3.1
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	4.6	3.4	3.3
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.0	3.6	3.7
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.5	3.8	3.9
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.0	6.1
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	7.0	6.6
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL390 – No ozone converter – page 2
Figure 05–07–298

Asia - Maximum Flight duration in hour, MAY WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
89°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
88°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
87°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
86°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
85°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
84°N	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6	1.6
83°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.6	1.6
82°N	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
81°N	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.7	1.7
80°N	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
79°N	1.8	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8	1.8	1.8	1.8
78°N	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.8
77°N	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9	1.9	1.9
76°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.9	1.9	1.9	1.9
75°N	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0
74°N	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.1
73°N	2.7	2.2	2.2	2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.7
72°N	2.8	2.8	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.8	2.9
71°N	3.0	2.9	2.9	2.3	2.3	2.2	2.2	2.2	2.2	2.3	3.0	3.1
70°N	3.1	3.1	3.0	2.4	2.3	2.3	2.2	2.2	2.2	3.1	3.2	3.3
69°N	3.2	3.2	3.2	3.1	2.4	2.3	2.3	2.3	3.0	3.3	3.4	3.6
68°N	4.4	3.4	3.3	3.2	2.5	2.4	2.3	2.3	3.1	3.5	3.8	4.0
67°N	6.3	4.6	4.5	3.4	3.3	2.8	2.8	3.2	3.5	3.8	4.2	4.5
66°N	7.0	4.9	4.8	3.5	3.4	2.9	2.9	3.4	3.8	4.2	4.6	5.0
65°N	7.0	7.0	5.1	5.7	5.6	3.0	3.7	5.6	6.3	4.6	7.0	7.0
64°N	7.0	7.0	7.0	6.3	6.1	4.7	4.5	6.2	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	6.7	5.1	7.0	6.9	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL380 – No ozone converter – page 1
Figure 05–07–299

Asia - Maximum Flight duration in hour, MAY WOUDC FL 380													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
89°N	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4
88°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.4	1.4
87°N	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.4
86°N	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
85°N	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
84°N	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
83°N	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
82°N	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5
81°N	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
80°N	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.6	1.7	1.7	1.6
79°N	1.8	1.7	1.7	1.6	1.6	1.6	1.7	1.7	1.7	1.7	1.7	1.7	1.7
78°N	1.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
77°N	1.9	1.9	1.9	1.7	1.7	1.8	1.8	1.8	1.7	1.7	1.7	1.8	1.7
76°N	2.0	2.0	2.0	2.0	2.0	2.0	1.8	1.8	1.8	1.8	1.8	1.7	1.8
75°N	2.0	2.0	2.0	2.4	2.1	2.1	2.0	1.8	1.8	1.8	1.8	1.9	1.8
74°N	2.1	2.6	2.6	2.6	2.6	2.5	2.1	2.1	1.9	1.8	1.8	2.0	2.0
73°N	2.7	2.8	2.8	2.8	2.8	2.7	2.6	2.3	2.2	1.9	2.0	2.0	2.0
72°N	2.9	3.0	3.0	3.0	3.0	2.9	2.8	2.3	2.3	2.2	2.1	2.1	2.0
71°N	3.2	3.2	3.3	3.3	3.2	3.2	3.1	2.9	2.4	2.3	2.2	2.1	2.1
70°N	3.5	3.6	3.6	3.6	3.6	3.5	3.3	3.2	2.5	2.8	2.7	2.2	2.2
69°N	3.8	3.9	4.0	4.0	4.0	3.8	3.7	3.5	3.5	2.9	2.8	2.7	2.2
68°N	4.2	4.4	4.5	4.5	4.5	4.3	4.1	3.8	3.8	4.0	3.0	2.9	2.3
67°N	4.8	5.0	7.0	7.0	7.0	7.0	4.6	4.3	4.2	4.4	3.2	3.0	2.4
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	5.5	4.9	3.4	3.2	2.8
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.5	4.9	3.9	3.7
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.4	4.2	4.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.5	4.2
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	4.8	4.9
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	5.2
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL380 – No ozone converter – page 2
Figure 05–07–300

Asia - Maximum Flight duration in hour, MAY WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89°N	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4
88°N	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
87°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
86°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6
85°N	2.6	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6
84°N	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7
83°N	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7	2.7
82°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.7	2.7
81°N	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8
80°N	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8
79°N	2.9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9
78°N	3.0	3.0	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9
77°N	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.0	3.0	3.0
76°N	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0
75°N	3.3	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.1	3.1	3.1
74°N	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2
73°N	4.2	3.5	3.5	3.4	3.4	3.4	3.3	3.3	3.3	3.2	3.3	4.1
72°N	4.4	4.4	3.6	3.5	3.5	3.4	3.4	3.3	3.3	3.3	4.2	4.3
71°N	4.6	4.6	4.6	3.6	3.6	3.5	3.5	3.4	3.4	3.5	4.4	4.6
70°N	4.8	4.8	4.8	3.7	3.6	3.6	3.5	3.5	3.4	4.5	4.7	4.9
69°N	5.0	5.0	5.0	4.9	3.7	3.6	3.6	3.5	4.5	4.8	5.1	5.4
68°N	7.0	5.3	5.2	5.1	3.8	3.7	3.6	3.6	4.8	5.2	5.6	6.0
67°N	7.0	7.0	7.0	5.2	5.1	4.4	4.4	4.9	5.2	5.7	6.1	6.6
66°N	7.0	7.0	7.0	5.6	5.4	4.5	4.4	5.2	5.6	6.2	6.8	7.0
65°N	7.0	7.0	7.0	7.0	7.0	4.6	5.7	7.0	7.0	6.8	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL370 – No ozone converter – page 1
Figure 05–07–301

	Asia - Maximum Flight duration in hour, MAY WOUDC FL 370												
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
89°N	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
88°N	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.4
87°N	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4	2.4
86°N	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.4
85°N	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
84°N	2.7	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
83°N	2.7	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.5
82°N	2.7	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.5
81°N	2.6	2.6	2.6	2.6	2.6	2.6	2.6	2.7	2.6	2.6	2.6	2.6	2.6
80°N	2.7	2.7	2.7	2.6	2.6	2.6	2.7	2.7	2.7	2.7	2.7	2.7	2.6
79°N	2.9	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.7
78°N	2.9	2.7	2.7	2.7	2.7	2.8	2.8	2.8	2.8	2.7	2.7	2.8	2.8
77°N	3.0	3.0	3.0	2.7	2.7	2.8	2.8	2.8	2.8	2.8	2.8	2.9	2.8
76°N	3.1	3.1	3.1	3.1	3.2	3.1	2.9	2.9	2.9	2.8	2.8	2.8	2.9
75°N	3.1	3.2	3.2	3.7	3.2	3.2	3.2	2.9	2.9	2.9	2.9	3.1	3.0
74°N	3.2	3.9	3.9	3.9	3.9	3.8	3.3	3.3	2.9	2.9	2.9	3.2	3.2
73°N	4.1	4.2	4.2	4.2	4.2	4.1	4.0	3.5	3.4	3.0	3.3	3.3	3.2
72°N	4.4	4.4	4.5	4.5	4.4	4.4	4.3	3.6	3.5	3.4	3.4	3.3	3.3
71°N	4.7	4.8	4.9	4.9	4.8	4.7	4.6	4.4	3.7	3.6	3.4	3.4	3.4
70°N	5.2	5.3	5.4	5.4	5.3	5.2	5.0	4.8	3.9	4.3	4.3	3.5	3.4
69°N	5.7	5.9	6.0	6.0	5.9	5.7	5.5	5.2	5.2	4.6	4.5	4.3	3.5
68°N	6.3	6.5	6.7	6.8	6.7	6.4	6.1	5.7	5.7	6.4	4.7	4.6	3.6
67°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.4	6.3	7.0	5.0	4.8	3.7
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	5.1	4.5
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.1
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.6
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL370 – No ozone converter – page 2
Figure 05–07–302

Asia - Maximum Flight duration in hour, MAY WOUDC FL 360												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89°N	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8
88°N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9
87°N	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
86°N	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
85°N	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.1	3.1
84°N	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.2	3.2	3.2	3.2	3.2
83°N	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.2	3.2
82°N	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.3	3.3
81°N	3.4	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.4	3.4	3.4
80°N	3.5	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.4
79°N	3.6	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.5	3.5
78°N	3.7	3.8	3.8	3.8	3.8	3.8	3.7	3.7	3.7	3.6	3.6	3.6
77°N	3.9	3.9	3.9	3.9	3.9	3.9	3.8	3.8	3.7	3.7	3.7	3.7
76°N	4.0	4.0	4.0	4.0	4.0	4.0	3.9	3.9	3.8	3.8	3.8	3.8
75°N	4.2	4.2	4.2	4.2	4.1	4.1	4.0	3.9	3.9	3.9	3.9	3.8
74°N	4.4	4.4	4.3	4.3	4.2	4.2	4.2	4.0	4.0	4.0	4.0	3.9
73°N	5.9	4.5	4.5	4.5	4.4	4.3	4.2	4.2	4.1	4.1	4.0	5.0
72°N	6.3	6.3	4.6	4.6	4.5	4.4	4.4	4.2	4.2	4.2	5.3	5.4
71°N	6.8	6.8	6.8	4.7	4.7	4.5	4.4	4.4	4.3	4.4	5.7	5.9
70°N	7.0	7.0	7.0	4.9	4.8	4.7	4.5	4.5	4.4	5.8	6.1	6.5
69°N	7.0	7.0	7.0	7.0	4.9	4.8	4.6	4.6	6.2	6.3	6.7	7.0
68°N	7.0	7.0	7.0	7.0	5.1	4.9	4.8	4.7	6.6	6.9	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	6.1	6.1	6.8	6.8	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	6.4	6.3	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	6.7	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL360 – No ozone converter – page 1
Figure 05–07–303

	Asia - Maximum Flight duration in hour, MAY WOUDC FL 360												
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
89°N	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
88°N	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
87°N	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8	2.8	2.8	2.8
86°N	3.1	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.8
85°N	3.1	3.1	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
84°N	3.2	3.2	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9	2.9	2.9
83°N	3.2	3.2	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	2.9
82°N	3.3	3.1	3.1	3.1	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
81°N	3.1	3.1	3.1	3.1	3.1	3.1	3.0	3.1	3.0	3.1	3.0	3.0	3.0
80°N	3.2	3.2	3.2	3.1	3.1	3.1	3.2	3.2	3.2	3.2	3.3	3.3	3.0
79°N	3.5	3.2	3.2	3.2	3.2	3.2	3.3	3.3	3.2	3.2	3.2	3.3	3.3
78°N	3.6	3.3	3.2	3.2	3.2	3.4	3.3	3.3	3.3	3.3	3.3	3.4	3.4
77°N	3.6	3.6	3.6	3.3	3.3	3.4	3.4	3.4	3.4	3.3	3.3	3.5	3.5
76°N	3.7	3.7	3.7	3.7	3.8	3.8	3.5	3.4	3.4	3.4	3.4	3.4	3.5
75°N	3.8	3.8	3.8	4.5	3.9	3.9	3.9	3.5	3.5	3.5	3.4	3.9	3.7
74°N	4.0	4.9	4.9	4.9	4.8	4.7	4.0	4.0	3.6	3.5	3.5	4.0	4.0
73°N	5.1	5.2	5.3	5.3	5.2	5.1	4.9	4.2	4.2	3.6	4.2	4.2	4.2
72°N	5.6	5.7	5.7	5.7	5.7	5.5	5.4	4.5	4.4	4.2	4.3	4.3	4.2
71°N	6.1	6.3	6.4	6.4	6.3	6.1	5.9	5.6	4.6	4.4	4.5	4.4	4.4
70°N	6.8	7.0	7.0	7.0	7.0	6.8	6.5	6.2	4.9	5.9	5.9	4.6	4.6
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.9	6.6	6.3	6.1	4.8
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.6	5.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL360 – No ozone converter – page 2
Figure 05–07–304

Asia - Maximum Flight duration in hour, MAY WOUDC FL 350												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
89°N	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6
88°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.6
87°N	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
86°N	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
85°N	4.2	4.2	4.2	4.2	4.2	4.1	4.1	4.1	4.1	4.1	4.1	4.1
84°N	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.2	4.2	4.2	4.2	4.2
83°N	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.4	4.3	4.3	4.2
82°N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.5	4.4	4.4
81°N	4.7	4.7	4.8	4.8	4.8	4.8	4.7	4.7	4.7	4.6	4.5	4.5
80°N	4.9	4.9	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.8	4.6	4.6
79°N	5.1	5.1	5.2	5.2	5.2	5.1	5.1	5.1	5.0	4.8	4.7	4.7
78°N	5.3	5.4	5.4	5.4	5.4	5.4	5.3	5.3	5.2	5.0	4.9	4.9
77°N	5.6	5.7	5.7	5.7	5.7	5.6	5.5	5.4	5.1	5.1	5.1	5.0
76°N	6.0	6.0	6.0	6.0	5.9	5.8	5.7	5.7	5.3	5.3	5.2	5.1
75°N	6.3	6.3	6.3	6.3	6.2	6.0	6.0	5.6	5.5	5.4	5.4	5.0
74°N	6.8	6.8	6.7	6.6	6.5	6.4	6.2	5.7	5.7	5.7	5.6	5.3
73°N	7.0	7.0	7.0	7.0	6.8	6.7	6.5	6.0	5.9	5.8	5.4	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2	6.1	6.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.4	6.1	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.7	6.6	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL350 – No ozone converter – page 1
Figure 05–07–305

Asia - Maximum Flight duration in hour, MAY WOUDC FL 350													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
89°N	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
88°N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5
87°N	3.9	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5
86°N	3.9	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6
85°N	4.1	4.0	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6
84°N	4.1	4.1	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.7	3.7	3.7	3.6
83°N	4.2	4.2	3.9	3.9	3.9	3.8	3.8	3.8	3.8	3.8	3.7	3.7	3.7
82°N	4.3	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.8	3.8	3.9	3.8	3.8
81°N	4.0	4.0	4.0	3.9	3.9	3.9	3.9	4.1	3.9	4.0	3.9	3.9	3.9
80°N	4.1	4.1	4.1	4.0	4.0	4.0	4.2	4.2	4.1	4.1	4.4	4.4	3.9
79°N	4.6	4.1	4.1	4.1	4.1	4.1	4.3	4.3	4.3	4.2	4.2	4.5	4.5
78°N	4.8	4.2	4.2	4.2	4.1	4.4	4.4	4.4	4.3	4.3	4.3	4.7	4.6
77°N	5.0	4.7	4.6	4.3	4.2	4.5	4.5	4.5	4.5	4.4	4.4	4.9	4.8
76°N	4.9	4.9	4.9	4.9	5.1	5.1	4.7	4.6	4.6	4.6	4.5	4.5	5.0
75°N	5.1	5.1	5.1	6.5	5.4	5.3	5.3	4.8	4.7	4.7	4.6	5.7	5.5
74°N	5.3	7.0	7.0	7.0	7.0	6.8	5.5	5.4	4.9	4.8	4.8	6.0	6.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.8	5.0	6.4	6.4	6.3
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.2	6.0	6.8	6.8	6.9
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.4	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL350 – No ozone converter – page 2
Figure 05–07–306

Asia - Maximum Flight duration in hour, MAY WOUDC FL 340												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
89°N	5.1	5.1	5.1	5.1	5.1	5.1	5.1	4.9	4.9	4.9	4.9	4.9
88°N	5.2	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.3	5.0
87°N	5.4	5.4	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
86°N	5.6	5.6	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.7
85°N	5.9	6.0	6.0	6.1	6.1	5.9	5.9	5.9	5.9	5.9	5.8	5.8
84°N	6.1	6.2	6.3	6.4	6.4	6.4	6.4	6.2	6.2	6.1	6.1	6.1
83°N	6.4	6.4	6.5	6.6	6.6	6.7	6.7	6.6	6.6	6.4	6.3	6.3
82°N	6.6	6.7	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.9	6.5	6.5
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.6
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL340 – No ozone converter – page 1
Figure 05–07–307

Asia - Maximum Flight duration in hour, MAY WOUDC FL 340													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8	4.8
89°N	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.9	4.8	4.8	4.8	4.8
88°N	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	4.9	4.9	4.9	4.9	4.9
87°N	5.5	5.2	5.2	5.2	5.1	5.1	5.1	5.0	5.0	5.0	5.0	4.9	4.9
86°N	5.6	5.3	5.3	5.3	5.2	5.2	5.2	5.2	5.2	5.1	5.1	5.0	5.0
85°N	5.8	5.8	5.4	5.4	5.4	5.4	5.3	5.3	5.2	5.2	5.2	5.2	5.1
84°N	6.0	6.0	5.5	5.5	5.5	5.5	5.4	5.4	5.4	5.4	5.3	5.2	5.2
83°N	6.3	6.2	5.6	5.6	5.6	5.6	5.6	5.6	5.5	5.4	5.4	5.4	5.6
82°N	6.4	5.6	5.6	5.6	5.6	5.7	5.7	5.6	5.6	5.6	5.9	5.8	5.8
81°N	5.8	5.8	5.8	5.8	5.7	5.7	5.6	6.2	5.8	6.1	6.1	6.0	6.0
80°N	5.9	5.9	5.9	5.9	5.9	5.9	6.4	6.4	6.4	6.3	7.0	7.0	6.2
79°N	7.0	6.1	6.1	6.1	6.0	6.0	6.7	6.6	6.5	6.5	6.4	7.0	7.0
78°N	7.0	6.3	6.3	6.3	6.3	7.0	7.0	7.0	6.8	6.8	6.7	7.0	7.0
77°N	7.0	7.0	7.0	6.4	6.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – May – FL340 – No ozone converter – page 2
Figure 05–07–308

Z. Asia – June

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
87°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
86°N	0.4	0.5	0.5	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
85°N	0.4	0.5	0.5	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3
84°N	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.3	0.3	0.3
83°N	0.4	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.3	0.3
82°N	0.5	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.3
81°N	0.9	1.0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.6	0.5
80°N	1.0	1.1	1.2	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.5
79°N	1.2	1.3	1.4	1.4	0.9	0.9	0.9	0.9	0.8	0.8	0.6	0.5
78°N	1.4	1.5	1.5	1.6	1.0	1.0	1.0	0.9	0.9	0.7	0.6	0.6
77°N	1.6	1.7	1.7	1.8	1.8	1.1	1.1	1.0	0.9	0.7	0.7	0.7
76°N	1.9	1.9	2.0	1.9	1.9	1.2	1.2	1.1	1.0	0.8	0.7	0.7
75°N	3.1	2.2	2.2	2.2	2.1	2.0	1.3	1.2	0.9	0.8	0.8	0.8
74°N	3.6	2.5	2.4	2.4	2.3	2.2	1.4	1.3	0.9	0.9	0.9	0.8
73°N	4.0	4.1	2.7	2.6	2.5	2.4	1.4	1.3	1.0	1.0	0.9	1.7
72°N	6.0	4.5	3.0	2.8	2.7	2.6	2.4	2.2	1.1	1.0	2.0	2.0
71°N	6.7	6.7	4.9	3.1	2.9	2.7	2.5	2.3	1.1	1.1	2.2	2.2
70°N	7.0	7.0	5.4	3.3	3.1	2.9	2.6	2.5	2.0	2.3	2.5	2.5
69°N	7.0	7.0	7.0	4.6	3.4	3.1	2.7	2.7	2.1	2.6	2.7	2.8
68°N	7.0	7.0	7.0	7.0	3.5	3.2	2.9	2.8	2.2	2.9	3.1	3.2
67°N	7.0	7.0	7.0	7.0	6.2	4.6	4.4	3.0	5.1	3.2	3.5	3.7
66°N	7.0	7.0	7.0	7.0	6.8	4.9	4.7	3.2	5.7	3.6	3.9	4.2
65°N	7.0	7.0	7.0	7.0	7.0	5.2	5.0	5.8	6.3	4.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	5.2	7.0	6.8	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL410 – No ozone converter – page 1
Figure 05–07–309

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4
87°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
86°N	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
85°N	0.3	0.3	0.3	0.3	0.3	---	---	---	---	---	---	---	0.3
84°N	0.3	0.3	0.3	---	---	---	---	---	---	---	---	---	---
83°N	0.3	0.3	0.3	---	---	---	---	---	---	---	---	---	---
82°N	0.3	0.3	---	---	---	---	---	---	---	---	---	---	---
81°N	0.5	0.4	0.4	---	---	---	---	---	---	---	---	---	---
80°N	0.5	0.4	0.4	0.3	0.3	---	---	---	---	---	---	---	---
79°N	0.5	0.5	0.4	0.4	0.3	0.3	---	---	---	---	---	---	---
78°N	0.5	0.5	0.4	0.4	0.3	0.3	---	---	---	---	---	---	---
77°N	0.6	0.6	0.5	0.4	0.4	0.3	---	---	---	---	---	---	---
76°N	0.7	0.6	1.1	1.0	0.8	0.7	---	---	---	---	---	---	---
75°N	0.7	1.3	1.2	1.1	1.0	0.8	0.6	---	---	---	---	---	---
74°N	1.5	1.5	1.4	1.2	1.1	0.9	0.7	0.5	---	---	---	---	---
73°N	1.7	1.7	1.6	1.4	1.3	1.1	0.8	0.6	0.4	---	---	---	---
72°N	2.0	1.9	1.8	1.6	1.5	1.2	1.0	0.7	0.4	---	---	---	---
71°N	2.2	2.2	2.1	1.9	1.7	1.4	1.1	0.9	0.6	0.4	---	---	---
70°N	2.5	2.5	2.4	2.2	2.0	1.7	1.3	1.0	0.7	0.5	---	---	---
69°N	2.9	2.9	2.8	2.6	2.3	2.0	1.6	1.2	0.9	0.6	---	---	---
68°N	3.3	3.3	3.2	3.1	2.8	2.4	1.9	1.5	1.1	0.7	0.4	---	---
67°N	3.8	3.9	7.0	6.6	5.6	4.6	2.3	1.8	1.3	0.9	0.5	---	---
66°N	7.0	7.0	7.0	7.0	7.0	5.8	4.5	2.2	1.6	1.1	0.6	0.3	---
65°N	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.1	2.0	1.4	0.8	0.4	---
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	2.4	1.6	1.1	0.6	---
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6	2.0	1.3	0.8	0.4
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	2.3	1.6	1.0	0.5
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8	1.9	1.2	0.7
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	2.2	1.5	1.1
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	2.6	1.7	1.3
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.1	2.0	1.6
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.5	3.2
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.8
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.6
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL410 – No ozone converter – page 2
Figure 05–07–310

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
87°N	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
86°N	0.5	0.5	0.5	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
85°N	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.4	0.4	0.4	0.4	0.4
84°N	0.5	0.5	0.6	0.6	0.6	0.6	0.7	0.7	0.6	0.4	0.4	0.4
83°N	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7	0.7	0.4	0.4
82°N	0.5	0.6	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.7	0.7	0.4
81°N	0.9	1.0	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.5
80°N	1.1	1.2	1.3	0.9	0.9	0.9	0.9	0.9	0.9	0.8	0.8	0.6
79°N	1.2	1.3	1.4	1.5	1.0	1.0	1.0	1.0	0.9	0.9	0.7	0.6
78°N	1.5	1.6	1.6	1.7	1.1	1.1	1.1	1.0	1.0	0.7	0.7	0.7
77°N	1.7	1.8	1.9	1.9	1.9	1.2	1.2	1.1	1.0	0.8	0.8	0.7
76°N	2.0	2.1	2.1	2.1	2.1	1.3	1.3	1.2	1.1	0.9	0.8	0.8
75°N	3.5	2.4	2.4	2.4	2.3	2.2	1.4	1.3	1.0	0.9	0.9	0.9
74°N	4.0	2.7	2.7	2.6	2.5	2.4	1.5	1.4	1.0	1.0	1.0	0.9
73°N	4.7	4.7	3.0	2.9	2.8	2.7	1.6	1.5	1.1	1.1	1.1	1.9
72°N	7.0	5.4	3.4	3.2	3.0	2.9	2.7	2.5	1.2	1.2	2.2	2.2
71°N	7.0	7.0	6.0	3.5	3.3	3.1	2.8	2.6	1.3	1.3	2.4	2.5
70°N	7.0	7.0	6.7	3.8	3.6	3.3	3.0	2.9	2.2	2.6	2.7	2.8
69°N	7.0	7.0	7.0	5.6	3.8	3.5	3.1	3.0	2.3	2.9	3.1	3.2
68°N	7.0	7.0	7.0	7.0	4.1	3.7	3.4	3.3	2.5	3.3	3.5	3.7
67°N	7.0	7.0	7.0	7.0	7.0	5.6	5.3	3.5	6.1	3.7	4.0	4.3
66°N	7.0	7.0	7.0	7.0	7.0	5.9	5.6	3.7	7.0	4.2	4.6	5.0
65°N	7.0	7.0	7.0	7.0	7.0	6.4	6.1	7.0	7.0	4.7	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL400 – No ozone converter – page 1
Figure 05–07–311

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
89°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
88°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
87°N	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
86°N	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3
85°N	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
84°N	0.4	0.3	0.3	0.3	0.3	0.3	0.3	---	---	---	0.3	---	---
83°N	0.3	0.3	0.3	0.3	0.3	---	---	---	---	---	---	---	---
82°N	0.3	0.3	0.3	0.3	---	---	---	---	---	---	---	---	---
81°N	0.5	0.5	0.5	0.3	---	---	---	---	---	---	---	---	---
80°N	0.5	0.5	0.5	0.4	0.4	0.3	---	---	---	---	---	---	---
79°N	0.6	0.5	0.5	0.4	0.4	0.3	---	---	---	---	---	---	---
78°N	0.6	0.6	0.5	0.5	0.4	0.3	---	---	---	---	---	---	---
77°N	0.7	0.6	0.6	0.5	0.4	0.3	---	---	---	---	---	---	---
76°N	0.7	0.7	1.2	1.1	1.0	0.8	---	---	---	---	---	---	---
75°N	0.8	1.4	1.3	1.2	1.1	0.9	0.7	---	---	---	---	---	---
74°N	1.7	1.6	1.5	1.4	1.2	1.0	0.8	0.6	---	---	---	---	---
73°N	1.9	1.8	1.7	1.6	1.4	1.2	0.9	0.7	0.4	---	---	---	---
72°N	2.2	2.1	2.0	1.8	1.6	1.4	1.1	0.8	0.5	---	---	---	---
71°N	2.5	2.4	2.3	2.1	1.9	1.6	1.3	1.0	0.6	0.4	---	---	---
70°N	2.9	2.8	2.7	2.5	2.2	1.9	1.5	1.1	0.8	0.5	---	---	---
69°N	3.3	3.3	3.2	3.0	2.7	2.3	1.8	1.4	1.0	0.7	0.3	---	---
68°N	3.8	3.9	3.8	3.5	3.2	2.7	2.2	1.6	1.2	0.8	0.4	---	---
67°N	4.5	4.6	7.0	7.0	7.0	5.6	2.6	2.0	1.5	1.0	0.6	---	---
66°N	7.0	7.0	7.0	7.0	7.0	7.0	5.4	2.5	1.9	1.3	0.7	0.3	---
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	2.3	1.6	1.0	0.5	---
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	2.7	1.9	1.2	0.7	0.3
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	2.3	1.5	0.9	0.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	2.8	1.8	1.1	0.6
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.4	2.2	1.4	0.8
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1	2.6	1.7	1.3
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.1	2.0	1.5
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8	2.4	1.8
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	3.8
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
54°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
53°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
52°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
51°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
50°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL400 – No ozone converter – page 2
Figure 05–07–312

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
89°N	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
88°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
87°N	3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
86°N	3.9	4.0	4.0	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
85°N	3.9	4.0	4.0	4.1	4.1	4.1	4.1	3.8	3.8	3.8	3.8	3.8
84°N	3.9	4.0	4.0	4.1	4.1	4.1	4.2	4.2	4.1	3.8	3.8	3.8
83°N	3.9	4.0	4.1	4.1	4.2	4.2	4.2	4.2	4.2	4.2	3.8	3.8
82°N	4.0	4.1	4.2	4.2	4.2	4.3	4.3	4.3	4.3	4.2	4.2	3.8
81°N	4.5	4.6	4.2	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.2	4.0
80°N	4.6	4.8	4.9	4.5	4.5	4.5	4.5	4.5	4.4	4.4	4.3	4.0
79°N	4.9	5.0	5.1	5.2	4.6	4.6	4.6	4.5	4.5	4.4	4.1	4.1
78°N	5.2	5.3	5.4	5.5	4.8	4.8	4.7	4.6	4.6	4.2	4.2	4.2
77°N	5.5	5.6	5.7	5.8	5.8	4.9	4.8	4.8	4.7	4.3	4.3	4.3
76°N	5.9	6.0	6.1	6.1	6.1	5.0	5.0	4.8	4.8	4.4	4.4	4.3
75°N	7.0	6.5	6.5	6.5	6.4	6.3	5.1	5.0	4.5	4.5	4.4	4.4
74°N	7.0	6.9	6.9	6.8	6.7	6.6	5.2	5.1	4.6	4.6	4.5	4.5
73°N	7.0	7.0	7.0	7.0	7.0	6.9	5.3	5.2	4.7	4.7	4.7	5.9
72°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.7	4.8	4.8	6.3	6.3
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.9	4.9	6.7	6.8
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	6.9	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL390 – No ozone converter – page 1
Figure 05–07–313

Asia - MaxImum FIght duratIon In hour, JUNE WOUDC FL 390													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
89°N	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
88°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.9	3.9
87°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
86°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7	3.7	3.8	3.8	3.8
85°N	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7	3.7
84°N	3.8	3.8	3.7	3.7	3.7	3.7	3.7	3.6	3.6	3.6	3.7	3.6	3.6
83°N	3.8	3.8	3.7	3.7	3.7	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5
82°N	3.8	3.7	3.7	3.7	3.6	3.6	3.6	3.5	3.6	3.5	3.5	3.5	3.5
81°N	4.0	4.0	3.9	3.7	3.6	3.6	3.5	3.5	3.5	3.4	3.4	3.4	3.3
80°N	4.0	4.0	3.9	3.8	3.8	3.7	3.7	3.6	3.4	3.4	3.3	3.3	3.2
79°N	4.1	4.0	3.9	3.9	3.8	3.7	3.6	3.6	3.5	3.3	3.2	3.2	3.1
78°N	4.1	4.1	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.1	3.0	3.0
77°N	4.2	4.1	4.0	4.0	3.9	3.8	3.6	3.5	3.4	3.3	3.1	3.0	2.9
76°N	4.3	4.2	4.9	4.8	4.6	4.4	3.7	3.5	3.4	3.2	3.1	2.9	2.8
75°N	4.3	5.2	5.1	5.0	4.8	4.6	4.3	3.5	3.4	3.3	3.1	2.9	2.7
74°N	5.6	5.5	5.4	5.2	5.0	4.7	4.4	4.1	3.5	3.3	3.1	2.9	2.6
73°N	5.9	5.9	5.7	5.6	5.3	4.9	4.6	4.3	3.9	3.3	3.1	2.9	2.7
72°N	6.3	6.2	6.2	5.9	5.6	5.2	4.8	4.5	4.0	3.3	3.1	2.9	2.7
71°N	6.8	6.8	6.7	6.4	6.0	5.6	5.1	4.7	4.2	3.9	3.2	2.9	2.7
70°N	7.0	7.0	7.0	7.0	6.6	6.0	5.5	4.9	4.4	4.1	3.6	3.0	2.7
69°N	7.0	7.0	7.0	7.0	7.0	6.6	6.0	5.3	4.8	4.3	3.8	3.1	2.8
68°N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.7	5.1	4.5	3.9	3.5	2.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.5	4.8	4.1	3.6	3.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.1	4.4	3.8	3.1
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.6	4.7	4.0	3.6
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.1	4.3	3.7
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.5	4.6	4.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.9	4.2
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.3	4.5
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.1
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.5
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL390 – No ozone converter – page 2
Figure 05–07–314

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
89°N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
88°N	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.6
87°N	4.5	4.5	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
86°N	4.9	4.9	4.9	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
85°N	4.9	4.9	5.0	5.1	5.1	5.2	5.2	4.6	4.6	4.6	4.6	4.6
84°N	4.9	5.0	5.1	5.2	5.2	5.2	5.2	5.2	5.2	4.6	4.6	4.6
83°N	5.0	5.1	5.2	5.3	5.3	5.4	5.4	5.4	5.4	5.4	4.6	4.6
82°N	5.1	5.2	5.3	5.4	5.5	5.6	5.6	5.6	5.5	5.5	5.4	4.7
81°N	5.9	6.2	5.6	5.7	5.7	5.7	5.7	5.7	5.7	5.7	5.6	5.0
80°N	6.2	6.5	6.8	5.8	5.9	5.9	5.9	5.9	5.8	5.7	5.7	5.1
79°N	6.6	7.0	7.0	7.0	6.2	6.2	6.1	6.1	6.0	5.9	5.3	5.3
78°N	7.0	7.0	7.0	7.0	6.5	6.4	6.4	6.3	6.2	5.4	5.4	5.4
77°N	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.5	6.3	5.6	5.5	5.5
76°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8	6.5	5.7	5.7	5.6
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.9	5.9	5.8
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	6.1	6.1	6.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	6.3	6.3	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.5	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.7	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL380 – No ozone converter – page 1
Figure 05–07–315

Asia - MaxImum FIght duratIon In hour, JUNE WOUDC FL 380													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
89°N	4.5	4.5	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
88°N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
87°N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6
86°N	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5
85°N	4.6	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.6
84°N	4.6	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.5	4.4	4.5	4.5	4.5
83°N	4.6	4.6	4.6	4.5	4.5	4.5	4.5	4.4	4.5	4.5	4.5	4.4	4.4
82°N	4.7	4.6	4.6	4.5	4.5	4.5	4.4	4.4	4.4	4.4	4.4	4.4	4.3
81°N	5.0	5.0	4.9	4.5	4.5	4.4	4.4	4.4	4.4	4.3	4.3	4.3	4.2
80°N	5.1	5.1	5.0	4.9	4.8	4.7	4.7	4.6	4.3	4.3	4.2	4.2	4.1
79°N	5.2	5.1	5.1	5.0	4.9	4.8	4.7	4.6	4.5	4.2	4.2	4.1	4.0
78°N	5.3	5.2	5.1	5.1	4.9	4.8	4.7	4.6	4.5	4.3	4.1	4.0	3.9
77°N	5.4	5.4	5.3	5.2	5.0	4.9	4.8	4.6	4.4	4.3	4.0	3.9	3.8
76°N	5.6	5.5	6.7	6.5	6.2	6.0	4.8	4.6	4.4	4.3	4.1	3.8	3.7
75°N	5.8	7.0	7.0	6.9	6.6	6.3	5.9	4.7	4.5	4.4	4.2	4.0	3.6
74°N	7.0	7.0	7.0	7.0	7.0	6.7	6.2	5.7	4.7	4.4	4.2	3.9	3.6
73°N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.0	5.5	4.5	4.2	3.9	3.7
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.7	4.5	4.3	4.0	3.7
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.0	5.6	4.3	4.0	3.7
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.2	4.1	3.8
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.4	4.2	3.9
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.7	4.9	3.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.2	4.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.5	4.2
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.3
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.7
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL380 – No ozone converter – page 2
Figure 05–07–316

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
89°N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
88°N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
87°N	5.9	5.9	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
86°N	6.5	6.6	6.6	6.0	6.0	6.0	6.0	6.0	6.1	6.1	6.1	6.1
85°N	6.6	6.6	6.7	6.8	6.8	6.9	6.9	6.1	6.1	6.1	6.2	6.2
84°N	6.6	6.7	6.8	7.0	7.0	7.0	7.0	7.0	7.0	6.2	6.2	6.2
83°N	6.7	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	6.3
82°N	6.9	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL370 – No ozone converter – page 1
Figure 05–07–317

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 370													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
89°N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
88°N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
87°N	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
86°N	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.0	6.0	6.0	6.0	6.0	6.0
85°N	6.2	6.1	6.1	6.1	6.1	6.1	6.1	6.1	6.0	6.0	6.0	6.0	6.2
84°N	6.2	6.2	6.2	6.2	6.1	6.1	6.1	6.1	6.0	6.0	6.2	6.2	6.2
83°N	6.3	6.2	6.2	6.2	6.2	6.1	6.1	6.0	6.2	6.2	6.2	6.1	6.1
82°N	6.3	6.3	6.3	6.2	6.2	6.1	6.1	6.0	6.2	6.2	6.1	6.1	6.1
81°N	7.0	7.0	6.9	6.2	6.2	6.1	6.1	6.3	6.2	6.2	6.1	6.1	6.0
80°N	7.0	7.0	7.0	7.0	6.8	6.7	6.7	6.6	6.2	6.1	6.1	6.0	6.0
79°N	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.6	6.5	6.1	6.0	6.0	5.9
78°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.7	6.6	6.4	6.0	5.9	5.8
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.6	6.4	6.0	5.8	5.7
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.7	6.4	6.1	5.7	5.7
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.7	6.5	6.2	5.7
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.2	5.6
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.6	6.3	5.9
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.3	5.9
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.4	6.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.1
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL370 – No ozone converter – page 2
Figure 05–07–318

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 360												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
89°N	6.5	6.5	6.5	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
88°N	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
87°N	6.6	6.6	6.6	6.6	6.7	6.7	6.7	6.7	6.7	6.7	6.7	6.7
86°N	7.0	7.0	7.0	6.7	6.7	6.7	6.7	6.8	6.8	6.7	6.7	6.7
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.8	6.8	6.8	6.8
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.9	6.8
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.9
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL360 – No ozone converter – page 1
Figure 05–07–319

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 360													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
89°N	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
88°N	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.5	6.5	6.5
87°N	6.7	6.6	6.6	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.5	6.5	6.5
86°N	6.7	6.7	6.6	6.6	6.6	6.6	6.5	6.5	6.5	6.4	6.4	6.4	6.4
85°N	6.7	6.7	6.7	6.6	6.6	6.5	6.5	6.4	6.4	6.4	6.3	6.3	6.5
84°N	6.8	6.7	6.7	6.6	6.6	6.5	6.4	6.4	6.3	6.2	6.4	6.4	6.4
83°N	6.8	6.8	6.7	6.6	6.5	6.4	6.4	6.3	6.4	6.4	6.3	6.2	6.2
82°N	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.2	6.3	6.2	6.2	6.1	6.1
81°N	7.0	7.0	7.0	6.6	6.5	6.3	6.2	6.3	6.2	6.2	6.1	5.9	5.8
80°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.2	6.0	5.9	5.8	5.7
79°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.3	5.9	5.8	5.6	5.4
78°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.6	6.3	6.0	5.6	5.4	5.2
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.3	6.0	5.5	5.2	5.1
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.3	5.9	5.6	5.1	5.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	6.2	5.8	5.4	4.9
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.2	5.8	5.4	4.8
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.8	5.4	5.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	5.5	5.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.6	5.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	5.1
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.3
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL360 – No ozone converter – page 2
Figure 05–07–320

Asia - Maximum Flight duration in hour, JUNE WOUDC FL 350												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL350 – No ozone converter – page 1
Figure 05–07–321

Asia - MaxImum FIight duratIon In hour, JUNE WOUDC FL 350													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8	6.9	6.9	6.8
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.9	6.8	6.6	6.5	6.4
82°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.6	6.7	6.5	6.4	6.2	6.1
81°N	7.0	7.0	7.0	7.0	7.0	6.9	6.6	6.6	6.5	6.2	6.0	5.8	5.7
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.2	6.0	5.7	5.5	5.3
79°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.5	6.1	5.7	5.4	5.1	4.9
78°N	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.5	6.0	5.6	5.2	4.8	4.6
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9	5.4	4.9	4.6	4.3
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	5.3	4.8	4.4	4.1
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.8	5.5	5.0	4.5	3.9
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.5	5.0	4.4	3.8
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.5	5.0	4.4	3.9
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	5.0	4.5	3.9
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.2	4.5	3.9
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.7	4.1
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	4.9	4.2
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	4.4
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	4.7
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – June – FL350 – No ozone converter – page 2
Figure 05–07–322

AA. Asia – July–September

In Asia, for the months of July, August, and September there is no maximum cruise time at altitude limitation.

AB. Asia – October

Asia - Maximum Flight duration in hour, OCTOBER WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – October – FL410 – No ozone converter – page 1
Figure 05–07–323

Asia - Maximum Flight duration in hour, OCTOBER WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.8
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.1	5.5	5.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.4	4.8	4.2
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.8	4.8	4.1	4.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	4.7	3.9	3.4
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.4	3.5	2.9
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	4.1	3.7	2.8
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.1	3.9	3.4	2.5
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.3	3.2	2.3
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.1	2.1
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	3.0	2.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7	3.6	1.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	3.7	1.9
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	3.9	1.9
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.3	2.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.7	2.6
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	2.9
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	3.2
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	4.8
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.7
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – October – FL410 – No ozone converter – page 2
Figure 05–07–324

Asia - Maximum Flight duration in hour, OCTOBER WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – October – FL400 – No ozone converter – page 1
Figure 05–07–325

Asia - Maximum Flight duration in hour, OCTOBER WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	5.7
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.8
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.5
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.7	4.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	3.5
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.2
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	3.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	2.9
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	2.8
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	2.9
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.8
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.1
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.6
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – October – FL400 – No ozone converter – page 2
Figure 05–07–326

AC. Asia – November

Asia - Maximum Flight duration in hour, NOVEMBER WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
89°N	4.7	4.7	4.7	4.7	4.7	4.7	4.6	4.6	4.6	4.5	4.4	4.4
88°N	5.9	5.9	5.9	5.9	5.8	5.7	5.6	5.5	5.5	5.3	5.2	5.1
87°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.7	6.4	6.3	6.0	5.8
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.5
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – November – FL410 – No ozone converter – page 1
Figure 05–07–327

Asia - Maximum Flight duration in hour, NOVEMBER WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8
89°N	4.4	4.3	4.3	4.2	4.1	4.0	4.0	3.9	3.8	3.8	3.7	3.7	3.6
88°N	5.0	4.8	4.7	4.6	4.4	4.3	4.2	4.1	3.9	3.8	3.7	3.6	3.5
87°N	5.6	5.4	5.2	5.0	4.7	4.6	4.4	4.2	4.0	3.9	3.7	3.6	3.4
86°N	6.2	5.9	5.7	5.3	5.1	4.9	4.6	4.4	4.2	3.9	3.7	3.5	3.4
85°N	6.9	6.5	6.1	5.8	5.4	5.1	4.8	4.5	4.3	4.0	3.8	3.6	3.2
84°N	7.0	7.0	6.6	6.2	5.7	5.4	5.0	4.7	4.4	4.1	3.6	3.4	3.2
83°N	7.0	7.0	7.0	6.6	6.1	5.6	5.3	4.9	4.3	4.0	3.7	3.5	3.2
82°N	7.0	7.0	7.0	7.0	6.5	6.0	5.5	5.0	4.4	4.1	3.8	3.5	3.3
81°N	7.0	7.0	7.0	7.0	6.8	6.2	5.7	4.9	4.6	4.2	3.9	3.4	3.2
80°N	7.0	7.0	7.0	7.0	7.0	6.5	5.9	5.4	4.7	4.3	3.8	3.5	3.3
79°N	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.7	4.5	4.2	3.9	3.7	3.4
78°N	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.1	4.8	4.4	4.1	3.8	3.6
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.5	5.1	4.7	4.3	4.0	3.7
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	5.4	5.0	4.6	4.2	3.9
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.7	5.3	4.8	4.5	4.2
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.6	5.1	4.8	4.5
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	5.6	5.2	4.9
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.7	5.3
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.2	5.8
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – November – FL410 – No ozone converter – page 2
Figure 05–07–328

Asia - Maximum Flight duration in hour, NOVEMBER WOUDC FL 400											
	Longitude										
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – November – FL400 – No ozone converter – page 1
Figure 05–07–329

Asia –Maximum Flight duration in hour, NOVEMBER WOUDC FL 400												
	Longitude											
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.8
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.5
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.3
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.2
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	5.7
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.2	5.8
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	5.8
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.1	5.7
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.9
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.1
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – November – FL400 – No ozone converter – page 2
Figure 05–07–330

AD. Asia – December

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 410												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	--	–	--	--	–	--	–	--	–	–	--	–
89°N	--	–	--	--	–	--	–	--	–	–	--	–
88°N	--	–	--	--	–	--	–	--	–	–	--	–
87°N	--	–	--	--	–	--	–	--	–	–	--	–
86°N	--	–	--	--	–	--	–	--	–	–	--	–
85°N	0.4	0.3	--	--	–	--	–	--	–	–	--	–
84°N	0.6	0.6	0.5	0.4	0.3	--	–	--	–	–	--	–
83°N	0.9	0.8	0.7	0.6	0.5	0.4	0.3	--	–	–	--	–
82°N	1.5	1.0	0.9	0.8	0.6	0.5	0.4	0.3	–	–	--	–
81°N	1.8	1.6	1.4	1.3	1.1	1.0	0.6	0.4	0.3	–	--	–
80°N	2.2	1.9	1.7	1.5	1.3	1.2	1.0	0.6	0.4	0.3	--	–
79°N	2.5	2.2	2.0	1.8	1.5	1.3	1.1	1.0	0.8	0.4	0.3	–
78°N	2.9	2.6	2.3	2.0	1.8	1.5	1.3	1.1	0.9	0.6	0.4	0.3
77°N	3.3	2.9	2.6	2.3	2.0	1.7	1.5	1.3	1.1	0.6	0.5	0.4
76°N	3.7	3.3	2.9	2.5	2.2	1.9	1.7	1.4	1.2	0.7	0.6	0.5
75°N	6.8	3.7	3.2	2.8	2.4	2.1	1.8	1.6	1.0	0.8	0.7	0.5
74°N	7.0	7.0	3.6	3.1	2.7	2.3	2.0	1.7	1.1	0.9	0.8	0.6
73°N	7.0	7.0	6.9	3.4	2.9	2.5	2.1	1.8	1.2	1.0	0.8	0.8
72°N	7.0	7.0	7.0	6.8	3.2	2.7	2.3	2.0	1.3	1.1	1.0	0.9
71°N	7.0	7.0	7.0	7.0	6.4	2.9	2.5	1.7	1.4	1.2	1.1	1.0
70°N	7.0	7.0	7.0	7.0	7.0	3.1	2.6	1.9	1.6	1.4	1.3	1.2
69°N	7.0	7.0	7.0	7.0	7.0	6.5	2.8	2.0	1.7	1.5	1.4	1.3
68°N	7.0	7.0	7.0	7.0	7.0	7.0	5.0	2.1	1.8	1.7	1.6	1.5
67°N	7.0	7.0	7.0	7.0	7.0	7.0	5.3	2.2	1.9	1.8	1.8	1.7
66°N	7.0	7.0	7.0	7.0	7.0	7.0	5.6	2.3	2.1	2.0	1.9	1.9
65°N	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.8	5.4	2.1	3.6	3.8
64°N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	6.2	5.9	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL410 – No ozone converter – page 1
Figure 05–07–331

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 410													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	–	--	--	–	--	–	–	--	--	–	--	–	–
89°N	–	--	--	–	--	–	–	--	--	–	--	–	–
88°N	–	--	--	–	--	–	–	--	--	–	--	–	–
87°N	–	--	--	–	--	–	–	--	--	–	--	–	–
86°N	–	--	--	–	--	–	–	--	--	–	--	–	–
85°N	–	--	--	–	--	–	–	--	--	–	--	–	–
84°N	–	--	--	–	--	–	–	--	--	–	--	–	–
83°N	–	--	--	–	--	–	–	--	--	–	--	–	–
82°N	–	--	--	–	--	–	–	--	--	–	--	–	–
81°N	–	--	--	–	--	–	–	--	--	–	--	–	–
80°N	–	--	--	–	--	–	–	--	--	–	--	–	–
79°N	–	--	--	–	--	–	–	--	--	–	--	–	–
78°N	–	--	--	–	--	–	–	--	--	–	--	–	–
77°N	0.3	--	--	–	--	–	–	--	--	–	--	–	–
76°N	0.3	--	--	–	--	–	–	--	--	–	--	–	–
75°N	0.4	0.3	--	–	--	–	–	--	--	–	--	–	–
74°N	0.6	0.5	0.3	0.3	--	–	–	--	--	–	--	–	–
73°N	0.7	0.6	0.5	0.4	0.3	–	–	--	--	–	--	–	–
72°N	0.8	0.7	0.6	0.5	0.4	0.3	–	--	--	–	--	–	–
71°N	0.9	0.8	0.7	0.6	0.5	0.4	0.3	--	--	–	--	–	–
70°N	1.1	1.0	0.9	0.8	0.7	0.6	0.4	0.3	--	–	--	–	–
69°N	1.3	1.2	1.1	1.0	0.9	0.7	0.6	0.4	0.3	–	--	–	–
68°N	1.4	1.4	1.3	1.8	1.7	1.5	0.8	0.6	0.6	–	--	–	–
67°N	1.6	1.6	2.4	2.3	2.1	1.9	1.6	0.8	0.8	0.3	--	–	–
66°N	3.2	3.2	4.7	4.4	4.0	2.3	2.0	1.7	1.0	0.5	0.3	–	–
65°N	3.9	6.1	6.0	5.6	5.1	4.5	3.8	2.2	1.2	0.7	0.5	0.3	–
64°N	7.0	7.0	7.0	7.0	6.7	5.8	4.8	2.7	2.4	0.9	0.7	0.5	0.4
63°N	7.0	7.0	7.0	7.0	7.0	7.0	6.2	4.8	3.0	2.4	0.8	0.6	0.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	3.6	2.9	1.0	0.8	1.6
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.4	3.5	1.3	2.1	1.9
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.2	2.7	2.4	1.7
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.8	2.8	2.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	4.4	3.2	2.3
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.2	6.5	6.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL410 – No ozone converter – page 2
Figure 05–07–332

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 400												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	--	–	--	–	–	--	--	–	–	–	–	--
89°N	--	–	--	–	–	--	--	–	–	–	–	--
88°N	--	–	--	–	–	--	--	–	–	–	–	--
87°N	--	–	--	–	–	--	--	–	–	–	–	--
86°N	--	–	--	–	–	--	--	–	–	–	–	--
85°N	0.6	0.5	0.4	0.3	–	--	--	–	–	–	–	--
84°N	1.0	0.9	0.7	0.6	0.5	0.4	0.3	–	–	–	–	--
83°N	1.5	1.3	1.1	0.9	0.8	0.6	0.5	0.4	–	–	–	--
82°N	2.4	1.7	1.5	1.2	1.0	0.9	0.7	0.5	0.4	–	–	--
81°N	3.1	2.7	2.3	2.0	1.8	1.5	0.9	0.7	0.5	0.4	–	--
80°N	3.7	3.3	2.8	2.5	2.1	1.8	1.5	0.9	0.7	0.5	0.3	--
79°N	4.5	3.9	3.4	2.9	2.5	2.1	1.8	1.5	1.2	0.6	0.5	0.3
78°N	5.3	4.6	3.9	3.4	2.9	2.5	2.1	1.7	1.4	0.9	0.7	0.5
77°N	6.3	5.4	4.6	3.9	3.3	2.8	2.4	2.0	1.7	1.0	0.8	0.6
76°N	7.0	6.3	5.3	4.4	3.8	3.2	2.7	2.2	1.9	1.1	0.9	0.7
75°N	7.0	7.0	6.1	5.1	4.3	3.5	3.0	2.5	1.5	1.3	1.0	0.8
74°N	7.0	7.0	7.0	5.8	4.8	3.9	3.3	2.7	1.7	1.4	1.2	0.9
73°N	7.0	7.0	7.0	6.5	5.3	4.4	3.6	3.0	1.9	1.6	1.3	1.2
72°N	7.0	7.0	7.0	7.0	5.8	4.8	3.9	3.2	2.0	1.7	1.5	1.4
71°N	7.0	7.0	7.0	7.0	7.0	5.2	4.2	2.8	2.2	1.8	1.8	1.6
70°N	7.0	7.0	7.0	7.0	7.0	5.6	4.5	3.1	2.6	2.2	2.0	1.8
69°N	7.0	7.0	7.0	7.0	7.0	7.0	4.9	3.3	2.8	2.4	2.3	2.1
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.5	3.0	2.7	2.5	2.4
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	3.1	3.0	2.9	2.8
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.0	3.4	3.3	3.2	3.2
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.6	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL400 – No ozone converter – page 1
Figure 05–07–333

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 400													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	--	--	–	–	--	–	--	--	–	–	--	–	--
89°N	--	--	–	–	--	–	--	--	–	–	--	–	--
88°N	--	--	–	–	--	–	--	--	–	–	--	–	--
87°N	--	--	–	–	--	–	--	--	–	–	--	–	--
86°N	--	--	–	–	--	–	--	--	–	–	--	–	--
85°N	--	--	–	–	--	–	--	--	–	–	--	–	--
84°N	--	--	–	–	--	–	--	--	–	–	--	–	--
83°N	--	--	–	–	--	–	--	--	–	–	--	–	--
82°N	--	--	–	–	--	–	--	--	–	–	--	–	--
81°N	--	--	–	–	--	–	--	--	–	–	--	–	--
80°N	--	--	–	–	--	–	--	--	–	–	--	–	--
79°N	--	--	–	–	--	–	--	--	–	–	--	–	--
78°N	0.3	--	–	–	--	–	--	--	–	–	--	–	--
77°N	0.4	0.3	–	–	--	–	--	--	–	–	--	–	--
76°N	0.5	0.4	–	–	--	–	--	--	–	–	--	–	--
75°N	0.6	0.5	0.4	0.3	--	–	--	--	–	–	--	–	--
74°N	0.9	0.7	0.5	0.4	0.3	–	--	--	–	–	--	–	--
73°N	1.0	0.9	0.7	0.6	0.4	0.3	--	--	–	–	--	–	--
72°N	1.2	1.1	0.9	0.8	0.6	0.4	--	--	–	–	--	–	--
71°N	1.5	1.3	1.1	1.0	0.8	0.6	0.4	0.3	–	–	--	–	--
70°N	1.7	1.6	1.4	1.2	1.0	0.8	0.6	0.5	0.3	–	--	–	--
69°N	2.0	1.9	1.7	1.5	1.3	1.1	0.9	0.7	0.5	–	--	–	--
68°N	2.3	2.2	2.1	3.1	2.8	2.4	1.2	0.9	0.9	0.3	--	–	--
67°N	2.7	2.6	4.2	3.9	3.6	3.1	2.6	1.2	1.2	0.5	0.3	–	--
66°N	6.1	6.1	7.0	7.0	7.0	4.0	3.3	2.9	1.6	0.8	0.5	0.3	--
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	3.7	2.0	1.0	0.8	0.5	0.4
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	4.8	4.3	1.4	1.0	0.8	0.6
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.6	4.2	1.3	1.0	0.8
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	1.7	1.3	2.6
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	2.1	3.6	3.1
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.2	2.8
59°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	3.3
58°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.0	4.0
57°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
56°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
55°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL400 – No ozone converter – page 2
Figure 05–07–334

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 390												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89°N	2.3	2.3	2.3	2.3	2.3	2.3	2.2	2.2	2.2	2.2	2.2	2.2
88°N	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5	2.5	2.4	2.4	2.4
87°N	3.1	3.0	3.0	2.9	2.9	2.9	2.8	2.8	2.7	2.7	2.6	2.5
86°N	3.6	3.5	3.4	3.4	3.3	3.2	3.1	3.0	2.9	2.9	2.8	2.7
85°N	4.3	4.1	4.0	3.8	3.7	3.6	3.4	3.3	3.2	3.1	3.0	2.9
84°N	5.0	4.8	4.5	4.3	4.1	3.9	3.8	3.6	3.4	3.3	3.2	3.0
83°N	5.9	5.5	5.2	4.9	4.6	4.3	4.1	3.9	3.7	3.5	3.4	3.2
82°N	7.0	6.4	5.9	5.4	5.0	4.7	4.4	4.2	3.9	3.7	3.5	3.4
81°N	7.0	7.0	7.0	7.0	6.4	5.9	4.8	4.5	4.2	3.9	3.7	3.5
80°N	7.0	7.0	7.0	7.0	7.0	6.6	6.0	4.8	4.4	4.1	3.9	3.7
79°N	7.0	7.0	7.0	7.0	7.0	7.0	6.5	5.9	5.4	4.3	4.1	3.8
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8	4.7	4.4	4.1
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.0	4.6	4.3
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	5.2	4.8	4.4
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.4	5.0	4.6
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.7	5.2	4.8
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.0	5.5	5.3
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.2	5.9	5.6
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.5	6.3	6.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.5
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL390 – No ozone converter – page 1
Figure 05–07–335

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 390													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
89°N	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	1.9
88°N	2.3	2.3	2.2	2.2	2.2	2.1	2.1	2.1	2.0	1.9	1.8	1.8	1.8
87°N	2.5	2.4	2.4	2.3	2.2	2.2	2.1	2.0	1.9	1.9	1.8	1.8	1.8
86°N	2.6	2.5	2.5	2.4	2.3	2.3	2.0	2.0	1.9	1.9	1.8	1.8	1.7
85°N	2.8	2.7	2.6	2.5	2.4	2.1	2.1	2.0	2.0	1.9	1.8	1.8	1.7
84°N	2.9	2.8	2.7	2.6	2.5	2.2	2.1	2.0	2.0	1.9	1.8	1.8	1.7
83°N	3.0	2.9	2.8	2.7	2.6	2.2	2.1	2.1	2.0	1.9	1.9	1.8	1.7
82°N	3.2	3.0	2.9	2.7	2.6	2.3	2.2	2.1	2.0	1.9	1.9	1.8	1.8
81°N	3.3	3.1	3.0	2.8	2.4	2.3	2.2	2.1	2.1	2.0	1.9	1.8	1.8
80°N	3.4	3.2	3.1	2.8	2.6	2.5	2.3	2.2	2.1	2.0	1.9	1.9	1.8
79°N	3.7	3.1	3.0	2.8	2.7	2.6	2.5	2.1	2.1	2.0	2.0	1.9	1.8
78°N	3.8	3.3	3.1	2.9	2.8	2.7	2.5	2.2	2.1	2.0	2.0	1.9	1.9
77°N	4.0	3.7	3.2	3.0	2.9	2.7	2.6	2.2	2.2	2.1	2.0	2.0	1.9
76°N	4.2	3.9	3.3	3.1	3.0	2.8	2.7	2.3	2.2	2.1	2.1	2.0	2.0
75°N	4.3	4.2	3.9	3.7	3.5	3.3	2.9	2.4	2.3	2.3	2.2	2.0	2.1
74°N	4.7	4.4	4.2	4.0	3.7	3.5	3.1	2.9	2.5	2.4	2.3	2.3	2.1
73°N	5.0	4.7	4.5	4.2	4.0	3.7	3.2	3.3	3.1	2.4	2.4	2.4	2.3
72°N	5.3	5.0	4.8	4.5	4.2	4.0	3.7	3.5	3.3	3.1	2.5	2.5	2.3
71°N	5.7	5.4	5.1	4.9	4.6	4.3	4.0	3.7	3.5	3.3	2.6	2.6	2.4
70°N	6.2	5.9	5.6	5.3	5.0	4.6	4.3	4.0	3.8	3.7	3.1	3.0	2.5
69°N	6.7	6.4	6.1	5.8	5.4	5.1	4.7	4.3	4.1	3.5	3.3	3.1	2.6
68°N	7.0	7.0	6.8	7.0	7.0	7.0	5.2	4.8	4.8	3.8	3.5	3.4	3.2
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.3	5.2	4.1	3.8	3.6	3.4
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.8	4.5	4.1	3.8	3.6
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	4.9	4.5	4.1	3.9
64°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.9	4.5	4.2
63°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.4	4.8	4.5
62°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.3	7.0
61°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	7.0	7.0
60°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL390 – No ozone converter – page 2
Figure 05–07–336

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 380												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
89°N	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.6	3.5	3.5	3.5	3.4
88°N	4.4	4.4	4.3	4.3	4.2	4.2	4.2	4.1	4.0	3.9	3.9	3.8
87°N	5.5	5.4	5.3	5.2	5.1	4.9	4.8	4.7	4.6	4.4	4.3	4.2
86°N	7.0	6.8	6.5	6.3	6.0	5.8	5.5	5.3	5.1	4.9	4.7	4.5
85°N	7.0	7.0	7.0	7.0	7.0	6.8	6.5	6.1	5.8	5.5	5.2	4.9
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.5	6.0	5.6	5.3
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.1	5.7
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.1
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL380 – No ozone converter – page 1
Figure 05–07–337

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 380													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
89°N	3.4	3.4	3.3	3.3	3.2	3.2	3.2	3.1	3.1	3.1	3.0	3.0	3.0
88°N	3.7	3.6	3.6	3.5	3.4	3.3	3.2	3.2	3.1	2.8	2.8	2.7	2.7
87°N	4.0	3.9	3.8	3.7	3.5	3.4	3.3	3.0	2.9	2.8	2.7	2.7	2.6
86°N	4.3	4.2	4.0	3.9	3.7	3.6	3.1	3.0	2.9	2.8	2.7	2.6	2.6
85°N	4.7	4.4	4.2	4.0	3.9	3.3	3.2	3.1	2.9	2.8	2.7	2.6	2.5
84°N	5.0	4.7	4.4	4.2	4.0	3.4	3.2	3.1	3.0	2.8	2.7	2.6	2.5
83°N	5.3	5.0	4.7	4.4	4.2	3.5	3.3	3.1	3.0	2.9	2.8	2.6	2.5
82°N	5.7	5.3	4.9	4.6	4.3	3.5	3.4	3.2	3.1	2.9	2.8	2.7	2.6
81°N	6.0	5.5	5.1	4.8	3.8	3.6	3.4	3.2	3.1	2.9	2.8	2.7	2.6
80°N	6.4	5.9	5.3	4.5	4.2	4.0	3.5	3.3	3.1	3.0	2.9	2.7	2.6
79°N	7.0	5.5	5.1	4.8	4.4	4.2	3.9	3.3	3.1	3.0	2.9	2.8	2.7
78°N	7.0	5.8	5.3	4.9	4.6	4.3	4.0	3.3	3.2	3.0	3.0	2.9	2.7
77°N	7.0	7.0	5.5	5.1	4.8	4.5	4.2	3.4	3.2	3.1	3.0	2.9	2.8
76°N	7.0	7.0	5.8	5.4	5.0	4.6	4.3	3.5	3.3	3.1	3.3	3.0	3.0
75°N	7.0	7.0	7.0	7.0	6.6	5.9	4.8	3.6	3.4	3.6	3.4	3.0	3.1
74°N	7.0	7.0	7.0	7.0	7.0	6.5	5.2	4.8	3.9	3.7	3.5	3.5	3.2
73°N	7.0	7.0	7.0	7.0	7.0	7.0	5.6	5.8	5.4	3.9	3.8	3.7	3.5
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8	5.3	4.0	3.8	3.4
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4	5.8	4.2	4.1	3.6
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	5.2	4.9	3.8
69°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.2	5.7	5.3	4.0
68°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.7	5.4
67°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3	5.9
66°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.4
65°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL380 – No ozone converter – page 2
Figure 05–07–338

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 370												
	Longitude											
Latitude (°N)	60°E	65°E	70°E	75°E	80°E	85°E	90°E	95°E	100°E	105°E	110°E	115°E
90°N	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
89°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
88°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
86°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
85°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
84°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
83°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL370 – No ozone converter – page 1
Figure 05–07–339

Asia - Maximum Flight duration in hour, DECEMBER WOUDC FL 370													
	Longitude												
Latitude (°N)	120°E	125°E	130°E	135°E	140°E	145°E	150°E	155°E	160°E	165°E	170°E	175°E	180°E
90°N	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
89°N	7.0	7.0	6.9	6.8	6.7	6.6	6.5	6.4	6.3	6.2	6.1	6.0	6.0
88°N	7.0	7.0	7.0	7.0	7.0	6.9	6.7	6.5	6.3	5.5	5.4	5.3	5.2
87°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	5.7	5.5	5.3	5.2	5.1
86°N	7.0	7.0	7.0	7.0	7.0	7.0	6.3	6.0	5.8	5.5	5.3	5.2	5.0
85°N	7.0	7.0	7.0	7.0	7.0	6.8	6.4	6.2	5.9	5.6	5.3	5.1	4.9
84°N	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.3	5.9	5.7	5.3	5.1	4.9
83°N	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.4	6.0	5.7	5.4	5.1	4.9
82°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.2	5.8	5.4	5.2	5.0
81°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.7	6.3	5.8	5.5	5.3	5.0
80°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.3	5.9	5.7	5.3	5.1
79°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.3	6.1	5.8	5.5	5.2
78°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.9	6.4	6.0	5.9	5.6	5.3
77°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.6	6.2	6.1	5.7	5.5
76°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.8	6.3	6.8	5.9	5.8
75°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.9	6.1
74°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	6.3
73°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
72°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
71°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
70°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
10°N	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0

Maximum cruise time at altitude – Asia – December – FL370 – No ozone converter – page 2
Figure 05–07–340

AE. South America, Africa and Middle East, Australia and Oceania

There is no maximum cruise time at altitude limitation for South America, Africa and Middle East, and Australia and Oceania.

ALTITUDE LIMITATION – ALL ZONES

A. North America

There is no altitude limitation from July to September.

NORTH AMERICA - ALTITUDE LIMITATIONS - JANUARY

Latitude (N)	Longitude															
	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	380	380	380	390	390	390	390	390	390	390	390	390
73N	390	390	390	380	370	370	370	370	380	390	390	390	390	390	390	390
72N	390	390	380	370	370	370	370	370	370	390	390	390	390	390	390	390
71N	390	390	370	370	370	370	370	370	370	370	390	390	390	390	390	390
70N	390	390	370	370	370	370	370	370	370	370	390	390	390	390	390	390
69N	390	380	370	370	370	370	350	350	370	370	390	390	390	390	390	390
68N	390	380	370	370	370	350	340	340	370	370	380	390	390	390	390	390
67N	390	380	370	370	370	340	340	340	350	370	380	390	390	390	390	390
66N	390	370	370	370	370	340	340	340	340	370	380	390	390	390	390	390
65N	390	370	370	370	370	340	340	340	340	370	390	390	390	390	390	390
64N	390	380	370	370	370	340	340	340	340	370	390	390	390	390	390	390
63N	390	390	370	370	370	340	340	340	370	370	390	390	390	390	390	390
62N	390	390	370	370	370	350	340	340	370	380	390	390	390	390	390	390
61N	390	390	370	370	370	370	350	370	370	390	390	390	390	390	390	390
60N	390	390	380	370	370	370	370	370	370	390	390	390	390	390	390	390
59N	390	390	390	370	370	370	370	370	390	390	390	390	390	390	390	390
58N	390	390	390	380	370	370	370	380	390	390	390	410	410	410	410	390
57N	390	390	390	390	380	370	380	390	390	390	390	410	410	410	410	390
56N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	390
55N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
54N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
53N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
52N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
51N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
50N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
49N	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410
48N	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410
47N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410
46N	410	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410
45N	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410
44N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
43N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
42N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – January – p1
Figure 05–07–341

NORTH AMERICA - ALTITUDE LIMITATIONS - JANUARY															
	Longitude														
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	400	410
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
66N	390	390	390	390	390	390	380	390	390	390	390	390	390	390	410
65N	390	390	390	390	390	390	370	380	390	390	390	390	390	390	410
64N	390	390	390	390	390	390	370	370	390	390	390	390	390	390	410
63N	390	390	390	390	390	390	370	370	390	390	390	390	390	390	410
62N	390	390	390	390	390	390	370	380	390	390	390	390	390	390	410
61N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
60N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
59N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
58N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
57N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
56N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
55N	390	390	390	390	390	390	390	390	390	390	390	390	400	410	410
54N	410	390	390	390	390	390	390	390	390	390	390	390	410	410	410
53N	410	390	390	390	390	390	390	390	390	390	390	390	410	410	410
52N	410	410	390	390	390	390	390	390	390	390	390	390	410	410	410
51N	410	410	390	390	390	390	390	390	390	390	390	390	410	410	410
50N	410	410	410	410	390	390	390	390	390	390	390	390	410	410	410
49N	410	410	410	410	410	390	390	390	390	390	390	390	410	410	410
48N	410	410	410	410	410	410	390	390	390	390	390	390	410	410	410
47N	410	410	410	410	410	410	390	390	390	390	390	410	410	410	410
46N	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410
45N	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410
44N	410	410	410	410	390	410	410	390	390	390	390	410	410	410	410
43N	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410
42N	410	410	410	410	410	410	410	390	410	410	410	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – January – p2
Figure 05–07–342

NORTH AMERICA - ALTITUDE LIMITATIONS - FEBRUARY																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	380
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	380	380
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	380	370
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	380	370
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	380
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	380
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
62N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
61N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
60N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
59N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
58N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
57N	390	390	390	390	390	390	390	390	390	390	390	390	410	410	390	390
56N	390	390	390	390	390	390	390	390	390	390	390	390	410	410	410	390
55N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	390
54N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	390
53N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
52N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
51N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
50N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
49N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
48N	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410
47N	390	400	410	410	410	390	410	410	410	410	410	410	410	410	410	410
46N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
45N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
44N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
43N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
42N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
39N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
38N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
37N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
36N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
35N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – February – p1
Figure 05–07–343

NORTH AMERICA - ALTITUDE LIMITATIONS - FEBRUARY														
	Longitude													
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	380	380	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	380	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	380	380	380	390	390	390	390	390	390	390	390	390	390	390	390
76N	370	370	370	390	390	390	390	390	390	390	390	390	390	390	390
75N	370	370	370	390	390	390	390	390	390	390	390	390	390	390	390
74N	370	370	370	380	390	390	390	390	390	390	390	390	390	390	390
73N	370	370	370	380	390	390	390	390	390	390	390	390	390	390	390
72N	380	370	380	380	390	390	390	390	390	390	390	390	390	390	390
71N	380	380	380	380	390	390	390	390	390	390	390	390	390	390	390
70N	390	380	380	380	380	380	370	380	390	390	390	390	390	390	390
69N	390	390	380	380	370	370	370	370	370	390	390	390	390	390	390
68N	390	390	380	380	370	370	370	370	370	380	390	390	390	390	390
67N	390	390	390	370	370	370	370	370	370	370	390	390	390	390	390
66N	390	390	390	370	370	370	350	370	370	370	390	390	390	390	390
65N	390	390	390	380	370	370	350	350	370	370	390	390	390	390	390
64N	390	390	390	380	370	370	350	350	370	370	390	390	390	390	390
63N	390	390	390	380	370	370	350	350	370	370	390	390	390	390	390
62N	390	390	390	390	370	370	350	350	370	370	390	390	390	390	390
61N	390	390	390	390	370	370	370	370	370	370	390	390	390	390	390
60N	390	390	390	390	380	370	370	370	370	380	390	390	390	390	390
59N	390	390	390	390	390	370	370	370	390	390	390	390	390	390	410
58N	390	390	390	390	390	390	380	390	390	390	390	390	390	390	410
57N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
56N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
55N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
54N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
53N	390	390	390	390	390	390	390	390	390	390	390	390	390	400	410
52N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
51N	410	390	390	390	390	390	390	390	390	390	390	390	390	410	410
50N	410	390	390	390	390	390	390	390	390	390	390	390	390	410	410
49N	410	390	390	390	390	390	390	390	390	390	390	390	390	410	410
48N	410	410	410	390	390	390	390	390	390	390	390	390	390	410	410
47N	410	410	410	400	390	390	390	390	390	390	390	390	390	410	410
46N	410	410	410	410	390	410	390	390	390	390	390	390	390	410	410
45N	410	410	410	410	390	410	390	390	390	390	390	390	410	410	410
44N	410	410	410	410	390	410	410	390	390	390	390	390	410	410	410
43N	410	410	410	410	390	410	410	390	390	390	390	390	410	410	410
42N	410	410	410	410	410	410	410	390	390	390	390	390	410	410	410
41N	410	410	410	410	410	410	410	400	390	390	390	390	410	410	410
40N	410	410	410	410	410	410	410	410	390	390	390	410	410	410	410
39N	410	410	410	410	410	410	410	410	410	410	400	410	410	410	410
38N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
37N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
36N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
35N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – February – p2
Figure 05–07–344

NORTH AMERICA - ALTITUDE LIMITATIONS - MARCH																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	380	380	390	390	390	390	390	390	390	390	390	390	390
80N	380	380	380	380	380	380	380	380	380	390	390	390	390	390	390	390
79N	380	380	380	370	370	370	380	380	380	380	390	390	390	390	390	390
78N	370	370	370	370	370	370	370	370	370	380	380	380	390	390	390	390
77N	370	370	370	370	370	370	370	370	370	370	370	380	380	380	380	380
76N	370	370	370	370	370	370	370	370	370	370	370	370	380	380	380	370
75N	370	370	370	370	370	370	370	370	370	370	370	370	380	380	370	370
74N	370	370	370	370	370	370	370	370	370	370	370	370	380	380	370	370
73N	370	370	370	370	370	370	370	370	370	370	370	370	380	380	380	370
72N	370	370	370	370	370	370	370	370	370	370	370	370	370	380	380	380
71N	370	370	370	370	360	350	350	350	370	370	370	370	370	380	380	380
70N	370	370	370	370	350	350	340	350	350	370	370	370	380	380	390	390
69N	370	370	370	360	350	340	340	340	350	370	370	370	380	390	390	390
68N	370	370	370	350	350	340	340	340	340	360	370	370	380	390	390	390
67N	370	370	370	350	340	340	340	340	340	350	370	370	380	390	390	390
66N	370	370	370	350	340	340	340	340	340	350	370	370	390	390	390	390
65N	370	370	370	350	340	340	340	340	340	350	370	370	390	390	390	390
64N	370	370	370	350	340	340	340	340	340	360	370	380	390	390	390	390
63N	370	370	370	350	340	340	340	340	340	370	370	390	390	390	390	390
62N	370	370	370	350	350	340	340	340	350	370	370	390	390	390	390	390
61N	370	370	370	360	350	340	340	340	350	370	380	390	390	390	390	390
60N	370	370	370	370	350	350	340	350	370	370	390	390	390	390	390	390
59N	370	370	370	370	360	350	350	350	370	370	390	390	390	390	390	390
58N	370	370	370	370	370	360	360	370	370	380	390	390	390	390	390	390
57N	380	370	370	370	370	370	370	370	370	390	390	390	390	390	390	390
56N	390	370	370	370	370	370	370	370	370	390	390	390	390	390	390	390
55N	390	380	370	370	370	370	370	370	380	390	390	390	390	390	390	390
54N	390	390	370	370	370	370	370	380	390	390	390	390	390	390	390	390
53N	390	390	380	370	370	370	370	390	390	390	390	390	390	390	390	410
52N	390	390	390	370	380	370	380	390	390	390	390	390	390	390	390	410
51N	390	390	390	380	390	380	390	390	390	390	390	390	390	390	390	410
50N	390	390	390	390	390	390	390	390	390	390	390	390	400	390	410	410
49N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
48N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
47N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
46N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
45N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410	410
44N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410	410
43N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410	410
42N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
41N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
40N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
39N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
38N	410	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
37N	410	410	410	390	390	410	410	410	410	410	410	410	410	410	410	410
36N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
35N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – March – p1
Figure 05–07–345

NORTH AMERICA - ALTITUDE LIMITATIONS - MARCH															
	Longitude														
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	380	380	380	380	390	390	390	390	390
82N	390	390	390	390	390	390	390	380	380	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	380	380	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	370	370	370	390	390	390	390	390	390	390	390	390	390	390	390
75N	370	370	370	390	390	390	390	390	390	390	390	390	390	390	390
74N	370	370	370	380	390	390	390	390	390	390	390	390	390	390	390
73N	370	370	370	390	390	390	390	390	390	390	390	390	390	390	390
72N	370	370	380	390	390	390	390	390	390	390	390	390	390	390	390
71N	380	380	380	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
62N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
61N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
60N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
59N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
58N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
57N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	410
56N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
55N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
54N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
53N	390	390	390	390	390	390	390	390	390	390	390	390	390	410	410
52N	410	390	390	390	390	390	390	390	390	390	390	390	390	410	410
51N	410	390	390	390	390	390	390	390	390	390	390	390	390	410	410
50N	410	390	390	390	390	390	390	390	390	390	390	390	390	410	410
49N	410	410	390	390	390	390	390	390	390	390	390	390	410	410	410
48N	410	410	410	390	390	390	390	390	390	390	390	390	410	410	410
47N	410	410	410	410	390	390	390	390	390	390	390	390	410	410	410
46N	410	410	410	410	390	390	390	390	390	390	390	390	410	410	410
45N	410	410	410	410	390	410	400	390	390	390	390	390	410	410	410
44N	410	410	410	410	390	410	410	390	390	390	390	400	410	410	410
43N	410	410	410	410	390	410	410	390	390	390	390	410	410	410	410
42N	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	390	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
39N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
38N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
37N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
36N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
35N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – March – p2
Figure 05–07–346

NORTH AMERICA - ALTITUDE LIMITATIONS - APRIL																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
62N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	390	390
61N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	400	390
60N	390	390	390	390	390	390	390	390	400	410	410	410	410	410	410	390
59N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410
58N	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410
57N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410
56N	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410
55N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410
54N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
53N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – April– p1
Figure 05–07–347

NORTH AMERICA - ALTITUDE LIMITATIONS - APRIL														
	Longitude													
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
62N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
61N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
60N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
59N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
58N	390	390	390	390	400	410	390	390	390	390	390	390	390	390	410
57N	410	390	390	390	410	410	390	390	390	390	390	390	390	400	410
56N	410	390	390	410	410	410	410	390	390	390	390	390	390	410	410
55N	410	410	410	410	410	410	410	390	390	390	410	410	410	410	410
54N	410	410	410	410	410	410	410	390	390	390	410	410	410	410	410
53N	410	410	410	410	410	410	410	390	390	390	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	390	390	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	390	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – April – p2
Figure 05–07–348

NORTH AMERICA - ALTITUDE LIMITATIONS - MAY																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	410	390	390	410	410	410	410	410	410	410	410	390	390	390
62N	410	410	410	390	400	410	410	410	410	410	410	410	410	410	410	390
61N	410	410	410	400	410	410	410	410	410	410	410	410	410	410	410	400
60N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – May – p1
Figure 05–07–349

NORTH AMERICA - ALTITUDE LIMITATIONS - MAY														
	Longitude													
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	410	410	390	390	390	390	390	410
63N	390	390	390	390	390	390	410	410	410	410	390	390	390	390	410
62N	390	390	390	410	410	410	410	410	410	410	410	390	390	410	410
61N	390	390	390	410	410	410	410	410	410	410	410	410	390	410	410
60N	410	390	400	410	410	410	410	410	410	410	410	410	390	410	410
59N	410	390	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	390	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – May – p2
Figure 05–07–350

NORTH AMERICA - ALTITUDE LIMITATIONS - JUNE																	
	Longitude																
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	400	400	400	400	400	410	410	410	410	410	410	410	410	410	410	410
83N	390	390	390	390	390	390	400	410	410	410	410	410	410	410	410	410
82N	390	390	390	390	390	390	390	400	410	410	410	410	410	410	410	410
81N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
80N	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410	410
79N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
78N	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410
77N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
76N	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
75N	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410
74N	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410
73N	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410
72N	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410
71N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
70N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
69N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
68N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
67N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
66N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
65N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
64N	410	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
63N	410	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
62N	410	410	390	390	390	390	390	390	410	410	410	410	410	410	410	410
61N	410	410	400	390	390	390	390	390	410	410	410	410	410	410	410	410
60N	410	410	410	400	390	400	400	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – June – p1
Figure 05–07–351

NORTH AMERICA - ALTITUDE LIMITATIONS - JUNE														
	Longitude													
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
74N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
73N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
72N	410	410	410	410	410	410	410	410	410	410	410	410	410	400	410
71N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
70N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
69N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
64N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – June – p2
Figure 05–07–352

NORTH AMERICA - ALTITUDE LIMITATIONS - OCTOBER																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
74N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
73N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
72N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
71N	410	410	410	410	400	390	390	390	410	410	410	410	410	410	410	410
70N	410	410	410	410	390	390	390	390	390	410	410	410	410	410	410	410
69N	410	410	410	390	390	390	390	390	390	410	410	410	410	410	410	410
68N	410	410	410	390	390	390	390	390	390	410	410	410	410	410	410	410
67N	410	410	410	390	390	390	390	390	390	390	410	410	410	410	410	410
66N	410	410	410	390	390	390	390	390	390	390	410	410	410	410	410	410
65N	410	410	410	390	390	390	390	390	390	390	410	410	410	410	410	410
64N	410	410	410	390	390	390	390	390	390	410	410	410	410	410	410	410
63N	410	410	410	390	390	390	390	390	390	410	410	410	410	410	410	410
62N	410	410	410	410	390	390	390	390	390	410	410	410	410	410	410	410
61N	410	410	410	410	390	390	390	390	390	410	410	410	410	410	410	410
60N	410	410	410	410	400	390	390	390	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	390	390	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – October – p1
Figure 05–07–353

NORTH AMERICA - ALTITUDE LIMITATIONS - OCTOBER															
	Longitude														
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
74N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
73N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
72N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
71N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
70N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
69N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
64N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – October – p2
Figure 05–07–354

NORTH AMERICA - ALTITUDE LIMITATIONS - NOVEMBER																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390
77N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390
76N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390
75N	410	410	410	410	410	410	410	410	410	410	410	410	410	400	390	390
74N	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390	390
73N	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390	390
72N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390
71N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390
70N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390
69N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – November – p1
Figure 05–07–355

NORTH AMERICA - ALTITUDE LIMITATIONS - NOVEMBER															
	Longitude														
Latitude (N)	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	390	400	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410
76N	390	390	390	400	410	410	410	410	410	410	410	410	410	410	410
75N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410
74N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410
73N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410
72N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410
71N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410
70N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410
69N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – November – p2
Figure 05–07–356

NORTH AMERICA - ALTITUDE LIMITATIONS - DECEMBER																
	Longitude															
Latitude (N)	180W	175W	170W	165W	160W	155W	150W	145W	140W	135W	130W	125W	120W	115W	110W	105W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	400	390	400	410	410	390	390	390	390	390	390	390
66N	400	410	410	410	410	410	410	410	410	410	400	400	390	390	390	390
65N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	390	390
64N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	400
63N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – December – p1
Figure 05–07–357

NORTH AMERICA - ALTITUDE LIMITATIONS - DECEMBER															
Latitude (N)	Longitude														
	100W	95W	90W	85W	80W	75W	70W	65W	60W	55W	50W	45W	40W	35W	30W
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	400	410	390	390	390	390	390	390	410
77N	390	390	390	390	390	400	410	410	410	390	390	390	390	410	410
76N	390	390	390	390	390	410	410	410	410	390	390	390	410	410	410
75N	390	390	390	390	390	390	410	410	410	390	390	400	410	410	410
74N	390	390	390	390	390	390	390	410	400	390	390	410	410	410	410
73N	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410
72N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	410
71N	390	390	390	390	390	390	390	390	390	400	410	410	410	410	410
70N	390	390	390	390	390	390	390	390	390	410	410	410	410	410	410
69N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410
68N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410
67N	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410
66N	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410
65N	390	390	390	390	400	410	410	410	410	410	410	410	410	410	410
64N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410
63N	390	390	390	400	410	410	410	410	410	410	410	410	410	410	410
62N	410	390	390	400	410	410	410	410	410	410	410	410	410	410	410
61N	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	390	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – North America – December – p2
Figure 05–07–358

B. Europe

There is no altitude limitation from July to November.

EUROPE - ALTITUDE LIMITATIONS - JANUARY																			
Latitude (N)	Longitude																		
	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	400	410	410	410	400	410	390	390	390	390	390	390
80N	390	390	390	390	390	390	400	410	410	410	410	410	410	410	400	390	390	390	390
79N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	400	390	390
78N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	390
77N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
74N	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
73N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
72N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
71N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
70N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – January
Figure 05–07–359

EUROPE - ALTITUDE LIMITATIONS - FEBRUARY																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	410	410	410	410	400	390	390	390	390
72N	390	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	390	390
71N	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	390
70N	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	390
69N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
64N	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
63N	390	410	410	410	410	410	410	410	410	410	410	390	410	410	410	410	410	410	410
62N	390	410	410	410	410	410	410	410	410	410	390	390	410	410	410	410	410	410	410
61N	390	410	410	410	410	410	410	410	410	410	390	390	410	410	410	410	410	410	410
60N	390	410	410	410	410	410	410	410	410	410	390	390	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	390	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – February
Figure 05–07–360

EUROPE - ALTITUDE LIMITATIONS - MARCH																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	410	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	410	410	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	410	410	410	410	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	410	410	410	410	410	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	410	410	410	410	410	410	410	390	390	390	390	390	390	390	390	390
64N	390	390	390	410	410	410	410	410	410	410	390	390	390	390	390	410	390	390	400
63N	390	390	410	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410	410
62N	390	390	410	410	410	410	410	410	410	410	390	390	390	400	410	410	410	410	410
61N	390	410	410	410	410	410	410	410	410	410	390	390	390	410	410	410	410	410	410
60N	390	410	410	410	410	410	410	410	410	410	390	390	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	390	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – March
Figure 05–07–361

EUROPE - ALTITUDE LIMITATIONS - APRIL																			
	Longitude																		
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	400	390	390	390	390	390	390	390	390	390	390
62N	390	390	390	410	410	390	390	390	410	390	390	390	390	390	390	390	390	390	410
61N	390	390	410	410	410	390	390	390	410	410	390	390	390	390	390	390	390	410	410
60N	390	410	410	410	410	390	390	410	410	410	390	390	390	390	390	400	410	410	410
59N	390	410	410	410	410	390	390	410	410	410	390	390	390	410	400	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	390	390	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – April
Figure 05–07–362

EUROPE - ALTITUDE LIMITATIONS - MAY																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	410	410	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	410	410	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	410	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	400	390	390	390	400	400	390	390	390	390	390	390	390	390	410	390	390
67N	390	390	390	400	390	410	410	410	410	400	390	390	390	390	390	400	410	410	410
66N	390	390	410	400	390	410	410	410	410	410	390	390	390	390	410	410	410	410	410
65N	390	410	410	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410	410
64N	410	410	410	410	410	410	400	410	410	410	410	390	390	410	410	410	410	410	410
63N	410	410	410	410	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	390	390	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – May
Figure 05–07–363

EUROPE - ALTITUDE LIMITATIONS - JUNE																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	400	400	390	390	390	390	410	410	410	410	410	410
85N	410	410	410	410	410	390	390	390	390	390	390	400	400	400	410	410	410	410	410
84N	410	410	410	400	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410
83N	410	410	410	390	390	390	390	390	390	390	390	390	390	390	410	400	410	410	410
82N	410	410	410	410	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410
81N	410	410	410	410	390	390	390	390	390	390	390	390	390	390	390	410	410	410	410
80N	410	410	410	410	390	390	390	390	390	390	390	390	390	390	400	410	410	410	410
79N	410	410	410	410	410	390	390	390	390	390	390	390	390	390	410	410	410	410	410
78N	410	410	410	410	410	390	390	390	390	390	390	390	390	410	410	410	410	410	410
77N	410	410	410	410	410	410	390	390	390	390	390	390	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	390	390	390	390	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – June
Figure 05–07–364

EUROPE - ALTITUDE LIMITATIONS - DECEMBER																		
	Longitude																	
Latitude (N)	30W	25W	20W	15W	10W	5W	0W	5E	10E	15E	20E	25E	30E	35E	40E	45E	50E	55E	60E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	400	400	410	410	410	410	400	400
85N	390	390	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410
84N	390	390	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	390	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	390	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	390	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410
30N	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Europe – December
Figure 05–07–365

C. Asia

There is no altitude limitation from July to November.

ASIA - ALTITUDE LIMITATIONS - JANUARY													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	410	390	390	390	390	390	390	390	390	390	390	390	390
76N	410	410	390	390	390	390	390	390	390	390	390	390	390
75N	410	410	410	390	390	390	390	390	390	390	390	390	390
74N	410	410	410	410	390	390	390	390	390	390	390	390	390
73N	410	410	410	410	400	390	390	390	390	390	390	390	390
72N	410	410	410	410	410	390	390	390	390	390	390	390	390
71N	410	410	410	410	410	400	390	390	390	390	390	390	390
70N	410	410	410	410	410	410	390	390	390	390	390	390	390
69N	410	410	410	410	410	410	390	390	390	390	390	390	390
68N	410	410	410	410	410	410	410	390	390	390	390	390	390
67N	410	410	410	410	410	410	410	390	390	390	390	390	390
66N	410	410	410	410	410	410	410	390	390	390	390	390	390
65N	410	410	410	410	410	410	410	410	410	390	390	390	390
64N	410	410	410	410	410	410	410	410	410	390	390	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410
54N	410	410	410	410	410	410	410	410	410	410	410	410	410
53N	410	410	410	410	410	410	410	410	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410	410
49N	410	410	410	410	410	410	410	410	410	410	410	410	410
48N	410	410	410	410	410	410	410	410	410	410	410	410	410
47N	410	410	410	410	410	410	410	410	410	410	410	410	410
46N	410	410	410	410	410	410	410	410	410	410	410	410	410
45N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – January – p1
Figure 05–07–366

ASIA - ALTITUDE LIMITATIONS - JANUARY												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	390	390	390	390
62N	410	390	390	390	390	390	390	390	390	390	390	390
61N	410	410	410	390	390	390	390	390	390	390	390	390
60N	410	410	410	410	390	390	390	390	390	390	390	390
59N	410	410	410	410	410	390	390	390	390	390	390	390
58N	410	410	410	410	410	390	390	390	390	390	390	390
57N	410	410	410	410	410	410	390	390	390	390	390	390
56N	410	410	410	410	410	410	390	390	390	390	390	390
55N	410	410	410	410	410	410	410	390	390	390	390	390
54N	410	410	410	410	410	410	410	390	390	390	390	390
53N	410	410	410	410	410	410	410	410	390	390	390	390
52N	410	410	410	410	410	410	410	410	410	390	390	390
51N	410	410	410	410	410	410	410	410	410	390	390	390
50N	410	410	410	410	410	410	410	410	410	410	390	390
49N	410	410	410	410	410	410	410	410	410	410	390	390
48N	410	410	410	410	410	410	410	410	410	410	400	390
47N	410	410	410	410	410	410	410	410	410	410	410	390
46N	410	410	410	410	410	410	410	410	410	410	410	410
45N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – January – p2
Figure 05–07–367

ASIA - ALTITUDE LIMITATIONS - FEBRUARY													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	410	390	390	390	390	390	390	390	390	390	390	390	390
68N	410	390	390	390	390	390	390	390	390	390	390	390	390
67N	410	400	390	390	390	390	390	390	390	390	390	390	390
66N	410	410	390	390	390	390	390	390	390	390	390	390	390
65N	410	410	410	390	390	390	390	390	390	390	390	390	390
64N	410	410	410	410	390	390	390	390	390	390	390	390	390
63N	410	410	410	410	410	390	390	390	390	390	390	390	390
62N	410	410	410	410	410	390	390	390	410	410	410	410	410
61N	410	410	410	410	410	390	390	410	410	410	410	410	410
60N	410	410	410	410	410	410	390	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410
54N	410	410	410	410	410	410	410	410	410	410	410	410	410
53N	410	410	410	410	410	410	410	410	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410	410
49N	410	410	410	410	410	410	410	410	410	410	410	410	410
48N	410	410	410	410	410	410	410	410	410	410	410	410	410
47N	410	410	410	410	410	410	410	410	410	410	410	410	410
46N	410	410	410	410	410	410	410	410	410	410	410	410	410
45N	410	410	410	410	410	410	410	410	410	410	410	410	410
44N	410	410	410	410	410	410	410	410	410	410	410	410	410
43N	410	410	410	410	410	410	410	410	410	410	410	410	410
42N	410	410	410	410	410	410	410	410	410	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – February – p1
Figure 05–07–368

ASIA - ALTITUDE LIMITATIONS - FEBRUARY												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390
63N	390	390	390	390	390	390	390	390	390	390	390	390
62N	410	390	390	390	390	390	390	390	390	390	390	390
61N	410	410	410	390	390	390	390	390	390	390	390	390
60N	410	410	410	410	390	390	390	390	390	390	390	390
59N	410	410	410	410	410	390	390	390	390	390	390	390
58N	410	410	410	410	410	390	390	390	390	390	390	390
57N	410	410	410	410	410	410	390	390	390	390	390	390
56N	410	410	410	410	410	410	390	390	390	390	390	390
55N	410	410	410	410	410	410	410	390	390	390	390	390
54N	410	410	410	410	410	410	410	390	390	390	390	390
53N	410	410	410	410	410	410	410	410	410	390	390	390
52N	410	410	410	410	410	410	410	410	410	390	390	390
51N	410	410	410	410	410	410	410	410	410	390	390	390
50N	410	410	410	410	410	410	410	410	410	410	390	390
49N	410	410	410	410	410	410	410	410	410	410	390	390
48N	410	410	410	410	410	410	410	410	410	410	390	390
47N	410	410	410	390	410	410	410	410	410	410	410	390
46N	410	410	410	390	390	410	410	410	410	410	410	410
45N	410	410	410	390	390	410	410	410	410	410	410	410
44N	410	410	410	390	390	410	410	410	410	410	410	410
43N	410	410	410	390	390	410	410	410	410	410	410	410
42N	410	410	410	390	390	410	410	410	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – February – p2
Figure 05–07–369

ASIA - ALTITUDE LIMITATIONS - MARCH													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	400	390	390	390	390	390	390	390	390	390	390	390	390
63N	410	410	390	390	390	390	390	390	390	390	390	390	390
62N	410	410	390	390	390	390	390	390	410	410	410	390	390
61N	410	410	390	390	390	390	390	390	410	410	410	390	390
60N	410	410	410	400	390	390	390	390	410	410	410	390	390
59N	410	410	410	410	400	390	410	410	410	410	410	390	390
58N	410	410	410	410	410	390	410	410	410	410	410	410	410
57N	410	410	410	410	410	390	410	410	410	410	410	410	410
56N	410	410	410	410	390	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410
54N	410	410	410	410	410	410	410	410	410	410	410	410	410
53N	410	410	410	410	410	410	410	410	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410	410
49N	410	410	410	410	410	410	410	410	410	410	410	410	410
48N	410	410	410	410	410	410	410	410	410	410	410	410	410
47N	410	410	410	410	410	410	410	410	410	410	410	410	410
46N	410	410	410	410	410	410	410	410	410	410	410	410	410
45N	410	410	410	410	410	410	410	410	410	410	410	410	410
44N	410	410	410	410	410	410	410	410	410	410	410	410	410
43N	410	410	410	410	410	410	410	410	410	410	410	410	410
42N	410	410	410	410	410	410	410	410	410	410	410	410	410
41N	410	410	410	410	410	410	410	410	410	410	410	410	410
40N	410	410	410	410	410	410	410	410	410	410	410	410	410
39N	410	410	410	410	410	410	410	410	410	410	410	410	410
38N	410	410	410	410	410	410	410	410	410	410	410	410	410
37N	410	410	410	410	410	410	410	410	410	410	410	410	410
36N	410	410	410	410	410	410	410	410	410	410	410	410	410
35N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – March – p1
Figure 05–07–370

ASIA - ALTITUDE LIMITATIONS - MARCH												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	380
79N	390	390	390	390	390	390	390	390	390	380	380	380
78N	390	390	390	390	390	390	390	390	380	380	380	370
77N	390	390	390	390	390	390	390	390	380	380	370	370
76N	390	390	390	390	390	390	390	390	380	380	370	370
75N	390	390	390	390	390	390	390	380	380	370	370	370
74N	390	390	390	390	390	390	390	390	380	370	370	370
73N	390	390	390	390	390	390	390	390	380	370	370	370
72N	390	390	390	390	390	390	390	390	380	370	370	370
71N	390	390	390	390	390	390	390	390	380	370	370	370
70N	390	390	390	390	390	390	390	390	380	370	370	370
69N	390	390	390	390	390	390	390	390	380	370	370	370
68N	390	390	390	390	390	390	390	390	380	370	370	370
67N	390	390	390	390	390	390	390	390	380	370	370	370
66N	390	390	390	390	390	390	390	390	390	370	370	370
65N	390	390	390	390	390	390	390	390	390	370	370	370
64N	390	390	390	390	390	390	390	390	390	380	370	370
63N	390	390	390	390	390	390	390	390	390	380	370	370
62N	390	390	390	390	390	390	390	390	390	380	370	370
61N	390	390	390	390	390	390	390	390	390	390	370	370
60N	390	390	390	390	390	390	390	390	390	390	370	370
59N	390	390	390	390	390	390	390	390	390	390	380	370
58N	390	390	390	390	390	390	390	390	390	390	380	370
57N	410	390	390	390	390	390	390	390	390	390	390	380
56N	410	410	390	390	390	390	390	390	390	390	390	390
55N	410	410	390	390	390	390	390	390	390	390	390	390
54N	410	410	390	390	390	390	390	390	390	390	390	390
53N	410	410	390	390	390	390	390	390	390	390	390	390
52N	410	410	390	390	390	390	390	390	390	390	390	390
51N	410	410	390	390	390	390	390	390	390	390	390	390
50N	410	410	390	390	390	390	390	390	390	390	390	390
49N	410	410	390	390	390	390	390	390	390	390	390	390
48N	410	410	390	390	390	390	390	390	390	390	390	390
47N	410	410	390	390	390	390	390	390	390	390	390	390
46N	410	410	390	390	390	390	390	390	390	390	390	390
45N	410	410	390	390	390	390	390	390	390	390	390	390
44N	410	410	390	390	390	390	410	400	400	390	390	390
43N	410	410	390	390	390	390	410	410	410	390	390	390
42N	410	410	410	390	390	390	410	410	410	410	390	390
41N	410	410	410	390	390	410	410	410	410	410	390	390
40N	410	410	410	410	410	410	410	410	410	410	390	390
39N	410	410	410	410	410	410	410	410	410	410	390	390
38N	410	410	410	410	410	410	410	410	410	410	410	410
37N	410	410	410	410	410	410	410	410	410	410	410	410
36N	410	410	410	410	410	410	410	410	410	410	410	410
35N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – March – p2
Figure 05–07–371

ASIA - ALTITUDE LIMITATIONS - APRIL													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	410	410
63N	390	400	390	390	390	390	390	390	390	390	410	410	410
62N	410	410	390	390	390	390	390	390	390	410	410	410	410
61N	410	410	390	390	390	410	390	390	410	410	410	410	410
60N	410	410	410	410	400	410	410	410	410	410	410	410	410
59N	410	410	410	410	410	410	410	410	410	410	410	410	410
58N	410	410	410	410	410	410	410	410	410	410	410	410	410
57N	410	410	410	410	410	410	410	410	410	410	410	410	410
56N	410	410	410	410	410	410	410	410	410	410	410	410	410
55N	410	410	410	410	410	410	410	410	410	410	410	410	410
54N	410	410	410	410	410	410	410	410	410	410	410	410	410
53N	410	410	410	410	410	410	410	410	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – April – p1
Figure 05–07–372

ASIA - ALTITUDE LIMITATIONS - APRIL												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390
67N	390	390	390	390	390	390	390	390	390	390	390	390
66N	390	390	390	390	390	390	390	390	390	390	390	390
65N	390	390	390	390	390	390	390	390	390	390	390	390
64N	390	390	390	390	390	390	390	390	390	390	390	390
63N	410	410	410	390	390	390	390	390	390	390	390	390
62N	410	410	410	410	390	390	390	390	390	390	390	390
61N	410	410	410	410	410	390	390	390	390	390	390	390
60N	410	410	410	410	410	410	390	390	390	390	390	390
59N	410	410	410	410	410	410	410	390	390	390	390	390
58N	410	410	410	410	410	410	410	390	390	390	390	390
57N	410	410	410	410	410	410	410	410	390	390	390	390
56N	410	410	410	410	410	410	410	410	410	390	390	390
55N	410	410	410	410	410	410	410	410	410	410	390	390
54N	410	410	410	410	410	410	410	410	410	410	400	410
53N	410	410	410	410	410	410	410	410	410	410	410	410
52N	410	410	410	410	410	410	410	410	410	410	410	410
51N	410	410	410	410	410	410	410	410	410	410	410	410
50N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – April – p2
Figure 05–07–373

ASIA - ALTITUDE LIMITATIONS - MAY													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390	390
68N	390	390	390	390	390	390	390	390	390	390	390	390	390
67N	410	390	390	390	390	390	390	390	390	390	390	410	410
66N	410	390	390	390	390	390	390	390	390	390	410	410	410
65N	410	410	410	410	410	390	390	410	410	410	410	410	410
64N	410	410	410	410	410	400	400	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – May – p1
Figure 05–07–374

ASIA - ALTITUDE LIMITATIONS - MAY												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390
77N	390	390	390	390	390	390	390	390	390	390	390	390
76N	390	390	390	390	390	390	390	390	390	390	390	390
75N	390	390	390	390	390	390	390	390	390	390	390	390
74N	390	390	390	390	390	390	390	390	390	390	390	390
73N	390	390	390	390	390	390	390	390	390	390	390	390
72N	390	390	390	390	390	390	390	390	390	390	390	390
71N	390	390	390	390	390	390	390	390	390	390	390	390
70N	390	390	390	390	390	390	390	390	390	390	390	390
69N	390	390	390	390	390	390	390	390	390	390	390	390
68N	400	410	410	400	390	390	390	390	390	390	390	390
67N	410	410	410	410	410	410	390	390	390	390	390	390
66N	410	410	410	410	410	410	410	410	410	390	390	390
65N	410	410	410	410	410	410	410	410	410	410	390	390
64N	410	410	410	410	410	410	410	410	410	410	390	390
63N	410	410	410	410	410	410	410	410	410	410	390	390
62N	410	410	410	410	410	410	410	410	410	410	390	410
61N	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – May – p2
Figure 05–07–375

ASIA - ALTITUDE LIMITATIONS - JUNE													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	410	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	410	410	410	410	410	410
84N	410	410	410	410	410	410	410	410	410	410	410	410	410
83N	410	410	410	410	410	410	410	410	410	410	410	410	410
82N	410	410	410	410	410	410	410	410	410	410	410	410	410
81N	410	410	410	410	410	410	410	410	410	410	410	410	410
80N	410	410	410	410	410	410	410	410	410	410	410	410	410
79N	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410
74N	410	410	410	410	410	410	410	410	410	410	410	410	410
73N	410	410	410	410	410	410	410	410	410	410	410	410	410
72N	410	410	410	410	410	410	410	410	410	410	410	410	410
71N	410	410	410	410	410	410	410	410	410	410	410	410	410
70N	410	410	410	410	410	410	410	410	410	410	410	410	410
69N	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	410	410	410	410	410	410	410	410	410	410	410	410	410
64N	410	410	410	410	410	410	410	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – June – p1
Figure 05–07–376

ASIA - ALTITUDE LIMITATIONS - JUNE												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	410	410	410	410	410	410	410	410	410	410	410	410
89N	410	410	410	410	410	410	410	410	410	410	410	410
88N	410	410	410	410	410	410	410	410	410	410	410	410
87N	410	410	410	410	410	410	410	410	410	410	410	410
86N	410	410	410	410	410	410	410	410	410	410	410	410
85N	410	410	410	410	410	410	410	400	400	400	400	410
84N	410	410	410	410	400	400	400	390	390	400	400	400
83N	410	410	400	400	400	390	390	390	390	390	390	390
82N	410	410	400	390	390	390	390	390	390	390	390	390
81N	410	410	400	390	390	390	390	390	390	390	390	390
80N	410	410	410	410	410	400	390	390	390	390	390	390
79N	410	410	410	410	410	400	390	390	390	390	390	390
78N	410	410	410	410	410	400	390	390	390	390	390	390
77N	410	410	410	410	410	400	390	390	390	390	390	390
76N	410	410	410	410	410	400	390	390	390	390	390	390
75N	410	410	410	410	410	410	390	390	390	390	390	390
74N	410	410	410	410	410	410	410	390	390	390	390	390
73N	410	410	410	410	410	410	410	410	390	390	390	390
72N	410	410	410	410	410	410	410	410	390	390	390	390
71N	410	410	410	410	410	410	410	410	410	390	390	390
70N	410	410	410	410	410	410	410	410	410	400	390	390
69N	410	410	410	410	410	410	410	410	410	410	390	390
68N	410	410	410	410	410	410	410	410	410	410	390	390
67N	410	410	410	410	410	410	410	410	410	410	400	390
66N	410	410	410	410	410	410	410	410	410	410	410	390
65N	410	410	410	410	410	410	410	410	410	410	410	390
64N	410	410	410	410	410	410	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – June – p2
Figure 05–07–377

ASIA - ALTITUDE LIMITATIONS - DECEMBER													
	Longitude												
Latitude (N)	60E	65E	70E	75E	80E	85E	90E	95E	100E	105E	110E	115E	120E
90N	390	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390	390
86N	400	390	390	390	390	390	390	390	390	390	390	390	390
85N	410	410	410	410	410	390	390	390	390	390	390	390	390
84N	410	410	410	410	410	410	410	400	390	390	390	390	390
83N	410	410	410	410	410	410	410	410	410	390	390	390	390
82N	410	410	410	410	410	410	410	410	410	410	390	390	390
81N	410	410	410	410	410	410	410	410	410	410	410	390	390
80N	410	410	410	410	410	410	410	410	410	410	410	400	390
79N	410	410	410	410	410	410	410	410	410	410	410	410	410
78N	410	410	410	410	410	410	410	410	410	410	410	410	410
77N	410	410	410	410	410	410	410	410	410	410	410	410	410
76N	410	410	410	410	410	410	410	410	410	410	410	410	410
75N	410	410	410	410	410	410	410	410	410	410	410	410	410
74N	410	410	410	410	410	410	410	410	410	410	410	410	410
73N	410	410	410	410	410	410	410	410	410	410	410	410	410
72N	410	410	410	410	410	410	410	410	410	410	410	410	410
71N	410	410	410	410	410	410	410	410	410	410	410	410	410
70N	410	410	410	410	410	410	410	410	410	410	410	410	410
69N	410	410	410	410	410	410	410	410	410	410	410	410	410
68N	410	410	410	410	410	410	410	410	410	410	410	410	410
67N	410	410	410	410	410	410	410	410	410	410	410	410	410
66N	410	410	410	410	410	410	410	410	410	410	410	410	410
65N	410	410	410	410	410	410	410	410	410	410	410	410	410
64N	410	410	410	410	410	410	410	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – December – p1
Figure 05–07–378

ASIA - ALTITUDE LIMITATIONS - DECEMBER												
	Longitude											
Latitude (N)	125E	130E	135E	140E	145E	150E	155E	160E	165E	170E	175E	180E
90N	390	390	390	390	390	390	390	390	390	390	390	390
89N	390	390	390	390	390	390	390	390	390	390	390	390
88N	390	390	390	390	390	390	390	390	390	390	390	390
87N	390	390	390	390	390	390	390	390	390	390	390	390
86N	390	390	390	390	390	390	390	390	390	390	390	390
85N	390	390	390	390	390	390	390	390	390	390	390	390
84N	390	390	390	390	390	390	390	390	390	390	390	390
83N	390	390	390	390	390	390	390	390	390	390	390	390
82N	390	390	390	390	390	390	390	390	390	390	390	390
81N	390	390	390	390	390	390	390	390	390	390	390	390
80N	390	390	390	390	390	390	390	390	390	390	390	390
79N	390	390	390	390	390	390	390	390	390	390	390	390
78N	390	390	390	390	390	390	390	390	390	390	390	390
77N	410	390	390	390	390	390	390	390	390	390	390	390
76N	410	390	390	390	390	390	390	390	390	390	390	390
75N	410	410	410	390	390	390	390	390	390	390	390	390
74N	410	410	410	410	390	390	390	390	390	390	390	390
73N	410	410	410	410	410	390	390	390	390	390	390	390
72N	410	410	410	410	410	410	390	390	390	390	390	390
71N	410	410	410	410	410	410	410	390	390	390	390	390
70N	410	410	410	410	410	410	410	410	410	390	390	390
69N	410	410	410	410	410	410	410	410	390	390	390	390
68N	410	410	410	410	410	410	410	410	410	390	390	390
67N	410	410	410	410	410	410	410	410	410	410	400	390
66N	410	410	410	410	410	410	410	410	410	410	410	400
65N	410	410	410	410	410	410	410	410	410	410	410	410
64N	410	410	410	410	410	410	410	410	410	410	410	410
63N	410	410	410	410	410	410	410	410	410	410	410	410
62N	410	410	410	410	410	410	410	410	410	410	410	410
61N	410	410	410	410	410	410	410	410	410	410	410	410
60N	410	410	410	410	410	410	410	410	410	410	410	410
10N	410	410	410	410	410	410	410	410	410	410	410	410

Altitude limitation – Asia – December – p2
Figure 05–07–379

D. South America, Africa and Middle East, Australia and Oceania

There is no altitude limitation for South America, Africa and Middle East, and Australia and Oceania.

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CHAPTER 6 – SUPPLEMENTS

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SUPPLEMENT 1 – NOISE CHARACTERISTICS <TC> OR <EASA>

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INTRODUCTION

This supplement contains the noise characteristics data which comply with these regulations:

- AWM 516, Change 516-11
- ICAO Annex 16, Amendment 10, Volume 1, Chapter 4

LIMITATIONS

The limitations in Chapter 2 are applicable.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable.

NOISE CHARACTERISTICS

A. Certification airplane configuration

Compliance has been demonstrated in the configuration that follows:

(1) Flyover and lateral noise levels

Flyover and lateral noise levels were established for the configuration that follows:

- Maximum takeoff weight

kg	lb	Option code
61000	134482	<13001061C>

kg	lb	Option code
64000	141096	<13001131C>

kg	lb	Option code
65997	145500	<13001176C>

kg	lb	Option code
67585	149000	<13001310C>

- Climb speed = V_2 + 10 KIAS
- Slat-flap lever position = 2
- Bleed valves = Auto
- APU = Off
- Air-conditioning packs (both) = Off
- Cowl and wing anti-ice = Off

(2) Approach noise levels

Landing approach noise levels were established for the configuration that follows:

- Glideslope = 3 degrees
- Landing gear = Down
- Landing weight:

kg	lb	Option code
58740	129500	<13001290C>

- Approach speed = V_{REF} + 10 KIAS
- Slat-flap lever setting = 5
- Bleed valves = Auto

- APU = On
- Air-conditioning packs (both) = On
- Cowl and wing anti-ice = Off

B. Certificated noise levels

The demonstrated effective perceived noise levels (EPNdB), noise limits and margins of compliance are given in the tables that follow:

PW1521G-3 <72211001D>					
Weight		**Measured points**			**Margin**
MTOW	**MLW**	**Description**	**Noise limit**	**Measured level**	
61000 kg (134482 lb) <13001061C>	58740 kg (129500 lb) <13001290C>	Approach	99.9	92.4	7.5
		Lateral	96.1	86.7	9.4
		Flyover	90.4	80.1	10.3
		Compliance with Chapter 4			17.1

PW1521G-3 <72211001D>					
Weight		**Measured points**			**Margin**
MTOW	**MLW**	**Description**	**Noise limit**	**Measured level**	
64000 kg (141096 lb) <13001131C>	58740 kg (129500 lb) <13001290C>	Approach	100.0	92.4	7.6
		Lateral	96.2	86.6	9.6
		Flyover	90.7	81.4	9.3
		Compliance with Chapter 4			16.5

PW1521G-3 <72211001D>					
Weight		Measured points			Margin
MTOW	MLW	Description	Noise limit	Measured level	
65997 kg (145500 lb) <13001176C>	58740 kg (129500 lb) <13001290C>	Approach	100.1	92.4	7.7
		Lateral	96.4	86.4	10.0
		Flyover	90.8	82.2	8.6
		Compliance with Chapter 4			16.3

PW1521G-3 <72211001D>					
Weight		Measured points			Margin
MTOW	MLW	Description	Noise limit	Measured level	
67585 kg (149000 lb) <13001310C>	58740 kg (129500 lb) <13001290C>	Approach	100.2	92.4	7.8
		Lateral	96.4	86.4	10.0
		Flyover	91.0	83.3	7.7
		Compliance with Chapter 4			15.5

ICAO Annex 16, Amendment 10, Volume 1, Chapter 4 compliance has been demonstrated with the previously mentioned margins.

No determination has been made such that the noise levels of this airplane are or should be, acceptable or unacceptable for operation at, into or out of, any airport.

The noise level values are stated for reference conditions of standard atmospheric pressure at sea level, 25°C (77°C) ambient temperature, 70% relative humidity and zero wind.

SUPPLEMENT 2 – OPERATION ON CONTAMINATED RUNWAYS

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INTRODUCTION

A. General

This supplement contains information and procedures for operation on runways contaminated by standing water, slush, wet snow, dry snow, compacted snow or ice.

This information has been prepared by the manufacturer and approved as guidance material, to assist operators in developing suitable guidance, recommendations or instructions for use by their flight crews when operating on contaminated runway surface conditions.

The data have been prepared using reasonable estimates of the effects of contaminated runway surface conditions on the accelerating ground roll and the braking ground roll. The effects of actual conditions may differ from those used to establish the data.

Contaminated runways are likely to have a significant effect on the performance. The main effects are:

- Additional drag – displacement drag and impingement drag which causes retardation effects on the wheels and increased skin friction,
- Possibility of power loss or system malfunction due to spray ingestion or impingement,
- Reduced braking performance – reduced wheel to runway friction and hydroplaning,
- Directional control problems, and
- Possibility of structural damage.

Contaminated runway performance data is an estimate assuming that the runway is completely contaminated, with the contaminant (standing water, slush or snow) to be of uniform depth and density.

The provision of performance data for contaminated runways should not be taken as implying that ground handling characteristics on these surfaces will be as good as can be achieved on dry or wet runways, in particular, in crosswinds and when using reverse thrust.

Performance calculations in the CAFM automatically take into account the runway surface condition as required, based upon the selection made in the drop-down list of the Runway Surface Condition section in the Runway Data pane of the CAFM calculator.

B. Runway conditions

(1) Runway contaminated by standing water, slush, or snow

A runway is considered to be contaminated when more than 25% of the runway surface area (whether in isolated areas or not) within the required length and width being used is covered by more than the contaminant depth in the table that follows. Therefore the contaminated runway criteria apply.

A runway is not considered to be contaminated but only wet (only if braking action is considered good), if the layer of contaminant on the runway is less than or equal to the depths listed in the table that follows. In these conditions, use the wet runway performance data (Refer to Chapter 5 – Performance).

Standing water	Slush	Wet snow	Dry snow
3.0 mm (0.12 in.)	3.0 mm (0.12 in.)	3.0 mm (0.12 in.)	3.0 mm (0.12 in.)

Definitions:

Standing water is accumulated water on the runway surface caused by heavy rainfall or by poor drainage.

Slush is partly melted snow or ice with high water content, from which water can readily flow, with an assumed specific gravity of 0.85. Slush is normally a transient condition found only at temperatures close to 0°C (32°F).

The following table gives the equivalent depths of slush corresponding to various depths of standing water:

Depth of standing water	Equivalent depth of slush
3.2 mm (0.125 in.)	3.8 mm (0.15 in.)

Depth of standing water	Equivalent depth of slush
6.4 mm (0.25 in.)	7.4 mm (0.30 in.)
12.7 mm (0.50 in.)	15.0 mm (0.60 in.)

Wet snow is snow that will stick together to form a snowball when compressed, but will not readily allow water to flow from it when squeezed.

Dry snow is fresh snow that can be blown or, if compacted by hand, will fall apart upon release (also commonly referred to as loose snow).

(2) Runway contaminated by compacted snow

A runway is considered to be contaminated by compacted snow when covered by snow which has been compacted into a solid mass such that airplane wheels, at representative operating pressures and loading, will run on the surface without causing significant rutting (i.e. resists further compression).

(3) Runway contaminated by ice

A runway is considered to be contaminated for a surface condition where braking action is expected to be very low due to the presence of ice.

Definition:

Ice is water which has frozen on the runway surface, including the condition where compacted snow transitions to a polished ice surface.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Maximum depth of contaminant

The maximum depths of runway contaminants covering more than 25% of the runway surface area, within the required length and width being used, are:

Contaminant	Takeoff	Landing
Standing water	12.7 mm (0.50 in.)	19.1 mm (0.75 in.)
Slush	15.0 mm (0.60 in.)	22.4 mm (0.88 in.)
Wet snow	19.1 mm (0.75 in.)	22.4 mm (0.88 in.)
Dry snow	76.2 mm (3.0 in.)	95.3 mm (3.75 in.)

B. Additional requirements

- During taxi, except in the interest of safety, avoid use of thrust reversers if movement area surfaces are covered with standing water, slush, snow, or ice.
- When operating on runways contaminated with ice, both thrust reversers must be operative before dispatch.
- Anti-skid must be operative.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

- Contaminated runway distances are calculated under the assumption that the runway is completely contaminated. However, selection of the type and amount of contaminant should be based on the runway conditions where the high speed portion of the takeoff will occur and, in the case of an ice covered runway, where braking would be used during a rejected takeoff or landing.
- The dispatch landing distance calculations on contaminated runways for landing at FLAP 4 or 5, with both engines operating, are predicated upon an approach speed at the runway threshold from V_{REF} to V_{REF} + 10 KIAS for considerations of the use of autothrottle and for wind gust factor, corrected for the effects of wind and usage of thrust reversers.
- V_1/V_R must be set to 1.0 for the runway conditions that follow:
  - 50.8 mm (2.0 in.) of dry snow
  - 76.2 mm (3.0 in.) of dry snow
  - 6.4 mm (0.25 in.) of standing water or equivalent
  - 12.7 mm (0.50 in.) of standing water or equivalent
  - 12.7 mm (0.50 in.) of wet snow
  - 19.1 mm (0.75 in.) of wet snow
- Cowl anti-ice or wing and cowl anti-ice must be set to ON in the CAFM for the runway conditions that follow:
  - Ice
  - Compacted snow
  - Dry snow

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

RECOMMENDATIONS

The recommendations that follow are applicable to all runway and taxiway conditions described in Runway conditions of this supplement.

A. Taxiing

- Taxi slowly to reduce slush from being deflected into the wheel wells and onto the fuselage.
- Avoid making sharp turns.
- Avoid taxiing too closely behind other aircraft.
- Low braking coefficient increases braking distance. Light to moderate continuous brake application is recommended to bring the airplane to a smooth and safe stop.
- If conditions exist that can result in water saturated brakes, use light brake applications during taxi before takeoff to warm the brakes. This can prevent water-saturated brakes from freezing at altitude and locking for landing.

B. Takeoff

Low braking coefficient and contaminant drag increase takeoff distance.

C. Landing

- A positive landing aids initial wheel spin up by breaking the surface tension of the contaminant layer, assisting braking.
- Contaminated runway landing data is based on the use of thrust reversers and braking.
- If a loss of directional control occurs, it may be necessary to move the thrust levers out of reverse thrust and go to forward idle thrust to recover the centerline.

HYDROPLANING

Hydroplaning significantly increases stopping distances and reduces directional control.

Hydroplaning can occur on runways contaminated with standing water or slush. Hydrodynamic lift forces generated between the tires and the water (slush) are sufficient to lift the tires and the airplane off the runway surface. In this condition, the tires are no longer capable of providing directional control or effective braking.

Hydroplaning does not normally occur in water depths of less than 5.0 mm (0.20 in.). Despite this, there are some conditions in which the minimum depth may be as low as 2.5 mm (0.10 in.). Once hydroplaning has begun it can persist even if the water depth and ground speed are less than required for initiation.

Hydroplaning can occur at all speeds. However, reference speeds for hydroplaning are calculated as follows:

Tire pressure (psi)	Hydroplaning ground speed (kt)
Main: 200	127
Nose: 150	110

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SUPPLEMENT 5 – OPERATION WITH AIRPLANE SYSTEMS INOPERATIVE

List of figures

INTRODUCTION

The data in this supplement provides performance corrections to be applied when the airplane is dispatched with inoperative systems.

This supplement is only applicable when used in conjunction with the Minimum Equipment List (MEL) approved by the appropriate authority.

When applicable, the performance corrections to be used to dispatch with airplane systems inoperative can be calculated automatically in the CAFM when they are selected in the MMEL/CDL section of each CAFM calculator. The performance penalties are also given in the Performance section of this supplement and can be used as an alternative to the CAFM.

For items permitted by the MEL that are not available in the CAFM, the performance penalties in the Performance section of this supplement must be used.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM, its supplements, and the CAFM.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Ground spoiler system or multi-function spoiler system 1 inoperative

Dispatch with one pair of ground spoilers inoperative or multi-function spoiler system 1 inoperative:

Minimum landing runway width is 45 m (150 ft) if a pedal or rudder jam is encountered.

B. Landing gear locked down

Flight in known or forecasted icing conditions is prohibited.

C. Brake system Electro-Mechanical Actuator (EMA) or Electro-Mechanical Actuator Controller (EMAC) inoperative

Dispatch with one or more EMA inoperative or with one or more EMAC inoperative:

Minimum landing runway width is 45 m (150 ft) if a pedal or rudder jam is encountered.

D. Air-conditioning pack or bleed source inoperative

FLAP 4 landings are prohibited in icing conditions during single bleed operation with all engines operating due to the high idle thrust level affecting descent capability.

Reduced thrust (FLEX) operations are prohibited.

Derated thrust operations are prohibited with wing anti-ice on.

E. TOGA switches inoperative (thrust levers)

(1) Takeoff

Use of autothrottle during the takeoff phase is prohibited.

Use of FMS speeds during the takeoff phase is prohibited.

(2) Go-around

Use of autothrottle during go-around is prohibited.

Use of FMS speeds during go-around is prohibited.

F. Thrust reverser inoperative

Dispatch with one thrust reverser inoperative:

The maximum crosswind component for takeoff and landing on a wet runway is limited to 25 knots, measured at 10 m (33 ft) tower height.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

A. TOGA switches inoperative (thrust levers)

(1) Takeoff performance

The takeoff procedures apply except:

At V_R, rotate towards the target pitch angle determined from the table that follows and adjust pitch to capture V_2(OEI) or a minimum of V_2 + 10 kt (AEO).

Target pitch angle at takeoff						
$\Delta V = V_2 - V_R$ (kt)	FLAP 2		FLAP 3		FLAP 4	
	AEO	OEI	AEO	OEI	AEO	OEI
0	12	8	12	8	11	8
1	14	10	13	8	12	8
2	16	11	14	10	13	8
3	17	12	15	11	14	9
4	18	12	16	11	15	11
5	19	13	17	12	16	11
6	20	13	18	12	17	11
7	21	14	19	12	18	12
8	22	14	20	13	19	12
9	23	14	21	13	20	12
10 and above	23	15	22	13	21	13

(2) Go-around performance

The go-around procedures apply, except:

OEI: Rotate towards 8 degrees and adjust pitch to capture V_{AC}.

AEO: Rotate towards 11 degrees and adjust pitch to capture V_{GA}.

Do not exceed 22 degrees.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable, except when modified as follows:

A. Hydraulic reservoir quantity level transducers inoperative – System 1, 2, or 3

The non-normal procedures in Chapter 4 are applicable.

B. Main channel of air data system 1 (ADS 1) inoperative – ADS 1 FAIL (Advisory)

The non-normal procedures in Chapter 4 are applicable.

C. Main channel of air data system 2 (ADS 2) inoperative – ADS 2 FAIL (Advisory)

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

NOTE

The landing performance that follows applies to both dispatch and operational data.

A. Flap or slat channel inoperative

In the MMEL/CDL window of the CAFM, activate the MMEL calculations and select MMEL effect Slow Flap Retraction and/or Slow Slat Retraction as appropriate.

Alternative: Apply the corrections that follow to performance data calculated in Chapter 5:

(1) Takeoff flight path performance

The performance limited takeoff weights only need adjustment if obstacles are present in the takeoff flight path.

If one or more obstacles are present in the takeoff flight path, reduce the performance limited takeoff weight as specified in the tables that follow:

1. If the performance limited takeoff weight is calculated on the basis that all obstacles are cleared by the required vertical distance margin before the airplane reaches the level-off height (i.e., acceleration distance and final segment climb are not limiting):

Takeoff flaps	Effect of FLAPS HALFSPEED	Effect of SLAT HALFSPEED
All	5%	5%

2. If the performance limited takeoff weight is not calculated on the basis that all obstacles are cleared by the required vertical distance margin when the airplane reaches the level-off height (i.e., acceleration distance and final segment climb may be limiting):

Takeoff flaps	Effect of FLAPS HALFSPEED	Effect of SLAT HALFSPEED
All	6%	6%

B. Ground spoiler system or multi-function spoiler system 1 inoperative

(1) Takeoff performance

For one pair of ground spoilers inoperative or multi-function spoiler system 1 pair inoperative:

Multiply the accelerate-stop distance calculated by the CAFM by 1.20.

Alternative: Multiply the available accelerate-stop distance by 0.83.

(2) Landing performance

For one pair of ground spoilers inoperative or multi-function spoiler system 1 pair inoperative:

Multiply the required landing distance calculated by the CAFM by 1.30.

Alternative: Multiply the available landing distance by 0.76.

C. Landing gear locked down

In the MMEL/CDL window of the CAFM and Computerized In-Flight Planning (CIFP), activate the MMEL calculations and select MMEL effect Flight with Landing Gear Down.

D. Brake system Electro-Mechanical Actuator (EMA) or Electro-Mechanical Actuator Controller (EMAC) inoperative

(1) Takeoff performance

(a) For 1 or 2 EMA inoperative or 1 EMAC inoperative:

Multiply the required accelerate-stop distance by 1.04.

Alternative: Multiply the available accelerate-stop distance by 0.96.

(b) For 3 or 4 EMA inoperative or 2 EMAC inoperative:

Multiply the required accelerate-stop distance by 1.11.

Alternative: Multiply the available accelerate-stop distance by 0.90.

(2) Landing performance

(a) For 1 or 2 EMA inoperative or 1 EMAC inoperative:

Multiply the required landing distance by 1.03.

Alternative: Multiply the available landing distance by 0.97.

(b) For 3 or 4 EMA inoperative or 2 EMAC inoperative:

Multiply the required landing distance by 1.10.

Alternative: Multiply the available landing distance by 0.90.

E. BTMS inoperative

After a landing or rejected takeoff, the minimum brake cooling time at the ramp must be observed to ensure enough brake energy capability before the next takeoff.

The minimum cooling time is determined as follows:

1. Determine the reference brake energy.
2. Use the reference brake energy to determine the brake cooling time.

(1) Reference brake energy

The reference brake energy measures the energy actually absorbed by the brakes, in million foot-pounds (mfp). The value for brake energy is at the intersection of the brakes-on speed and airport pressure altitude, and the weight and airport outside air temperature (refer to Figure 06–05–01–2 <Metric>).

Example: <Metric>

Conditions:

- Brakes-on speed = 120 KIAS
- Pressure altitude = 1000 feet
- Weight = 55000 kg
- OAT = 25°C

- Slope = 0
- Wind = 0 kt

Use the Example – Reference brake energy table (refer to Figure 06–05–01–1).

Result (by interpolation):

- Reference brake energy = 27.6 mfp

REFERENCE BRAKE ENERGY - MFP PER BRAKE													
BRAKES ON SPEED (KIAS)	ALT. (1000 FT)	WEIGHT (1000 KG)											
		40			50			60			70		
		OAT (°C)											
		0	25	50	0	25	50	0	25	50	0	25	50
80	0	11.9	12.9	13.9	14.9	16.1	17.3	18.2	19.7	21.2	21.9	23.7	25.4
	2	12.6	13.7	14.7	15.8	17.1	18.3	19.3	20.9	22.5	23.2	25.1	27.0
	4	13.3	14.4	15.5	16.7	18.0	19.4	20.4	22.1	23.7	24.5	26.5	28.5
	8	14.8	16.0	17.2	18.5	20.0	21.4	22.6	24.4	26.3	27.1	29.3	31.5
100	0	14.9	16.1	17.3	18.6	20.1	21.6	22.8	24.6	26.5	27.3	29.6	31.8
	2	15.8	17.1	18.4	19.7	21.3	22.9	24.2	26.1	28.1	29.0	31.3	33.7
	4	16.7	18.0	19.4	20.8	22.5	24.2	25.5	27.6	29.7	30.6	33.1	35.6
	8	18.5	20.0	21.5	23.1	24.9	26.8	28.3	30.6	32.9	33.9	36.7	39.4
120	0	18.7	20.2	21.8	22.1	23.9	25.7	27.4	29.6	31.8	32.8	35.5	38.1
	2	19.9	21.5	23.1	23.4	25.3	27.2	29.0	31.3	33.7	34.8	37.6	40.4
	4	21.0	22.7	24.4	24.7	26.7	28.8	30.6	33.1	35.6	36.8	39.7	42.7
	8	23.2	25.1	27.0	27.4	29.6	31.8	33.9	36.7	39.4	40.7	44.0	47.3
140	0	22.7	24.6	26.4	27.1	29.3	31.5	32.0	34.6	37.1	36.6	39.6	42.5
	2	24.1	26.1	28.0	28.8	31.1	33.4	33.9	36.6	39.4	38.8	41.9	45.1
	4	25.5	27.5	29.6	30.4	32.9	35.3	35.8	38.7	41.6	41.0	44.3	47.6
	8	28.2	30.5	32.8	33.6	36.4	39.1	39.6	42.8	46.1	45.4	49.1	52.7
160	0	26.8	28.9	31.1	32.2	34.8	37.4	38.3	41.5	44.6	44.3	47.8	51.4
	2	28.4	30.7	33.0	34.1	36.9	39.7	40.7	43.9	47.2	46.9	50.7	54.5
	4	30.0	32.4	34.8	36.1	39.0	41.9	43.0	46.4	49.9	49.6	53.6	57.6
	8	33.2	35.9	38.6	39.9	43.2	46.4	47.6	51.4	55.3	54.9	59.3	63.8

Example – Reference brake energy <Metric>
Figure 06–05–01–1

REFERENCE BRAKE ENERGY - MFP PER BRAKE													
BRAKES ON SPEED (KIAS)	ALT. (1000 FT)	WEIGHT (1000 KG)											
		40			50			60			70		
		OAT (°C)											
		0	25	50	0	25	50	0	25	50	0	25	50
80	0	11.9	12.9	13.9	14.9	16.1	17.3	18.2	19.7	21.2	21.9	23.7	25.4
	2	12.6	13.7	14.7	15.8	17.1	18.3	19.3	20.9	22.5	23.2	25.1	27.0
	4	13.3	14.4	15.5	16.7	18.0	19.4	20.4	22.1	23.7	24.5	26.5	28.5
	8	14.8	16.0	17.2	18.5	20.0	21.4	22.6	24.4	26.3	27.1	29.3	31.5
100	0	14.9	16.1	17.3	18.6	20.1	21.6	22.8	24.6	26.5	27.3	29.6	31.8
	2	15.8	17.1	18.4	19.7	21.3	22.9	24.2	26.1	28.1	29.0	31.3	33.7
	4	16.7	18.0	19.4	20.8	22.5	24.2	25.5	27.6	29.7	30.6	33.1	35.6
	8	18.5	20.0	21.5	23.1	24.9	26.8	28.3	30.6	32.9	33.9	36.7	39.4
120	0	18.7	20.2	21.8	22.1	23.9	25.7	27.4	29.6	31.8	32.8	35.5	38.1
	2	19.9	21.5	23.1	23.4	25.3	27.2	29.0	31.3	33.7	34.8	37.6	40.4
	4	21.0	22.7	24.4	24.7	26.7	28.8	30.6	33.1	35.6	36.8	39.7	42.7
	8	23.2	25.1	27.0	27.4	29.6	31.8	33.9	36.7	39.4	40.7	44.0	47.3
140	0	22.7	24.6	26.4	27.1	29.3	31.5	32.0	34.6	37.1	36.6	39.6	42.5
	2	24.1	26.1	28.0	28.8	31.1	33.4	33.9	36.6	39.4	38.8	41.9	45.1
	4	25.5	27.5	29.6	30.4	32.9	35.3	35.8	38.7	41.6	41.0	44.3	47.6
	8	28.2	30.5	32.8	33.6	36.4	39.1	39.6	42.8	46.1	45.4	49.1	52.7
160	0	26.8	28.9	31.1	32.2	34.8	37.4	38.3	41.5	44.6	44.3	47.8	51.4
	2	28.4	30.7	33.0	34.1	36.9	39.7	40.7	43.9	47.2	46.9	50.7	54.5
	4	30.0	32.4	34.8	36.1	39.0	41.9	43.0	46.4	49.9	49.6	53.6	57.6
	8	33.2	35.9	38.6	39.9	43.2	46.4	47.6	51.4	55.3	54.9	59.3	63.8

CS300_Ref_Brake_Energy_MET_20180112

NOTE

- Wind Correction: Enter table with the brakes-on speed minus 0.5 times the headwind or plus 2 times the tailwind.
- Slope Correction: Decrease brake energy by 3% for each percent of upslope. Increase brake energy by 3% for each percent of downslope.
- Ground speed can be used for brakes-on speed by entering the table at sea level, 15°C.

Reference brake energy <Metric>
Figure 06–05–01–2

(2) Brake cooling time

To determine the brake cooling times select the appropriate table based on thrust reverser use during the last braking event. Enter the table with the value determined for reference brake energy and the braking level applied during the last braking event (refer to Figure 06–05–01–4 <Metric> to Figure 06–05–01–5 <Metric>).

Two specific zones are identified in the tables. If the values are in these zones, these procedures must be done:

- Caution zone (shaded cells): The wheel fuse plugs can melt because of cumulative braking energy absorbed during taxi after a rejected takeoff event. A tire pressure check must be done after 40 minutes.
- Fuse plug melt zone: Clear runway immediately. Unless required, do not set the parking brake. Do not approach the gear or try to taxi. A tire pressure check must be done after 40 minutes.

Example: <Metric>

Conditions:

- Reference brake energy (from step (1)) = 27.6 mfp
- Autobrake level = Medium
- No thrust reversers

Use the Example – Brake cooling table (refer to Figure 06–05–01–3). If the reference brake energy is not given in the table, use the values in the adjacent line (i.e. higher brake kinetic energy per brake).

For rejected takeoff below minimum energy, assume the minimum energy (10 mfp).

Result:

- Cooling time = 62 minutes

COOLING TIME - MIN				
ONE OR NO THRUST REVERSER ALL RUNWAYS CONDITIONS				
REFERENCE BRAKE ENERGY (MFP PER BRAKE)	REJECTED TAKEOFF	LANDING		
	MANUAL BRAKING / AUTOBRAKE RTO	MANUAL BRAKING / AUTOBRAKE HIGH	AUTOBRAKE MEDIUM	AUTOBRAKE LOW
10	30	No special procedure required - Dispatch allowed without further time delay		
12	36			
14	41	30		
16	46	36	31	28
18	51	42	37	33
20	56	47	42	39
22	61	53	47	44
24	66	58	53	48
26	70	63	57	53
28	75	68	62	58
30	79	73	67	62
32	83	78	71	67
34	Fuse Plug Melt Zone	82	76	71
36		87	80	75
38			84	79
40				83
42 AND ABOVE				

Example – Cooling time <Metric>
Figure 06–05–01–3

COOLING TIME - MIN				
ONE OR NO THRUST REVERSER ALL RUNWAYS CONDITIONS				
REFERENCE BRAKE ENERGY (MFP PER BRAKE)	REJECTED TAKEOFF	LANDING		
	MANUAL BRAKING / AUTOBRAKE RTO	MANUAL BRAKING / AUTOBRAKE HIGH	AUTOBRAKE MEDIUM	AUTOBRAKE LOW
10	30	No special procedure required - Dispatch allowed without further time delay		
12	36			
14	41	30		
16	46	36	31	28
18	51	42	37	33
20	56	47	42	39
22	61	53	47	44
24	66	58	53	48
26	70	63	57	53
28	75	68	62	58
30	79	73	67	62
32	83	78	71	67
34	Fuse Plug Melt Zone	82	76	71
36		87	80	75
38			84	79
40				83
42 AND ABOVE				

CS300_Brake_Cooling_Time_0REV_MET_20180115

NOTE

- Caution zone is represented by the grey shaded cells.
- Energy is assumed to be equally distributed over the operating brakes.

Brake cooling time – One or no thrust reverser <Metric>
Figure 06–05–01–4

COOLING TIME - MIN				
TWO THRUST REVERSERS ALL RUNWAYS CONDITIONS				
REFERENCE BRAKE ENERGY (MFP PER BRAKE)	REJECTED TAKEOFF	LANDING		
	MANUAL BRAKING / AUTOBRAKE RTO	MANUAL BRAKING / AUTOBRAKE HIGH	AUTOBRAKE MEDIUM	AUTOBRAKE LOW
10	32	No special procedure required - Dispatch allowed without further time delay		
12	37			
14	42	27		
16	46	33		
18	51	38		
20	56	44	31	
22	60	49	35	
24	64	54	39	
26	68	59	43	
28	72	63	47	30
30	76	68	50	33
32	80	73	54	35
34	84	77	57	38
36	Fuse Plug Melt Zone	81	61	41
38			64	43
40			68	46
42			71	48

CS300_Brake_Cooling_Time_2REV_MET_20180115

NOTE

- Caution zone is represented by the grey shaded cells.
- Energy is assumed to be equally distributed over the operating brakes.

Brake cooling time – Two thrust reversers <Metric>
Figure 06–05–01–5

F. Air-conditioning pack or bleed source inoperative

This section includes all items that lead to operation with a single pack or single bleed source configuration.

If in a single pack or single bleed configuration and wing anti-ice is selected OFF, activate the MMEL calculations and select MMEL effect Single PACK in the MMEL/CDL window of the CAFM.

NOTE

For Landing performance, when this message is on the CAFM:

(*) indicates no impact on calculation

Ignore the message. When the MMEL effect Single PACK is selected, the output data includes the impact of the selected MMEL effect.

If wing anti-ice is selected ON, or as an alternative to using the CAFM If wing anti-ice is selected OFF, apply the corrections that follow to performance data calculated in Chapter 5:

(1) Takeoff performance

Multiply the one engine inoperative takeoff distance and takeoff run, the all engine operating takeoff distance and takeoff run and the accelerate-stop distance calculated by the CAFM by 1.05.

Alternative: Multiply the takeoff distance and takeoff run available (TODA and TORA) and the accelerate-stop distance available by 0.95. In addition, if one or more obstacles are present in the takeoff flight path, multiply the distance of the obstacles from the reference point by a factor of 0.95 (obstacles moved closer to the reference point).

(2) Landing performance

Increase V_{REF} by 10 kts.

This 10-knot increase is required to improve descent capability only.

Additional speed adders for icing conditions, use of autothrottle or wind gust are not required.

Multiply the required landing distance by the factors that follow:

- Dry or wet runway: 1.40
- Contaminated runway: 1.50

Alternative: Multiply the available landing distance by the factors that follow:

- Dry or wet runway: 0.71
- Contaminated runway: 0.67

Consider maximum use of thrust reversers, especially on contaminated runways.

(3) Thrust setting tables

Some thrust setting N1 verification tables in the CAFM/FCOM/QRH are affected by this item. The affected configurations are listed in the table that follows, with instructions on how to obtain the correct reference.

Power setting	Affected configuration	Effect on thrust setting table
Maximum takeoff	Packs on, anti-ice off (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.
	Packs on, cowl anti-ice on (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.

Power setting	Affected configuration	Effect on thrust setting table
	Packs on, wing and cowl anti-ice on (AEO)	Thrust setting table is not valid, use the supplemental TO – Single source or single pack bleed – Pack(s) on, wing and cowl anti-ice on table.
Derated thrust or reduced thrust takeoff	Packs on, anti-ice off (AEO)	Derate: Single pack or single bleed. Use CAFM MMEL effect Single PACK. FLEX prohibited. Use MTO or Derated TO.
	Packs on, cowl anti-ice on (AEO)	Derate: Single pack or single bleed. Use CAFM MMEL effect Single PACK. FLEX prohibited. Use MTO or Derated TO.
	Wing and cowl anti-ice on (AEO)	The configuration is prohibited. Use MTO.
	Packs on, wing and cowl anti-ice on (AEO)	The configuration is prohibited. Use MTO and supplemental tables.
Go-around	Packs on, anti-ice off (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.

Power setting	Affected configuration	Effect on thrust setting table
	Packs on, cowl anti-ice on (AEO)	Single pack or single bleed. Use CAFM MMEL effect Single PACK.
	Packs on, wing and cowl anti-ice on (AEO)	Use the OEI go-around tables.
Maximum climb and derated climb	Packs on, anti-ice off (AEO)	N1 may be up to approximately 1% lower.
	Packs on, cowl anti-ice on (AEO)	Thrust setting table is not valid as a reference.
	Packs on, wing and cowl anti-ice on (AEO)	Thrust setting table is not valid as a reference.

THRUST SETTING– %N1

MAXIMUM TAKEOFF – STATIC to 30 KIAS

TO (SINGLE SOURCE BLEED)

PACK(S) ON, WING AND COWL ANTI–ICE ON

PW1521G–3

OAT		PRESSURE ALTITUDE (Feet)											
(°C)	(°F)	–2000	0	1000	2000	3000	4000	5000	6000	8000	10000	12000	14500
–54	–65	73.7	76.0	76.7	77.3	77.9	78.5	79.1	79.7	80.8	81.8	82.8	83.9
–50	–58	74.4	76.7	77.4	78.0	78.6	79.2	79.8	80.4	81.5	82.5	83.6	84.7
–45	–49	75.2	77.6	78.2	78.9	79.5	80.1	80.7	81.3	82.4	83.4	84.5	85.6
–40	–40	76.0	78.4	79.1	79.7	80.3	81.0	81.6	82.2	83.3	84.3	85.4	86.5
–35	–31	76.8	79.2	79.9	80.6	81.2	81.8	82.4	83.0	84.2	85.2	86.3	87.4
–30	–22	77.6	80.0	80.7	81.4	82.0	82.7	83.3	83.9	85.0	86.1	87.2	88.3
–25	–13	78.4	80.8	81.5	82.2	82.9	83.5	84.1	84.7	85.9	87.0	88.1	89.2
–20	–4	79.2	81.7	82.3	83.0	83.7	84.3	85.0	85.6	86.8	87.8	88.9	89.9
–15	5	79.9	82.4	83.1	83.8	84.5	85.1	85.8	86.4	87.6	88.7	89.8	90.7
–10	14	80.7	83.2	83.9	84.6	85.3	86.0	86.6	87.2	88.4	89.5	90.6	90.9
–5	23	81.5	84.0	84.7	85.4	86.1	86.8	87.4	88.1	89.2	90.3	90.6	89.5
0	32	82.2	84.8	85.5	86.2	86.9	87.6	88.2	88.9	90.0	90.0	89.0	87.8
5	41	83.0	85.6	86.3	87.0	87.7	88.4	89.0	89.4	89.0	88.5	87.4	85.2
10	50	83.7	86.3	87.1	87.8	88.3	88.3	88.3	88.1	87.5	86.8	84.9	82.7

cs300_pw1521G_v05r2_status_takeoff_to_avg_311.ch16

Maximum takeoff – Static to 30 KIAS – Single source/single pack bleed – Packs on, wing and cowl anti–ice on <72211001D>
Figure 06–05–01–6

For all selections of wing anti-ice, apply the corrections that follow to the performance data calculated with the CIFP:

(1) Fuel flow performance

Increase all fuel flows by:

- Anti-ice off: 2% below Mach 0.70 only (Multiply all fuel flows calculated in the CIFP by 1.02).

- Anti-ice on: 5% (Multiply all fuel flows calculated in the CIFP by 1.05).

(2) AEO climb performance

Decrease the cruise altitude limited by the climb ceiling determined by the CIFP by:

- Anti-ice off: No impact.
- Anti-ice on: 8000 feet.

Alternative: Decrease the weight limited by climb ceiling by:

- Anti-ice off: No impact.
- Anti-ice on: 10886 kg (24000 lb).

G. RECIRC AIR selected OFF <10100200C>

This section includes the performance impact of a RECIRC AIR selected OFF with FWD CARGO selected LO HEAT or HI HEAT. For operations with FWD CARGO selected OFF or VENT, the impact of a RECIRC AIR selected OFF is negligible.

The fuel flow performance must be determined by the CIFP with the FWD CARGO selected LO HEAT or HI HEAT and RECIRC AIR selected OFF.

Alternative: Multiply all fuel flows calculated by the CIFP with the FWD CARGO selected LO HEAT or HI HEAT and RECIRC AIR selected on by 1.005.

H. Thrust reverser inoperative

Dispatch with one thrust reverser inoperative:

Select the actual number of operating thrust reversers in the Engine Data pane of each appropriate CAFM calculator.

I. Active Clearance Control (ACC) valve failed in the closed position

For loss of active clearance control function of left and/or right engine:

Multiply all fuel flows calculated by the CIFP by 1.03.

J. Pre-cooler Exit (PCE) doors in open position

(1) Takeoff performance

Multiply the one engine inoperative takeoff distance and takeoff run, the all engines operating takeoff distance and takeoff run and the accelerate-stop distance calculated by the CAFM by 1.05.

Alternative: Multiply the takeoff distance and takeoff run available (TODA and TORA) and the accelerate-stop distance available by 0.95.

(2) Takeoff weight limited by climb requirements

Reduce the takeoff weight limited by climb requirements by 544 kg (1200 lb).

(3) Obstacle clearance

If one or more obstacles are present in the takeoff flight path, multiply the distance of the obstacles from the reference point by a factor of 0.95 (obstacles moved closer to the reference point).

Additionally, reduce the takeoff weight limited by obstacle clearance by 680 kg (1500 lb).

(4) Enroute performance

Reduce the required net ceiling calculated by the CAFM by 800 feet.

Alternative: Decrease the weight limited by net ceiling by 1225 kg (2700 lb).

(5) Fuel flow performance

Multiply all fuel flows calculated with the CIFP by 1.02.

(6) AEO climb performance

Decrease the cruise altitude limited by the climb ceiling or the maximum cruise speed capability determined by the CIFP by 800 feet.

Alternative: Decrease the weight limited by climb ceiling by 2268 kg (5000 lb).

(7) Landing performance

Reduce the landing weight limited by climb requirements by 544 kg (1200 lb).

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

SUPPLEMENT 6 – OPERATIONAL CAPABILITIES

INTRODUCTION

This supplement provides data for operational capabilities and the applicable standards of certain airplane systems.

Compliance with the standards in this supplement does not constitute an operational approval.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

NAVIGATION

A. RVSM

The airplane is certified capable of RVSM operations in accordance with the FAA Advisory Circular 91-85 “Authorization of Aircraft and Operators for Flight in Reduced Vertical Separation Minimum Airspace”, dated 8/21/09 and with the EASA Temporary Guidance Leaflet, TGL No. 6, Revision 1, RVSM.

RVSM operations must not be started or continued unless all required equipment, as specified in the table that follows, is operational.

RVSM – Required equipment list	
Equipment	**Requirement**
Autopilot	Must be operational
Altitude alerting system	Must be operational
Altitude reporting transponder	One (1) must be operational
Air data computers	Two (2) must be operational

B. Traffic alert and Collision Avoidance System (TCAS)

The TCAS installation is in accordance with AMC 20-15.

Pilots are authorized to deviate from their Air Traffic Control (ATC) clearance in order to comply with a TCAS Resolution Advisory (RA) command.

C. Flight Management System (FMS)

The FMS has been demonstrated capable of, and has been shown to meet the requirements for, the following operation:

(1) Oceanic and remote (Class II navigation)

Use of the FMS with GNSS has been found to comply with the requirements of AC 20-138D for GNSS primary means of navigation in oceanic and remote airspace, with two operational GNSS receivers and two operational FMS systems.

(2) North Atlantic High Level Airspace (NAT HLA)

The FMS installation has been demonstrated to meet the Lateral Navigation requirements of the North Atlantic Operations and Airspace Manual, NAT DOC 007.

(3) RNAV-1/PRNAV

The FMS installation has been demonstrated to meet the PRNAV requirements of JAA TGL 10 and AC 90-100A.

(4) RNAV-5/BRNAV

This FMS installation has been demonstrated capable of primary navigation in BRNAV requirements of AC 90-96A and AMC 20-4.

(5) RNP-1

The FMS has been demonstrated capable of primary navigation for RNP-1 operations in accordance with ICAO Doc 9613 PBN Volume II, Part C, Chapter 3 and AC 20-138D Chapter 9, if the FMS is receiving information from a GNSS sensor and operating in GNSS navigation or Precision Approach (PA) mode.

(6) RNP APCH

The FMS has been demonstrated capable of primary navigation for up to RNP APCH 0.3 operations in accordance with ICAO Doc 9613 PBN Volume ll, Part C, Chapter 5, AC 20-138C for FAA RNP instrument approach with Baro-VNAV and AMC 20-27 for RNP APCH with Baro-VNAV and RF legs, if FMS is receiving information from a GNSS sensor and operating in:

- GNSS navigation mode, and
- RNP APPR annunciation is shown at the Final Approach Fix.

(7) RNP-2

The FMS has been demonstrated capable of primary navigation for RNP-2 operations in accordance with ICAO Doc 9613 PBN Volume ll, Part C, Chapter 2 and AC 20-138D Chapter 9, if the FMS is receiving information from a GNSS sensor and operating in GNSS navigation mode.

(8) RNP-4

The FMS has been demonstrated capable of primary navigation for RNP-4 Oceanic and remote area operations in accordance with ICAO Doc 9613 PBN Volume ll, Part C, Chapter 1 and AC 20-138D Chapter 10, if two FMS systems are available and receiving information from two independent GNSS sensors and operating in GNSS navigation mode.

Communication and Surveillance considerations: For RNP-4 operations in oceanic and remote airspace the airplane is equipped to support the ATC communications and surveillance requirements in such airspace.

NOTE

The FMS employs a Spherical Earth model as opposed to WGS-84 or equivalent geodetic model; this is mitigated by the appropriate leg length limitations.

(9) RNP-10 (RNAV 10)

The FMS has been demonstrated capable of primary navigation for RNP-10 Oceanic and remote area operations in accordance with ICAO Doc 9613 PBN Volume II, Part B, Chapter 1, and AC 20-138D Chapter 10, if two FMS systems are available and receiving information from any of the navigation sensors that follow:

- Two GNSS sensors operating in GNSS navigation mode (no time limitation),
- One GNSS operating in GNSS navigation mode and one IRS (no time limitation), or
- Two IRS (subject to a maximum duration of 1.5 hours after loss of GNSS).

(10) RF legs

The FMS has been demonstrated capable of and has been shown to meet the performance criteria for RF legs in accordance with AC 20-138D if the FMS is receiving information from a GNSS sensor and the aircraft uses the flight director or coupled autopilot to operate.

(11) VNAV

The FMS has been demonstrated capable of and has been shown to meet the accuracy requirements of: VFR/IFR en route, terminal and approach VNAV operation in accordance with the criteria of AC 20-138D Chapter 11. VNAV Temperature Compensation meets the requirements of TCCA AC 500.020 FMS Barometric VNAV Temperature Compensation and RTCA DO-236B MASPS RNP for Area Navigation, Appendix H.

Baro-VNAV vertical guidance deviation information is only an aid to help pilots comply with altitude restrictions. When Baro-VNAV vertical guidance is used, the pilot must use the primary barometric altimeter to ensure compliance with all altitude restrictions. These include step-down fix altitude restrictions, particularly during instrument approach operations.

(12) LPV

The FMS has been demonstrated capable of RNAV GNSS approaches to LPV minima in accordance with AC 20-138D and AMC 20-28, if the FMS is receiving information from a GNSS sensor operating in Navigation mode with SBAS available.

LPV approach operations to LPV minima must not be started unless two FMS and two SBAS GNSS sensors are fully operational and shown independently.

D. FM immunity

The VHF NAV radios installed comply with FM immunity requirements per ICAO Annex 10, and:

- ED-22B / DO-196 for VOR receivers

- ED-46B / DO-195 for LOC receivers

SURVEILLANCE

A. Mode S elementary surveillance

The Mode S transponder has been certified to meet the requirements of Elementary Mode S Surveillance as defined by JAA TGL 13.

B. Enhanced mode S surveillance

The Mode S transponder satisfies the data requirements of the ICAO doc 7030/4, Regional Supplementary Procedures for SSR Mode S Enhanced Surveillance

Parameter	Available
Magnetic heading	Yes
Indicated airspeed	Yes
Mach number	Yes
Vertical rate	Yes[1]
Roll angle	Yes
Track angle rate	Yes[2]
True track angle	Yes[2]
Groundspeed	Yes[2]
Selected altitude	Yes
Barometric pressure setting	Yes

[1] The rate of climb/descent is generated from a barometric source (not inertial).

[2] Aircraft must be equipped with at least one functioning FMS.

C. Automatic Dependent Surveillance Broadcast (ADS-B)

The installed ADS-B out system meets the equipment requirements of EASA CS.ACNS.D.ADSB (1090 MHz Extended Squitter ADS-B Out) and FAA AC 20-165A.

ADS-B operations must not be started or continued if any of these caution messages are shown:

- ADS-B 1 OUT FAIL
- ADS-B 2 OUT FAIL
- ADS-B FAIL
- XPDR 1 FAIL
- XPDR 2 FAIL

Compliance with the standards in this supplement does not constitute an operational approval to conduct ADS-B operations.

COMMUNICATIONS

A. Aircraft Communications Addressing and Reporting System (ACARS)

The ACARS is approved for the transmission and receipt of messages that will not create an unsafe condition if the message is improperly received. An unsafe condition can exist if:

- the message or part of the message is delayed or not received,
- the message is delivered to the wrong recipient, or
- the message content is corrupted.

Crew actions based on messages such as pre–departure clearance, digital automatic terminal information service, weight and balance, takeoff data (speeds, trim settings, runway distances), are prohibited, unless approved operational procedures are used to verify that the message is received by the intended recipient, that the message is valid and that the content is not corrupted.

B. Data link <23249001C>

(1) ATN B1 CPDLC (Controller-to-Pilot Data Link Communication)

The aircraft data link system has been demonstrated to comply with the applicable safety, performance and interoperability requirements for continental ATN B1 Data Link using VDL Mode-2.

The aircraft ATC Data Link system does support multi-frequency operation as defined in ARINC Spec 631-5.

ATN B1 CPDLC installation is limited to providing a supplementary means of communication; voice must remain the primary means of communication. Use of ATN B1 CPDLC should be avoided during periods of high pilot workload and critical phases of flight where pilot-ATC communications are time critical.

C. Iridium Satellite Communication (SATCOM) system <23150004C>

The Iridium SATCOM system is capable of:

- Aircraft Communications Addressing and Reporting System (ACARS) over Iridium SATCOM.

The Iridium SATCOM system installation does not support voice communication.

D. AFIRS™ Iridium Satellite Communication (SATCOM) system <23159006C>

The AFIRS™ Iridium SATCOM system is capable of:

- Aircraft Communications Addressing and Reporting System (ACARS) over Iridium SATCOM.
- Long range voice communications in accordance with AC 20-150B.

Before the start of operations that require the use of the AFIRS™ Iridium SATCOM system, it is recommended to place a test call to ensure the system is operational.

SUPPLEMENT 7 – RNP – AUTHORIZATION REQUIRED OPERATIONS

List of figures

INTRODUCTION

This supplement contains information and procedures to conduct Required Navigation Performance Authorization Required (RNP AR) operations. The airplane is capable of dual or single engine RNP AR approaches.

The airplane has been shown to meet the airworthiness requirements for Required Navigation Performance Authorization Required approach operations contained in EASA AMC 20-26; FAA AC 20-138D, Appendix 2 and ICAO Doc 9613 PBN Volume II, Part C, Chapter 6.

Compliance with the standards in this supplement does not constitute operational approval to conduct Authorization Required RNP approaches.

This supplement complements data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements. In case of conflict between this data and the AFM, the AFM and its supplements take precedence.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Operational limitations

RNP AR approaches are approved for approaches greater than or equal to RNP 0.3 and missed approaches of 1.0 nm accuracy.

RNP AR approaches are approved with autopilot engaged or flight director only.

RNP AR approaches must be flown in accordance with approach procedures that are retrieved from a current FMS navigation database.

MAN SPD must be set and used at or before the first waypoint of the approach or approach transition.

RNP AR APPR must be shown on PFD or HUD at first waypoint of the approach or approach transition and laterally within 1 dot (1/2 RNP) of published path.

Flaps must be set to FLAP 4 or FLAP 5 at or before the Final Approach Fix (FAF).

NOTE

Some approach charts use the term Final Approach Point (FAP) or Final Approach Waypoint (FAWP) instead of Final Approach Fix (FAF). The FAF is shown on the Vertical Situation Display (VSD).

B. System limitations

The RNP AR approach starts after the first waypoint of the approach or approach transition. It is indicated when the RNP AR APPR message replaces the RNP AR ARM message on the PFD.

A RNP AR approach must not be started unless all required equipment, as specified in the table that follows, is operational.

RNP AR approach – Operational equipment [1]	
Equipment	**Requirement**
PFCC	Two (2) must be operational
Display Unit (DU)	Four (4) must be operational
FD	Two (2) must be operational
FMS	Two (2) must be operational
GNSS	Two (2) GNSS sensors must be operational
IRS	Two (2) must be operational
ADS (smart probes)	Three (3) must be operational
TAWS	Must be operational and displayed
Radio altimeter	Two (2) must be operational
TOGA switches	One (1) must be operational
Navigation database	One (1) must be valid

[1] The approach can be continued if failure occurs during the approach unless otherwise specified in the non-normal procedures.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

The normal procedures that follow contain guidance to be used as a reference for Operators to develop their own RNP AR standard operating procedures.

A. Maximum airspeed by approach segment

RNP AR approach procedure designs may use airspeed restrictions unique to the procedure for the approach or missed approach segment shown on the Instrument Approach Procedure, to limit the turn radius regardless of aircraft category.

RNP AR approach operations must be done at or below published maximum speed limits under all operating conditions and configurations.

The airspeed values in these tables are excerpts from TCCA AC 700-024 Issue 2, FAA (TERPS) AC 90-101A Change 1, and EASA (PANS Ops) AMC 20-26 and must be used in conjunction with these regulatory documents. In case of discrepancy, the regulatory documents take precedence.

Maximum airspeed by approach segment <TC>

Segment	Indicated airspeed (KIAS) by aircraft category	
	CAT C	CAT D
Initial and intermediate (IAF to FAF)	250	250
Final (FAF to DA)	140	165
Missed approach (DA to MAHP)	240	265

B. Preflight

(1) Check the required RNP AR equipment to be used for navigation accuracy versus MEL.

B. Preflight (Cont'd)

(2) Check predictive RAIM with dispatcher ground tool.

– COMPLETE –

C. Flight deck preparation

(1) Check NAV database validity date (FMS).

(2) Check that TAWS is operational.

(3) Deselect NAVAIDs according to NOTAMs.

– COMPLETE –

D. Before approach

(1) Load the approach from the FMS database and compare to the approach chart data.

(a) NAVAIDS facilities must be excluded from the system to comply with published NOTAMs.

(b) Do not modify the lateral track. Altitude and airspeed must not be changed on the final leg.

(2) Set TEMPCOMP as required.

(3) Set altimeter to local QNH.

RNP AR approaches are not authorized for remote altimeter settings.

(4) Confirm that both altimeters are within 30 m (100 ft).

(5) TAWS TERRAIN must be shown.

D. Before approach (Cont'd)

(6) The RNP AR ARM message appears when within 31 nm of the first waypoint of the approach or transition.

– COMPLETE –

E. Approach briefing

The standard briefing should also include RNP AR segment speed restrictions and contingency plans for missed approach from any point on the approach. These can include:

- Check the turn radius value of each RF leg, TF leg fixes, RF and TF leg maximum speeds, and RNP value,
- Equipment failure (includes GNSS),
- Loss of VNAV,
- Initiation of a go-around for any failure that affects RNP AR operations,
- Evaluation of climb to a minimum safe altitude or higher on a go-around,
- Hazards due to terrain, wind variations, windshear in combination with terrain,
- Show terrain on MFW for terrain clearance, in case of loss of navigation,
- Planned recovery maneuver from a failure during a RF leg,
- Review of headings and turn directions from the approach chart,
- Use of the lateral deviation scale below the PFD on the non-failed side (if applicable), and/or
- Transfer of flight guidance to the non-affected side.

F. Approach

At the first waypoint of the approach or approach transition:

(1) Speed mode ..... MAN

F. Approach (Cont'd)

(2) Confirm RNP AR APPR flag shown on PFD or HUD when laterally within 1 dot (1/2 RNP) of published path.

NOTE

1. Flight plan modification (direct to) cancels the RNP AR APPR. It is reactivated at the first unmodified waypoint.
2. If an underspeed (USPD) condition occurs after RNP AR APPR is annunciated, VGP will no longer arm. To continue the approach flight crews must reselect VNAV and deselect and reselect APPR.

At or before FAF:

(3) FLAP ..... 4 or 5

– COMPLETE –

G. During the approach

(1) Lateral navigation

Crews must monitor PFD lateral indications and confirm RNP transitions and values.

Lateral deviation must stay within 1 dot (1/2 RNP) of the published path. If the lateral deviation becomes 2 dots, the missed approach procedure must be completed.

Do not accept direct to:

- A FAF or a fix after the FAF, or
- A fix immediately before a RF leg.

(2) Vertical navigation

Crews must monitor vertical indications to comply with altitude restrictions for each leg.

To ensure continuous descent (VPATH active), flight crews must select minimums and monitor the vertical path and altitude constraints during the approach. When VGP is armed or active as the vertical mode, missed approach altitude must be selected. After the FAF, if the vertical deviation reaches 1 dot, the missed approach procedure must be completed.

(3) Speed management

It is possible that during RF legs, in turbulent environmental conditions, the $V_{MIN\ TRIM}$ speed increases while the aircraft is in a turn and the flaps are being extended. Crews must closely monitor speed to avoid underspeed conditions.

H. RNP AR – Pilot Monitoring (PM) callouts

The table that follows shows the PM callouts for specific conditions during a RNP AR approach:

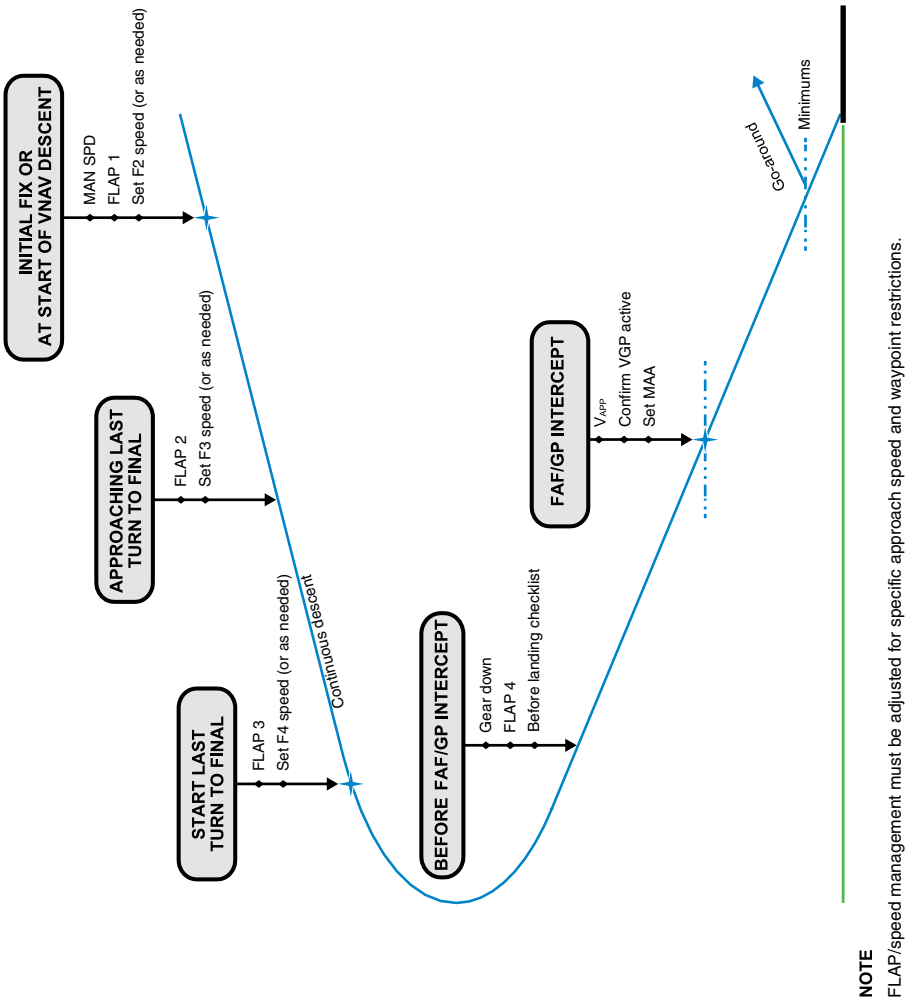
Callouts – RNP AR approach	
Condition	**PM**
When 1 dot or XTK 1/2 RNP, whichever comes first	Lateral deviation
When 1/2 dot	Vertical deviation
When lateral deviation reaches 2 dots or XTK 1 RNP, whichever comes first	Go-around
When vertical deviation reaches 1 dot	Go-around

I. RNP AR – Mode selections, callouts and profile

Mode selections and callouts – Approaches with vertical guidance – RNP AR approach			
Condition	**Mode selection**	**PF**	**PM**
RNP AR ARM active (PFD or HUD)		RNP AR armed	

Mode selections and callouts – Approaches with vertical guidance – RNP AR approach			
Condition	**Mode selection**	**PF**	**PM**
			Check
Cleared for approach	Select APPR	Approach	
			Check
FMS course captured		APPR FMS 1(2)	
			Check
RNP AR APPR active (PFD or HUD)		RNP AR approach	
			Check
Speed	Select MAN SPD	MAN speed	
			Check
Approaching path			Path alive
		Check	
VPATH captured		VPATH	
			Check
FLAP configuration as required		FLAP #	
When ready for deceleration to landing configuration and speed		Gear down, FLAP #	
		Before landing checklist	
			Before landing checklist complete

Mode selections and callouts – Approaches with vertical guidance – RNP AR approach			
Condition	**Mode selection**	**PF**	**PM**
VGP captured		VGP Missed approach altitude __ set	
			Check
100 feet above minimums			Approaching minimums
		Check	
At minimums			Minimums
		Landing (go-around)	
Decelerating through 80 KIAS			80 knots



RNP AR approach profile
Figure 06–07–01–1

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable, except when modified as follows:

The non-normal procedures that follow contain guidance to be used as a reference for Operators to develop their own RNP AR standard operating procedures.

NO APPR (amber PFD or HUD flag)

(1) Discontinue approach or continue if the required runway visual references are visible and identifiable and the approach and landing can safely be completed.

NOTE

During the missed approach, continue to follow the lateral track and speed constraints during the climb to the minimum safe altitude, to the MAP, unless clear of obstacles or otherwise specified by ATC.

RNP AR MA will be shown when sequencing the MAP.

– COMPLETE –

Lateral deviation exceeds 1xRNP

(1) Discontinue approach or continue if the required runway visual references are visible and identifiable and the approach and landing can safely be completed.

Lateral deviation exceeds 1xRNP (Cont'd)

NOTE

During the missed approach, continue to follow the lateral track and speed constraints during the climb to the minimum safe altitude, to the MAP, unless clear of obstacles or otherwise specified by ATC.

RNP AR MA will be shown when sequencing the MAP.

– COMPLETE –

Vertical deviation exceeds 75 feet after the FAF

(1) Discontinue approach or continue if the required runway visual references are visible and identifiable and the approach and landing can safely be completed.

NOTE

During the missed approach, continue to follow the lateral track and speed constraints during the climb to the minimum safe altitude, to the MAP, unless clear of obstacles or otherwise specified by ATC.

RNP AR MA will be shown when sequencing the MAP.

– COMPLETE –

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable except when modified as follows:

The use of the supplements that follow in conjunction with Supplement 7 is prohibited:

- Supplement 8 – Category II and Category III, autoland operations

CONTINGENCY PROCEDURES DURING RNP AR APPROACH

A. Approach

Approach can be continued if:

- GNSS REVERTED on one (1) side (white HSI message).
- AP failure for RNP ≥ 0.3.

B. Management of degraded navigation

Unless required runway visual references are visible and identifiable, discontinue the approach and initiate a go-around when:

- Any indication of loss of navigation or FMS capability on the EICAS, PFD, and/or HSI.
- A flight instrument failure occurs which affects the ability to safely complete the approach.
- The navigation instruments show significant disagreement.
- Vertical/lateral tracking tolerances are exceeded:
  - Maximum lateral deviation: 2 dots, flashing amber message (1x RNP) on the CDI and amber XTK value shown on the FMS, ROUTE – LEGS tab.
  - Maximum vertical deviation past the FAF to DA, amber message (±75 ft).

NOTE

For RF legs on the approach or missed approach segments, ensure maximum IAS for each segment is not exceeded.

C. Management of loss of navigation

Due to reduced containment areas, efficient crew monitoring and coordination are important to ensure lateral and vertical flight path accuracy during all RNP AR approach and missed approach segments.

It is not possible to include all situations that can cause a loss of aircraft navigation capability. Therefore, if a loss of navigation capability occurs, unless required runway visual references are visible and identifiable to safely maneuver the airplane, it is recommended that flight crews complete the escape maneuver procedure that follows to ensure adequate separation from obstacles or terrain.

D. Escape maneuver procedure (with or without a TAWS ground proximity alert)

(1) Disengage autopilot.

(2) Immediately initiate a pull-up and advance thrust levers to maximum thrust.

(3) Ensure flight spoilers are retracted.

(4) Climb at the best climb angle, respecting the stick shaker.

NOTE

Maintaining sidestick at the aft soft stop establishes the best climb angle.

(5) Continue escape maneuver until the airplane is safely above highest terrain or MSA.

(6) Adjust flight path and reconfigure as required.

D. Escape maneuver procedure (with or without a TAWS ground proximity alert) (Cont'd)

It is important during the escape maneuver that the PM closely monitor the flight instruments, ensure thrust setting and call any variations in airspeed, rate of climb, pitch, thrust and altitude.

– COMPLETE –

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SUPPLEMENT 8 – CATEGORY II AND CATEGORY III, AUTOLAND OPERATIONS

INTRODUCTION

This supplement contains the operational information necessary to conduct Category II, Category III and autoland approaches.

The airplane has been shown to meet the airworthiness requirements for Category II and III operations contained in Appendix 3 of AC 120-29A, AC 120-28D and Subpart 1, 2 and 3 of CS-AWO Book 1. LAND 2 fail passive automatic landing and rollout meets the requirements of CS-AWO 321(b)(2). LAND 3 fail operational automatic landing and rollout meets the requirements of CS-AWO 321(d).

Transport Canada operators must refer to the operational requirements of Transport Canada, TP 1490, Manual of All Weather Operations (Categories II and III).

(1) Category II

The airplane is capable of dual or single engine autopilot-coupled Category II approaches. The airplane is capable of dual or single engine flight director Category II approaches flown on the HUD.

(2) Category III or autoland

The airplane is capable of dual-engine autopilot-coupled approaches for Category III or autolandings.

LAND 2 is a fail passive autoland system and LAND 3 is a fail operational autoland system.

(3) Autoland

Autolandings have been demonstrated on:

- Type or class II and III (Category II or III) ILSs, and
- Dry and wet runways.

Type or class I ILS (Category I) may not be suitable for autoland operations. The operator must obtain approval for autoland on type or class I ILS beams if the localizer and glideslope meet the performance requirements of type or class II or III (Category II or III). These operations can be conducted in weather conditions suitable for training or recording of operational demonstration.

Autoland operations have not been demonstrated at greater than maximum landing weight. An automatic approach can be attempted, however the autopilot must be disengaged by 80 feet AGL and a manual landing must be done.

Compliance with the standards in this supplement does not constitute operational approval to conduct Category II, Category III, or autoland operations.

This supplement complements data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements. In case of conflict between this data and the AFM, the AFM and its supplements take precedence.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. System limitations

(1) Operational limitations

Operational limitations		
System	**APPR 2 (no autoland)**	**LAND 2 or LAND 3 (autoland)**
AURAL WARN INHIB is selected on	Operation is prohibited	
Engines	Single or dual	Dual
Approach glideslope angle	2.5 to 3.5	2.5 to 3.25
Runway slope	2.0% upslope 2.0% downslope	0.8% upslope 1.0% downslope
Runway width	–	45 m (150 feet)
Autopilot	On or	On

Operational limitations		
System	**APPR 2 (no autoland)**	**LAND 2 or LAND 3 (autoland)**
	Off (HUD flight director must be used)	
Autothrottle	On or Off	On
Autopilot minimum height	Applicable	Not applicable

(2) Alert height

The alert height is 200 feet AGL.

Alert height is the height above a runway for Category III fail operational systems at which the approach must be discontinued if a required aircraft system or ground system has failed at an altitude above the alert height.

(3) **RUDDER FAIL** warning message

If a **RUDDER FAIL** warning message is shown, the approach must be discontinued with a go-around for any LAND 2 or LAND 3 operations.

B. Operational requirements

An ILS approach to Category II and Category III minima or autoland must not be started unless all required equipment, as specified in the table that follows, is operational. Some equipment failures during the approach will cause the system to automatically down-mode to a different ASA (higher approach minima can apply) or to a NO AUTOLAND condition.

Category II and Category III (fail passive), autoland operations – Operational equipment		
Equipment	**Category II – APPR 2**	**Category III (fail passive), autoland – LAND 2**
PFCC normal mode	One (1) must be operational	Two (2) must be operational
PFD	Two (2) must be operational	Two (2) must be operational
FD	Two (2) must be operational	Two (2) must be operational
Autopilot	One (1) must be operational unless HUD flight director guidance is used [1]	Two (2) must be operational
HUD	One (1) HUD using flight director guidance must be operational unless autopilot is used [1]	–
Autothrottle	–	One (1) must be operational [1]
TOGA switches	One (1) must be operational [1]	One (1) must be operational [1]
IRS	Two (2) must be operational	Three (3) must be operational

Category II and Category III (fail passive), autoland operations – Operational equipment		
Equipment	**Category II – APPR 2**	**Category III (fail passive), autoland – LAND 2**
ADS (smart probes)	Two (2) must be operational	Four (4) must be operational
Radio altimeter	One (1) must be operational	Two (2) must be operational
VHF NAV	Two (2) must be operational	Two (2) must be operational
Nosewheel steering	–	Must be operational [1]
Multi-Function Spoilers (MFS)	–	Four (4) pairs must be operational
Hydraulics	All systems must be operational	All systems must be operational
Electrics	Two (2) generators must be on [2]	Two (2) generators must be on [2]
Windshield heat (operational)	Two (2) must be operational [1]	Two (2) must be operational [1]
Windshield wiper (operational)	Two (2) must be operational [1]	Two (2) must be operational [1]

[1] Failure will not cause a system down-mode.
[2] Failure of one (1) will not cause a system down-mode, the approach can be continued with one (1) operational.

C. Wind components

The wind components measured at 10 m (33 ft) tower height are:

Maximum wind components	APPR 2		LAND 2 or LAND 3	
	HUD flight director	Autopilot coupled	Weather: CAT II or III	Weather: CAT I or better
Headwind	21 knots Demonstrated	25 knots Limit	25 knots Limit	29 knots Demonstrated
Crosswind	18 knots Demonstrated	15 knots Limit	15 knots Limit	24 knots Demonstrated
Tailwind	10 knots Demonstrated	10 knots Limit	10 knots Limit	10 knots Limit

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

A. Autopilot, autothrottle and autobrake

Autopilot and autothrottle must be used for all autoland approaches.

The use of autobrake is recommended for all autoland approaches.

Since the autothrottle must be used, the approach speed must be increased by 5 KIAS (V_{REF} + 5 KIAS). A maximum of 5 KIAS can then be used for the wind gust correction (½ of the gust), for a total permitted correction of 10 KIAS (V_{REF} + 10 KIAS).

B. Category II weather minima

ILS CAT II approaches can be flown in APPR 2, LAND 2 or LAND 3.

Autolands, LAND 2, or LAND 3 can be conducted when the localizer and glideslope are operating normally without restrictions.

C. Category III weather minima

CAT III (fail passive) approaches can be flown in LAND 2 or LAND 3.

D. Low visibility approaches

For recommendations on Low visibility operations, refer to Chapter 8 – Operational guidance – Low visibility operations.

(1) Autoland capabilities

Autoland capabilities					
Approach capability	**Autoland available**	**Two engine capable**	**Single engine capable**	**Autopilot required**	**Autothrottle required**
LAND 2 or LAND 3	Yes	Yes	No	Yes	Yes
APPR 2	No	Yes	Yes	Yes [1] or No [2]	No [3]

[1] If HUD is not used.
[2] If HUD is used (flight director guidance required).
[3] Use of autothrottle is recommended.

(2) Category II and Category III, autoland – Callouts and FMA checks

The ILS approach standard callouts are applicable to all Category II and Category III, autoland approaches. These callouts and FMA confirmations by the crew must also be included:

Callouts and FMA confirmations – Low visibility approaches		
Condition	**PF**	**PM**
After aircraft configuration is set for landing: First indication of ASA mode (Between 1500 feet to 800 feet AAE)		APPR 2 or LAND 2 or LAND 3
	Check	
At 1000 feet AAE		1000 feet
	No down-grade	

Callouts and FMA confirmations – Low visibility approaches		
Condition	**PF**	**PM**
ALIGN active	Sees ALIGN active	ALIGN or call No ALIGN
	If no ALIGN: Go-around	
100 feet above decision height (For Category II and Category III fail passive)		Approaching minimums
	Check	
At decision height [1] (For Category II and Category III fail passive)		Minimums
	Landing or Go-around	
FLARE active	Sees FLARE active	FLARE or call No FLARE
	If no FLARE: Go-around	
RETARD active	Sees RETARD active	RETARD or call No RETARD
	If no RETARD: Check [2]	
At nose gear touchdown	ROLLOUT active	ROLLOUT or call No ROLL-OUT
	If no ROLLOUT:	

Callouts and FMA confirmations – Low visibility approaches		
Condition	**PF**	**PM**
	I have control, autopilot off	
Decelerating through 80 KIAS		80 knots
At a safe taxi speed, when autopilot is manually disengaged	Autopilot off	

[1] For Category II approaches, the autopilot can be disengaged and a manual landing completed.
[2] PF reduces thrust to IDLE below 20 feet AGL.

(3) Autoland operations – Additional guidance

ILS protected areas are not assured for any ILS where low visibility procedures are not activated by the airport authority for any type or class of ILS.

Autoland performance cannot be guaranteed if the aircraft or vehicles are in the ILS critical or sensitive area. Interference or loss of ground-based signals is also possible on Category I ILSs or when Category II or Category III procedures are in progress or not authorized.

The longitudinal separation that is usually available in low visibility conditions between takeoff and landing may not be available during non-instrument conditions. Other aircraft taking off or landing can also have an effect on the localizer and glideslope signals.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable, except when modified as follows:

- **RUDDER FAIL** warning message:

  An autoland approach must not be started or the approach must be discontinued with a go-around for any LAND 2 and LAND 3 operations.

NOTE

It is acceptable to retract the slats/flaps to a go-around FLAP setting but not beyond :

- If the slats/flaps are in FLAP 4, then the go-around setting is FLAP 2.
- If the slats/flaps are in FLAP 5, then the go-around setting is FLAP 4.

Fuel consumption will be increased by a factor of:

- 1.5 with slats/flaps extended at FLAP 2.
- 2.1 with slats/flaps extended at FLAP 4.

FMS 2 FAIL (Caution) – Category III or autoland

(1) NAV SRC .....FMS 1

(2) NAV 1, NAV 2, NAV 3 ..... Manually tune and set course.

NOTE

Manual tuning all of the navigation sources and setting the inbound courses is required for LAND 2 or LAND 3 operations.

– COMPLETE –

NOSE STEER FAIL (Caution) – Category III or autoland

(1) Above alert height or 200 feet AGL, whichever is applicable:

➔ **Yes –** Go to (2)

➔ **No –** Go to (4)

NOSE STEER FAIL (Caution) – Category III or autoland (Cont'd)

(2) Above alert height or 200 feet AGL, whichever is applicable:

(3) Discontinue approach or disengage autopilot and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

(4) Below alert height or 200 feet AGL, whichever is applicable:

(5) Continue approach.

NOTE

Autolandings with a nose steering failure below alert height have been satisfactorily demonstrated.

– COMPLETE –

NO APPR2 (red PFD flag) – Category II

(1) Discontinue approach or disengage autopilot (if engaged) and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

NO AUTOLAND (red PFD flag) – Category III or autoland

(1) Discontinue approach or disengage autopilot and continue if the required runway visual references are visible and identifiable.

NOTE

Maximum altitude loss during all engine go-around is approximately 50 feet. Go-arounds below this altitude can result in touchdown.

– COMPLETE –

NO APPR2 (amber PFD flag) – Category II

(1) Discontinue approach or continue to available Category I procedures.

– COMPLETE –

NO AUTOLAND (amber PFD flag) – Category III or autoland

(1) Discontinue approach or continue to available Category (as shown in ASA) procedures or disengage autopilot and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

NO LAND3 (amber PFD flag) – Category III or autoland

NOTE

NO LAND3 can momentarily be shown during autoland approaches in non-CAT III weather conditions due to interference from other aircraft taking off or landing.

(1) Discontinue approach or continue to available Category (as shown in ASA) procedures or disengage autopilot and continue if the required runway visual references are visible and identifiable.

– COMPLETE –

Autopilot disengaged during rollout – Category III or autoland

(1) Use runway lights and markings as visual references for directional guidance.

Autopilot disengaged during rollout – Category III or autoland (Cont'd)

NOTE

The autopilot ROLLOUT command bar is not a Flight Director Guidance but it may remain on the PFD (or HUD, if installed) during rollout for situational awareness regarding Autopilot yaw input. It will show directional information toward the localizer centerline (with the localizer deviation scale).

– COMPLETE –

Autothrottle failure – Category III or autoland

(1) Above alert height or 200 feet AGL, whichever is applicable:

- **Yes –** Go to (2)
- **No –** Go to (9)

(2) Above alert height or 200 feet AGL, whichever is applicable:

(3) Autothrottle ..... Select on

(4) Autothrottle engages:

- **Yes –** Go to (5)
- **No –** Go to (7)

(5) Autothrottle engages:

(6) Continue approach.

– COMPLETE –

(7) Autothrottle does not engage:

(8) Discontinue approach or continue to available Category I or Category II procedures and disengage autopilot before landing.

– COMPLETE –

Autothrottle failure – Category III or autoland (Cont'd)

(9) Below alert height or 200 feet AGL, whichever is applicable:

(10) Thrust levers .....IDLE below 20 feet AGL or RETARD active.

– COMPLETE –

Engine failure – Category III or autoland

(1) Above alert height or 200 feet AGL, whichever is applicable:

- **Yes –** Go to (2)
- **No –** Go to (4)

(2) Above alert height or 200 feet AGL, whichever is applicable:

(3) Discontinue approach or continue to available Category I or II procedures.

NOTE

Maximum altitude loss during single engine go-around is approximately 100 feet. Go-arounds below this altitude can result in touchdown.

– COMPLETE –

(4) Below alert height or 200 feet AGL, whichever is applicable:

(5) Continue approach.

NOTE

Autolandings with an engine failure below alert height have been satisfactorily demonstrated.

– COMPLETE –

PERFORMANCE – CATEGORY II

The performance data in Chapter 5 are applicable, except when modified as follows:

A. Landing weight limited by climb requirements

The maximum allowable landing weight limited by climb requirements for Category II operations is determined in the CAFM Approach and Landing Performance module, using the Landing Weight Limited by Climb Requirements calculation scenario.

To add the Category II climb requirements to the CAFM calculator, select CAT II in the landing Category field of the Aircraft Data pane.

PERFORMANCE – CATEGORY III AND AUTOLAND

The performance data in Chapter 5 are applicable, except when modified as follows:

A. Landing weight limited by climb requirements

The maximum allowable landing weight limited by climb requirements for Category III operations is determined in the CAFM Approach and Landing Performance module, using the Landing Weight Limited by Climb Requirements calculation scenario.

To add the Category III climb requirements to the CAFM calculator, select CAT III in the landing Category field of the Aircraft Data pane.

B. Landing distance and speed

(1) Dispatch

The dispatch landing distance calculation for CAT III operation is activated when Autoland is selected to On in the Aircraft Systems pane of the Landing Distance and Speed calculation type in the CAFM.

The CAFM provides the Actual Landing Distance (ALD) and Factored Landing Distance (FLD). The FLD must be used to determine the maximum allowable landing weight at dispatch.

The ALD and the FLD are calculated for the specified temperature, runway slope and V_{REF} increment.

When Autoland is selected to On, Autothrottle must also be selected to On. Then, the V_{REF} increment for autothrottle is automatically added as shown in the Runway Data pane.

The CAFM allows the selection of one autobrake level as well as the full braking configuration (autobrake off):

- High

NOTE

Selection of autobrake levels medium and low are only available for operational calculation in the Landing Distance and Speed calculation module of the CAFM.

The actual ILS glideslope angle and the actual ILS threshold height can be entered in the Aircraft System pane.

The factored landing distance output from this supplement must be compared with the corresponding factored landing distance output from Chapter 5 (for dry or wet runways, as applicable) and the longer of the two values must be used.

(2) Operational

The Operational Landing Distance (OLD) calculation for CAT III operation is activated when Autoland is selected to On in the Aircraft Systems pane of the Landing Distance and Speed calculation type in the CAFM.

The OLD is calculated for the specified temperature, runway slope and V_{REF} increment.

The OLD output can be increased by a distance factor in the CAFM (for example, a landing distance factor of 1.15 that may be applicable from an operational standpoint).

The CAFM allows the selection of three autobrake levels as well as the full braking configuration (autobrake off):

- High

- Medium
- Low

The actual ILS glideslope angle and the actual ILS threshold height can be entered in the Aircraft System pane.

SUPPLEMENTS

A. Category II

The supplementary data in Chapter 6 are applicable.

B. Category III and autoland <90000003C>

The supplementary data in Chapter 6 are applicable except when modified as follows:

The use of the supplements that follow in conjunction with Supplement 8 is prohibited:

- Supplement 20 – Alternate forward center of gravity <13000701C>

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SUPPLEMENT 12 – DERATED THRUST AND REDUCED THRUST TAKEOFF

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INTRODUCTION

This supplement contains the derated thrust and reduced thrust (also known as flex thrust) takeoff data and procedures.

This supplement provides alternate procedures to set the engine takeoff thrust level at less than takeoff (TO) thrust to prolong engine life. This can be done as follows:

- Set a derated takeoff thrust (e.g. TO–1, TO–2, TO–3) with APR ARMED or DISARMED,
- Set a reduced thrust takeoff (FLEX), or
- Set a combination of derate or flex.

Flex uses the assumed temperature method.

Derated thrust and reduced thrust takeoff N1 settings are given in the Thrust Setting module of the CAFM as a function of pressure altitudes, assumed temperature (required only for FLEX) and ambient temperatures, for various engine bleed configurations and APR status for OEI operation (APR ARMED and DISARMED).

The derated thrust and reduced thrust takeoff N1 setting is automatically calculated by the FADEC based on manual entry in the PERF – DEP TAB of the FMS, where the derated thrust (e.g. TO–1, TO–2, TO–3) and a valid assumed temperature (FLEX) are entered. The takeoff N1 setting is also calculated based on the APR selection (ARMED or DISARMED) for OEI operation. The reduced thrust N1 is then set when the autothrottle is engaged for takeoff. When derated thrust and reduced takeoff thrust are applied, it does not have an adverse affect on the airplane systems and functions, and is always applied at the discretion of the pilot.

The derated thrust and reduced engine thrust procedures can be used on wet runways, if wet runway performance data are used. If the takeoff weight calculated by the CAFM for a wet runway is higher than the takeoff weight for a dry runway, use the takeoff weight for a dry runway.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

- The derated thrust and/or reduced engine thrust (FLEX) procedures must not be used:
  - with an engine that cannot achieve available full rated thrust.

    The operator must make sure there is a procedure to confirm the availability of full takeoff thrust to ensure that engine deterioration does not exceed authorized limits.

    NOTE

    1. A takeoff at full rated thrust (TO) or Power Assurance test at full rated thrust must be accomplished every 100 flights.
    2. Trend monitoring can be used to verify the availability of full rated takeoff thrust with any approved trend monitoring program. On condition of an approved engine condition monitoring program this interval can be increased to 1000 flights.

  - when windshear or downdraft warnings are forecast.
  - when the anti-skid system is inoperative.
  - when the autothrottle is inoperative.
  - with the autothrottle disengaged.
- The derated thrust and reduced engine thrust (FLEX) procedures can be used on wet runways, if wet runway performance data is used.
- Reduced thrust (FLEX) is not permitted if wing and/or cowl anti-icing are in use.
- Reduced thrust (FLEX) is not permitted on runways contaminated with standing water, slush, snow or ice.

- Derated thrust is not permitted on runways with standing water, slush or snow unless takeoff performance is adjusted with a method approved by the appropriate authority that addresses possible loss in conservatism and possible loss of controllability when operating on these runway surfaces. When generating data from the CAFM, V1 = VR must be set as follows: <TC>
  - Select Specified V1 Type in relevant CAFM calculator(s).
  - Set value to 1.0.
- Derated thrust is not permitted on runways contaminated with ice.
- During a derated thrust takeoff procedure, the takeoff thrust setting parameter is considered a limitation for takeoff and thrust levers should not be advanced.

NOTE

1. When only derate is used, thrust levers should not be advanced further except in an emergency. A further thrust increase after an engine failure can result in a loss of directional control while on the ground.
2. When flex and derate are used, if the assumed temperature method is applied to a fixed derate, application of additional power should not be more than fixed derate N1 limit as loss of directional control can occur while on the ground.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable, except when modified as follows:

- The flight crew must confirm that either:
  a. The target N1 shown on the EICAS (with engines running, takeoff thrust rating selected, and bleeds configured for takeoff) is the same as the N1 value in the thrust setting tables generated with the thrust setting module of the CAFM for the applicable configuration; or

b. The derated thrust and/or assumed temperature (FLEX) shown on the EICAS thrust mode display (and confirmed by both crew) are the same as the ones used to determine performance.

- During reduced thrust (FLEX) operation, takeoff or derated takeoff thrust can be achieved at any time, with the procedures that follow:

  – When only FLEX is used:

    Setting the thrust levers to the maximum TLA.

  – When FLEX and derate are used:

    Setting the thrust levers so that the thrust command bug cursor matches the TO reference.

    If the thrust levers are set after 60 knots, the FLEX icon stays on the EICAS N1 display until 400 feet AGL.

NOTE

If the assumed temperature method is applied to a fixed derate, application of additional power must not be more than the fixed derate N1 limit as loss of directional control can occur while on the ground.

- The derated thrust and reduced thrust functions can be cancelled before takeoff, when a different takeoff thrust rating (e.g. TO, TO-1, TO-2, TO-3) is selected on the PERF – DEP tab of the FMS. This also clears the assumed temperature input (FLEX).

A. Reduced engine thrust takeoff setting (FLEX) procedure with N1 verification

To determine the reduced engine thrust takeoff setting (FLEX), use the procedures that follow:

1. Determine the assumed temperature (FLEX) as shown in the performance section in this supplement.

2. Determine the N1 value from the appropriate reduced thrust data generated with the Thrust Setting module of the CAFM output for the assumed temperature from step 1, the current ambient temperature, the required takeoff thrust rating (e.g. TO, TO-1, TO-2, TO-3) and engine bleed configuration.
3. Set bleeds for takeoff (with the engines running).
4. On the PERF – DEP tab of the FMS:
   a. Enter TO THRUST (e.g. TO, TO-1, TO-2, TO-3).
   b. Enter the assumed temperature (FLEX) from step 1.

NOTE

1. Assumed temperature (FLEX) should be at least 5°C higher than the OAT. If an assumed temperature is used that is within 5°C of the OAT, it can cause the assumed temperature entry on one or both engines to be rejected, and the **ENG SETTING MISMATCH** caution message to appear.
2. The wing anti-ice test can lead to the rejection of the assumed temperature entry. It is recommended to do the WAI test before entry of the assumed temperature.

3. Compare the target N1 value shown on the EICAS with the value from step 2. If the N1 value shown on the EICAS is not within ±1% of the tabulated value of N1, the assumed temperature must be re–entered into the FMS until the two N1 values are within ±1% N1.

B. Reduced engine thrust takeoff setting (FLEX) procedure with TO mode and FLEX temperature verification

To determine the reduced engine thrust takeoff setting (FLEX), use the procedures that follow:

1. Determine the assumed temperature (FLEX) as shown in the Performance section in this supplement.
2. Set bleeds for takeoff.

3. On the PERF – DEP tab of the FMS:
   a. Enter TO THRUST (e.g. TO, TO–1, TO–2, TO–3).
   b. Enter the assumed temperature (FLEX) from step 1.

NOTE

1. Assumed temperature (FLEX) should be at least 5°C higher than the OAT. If an assumed temperature is used that is within 5°C of the OAT, it can cause the assumed temperature entry on one or both engines to be rejected, and the **ENG SETTING MISMATCH** caution message to appear.
2. The wing anti-ice test can lead to the rejection of the assumed temperature entry. It is recommended to do the WAI test before entry of the assumed temperature.

3. Both crew confirm that the derated thrust and/or assumed temperature (FLEX) shown on the EICAS thrust mode display are the same as the ones used to determine performance.

C. Derated thrust takeoff setting procedure with N1 verification

To set a derated thrust takeoff setting, use the procedure that follows:

1. Determine the N1 value from the appropriate derated thrust data generated with the Thrust Setting module of the CAFM output for the required takeoff thrust rating (e.g. TO-1, TO-2, TO-3) and engine bleed configuration.
2. Set bleeds for takeoff (with the engines running).
3. On the PERF – DEP tab of the FMS:
   a. Enter TO THRUST (e.g. TO-1, TO-2, TO-3).
   b. APR ARM box is automatically checked. If the required takeoff thrust setting is with APR DISARMED, uncheck the APR ARM box.

4. Compare the target N1 value shown on the EICAS with the value from step 1. The N1 value shown on the EICAS should be within ±1% of the tabulated value.

D. Derated thrust takeoff setting procedure with TO mode verification

To set a derated thrust takeoff setting, use the procedure that follows:

1. Set bleeds for takeoff.
2. On the PERF – DEP tab of the FMS:
   a. Enter TO THRUST (e.g. TO-1, TO-2, TO-3).
   b. APR ARM box is automatically checked. If the required takeoff thrust setting is with APR DISARMED, uncheck the APR ARM box.
3. Both crew confirm that the derated thrust shown on the EICAS thrust mode display is the same as the one used to determine performance.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

If there is an engine failure with APR ARMED, the FADEC will set the operating engine to APR thrust.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

The error messages that follow can be shown in the CAFM Thrust Setting module – Reduced Thrust Calculation and are accounted for in the performance calculation procedures.

ERR/Warn	ID	CAFM message
Error	102	For the selected assumed temperature, the reduced thrust takeoff N1 is identical to the normal operation N1.

ERR/Warn	ID	CAFM message
Error	124	The assumed temperature cannot be lower than the airport temperature.
Error	298	The assumed temperature is greater than the maximum assumed temperature of the ISA [value].
Error	299	The assumed temperature is greater than the maximum assumed temperature of OAT [value].

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

A. Calculation of the assumed temperature (FLEX)

To calculate the assumed temperature, use the procedures that follow:

1. For the actual gross takeoff weight, determine the maximum allowable OAT for each of these requirements from the applicable CAFM performance module:
   - Runway length available (from Take-Off Performance module – Take-Off Field Length)
   - Maximum tire speed (from Take-Off Performance module – Take-Off Weight Limited by Tire Speed)
   - Climb requirements (from Take-Off Performance module – Take-Off Weight Limited by Climb Requirements)
   - Obstacle clearance (from Take-Off Path module)
2. In the CAFM Thrust Setting module – Reduced Thrust Calculation, enter the lowest of the maximum allowable OAT, determined in step 1, as the Assumed Temperature.
   a. If no error message is returned by the CAFM, continue to step 3.
   b. If error message 102 or 124 is returned by the CAFM, do not use FLEX.

c. If error message 298 or 299 is returned by the CAFM, use the maximum assumed temperature value given in the error message as the Assumed Temperature instead of the value from step 1 and continue to step 3.

NOTE

If an assumed temperature is used that is within 5°C of the maximum FLEX temperature, it can cause the assumed temperature entry on one or both engines to be rejected, and the **ENG SETTING MISMATCH** caution message to appear.

3. Use the airplane takeoff gross weight, the airport pressure altitude and the assumed temperature determined in step 2 to determine V1, VR, and V2 speeds.
4. If V1 determined from step 3 is more than V1MBE at the actual temperature, then reduce the assumed temperature as required.
5. Accomplish the procedures given in the Normal procedures, in this supplement.

B. Derated thrust takeoff procedure

In the Engine Data page of each calculator, select theTake-off thrust. TO represents the engine rating. TO-1,TO-2 and TO-3 (when available for a given engine rating) represent the various derate available. When selecting a derate only, a menu to select APR armed or disarmed will be available. The CAFM uses lower minimum control speeds (VMC) for derates.

C. Configuration and thrust settings

The configuration and thrust settings in Chapter 5 are applicable, except when modified as follows:

Phase of flight	Speed	Engine thrust setting	FLAP	Landing gear
Takeoff	Takeoff speeds (V1, VR, V2)	Four takeoff thrust levels (TO, TO-1, TO-2, TO-3 [when available]) with or without FLEX, 2 engines or 1 engine with or without APR	FLAP 2, 3, or 4	Down
First segment climb	V2	Four takeoff thrust levels (TO, TO-1, TO-2, TO-3 [when available]) with or without FLEX, 2 engines or 1 engine with or without APR	FLAP 2, 3, or 4	Down
Second segment climb				Up
Level flight acceleration	Acceleration from V_2 to V_{FTO}	Four takeoff thrust levels (TO, TO-1, TO-2, TO-3 [when available]) with or without FLEX, 2 engines or 1 engine with or without APR	Retraction from FLAP 2, 3, or 4 to FLAP 0	Up

D. Thrust setting tables

Derated thrust takeoff with or without APR and reduced thrust takeoff (FLEX) N1 thrust settings are calculated in the Thrust Setting module of the CAFM. These correspond to the N1 thrust setting as calculated by the Full Authority Digital Engine Control (FADEC).

The flight crew must complete the required verification procedures as given in the Normal procedures in this supplement.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

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SUPPLEMENT 14 – FERRY KIT

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INTRODUCTION

This supplement contains data applicable when a ferry kit is installed.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM), and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. Maximum occupants

- Flight crew, and
- Cabin occupants as limited by the following, when the ferry kit is installed in a completed and approved cabin configuration:
  - Approved number of supplemental oxygen bottles, and
  - Approved number of life vests and life rafts.

NOTE

Before flight, cabin occupants must be briefed on the proper use of all emergency equipment, including:

- Supplemental oxygen system (at assigned seat locations),
- Life vests, and
- Life rafts.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

SUPPLEMENT 19 – ETOPS <10109100C>

List of figures

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INTRODUCTION

This supplement contains the operational information necessary to conduct extended operations.

ETOPS requirements apply to operations of two-engine airplanes beyond the applicable threshold specified by the national authority.

The type-design reliability and performance of this airplane-engine combination has been evaluated under SCA 2015-06 and found suitable for 180 minutes extended operations (ETOPS) when the configuration, maintenance, and procedures standard in the ETOPS Configuration, Maintenance and Procedures (BD500-3AB48-11200-00) are met. <TC>

The actual maximum approved diversion time for this airplane may be less based on its most limiting system time capability. This finding does not constitute operational approval to conduct ETOPS.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements.

LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

A. System limitations

(1) Time-limited systems

The time capability of the cargo fire suppression system is 135 minutes (120 minutes diversion + 15 minutes hold). <10100100C> or <10100101C>

The time capability of all the other ETOPS significant systems exceeds 195 minutes.

(2) Auxiliary Power Unit (APU)

The APU must be started and run on ground for at least 10 minutes, within 2 hours before the departure for an ETOPS flight.

Before departure, if an approved APU trend-monitoring program is not available, a normal (APU-assisted) engine start must be done to show that APU EGT does not exceed ETOPS departure limits.

The APU must be started at the mid point of an ETOPS route and run for 10 minutes. <10100101C> or <10100103C>

(3) Airplane cold soak

When the airplane is cold-soaked at an ambient temperature of –20°C (–4°F) or below for more than 8 hours, one of the procedures that follow is required:

- Before airplane cold soak, remove airplane main batteries and store at room temperature,
- During airplane cold soak, leave external power on, or
- After airplane cold soak with batteries installed, 20 minutes after the airplane is powered on by any AC electrical source, the battery control switches must be cycled one (1) time.

B. Operational requirements

The enroute alternate range circle at the planning stage must not exceed 120 minutes on a single engine at one engine cruising speed, under standard conditions and in still air. <10100100C> or <10100101C>

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable in conjunction with the procedures in the ETOPS Configuration, Maintenance and Procedures (BD500-3AB48-11200-00), except when modified as follows:

A. Preflight – If an approved APU trend-monitoring program is not available

The procedural steps that follow must be added before normal (APU-assisted) engine start:

A. Preflight – If an approved APU trend-monitoring program is not available (Cont'd)

Normal (APU-assisted) engine start:

(1) APU EGT departure limit ..... Use the table to determine the value.

The OAT and airport pressure altitude are used to determine the APU EGT departure limit. For interpolation, the next lower value must be used.

APU EGT departure limit				
OAT		Pressure altitude (ft)		
°C	°F	SL	5000	10000
–50	–58	378	417	511
–45	–49	389	424	513
–40	–40	401	434	516
–35	–31	422	448	524
–30	–22	441	461	531
–25	–13	458	475	538
–20	–4	478	488	544
–15	5	494	501	549
–10	14	508	514	556
–5	23	521	527	564
0	32	535	540	572
5	41	546	555	580
10	50	557	572	589
15	59	568	591	603
20	68	579	604	617
25	77	590	618	630

A. Preflight – If an approved APU trend-monitoring program is not available (Cont'd)

APU EGT departure limit				
OAT		Pressure altitude (ft)		
°C	°F	SL	5000	10000
30	86	600	631	642
35	95	614	643	655
40	104	625	655	––
45	113	644	666	––
50	122	664	––	––

(2) STATUS synoptic page ..... Select

(3) APU EGT .....Monitor during engine start

The APU EGT must stay below the APU EGT departure limit during engine start.

(4) Engine start .....Complete

– COMPLETE –

B. Preflight

The procedural step that follows must be added as the last step to the Preflight procedure:

(1) ♦ Ram air valve test .....Complete

(a) RAM AIR ..... OPEN

(b) Confirm **RAM AIR OPEN** status message is shown.

(c) Confirm **RAM AIR FAIL** caution message is not shown.

(d) AIR synoptic page ..... Select

(e) Confirm that the ram air valve is shown in the fully open position.

B. Preflight (Cont'd)

(f) RAM AIR ..... Select closed

(g) Confirm **RAM AIR OPEN** status message is not shown.

(h) Confirm **RAM AIR FAIL** caution message is not shown.

(i) Confirm that the ram air valve is shown in the fully closed position.

– COMPLETE –

C. ETOPS flight

This procedure must be inserted as the first procedure in the IN FLIGHT section:

Before the start of any ETOPS segment and every hour during each ETOPS segment, up to the Equal Time Point (ETP):

(1) Roll attitude ..... Wings level

(2) FLT CTRL synoptic page ..... Select

(3) Confirm that spoilers are retracted.

NOTE

Drag may be higher than normal if any spoiler is deployed. Do not rely on FMS fuel predictions.

– COMPLETE –

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable in conjunction with the procedures in the ETOPS Configuration, Maintenance and Procedures (BD500-3AB48-11200-00).

NOTE

For non-normal procedures that cause a single pack and/or single bleed configuration, in addition to the impact of flying at a lower altitude, fuel flow will be increased up to:

- With anti-ice off: 2%
- With anti-ice on: 5%

PERFORMANCE

The performance data in Chapter 5 are applicable.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable except when modified as follows:

The use of the supplements that follow in conjunction with Supplement 19 is prohibited:

- Supplement 5 – Operation with airplane systems inoperative

OPERATIONAL GUIDANCE

A. Engine failure – Terrain critical – Descent

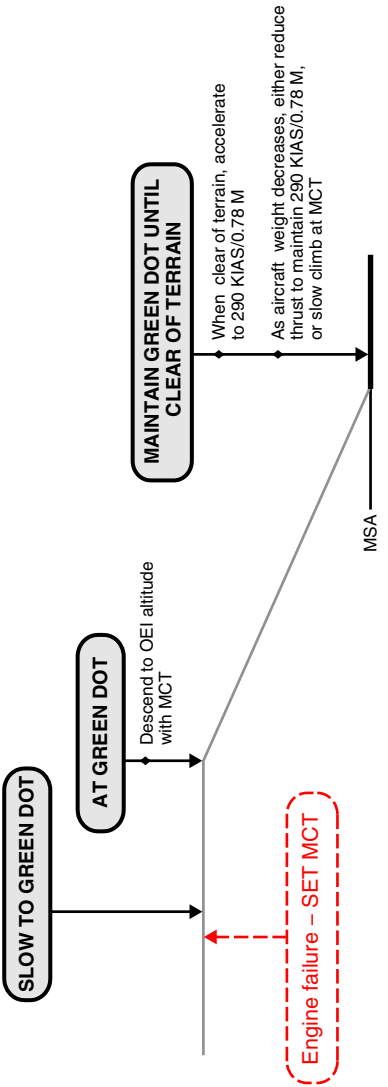
After engine failure, set MCT and slow to green dot while maintaining altitude.

When at green dot, start a descent with MCT to OEI altitude.

Maintain green dot and MCT until terrain is no longer a factor.

When clear of terrain, accelerate to 290 KIAS/0.78 M.

As aircraft weight decreases, either reduce thrust to maintain 290 KIAS/0.78 M or slow climb at MCT.



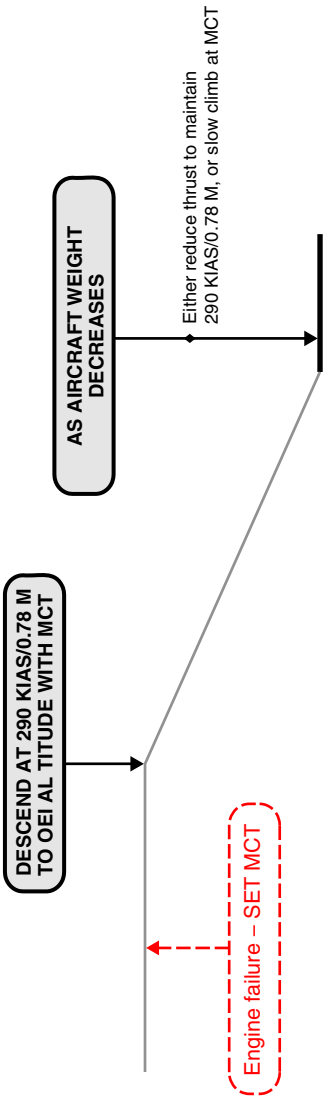
ETOPS – Engine failure – Terrain critical – Descent profile
Figure 06–19–01–1

B. Engine failure – Range – Descent

After engine failure, set MCT and 290 KIAS/0.78 M.

Descend at 290 KIAS/0.78 M with MCT to OEI altitude.

As aircraft weight decreases, either reduce thrust to maintain 290 KIAS/0.78 M or slow climb at MCT.



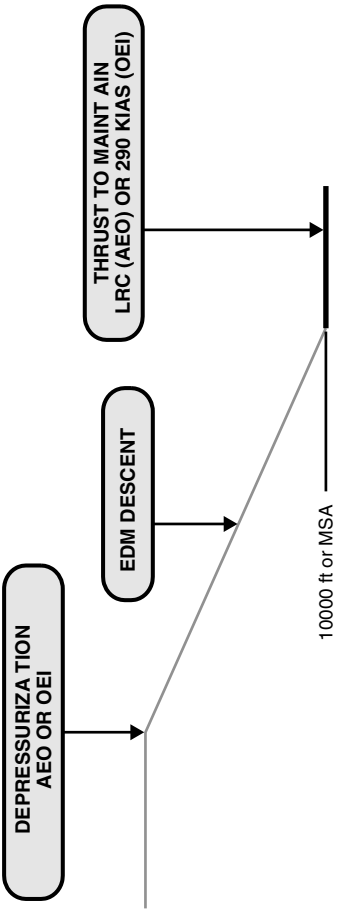
ETOPS – Engine failure – Range – Descent profile
Figure 06–19–01–2

C. Depressurization AEO or OEI – Descent

Use the same profile for AEO or OEI depressurization.

EDM descent profile to 10000 feet (or lowest safe altitude, whichever is higher).

Thrust as required for LRC (AEO) or 290 KIAS (OEI).



ETOPS – Depressurization AEO or OEI – Descent profile
Figure 06–19–01–3

SUPPLEMENT 20 – ALTERNATE FORWARD CENTER OF GRAVITY <13000701C>

List of figures

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INTRODUCTION

This supplement contains information that must be used for operation with alternate forward CG.

This supplement complements or supersedes data contained in the basic Airplane Flight Manual (AFM) and must therefore be used in conjunction with the basic AFM and its supplements.

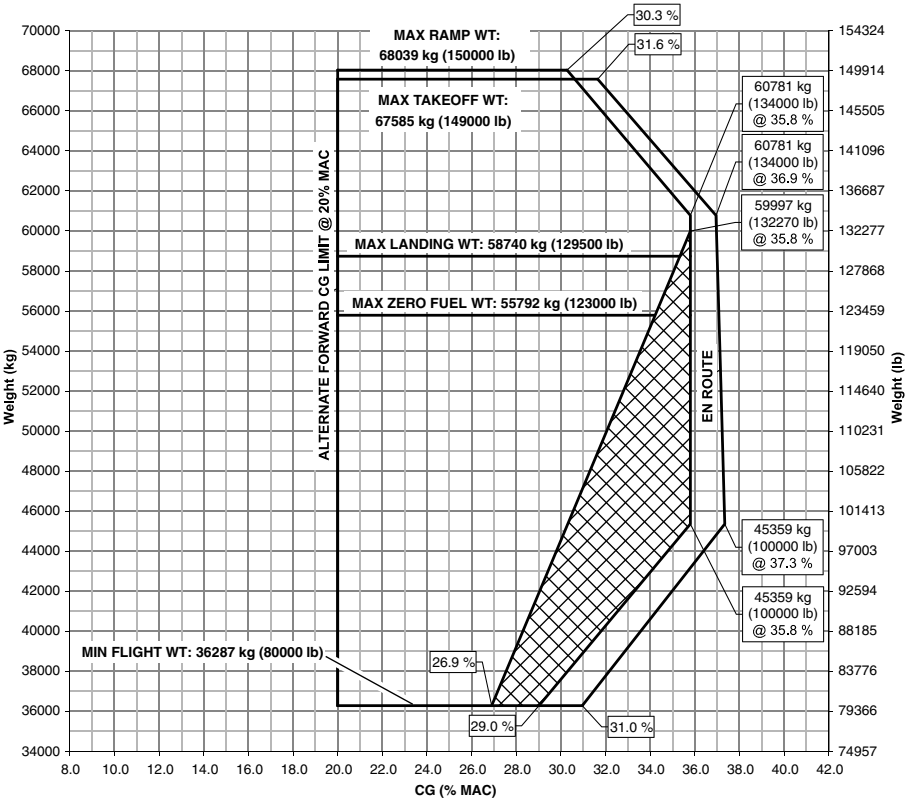
LIMITATIONS

The limitations in Chapter 2 are applicable, except when modified as follows:

<Post-SB BD500-732002> or <Mod 732002> or <Post-SB BD500-732003> or <Mod 732003>

A. Center of gravity limits

The maximum permissible Center of Gravity (CG) range with the landing gear extended is/are shown on the page(s) that follow(s).



LEGEND

Takeoff prohibited.

Center of gravity limits – Alternate CG <13001310C> and <13001290C> and <13000701C>

Figure 06–20–01–1

B. Runway slopes

When the alternate forward CG option is selected to calculate performance in the CAFM, the maximum runways slopes approved for takeoff are: –1.5% to +2%.

C. Flight Management System (FMS)

Aircraft certified for the alternate forward CG must use the CAFM and select the alternate CG option to determine V_{REF} and V_{AC}. V_{GA} is V_{AC} + 10. V_{REF}, V_{AC} and V_{GA} must be manually entered on the FMS, PERF – ARR tab.

NORMAL PROCEDURES

The normal procedures in Chapter 3 are applicable.

NON-NORMAL PROCEDURES

The non-normal procedures in Chapter 4 are applicable.

PERFORMANCE

The performance data in Chapter 5 are applicable, except when modified as follows:

The use of alternate forward center of gravity affects the airplane stall speed, takeoff performance, takeoff path, enroute performance, and approach and landing performance. The alternate forward CG option can be selected in each relevant calculation module of the CAFM.

SUPPLEMENTS

The supplementary data in Chapter 6 are applicable.

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CHAPTER 8 – OPERATIONAL GUIDANCE

OPERATIONAL GUIDANCE – WEATHER

WEATHER OPERATIONS

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LOW VISIBILITY OPERATIONS

GENERAL

NOTE

The guidance in this section must be used with Supplement 8 – Category II and Category III, autoland operations.

Low Visibility Operations (LVO) are operations that occur at an aerodrome when the Runway Visual Range (RVR) or visibility drops below a certain value. These values can vary from one country to another. If RVR and visibility are reported, the RVR must be used.

Special procedures, established by the airport authority and ATC, are used when low visibility conditions are in effect. Different authorities use different names for these procedures, such as Low Visibility Operation Plans (LVOP), Surface Movement and Guidance Control System (SMGCS), etc.

A. RVR reports

RVR reports are different in measurement and where the sensor is installed. The number of RVR sensors installed is determined by the length of the runway. There can be two, three or four sensors reporting:

- TDZ – The touchdown RVR sensor is near the touchdown end.
- MID – The mid-point RVR sensor is 1000 feet or less from the center point of the runway.
- RO – The rollout RVR sensor is near the rollout end of the runway.
- FE – In the USA, the far end RVR sensor is the touchdown RVR sensor on the reciprocal runway when four RVR sensors are installed. This value can be ignored.

Where only two RVR sensors are installed, both are required and controlling.

Where three (or more) RVR sensors are installed on the takeoff runway:

- The touchdown zone, mid-point, and rollout RVR values are controlling when all sensors are operational.
- Failure of any one RVR sensor does not have an effect on operations if the two remaining RVR sensors report values at or above the applicable minima.

RVR reports must be greater than or equal to the required takeoff minima. When the TDZ RVR sensor is inoperative, the pilot can estimate the RVR value and takeoff can be authorized by the Operator's authority.

The Operator must refer to their authority regulations to plan the takeoff with the applicable Decision Height (DH) and RVR minima.

Decision Height (DH) and RVR minima <TC>		
Weather category	**Minima**	
CAT II	DH	100 ft ≤DH <200 ft
	RVR	≥350 m (≥1200 ft) – RVR A ≥175 m (≥600 ft) – RVR B
CAT IIIa	DH	No DH or DH <100 ft
	RVR	≥175 m (≥600 ft) RVR A, B, C

Decision Height (DH) and RVR minima – ICAO		
Weather category	**Minima**	
CAT II	DH	100 ft ≤DH <200 ft
	RVR	≥350 m (≥1200 ft)
CAT IIIa	DH	No DH or DH <100 ft
	RVR	≥200 m (≥700 ft)

B. Airport/runway lights

It is recommended to use the applicable lighting references when RVR is reported for specific visibility criteria:

When RVR is 350 m (1200 ft) and less (RVR 1200 operations):

- Runway/taxiway intersection guard lights, and
- Runway high intensity edge lights.

When RVR is 175 m (600 ft) and less (RVR 600 operations):

- Taxiway centerline lights,
- Runway/taxiway, runway/runway intersection stop bars,
- Runway high intensity edge lights, and
- Runway centerline lights.

LOW VISIBILITY PROCEDURES

A. Preflight

When low visibility operations are in effect, a takeoff alternate is required if the weather limits are below the minimums for the approach to be used. Selection must include unplanned events such as engine failure or other non-normal situations that can have an effect on landing at the departure airport. The takeoff alternate must be at 60 minutes or less, at the engine inoperative cruise speed in still air.

The takeoff briefing must include all items of a normal takeoff briefing and it is recommended that the specific low visibility items that follow also be included:

- Roles and responsibilities of the PF and PM during pushback, taxi and takeoff,
- Ramp procedures for pushback and/or initial taxi from the ramp/start box to the low visibility taxi route,
- Transponder requirements for the airport,
- Planned low visibility taxi route to the active runway or to include the deicing pad (if applicable),

- Use of airport moving map (if available) and airport low visibility charts,
- Location of hold position markers and stop bars,
- Any changes to the planned route after the taxi clearance is received,
- HUD setup for takeoff (LVTO) if applicable,
- Review of NOTAMs that can have an effect on low visibility operations (i.e. lighting, NAVAIDs), and
- Both crew members are qualified for low visibility operations.

B. Pushback, engine start and taxi

There are no changes to the PF and PM duties during ground operations in low visibility.

When possible, it is recommended that engine starts be done after the pushback is completed. If the engine starts are done during pushback, it is recommended that the copilot does and monitors the engine starts while the pilot monitors the pushback. When the pushback is completed, the flight crew can go back to their normal PF/PM duties and complete the before taxi procedures before the start of the taxi phase.

Single engine taxi is not recommended in low visibility operations because it can interfere with the PM duties when he must monitor the taxi while the second engine is started. If single engine taxi is operationally required, it is recommended that the flight crew stop the aircraft and set the parking brake to ON before the second engine start. The taxi phase can be continued when the before taxi procedures are completed.

If the aircraft has started taxi for takeoff and the visibility drops below the published level of service for the planned runway, the aircraft can continue to taxi but must not take off until the visibility has increased to the required level of service.

It is recommended to taxi as slowly as necessary for safety and to use the TAXI–WIDE and WING INSP lights, even in daylight conditions.

If, at any time, the flight crew becomes uncertain about the aircraft location on the airport moving area, it is recommended that they stop the aircraft and immediately advise ATC, except when an aircraft is on or crosses a runway. The aircraft should cross the runway completely before it stops and requests more clearance or help. Progressive taxi instructions or a follow-me car can be requested.

It is recommended that all checklist procedures, FMS changes, cabin announcements, etc. be done with the aircraft stopped and parking brake set to ON. FMS changes must be done by the PM and confirmed by the PF before they are completed.

C. Takeoff

There are no changes to the takeoff procedures but the flight crew must be aware that it is possible to lose visual references during takeoff because of fluctuations in RVR during low visibility operations.

It is recommended to do a normal takeoff and hold the brakes (static) until the thrust levers are advanced to the takeoff setting. The brakes can then be released.

D. Approach

While Category II approaches can be flown with or without the use of autoland, Category III approaches must be flown with autoland.

Autolandings can be completed if all requirements for autoland are met and localizer or glideslope are not NOTAMed or noted as unusable to landing on the instrument chart.

(1) Decision altitude or height (DA or DH)

A decision altitude or height is the altitude or height where a missed approach must be started if the required visual references to continue the approach to a safe landing are not established. For most LVO approaches, the decision height is the controlling minima and the altitude value in the approach chart is advisory only. A decision height is usually based on a specified radio altitude above the terrain on the final approach or touchdown zone.

(2) Alert height

The alert height is 200 ft AGL.

Alert height is the height above a runway for Category III fail operational systems at which the approach must be discontinued if a required aircraft system or ground system has failed at an altitude above the alert height.

When approved by the operator's authorities, the operator can use a lower alert height for their specific operations but it cannot be higher than 200 ft AGL.

(3) Fail passive autoland system

Fail passive is an autoland system which, if there is a failure below 200 ft AGL, causes no significant deviation of aircraft path or attitude. When LAND 2 is shown on the ASA, the aircraft meets the requirements for a fail passive system.

(4) Approach and arrival preparation

The approach briefing must include all items of a normal approach briefing and it is recommended that these specific low visibility and/or autoland items also be included:

- DH/RVR minima and go-around considerations,
- Use of landing/taxi lights,
- Visual cues and runway approach lights,
- Wind limits,
- ASA requirement for the planned approach,
- The effect of MEL dispatch items on approach capability, if applicable,
- Approach reversion plan if there is an autoland down mode (all possible scenarios),
- Considerations for failures below alert height or 200 ft AGL (whichever is applicable), which include loss of autoland, engine failure and rudder failure,

- Autobrake level to be used (based on flap setting, runway length, and runway conditions),
- Autopilot disengagement and autobrake disconnect criteria during the landing,
- Applicable transfer of controls and autopilot disengagement when autoland is done by the copilot without a tiller on the right side,
- Low visibility taxi requirements (turn-off exit, low visibility taxi route, etc.), and
- Use of the HUD (if installed) and correct seat position.

Items that are specific to autoland must be briefed during all autoland approaches, even if there are weather limits. When an autoland approach has been briefed for a low visibility approach, it is recommended that an autoland be completed, even if there are improved weather conditions during the approach.

There are no changes to the PF and PM duties during approaches in low visibility.

(5) ILS Category II and Category III, autoland – Standard callouts

The ILS approach standard callouts are applicable to all Category II and Category III, autoland approaches. It is recommended that specific low visibility and/or autoland items also be included. Refer to Supplement 8 – Category II and Category III, autoland operations – Category II and Category III, autoland – Callouts and FMA checks.

E. Category II weather minima and required visual references

Category II approaches can be flown in APPR 2, LAND 2 or LAND 3.

When possible, it is recommended to use autoland for all Category II approaches (LAND 2 or LAND 3).

(1) Category II approach (APPR 2) without the HUD

The autopilot must be used to fly the approach with a manual landing completed. The autopilot must be disengaged by 80 feet minimum.

(2) Required visual references

Visual reference at DH requires a segment of at least three consecutive lights from the:

- Centerline of the approach lights,
- Touchdown zone lights,
- Runway centerline lights,
- Runway edge lights, or
- A combination of these is acquired and can continue to be seen.

The visual reference must also include a lateral element of the ground pattern (i.e. approach lights crossbar, landing threshold) unless the approach is done with the HUD to touchdown.

Operators must define the lowest approved Category II minima. It is recommended to set 100 RA or published DH (whichever is higher). At DH, to continue the approach:

- The visual references must be applicable to continue to monitor the approach and landing, and
- The flight path must be acceptable.

If these 2 conditions are not met, a go-around must be completed.

RVR reports must be sufficient to start the approach.

F. Category III weather minima and required visual references

Category III (fail passive) approaches can be flown in LAND 2 or LAND 3.

(1) Category III approach with DH

Flight crews must set DH at not less than 50 feet (RA). To continue the approach, there must be visual references that confirm the aircraft is over the touchdown zone. If the crew is not able to confirm this, a go-around must be completed.

(2) Category III approach with no DH (RVR value only)

The decision to continue is based on the operational status of the aircraft and ground equipment. Even if a minimum RVR is specified, no visual references are required. However, it is recommended that the crew acquire visual cues during touchdown and continue to monitor the rollout.

(3) Required visual references – Category III (fail passive)

Visual reference at DH requires a segment of at least three consecutive lights from the:

- Centerline of the approach lights,
- Touchdown zone lights,
- Runway centerline lights,
- Runway edge lights, or
- A combination of these is acquired and can continue to be seen.

Operators must define the lowest approved Category III minima if they are different from the recommended minima that follow.

RVR reports must be sufficient to start the approach.

G. Non-LVO autoland

Autoland (LAND 2 or LAND 3) in non-LVO conditions can be authorized by the operator and local authorities, if all the required conditions for autoland are met and special procedures are in place.

For example, these procedures can include such cases as:

- Marginal CAT I weather,
- Aircraft and airport technical requirements (i.e. return from maintenance, validation of airport), and/or
- Flight crew training proficiency.

These approaches are done in the same way as any autoland approach. Flight crews must advise ATC of their intentions. Since airport LVO protections are not available (i.e. ILS critical areas, ground vehicles, departing traffic, etc.), flight crews must be ready to take over the approach and landing if there is an anomaly that can have an effect on autoland.

H. Down-mode and down-grade/approach reversion

Down-mode refers to the failure of a required system that can have an effect on the aircraft approach capability (i.e. LAND 3 to LAND 2).

Down-grade refers to a change in the planned approach and is usually caused by a down-mode. For example, a down-mode in aircraft capability from LAND 3 to LAND 2 will have an effect on the approach if the flight crew had planned for a CAT IIIb landing (down-grade CAT IIIb to CAT IIIa minima).

During low visibility operations, the decision to continue the approach after a down-mode is based on 1000 feet AAE.

Below 1000 feet AAE, if the aircraft capability (ASA) is not sufficient for the planned approach and weather minima, a go-around must be completed unless the required visual references are available before landing.

When an autoland down-mode occurs below 1000 feet AAE, a go-around must be completed.

If weather conditions permit, where a down-mode from LAND 3 to LAND 2 occurs above 1000 feet AAE, the approach can be continued if there is an adequate briefing and the next higher minima is adjusted by the PM in time. There must be enough time so that the adjustment does not have an effect on the stabilized approach criteria or interfere with the duties of the PM. If not, a go-around must be completed.

If weather conditions permit, where a down-mode from LAND 2 to APPR 2 occurs (autoland capability lost and manual landing required) the approach can be continued if the down-mode occurs above 1000 feet AAE, there is an adequate briefing, and the next higher minima is adjusted by the PM in time. There must be enough time so that the adjustment does not interfere with the duties of the PM. When the down-mode occurs below 1000 feet AAE, a go-around must be completed.

I. Visual cues and cutoff angles

Loss of visual cues during landing in low visibility operations must be considered, with special emphasis to the expected location of the runway touchdown zone in crosswind conditions.

Changes in visual segments can have an important effect on the pilot's visual judgement on the flight path. A sudden decrease in visual segment means that the forward limit of visibility appears to move closer and down the windscreen. This is similar to the visual effect of suddenly increasing pitch attitude, which can be mistaken for an autoland failure. The natural reaction is to lower the nose, which disengages the autopilot and increases the rate of descent, which creates an undesirable situation very near to the ground. To avoid this confusion, a visual scan of the flight instruments and annunciations can be done during flare and rollout without autopilot disengagement.

Night and day can have an effect on visual cues. At night, the lights stand out in contrast and give better visual information than during daytime. During day operations, the lights are less apparent and the visual segment appears shorter. But, flight deck visibility and cues available from runway contrast and markings are better during daytime operations.

When landing in low visibility, especially in fog or snow, the use of landing lights can decrease forward visibility because of the blinding effect. It can also cause disorientation. The use of landing lights in very low visibility conditions is not recommended. Strobe lights can cause a distraction. The use of wipers can also have an unwanted effect on the ability of the flight crew to maintain sufficient visual cues.

It is important to use the eye level locators to correctly adjust the seating position for low visibility approaches and landings. This will make sure that the eye reference position is correctly aligned. A lower seat position can reduce the visual segment. When the eye reference position is too low, the visual segment can be decreased even more by the cutoff angle of the glareshield or aircraft nose. An incorrect seating position which reduces the cutoff angle by 1 degree can reduce the visual segment by approximately 10 m (30 ft).

J. Landing and rollout

When available, the use of autobrake is recommended for all autoland approaches because it ensures a symmetrical brake pressure application. The autobrake level must be based on the operational landing distance for the runway condition (Runway Condition Assessment Matrix (RCAM)) and landing weight. It is important that flight crews evaluate available runway and braking action information from applicable airport reports.

Autoland performance has been demonstrated up to maximum landing weight, for dry and wet runways. On a contaminated runway, it is recommended that the autopilot be disengaged after nosewheel touchdown and a manual rollout be done. The recommended crosswind values based on the conditions given in the RCAM (Refer to Normal procedures – Landing – Maximum recommended crosswind) can be used as long as the maximum crosswind limits for autoland are respected.

(1) Autopilot

Although the rollout guidance is removed when speed is less than 30 knots, the autoland continues to show rollout commands until the aircraft has stopped. It is recommended to disengage the autopilot at a safe taxi speed of approximately 30 knots.

If the autopilot is manually disengaged at higher speeds and taxi off the runway is expected while the rollout guidance is still active, the coupled-side FD should be removed to prevent flight director mode change indications.

NOTE

The AP switch on the FCP is disabled during autoland.
The A/P DISC switch on the sidestick must be used.

When applicable, it is recommended that the PF advise the PM if the autobrake is overridden (a manual braking callout).

(2) Rollout and go-around – TOGA selection

After landing, if TOGA is selected before WOW + 2 seconds, the go-around mode is engaged. The autopilot and autothrottle stay engaged but the PF must take manual control of the rudder.

After landing, if TOGA is selected after WOW + 2 seconds (with ROLLOUT shown on the FMA), the TOGA switches are disabled and the autothrottle does not engage since the go-around mode is no longer available. The pilot must disengage the autopilot and complete a manual go-around.

K. Go-around

(1) Loss of visual guidance

For CAT II or CAT III operations at DH, the approach must be discontinued and a go-around completed if the required visual references to monitor the approach and landing are not available. After DH and before touchdown, if the visual references are lost, a go-around must be initiated. A late go-around can cause the aircraft to touch down.

After touchdown, if visual references are lost, a go-around must not be attempted. It is recommended that the landing and rollout be continued while the crew monitors the autoland system, until visual cues can be re-established or the aircraft comes to a full stop.

(2) Failure of required equipment

If there is a failure of a required aircraft system or ground system (includes engine failure) above alert height or 200 ft AGL, whichever is applicable, the required non-normal procedure must be completed.

If the NO AUTOLAND flag is shown on the ASA, the required non-normal procedure must be completed.

Although there is a very low risk that this will occur, if a **RUDDER FAIL** warning message appears, the approach must be discontinued with a go-around. If this occurs, it is acceptable to retract the slats/flaps to a go-around FLAP setting (FLAP 2 or FLAP 4) but not beyond FLAP 2. Fuel consumption will be increased by a factor of:

- 1.5 with slats/flaps extended at FLAP 2.
- 2.1 with slats/flaps extended at FLAP 4.

If, at any time, the **RUDDER FAIL** warning message goes out, the flight crew must still complete the non-normal procedure.

(3) Loss of altitude

Maximum altitude loss during a go-around from an autoland approach with two engines is approximately 50 feet (at maximum landing weight/high pressure altitude airports). On average, a 25-foot altitude loss is expected.

During a single engine go-around the altitude loss can be up to 100 feet (at maximum landing weight/high pressure altitude airports). On average, a 30-foot altitude loss is expected.

Go-arounds started below these altitudes can cause the aircraft to touch down. If a touchdown occurs after a go-around is started, the go-around must be continued.

COLD WEATHER OPERATIONS

GENERAL

The procedures in this section are intended to ensure an aerodynamically clean airplane before takeoff in cold weather conditions.

The pilot–in–command is ultimately responsible to make sure that the airplane is in a safe condition for flight. It is assumed that the decision to operate is based on good airmanship applicable to cold weather operations and on the assurance of compliance to the operational and system limitations (refer to Airplane Flight Manual (BD500-3AB48-32200-00), Chapter 2 – Limitations).

Because SAT or TAT does not read accurately on the ground due to probe heating, ATIS or other reliable means must be used to acquire ambient temperature and other pertinent meteorological conditions.

DEFINITIONS

A. Cold weather operations

Cold weather operations refers to ground handling, takeoffs, and landings conducted on surface conditions where frozen moisture is present or conditions are conducive to moisture freezing.

These conditions are commonly encountered when the surface temperature is at or below 0°C (32°F), although frozen moisture can be present and stay for a significant time at higher temperatures.

B. Cold soak

Cold soaking is the effect cold fuel in the tanks can have on the wing surface resulting in moisture present in the air surrounding the wing to freeze on the upper and lower surface if fuel temperature is 0°C (32°F) or below. It is possible to have clear ice or frost to form on the wing even with ambient air temperatures above freezing.

The airplane is considered cold-soaked when it has been at an ambient temperature of –7°C (20°F) or below for more than 8 consecutive hours, without having performed the recommended procedures for preventing cold soak.

C. Ground icing conditions

With due regard to aircraft skin temperature and weather conditions, ground icing conditions exist when frost, ice, or snow is adhering or can adhere to the critical surfaces of an aircraft. Ground icing conditions also exist when active frost, frozen or freezing precipitation is reported or observed.

D. Runway contaminants

Refer to Chapter 6, Supplement 2 – Operation on contaminated runways.

E. Critical surfaces

The critical surfaces of the airplane are defined as the wings, horizontal stabilizer, vertical stabilizer, control surfaces and engine inlets. If the upper surface of the fuselage is contaminated with ice, snow, or frost, and surface features and markings cannot be distinguished, the surface must be cleaned or deiced.

The fuselage is not considered a critical surface, but snow and ice on such a large surface could have considerable effect on drag and weight. Due diligence is required and consideration should be given to snow clearing and/or deicing the fuselage.

F. Comparative analysis procedure

The upper surface of the horizontal stabilizer may not be visible from the ground. A comparative analysis of the non-visible horizontal stabilizer upper surface may be used to validate the condition of this surface. The upper surface of the wing should be used as the comparative surface. If the inspection of the wing surface dictates that there is a requirement to deice/anti-ice, then the horizontal stabilizer surface/elevator must also be deiced/anti-iced. Conversely, if the inspection of the wing surface dictates that there is no requirement to deice/anti-ice, then the horizontal stabilizer surface need not be deiced/anti-iced.

It is the ultimate responsibility of the pilot-in-command (PIC) to ensure that the airplane is in a safe condition for flight operations before all takeoffs. If the pilot-in-command has any doubt as to the cleanliness of the aircraft, then the aircraft must be deiced/anti-iced.

G. Airframe contaminants

Any type of contaminant (listed as follows) on the critical surfaces affects airplane performance and must be removed before takeoff.

(1) Ice

Two types of ice, rime ice and clear ice, commonly affect aircraft operations.

(a) Rime ice

Although rime ice is more commonly found in flight, it may occur on the ground when conditions are favorable. Rime ice may occur on the ground in low temperatures with a low concentration of small super-cooled water droplets and moderate winds. It appears as an opaque and rough ice surface that adheres to surfaces exposed to wind. It can easily be detected and is easily removed by the application of deicing/anti-icing fluids.

(b) Clear ice

Clear ice can occur in flight or on the ground. It forms when temperatures are at or just below 0°C (32°F) with a high concentration of large super-cooled water droplets.

Clear ice is hard and appears as a smooth and glassy coating that can be very difficult to detect. Clear ice may not be seen during a walk-around, particularly if the wing is wet or during night operations. Clear ice adheres firmly to surfaces and is difficult to remove, requiring special care during deicing/anti-icing.

Clear ice can also form on the wing surfaces if visible moisture is present and the ambient temperature is at or below freezing; or at ambient temperatures above freezing with subfreezing fuel in the wing tanks or subfreezing structure in contact with the wing skin. Any condensation, fog, drizzle, or rain contacting the chilled wing surfaces can quickly freeze to the exterior surface.

Even if the outside air temperature is above freezing, the pilot-in-command must ensure that the wing upper surfaces are free of ice.

(2) Slush

Slush is snow saturated with water which displaces with a splatter when stepped on firmly. It is encountered at temperatures up to 5°C (41°F).

(3) Wet snow

Wet snow easily sticks together and tends to form a snowball if compacted by hand.

(4) Dry snow

Dry snow is loose and can easily be blown. If compacted by hand, it readily falls apart again.

(5) Frost

Frost forms from the slow deposition of ice crystals on cold surfaces, directly from water vapor in the air. The frost forming surface must be below freezing temperatures for frost to form even though the ambient temperature may be above freezing. Frost appears as a white crystalline deposit that usually develops uniformly on exposed surfaces during below-freezing, calm and cloudless nights with a high ambient dew point.

Wing frost, caused by cold-soaked fuel, can form on the upper and lower surfaces of the wing even at outside air temperatures significantly above freezing. Frost on the upper surface of the wing must be removed. Takeoff is permitted with frost on the lower surface of the wing to a maximum thickness of 3.0 mm (0.12 in.).

(6) Dehydrated deicing/anti-icing fluids

If deicing/anti-icing fluid is allowed to dry on airplane surfaces, this same fluid can become a contaminant. Deicing and, especially, anti-icing fluids are designed to adhere to airplane surfaces and shear off at speeds approaching takeoff speeds. If left on airplane surfaces for long periods of time (overnight), they may dehydrate and form a gel or dried deposit that will not shear off, even at high speeds.

H. Holdover time

Holdover time is the published estimated time that an application of an approved deicing/anti-icing fluid is effective in preventing frost, ice, or snow from adhering to treated surfaces. Holdover time begins when the final application of deicing/anti-icing fluid starts and expires when the deicing/anti-icing fluid applied to the aircraft loses its effectiveness. The fluid is considered to be no longer effective when its ability to absorb more precipitation has been exceeded.

NOTE

Regulatory agencies may provide different timetables for Type I fluid used on aircraft surfaces composed predominately of composites.

LIMITATIONS

Refer to Airplane Flight Manual (BD500-3AB48-32200-00), Chapter 2 – Limitations.

AIRFRAME CONTAMINATION

A. Clean Aircraft Concept

The Clean Aircraft Concept (aerodynamically clean) prohibits takeoff when frost, ice, snow, or other contaminants are present on the airplane critical surfaces.

The takeoff performance data for this airplane is based on the Clean Aircraft Concept. Failure to remove contaminants results in adverse effects on airplane performance and flight characteristics. These adverse effects are most often encountered:

- Decreased thrust,
- Decreased lift,
- Increased drag,
- Increased stall speeds,
- Trim changes, and/or
- Altered stall characteristics.

The removal procedures for frost, ice and snow from the airplane surfaces should be done at the latest possible time before takeoff to maximize the time that deicing/anti-icing fluids are able to provide protection (holdover time).

These general precautions must be observed in icing conditions before takeoff:

1. Do not assume that dry and/or loose snow will be removed during the takeoff roll. Snow falling on a warm airplane can melt and later refreeze to form ice that sticks to the surface of the airplane.
2. Before flight, a thorough inspection of critical surfaces must be done to determine the presence of contamination. This inspection must be done by the pilot-in-command (PIC), or its delegate, or by other trained and approved qualified personnel.
3. After deicing/anti-icing, the PIC must ensure another inspection is done to confirm that all critical surfaces are clear of contamination.

4. The period of effective deicing/anti-icing, known as holdover time, must be longer than the actual period between deicing and takeoff. Holdover time begins when the final application of deicing/anti-icing fluid starts.

5. If the holdover time is exceeded, or at any time contamination is suspected, a new inspection must be done and, if required, deicing/anti-icing must be repeated.

ENGINE CONTAMINATION

A. Preflight considerations

(1) Preflight inspection

A thorough preflight inspection of the engines for contamination is required during cold weather operations.

This inspection should include examination of the ramp conditions and whether or not deicing procedures are in effect. The flight crew must determine if ramp conditions permit engine starting while parked (at the gate) or during/after pushback.

The procedures that follow are designed to complement both regulatory and operational procedures during cold weather operations.

(2) Use of deicing/anti-icing fluid

CAUTION

Do not use deicing/anti-icing fluid to remove frozen precipitation from the spinner, fan, inlet or other engine components.

Deicing/anti-icing fluids that are ingested into the engine can have a corrosive and contaminating effect. This effect may degrade fan blade lubricants (and cause increased N1 vibrations), resulting in increased maintenance costs.

Deicing/anti-icing fluid must not be sprayed directly into or applied on the engine inlet, APU inlet or exhaust vents.

(3) Engine start

CAUTION

Before engine start, make sure that there is no ice on the fan blades. Ice on the fan blades can cause rotor imbalance and damage to the engine.

During ice removal on other engine surfaces, for personnel safety, the engines should not be operating.

However, if necessary, ice removal can be done with a low-pressure stream of glycol-based Type I deicing fluid while the engines are operating at IDLE. Make sure that the fluid is not sprayed directly into the engine inlet.

PREFLIGHT PREPARATION

The removal of contaminants from the airplane is a maintenance function, however, the flight crew should be diligent during the preflight preparation to inspect areas where adherence and accumulation of frost, ice, and snow could seriously affect normal systems operations.

A. External safety inspection

(1) All protective covers ..... Removed

- Probe covers (ADS probes, TAT, ice detector, AOA vane).
- Intake and exhaust covers (engines).

(2) ADS probes ..... Free of frost, ice, and snow

(3) AOA vanes ..... Free of frost, ice, and snow

(4) Windshields and wipers ..... Free of ice and snow

(5) Airplane critical surfaces ..... Free of frost, ice, and snow

A. External safety inspection (Cont'd)

NOTE

During snowfall, freezing rain and drifting snow, it is possible for snow and melting ice to penetrate into hinges, operating linkages, drainage openings and vents, and then refreeze. These areas must be checked carefully.

(6) Nosewheel and main landing gear area .....Free of contamination

- Latching and operating mechanisms are free and clear of any accumulation (uplocks/downlocks).
- Check electrical components (connectors, cables and micro-switches) for evidence of water ingress.
- Gear doors are free from contamination.
- Wheels are not frozen to the ground.

(7) APU and air-conditioning intake and exhaust areas .....Clear of frost, ice, and snow

(8) Engine inlet, spinner, fan blades and cowlings .....Clear of frost, ice, and snow

- Check condition of the inlet, spinner and fan blades. If there is ice or show accumulation in the fan duct, the fan must still rotate freely.
- The engine inlet, inlet lip, fan blades and fan exhaust duct must be free of snow and ice.

(9) Fuel tanks and hydraulic components ..... Check for evidence of leaks

(10) Water system and drain masts .....Check for evidence of freezing

– COMPLETE –

B. Cabin preparation

In case of a cold-soaked airplane, it is recommended that the cabin interior be warmed up before dispatching the airplane to ensure proper operation of all exits.

(1) Cabin temperature control ..... As required

To warm up the cabin to a comfortable level.

(2) All doors ..... Check

If required, check that the main passenger doors and the galley service doors can be opened properly.

(3) Low pressure ground air ..... Connect

If low pressure ground air is available, it can be used to warm up the cabin.

CAUTION

Failure to disconnect ground conditioned air before closing the passenger doors can result in rapid pressurization of the aircraft. Special attention should be given to, and prompt action taken, in the event of inadvertent unscheduled pressurization of the airplane.

– COMPLETE –

AIRFRAME DEICING/ANTI–ICING METHODS

A. Deicing/anti-icing fluids

The application of deicing/anti-icing fluid is the most common means of ground deicing and anti-icing protection. These fluids are water/glycol solutions, broadly classified as Type I, Type II, Type III, and Type IV.

NOTE

Both the Society of Automotive Engineers (SAE) and the International Standards Organization (ISO) issue specifications defining the composition and characteristics of airplane deicing/anti-icing fluids. For the practical purposes of flight operations, these respective specifications are identical. Unless otherwise noted, the use of SAE/ISO Type I, Type II, Type III, and Type IV fluids is assumed in what follows.

(1) Type I fluids

In concentrated form, these fluids contain glycols to a minimum concentration of 80%, but with no thickening agents. Their resulting low viscosity and very short holdover times provide very limited anti-icing protection.

(2) Type II and Type IV fluids

These fluids contain glycols to a minimum concentration of 50% as well as thickening agents. Their relatively high viscosity permits the application of a layer of fluid that is effective in anti-icing and stays for a significant holdover time to provide anti-icing.

During takeoff, the slipstream imparts a shear stress to the fluid layer causing it to flow off the surface to which it was applied. Anti-icing effectiveness, however, is subject to many more variables that are usually present in deicing. Of fundamental concern to the aircrew is the calculation of the anti-icing holdover time available after deicing, given prevailing conditions and use of a particular fluid.

(3) Type III fluids

Type III is a thickened fluid which has properties that lie between Types I and II. Therefore, it provides a longer holdover time than Type I fluids but less than Type II.

Tables are published by regulatory agencies to show holdover times for Type I, Type II, Type III, and Type IV fluids, as influenced by the kind of freezing precipitation present. These tables do not account for all factors that influence holdover time. Diverse and individually variable factors such as fluid temperature, relative humidity, wind direction and speed, can significantly shorten the holdover times.

Holdover time starts at the beginning of the last fluid application.

CAUTION

1. For all types of deicing fluid, the time of protection will be shortened in heavy weather conditions, heavy precipitation rates or high moisture content. High wind velocity or jet blast can reduce holdover time below the lowest time stated in the range. Holdover time can also be reduced when airplane skin temperature is lower than OAT. The only acceptable decision criteria is to use the shortest time within the stated range.
2. When ice pellet precipitation occurs after the application of deicing/anti-icing fluid, the deicing/anti-icing fluid dilutes which results in rapid wing contamination.

DEICING/ANTI–ICING PROCEDURES

A. Deicing/anti-icing procedures

Deicing is the removal of snow, ice or frost from airplane surfaces using mechanical means, hot water or a heated mixture of water and deicing/anti-icing fluid.

Anti-icing is the application of deicing/anti-fluid with a useful holdover time to prevent the accumulation of snow, ice or frost on airplane surfaces after deicing.

Current practice prescribes the general methods that follow for effecting deicing/anti-icing:

(1) Mechanical removal of loose contamination

If a significant amount of loose snow is on the airplane, the expenditure of a relatively large amount of deicing fluid can be avoided if the snow is removed mechanically.

(2) One-step deicing/anti-icing

Fluid is applied in one step to remove frozen contamination and provide time-limited anti-ice protection.

(3) Two-step deicing/anti-icing

Two fluid applications are made: the first to deice using hot water or a water/fluid mixture; the second to anti-ice using anti-icing fluid or a water/fluid mixture.

NOTE

1. If heated water is used for the first step, the second step must be completed as quickly as possible to prevent re-freezing.
2. A spray trajectory of 3 metres (10 feet) is recommended to ensure that direct spray does not damage airplane surfaces.

3. Application on airplane surfaces should always be from the leading edge to the trailing edge and from the wing tip to the wing root.

B. Removal of loose contamination

If the airplane is covered with a significant amount of snow:

(1) Slats and flaps .....Keep in present position

Moving the slats/flaps can contribute to contamination of the actuators.

(2) Snow .....Remove from these areas and inspect for the presence of adhering ice, frost, or snow:

- Wings – leading edges, upper and lower surfaces,
- Vertical and horizontal stabilizers – leading edges, upper/lower surfaces, and side panels,
- Flaps, flap tracks, and flap drives,
- Slats, slat tracks, and slat drives,
- Ailerons, elevators, rudder, multi-function spoilers, and ground spoilers,
- Air data probes/sensors, AOA vanes,
- Windshield, windows, door sills, and surrounds,
- Antennas,
- Fuel drains,
- Engine and APU intakes, APU exhaust, and
- Landing gear and landing gear bays.

(3) Tactile check .....Accomplish, as required.

If frozen contamination is found adhering to critical surfaces:

(4) Perform one-step or two-step deicing/anti-icing.

– COMPLETE –

C. Preparation for deicing/anti-icing

WARNING

For personal safety and to avoid occurrence of incidents caused by engine suction or blast, engines must stay at IDLE.

CAUTION

1. The deicing/anti–icing equipment should be positioned to avoid direct impingement on engine intakes, flight crew emergency exit hatch, windshields, cabin windows, AOA vanes, pitot heads, static vents, wheels and brakes. Direct impingement is defined as anti–ice fluid jet impact due to spray velocity which may cause mechanical damage.
2. Spray must not be directed at the trailing edges of control surfaces. Such spray may force partially melted contamination into hinge mechanisms and under control shrouds with the risk of later re-freezing.
3. An airplane that has been anti-iced must not receive another coat of Type II, Type III or Type IV fluid on top of the existing film. If the holdover time is exceeded, surfaces must first be checked and, if required, be deiced with a mixture of hot water and deicing fluid, before another application of Type II, Type III or Type IV fluid is made.
4. Type II, Type III or Type IV fluids must never be applied to the windshields and side windows.

C. Preparation for deicing/anti-icing (Cont'd)

5. Application of deicing/anti-icing fluid on wheel brake assemblies will seriously degrade braking performance.
6. With the APU operating, ingestion of deicing/anti-icing fluid will contaminate the air-conditioning system and cause unpleasant fumes and odors to enter the airplane. This may also cause erratic operation and possible damage to the APU.

D. Deicing/anti-icing procedures

Before fluid is applied:

(1) Engine(s) is/are operating:

➔ **Yes –** Go to (2)

➔ **No –** Go to (38)

(2) Engine(s) is/are operating:

Before taxi, before de-icing:

(3) HYD 3A ..... AUTO

<Mod 291002> or <Post-SB BD500-291002>

(4) HYD 3B ..... AUTO

<Mod 291002> or <Post-SB BD500-291002>

(5) HYD 2B ..... AUTO

(6) APU ..... As required

I (7) ♦♦ Wing anti-ice test ..... Complete

With at least one pack and engine bleed available:

(a) ANTI-ICE, WING ..... ON

D. Deicing/anti-icing procedures (Cont'd)

(b) AVIONIC synoptic page ..... Select

(c) AVIO, TEST – WING A/ICE ..... Select

(d) Confirm PASS is shown.

(e) ANTI-ICE, WING .....AUTO or ON

(8) ANTI-ICE, COWL .....AUTO or ON

ON if icing conditions exist.

(9) NOSE STEER ..... Select on

(10) EICAS and INFO ..... Checked

Both pilots check messages.

When aircraft in position/ready for deicing:

(11) PARK BRAKE ..... ON

(12) NOSE STEER ..... OFF

(13) Thrust levers ..... IDLE for the duration of the operation.

If the APU is running, make sure the personnel that does the fluid application are aware of the location of the APU air intake and have been instructed to avoid fluid spray that can be ingested by the APU.

(14) APU .....As required

It is recommended to turn the APU OFF. Confirm door is closed if APU is OFF.

(15) L PACK ..... OFF

(16) R PACK ..... OFF

(17) L BLEED ..... OFF

(18) APU BLEED ..... OFF

(19) R BLEED ..... OFF

(20) EQUIP COOLING, INLET ..... OFF

D. Deicing/anti-icing procedures (Cont'd)

Stabilizer should remain in current position for deicing if there are signs of ice around the visor fairing or the horizontal stabilizer/elevator-to-aft-fuselage interface.

(21) Stabilizer trim ..... Set to 5 units

If accumulation of frost, ice, or snow is suspected while slats/flaps are extended, leave slats/flaps at current position for deicing.

(22) FLAP 0

To prevent damage, the pilot must advise the deicing operator to avoid direct spraying of anti-icing fluid on the following:

- *Windshields, side windows, and cabin windows,*
- *Flight crew emergency exit hatch,*
- *ADS (to prevent ingestion) and TAT probes,*
- *AOA vanes,*
- *Engine cowls intake (to prevent ingestion) and exhaust,*
- *APU inlet/exhaust,*
- *Antennas, and*
- *Wheels and brakes.*

After deicing/anti-icing spraying:

The PIC must ensure that an inspection is done to confirm that critical surfaces are clear of contamination.

D. Deicing/anti-icing procedures (Cont'd)

(23) APU ..... As required

(24) FLAP .....( ) selected

Set takeoff flaps as entered in FMS.

(25) Stabilizer trim ..... ( ) set

(26) Flight controls ..... Checked

(a) FLT CTRL synoptic page ..... Monitor

(b) Sidesticks ..... Checked

One pilot checks the flight controls for full and correct range of movement.

(c) Rudder ..... Checked

Nosewheel steering off or use PEDAL DISC switch on tiller. Ensure full deflection (monitor both sides for correct movement).

(27) NOSE STEER ..... Select on

(28) PARK BRAKE ..... As required

One minute after deicing/anti-icing is complete:

(29) L BLEED ..... Select auto

(30) APU BLEED ..... Select auto

(31) R BLEED ..... Select auto

(32) EQUIP COOLING, INLET ..... Select auto

(33) ANTI-ICE, COWL .....AUTO or ON

(34) ANTI-ICE, WING .....AUTO or ON

One minute after bleeds are set to auto:

(35) L PACK ..... Select auto

(36) R PACK ..... Select auto

D. Deicing/anti-icing procedures (Cont'd)

(37) Before takeoff procedure .....Accomplish Refer to Normal procedures – Before flight – Before takeoff.

– COMPLETE –

(38) Engine(s) is/are not operating:

(39) APU is OFF:

➔ **Yes –** Go to (40)

➔ **No –** Go to (57)

(40) APU is OFF:

Before fluid is applied:

(41) Doors ..... Closed

(42) External power ..... As required

(43) EQUIP COOLING, INLET ..... OFF

To prevent damage, the pilot must advise the deicing operator to avoid direct spraying of anti-icing fluid on the following:

- *Windshields, side windows, and cabin windows,*
- *Flight crew emergency exit hatch,*
- *ADS (to prevent ingestion) and TAT probes,*
- *AOA vanes,*
- *Engine cowls intake (to prevent ingestion) and exhaust,*
- *APU inlet/exhaust,*
- *Antennas, and*
- *Wheels and brakes.*

After deicing/anti-icing spraying:

The PIC must ensure that an inspection is done to confirm that critical surfaces are clear of contamination.

D. Deicing/anti-icing procedures (Cont'd)

Before APU is started or external air is established:

(44) L PACK ..... OFF

(45) R PACK ..... OFF

(46) L BLEED ..... OFF

(47) APU BLEED ..... OFF

(48) R BLEED ..... OFF

(49) APU or external air ..... START / Establish

One minute after deicing/anti-icing is complete:

(50) L BLEED ..... Select auto

(51) APU BLEED ..... Select auto

(52) R BLEED ..... Select auto

(53) EQUIP COOLING, INLET ..... Select auto

One minute after bleeds are set to auto:

(54) L PACK ..... Select auto

(55) R PACK ..... Select auto

(56) Before start procedure ..... Accomplish Refer to Normal procedures – Before flight – Before start.

– COMPLETE –

(57) APU is ON:

Before fluid is applied:

(58) Doors ..... Closed

(59) External power ..... As required

(60) L PACK ..... OFF

(61) R PACK ..... OFF

D. Deicing/anti-icing procedures (Cont'd)

(62) L BLEED ..... OFF

(63) APU BLEED ..... OFF

(64) R BLEED ..... OFF

(65) EQUIP COOLING, INLET ..... OFF

To prevent damage, the pilot must advise the deicing operator to avoid direct spraying of anti-icing fluid onto the following:

- *Windshields, side windows, and cabin windows,*
- *Flight crew emergency exit hatch,*
- *ADS (to prevent ingestion) and TAT probes,*
- *AOA vanes,*
- *Engine cowls intake (to prevent ingestion) and exhaust,*
- *APU inlet/exhaust,*
- *Antennas, and*
- *Wheels and brakes.*

After deicing/anti-icing spraying:

The PIC must ensure that an inspection is done to confirm that critical surfaces are clear of contamination.

One minute after deicing/anti-icing is complete:

(66) L BLEED ..... Select auto

(67) APU BLEED ..... Select auto

(68) R BLEED ..... Select auto

(69) EQUIP COOLING, INLET ..... Select auto

One minute after bleeds are set to auto:

(70) L PACK ..... Select auto

(71) R PACK ..... Select auto

D. Deicing/anti-icing procedures (Cont'd)

(72) Before start procedure .....Accomplish Refer to Normal procedures – Before flight – Before start.

– COMPLETE –

PHASE OF FLIGHT PROCEDURES

A. Pushback

It is recommended to delay engine start until pushback or towing is completed. The flight crew must be aware that on slippery surfaces the parking brake may not be enough to prevent forward motion of the airplane, with the engines at idle thrust.

B. Engine start procedure

(1) Engine start procedure .....Accomplish

(2) Engine instruments .....Monitor for normal operation

NOTE

During cold weather starts, initial oil pressure response may be slow and the oil pressure indication may be higher than normal.

– COMPLETE –

C. Engine warm-up

Refer to the Airplane Flight Manual (BD500-3AB48-32200-00), Chapter 2 – Limitations.

D. Taxi

Recommendations:

- Avoid large and rapid nosewheel steering inputs on slippery surfaces.

- Maintain a greater than normal distance between airplanes especially when slush, standing water, ice or snow is present on surface of the movement area.
- During cold weather operations, use of a moderate brake application to warm the brakes before takeoff is recommended to eliminate moisture and prevent possible brake freezing. Monitor BTMS during taxi.

E. Ice shedding (on ground)

Refer to Airplane Flight Manual (BD500-3AB48-32200-00), Chapter 2 – Limitations.

Engine ice shedding must be performed when the OAT is 3°C (37°F) or below and visible moisture in any form is present such as fog, rain, snow, sleet or ice crystals. Engine run-ups must be, momentarily, to a minimum of 60% N1 at intervals no greater than 30 minutes. Takeoff must be initiated within the 30-minute interval, otherwise a final ice shedding run-up must be done immediately before takeoff to ensure normal engine operation.

If a final engine ice shedding is required just before takeoff, do as follows:

- Advance thrust levers to achieve of 60% N1.
- Set thrust levers to IDLE.
- Continue with normal takeoff procedure.

The conditions that follow may be observed during ice shedding on the ground:

- Vibrations may increase during the ice shedding process.
- Ice shedding may be characterized by a sharp metallic noise as ice impacts the side of the nacelle.
- An airframe vibration and a change in engine noise may occur during the ice shedding process.

F. Before takeoff

Ensure all engine bleed and runway condition penalties have been considered in takeoff performance calculations.

Before takeoff, if the holdover time has expired, the airplane must be inspected again and deiced/anti-iced if necessary.

G. Takeoff

Recommendations:

- If the airplane starts to slide on the ice or snow during thrust application, and takeoff performance allows, release the brakes and begin the takeoff roll. Expect lag in nosewheel steering response and nosewheel skidding and apply corrections as necessary.
- Consider delaying gear retraction after takeoffs from slush or snow covered runways.

H. In flight

When operating for extended periods in icing conditions, engine vibrations may be encountered, even with the anti-ice on. A momentary increase in thrust, up to CLB thrust, should stop undesirable vibrations.

I. Descent and approach

Recommendations:

- Anticipate wing anti-ice requirements during descent. This may increase idle thrust settings and result in a lower rate of descent.
- Ensure all engine bleed and runway condition penalties have been considered in the landing/go-around performance calculations.
- Avoid holding in icing conditions for longer than is necessary.
- Ensure that the available cleared runway width is sufficient.
- Take note of braking action reports.

A diversion should be considered:

- During extreme weather conditions (i.e. freezing rain).

- When braking action is reported to be poor.
- With strong crosswinds and slippery runways.

J. Landing

Recommendations:

- When landing, accomplish a positive landing to ensure initial wheel spin up, free up frozen brakes, and reduce the risk of hydroplaning.
- Lower the nosewheel immediately.
- Use autobrake, if available. If not, apply brakes normally with steadily increasing pressure to allow the anti-skid system to modulate brake pressures to achieve maximum braking.
- Use maximum reverse thrust as soon as possible after touchdown. Thrust reversers are most effective at high speed.
- Expect skidding and hydroplaning to occur, and be prepared to make the necessary corrections.
- If a loss of directional control occurs, reduce reverse thrust to idle reverse and if necessary, return the engines to forward idle thrust to return to the centerline. Regain the centerline with the rudder and/or differential braking.

K. Taxi-in and parking

Recommendations:

- Do not retract the flaps if the landing occurred on a contaminated runway, to avoid possible damage to the structure and mechanism by frozen slush and/or snow.
- Expect that movement areas may be slippery and that the use of reverse thrust may be necessary to stop the airplane.

LEAVING THE AIRPLANE

A. Conditions

Based on the forecast weather conditions, the crew should assess if the airplane will become cold-soaked or not, and choose from the appropriate procedures that follow:

- If cold soak is not likely, refer to Cold soak not likely.
- If cold soak must be prevented, refer to Cold soak prevention.
- Otherwise, continue with aircraft cold soak preparation, refer to Cold soak preparation.

B. Cold soak not likely

Recommendations:

- If able, park on a clear or sanded spot.
- Park into wind, if possible.
- In addition to the normal procedures for securing the airplane, the flight crew must ensure that ground personnel provide adequate servicing of the airplane, appropriate for the expected weather, especially for prolonged or overnight stops.

At airports where normal support is not available, the flight crew should make certain that the following procedures are done:

(1) Wheel chocks .....Check in place

(2) PARK BRAKE ..... OFF

Wheel chocks must be in place and parking brake off to eliminate the possibility of the brakes freezing.

(3) Protective covers .....Installed

(4) Engine covers (if required by weather conditions) .....Installed

B. Cold soak not likely (Cont'd)

(5) Water, lavatory, and waste systems ..... As required

If adequate airplane interior heating cannot be provided, the water, lavatory, and waste systems must be drained.

– COMPLETE –

C. Cold soak prevention

The intent of this procedure is to prevent critical equipment from reaching the point of cold soak, to allow for faster and easier aircraft preparation for the next flight.

Aircraft preparation:

Recommendations:

- If able, park on a clear or sanded spot.
- Park into wind, if possible.

(1) Wheel chocks ..... Check in place

(2) PARK BRAKE ..... OFF

Wheel chocks must be in place and parking brake off to eliminate the possibility of the brakes freezing.

(3) Water, lavatory, and waste systems ..... As required

(4) Protective covers ..... Installed

(5) Engine covers (if required by weather conditions) ..... Installed

(6) External power ..... Connected

Electrical and electronic equipment warm by their own power consumption and heat generation.

(7) External low pressure ground air (if available) ..... Connect

C. Cold soak prevention (Cont'd)

APU and engine cold soak prevention:

(8) APU and engine oil temperatures ..... Monitor

Before the oil temperature reaches the lower limits for ground starting:

(a) Start the APU and/or engines, as required.

(b) Run the APU and/or engines long enough to warm up the oil.

(c) Warm up the cabin using bleed air/packs.

Preparation for next flight:

(9) Proceed to standard aircraft preflight preparation.

– COMPLETE –

D. Cold soak preparation

Recommendations:

- If able, park on a clear or sanded spot.
- Park into wind, if possible.

(1) Wheel chocks .....Check in place

(2) PARK BRAKE ..... OFF

Wheel chocks must be in place and parking brake off to eliminate the possibility of the brakes freezing.

(3) Water and waste systems .....Drain

(4) Protective covers ..... Installed

(5) Engine coves (if required by weather conditions) ..... Installed

(6) Aircraft batteries ..... Remove

D. Cold soak preparation (Cont'd)

NOTE

If ambient temperature is expected to be below –15°C (5°F), it is recommended that the aircraft batteries be removed and stored at room temperature. This is especially important if the APU will be started using batteries after the cold soak.

– COMPLETE –

E. Aircraft warm-up procedure after cold soak

(1) Before applying any electrical power, if the electronic or electrical equipment are at temperatures below –40°C (–40°F), use a heater to warm equipment as per AMP procedures.

(2) External low pressure ground air ..... Connect

To warm up the cabin.

(3) If APU oil temperature is too low for APU start, use the AMP procedure to preheat the APU.

(4) If engine oil temperature is too low for engine start, use the AMP procedure to preheat the engines.

(5) Aircraft batteries (if removed) ..... Install

(6) External ground power (if available) ..... Connect

(7) Apply power to the aircraft.

(8) Heaters (if applicable) ..... Disconnect

(9) APU (if available) ..... Start

(10) Packs ..... As required

To assist in warming up the cabin.

(11) External low pressure ground air (if applicable) ..... Disconnect

E. Aircraft warm-up procedure after cold soak (Cont'd)

(12) HYD 3A ..... ON

(13) HYD 3B ..... ON

NOTE

After cold soak to temperatures below –40°C (–40°F), the hydraulic systems must be warmed up so that before takeoff, the HYD 3 reservoir temperature is at least –6°C (21°F). Warming the system can be achieved with selection of the ACMP 3A and/or 3B to ON as early as possible during the aircraft warm–up procedure. Before dispatch, the ACMPs must be selected as per AFM instructions.

Proceed with cold weather aircraft preflight preparation.

– COMPLETE –

HOT WEATHER OPERATIONS

GENERAL

A. Introduction

The main concerns focus primarily on passenger and crew comfort and the significant decrease in the airplane performance which high ground temperatures can affect. The following recommended procedures have been provided to supplement the normal operating procedures and should be observed, as applicable.

B. Preflight preparation

In order to keep the airplane as cool as possible, all doors should be kept closed as much as possible. Cargo bay doors should not be left open any longer than is necessary.

If a ground air source is available:

(1) Low pressure ground air ..... Connect

(2) External power ..... Connected

If APU is the only air source available:

(3) L PACK ..... Select auto

(4) R PACK ..... Select auto

(5) RECIRC AIR ..... Select auto

(6) TRIM AIR ..... Select auto

(7) CKPT and CABIN temperature controls ..... As required

(8) AFT CARGO ..... VENT

(9) FWD CARGO ..... VENT

(10) EQUIP COOLING, EXHAUST ..... Select auto

(11) L WSHLD ..... OFF

(12) R WSHLD ..... OFF

(13) WINDOW HEAT, L SIDE ..... OFF

B. Preflight preparation (Cont'd)

(14) WINDOW HEAT, R SIDE ..... OFF

(15) All air outlets and gaspers .....Open

(16) Window shades ..... Closed

If cooling air is available from an external source, the supply should be connected immediately after engine shutdown and should not be removed until just before engine start.

CAUTION

Failure to disconnect ground conditioned air before closing the passenger doors can result in rapid pressurization of the aircraft. Special attention should be given to, and prompt action taken, in the event of inadvertent unscheduled pressurization of the airplane.

– COMPLETE –

C. Taxi and takeoff

Excessive use and riding of brakes should be avoided. The recommended technique is to allow the airplane to accelerate, then brake to a very slow taxi speed and release the brakes completely.

High speed short radius turns should be avoided because hot temperatures will tend to wear tires at a higher rate.

Ensure all engine bleed and runway condition penalties have been considered in the hot weather takeoff performance calculations.

D. Landing

Runway conditions, particularly at the touchdown area could be slick due to the heavy deposits of rubber and oil which have melted. The occurrence of hydroplaning is not remote, and the procedures mentioned in the Landing portion of the Operation on contaminated runways supplement can be used.

This condition also holds true at the opposite end of the runway in use, therefore, slow down to a manageable speed before turning off from the runway to preclude skidding and departing from the intended path.

Always opt for the longest runway available for landing, if possible.

SUPER–COOLED LARGE DROPLET ICING

GENERAL

A. Super-cooled large droplet icing conditions

Super-cooled Large Droplets (SLD) exist in liquid form at temperatures below 0°C (32°F).

If SLD are large enough, the mass prevents the pressure wave travelling ahead of an airfoil from deflecting it. When this occurs, the droplets impact further aft than a typical cloud-sized droplet and form clear ice (possibly beyond the protected area).

B. Recognition of SLD conditions

The presence of SLD can only be determined by observation of the resulting ice accumulation on unprotected surfaces.

The indicator for differentiating SLD icing is observation of ice accumulation on the flight compartment (cockpit) side windows. Any ice accumulation on the side windows should be taken as an indication that SLD icing conditions are present.

C. Procedures

Operation in SLD icing conditions is prohibited.

When SLD is recognized (observation of side window icing), ensure the wing and cowl anti-ice systems are operating and leave SLD icing conditions immediately.

After leaving SLD icing conditions, the wings should be monitored for signs of ice formation. If ice is observed, then the Ice dispersal procedure should be accomplished. Refer to Non-normal procedures – Ice and rain protection – Ice dispersal procedure.

WINDSHEAR

GENERAL

Windshear is a sudden change in wind speed and/or direction over a short distance. Severe windshear indicates sudden airspeed changes greater than 15 knots or vertical speed changes greater than 500 fpm. Most windshear occurs horizontally, but under certain conditions such as thunderstorms and strong frontal systems, windshear can travel vertically, creating a downburst. The downburst is the most hazardous type of windshear and in that category, the microburst is the most dangerous.

A microburst is an extremely violent downward blast of air that radiates outward from the center when it reaches the ground. The microburst downdraft is typically a few hundred to a few thousand feet across. When it reaches the ground, it spreads out horizontally and can form one or more horizontal vortex rings around the downdraft. The outflow is typically 1 to 2 nm across and the vortex ring can rise to 2000 feet above the ground.

The duration of microbursts, from the initial downburst to dissipation seldom exceeds 15 to 20 minutes, with the maximum shear intensity lasting for about 2 to 4 minutes. Multiple microbursts have been known to occur in the same general area and tend to take a line structure such that the downburst activity could last much longer. When microburst activity starts, be prepared for more windshear encounters.

If windshear is inadvertently encountered, recovery must be started immediately, especially if flight path control becomes marginal.

Indications of marginal flight path control are characterized by uncontrolled changes in excess of the following (+ or –):

- 15 knots indicated airspeed,
- 500 feet per minute vertical speed,
- 5 degrees pitch attitude,
- 1 dot displacement from the glideslope,
- 10 degree variation from nominal heading, and
- Unusual thrust lever position for a significant period of time.

ENVIRONMENT CONDUCIVE TO WINDSHEAR

There is no sure method of predicting when and where windshear will occur. However, the conditions that follow can identify the possible existence of windshear along the flight paths:

- Thunderstorms accompanied by heavy rain (where the air is very humid),
- The presence of virga (rain that evaporates before reaching the ground),
- Strong frontal activity,
- Low level Jetstream, and
- A combination of these conditions:
    - Extreme variations in wind speed and/or direction in a relatively short time,
    - Evidence of a gust front, such as blowing dust over the airport surface,
    - Surface temperatures higher than 30°C (86°F), and/or
    - Dew point spread of 4°C (7.2°F) or more.

Strong microbursts can also occur without precipitation, even during sunny weather conditions.

Windshear can also be caused by strong surface winds in the vicinity of small hills or large buildings and by sea breeze fronts.

PRECAUTIONARY ACTIONS

Avoidance is still the best course of action to take if windshear is known or suspected in the area. Stay clear of thunderstorm cells, heavy precipitation, virga and areas of known windshear.

Flight crew awareness, preparation and coordination cannot be emphasized enough. A thorough knowledge of and familiarity with the phenomenon and the various meteorological conditions indicative of windshear activity is necessary if one is to be prepared for the possibility of an inadvertent encounter.

- Monitor for windshear PIREPs.

- Use the weather radar to locate thunderstorm cells in the takeoff or approach areas.

When windshear activity is known or suspected:

At departure airport:

- Delay the takeoff until conditions are favorable.
- Use the longest and most favorable runway available.
- Select the minimum flap setting acceptable for the field length available.
- Use full takeoff thrust (no derate or flex).
- Monitor the IAS during the takeoff roll.
- Obstacle clearance permitting, consider using an increased initial climb speed.

At arrival airport:

- Delay the approach until conditions are favorable or divert to another airport.
- Use the longest and most favorable runway available.
- Add an appropriate wind correction to the final approach speed.
- Fly a normal approach and consider using the autopilot and autothrottle to allow for more monitoring and recognition time.
- Do not make large thrust reductions or trim changes to correct rapid increases in airspeed for they could vary from an increase to a decrease in a very short time.
- If there is a significant reduction or increase in rate of descent, consider a go-around.

PREDICTION

The aircraft is equipped with a Predictive Windshear System (PWS). The system uses weather radar information to predict windshear conditions during the takeoff and approach phases. It is active when the weather radar is operating or when in TEST or STDBY mode.

There are two levels of predictive alerts:

(1) Caution aural indication

- MONITOR RADAR DISPLAY during the takeoff and approach phases.

(2) Warning aural indication

- WINDSHEAR AHEAD, WINDSHEAR AHEAD for the takeoff and climbout phases, and
- GO AROUND WINDSHEAR AHEAD for the approach/landing phases.

A. Takeoff

During takeoff procedures, annunciation of new PWS alerts is inhibited when the calibrated speed is more than 80 knots, until the aircraft exceeds 50 feet AGL. The PWS function is active until the aircraft radio altitude exceeds 2400 feet.

If there are PWS warning indications during the takeoff phase (below 80 knots), it is recommended that the crew complete a rejected takeoff (refer to Non-normal procedures – Rejected takeoff.).

B. Approach

During approach procedures, the PWS alert is activated when the radio altitude is less than 2300 feet and stays active until 50 feet AGL.

If there are PWS warning indications during the approach phase, it is recommended that the crew complete a go-around (refer to Normal procedures – Go-around procedure.).

DETECTION

The airplane is equipped with a reactive Windshear Detection and Escape Guidance System that receives information from the TAWS. The system detects windshear conditions between 10 and 1500 feet radio altitude.

The Detection and Escape Guidance System provides aural and visual alert messages and shows pitch and low speed cue symbology as guidance to escape/recover. If engaged, the autopilot and autothrottle stay engaged.

When windshear is encountered, an aural WINDSHEAR, WINDSHEAR, WINDSHEAR indication sounds and a red WINDSHEAR message is shown on the PFD (decreasing performance windshear).

WARNING

A windshear encountered on the runway does not activate the windshear detection system. For detection, It is crucial to closely monitor airspeed during takeoff.

During a windshear warning, the PF must press TOGA to get the FD escape guidance. The flight path vector is dynamic and the FD cue is set taking into consideration pitch and low speed limits for the actual configuration.

Use of the FD windshear guidance provides the most effective recovery from windshear encounters.

RECOVERY WITH GUIDANCE

A. Windshear warning

If a windshear warning is encountered:

(1) TOGA ..... Select

(2) Thrust levers .....Advance to MAX

(3) FD guidance ..... Follow smoothly and precisely

(4) SPOILER lever ..... RET

(5) Configuration .....Maintain

Do not change landing gear or flap configuration until the vertical flight path is under control.

(6) Follow escape guidance until the windshear condition is no longer indicated.

(7) Monitor flight instruments.

- The PM closely monitors the flight instruments and ensures proper thrust setting.

A. Windshear warning (Cont'd)

- The PM calls out any significant variations in airspeed, rate of climb, pitch, thrust and altitude.

NOTE

TO/WSHR (during takeoff) or GA/WSHR (during approach) will stay as the active mode until another selection is made.

When clear of windshear:

(8) Autopilot ..... As required

(9) Autothrottle ..... As required

(10) Landing gear ..... UP

(11) FD modes ..... As required

(12) FLAP ..... Retract on schedule

(13) ATC .....Advise

– COMPLETE –

RECOVERY WITHOUT GUIDANCE

A. Increasing performance windshear encounter

If an increasing performance windshear occurs during an approach, immediately complete a go-around maneuver.

NOTE

Gusty wind conditions not associated with downdrafts may occasionally trigger a windshear caution during an approach. If flight path control is acceptable and the condition can be positively assessed as not related to thunderstorm or microburst activity, a go-around may not be required.

B. Windshear encounter

In the absence of windshear FD escape guidance:

(1) Thrust levers .....Advance to MAX

(2) Sidestick .....Pull to the aft soft stop

Respect the stick shaker.

(3) SPOILER lever ..... RET

(4) Configuration .....Maintain

Do not change landing gear or flap configuration until the vertical flight path is under control.

(5) Continue windshear escape maneuver until the windshear condition is no longer indicated.

(6) Monitor flight instruments.

- The PM closely monitors the flight instruments and ensures proper thrust setting.
- The PM calls out any significant variations in airspeed, rate of climb, pitch, thrust and altitude.

NOTE

TO/WSHR (during takeoff) or GA/WSHR (during approach) will remain as the active mode until another selection is made.

When clear of windshear:

(7) Autopilot ..... As required

(8) Autothrottle ..... As required

(9) Landing gear ..... UP

(10) FD modes ..... As required

(11) FLAP ..... Retract on schedule

B. Windshear encounter (Cont'd)

(12) ATC .....Advise

– COMPLETE –

FLIGHT IN TURBULENCE

GENERAL

Flight through known turbulence should be avoided as much as possible. During flight, areas with known severe turbulence should be avoided, if possible. In the departure or approach area, when severe turbulence or thunderstorms are reported or observed, delay of takeoff or approach may be required. If flight through turbulence is unavoidable, the procedures that follow are recommended and should be observed, as applicable.

DEFINITIONS

These terms are used to report turbulence:

(1) Light

Turbulence that momentarily causes slight, erratic changes in altitude and/or attitude (pitch, roll, yaw).

(2) Moderate

Turbulence that is similar to light turbulence but of greater intensity. Changes in altitude and/or attitude occur but the aircraft remains in positive control at all times. It usually causes variation in indicated speed.

(3) Severe

Turbulence that causes large, abrupt changes in altitude and/or attitude. It usually causes large variations in indicated airspeed. Aircraft may be momentarily out of control.

(4) Extreme

Turbulence in which the aircraft is violently tossed about and is practically impossible to control. It may cause structural damage.

(5) Frequency

- Occasional: Less than 1/3 of the time.
- Intermittent: 1/3 to 2/3 of the time.
- Continuous: More than 2/3 of the time.

FLIGHT CREW AND PASSENGER CONSIDERATIONS

Whenever possible, advise the cabin crew before takeoff of anticipated enroute turbulence so that they can plan their activities accordingly.

Before entering an area of known turbulence, secure all loose equipment in the flight compartment and cabin. Shoulder harnesses should be worn by flight crew. When turbulence is encountered, follow this guidance:

(1) Light turbulence

- Select SEAT BELTS to ON.
- Advise the passengers over the PA system of turbulence and request that they fasten their seatbelts.

(2) Moderate or severe turbulence

- Select SEAT BELTS to ON.
- Advise the passengers over the PA system of turbulence and request that they fasten their seatbelts.
- Advise cabin crew to be seated.

(3) When clear of turbulence

- SEAT BELTS as required.
- Inspect the cabin for damage if severe or extreme turbulence was encountered.

(4) Reporting

Crews must, at all times, report landings of abnormal severity or attitude, hard landings, severe turbulence encounters or aircraft upsets.

CONSIDERATIONS FOR FLIGHT IN TURBULENCE

A. Autopilot and autothrottle

The autopilot and autothrottle should be used when flying through turbulence and should be regarded as the primary means of aircraft control in turbulence. However, some flight conditions might require manual control.

B. Airspeed

The maximum airspeed for turbulence penetration is 265 KIAS below 10000 feet or 280 KIAS above 10000 feet or 0.75 Mach, whichever is lower.

C. Altitude

Large altitude variations are possible in severe gusts or drafts. Do not make abrupt flight control inputs to maintain altitude. Allow altitude to vary, provided there is adequate terrain clearance. The crew may have to advise ATC if unable to maintain accurate altitude in RVSM airspace.

D. Attitude

In severe gusts or drafts, large pitch changes may occur. If the airplane is flown manually, hold wings level and smoothly adjust back to the required pitch attitude.

OPERATION IN VOLCANIC ASH/DUST

GENERAL

Fight operations in areas of known volcanic activity should be avoided. This consideration is most important during hours of darkness or daytime instrument meteorological conditions when volcanic ash/dust clouds may not be visible.

Flight planning considerations should include the review of pertinent NOTAMs, PIREPs, and Volcanic Ash Advisories when a flight is planned into areas of possible volcanic activity. When volcanic activity is currently reported, stay well clear of the area or, if possible, stay on the upwind side of the volcanic ash.

DETECTION

The airplane weather radar is not capable of detecting volcanic ash/dust clouds and is therefore not reliable under these circumstances. The presence of volcanic ash/dust can be indicated by:

- Smoke or dust appearing in the flight compartment,
- An acrid odor similar to electrical smoke,
- Multiple engine malfunctions such as power loss, fluctuating N1, compressor stall, increasing EGTs, flameouts, etc., or
- At night, static discharges (also known as Saint Elmo's fire) can be observed around the windshield and/or windows, accompanied by a bright orange glow in the engine inlets.

EFFECTS

Flight into volcanic ash/dust clouds can result in the degradation of airplane and engine performance. the adverse effects of volcanic ash/dust encounter are as follows:

- Rapid erosion and damage to the internal components of the engines.
- Ash/dust build-up and blockage of the guide vanes and inlet cowls, which can cause surge, loss of thrust and/or high EGT.

- Ash/dust blockage of the smart probes, which can cause erratic airspeed indications.
- The abrasive properties of volcanic material can cause serious damage to the engines, wing and tail leading edge surfaces and windshields.
- Volcanic ash/dust can also cause the windshield to become translucent, effectively reducing visibility.

CORRECTIVE ACTIONS

A. Procedure

The best course of action is avoidance. However, volcanic ash/dust clouds may sometimes extend for hundreds of miles and an encounter could be unavoidable. The need to exit the area as quickly as possible cannot be overemphasized.

If an inadvertent encounter is experienced, this procedure is recommended:

(1) Thrust ..... Reduce towards IDLE

If altitude permits, engine thrust should be reduced towards idle to maximize the engine stall margin and lower the EGT. This action would also reduce the build-up of volcanic material on the turbine vanes.

(2) Reverse course if possible.

Clear air must be regained as soon as possible. Terrain permitting, a descending 180-degree turn is likely to be the fastest way out of the contaminated air.

(3) ANTI-ICE, L COWL ..... ON

(4) ANTI-ICE, WING ..... ON

(5) ANTI-ICE, R COWL ..... ON

These actions (if thrust is at IDLE) increase bleed air extraction from the engines and further improve the engine stall margin.

(6) EGT ..... Monitor

A. Procedure (Cont'd)

Closely monitor the EGT and ensure that the limits are not exceeded.

- *If it becomes necessary to shut down an engine to prevent exceeding EGT limits, an engine restart can be attempted once the engine has cooled down.*
- *If the engine fails to start, repeated attempts should be done immediately.*

NOTE

A successful start may not be possible until the airplane is clear of the volcanic ash/dust, and the airspeed and altitude are within the airstart envelope.

After exiting the area of volcanic ash/dust cloud and the engine(s) are restarted, systems should be restored to normal operation. ATC must be advised of the encounter.

– COMPLETE –

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OPERATIONAL GUIDANCE – FLIGHT

BEFORE FLIGHT

IN FLIGHT

List of figures

IN FLIGHT

FMS GUIDANCE

GENERAL

As a general rule, either pilot can make changes to the FMS.

On the ground, FMS modifications should be done with the aircraft stopped. If FMS entries must be made during the taxi phase, the PM makes the changes. The PF must confirm the entries before they are executed.

In flight, the PM normally makes all FMS entries. If crew workload permits, with the autopilot engaged, the PF can do the FMS programming or changes. In either case, all programming or changes must be confirmed by both pilots before they are executed.

It is important to monitor all FMS messages shown in the FMS message dialog box. If the white MSG or amber MSG button is shown on the bottom bar of the FMS, the message dialog box must be reviewed for important messages related to the state of the active FMS source.

BLOCK FUEL

In certain cases, during the FMS programming on DU 5, the required BLOCK FUEL field can appear greyed out on either FMS 1 or FMS 2 or both, prohibiting data entry. In such cases, the crew should use DU 2 (FMS 1) or DU 3 (FMS 2) to enter the block fuel.

PERF – DEP LOCKED OUT

In certain cases, after all required entries are made on the FPLN – FUEL tab, the PERF – DEP tab can appear to be locked out, where entries or changes are no longer allowed. Also, the stab trim may start flashing.

In such cases, to reset the PERF – DEP tab, the crew must re-enter the ZFW – WT and CG values on the FLPN – FUEL tab.

VERTICAL SITUATION DISPLAY (VSD)

A. Map display, symbols and overlay functions

Flight crews must manage the MAP display, symbols and overlay selections based on the current phase of flight. When multiple symbols are selected, it can cause clutter on the MAP display at higher map ranges where flight plan waypoint information may not be readable. Lower MAP ranges are recommended for departures and arrivals.

Weather (WX) and terrain (TERRAIN) are recommended overlay functions for all phases of flight. Lower to mid MAP ranges are recommended to assess or avoid weather.

It is recommended that the VSD be used for departures and arrivals to enhance situational awareness of the aircraft vertical profile and surroundings, specifically in mountainous areas.

During arrivals with many altitude constraints, it is recommended that the VSD be used to cross-check vertical descent profile to meet the altitude constraints on the FMS. Lower to mid MAP ranges are recommended for descent and arrivals.

For all phases of flight, the VSD must not be used for vertical navigation. It must only be used to enhance vertical situational awareness. The flight crew must focus on the information shown on the PFD to confirm appropriate vertical path during the approach.

NOTE

The flight crew must not rely TERRAIN and VSD for navigation and terrain avoidance.

CARBON BRAKE USAGE

GENERAL

Carbon brakes are the preferred choice of aircraft manufacturers for their light weight and efficiency. Carbon brake heat sink materials have greater heat capacity per unit of weight than steel and the operating temperatures of the carbon heat sink are substantially above that of the steel. Carbon brakes continue to work effectively at temperatures well above the temperature of steel brakes. The wear rate of carbon brakes is less sensitive to increase as a function of temperature but more sensitive to the number of braking applications. Carbon brake wear while in the cool brake-temperature range results in greater wear than the same application when the brake is in its optimum temperature range. Dispatch with BTMS values between 04 and 06 is recommended. It helps to reduce brake wear and extend brake life.

Braking techniques should aim at reducing brake wear while optimizing their temperature. For example: during taxi, when the brakes are cool, let the airplane accelerate and then use a single, smooth brake application to reduce the taxi speed down. During taxi with multiple turns on different taxiways, expect the required deceleration and apply a single brake application before engaging the turn. Monitor your brake temperature index during long taxi procedures. Single engine taxi out and taxi in is recommended to reduce aircraft ground speed and brake energy required.

During landing roll, a single brake application down to taxi speed would optimize the use of brakes by minimizing the wear, while bringing the brake temperature closer to the optimum range. The use of autobrakes during landing roll will help reach this goal by providing symmetric and optimum brake pressure during landing roll, especially on wet and contaminated runways. Autobrake disengagement should be done in a timely manner, so as to prevent multiple brake applications before exiting the runway. It is recommended to minimize the use of reverse thrust whenever possible to achieve the optimum brake temperature. This will reduce brake wear.

Due to the nature of carbon brakes, be aware there could be a significant delay from the moment the brakes are applied and released to the moment their peak temperature is reached and shown on the synoptic page. Do not drag the brakes, as it results in a greater rate of brake wear.

During cold weather operations, flight crews are reminded that carbon disk brakes can absorb or retain moisture. If a wet brake is not heated sufficiently to evaporate moisture from the disk surfaces, there is a possibility that after in-flight cold soak or parking in freezing conditions, the brake disk surfaces may freeze together. Should this occur, taxiing might produce a flat spot on the tire or the tire may burst on landing.

Especially when operating to or from contaminated runways, if you suspect your brakes to be wet (or to prevent them from getting wet), these procedures will help to prevent frozen brakes.

(1) Taxi

During taxi, a few firm brake pressures permit the brake stack to reach a warm condition, evaporating any moisture buildup within the disk stack.

(2) Takeoff

From slush or snow covered runways, delay landing gear retraction if conditions permit.

(3) Landing

Make a positive contact with the runway and achieve a wheel load as quickly as possible.

FLIGHT CREW OXYGEN SYSTEM – DISPATCH/CONSUMPTION DATA

GENERAL

A. Minimum oxygen dispatch pressure

NOTE

The oxygen pressure EICAS indication is corrected for ambient temperature and indicates equivalent pressure at 70 °F (21°C).

The minimum oxygen dispatch pressure table that follows defines the minimum crew oxygen pressure required for dispatch (as indicated on the EICAS page). This corresponds to the quantity of oxygen necessary to cope with an emergency descent (with 100% mask setting), followed by continuous cruise at 10000 ft (with normal mask setting), based on normal mission consumptions.

Minimum oxygen dispatch pressure		
Number of crew members	Minimum pressure (psig)	
	Mountain regions[1]	Other regions
2	950	900
3	1300	1200

[1] Refers to flight routes that go through an area that does not allow for flights at or below 10000 feet because of terrain heights.

B. Crew oxygen consumption data

The table that follows shows the total time (in hours and minutes) that oxygen will be available at various mask settings:

- During level flight at maximum altitude,
- At initial bottle pressure of 1050 psig (pressure threshold that triggers the **CREW OXY LO PRESS** caution message, and
- At 1850 psig (maximum crew oxygen bottle pressure).

In all cases, a safety margin of 16.6% was subtracted from the full charge of 1850 psig, since the 1050 psig threshold already includes such margins.

Oxygen autonomy at 8000 ft cabin altitude				
Level flight at cabin altitude of 8000 ft				
Number of crew members	**2**		**3**	
Initial bottle pressure	**1050 psig**	**1850 psig**	**1050 psig**	**1850 psig**
Normal mask setting	2h33min	4h59min	1h42min	3h19min
100% mask setting	0h37min	1h14min	0h25min	0h49min
Emergency mask setting	0h34min	1h07min	0h22min	0h44min

The tables that follow show the total time (in hours and minutes) that oxygen are available at various diversion altitudes, such as after an emergency descent (as per 14CFR 121.333(b) and CAR 605.31(2) NOTE 3, or from maximum altitude to diversion altitude in 10 minutes). The assessment is done for the initial bottle pressure of 1050 psig (pressure threshold that triggers the **CREW OXY LO PRESS** caution message) and 1850 psig (maximum crew oxygen bottle pressure). In all cases, a safety margin of 16.6% was subtracted from the full charge of 1850 psig, since the 1050 psig threshold already includes such margins.

Oxygen autonomy at various diversion altitudes with mask in normal mode				
10-minute descent from 41000 ft to level flight at safe altitude (normal mask setting for both descent and level flight)				
Number of crew members	**2**		**3**	
Initial bottle pressure	**1050 psig**	**1850 psig**	**1050 psig**	**1850 psig**
Cabin pressure altitude 10000 ft	2h43min	5h32min	1h44min	3h37min
Cabin pressure altitude 14000 ft	2h43min	5h32min	1h44min	3h37min

Oxygen autonomy at various diversion altitudes with mask in normal mode				
10-minute descent from 41000 ft to level flight at safe altitude (normal mask setting for both descent and level flight)				
Number of crew members	**2**		**3**	
Initial bottle pressure	**1050 psig**	**1850 psig**	**1050 psig**	**1850 psig**
Cabin pressure altitude 18000 ft	2h20min	4h46min	1h29min	3h07min
Cabin pressure altitude 20000 ft	2h08min	4h21min	1h22min	2h50min

Oxygen autonomy at various diversion altitudes with mask in 100% mode then normal mode				
10-minute descent from 41000 ft to level flight at safe altitude (100% mask setting for descent and normal mask setting for level flight)				
Number of crew members	**2**		**3**	
Initial bottle pressure	**1050 psig**	**1850 psig**	**1050 psig**	**1850 psig**
Cabin pressure altitude 10000 ft	2h32min	5h21min	1h33min	3h25min
Cabin pressure altitude 14000 ft	2h32min	5h21min	1h33min	3h25min
Cabin pressure altitude 18000 ft	2h10min	4h36min	1h20min	2h57min
Cabin pressure altitude 20000 ft	1h59min	4h12min	1h13min	2h42min

Oxygen autonomy at various diversion altitudes with mask in 100% mode				
10-minute descent from 41000 ft to level flight at safe altitude (100% mask setting for both descent and level flight)				
Number of crew members	**2**		**3**	
Initial bottle pressure	**1050 psig**	**1850 psig**	**1050 psig**	**1850 psig**
Cabin pressure altitude 10000 ft	0h32min	1h08min	0h19min	0h44min
Cabin pressure altitude 14000 ft	0h38min	1h22min	0h23min	0h52min
Cabin pressure altitude 18000 ft	0h46min	1h37min	0h28min	1h02min
Cabin pressure altitude 20000 ft	0h51min	1h47min	0h31min	1h09min

PARTIAL POWER-OFF

GENERAL

A. Partial power-off procedure

Some ground power units are known to display power interruptions. When the ground power unit experiences an unexpected shutdown, the external power system does not automatically return to IN USE, which can cause the aircraft to stay on battery power, without any battery charging capability. Battery depletion will occur.

When required by operational constraints the partial power-off procedure that follows can be used. It is the responsibility of the PIC to ensure that the integrity of the airplane is not affected by the application of this procedure, otherwise, the full power-off procedure must be done (refer to Chapter 3 – Normal procedures – Power-off).

(1) ECL ..... DU 2

(2) EMER LTS ..... OFF

(3) EXT PWR ..... IN USE

(4) APU ..... OFF

Confirm APU has completed its cooldown phase (approximately 60 seconds) and is shut down, with the APU door closed, before battery power is removed.

(5) BATT 1 ..... OFF

(6) BATT 2 ..... OFF

NOTE

The EQUIP COOLING, INLET switch must stay in auto to avoid possible avionic bay overheat.

If the ground power unit experiences an unexpected shutdown, the **EQUIP BAY COOL FAULT** advisory and **21 EQUIP BAY COOL FAULT – MID GND VLV INOP** info messages may be shown. For more information, refer to Operational guidance – System – Air-conditioning, bleed and pressurization.

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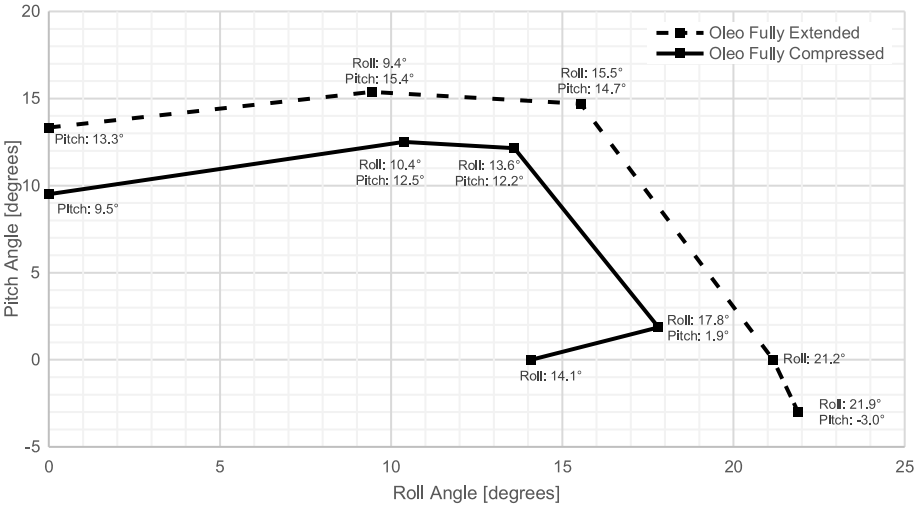
AIRPLANE GEOMETRY CONSIDERATIONS FOR TAKEOFF AND LANDING – GROUND ENVELOPE

GENERAL



Airplane geometry considerations for takeoff and landing – Ground envelope
Figure 08–02–02–1

TAKEOFF – ENGINE FAILURE AFTER V1

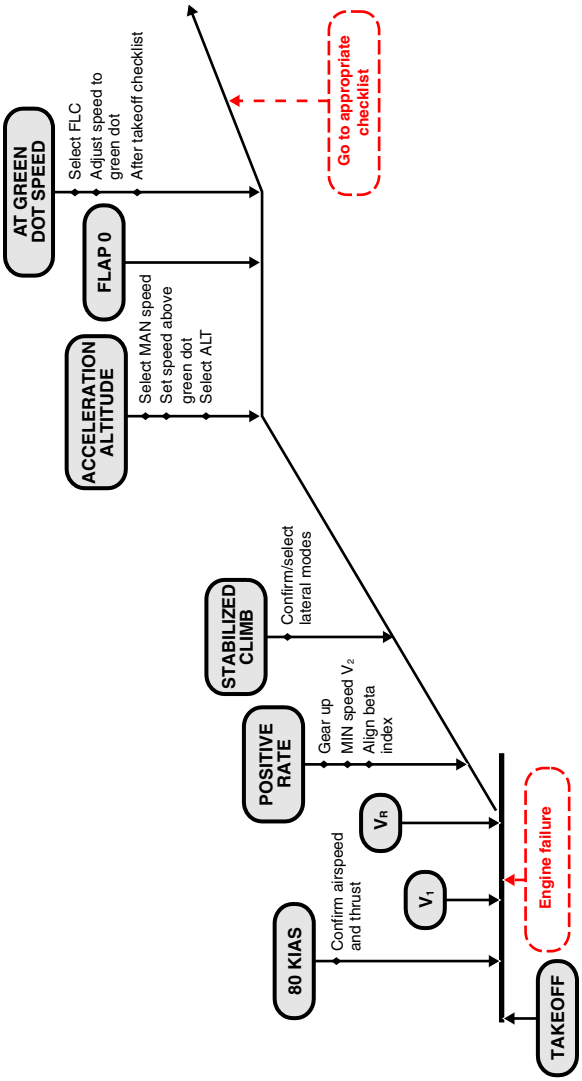
GENERAL

Mode selections and callouts – Takeoff – Engine failure after V_1			
Condition	**Mode selection**	**PF**	**PM**
At 80 KIAS when thrust is at required N1 value			80 knots, thrust set
		Check	
At V_1			V_1
Engine failure			Engine failure
At V_R			Rotate
When positive rate of climb is confirmed			Positive rate
		Gear up	
Stabilized climb	Confirm/select NAV or HDG [2]	FMS 1(2) (HDG)	
			Check
Acceleration altitude	Select MAN speed, set speed above green dot, then select ALT [1]	(V)ALT	
			Check
		FLAP #	
FLAP 0 and green dot speed	Select FLC and adjust/set speed to green dot	(V)FLC	
			Check
Final climb segment		After takeoff checklist	

Mode selections and callouts – Takeoff – Engine failure after V_1			
Condition	**Mode selection**	**PF**	**PM**
			After takeoff checklist complete
		Call for appropriate checklist	

[1] It is important to maintain the speed target above the current speed of the aircraft to avoid unwanted thrust reduction (AT ON) in the level acceleration segment.

[2] If turns below acceleration altitude are required, HDG 1/2 bank must be used until speed is above $V_2 + 10$.



Takeoff – Engine failure after V1 profile
Figure 08–02–02–2

I

NOISE ABATEMENT DEPARTURE PROCEDURE (NADP)

GENERAL

The DEP PROFILE function on FMS, DEP tab can be used to comply with departure noise abatement restrictions at certain airports. The DEP PROFILE drop-down selection triggers changes in flight guidance and automatic thrust reduction (thrust in AUTO mode and autothrottle engaged) during the initial climb phase. There are three DEP PROFILE selections available: STANDARD, NADP – CLOSE-IN, and NADP – DISTANT.

The NADP – CLOSE-IN and NADP – DISTANT selections can be used when changes in the aircraft acceleration and thrust reduction altitudes are needed to comply with departure airport noise restrictions.

A. DEP PROFILE – STANDARD

At aircraft power-up or when a new flight plan is entered, the default DEP PROFILE option is STANDARD.

When STANDARD is selected, the flight guidance adjusts to maintain the planned FMS speed until the programmed acceleration altitude (ACCEL) is reached (default is 1500 ft AAE). At this altitude, the guidance adjusts to accelerate to V_{FE} – 5 KIAS or the final climb speed (i.e. 250 KIAS), as set by the aircraft flap configuration. When the aircraft slats/flaps are retracted (FLAPS CLEAN), the thrust is automatically reduced to the programmed climb thrust (CLB, CLB-1, or CLB-2 as applicable) when the AUTO thrust mode and autothrottle are engaged. If the autothrottle is disengaged the crew must adjust the thrust to the posted climb setting.

DEP PROFILE – STANDARD
Figure 08–02–02–3

B. DEP PROFILE – NADP – CLOSE-IN

The NADP – CLOSE-IN option can be used when the thrust reduction altitude is lower than the acceleration altitude. This selection will give a profile that is aligned with a NADP1 profile.

When NADP – CLOSE-IN is selected, the flight guidance adjusts to maintain the planned FMS speed and thrust setting until the programmed thrust reduction altitude (THR RED) is reached. The thrust is then automatically reduced to the programmed climb thrust (CLB, CLB-1 or CLB-2 as applicable) when the AUTO thrust mode and autothrottle are engaged. If the autothrottle is disengaged, the crew must adjust the thrust to the posted climb setting.

The aircraft continues to climb at $V_2 + 10$ KIAS until the acceleration altitude (ACCEL) is reached where the flight guidance initiates the acceleration to $V_{FE} – 5$ KIAS for the next lower slat/flap setting and the final climb speed (i.e. 250 KIAS) when slats/flaps are retracted.

DEP PROFILE – NADP – CLOSE–IN
Figure 08–02–02–4

If there is an engine failure after the thrust reduction occurs, the thrust automatically goes back to MCT when the AUTO thrust mode and autothrottle are engaged. If the autothrottle is disengaged, the crew must adjust the thrust to the posted MCT. Operators must make sure that the minimum climb gradient requirements are met when the engine failure occurs at or above the thrust reduction altitude during a NADP departure.

C. DEP PROFILE – NADP – DISTANT

The NADP – DISTANT option is used when the acceleration altitude is lower than the thrust reduction altitude. This selection will give a profile that is aligned with an NADP2 profile.

When NADP – DISTANT is selected, the flight guidance adjusts to maintain the planned FMS speed and thrust setting until the programmed thrust reduction altitude (ACCEL) is reached. The aircraft then initiates the acceleration to V_{FE} – 5 KIAS for the next lower slat/flap setting and the final climb speed (i.e. 250 KIAS) when slats/flaps are retracted.

At the same time, at the programmed thrust reduction altitude, the thrust is automatically reduced to the programmed climb thrust (CLB, CLB-1 or CLB-2 as applicable) when the AUTO thrust mode and autothrottle are engaged. If the autothrottle is disengaged, the crew must adjust the thrust to the posted climb setting.

DEP PROFILE – NADP – DISTANT
Figure 08–02–02–5

If there is an engine failure after the thrust reduction occurs, the thrust automatically goes back to MCT when the AUTO thrust mode and autothrottle are engaged. If the autothrottle is disengaged, the crew must adjust the thrust to the posted MCT.

D. NADP required settings

To use the NADP function, these steps must be completed:

1. A flight plan with a departure runway must be entered.
2. The required takeoff PERF – FUEL tab data must be entered.
3. The required takeoff PERF – DEP tab data must be entered.
4. In DEP PROFILE, a NADP profile (NADP – CLOSE-IN or NADP – DISTANT) must be selected.
5. NAV SRC must be selected to FMS.
6. Speed must be selected to FMS.
7. TOGA, NAV, VNAV (VFLC armed) must be selected.
   – TO or HDG can also be used (preset) as lateral modes for NADP departures.

When all the required takeoff entries are completed and the crew selects the applicable flight guidance for takeoff, the NADP status is shown, in white, on the PFD A1 line. If any of the required entries or selections are not completed or are incorrect, the NADP message on the PFD A1 line is shown in amber.

The NADP A1 line message has a lower priority than the SEQ INHIBIT or DISCONTINUITY messages. If the FMS shows SEQ INHIBIT or DISCONTINUITY on the PFD A1 line, the NADP status indication is not shown. The crew must confirm the NADP entries on the PERF – DEP tab.

E. NADP altitudes

During the NADP setup, when the acceleration and thrust reduction altitudes are changed, the difference between these two entries must be 300 feet or more. If not, an amber INVALID ENTRY message is shown.

DEP PROFILE – NADP – CLOSE–IN – INVALID ENTRY
Figure 08–02–02–6

STALL RECOVERY

STALL PROTECTION

A. FBW normal mode load factor protection

The speed at which an aircraft stalls is not constant, and is a function of the aircraft weight and maneuvering load factor. Increased weight and load factors will increase stall speeds for a given stall angle-of-attack (AOA).

The normal load factor protection limits the load, based on aircraft configuration and sidestick position (soft or hard stops).

Turbulence can cause an abrupt increase in AOA, due to the change in direction of airflow relative to the wing.

B. High angle-of-attack protection – Normal mode

This protection ensures the aircraft does not exceed the:

- Operational AOA envelope at the sidestick (soft stop), or
- Maximum AOA at full aft sidestick (hard stop).

When the AOA at minimum trim speed ($V_{MINTRIM}$) is exceeded, the stabilizer nose-up trim is disabled.

When the AOA is between $V_{MINTRIM}$ AOA and the soft stop, the spoilers retract automatically and roll rate is reduced.

When the AOA is greater than the AOA at the soft stop, the stick shaker is activated.

At the hard stop, the AOA is limited to below the stall and the maximum roll angle is decreased.

The high angle-of-attack protection (HAP) function adjusts the protection AOA:

- When in icing conditions and the wing anti-ice system is not activated or has failed
- During abnormal slat/flap configurations
- When sideslip angles are greater than 5 degrees

In normal mode, the aircraft automatically reduces the AOA to inside the operational envelope when the sidestick position is returned to within the soft stop limits.

PITCH PROTECTION FUNCTIONS

A. FBW normal mode

FBW normal mode provides flight envelope protection to help maintain the aircraft within the operational flight envelope. The soft limit (soft stop) is used to provide a tactile cue at the edge of the operational envelope.

If the soft stop is exceeded, tactile, visual, or aural cues indicate that the aircraft has exceeded the operational envelope.

The cues are:

- Steep increase in sidestick deflection force
- SPEED aurals
- Sidestick shaker
- STALL aural and a STALL red flag is shown on the PFD.

STALL RECOVERY

A. Stall recognition and recovery

A stall is characterized by any or all of these indications:

- Buffeting, which could be heavy at times
- A lack of pitch authority
- A lack of roll control
- Inability to stop descent rate
- Stall warning activation

The stall angle-of-attack is normally constant for a given configuration. However, for swept-wing turbojet aircraft the stall angle generally reduces as altitude increases, due to the Mach effect.

A wing stalls when it reaches its critical AOA, where airflow separation results in a loss of lift. This aerodynamic stall can occur at any altitude, thrust setting and/or airspeed.

On this aircraft, the FBW normal mode envelope protection function maintains the aircraft inside the normal flight envelope for stall prevention. In FBW direct mode, these protections are compromised and not available.

The goal of stall recovery training is to ensure that the flight crew recognizes the first indications of an approach to stall and apply the appropriate recovery actions.

Stall recovery is not a precision maneuver. The objective in recovery is to restore the aircraft to normal flight. This is done by reducing the AOA.

After recovery, crews should evaluate why the stall occurred to prevent another instance of stall.

High altitude recovery typically involves substantial loss of altitude when regaining airspeed.

B. Stall recovery

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) Pitch attitude ..... Lower nose to reduce angle of attack

(4) Roll attitude ..... Wings level

(5) Thrust levers ..... As required

(6) SPOILER lever ..... RET

(7) Return to desired flight path.

NOTE

During recovery always control pitch attitude in a smooth steady manner, respecting stick shaker.

– COMPLETE –

UNUSUAL ATTITUDES AND UPSET RECOVERY

AIRPLANE UPSET DEFINITION

An airplane in flight unintentionally exceeds the parameters normally experienced in line operations or training:

- Pitch attitude greater than 25 degrees nose up,
- Pitch attitude greater than 10 degrees nose down,
- Bank angle greater than 45 degrees, or
- The airplane is within these parameters but flying at airspeeds inappropriate for the conditions.

PREVENTION

Flight crews can prevent upset well before the upset condition is reached. Actions include:

- Active scanning of internal and external factors that can lead to divergence for the aircraft flight path.
- Use automation (AP/AT).
- Closely monitor speed and thrust when AT is not engaged.
- Use standard FMA callouts.

RECOGNITION

Flight crews can prepare to recover an upset well before the upset condition is reached. Actions can include:

- Recognition of possible upset conditions:
  - Display of chevrons on the PFD and/or HUD
  - De-clutter on the PFD and/or HUD
- When acting as PF: Prompt recognition of divergence from intended flight path or uncommanded changes to the aircraft flight path.

- When acting as PM: Active monitoring of aircraft state and flight parameters, and prompt callout of divergence from planned or briefed flight path.
- When acting as PF or PM (through callouts): Take prompt action to correct a divergence from the intended flight path and interrupt progression toward a potential upset.

RECOVERY

During the recovery of an upset condition, the crew must ensure that aircraft condition and reduction of angle-of-attack are assessed with the aircraft symbol, not with the flight path vector.

If an upset condition is identified:

- The PF must announce the condition before appropriate action is taken (i.e. Nose high upset, Nose low upset callouts). A crosscheck with the ISI and opposite PFD is required.
- The PM must confirm the condition (i.e. Nose high confirmed, Nose low confirmed callouts). He must then monitor airspeed and attitude throughout the recovery and announce any continued divergence.
- When an upset is precipitated by a stall, the stall must be recovered before initiating other recovery actions.
- Crews must, at all times, report landings of abnormal severity or attitude, hard landings, severe turbulence encounters or aircraft upsets.

A. Upset recovery – Nose high

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) Pitch attitude ..... As required to reduce angle of attack.

(4) Roll attitude ..... As required

(5) Thrust levers ..... As required

(6) SPOILER lever ..... As required

A. Upset recovery – Nose high (Cont'd)

(7) Return to desired flight path when airspeed is sufficiently increasing.

NOTE

Reducing thrust may assist in achieving a nose down pitch rate.

WARNING

Avoid excessive use of pitch trim or rudder which can result in high structural loads.

– COMPLETE –

B. Upset recovery – Nose low

(1) Autopilot ..... Disengage

(2) Autothrottle ..... Select off

(3) Pitch attitude ..... As required to reduce angle of attack.

(4) Roll attitude ..... As required

(5) Thrust levers ..... As required

(6) SPOILER lever ..... As required

(7) Return to desired flight path.

NOTE

During recovery always control pitch attitude in a smooth steady manner, respecting stick shaker. Recovery from stall may be required.

B. Upset recovery – Nose low (Cont'd)

WARNING

Avoid excessive use of pitch trim or rudder which can result in high structural loads.

– COMPLETE –

TCAS RESOLUTION ADVISORY (RA)

GENERAL

A. Recommendation

There are scaling differences between some symbols shown on the PFD and HUD (if installed). During a Resolution Advisory (RA), the PFD shows a wider fly-to-box symbol when compared to a smaller symbol shown on the HUD.

Because of these differences, before the start of a RA procedure, it is recommended that both pilots use the same reference (PFD or HUD) consistently throughout the procedure until a CLEAR OF CONFLICT message is received.

B. TCAS RA procedure

(1) Autopilot ..... Disengage

(2) FD (PF side) ..... Select off

(3) Flight path ..... Adjust

Promptly and smoothly fly the flight path vector into the RA fly-to-zone.

(4) ATC .....Advise

When CLEAR OF CONFLICT:

(5) FCP modes ..... As required

(6) Autopilot ..... As required

NOTE

The autothrottle does not need to be disengaged.

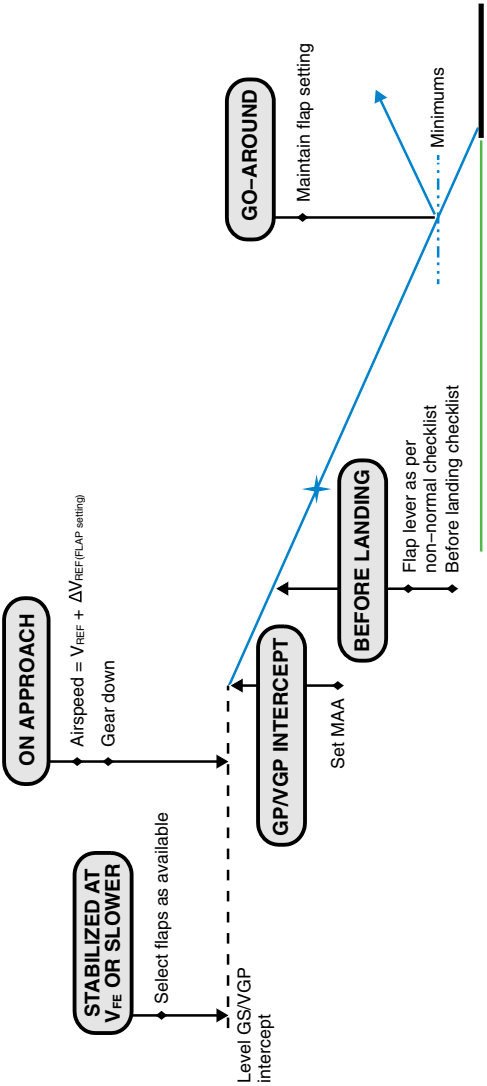
With the FD OFF, AT thrust mode reverts to SPD and the thrust will adjust in accordance with the requirements of the maneuver (climb, level or descent).

– COMPLETE –

PARTIAL SLAT/FLAP/FLAPLESS APPROACH

GENERAL

Mode selections and callouts – Partial flap/slat/flapless approach		
Condition	**PF**	**PM**
When applicable (according to non-normal checklist)	FLAP #	
When ready for landing gear selection	Gear down Before landing checklist	
		Before landing checklist complete
At final aircraft landing configuration	MAN SPD – Set V_{REF}	
100 feet above minimums		Approaching minimums
	Check	
At minimums		Minimums
	Landing (go-around)	
Decelerating through 80 KIAS		80 knots



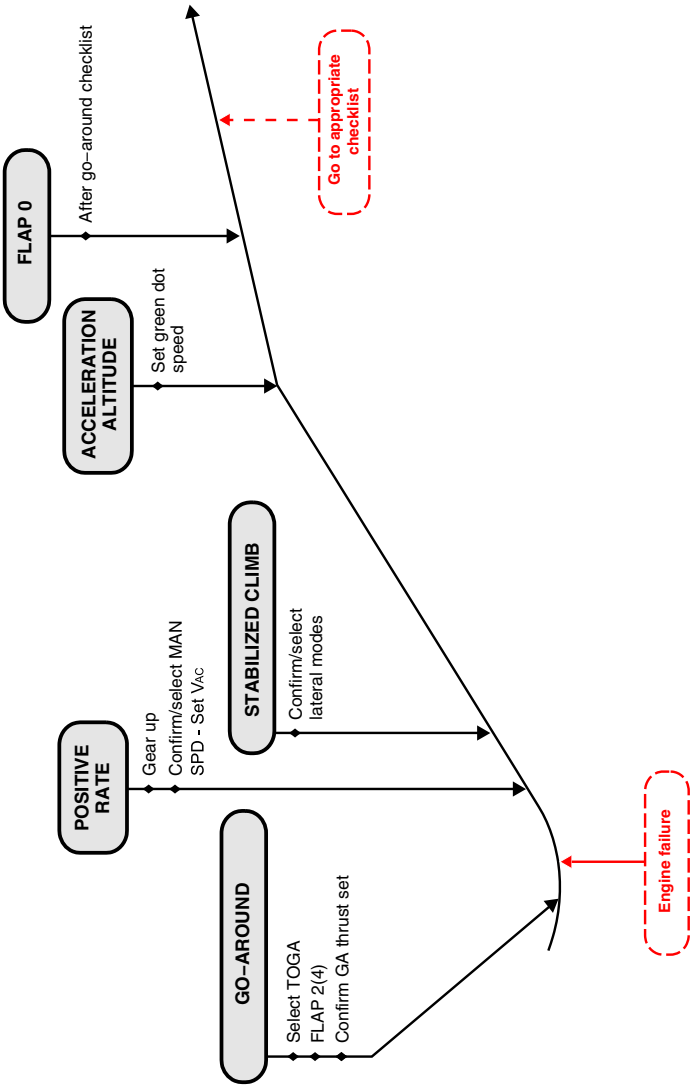
Partial flap/slat/flapless approach profile
Figure 08–02–02–7

GO–AROUND – SINGLE ENGINE

GENERAL

Mode selections and callouts – Go–around – Single engine			
Condition	**Mode selection**	**PF**	**PM**
Go–around decision made	Select TOGA	Go–around FLAP 2(4)	
			FLAP 2(4)
Positive rate of climb confirmed			Positive rate
		Gear up	
	Confirm/ select MAN SPD – Set V_{AC}		
Selection and/or confirmation of lateral navigation modes as required	Select or confirm NAV (HDG)	FMS 1(2) (HDG)	
			Check
At acceleration altitude	Set green dot speed	FLAP #	
		After go–around checklist	
			After go–around checklist complete

I



Go–around – Single engine profile
Figure 08–02–02–8

TOUCH AND GO LANDING

GENERAL

A. Introduction

Touch and go landing procedures are intended for use during flight training, primarily for approach and landing practice, and should not be done as part of the normal takeoff and landing procedures.

For a touch and go landing FLAP 5 is recommended, however FLAP 4 can also be used.

During touch and go procedures, the flap retraction FMS F-speeds are not shown in accordance to a normal takeoff/climb profile.

If flap retraction is required during touch and go procedures, the recommended flap retraction speeds that follow can be used:

- FLAP 4 to 3 = 170 KIAS
- FLAP 3 to 2 = 180 KIAS
- FLAP 2 to 1 = 190 KIAS
- FLAP 1 to 0 = 200 KIAS

After the touch and go landing is complete, selection of a new approach in the FMS resets the FMS F-speeds and the appropriate flap extension speeds are shown.

B. Touch and go landing procedure

NOTE

1. Ground lift dumping (GLD) are automatically deployed with weight-on-wheels, and retract when the thrust levers are advanced beyond a 23-degree lever angle (approximately vertical).
2. If thrust reversers are inadvertently deployed, a full stop landing must be completed.
3. Use V_{REF} for rotation speed and V_{GA} for initial climb out.

B. Touch and go landing procedure (Cont'd)

4. Flaps must be retracted one setting (i.e. FLAP 5 to FLAP 4) to reset the logic (landing to takeoff).
5. Do not select TOGA.

Before landing:

(1) Autothrottle ..... Select off

(2) FD ..... Select off

(3) FLT CTRL synoptic page ..... Select

After touchdown (all landing gear on ground):

(4) FLAP ..... FLAP 4(3)

(5) Trim .....Adjust to middle of green band

(6) Thrust levers ..... Advance until GLD retracted

(7) FLT CTRL synoptic page ..... Confirm GLD retracted and FLAP set

(8) Symmetrical thrust .....Confirm

(9) Thrust levers ..... Advance to required takeoff thrust

(10) Flight and engine instruments ..... Monitor

At V_{REF}:

(11) Rotate towards 10 degrees pitch.

Rotate 3 to 5 degrees per second towards 10 degrees pitch then transition to maintain V_{GA} for initial climb.

When a positive rate of climb is indicated:

(12) Landing gear ..... UP

(13) HDG ..... Select

(14) FLC ..... Select

B. Touch and go landing procedure (Cont'd)

CAUTION

Engagement of the autothrottle without selecting HDG and FLC can cause the autothrottle to go into RETARD mode.

(15) FLAP ..... As required

(16) Autopilot ..... As required

(17) Autothrottle ..... As required

WARNING

If reverse thrust has been initiated, a full stop must be made.

– COMPLETE –

BALKED OR REJECTED LANDING

GENERAL

A. Introduction

A balked or rejected landing is a missed approach initiated after the aircraft has entered the low–energy landing regime. It could be before or after a main landing gear contact with the runway.

In this flight regime, the aircraft is in a state of low energy. The engines are usually in or close to a low idle state and require several seconds to accelerate to full go–around thrust. The missed approach obstacle clearance must also be a consideration. If there are any doubts regarding the probability of completing a safe landing, a go–around must be initiated.

The low–energy regime occurs when the following conditions are met:

- Landing gear down and slats/flaps are set for landing,
- Aircraft is descending,
- Thrust is stabilized in the idle range,
- Airspeed is decreasing, and
- Aircraft altitude is 50 feet or less.

B. Balked/rejected landing procedure

(1) TOGA ..... Select

Arm autothrottles (AT) if not previously armed, set Flight Director (FD) to give initial pitch guidance, and synchronize heading bug.

(2) Thrust levers ..... Advance to go-around thrust

Monitor thrust.

(3) Rotate to follow FD.

Be prepared for a possible main wheel touchdown.

When safely established in the go-around and no risk of touchdown

B. Balked/rejected landing procedure (Cont'd)

(speed at or above V_{GA} and aircraft climbing):

(4) FLAP ..... Set for go-around

Landing FLAP	Go-around FLAP
4	2
5	4

When a positive rate of climb is indicated:

(5) Landing gear ..... UP

(6) FD modes ..... As required

(7) Autopilot ..... As required

(8) FLAP ..... Retract on schedule

(9) After go-around procedure .....Accomplish Refer to Normal procedures – After go-around.

– COMPLETE –

OVERWEIGHT LANDING

GENERAL

A. Introduction

The airplane is built for an immediate return to landing after takeoff, up to the maximum takeoff weight (MTOW). Overweight landings up to MTOW can be safely accomplished when normal landing procedures and techniques are used.

There are no adverse handling characteristics associated with heavier than normal landing weights.

B. Recommendations

An overweight landing increases the landing distance required. Landing distance must be verified. Use the longest available runway, and consider atmospheric conditions, wind and slope effects.

Where possible, avoid landing with a tailwind, on runways with negative slope, or on runways with less than normal braking conditions. The OLD should be confirmed before landing, especially in wet or slippery runway conditions.

Overweight landings with FLAP 4 or 5 will not result in brake energy levels exceeding the maximum demonstrated brake energy level, but use of thrust reversers should be maximized in order to reduce the probability of main wheel fuse plug release.

Do not carry excess airspeed on final, especially when landing with one engine inoperative or other non–normal condition.

Fly a normal profile. Maintain a normal rate of descent. A smooth landing with the lowest practical sink rate is desirable but avoid the tendency of a long flare as this will considerably increase the landing distance.

Fly the airplane onto the runway at the touchdown point. If a long landing is likely to occur, a go-around must be accomplished.

After touchdown, promptly apply maximum reverse thrust and use all of the available runway for stopping to minimize brake temperatures. Do not attempt to make an early runway turnoff.

Overweight landings must be recorded in accordance with the Aircraft Maintenance Publication (AMP).

HARD LANDING

GENERAL

A. Introduction

A hard landing is described as:

- A landing at a vertical descent rate of more than 600 fpm when the aircraft gross weight is less than or equal to the Maximum Landing Weight (MLW),
- A landing at a vertical descent rate of more than 360 fpm when the aircraft gross weight is more than the MLW, but less than or equal to the Maximum Takeoff Weight (MTOW),
- Leaving the prepared surface,
- A landing where the nose landing gear touches the ground before the main landing gear,
- A touchdown that causes a tire to burst,
- A tail, wing tip, or nacelle strike, or
- A hard derotation (also known as an abnormally hard nosewheel touchdown).

B. Recommendations

After a hard landing or hard derotation at any weight, it is possible that damage was caused to the aircraft structure and systems. This damage can be visible or hidden. The aircraft must be inspected before the next flight with the applicable procedures in the Aircraft Maintenance Publication (AMP).

Hard landings are recorded in the Aircraft Health Monitoring System (AHMS) and Flight Data Recorder (FDR).

Crews must, at all times, report landings of abnormal severity or attitude, hard landings, severe turbulence encounters or aircraft upsets.

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OPERATIONAL GUIDANCE – SYSTEM

GENERAL <Pre-SB BD500-530003>

AIR–CONDITIONING, BLEED AND PRESSURIZATION

AUTOMATIC FLIGHT

COMMUNICATIONS

ELECTRICAL

ELECTRONIC DISPLAY

FIRE AND OVERHEAT PROTECTION

FLIGHT CONTROLS

FUEL

ICE AND RAIN PROTECTION

LANDING GEAR, WHEEL AND BRAKE SYSTEM

NAVIGATION

POWER PLANT

FLIGHT MANAGEMENT SYSTEM (FMS)

List of figures

GENERAL <Pre-SB BD500-530003>

AUTOMATIC FLIGHT

NAVIGATION

<Pre-SB BD500-530003>

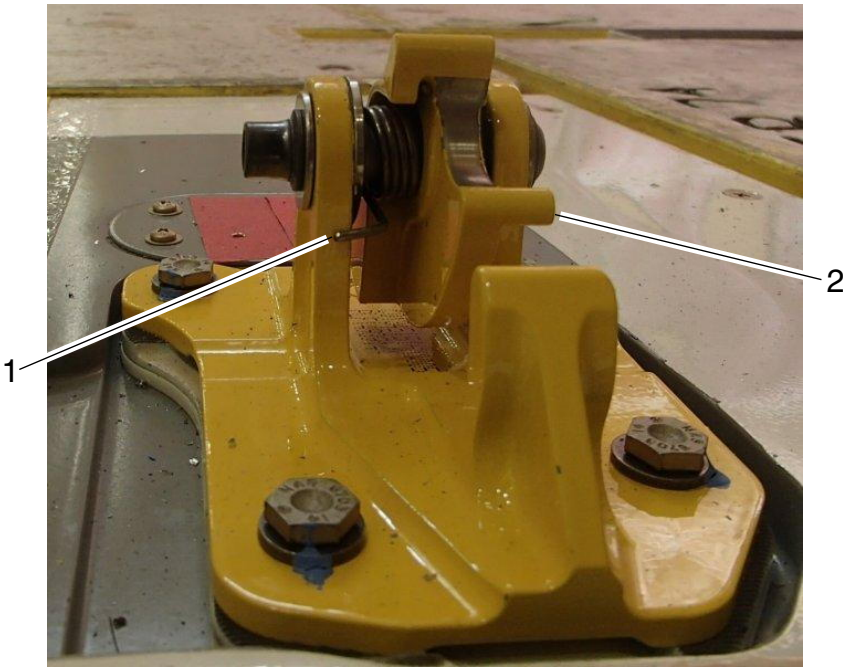
FUSELAGE – GENERAL

SYSTEM BEHAVIOR

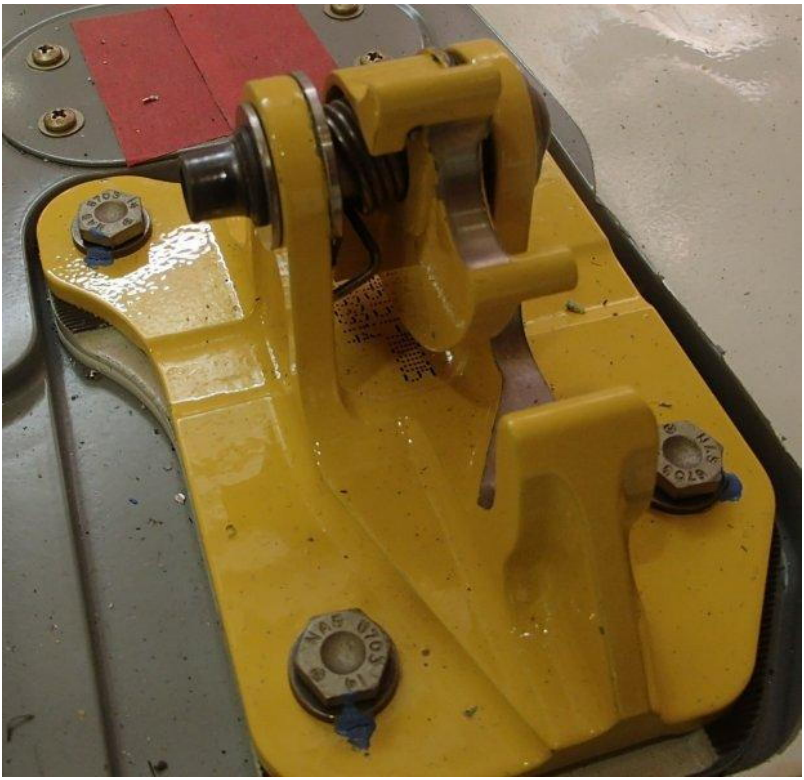
A. The cabin door does not close due to girt bar attachment spring malfunction

Applicability: Aircraft equipped with girt bar fitting assembly P/N C02315131-N0003, C02315131-N0004, C01345150-N0007, C01345150-N0008

Normally the torsion spring sits on the front side (1) of the girt bar fitting (refer to Figure 08–03–01–1) and snaps back the pawl (2) to the upper position when the door is open. However, with the current installation, the spring can easily move and dislodge from the normal open position (refer to Figure 08–03–01–2). When this occurs, the pawl stays in the closed position and the cabin door cannot be closed (refer to Figure 08–03–01–3).



Girt bar fitting normal spring position
Figure 08–03–01–1



Girt bar spring dislodged
Figure 08–03–01–2

Girt bar fitting closed position
Figure 08–03–01–3

Recommendation:

When no maintenance personnel is available to move the torsion spring to the normal position, the cabin door can still be operated without restriction even if the girt bar fitting torsion spring is not in its normal open position. However the cabin crew must manually push on the pawl (2) (refer to Figure 08–03–01–1) to bring it back to the open position before closing the door.

COOLING

SYSTEM BEHAVIOR

A. EQUIP BAY COOL FAULT (Advisory)

Applicability: All

When aircraft power is removed while the EQUIP COOLING, INLET switch is in auto, the ground valve will not be in the correct position during the next power-up. Because the ground valve stays in the last known position, an **EQUIP BAY COOL FAULT** advisory message may be shown. To avoid this message, the EQUIP COOLING, INLET must be switched OFF before aircraft power is removed (refer to Chapter 3 – Normal procedures – Power-off).

Recommendation:

When external or APU power is established or restored, if the **EQUIP BAY COOL FAULT** advisory and **21 EQUIP BAY COOL FAULT – MID GND VLV INOP** info messages are shown, cycle the EQUIP COOLING INLET switch to OFF and back to auto, with at least one of the cabin doors open.

DISTRIBUTION

SYSTEM BEHAVIOR

A. Recirculation fan noise on ground or in flight

Applicability: All

The recirculation fan can be noisy (in the cockpit and cabin) during initial pull-up/down temperature sequences.

Recommendation:

As a temporary measure, to reduce noise levels in the cockpit and cabin, the flight crew can select RECIRC AIR to OFF. This will not have an unwanted effect on normal aircraft operation.

In cases where a non-normal procedure requires the selection of RECIRC AIR to auto/on, the flight crew must select the RECIRC AIR switch to the correct position.

AUTOTHROTTLE

SYSTEM BEHAVIOR

A. Autothrottle disconnect before HOLD mode during takeoff

Applicability: Aircraft equipped with IMAA-6000 software P/N 810-0311-2B0303, 810-0311-2B0304 or 810-0311-2B0305

The Autothrottle (AT) application uses a single source for airspeed information while the flight controls system monitor uses a consolidated source. In certain crosswind/turbulence conditions, there can be a discrepancy between the information from the two sources, which can cause the autothrottle to disconnect, up to the moment when the HOLD mode becomes active (60 KIAS). Since the thrust level is set by 60 KIAS, there is no required crew action.

Recommendation:

The autothrottle can be reselected above 400 feet AGL, as it transitions to THRUST mode.

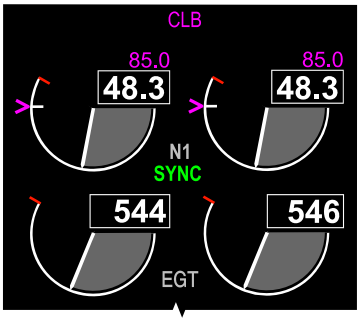
B. N1 sync function deactivates and toggles with autothrottle on

Applicability: Aircraft equipped with IMAA-6000 software P/N 810-0311-2B0303, 810-0311-2B0304 or 810-0311-2B0305

The FADEC synchronization mode matches the N1 mechanical rotor speeds for the two engines to minimize acoustic beat noise by adjusting the Thrust Lever Angle (TLA) command cursor position.

The autothrottle follows the FADEC channel in control and applies TLA trim input on that channel only. Since the trim is only applied to the channel in control, the TLA command does not synchronize between FADEC Channel-A and Channel-B.

When the FADEC detects a mismatch command between both autothrottle channels, the FADEC synchronization mode disengages. The green SYNC icon shown on EICAS indicates that synchronization mode is active.



N1 sync indication
Figure 08–03–03–1

Recommendation:

No flight crew action is required. The green SYNC icon may disappear intermittently during the flight.

NUISANCE MESSAGE GUIDANCE

A. AUTO FLIGHT FAULT (Advisory) and 22 AUTO FLIGHT FAULT – FCP A INOP (Info) – Single FCP channel failure causes loss of autothrottle

Applicability: Aircraft equipped with Flight Control Panel (FCP) P/N 822-2468-010 or 822-2468-011

To engage the autothrottle function, FCP channel A must be operative, otherwise the autothrottle does not engage if only FCP channel B is available.

When FCP channel A is inoperative, the **AUTO FLIGHT FAULT** advisory and **22 AUTO FLIGHT FAULT – FCP A INOP** info messages are shown. If previously engaged, the autothrottle will disconnect and the AUTOTHROTTLE aural will sound. In this case, the flight crew will not be able to engage the autothrottle.

GENERAL

SYSTEM BEHAVIOR

A. Intermittent Push To Talk (PTT) while using VHF

Applicability: Aircraft equipped with VHF transceiver P/N 822−1468−110/390

When the PTT switch changes state too quickly, from transmit to receive and back to transmit, the VHF goes into a lockup condition for 2 seconds and then recovers. During that time frame VHF transmission is disabled. When the VHF has recovered, the process is free to repeat itself. Subsequently, flight crews can get into a loop where their actions cause the VHF to repeat the lockup condition.

This problem was observed mostly when the Cursor Control Panel (CCP) PTT switches were used but it was also reported on rare occasion when the sidestick controller PTT was used.

Each flight crew member has five PTT switches at their disposition in the flight deck: two on the CCP, one on the ACP, one on the sidestick and one on the hand mike.

Recommendation:

If the flight crew encounters an intermittent PTT switch, it is recommended to use an alternate source of PTT in order to continue communication. Maintenance should be advised of the problem in order to determine if there is a hard failure with that particular PTT switch.

RECORDERS <31340001C>

SYSTEM BEHAVIOR

A. High Load Event Indication Function (HLEIF) false indications

Applicability: Aircraft equipped with HLEIF

It is possible for the HLEIF to give false indications on borderline threshold events. This is caused by the variation in payload and fuel, attitude, aircraft motion and/or airframe flexibility.

Recommendation:

Regardless of HLEIF indication status, crews must, at all times, report landings of abnormal severity or attitude, hard landings, severe turbulence encounters or aircraft upsets.

AFIRS™ IRIDIUM SATELLITE COMMUNICATION (SATCOM) SYSTEM <23159006C>

SYSTEM BEHAVIOR

A. Incoming SATCOM call ACP functionality

Applicability: Aircraft equipped with AFIRS™ Iridium SATCOM system

If SAT is already selected as the transmit source on the Audio Control Panel (ACP), an incoming SATCOM call cannot be answered with the re-selection of the SAT transmit switch.

Recommendation:

To answer the incoming call, select a transmit source other than SAT so that the green light above the SAT switch goes out, and then re-select SAT.

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ELECTRICAL POWER

NUISANCE MESSAGE GUIDANCE

A. ELECTRICAL FAULT (Advisory) with 24 ELECTRICAL FAULT – EPC 3 DEGRADED (Info) after aircraft power-on

When the aircraft is powered on within 7 seconds after power-off, the **ELECTRICAL FAULT** advisory and associated **24 ELECTRICAL FAULT – EPC 3 DEGRADED** info messages may be shown approximately 30 seconds after power is restored.

Recommendation:

To prevent this, there must be a minimum time of 15 seconds between aircraft power-off and a subsequent power-on (refer to Normal procedures – Power-off).

To clear these messages, a full aircraft power reset must be done.

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CENTRAL DISPLAY SYSTEMS

SYSTEM BEHAVIOR

A. Indicated altitude fluctuation on PFD (and/or HUD)

Applicability: Aircraft equipped with IMAA-6000 software P/N 810-0311-2B0303, 810-0311-2B0304 or 810-0311-2B0305

During normal system operation (level flight conditions), fluctuations in the indicated altitude can be seen on the PFD (and/or HUD). These fluctuations are usually in the tens of feet digits (up to ±20 feet) but they can also occur in the hundreds or thousands of feet digits.

This is normal system behavior and the fluctuation does not have an unwanted effect on any other aircraft system.

Recommendation:

No flight crew action is required. If there is an exceedance, the system will show the applicable messages.

B. Unexpected shutoff of a display unit while adjusting its brightness

Applicability: Aircraft Pre Rockwell Collins Service Bulletin AFD-65X0-31-14 for the AFD-6510 (P/N 822-2276-410) adaptive flight displays

There are instances where a Display Unit (DU) can go blank (shut off) when the associated dimming control switch is used to adjust its brightness level. When this occurs, the **AVIONIC FAULT** advisory and **34 AVIONIC FAULT – DSPL XTALK COM LOSS** info messages are shown.

Recommendation:

When a DU shuts off during the adjustment of its brightness level, the crew can recover the DU if the appropriate OFF/BRT dimming switch is selected to the OFF position and then back to the BRT position. The DU repowers itself after a few seconds and can then be adjusted to the desired brightness level.

To avoid this issue, it is recommended that all DU brightness switches be set to full brightness (BRT) when the aircraft is initially powered up.

These recommendations do not include conditions where the DU shuts off independently (not associated with brightness adjustment by the crew). When this occurs, the display unit failure procedure must be done (refer to the Airplane Flight Manual (AFM) – BD500-3AB48-32200-00, Chapter 4 – Non-normal procedures – Instruments system – Display unit failure procedure).

AIR DATA SYSTEM (ADS)

SYSTEM BEHAVIOR

A. ADS X DEGRADED (Advisory) on ground

Applicability: All

In a location with reported crosswinds and during taxi with no previous degraded fault message, one of the messages that follow can occur and be latched:

- **ADS 1 DEGRADED**
- **ADS 2 DEGRADED**
- **ADS 3 DEGRADED**
- **ADS 4 DEGRADED**

Recommendation:

The message should clear when the aircraft has reached a speed of approximately 50 to 80 knots. If the message does not clear, maintenance action is required.

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DETECTION

NUISANCE MESSAGE GUIDANCE

A. EQUIP BAY SMOKE FAIL (Caution) on ground

Applicability: All

Electrical power transients during engine start or shutdown can cause one or two extraction fans to cycle, leading to a temporary low flow condition detected by the FIDEX control unit. This condition can cause the messages that follow to be shown momentarily on ground:

- **EQUIP BAY SMOKE FAIL** (Caution)
- **FIRE SYSTEM FAULT** (Advisory)
- **26 FIRE SYSTEM FAULT – EQUIP BAY SMOKE DET REDUND LOSS** (Info)

Recommendation:

These messages can be shown for up to 2 minutes after electrical power transients on ground induced by engine start or engine shutdown.

If the messages stay on for 2 minutes or more, the messages must be considered valid and maintenance action is required.

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GENERAL

SYSTEM BEHAVIOR

A. Flight control inputs (ground)

It is not recommended to make flight control inputs during electrical power supply changes (APU start/shutdown, external power connection/disconnection).

When **FLT CTRL IN TEST** is shown, it is not recommended to make modifications to the aircraft configuration:

- Electrical power supply changes (APU start/shutdown, external power connection/disconnection),
- Engine start,
- Hydraulic pressurization (via pump), or
- PFCC switches.

B. FLT CTRL TEST REQ (Advisory)

The **FLT CTRL TEST REQ** advisory message can be shown only when the airplane is on the ground and stationary conditions are met.

When this message is shown, the flight control test must be completed before flight. To avoid faults during dispatch, the procedure to do the test is in the Normal procedures – After flight – Shutdown procedure. Find extracted steps as follows:

When indicated by FLT CTRL TEST REQ advisory message:

NOTE

All three hydraulic systems must be pressurized before the test is started.

(1) Flight control test ..... Complete

(a) PTU ..... ON

(b) AVIONIC synoptic page ..... Select

(c) AVIO, TEST – FLT CTRL ..... Select

B. FLT CTRL TEST REQ (Advisory) (Cont'd)

(d) Confirm PASS is shown.

(e) PTU ..... AUTO

– COMPLETE –

C. Unexpected initiation of ABIT or inability to initiate ABIT

The ABIT can initiate itself when the PFCC in control changes. In this case, the crew may not be able to launch the ABIT.

Recommendation:

If the AVIONIC synoptic page – AVIO, TEST – FLT CTRL is not responsive, the three PFCCs must be reset before the ABIT can be successfully initiated.

(1) Make sure the three hydraulic systems are unpressurized.

(2) PFCC 1 ..... OFF

(3) PFCC 2 ..... OFF

(4) PFCC 3 ..... OFF

After 30 seconds, at the same time:

(5) PFCC 1 ..... Select on

(6) PFCC 2 ..... Select on

(7) PFCC 3 ..... Select on

After the PFCCs are selected on:

(8) Make sure the **FLT CTRL IN TEST** advisory message is not shown.

(9) ABIT ..... Accomplish

– COMPLETE –

D. Amber X on ground spoilers during flight control checks

Recommendation:

(1) FLT CTRL synoptic page ..... Select

D. Amber X on ground spoilers during flight control checks (Cont'd)

(2) Any ground spoiler shows an amber X:

➔ **Yes –** Go to (3)

➔ **No –** Go to (5)

(3) Any ground spoiler shows an amber X:

(4) Do not dispatch.

– COMPLETE –

(5) No ground spoiler shows an amber X:

(6) Dispatch.

– COMPLETE –

NUISANCE MESSAGE GUIDANCE

A. Electronic FCS test (PBIT)

PBIT is the electronic power-on test for the system, designed to ensure integrity of the electronic unit protections and identify dormancies in the system.

The PBIT is an automated test, no crew action is required.

With the aircraft on the ground and stationary with all three hydraulic systems unpressurized, the PBIT sequence is initiated automatically at PFCC power-up (aircraft power-up), approximately 20 seconds after the first PFCC has completed initialization or when the system completes 20 eH (electrical hours), uninterrupted. The PBIT takes approximately 80 seconds to complete.

Associated messages during the PBIT sequence:

- **STAB DEGRADED** (Caution)
- **NOSE STEER FAIL** (Caution)
- **FLT CTRL IN TEST** (Advisory)
- **FLT CTRL FAULT** (Advisory)

- **ADS 1 DEGRADED** (Advisory), **ADS 2 DEGRADED** (Advisory), **ADS 3 DEGRADED** (Advisory), **ADS 4 DEGRADED** (Advisory)
- **27 FLT CTRL FAULT – AFCU INOP** (Info)

All these messages go out when the PBIT sequence is completed.

If no **FLT CTRL FAULT** advisory and no **27 FLT CTRL FAULT** info message are shown after test completion, the test is considered a PASS.

Associated STAB TRIM indications during the PBIT test sequence:

If the stab position is not at 5.0 units, the stab position indication jumps to 5.0 units and quickly converges back to the previous position. There is not impact to the stab trim system.

B. Actuation FCS test (ABIT)

The ABIT is a test designed to ensure the integrity of the mechanical protections related to actuators and identify dormancies in the system. There should not be surface motion but, under some failure conditions, surface motion is part of the indication of failure (annunciations are provided accordingly).

The **FLT CTRL TEST REQ** advisory message is shown when the aircraft completes 20 flight hours, is on ground and stationary conditions are met. The ABIT must be done to clear the message.

The flight crew must initiate the test, when all 3 hydraulic systems are pressurized, with the selection of the FLT CTRL button in the AVIO tab of the AVIONIC synoptic page. The ABIT test takes approximately 50 seconds to complete.

Associated messages during the ABIT test sequence:

- **NOSE STEER FAIL** (Caution)
- **NOSE STEER FAULT** (Advisory)
- **FLT CTRL IN TEST** (Advisory)
- AVIONIC synoptic page – AVIO, TEST – FLT CTRL – IN PROG shown.

All these messages go out when the ABIT sequence is completed.

If any of the ABIT tests fail, FAULT is shown against the FLT CTRL test line in the AVIONIC synoptic page. In addition, the **FLT CTRL FAULT** advisory message and an associated **27 FLT CTRL FAULT – xxx** info message are shown.

C. FLT CTRL FAULT (Advisory) with 27 FLT CTRL FAULT – AFCU INOP (Info)

A **FLT CTRL FAULT** advisory message with a **27 FLT CTRL FAULT – AFCU INOP** info message can be shown after aircraft power-up and when the PBIT is completed with flaps/slats not retracted.

Recommendation:

(1) HYD 3A ..... ON

(2) HYD 2B ..... ON

(3) PTU ..... ON

(4) SLAT/FLAP lever 0

(5) PFCC 1 ..... OFF

(6) PFCC 2 ..... OFF

(7) PFCC 3 ..... OFF

After 30 seconds, at the same time:

(8) PFCC 1 ..... Select on

(9) PFCC 2 ..... Select on

(10) PFCC 3 ..... Select on

After the PFCCs are selected on:

(11) Wait at least 30 seconds and make sure the **FLT CTRL IN TEST** advisory message is not shown.

(12) HYD 3A ..... AUTO

(13) HYD 2B ..... ON

(14) PTU ..... AUTO

C. FLT CTRL FAULT (Advisory) with 27 FLT CTRL FAULT – AFCU INOP (Info) (Cont'd)

After the PBIT test is completed:

(15) **FLT CTRL FAULT** advisory and **27 FLT CTRL FAULT – AFCU INOP** info messages go out:

- **Yes –** Go to (16)
- **No –** Go to (18)

(16) FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – AFCU INOP info messages go out:

(17) Dispatch.

– COMPLETE –

(18) FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – AFCU INOP info messages stay on:

(19) Do not dispatch.

– COMPLETE –

D. FLT CTRL FAULT (Advisory) with 27 FLT CTRL FAULT – PFCC ADS INPUT REDUND LOSS (Info) after engine start

Recommendation:

After engine start, FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – PFCC ADS INPUT REDUND LOSS info messages are shown:

(1) FLAP 0

(2) PFCC 1 ..... OFF

(3) PFCC 2 ..... OFF

(4) PFCC 3 ..... OFF

After 30 seconds, at the same time:

(5) PFCC 1 ..... Select on

(6) PFCC 2 ..... Select on

D. FLT CTRL FAULT (Advisory) with 27 FLT CTRL FAULT – PFCC ADS INPUT REDUND LOSS (Info) after engine start (Cont'd)

(7) PFCC 3 ..... Select on

After the PFCCs are selected on:

(8) Wait at least 30 seconds and make sure the **FLT CTRL IN TEST** advisory message is not shown.

(9) **FLT CTRL FAULT** advisory and **27 FLT CTRL FAULT – PFCC ADS INPUT REDUND LOSS** info messages go out:

- **Yes** – Go to (10)
- **No** – Go to (12)

(10) FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – PFCC ADS INPUT REDUND LOSS info messages go out:

(11) Dispatch.

– COMPLETE –

(12) FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – PFCC ADS INPUT REDUND LOSS info messages stay on:

(13) Do not dispatch.

– COMPLETE –

E. FLT CTRL FAULT (Advisory) with 27 FLT CTRL FAULT – PFCC ADS INPUT DEGRADED (Info) after engine start

Recommendation:

After engine start, FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – PFCC ADS INPUT DEGRADED info messages are shown:

(1) FLAP 0

(2) PFCC 1 ..... OFF

(3) PFCC 2 ..... OFF

(4) PFCC 3 ..... OFF

E. FLT CTRL FAULT (Advisory) with 27 FLT CTRL FAULT – PFCC ADS INPUT DEGRADED (Info) after engine start (Cont'd)

After 30 seconds, at the same time:

(5) PFCC 1 ..... Select on

(6) PFCC 2 ..... Select on

(7) PFCC 3 ..... Select on

After the PFCCs are selected on:

(8) Wait at least 30 seconds and make sure the **FLT CTRL IN TEST** advisory message is not shown.

(9) **FLT CTRL FAULT** advisory and **27 FLT CTRL FAULT – PFCC ADS INPUT DEGRADED** info messages go out:

- **Yes –** Go to (10)
- **No –** Go to (12)

(10) FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – PFCC ADS INPUT DEGRADED info messages go out:

(11) Dispatch.

– COMPLETE –

(12) FLT CTRL FAULT advisory and 27 FLT CTRL FAULT – PFCC ADS INPUT DEGRADED info messages stay on:

(13) Do not dispatch.

– COMPLETE –

DISTRIBUTION

NUISANCE MESSAGE GUIDANCE

A. FUEL MAN XFR FAIL (Caution) after successful manual fuel transfer

Applicability: All

After a successful manual fuel transfer, the **FUEL MAN XFR COMPLETE** advisory message is shown to remind the crew to select the MAN XFR switch to OFF. If the switch is not selected to OFF and stays in the L, R, or CTR position for a period of time, the **FUEL MAN XFR FAIL** caution message is shown and will be latched. Also, the refuel shutoff valve (SOV) of the affected tank (where the fuel is being transferred) will be reported faulty by the OMS and will become amber on the FUEL synoptic page.

In this situation, if the crew does not react to the **FUEL MAN XFR COMPLETE** advisory message as given in the AFM procedure(s), the **FUEL MAN XFR FAIL** caution message and the refuel SOV failure are considered to be nuisance annunciations.

NOTE

The fuel feed and transfer system continues to be fully functional even in the presence of these messages.

Recommendation:

On ground:

The latched condition can be cleared with a reset of the L FUEL QTY (CDC1-6-3) and R FUEL QTY (CDC2-8-3) SSPCs on the CB synoptic page.

In flight:

After a manual transfer, if a subsequent manual transfer is required, it can be initiated when the MAN XFR switch is first selected to OFF and then to the desired position as given in the applicable AFM procedure(s).

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GENERAL

SYSTEM BEHAVIOR

A. Wing anti-ice test while in single bleed configuration

Applicability: Aircraft dispatched under MMEL single bleed source configuration

During operation in single bleed configuration, make sure that the engine with the operating bleed is at or above 50% N1 before the wing anti-ice is started (refer to Normal procedures – Before taxi). This will prevent engine EGT exceedance and possible damage to the engine.

Recommendation:

These steps are recommended best practices to safely complete the wing anti-ice test during operation in single bleed configuration:

(1) Coordination with ATC is required to ensure safe engine blast zone behind the aircraft (apron, runway, other).

(2) Select the PARK BRAKE to ON.

(3) It is recommended to advance both engines to at least 50% N1.

(4) Make sure that N1 stays at or above 50% until the wing anti-ice test is complete.

(5) Select ANTI-ICE, WING switch to ON.

(6) On the AVIONIC tab, select WING A/ICE test.

(7) When the test is complete, reduce both thrust levers to IDLE.

(8) Select ANTI–ICE, WING switch as required.

NOTE

At above 15°C (59°F) OAT, if the wing anti-ice system is ON for more than 3 minutes, the **WING A/ICE ON** caution message comes on.

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GENERAL

NUISANCE MESSAGE GUIDANCE

(<Mod 324002> or <Post-SB BD500-324002>) and <Pre-SB BD500-324004>

A. BRAKE FAULT (Advisory) when low brake force is applied (posted for 3 seconds)

The **BRAKE FAULT** advisory messages can be shown when the low brake force is applied. If the messages clear within 3 seconds, no further action is required.

The following messages may be shown:

- **32 BRAKE FAULT– BDCU 1 NORM INOP**
- **32 BRAKE FAULT– BDCU 2 NORM INOP**
- **32 BRAKE FAULT– BRAKE CODE 2 INOP**

B. GEAR FAULT (Advisory) after selection of landing gear lever to the UP or DN position

Applicability: Aircraft equipped with landing gear uplock assembly P/N 4136A0000-03

After selection of the landing gear lever to the UP or DN position, the **GEAR FAULT** advisory message can be shown and latched. This is caused by a malfunction during the automatic dormancy check of the alternate gear extension system.

These info messages can also be shown:

- **32 GEAR FAULT – L GEAR UPLK MOTOR FAULT**
- **32 GEAR FAULT – R GEAR UPLK MOTOR FAULT**
- **32 GEAR FAULT – NOSE GEAR UPLK MOTOR FAULT**

The landing gear system continues to operate correctly.

Recommendation:

After landing, to clear the latched **GEAR FAULT** advisory message (and associated info messages, if any) the flight crew can select the ALTN GEAR switch to the DN position, wait at least 10 seconds and then select the switch back to the NORM position. If the messages do not clear, maintenance action will be required.

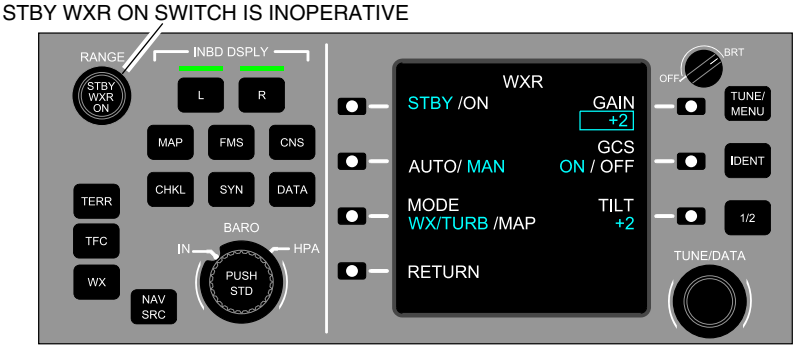
INDEPENDENT POSITION DETERMINING

SYSTEM BEHAVIOR

A. Inoperative STBY WXR ON switch on range knob of Control Tuning Panel (CTP)

Applicability: Aircraft equipped with CTP P/N 822-2493-101 or 822-2493-102

The STBY WXR ON switch on the CTP is not active. When selected, it has no effect on the weather radar nor on any other system.



CTP – STBY WXR ON switch
Figure 08–03–16–1

Flight crews should be advised that the STBY WXR ON switch on the CTP is inoperative.

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GENERAL

ENGINE SHUTDOWN PROCEDURE

The engine must be operated at or near idle for at least 3 minutes (cumulative) before shutdown (recommended 5 minutes). Taxi time may be counted when thrust is at or near idle. This does not apply to non-normal shutdowns. Near idle is defined as up to 40% N1. An additional period equal to or greater than the time spent above 40% N1 must be accounted for.

Engine shutdown after high power operation (thrust above 40% N1) without adequate cool down can cause accelerated deterioration. In these situations, a non-normal procedure must be followed.

The affected engine must not be re-started after a high power shutdown (greater than 40% N1). The engine should be considered unserviceable until cleared by maintenance.

If an inadvertent high power shutdown occurs at any time during the procedure above, the following non-normal procedure is required. Do the tasks that follow in order:

1. If restart is possible, restart the engine within 2 minutes and stabilize at min IDLE for 10 minutes before shutdown.
2. If restart is not possible, but cranking is possible, dry crank the engine immediately. Dry motor for 4 minutes, then pause for a 60-second minimum period when N2% speed is zero (0). This should be repeated two additional times.
3. If neither restart nor cranking is possible, it is recommended to only attempt re-start after 8 hours.

NOTE

No restriction on emergency in-flight restarts is intended.

When the above cool down procedure is completed, the sequence that follows should be completed to shut down the engine:

1. Thrust lever to IDLE.
2. ENG run switch to OFF.

CRANKING

SYSTEM BEHAVIOR

A. Engine oscillation during crossbleed start

Applicability: Aircraft equipped with FADEC software 2.9.5.6 and later

During an engine ground start, the starter air valve toggles to maintain a low N2 (~13% N2) at the beginning of the start phase.

When the opposite engine is used as the start bleed source, this assisting engine continuously adjusts itself to the bleed demand, which creates oscillations to the donor engine main parameters.

Oscillations can be observed on EICAS for Exhaust Gas Temperature (EGT), N2, fuel flow (FF) and, with smaller amplitudes, on N1 and oil pressure (OIL PRESS). This behavior is considered normal.

Recommendation:

During an on ground crossbleed start, flight crews should not abort engine start if oscillations are observed on the assisting engine, as long as the assisting engine parameters stay within the engine defined operating limits.

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FLIGHT MANAGEMENT COMPUTING

SYSTEM BEHAVIOR

A. FMS resets

Applicability: Aircraft equipped with IMAA-6000 software P/N 810-0311-2B0303, 810-0311-2B0304 or 810-0311-2B0305

There are several known instances of FMS resets. Although rare, flight crews must be aware of the conditions that can lead to such resets so they can be prevented.

FMS resets can be identified by the indications that follow:

- **FMS 1 FAIL** (Caution) or **FMS 2 FAIL** (Caution)
- FMS FAIL flag on the associated PFD
- FMS MAP shown in amber on the associated map
- FMS NOT AVAILABLE shown on the FMS window formats for the affected FMS
- FMS speed target indicates magenta dashes (– – –) at the top of the airspeed tape.

On FMS recovery after a reset, the FMS speed target may revert to approach speed.

Conditions that can lead to a FMS reset:

(1) When a waypoint is selected on the MAP

Due to a software issue, a FMS reset can occur if the flight crew have background map items (Nav database items selected from the MAP-SYMBOL drop-down menu) on display and then, at the same time, select a waypoint on the map that is part of the flight plan. This reset occurs because the FMS uses the Flight Plan Map Item index to try to retrieve an item from the Background Map Items list.

To prevent a reset caused by this issue, the flight crew can:

1. Make sure that background items are not shown on the map when flight plan items are selected on the map.
2. If background items are shown, only select flight plan waypoints from the ROUTE LEGS or VIA-TO format and do not use the map.

Background map items are shown on the map when:

- One of the symbol layers on the map is active (such as navaids, airports, etc.),
- A fix is applied to a waypoint which is not part of the flight plan. After a waypoint is sequenced in the flight plan that contains a fix, it becomes a background map when it is no longer in the FROM waypoint,
- A fix is applied to a Terminal Waypoint in the flight plan or Origin Airport, or
- The plan map center function is used when a user-selected lat/long position is created on the map and centered on it.

(2) Master FMS reset can cause slave FMS to reset also

A dual FMS reset can occur when the FMS datalink pages FPLN-INIT and FPLN-WIND/TEMP are shown. The reset occurs if the non-coupled FMS shows these pages and the coupled-side FMS resets for another reason. The root cause is that the non-coupled FMS waits for a response from the coupled FMS to give the status of the datalink function. But because the coupled FMS has failed, the non-coupled FMS exceeds an internal time limit to receive a response and resets.

(3) When Vector Leg (VM or FM) is the active leg and ETE is shown on POS REPORT page or INFO dialog box

A FMS reset can occur when the aircraft flies a manually terminated flight plan leg type (VM or FM leg) and the crew selects the waypoint INFO dialog box ROUTE-POS REPORT page for display. This reset occurs because the equation used to calculate the Estimated Time Enroute (ETE) value for the leg gives an out-of-range value.

(4) With HOLD dialog box

A FMS reset can occur if the user opens the HOLD dialog box at the same time as the aircraft exits the hold. This reset will not occur if the HOLD dialog box stays open while the aircraft exits the hold.

The issue occurs because of the software timing when the FMS retrieves the hold pattern information to fill the HOLD dialog box. If the dialog box is opened at exactly the same time as the hold is exited, the hold pattern is deleted thus the FMS is not able to retrieve the information which will cause the software to reset.

To prevent this condition, the flight crew can:

- Leave the HOLD dialog box open until the hold is exited, or
- Not reselect the HOLD dialog box while the hold is being sequenced (the symbol is flashing on the map display).

I

Recommendation:

It is recommended that the flight crew avoid the steps that could lead to these known FMS reset scenarios.

If a FMS reset occurs, when the FMS recovers after the reset, the FMS speed target may revert to approach speed. In this case, it is recommended that MAN SPD mode be selected on the flight control panel and the desired airspeed be set through the SPD control.

The crew must complete the applicable AFM procedure (refer to the Airplane Flight Manual (AFM) – BD500-3AB48-32200-00, Chapter 4 – Non–normal procedures – Navigation – **FMS 1 FAIL** or **FMS 2 FAIL** caution message). After the reset, selection of an approach at the destination airport restores the FMS speed to the appropriate speed target, and FMS SPD mode becomes available to the crew.

(1) When a waypoint is selected on the MAP

Use of the cursor to select flight plan waypoints on the map display is prohibited.

(2) Master FMS reset can cause slave FMS to reset also

Display of the FPLN-INIT or FPLN-WIND/TEMP FMS pages during takeoff and approach is prohibited.

(3) When Vector Leg (VM or FM) is the active leg and ETE is shown on POS REPORT page or INFO dialog box

Use of FMS ROUTE page – POS REPORT tab is prohibited in terminal area.

Use of the waypoint INFO dialog box is prohibited in flight.

(4) With HOLD dialog box

While the aircraft exits the hold, do not reselect the HOLD dialog box for display when the Hold Fix is being sequenced.

B. Performance predictions not available while in missed approach hold – FIX – ETA not computed

Applicability: Aircraft equipped with IMAA-6000 software P/N 810-0311-2B0303, 810-0311-2B0304 or 810-0311-2B0305

After conducting a missed approach and entering a published hold, destination ETA and destination fuel are not available. However, if the flight plan to the alternate or a new destination are executed, the destination ETA and destination fuel are shown.

Recommendation:

To recover destination ETA and fuel predictions, the flight crew must:

- Exit the missed approach hold.
- Select Direct to a waypoint after the hold to restore PERF data.

NUISANCE MESSAGE GUIDANCE

A. FMS FUEL (Caution) shown after landing or momentarily in flight

Applicability: Aircraft equipped with IMAA-6000 software P/N 810-0311-2B0303, 810-0311-2B0304 or 810-0311-2B0305

On ground:

The **FMS FUEL** caution message may be shown after landing when the flight crew switches the NAV source from LOC back to FMS source.

The FMS may continue to calculate the flight time and fuel required to the destination (and/or alternate) even after the aircraft has landed. This causes the fuel at destination (or alternate) to be shown as invalid (amber – – – –) or insufficient (amber value). The required trip fuel calculation based on the current fuel on board causes the FMS to indicate that fuel on board does not meet the required fuel reserves.

These FMS nuisance messages are also shown at the same time as the **FMS FUEL** caution message:

- CHECK FUEL AT DEST (FMS message)
- CHECK FUEL AT ALTERNATE (FMS message)

The **FMS FUEL** caution message and associated FMS messages will clear when a new flight plan is entered before the next flight and an adequate amount of fuel is loaded.

In flight:

The **FMS FUEL** caution message is shown momentarily in flight.

The message can be considered a nuisance, with no pilot action required, when it occurs during these conditions:

- When vectored by ATC while deviating from the flight plan in the FMS, or

- When the aircraft speed exceeds the speed entered in the FMS.

If the **FMS FUEL** caution message stays on, or is shown during any other circumstance, the flight crew must complete the FMS FUEL procedure (refer to Airplane Flight Manual (AFM) – BD500-3AB48-32200-00, Chapter 4 – Non-normal procedures – Navigation – FMS FUEL procedure).

WEATHER RADAR SYSTEM

SYSTEM BEHAVIOR

A. Predictive windshear system false alert

Applicability: Aircraft equipped with receiver-transmitter antenna RTA-4218 P/N 822-2259-001 or 822-2259-002 Pre-SB RTA-4218-SB-1

There have been reports of suspected Predictive Windshear System (PWS) false alerts at certain airports [i.e. Amsterdam (EHAM) while on approach for Runway 27 or 18C].

The PWS can be susceptible to false alerts at runways considered to be in clutter-rich environments. A clutter-rich environment is defined as a runway with an adjacent area which has expressways, high volume streets and/or concentrated urban clutter with highways that have random vehicle traffic patterns. These conditions were reported during these events.

Recommendation:

When a predictive windshear warning (GO AROUND, WINDSHEAR AHEAD aural warning with red WSHR AHEAD message) is triggered on approach, flight crews should evaluate possible false PWS alerts, in relation to other established criteria, such as:

- Visual conditions/weather patterns (ex: absence of water droplets, etc.)
- Speed and glideslope/glidepath variations during the approach
- Wind variations during the approach
- Windshear reports from other aircraft or towers

If the flight crew evaluates that there are no signs of windshear conditions present and if the reactive windshear system is operational, the approach can be continued.

The Reactive Windshear System (RWS) is not affected by these conditions and alerts are valid.

NUISANCE MESSAGE GUIDANCE

A. WXR PWS FAIL (Advisory) shown intermittently in flight

Applicability: Aircraft equipped with receiver-transmitter antenna RTA-4218 P/N 822-2259-001 or 822-2259-002

The weather radar may report a nuisance failure of the Predictive Windshear System (PWS). When this condition occurs, the **WXR PWS FAIL** advisory message is shown. This nuisance message normally self-clears.

Recommendation:

If the **WXR PWS FAIL** advisory message is no longer shown after landing, no further action is required.

If the **WXR PWS FAIL** advisory message stays on after landing, maintenance action is required.