



Preface

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Section 0

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757/767-300
Operations Manual
Volume 1
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**Preface****Model Identification****Chapter P1****Section 1****General**

The aircraft listed in the table below are covered in the operations manual. The numbers are used to distinguish data peculiar to one or more, but not all of the aircraft. Where data applies to all airplanes listed, no reference is made to individual aircraft numbers.

The table permits flight crew correlation of configuration differences by Registry Number in alpha/numeric order within an operator's fleet for aircraft covered in this manual. Configuration data reflects the airplane as delivered configuration and is updated for service bulletin incorporations in conformance with the policy stated in the introduction section of this chapter.

Aircraft number is supplied by the operator. Registry number is supplied by the national regulatory agency. Serial and tabulation numbers are supplied by Boeing.

The procedures and information contained in this manual also apply to aircraft acquired by Delta Air Lines subsequent to the current revision; however, this document may not address all pertinent information for these aircraft. In such instances, specific operating procedures and systems information can be found in appropriate Differences Chapter(s) and/or Fleet Bulletin(s) prior to their incorporation in the next scheduled revision.

757-200

Ship Number	Registry Number	Serial Number	Tabulation Number
602	N602DL	22809	NA502
603	N603DL	22810	NA503
604	N604DL	22811	NA504
606	N606DL	22813	NA506
607	N607DL	22814	NA507
608	N608DA	22815	NA508
609	N609DL	22816	NA509
610	N610DL	22817	NA510
611	N611DL	22818	NA511

Ship Number	Registry Number	Serial Number	Tabulation Number
612	N612DL	22819	NA512
613	N613DL	22820	NA513
614	N614DL	22821	NA514
615	N615DL	22822	NA515
616	N616DL	22823	NA516
617	N617DL	22907	NA517
618	N618DL	22908	NA518
623	N623DL	22913	NA523
624	N624DL	22914	NA524
625	N625DL	22915	NA525
626	N626DL	22916	NA526
627	N627DL	22917	NA527
628	N628DL	22918	NA528
629	N629DL	22919	NA529
630	N630DL	22920	NA530
631	N631DL	23612	NA531
632	N632DL	23613	NA532
633	N633DL	23614	NA533
634	N634DL	23615	NA534
635	N635DL	23762	NA535
636	N636DL	23763	NA536
637	N637DL	23760	NA537
638	N638DL	23761	NA538
639	N639DL	23993	NA539
640	N640DL	23994	NA540
641	N641DL	23995	NA541
642	N642DL	23996	NA542

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Ship Number	Registry Number	Serial Number	Tabulation Number
643	N643DL	23997	NA543
644	N644DL	23998	NA544
645	N645DL	24216	NA545
646	N646DL	24217	NA546
647	N647DL	24218	NA547
648	N648DL	24372	NA548
649	N649DL	24389	NA549
650	N650DL	24390	NA550
651	N651DL	24391	NA551
652	N652DL	24392	NA552
653	N653DL	24393	NA553
654	N654DL	24394	NA554
655	N655DL	24395	NA555
656	N656DL	24396	NA556
657	N657DL	24419	NA557
658	N658DL	24420	NA558
659	N659DL	24421	NA559
660	N660DL	24422	NA560
661	N661DN	24972	NA561
662	N662DN	24991	NA562
663	N663DN	24992	NA563
664	N664DN	25012	NA564
665	N665DN	25013	NA565
666	N666DN	25034	NA566
667	N667DN	25035	NA567
668	N668DN	25141	NA568
669	N669DN	25142	NA569

Ship Number	Registry Number	Serial Number	Tabulation Number
670	N670DN	25331	NA570
671	N671DN	25332	NA571
672	N672DL	25977	NA572
673	N673DL	25978	NA573
674	N674DL	25979	NA574
675	N675DL	25980	NA575
676	N676DL	25981	NA576
677	N677DL	25982	NA577
678	N678DL	25983	NA578
679	N679DA	26955	NA579
680	N680DA	26956	NA580
681	N681DA	26957	NA581
682	N682DA	26958	NA582
683	N683DA	27103	NA583
684	N684DA	27104	NA584
685	N685DA	27588	NA585
686	N686DA	27589	NA586
687	N687DL	27586	NT701
688	N688DL	27587	NT702
689	N689DL	27172	NT703
690	N690DL	27585	NT704
691	N900PC	28446	NE008
692	N692DL	29724	NT705
693	N693DL	29725	NT706
694	N694DL	29726	NT707
695	N695DL	29727	NT708
696	N696DL	29728	NT709

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Ship Number	Registry Number	Serial Number	Tabulation Number
697	N697DL	30318	NT710
698	N698DL	29911	NT711
699	N699DL	29970	NT712
5635	N535US	26482	NE311
5636	N536US	26483	NE312
5637	N537US	26484	NE313
5638	N538US	26485	NE314
5639	N539US	26486	NE315
5640	N540US	26487	NE316
5641	N541US	26488	NE317
5642	N542US	26489	NE318
5643	N543US	26490	NE319
5644	N544US	26491	NE320
5645	N545US	26492	NE321
5646	N546US	26493	NE322
5647	N547US	26494	NE323
5648	N548US	26495	NE324
5649	N549US	26496	NE325
5650	N550NW	26497	NU031
5651	N551NW	26498	NU032
5652	N552NW	26499	NU033
5653	N553NW	26500	NU034
5654	N554NW	26501	NU035
5655	N555NW	33391	NU036
5656	N556NW	33392	NU037
5657	N557NW	33393	NU038
6700	N6700	30337	NT713



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Ship Number	Registry Number	Serial Number	Tabulation Number
6701	N6701	30187	NT714
6702	N6702	30188	NT715
6703	N6703D	30234	NT716
6704	N6704Z	30396	NT717
6705	N6705Y	30397	NT718
6706	N6706Q	30422	NT719
6707	N6707A	30395	NT720
6708	N6708D	30480	NT721
6709	N6709	30481	NT722
6710	N6710E	30482	NT723
6711	N6711M	30483	NT724
6712	N6712B	30484	NT725
6713	N6713Y	30777	NT726
6714	N6714Q	30485	NT727
6715	N6715C	30486	NT728
6716	N6716C	30838	NT729
6717	N67171	30839	NT730
6801	N702TW	28162	NC076
6802	N703TW	27620	NC077
6803	N704X	28163	NC078
6804	N706TW	28165	NC079
6805	N707TW	27625	NC080
6806	N709TW	28168	NC081
6807	N710TW	28169	NC082
6808	N712TW	27624	NC083
6809	N713TW	28173	NC084
6810	N721TW	29954	NT371

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Ship Number	Registry Number	Serial Number	Tabulation Number
6811	N705TW	28479	NC091
6812	N717TW	28485	NT353
6813	N727TW	30340	NT360
6814	N711ZX	28481	NC093
6815	N718TW	28486	NT354
6816	N722TW	29385	NT372
6817	N723TW	29378	NT373
6818	N624AG	25624	NC066
6819	N819DX	33959	NJ551
6820	N820DX	33960	NJ552
6821	N821DX	33961	NJ553
6822	N822DX	33966	NJ554
6823	N823DX	33967	NJ555
6901	N751AT	23125	NB001
6902	N750AT	23126	NB002
6903	N757AT	23127	NB003
6904	N752AT	23128	NB004
And Subsequent			

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Ship Number	Registry Number	Serial Number	Tabulation Number
5801	N581NW	32982	NL601
5802	N582NW	32981	NL602
5803	N583NW	32983	NL603
5804	N584NW	32984	NL604
5805	N585NW	32985	NL605

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Ship Number	Registry Number	Serial Number	Tabulation Number
5806	N586NW	32987	NL606
5807	N587NW	32986	NL607
5808	N588NW	32988	NL608
5809	N589NW	32989	NL609
5810	N590NW	32990	NL610
5811	N591NW	32991	NL611
5812	N592NW	32992	NL612
5813	N593NW	32993	NL613
5814	N594NW	32994	NL614
5815	N595NW	32995	NL615
5816	N596NW	32996	NL616
And Subsequent			

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Ship Number	Registry Number	Serial Number	Tabulation Number
121	N121DE	23435	VK036
124	N124DE	23438	VK039
125	N125DL	24075	VK040
126	N126DL	24076	VK041
127	N127DL	24077	VK042
128	N128DL	24078	VK043
129	N129DL	24079	VK044
130	N130DL	24080	VK045
136	N136DL	25146	VK051
137	N137DL	25306	VK052
138	N138DL	25409	VK053

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Ship Number	Registry Number	Serial Number	Tabulation Number
139	N139DL	25984	VK054
171	N171DN	24759	VN251
172	N172DN	24775	VN252
174	N174DN	24802	VN254
175	N175DN	24803	VN255
176	N176DN	25061	VN256
177	N177DN	25122	VN257
178	N178DN	25143	VN258
179	N179DN	25144	VN259
180	N180DN	25985	VN260
181	N181DN	25986	VN261
182	N182DN	25987	VN262
183	N183DN	27110	VN263
184	N184DN	27111	VN264
185	N185DN	27961	VN265
186	N186DN	27962	VN266
187	N187DN	27582	VN267
188	N188DN	27583	VN268
189	N189DN	25990	VN269
190	N190DN	28447	VN270
191	N191DN	28448	VN271
192	N192DN	28449	VN272
193	N193DN	28450	VN273
194	N194DN	28451	VN274
195	N195DN	28452	VN275
196	N196DN	28453	VN276
197	N197DN	28454	VS066

Ship Number	Registry Number	Serial Number	Tabulation Number
198	N198DN	28455	VS067
199	N199DN	28456	VS068
1200	N1200K	28457	VS069
1201	N1201P	28458	VS070
1401	N140LL	25988	VK055
1402	N1402DA	25989	VK056
1403	N143DA	25991	VR471
1404	N144DA	27584	VR472
1501	N1501P	24983	VN301
1502	N152DL	24984	VN302
1503	N153DL	24985	VN303
1504	N154DL	25241	VN304
1505	N155DL	25269	VN305
1506	N156DL	25354	VN306
1521	N394DL	27394	VL753
1601	N169DZ	29689	VS073
1602	N1602	29694	VS074
1603	N1603	29695	VS075
1604	N1604R	30180	VS076
1605	N1605	30198	VS077
1606	N16065	30199	VS078
1607	N1607B	30388	VS466
1608	N1608	30573	VS467
1609	N1609	30574	VS468
1610	N1610D	30594	VS469
1611	N1611B	30595	VS470
1612	N1612T	30575	VS471



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Ship Number	Registry Number	Serial Number	Tabulation Number
1613	N1613B	32776	VS472
1701	N171DZ	29690	VS266
1702	N172DZ	29691	VS267
1703	N173DZ	29692	VS268
1704	N174DZ	29693	VS269
1705	N175DZ	29696	VS270
1706	N176DZ	29697	VS271
1707	N177DZ	29698	VS272
1708	N178DZ	30596	VS273
And Subsequent			

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General

The manufacturer has developed normal and non-normal procedures for the 757-767-300 aircraft. Delta Air Lines, Inc. has modified some of these procedures for simplification and standardization, when appropriate, with other aircraft operated by Delta Air Lines, Inc. Finally, the FAA has approved the procedures presented in this Operations Manual.

These procedures are intended to be followed during normal ground operations and in flight. Deviations from these procedures should be made only with good cause and based on the safest course of action. The captain's best judgment must be applied if an abnormality occurs that is not covered by these procedures.

Manual Rights

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Corrections to the Manual

Log on to the Delta Flight Operations Portal, <http://dlnet.delta.com> and submit a Publications Change Request (PCR) to correct any errors or discrepancies discovered in this manual, or to submit a suggested change to any Aircraft Operating Manual, Volume 1, Volume 2, Quick Reference Handbook (QRH), Flight Crew Training Manual (FCTM), Normal Checklist, Airway Manual (AM), Flight Operations Manual (FOM), Operating Experience (OE/TOE) Guide, Fleet Bulletin (FB), or All Pilots Bulletin (APB).

There are links to the PCR form on each fleet page and also on the Flight Ops Manuals/Library Services page. Once submitted, the PCR is automatically routed to the applicable Fleet Technical Manager and Technical Writer for that manual.

Organization

The operations manual is organized in the following manner.

Volume 1

- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.
- Limitations - Covers operational limitations.
- Normal Procedures - Covers all amplified normal operating procedures and are based on a thorough analysis of crew activity required to operate the aircraft, and reflect the latest knowledge and experience available.
- Normal Operational Information - Contains reference material used to support normal procedures.
- Supplementary Procedures is organized by system and covers:
 - any procedure that is non-routine in nature,
 - any first flight of the day test or other systems test,
 - guidance on lengthy operating procedures, and
 - adverse weather procedures and guidance.
- Differences - Notes differences between aircraft models and variants.

Volume 2

- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.
- Contains general aircraft and systems information. These chapters are generally subdivided into sections covering controls and indicators and systems descriptions.

QRH

- Non-normal checklists - Contains checklists used to manage non-normal situations.
- Non-Normal Operational Information - Contains reference material used to support non-normal procedures.
- Non-Normal Checklist Instructions - Contains non-normal checklist instructions and evacuation flow/philosophy.
- Revision Record - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions and a list of effective pages.

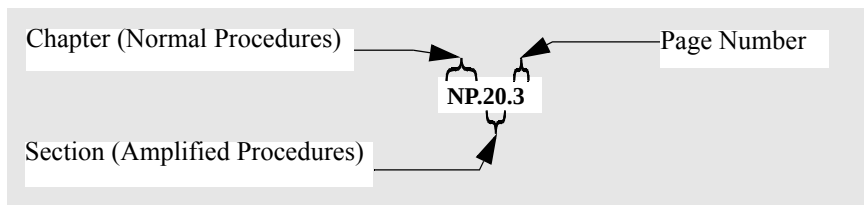
FCTM

- Preface - Contains general information regarding the manual's purpose, structure, and content. It also contains lists of abbreviations, a record of revisions, and a list of effective pages.
- Provides information and recommendations on aircraft operations, maneuvers, techniques, and human factors.

Page Numbering

This manual uses a decimal page numbering system. The page number is divided into three fields; chapter, section, and page. An example of a page number for the Normal Procedures chapter follows:

Example Page Number



Warnings, Cautions, and Notes

The following levels of written advisories are used throughout the manual and are not to be confused with EICAS messages, which are identified in separate text.

Warning - A warning is an instruction about a hazard that if ignored could result in injury, loss of aircraft control, or loss of life. A warning will appear prior to the applicable step or item.

WARNING: Do not pressurize any hydraulic or pneumatic system until clearance is obtained from Maintenance.

Caution - A caution is an instruction concerning a hazard that if ignored could result in damage to equipment. A caution will appear prior to the applicable step or item.

CAUTION: Do not set takeoff thrust until oil temperature is above 50°C.

Note - A note provides amplified information, instruction, or emphasis. A note will appear after the applicable step or item.

Note: The checklist must not be modified in any way.

Aircraft Effectivities

Differences in aircraft configuration are shown by use of aircraft effectivities throughout Volumes 1 and 2, QRH, and the FCTM. The following rules are used to express aircraft effectivities:

- Aircraft effectivities are listed by model and/or ship number. A range of aircraft is defined by a dash, e.g. 9901 - 9910. A comma in the effectivity range indicates a break in the range, e.g. 9901 - 9910, 9912 - 9925; aircraft 9911 is excluded from the range. Aircraft introduced to the fleet following manual publication are effective as subsequent ships, e.g. 9901 & Subsequent.
- Aircraft effectivities are listed in bold text throughout the manual, except in the Limitations chapter. In the Limitations chapter, aircraft effectivities are listed in bold when the effectivity applies to the entire section or subsection. When the effectivity applies only to a step within a section, it is listed in normal text.
- Aircraft effectivities apply only to the paragraph, illustration, operational note, procedural step, etc. and to subordinate items (if any). Refer to the examples below.

Example (with subordinate items):

9951 – 9961	
CTR TK PUMP (affected).....	OFF
Do not open the WING X FEED valve.	
OUTR TK XFR.....	ON

In this example, the effectivity 9951 - 9961 applies to the first procedural step (CTR TK PUMP....) and the further indented/subordinate step (Do not...). The effectivity does not apply to the next equivalently indented step (OUTR TK XFR.....).

Example (without subordinate items):

Using ship number:

9951 – 9961	
CTR TK PUMP (affected).....	ON
OUTR TK XFR.....	OFF

In this example, the effectivity 9951 - 9961 applies to the first procedural step (CTR TK PUMP) only. The effectivity does not apply to the next procedural step (OUTR TK XFR).

Using model number:

767-300	
EQUIPMENT COOLING mode selector.....	AUTO

In this example, the 767-300 will have the selector in the AUTO position.

When aircraft effectivities are centered immediately below a checklist title, the entire checklist applies to the listed aircraft. In the following example, the FUEL L + R CTR PUMPS LO PR checklist is applicable to 9951-9961 only:

FUEL L + R CTR PUMPS LO PR
9951-9961

Preface

Abbreviations

Chapter P1

Section 3

General

The following abbreviations may be found throughout the manual. Some abbreviations may also appear in lowercase letters. Abbreviations having very limited use are explained in the chapter where they are used. Since this list is compiled across several fleets, there may be some abbreviations that do not apply to this specific fleet.

A	
ABV	Above
AC	Alternating Current or Aircraft
ACARS	Aircraft Communications Addressing and Reporting System
ACE	Actuator Control Electronics
ACP	Audio Control Panel
ACT	Active
ADC	Air Data Computer
ADF	Automatic Direction Finder
ADI	Attitude Director Indicator
ADIRS	Air Data Inertial Reference System
ADIRU	Air Data Inertial Reference Unit
ADM	Air Data Module
AED	Automated External Defibrillator
AFDC	Autopilot Flight Director Computer

AFDS	Autopilot Flight Director System
AFE	Above Field Elevation
AFM	Airplane Flight Manual (FAA approved)
AFM - DPI	Airplane Flight Manual - Digital Performance Information
AFS	Automatic Flight System (Autopilot or Autothrottle)
A/G	Air/Ground
AGL	Above Ground Level
AH	Alert Height
AHRS	Attitude Heading Reference System
AI	Anti-Ice
AIL	Aileron
ALFA	Safe Stall Margin Speed
ALT	Altitude
ALT ACQ	Altitude Acquire
ALT HOLD	Altitude Hold
ALTN	Alternate
AM	Amplitude Modulation

AIMS	Airplane Information Management System
AMI	Airline Modifiable Information
ANP	Actual Navigational Performance
ANT	Antenna
ANU	Aircraft Nose Up
AOA	Angle of Attack
AOC	Airline Operational Communication Data Link
A/P	Autopilot
APB	All Pilots Bulletin
APL	Airplane
APP	Approach
APU	Auxiliary Power Unit
AR	Authorization Required
ARINC	Aeronautical Radio, Incorporated
ARM	Aircraft Restrictions Manual
ARPT	Airport
ARR	Arrival
ART	Automatic Reserve Thrust
ASA	Autoland Status Annunciator
ASI	Airspeed Indicator
ASR	Airport Surveillance Radar
ASYM	Asymmetry
A/T	Autothrottle
ATA	Actual Time of Arrival

ATC	Air Traffic Control
ATIS	Automated Terminal Information Service
ATM	Assumed Temperature Method
ATT	Attitude
AUTO	Automatic
AUTO–THROT	Autothrottle
AUX	Auxiliary
AVAIL	Available
AWABS	Automated Weight and Balance System
B	
BARO	Barometric
BAT	Battery
B/C or B/CRS or BAC or BCS	Back Course
BFO	Beat Frequency Oscillator
BITE	Built-In Test Equipment
BKR	Breaker
BLD	Bleed
BLW	Below
BRG	Bearing
BRT	Bright
BTL	Bottle
BTL DISCH	Bottle Discharge (fire extinguisher)
BTMS	Brake Temperature Monitoring System
C	

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C	Captain or Celsius or Center or Cool
CAA	Civil Aviation Authority
CADC	Central Air Data Computer
CALSEL	Call Select
CANC/RCL	Cancel/Recall
CANPA	Constant Angle Non-Precision Approach
CAP	Capture
CAPT	Captain
CAWS	Central Aural Warning System
CB	Circuit Breaker
CCD	Cursor Control Device
CDS	Common Display System
CDU	Control Display Unit
CFIT	Controlled Flight Into Terrain
CG	Center of Gravity
CHKL	Checklist
CHR	Chronograph
CKD	Checked
CKT	Circuit
CL	Close
CLB	Climb
CLMP	Computer Lockout Manual Power
CLR	Clear
CMD	Command
CO	Company

COMM	Communication
COMP	Comparator
COMPT	Compartment
CON	Continuous
CONFIG	Configuration
CONT	Control
COOL	Cooling
CRM	Crew Resource Management
CRS	Course
CRT	Cathode Ray Tube
CRZ	Cruise
CTL	Control
CTR	Center
CWS	Control Wheel Steering
D	
DA	Decision Altitude
DA(H)	Decision Altitude (Height)
DC	Direct Current
DCU	Display Concentrator Unit
D/D	Direct Descent
DDA	Derived Decision Altitude (MDA +50 feet)
DDG	Dispatch Deviations Guide
DEL	Delete
DEP	Departure
DEP ARR	Departure Arrival
DEPR	Depressurize
DES	Descent

DEU	Display Electronic Unit
DFCS	Digital Flight Control System
DFGC	Digital Flight Guidance Computer
DFGS	Digital Flight Guidance System
DH	Decision Height
DIFF	Differential
DIR	Direct
DISC	Disconnect
DISCH	Discharge
DK	Deck
DME	Distance Measuring Equipment
DN	Down
DPC	Display Processing Computer
DSP	Display Select Panel
DSPL	Display
DTG	Distance to Go
DTW	Distance to Waypoint
DU	Display Unit
E	
EADI	Electronic Attitude Director Indicator
ECON	Economy
E/D	End of Descent
E/E	Electrical/Electronic
EEC	Electronic Engine Control
EFB	Electronic Flight Bag

EFI	Electronic Flight Instruments
EFIS	Electronic Flight Instrument System
EGPWS	Enhanced Ground Proximity Warning System
EGT	Exhaust Gas Temperature
EHSI	Electronic Horizontal Situation Indicator
EICAS	Engine Indication and Crew Alerting System
EIS	Electronic Instrument System
ELEC	Electrical
ELEV	Elevator
EMER	Emergency
ENG	Engine
ENG OUT	Engine Out
ENT	Entry
EO or E/O	Engine Out
EOAP	Electronic Overhead Annunciation Panel
EPC	Electrical Power Center
EPR	Engine Pressure Ratio
EQPT or EQUIP	Equipment
ETOPS	Extended Range Operation with Twin Engine Airplanes
ETP	Equal Time Point
EVAC	Evacuation
EXEC	Execute

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EXT	Extend or External
F	
F	Fahrenheit
FAC	Final Approach Course
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FAF	Final Approach Fix
FAR	Federal Aviation Regulation
FB	Fleet Bulletin
FCC	Flight Control Computer
FCTL	Flight Control
FCTM	Flight Crew Training Manual
FD, F/D or FLT DIR	Flight Director
FF	Fuel Flow
FFM	Force Fight Monitor
FGCP	Flight Guidance Control Panel
FGS	Flight Guidance System
FILT	Filter
FIR	Flight Information Region
FL CH or FLCH	Flight Level Change
FLT	Flight
FLT CTRL	Flight Control
FLPRN	Flapron
FMA	Flight Mode Annunciator

FMC	Flight Management Computer
FMS	Flight Management System
F/O or F O	First Officer
FOM	Flight Operations Manual
FPA	Flight Path Angle
FPM	Feet Per Minute
FPV	Flight Path Vector
FREQ	Frequency
F/S	Fast/Slow
FT	Feet
FWD	Forward
FWSOV	Fire Wall Shut Off Valve
FX	Fix
G	
GA	Go-Around
GC	Ground Clutter Suppression
GEN	Generator
GLS	GNSS Landing System
GMT	Greenwich Mean Time
GND	Ground
GNSS	Global Navigation Satellite System
GP or G/P	Glidepath
GPS	Global Positioning System
GPWS	Ground Proximity Warning System
GS	Ground Speed

GS or G/S	Glideslope
GW	Gross Weight
H	
HAA	Height Above Airport
HAT	Height Above Touchdown
HDG	Heading or Hydraulic Driven Generator
HDG REF	Heading Reference
HDG SEL	Heading Select
HF	High Frequency
HGS	Head-Up Guidance System (HGS® is a registered trademark of Flight Dynamics)
HI	High
HLD	Hold
HPA	Hectopascals
HPSOV	High Pressure Shut Off Valve
HSI	Horizontal Situation Indicator
HUD	Head-Up Display
HYD	Hydraulic
I	
IAF	Initial Approach Fix
IAN	Integrated Approach Navigation
IAS	Indicated Airspeed
ICAO	International Civil Aviation Organization

IDENT	Identification
IFE	In-Flight Entertainment System
IFR	Instrument Flight Rules
IGN	Ignition
IGS	Instrument Guidance System
ILS	Instrument Landing System
IM	Inner Marker
IMC	Instrument Meteorological Conditions
IN	Inches
INBD	Inboard
IND	Indicator
IND LTS	Indicator Lights
INOP	Inoperative
INIT	Initialization
INSTR	Instrument
INT or INTPH	Interphone
INTC	Intercept
INTC CRS	Intercept Course
IP	Instructor Pilot
IRS	Inertial Reference System
IRU	Inertial Reference Unit
ISA	International Standard Atmosphere
ISDU	Inertial System Display Unit
ISFD	Intergrated Standby Flight Display

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ISLN	Isolation
J	
JAA	Joint Aviation Authority
K	
K or KTS	Knots
KCAS	Knots Calibrated Airspeed
KGS	Kilograms
KIAS	Knots Indicated Airspeed
L	
L	Left
LAT	Latitude
LBS	Pounds
LD	Load
LDA	Localizer-type Directional Aid
LDG	Landing
LDG ALT	Landing Altitude
LE	Leading Edge
LIM	Limit
LIM SPD	Limit Speed
LKD	Locked
LLM	Lower Landing Minimum
L NAV or LNAV	Lateral Navigation
LOC	Localizer
LOC-BC	Localizer Back Course
LOM	Locator Outer Marker
LON	Longitude
LPV	Localizer Performance with Vertical guidance

LRC	Long Range Cruise
LRU	Line Replaceable Unit
LSK	Line Select Key
LT	Light
LWR CTR	Lower Center
LWR DSPLY or LWR DSPL	Lower Display
M	
M	Mach
MAG	Magnetic
MAHP	Missed Approach Holding Point
MAN	Manual
MAP	Missed Approach Point
MASI	Mach/Airspeed Indicator
MAX	Maximum
MCC	Maintenance Control Center
MCDU	Multi-purpose Control and Display Unit
MCO	Maintenance Carry Over
MCP	Mode Control Panel
MCT	Maximum Continuous Thrust
MDA	Minimum Descent Altitude
MDA(H)	Minimum Descent Altitude (Height)
MDM	Mechanical Dispatch Manual
MEA	Minimum Enroute Altitude

MEL	Minimum Equipment List
MFD	Multifunction Display
MHZ	Megahertz
MIC	Microphone
MIN	Minimum
MKR	Marker
MLS	Microwave Landing System
MM	Middle Marker
MMO	Maximum Mach Operating Speed
MNPS	Minimum Navigation Performance Specification
MOCA	Minimum Obstruction Clearance Altitude
MOD	Modify
MORA	Minimum Off Route Altitude
MSA	Minimum Safe Altitude
MSG	Message
MSGS RCVD	Messages Received
MSL	Mean Sea Level
MTRS	Meters
MUH	Minimum Use Height
N	
N	Normal
NADP	Noise Abatement Departure Procedures
NAR	North American Route
NAV	Navigation

NAV RAD	Navigation Radio
ND	Navigation Display
NGS	Nitrogen Generation System
NLT	No Later Than
NLT	No Later Than
NM	Nautical Mile(s)
NNC	Non-Normal Checklists
NNM	Non-Normal Maneuvers
NPS	Navigation Performance Scales
NORM	Normal
N1	Low Pressure Rotor Speed
N2	High Pressure Rotor Speed (Pratt & Whitney and GE engines) or Intermediate Pressure Rotor Speed (Rolls Royce Engines)
N3	High Pressure Rotor Speed (Rolls Royce Engines)
O	
OAP	Overhead Annunciator Panel (a.k.a. EOAP)
OAT	Outside Air Temperature
OCC	Operations Control Center
ODM	Operational Data Manual
OFST	Offset
OHU	Overhead Unit
OM	Outer Marker
OP	Open

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OUTBD DSPL	Outboard Display
OVHD	Overhead
OVHT	Overheat
OVRD	Override
OVSPD	Overspeed
OXY or O2	Oxygen
P	
PA	Passenger Address
PAC	Path Attenuation Compensation
PAPI	Precision Approach Path Indicator
PAR	Precision Approach Radar
PASS	Passenger
PBE	Protective Breathing Equipment
PCP	Pilot Call Panel
PDC	Pitch Data Computer or Performance Data Computer or Pre-Departure Clearance
PERF	Performance
PERF INIT	Performance Initialization
PES	Pitch Enhancement System
PF	Pilot Flying
PFAF	Precision Final Approach Fix
PFC	Primary Flight Computer

PFD	Primary Flight Display
PI	Performance Inflight
PIP	Product Improvement Package
PLI	Pitch Limit Indicator
PM	Pilot Monitoring
PMC	Power Management Control
PNL	Panel
POS	Position
POS INIT	Position Initialization
POS REF	Position Reference
PPI	Planned Position Indicator
PPOS	Present Position
PRES or PRESS	Pressure
PREV	Previous
PRI	Primary
PRAIM	Predictive Receiver Autonomous Integrity Monitoring
PROG	Progress
PROX	Proximity
P/RST	Push To Reset
PRV	Pressure Regulating Valve
PSI	Pounds Per Square Inch
PTH	Path
PTT	Push To Talk
PTU	Power Transfer Unit
PWR	Power

PWS	Predictive Windshear System
Q	
Q	Quantity
QFE	Local Station Pressure
QNH	Altimeter Setting
QRH	Quick Reference Handbook
QTY	Quantity
R	
R	Right
RA	Radio Altitude or Resolution Advisory
RAD	Radio
RAT	Ram Air Temperature or Ram Air Turbine
RCL	Request for Clearance
RDMI	Radio Distance Magnetic Indicator
REC	Recorder
RECIR or RECIRC	Recirculation
REF	Reference
RET	Retract
REV	Reverse
RF	Radius-to-Fix (RF) Legs or Refill
RMI	Radio Magnetic Indicator
RON	Remain Overnight
RNAV or RNV	Area Navigation
RNP	Required Navigational Performance

RPL	Rudder Pressure Limiter
RPM	Revolutions Per Minute
RPR	Rudder Pressure Reducer
RSEP	Rudder System Enhancement Program
RST	Reset
RSVR	Reservoir
R/T	Radio Transmit
RTE	Route
RTO	Rejected Takeoff
RTP	Radio Tuning Panel
RUD	Rudder
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
S	
SAAAR	Special Aircraft and Aircrew Authorization Required
SAARU	Secondary Attitude Air Data Reference Unit
SAT	Static Air Temperature or Satellite
SB	Service Bulletin
S/B	Speedbrake
S/C	Step Climb
SCL	Secure Content Locker
SDF	Simplified Directional Facility
SEI	Standby Engine Indicator
SEL	Select
SELCAL	Selective Calling

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SENS	Sensitivity
SERV	Service
SG	Symbol Generator
SMGCS	Surface Movement and Guidance Control System
SPD	Speed
SPDBRK	Speedbrake
STA	Station
STAB	Stabilizer
STAT	Status
STBY	Standby
STD	Standard
SYS	System
T	
T or TRU	True
T or TK or TRK	Track (to a Navaid)
TA	Traffic Advisory
TAA	Terminal Arrival Area
TACAN	Tactical Air Navigation
TAC	Thrust Asymmetry Compensation
TAI	Thermal Anti-Ice
TAS	True Airspeed
TAT	Total Air Temperature
T/C	Top of Climb
TCA	Terminal Control Area
TCAS	Traffic Alert and Collision Avoidance System
T/D	Top of Descent
TDU	Takeoff Data Uplink

TDZ	Touch Down Zone
TDZE	Touch Down Zone Elevation
TE	Trailing Edge
TEMP	Temperature
TERR	Terrain
TFC	Traffic
TFR	Transfer
THR	Throttle or Thrust
THR HOLD	Throttle Hold
TMC	Thrust Management Computer
TMI	Track Message Identifier
TMSP	Thrust Mode Select Panel
TO or T/O	Takeoff
TOC	Top of Climb
TOD	Top of Descent
TO/GA	Takeoff/Go-Around
TR	Traffic Resolution
TRK	Track
TRP	Thrust Rating Panel
TRU	Transformer Rectifier Unit
TURB	Turbine or Turbulence
U	
UNLKD	Unlocked
UNSCHD or UNSCHED	Unscheduled
UPR DSPL	Upper Display
U.S.	United States

USB	Upper Side Band
UTC	Universal Time Coordinated
UTIL	Utility
V	
VA	Design maneuvering speed
VAL	Valve
VANP	Vertical Actual Navigational Performance
VASI	Visual Approach Slope Indicator
VDP	Visual Descent Point
VEF	Speed at Engine Failure
VERT	Vertical
VFR	Visual Flight Rules
VG	Vertical Gyro
VHF	Very High Frequency
VIB	Vibration
VLV	Valve
VMC	Visual Meteorological Conditions
VMCA	Minimum Control Airspeed or Single Engine Minimum Control Airspeed
VMCG	Minimum Control Speed Ground
VMO	Maximum Operating Speed
V NAV or VNAV	Vertical Navigation
VOR	VHF Omnidirectional Range

VR	Rotation Speed
VREF	Reference Speed
VRNP	Vertical Required Navigation Performance
V/S	Vertical Speed
VSCF	Variable Speed Constant Frequency
VSD	Vertical Situation Display
VSI	Vertical Speed Indicator
VTK	Vertical Track
V1	Takeoff Decision Speed
V1 (MCG)	Minimum V1 for Control on the Ground
V2	Scheduled Takeoff Target Speed
W	
W	Warm
WATRS	Western Atlantic Route System
WDR	Weight Data Record
WGS-84	World Geodetic System of 1984
WHL	Wheel
WPT	Waypoint
WT	Weight
WXR	Weather Radar
X	
X—FEED	Crossfeed
XPDR or XPNDR	Transponder
XTK	Cross Track

**Preface**
Revision Record**Chapter P1**
Section 4**Revision Transmittal Letter**

To: All holders of Delta Air Lines, 757/767-300 Operations Manual.

Subject: Operations Manual Revision.

This revision reflects the most current information available to Delta Air Lines, Inc. through the subject revision date. The following revision highlights explain changes in this revision. General information explains the use of revision bars to identify new or revised information.

Revision Record

No.	Revision Date	Date Filed
0	April 08, 2002	
2	December 16, 2002	
4	December 08, 2003	
6	January 31, 2005	
8	March 31, 2006	
10	August 27, 2007	
12	July 28, 2008	
14	April 1, 2009	
16	August 1, 2009	
18	January 1, 2010	
20	July 12, 2010	
22	March 3, 2011	
24	May 24, 2012	
26	February 28, 2013	
28	December 3, 2013	
30	September 9, 2014	
32	August 11, 2015	
34	March 11, 2016	

No.	Revision Date	Date Filed
1	September 23, 2002	
3	March 10, 2003	
5	April 23, 2004	
7	August 01, 2005	
9	December 12, 2006	
11	December 21, 2007	
13	December 29, 2008	
15	June 1, 2009	
17	October 1, 2009	
19	April 11, 2010	
21	November 1, 2010	
23	December 8, 2011	
25	November 7, 2012	
27	June 20, 2013	
29	March 25, 2014	
31	February 24, 2015	
33	October 6, 2015	

General

Delta Air Lines, Inc. issues operations manual revisions to provide new or revised procedures and information. Formal revisions also incorporate appropriate information from previously issued Fleet Bulletins.

The revision date is the approximate date the revision material is distributed and considered current. The revision should be incorporated on the revision date, but may be incorporated as much as 21 days after the revision date.

Formal revisions include a Transmittal Letter, a new Revision Record, Revision Highlights, and a current List of Effective Pages. Use the information on the new Revision Record and List of Effective Pages to verify the operations manual content.

The Revision Record should be completed by the person incorporating the revision into the manual.

Filing Instructions

Consult the List of Effective Pages (P1.5). Pages identified with an asterisk (*) are either replacement pages, new (original) issue pages, or deleted pages. Remove corresponding old pages and replace or add new pages. Remove pages marked DELETED; there are no replacement pages for deleted pages.

Be careful when inserting changes not to throw away pages from the manual that are not replaced. The List of Effective Pages determines the correct content of the manual.

Revision Highlights

This section (P1.4) replaces the existing section P1.4 in your manual.

Pages containing revised technical and non-technical material have revision bars associated with the changed text or illustration.

Repaginated material not containing technical revisions are identified only by a new page date.

All references to the Airway Manual have been updated to reflect the new organization of the Airway Manual. These changes will not be indicated with individual highlights.

Chapter P1 - Preface

Section 1 - Model Identification

P1.1.5 - Removal of ships 5501-5534.

Section 2 - Introduction

P1.2.3 - Added “and human factors.”

Chapter L - Limitations

Section 10 - Operating Limitations

Operational Limitations

L.10.1 - Removed “green pages”.

Weight Limitations

L.10.3 - Removal of ships 5501-5534 from table.

RVSM Altimeter Cross Check Limits

L.10.9 - Moved RVSM Altimeter Cross Check Limits under Flight Instruments, Displays to standardize with Boeing.

Weather Radar

L.10.9 - Moved and revised Weather Radar to standardize with Boeing.

L.10.11 - Removed “Traffic Alert and Collision Avoidance System (TCAS) from Volume 1 and placed in FCTM.

Chapter NP - Normal Procedures

Section 11 - Normal Checklist Instructions

Normal Checklist Instructions

NP.11.1 - Added Normal Checklist Instructions.

Section 12 - Operational Procedures

Automation Guidelines

NP.12.1 - Updated bullet, “All pilot-induced lateral, vertical, and speed mode changes should be verbalized by the PF and, after referencing the FMA, the PM should verbally confirm the appropriate FMA status”; partial incorporation of FB 16-01.

NP.12.1 - Changed “verify” to “verbalize”, and “The PF should verbalize that the proper selections have been set.” to “The PM should verbalize that the proper selections have been set.” for cross fleet standardization.

Standard Callouts

NP.12.4 - Added “Crews should focus on the aircraft state during the level-off period.”, and added “Approximately” to “1,000 feet above each assigned altitude” for cross fleet standardization.

NP.12.5 - Added “Approximately” to “1,000 feet above each assigned altitude.” for cross fleet standardization.

NP.12.6 - Removed “ALL APPROACHES (ILS and Non-ILS)” table; partial incorporation of FB 16-01.

NP.12.7 - Added standard callout for GO-AROUND ALL APPROACHES; partial incorporation of FB 15-09.

Lights Usage

NP.12.10 - Removed, “LOGO lights - ON” from Crossing a runway for cross fleet standardization.

NP.12.11 - Removed, “LOGO lights - ON” from Line up and wait for cross fleet standardization.

NP.12.11 - Added “logo” to statement.

NP.12.11 - Removed, “LOGO lights - ON” from In flight (above 18,000 feet) for cross fleet standardization.

NP.12.11 - Removed, “LOGO lights - ON” from In flight (below 18,000 feet) for cross fleet standardization.

Section 20 - Amplified Procedures**Interior Inspection - First Officer or Relief Pilot**

NP.20.3 - Updated required documents for cross fleet standardization.

NP.20.3 - Added EFB Mounts to Interior Inspection - First Officer or Relief Pilot.

NP.20.4 - Removed ships 5501-5534 and added ships 6819-6823.

Preflight Procedure - Pilot Flying

NP.20.14 - Added how to enter the present position on the POS INIT page.

Preflight Procedure - Pilot Monitoring

NP.20.30 - Removed “OFF” from AUTOBRAKES selector, and “If selector has the RTO position available, use RTO. If not, use the OFF position.”

Engine Start Procedure

NP.20.52 - Revised Engine Start procedure; partial incorporation of FB 15-04.

NP.20.53 - Added SPAR VALVE instructions to procedure; partial incorporation of FB 15-11.

After Start Procedure

NP.20.56 - Removed “OFF” from “Autobrakes...RTO”.

Delayed Start Procedure

NP.20.61 - Revised Delayed Start procedure; partial incorporation of FB 15-04.

NP.20.63 - Removed “OFF” from Autobrakes.

Before Takeoff Procedure

NP.20.64 - Revised Takeoff Briefing procedure; partial incorporation of FB 16-01.

NP.20.65 - Revised Before Takeoff checklist; partial incorporation of FB 16-01.

Cruise Procedure

NP.20.69 - Added “Verify/set RNP value for Oceanic airspace. Reference SP.11 for Manual Entry procedures” to Enroute.

Landing Procedure

NP.20.76 - Revised table for Automation Guidelines; partial incorporation of FB 16-01.

Go-Around Procedure

NP.20.78 - Revised Pilot Flying callout to, Push either GA switch and announce “GO AROUND”; partial incorporation of FB 15-09.

NP.20.78 - Revised Pilot Monitoring callout to, Verify FMA pitch, roll and ATS. Announce pitch mode “GO AROUND VERIFIED”; partial incorporation of FB 15-09.

NP.20.78 - Added callout for Pilot Flying to Call “FLAPS 20”; partial incorporation of FB 15-09.

NP.20.78 - Updated items for Pilot Flying and Pilot Monitoring to verify; partial incorporation of FB 15-09.

NP.20.78 - Grammar correction; partial incorporation of FB 15-09.

NP.20.78 - Updated Pilot Monitoring to Monitor rotation, pitch and vertical speed; partial incorporation of FB 15-09.

NP.20.78 - Added “If another approach is warranted at the destination airport:”; partial incorporation of FB 15-09.

NP.20.78 - Added Pilot Flying and Pilot Monitoring procedure; partial incorporation of FB 15-09.

NP.20.79 - Updated to “After planned flaps set and above flap maneuvering speed, if a diversion is required:”; partial incorporation of FB 15-09.

Shutdown Procedure

NP.20.86 - Added “RNAV (RNP) approach reports are required. Refer to SP.5” and “Autoland attempts must be recorded. Refer to SP.4” to After the Shutdown checklist is complete.

NP.20.86 - Removed ships 5501-5534.

Chapter NOI - Normal Operational Information

Section 3 - Approach Guidance

ILS CAT I, LDA with GS - Approach Guide APP Mode

NOI.3.4 - Revised Note to say “Approach may continue to DA(H) if established on the final segment and the controlling visibility decreases below the authorized minimums. Specific foreign country exceptions may apply. For further information, refer to the Airway Manual, Ops Specs, Takeoff Minima.” for cross fleet standardization.

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GPS, RNAV (GPS), or RNAV (GNSS) - Approach Guide LNAV & VNAV Modes

NOI.3.10, 12 - Removed “Verify” from FMS approach procedure, and added “Verify waypoints, altitude constraints and descent angle.” for cross fleet standardization.

RNAV (RNP) - Approach Guide LNAV & VNAV Modes

NOI.3.12 - Removed “green pages”.

Charted Visual Approach Guide (Procedure in FMS Database) LNAV & VNAV Modes

NOI.3.19 - Removed “green pages”.

Chapter SP - Supplementary Procedures**Section 05 - Introduction**

General

SP.05.1 - Revised section for cross fleet standardization.

Section 1 - Airplane General, Emer. Equip., Doors, Windows

Pilot Lower Lobe Crew Rest Compartment

SP.1.13 - Removed “as installed” from effectivities.

Section 2 - Air Systems

Air Conditioning Packs

SP.2.1 - Added step, “APU Bleed Air switch...Off” to prevent auto shutdown of APU; partial incorporation of FB 15-04.

SP.2.3 - Changed “WDR Preface” to “Flight Plan Addendum” to match flight plan format.

Section 5 - Communications

Cockpit Voice Recorder Test

SP.5.1 - Removed ships 5501-5534.

Aircraft Communication Addressing and Reporting System (ACARS -501) Collins Touchscreen or FMS MCDU

SP.5.12 - Revised ball note 4 from “FMC” to “GW”.

SP.5.13 - Removed Note, due to ACARS 501 cannot perform datalink.

SP.5.37 - Removed “or Fault Reporting Manual (FRM)” from title.

SP.5.38 - Removed FRM Example, due to FRM has been removed from aircraft.

Aircraft Communication Addressing and Reporting System (ACARS-601, as installed)

SP.5.44 - Revised to “The following are available for use:”

SP.5.46 - Revised to “The following are available for use:”

SP.5.52 - Removed “flight deck FRM codes” due to the FRM is no longer on the aircraft.

RNAV (RNP) Approach Documentation

SP.5.57 - Added “Data Collection ACARS - 601”.

SP.5.58 - Changed title from “Data Collection” to “Data Collection ACARS - 501”.

Controller Pilot Data Link Communications and Automatic Dependent Surveillance (CPDLC/ADS)

SP.5.81 - Removed sentence, “In the event of a communications failure; revert to appropriate lost communications procedure referenced in AM 9, section 9, Emergency.”

SATCOM Operation for 757

SP.5.102 - Updated aircraft effectivities.

Section 11 - Flight Management, Navigation

Lateral Navigation

SP.11.23 - Removed, “This entire procedure must be re-accomplished when the runway and/or arrival is changed. This will prevent the possibility of incorrect routing or inadequate obstacle clearance.”

Navigation Database

SP.11.30 - Removed Version PEG02 from table and Note.

RNP-4 Manual Entry Procedures

SP.11.32 - Added “All flights operating in Oceanic airspace will verify/set FMC value to RNP-4. Automatic switching normally occurs in class II airspace when radio updating is not available.”

Critical Terrain Box FMS Loading Procedures

SP.11.35 - Updated Critical Terrain information and retitled to “Critical Terrain Box FMS Loading Procedures”; partial incorporation of FB 15-02.

Section 15 - Warning Systems

EICAS Status Message Erase Policy

SP.15.1 - Changed “green pages” to “Delta Special Pages”.

Takeoff Configuration Warning Test

SP.15.5 - Added Configuration Test switch and items to observe to Takeoff Configuration Warning Test to standardize with Boeing.

Section 16 - Adverse Weather**AWABS Determinations**

SP.16.17 - Added “A321”.

Guidelines for Takeoff on Contaminated Runways or Landing with Braking Action Less than Good

SP.16.19 - Updated Takeoff Runway Contaminant Decision Tree to include A321 for cross fleet standardization.

SP.16.20 - Added “A321”.

Ground De/Anti-Icing Procedure

SP.16.22 - Revised captain’s response to “Roger, ship #____.”; partial incorporation of APB 15-04.

Remote (Engine(s) Running)

SP.16.32 - Removed “green pages”.

SP.16.32 - Revised deicer and captain communication for Pre-Deicing Communication and Pre-Deicing Communication Using Forced Air; partial incorporation of APB 15-04.

Chapter DF - Differences**Section 10 - 757 Differences**

DF.10.3,5,7,9,11,13,15,17,19,21,23,25,27,29,31 - Removed ships 5501-5534 from table.

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**Preface****Chapter P1****List of Effective Pages - FAA Approved****Section 5**

Page	Date
Volume 1	
* Title Page	March 11, 2016
* Blank	March 11, 2016
* P1.TOC.0.1-2	March 11, 2016
* P1.1.1-12	March 11, 2016
* P1.2.1-6	March 11, 2016
* P1.3.1-12	March 11, 2016
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* P1.4.1-10	March 11, 2016
List of Effective Pages	
* P1.5.1-2	March 11, 2016
Limitations (tab)	
* L.TOC.0.1-2	March 11, 2016
* L.10.1-12	March 11, 2016
Normal Procedures (tab)	
* NP.TOC.0.1-4	March 11, 2016
* NP.10.1-8	March 11, 2016
* NP.11.1-8	March 11, 2016
* NP.12.1-12	March 11, 2016
* NP.20.1-90	March 11, 2016
Normal Operational Information (tab)	
* NOI.TOC.0.1-2	March 11, 2016
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* NOI.3.1-22	March 11, 2016

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Supplementary Procedures (tab)	
* SP.TOC.0.1-10	March 11, 2016
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* SP.3.1-2	March 11, 2016
* SP.4.1-8	March 11, 2016
* SP.5.1-128	March 11, 2016
* SP.6.1-8	March 11, 2016
* SP.7.1-10	March 11, 2016
* SP.8.1-2	March 11, 2016
* SP.10.1-4	March 11, 2016
* SP.11.1-46	March 11, 2016
* SP.12.1-6	March 11, 2016
* SP.15.1-6	March 11, 2016
* SP.16.1-48	March 11, 2016
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* DF.05.1-2	March 11, 2016
* DF.10.1-32	March 11, 2016
* DF.20.1-16	March 11, 2016

* = Revised, Added, or Deleted

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Limitations

Operating Limitations

Chapter L

Section 10

General

The 757/767-300 aircraft must be operated in compliance with Certificate Limitations of the applicable FAA Approved Airplane Flight Manual (AFM). This chapter contains Airplane Flight Manual (AFM) limitations and manufacturer recommended non-AFM operating limitations.

Limitations that are obvious, shown on displays or placards, or incorporated within an operating procedure or flight plan/performance documents are not published in this chapter.

Those AFM limitations that are incorporated into other chapters of this manual, into the Vol. 2, or into the QRH are identified with an [AFM] tag.

Note: The symbol (#) indicates recall limitations. Recall limitations are those operationally significant limitations that must be committed to memory. Memorization is necessary because there are no placards, display indications, or markings indicating a limitation exists.

Note: A logbook entry is required any time an aircraft limitation is exceeded, e.g., overweight landing, engine exceedance, etc.

Airplane General, Emergency Equipment, Doors, Windows

Operational Limitations

Runway slope	± 2%
# (757) Maximum Operating Altitude	42,000 feet pressure altitude
# (767-300) Maximum Operating Altitude	43,000 feet pressure altitude
Maximum Takeoff and Landing Altitude (except ships 636, 638, 640-641, 6815-6817, 6901-6904)	8,400 feet pressure altitude (9,500 feet pressure altitude)
# Maximum Takeoff and Landing Tailwind Component	10 knots, or as permitted by Delta Special Pages.

Non-AFM Operational Information

Note: The following items are not AFM limitations, but are provided for flight crew information.

Turbulent air penetration speed is: 290 KIAS /.78 Mach, whichever is lower.

Do not operate HF radios during refueling operations.

The Delta 757/767-300 crosswind limit is 40 knots for takeoff and landing, including gusts.

Note: The crosswind component may be further limited by low visibility approaches, autolands, or contamination.

Note: Refer to SP.16, Guidelines for Contaminated Runways.

Weight Limitations

Maximum Weight Limitations

601-690, 691, 692-699, 6700-6717, 6801-6818, 6901-6904

Weights	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Maximum Taxi (MTW)	691 - 241,000 6819-6823 - 256,000	241,000	256,000	241,000
Maximum Take Off (MTOW)	691 - 240,000 6819-6823 - 255,000	240,000	255,000	240,000
Maximum Landing (MLW)	198,000	198,000	198,000	198,000
Maximum Zero Fuel(1)	185,400	184,000 185,400(2)	185,400	184,000
(1) If the main tanks are not full, center tank fuel may not exceed 2,000 pounds. (2) Applies to aircraft with blended winglets installed.				

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5635-5657, 5801-5816

Weights	757-251 5639-5643 5650-5657	757-251 5635-5638 5644-5649	757-351 5801-5816
Maximum Taxi (MTW)	241,000	256,000	273,500
Maximum Take Off (MTOW)	240,000	255,000	272,500
Maximum Landing (MLW)	198,000	198,000	224,000
Maximum Zero Fuel(1)	184,000 185,400(2)	184,000 185,400(2)	210,000 211,560(4)
(1) If the main tanks are not full, center tank fuel may not exceed 2,000 pounds. (2) Applies to aircraft with blended winglets installed. (3) For ship 5518 the MTW is 231,000, and MTOW is 230,500. (4) For ships 5801-5816 with blended winglets installed.			

767-300

Weights	121, 124-139	1401-1404
Maximum Taxi (MTW)	352,000	352,000
Maximum Take Off (MTOW)	351,000	351,000
Maximum Landing (MLW)	295,000	295,000
Maximum Zero Fuel(1)	278,000	278,000
(1) The center tank may contain up to 22,000 pounds of fuel with less than full main tanks provided center tank weight plus actual zero fuel weight does not exceed the maximum zero fuel weight, and center of gravity limits are observed. With fuel jettison system installed and activated, total fuel must not be less than 10,300 pounds in the main tanks.		

767-300ER

Weights	171-186, 189-190, 197, 199, 1501-1506, 1521, 1601-1602, 1605, 1701, 1703-1704, 1708	187-188, 191-196, 198, 1200-1201, 1603-1604, 1606-1613, 1702, 1705-1707
Maximum Taxi (MTW)	409,000	413,000
Maximum Take Off (MTOW)	408,000	412,000
Maximum Landing (MLW)	320,000	320,000
Maximum Zero Fuel(1)	295,000 298,300 (2)	295,000 298,300 (2)
(1) The center tank may contain up to 22,000 pounds of fuel with less than full main tanks provided center tank weight plus actual zero fuel weight does not exceed the maximum zero fuel weight, and center of gravity limits are observed. With fuel jettison system installed and activated, total fuel must not be less than 10,300 pounds in the main tanks.		
(2) Applies to aircraft with blended winglets installed.		

Other Weight Restrictions

Note: These weights may be further restricted by field length limits, climb limits, tire speed limits, brake energy limits, obstacle clearance, or enroute and landing requirements.

Flight Deck Access System

Verify that an operational check of the Flight Deck Access System has been accomplished according to approved procedures once each flight day.

Door Mounted Escape Slides

Entry door evacuation slide systems must be armed and engagement of the girt bar with door sill verified prior to taxi, takeoff, or landing whenever passengers are carried.

Air Systems

Air Conditioning/Pressurization

When the airplane is electrically powered for more than 20 minutes on the ground, equipment cooling must be provided as shown below.

Temp. (OAT)	Cooling Required
34°C to 40°C (94°F to 105°F)	One forward and one aft entry door on opposite sides open, or at least one A/C pack or equivalent ground cooling operating.
41°C to 49°C (106°F to 120°F)	At least one A/C pack or equivalent ground cooling operating.
More than 49°C (120°F)	Two A/C packs or equivalent ground cooling operating.

Auto Flight

Autopilot

After takeoff, the autopilot must not be engaged below 200 feet AGL.

Use of aileron trim with the autopilot engaged is prohibited.

Automatic Landing

Do not use the autopilot below 100 ft. Radio Altitude at airport pressure altitudes above 8,400 ft.

Maximum allowable wind speeds when landing weather minima are predicated on autoland operations (e.g., CAT II autoland, CAT III):

# Headwind	25 knots
# Crosswind	25 knots*
# Tailwind	10 knots

* The Boeing AFM low visibility autoland crosswind limitation is 25 knots. To both initiate and land, Delta Ops Specs further restricts CAT II and CAT III low visibility operations to a 15 knot crosswind limit. For CAT I or higher visibility, the autoland crosswind limit is 40 knots.

Autoland authorized for flaps 25 or 30 landing only.

Note: Do not autoland aircraft when ground speed exceeds 165 knots.

Communications

Aircraft Communications Addressing and Reporting System (ACARS)

The ACARS is limited to the transmission and receipt of messages which will not create an unsafe condition if the message is improperly received, such as the following conditions:

- the message or parts of the message are delayed or not received,
- the message is delivered to the wrong recipient, or
- the message content may be frequently corrupted.

However, Pre-Departure, Digital Automatic Terminal Information Service, Oceanic Clearances, Weight and Balance and Takeoff Data messages can be transmitted and received over ACARS if they are verified per approved operational procedures.

Engines, APU

Engine Limitations - Emergency Conditions

The published operating limits for engines relate to predefined normal and abnormal operations. If, however, any crew finds itself in a life-threatening situation which requires an application of thrust beyond the certified takeoff limits, they can feel confident that the engine(s) will operate satisfactorily for whatever reasonable time is required to maintain safe control of the aircraft.

Engine Limit Display Markings

Minimum and maximum limits are red.

Caution limits are amber.

Ignition

Continuous ignition must be on (engine start selector in the CONT position) while operating in severe turbulence.

Note: Continuous ignition is automatically provided with the flap lever out of the "UP" position or in icing conditions when engine anti-ice is on.

EGT Limitations

757

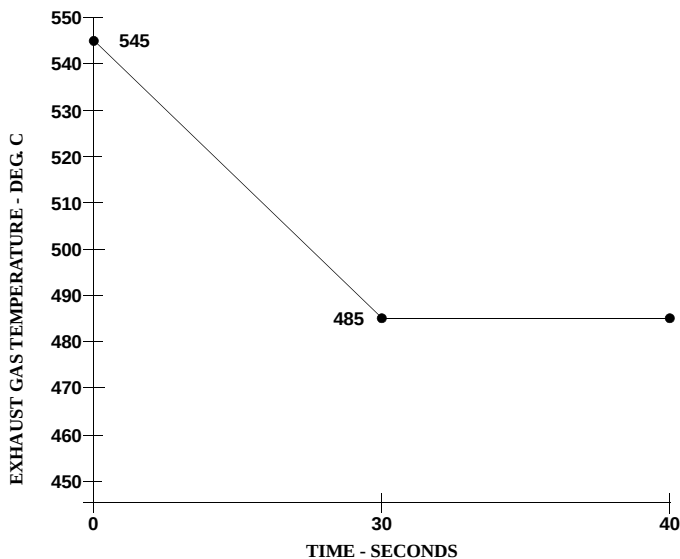
Takeoff (5 minutes) (1)	645°C (3)
Continuous	615°C
Starting - Max (no time limit)	485°C to 545°C (2)

(1) 10 minutes for ships 6801-6823 and 6901-6904 in the event of loss of thrust on one engine during takeoff.

(2) For ground starting EGT limit at 0 seconds and decreasing linearly to 485°C at 30 seconds and thereafter. Refer to the Engine Start Overtemp Limits chart in this section.

(3) Transient operation - 660°C for up to 5 seconds during takeoff or climb phase.

Engine Start Overtemp Limits



Note: If start EGT surpasses 485°, but does not exceed 545°, engine shutdown is not required. Make a logbook entry and contact MCC prior to dispatch for further guidance.

767-300

	GE CF6-80A2	P&W 4060	GE CF6-80C2
Takeoff (5 minutes) (1)	941°C	650°C	960°C
Continuous	895°C	625°C	925°C
Starting - Max (no time limit)	750°C	535°C	750°C
(1) 10 minutes for aircraft with GE CF6-80C2 engines in the event of loss of thrust on one engine during takeoff.			

If maximum engine start limits exceeded, shut down the engine. Maintenance action is required prior to further operation.

Engine Indicating

The flight crew shall not blank engine vibration display during takeoff.

N2 Control Mode

757

Takeoff in N2 control mode (ENG LIM PROT light illuminated) is not permitted.

Reverse Thrust

Reverse thrust is for ground use only.

Backing of the airplane with the use of reverse thrust is prohibited.

Engine Starter Duty Cycle

- Continuous for 5 minutes
- Cool for 30 seconds per minute of operation

APU Limitations

- Starter duty cycle is a maximum of 3 consecutive starts or attempts within a 60-minute period
- In flight, APU bleed air is available up to approximately 17,000 feet

Flight Controls

The maximum altitude for flap extension is 20,000 feet.

Full application of pitch, roll, or yaw controls should be confined to speeds below the maneuvering speed. Rapid and large alternating control inputs, especially in combination with large changes in pitch, roll, or yaw, and full control inputs in more than one axis at the same time, should be avoided as they may result in structural failures at any speed, including below the maneuvering speed.

Flight Instruments, Displays

RVSM Altimeter Cross Check Limits

Standby altimeters do not meet altimeter accuracy requirements of RVSM airspace.

The maximum allowable in-flight difference between Captain and First Officer altitude displays for RVSM operation is 200 feet.

The maximum allowable on-the-ground differences between Captain and First Officer altitude displays for RVSM operation are:

Field Elevation	Max Difference Between Captain & F/O		Max Difference Between Captain or F/O and Field Elevation
	757	767-300	
SEA LEVEL	25 feet	40 feet	75 feet
5,000 feet	35 feet	45 feet	75 feet
10,000 feet	40 feet	50 feet	75 feet

Flight Management, Navigation

Weather Radar

Avoid weather radar operation in a hangar, or within 50 feet (15.25 meters) of fueling operations or a fuel spill.

Avoid weather radar operation when personnel are within the area normally enclosed by the aircraft nose radome.

Note: The hangar recommendation does not apply to the weather radar test mode.

Fuel

The use of Jet B and JP4 fuel is prohibited.

The maximum fuel temperature is 49°C (120°F).

The maximum fuel imbalance for dispatch is 1,500 pounds.

The minimum fuel temperature is:

Minimum Inflight Fuel Tank Temperature				
Fuel Type	Jet A	Jet A1	JP 5	TS 1
Min Tank Temp (°C)	-37°	-44°	-43°	-57°

Note: These minimum inflight fuel tank temperatures are 3° above the freeze point for fuel type.

Warning Systems

Ground Proximity Warning System (GPWS)

Do not use the terrain display for navigation.

The use of terrain awareness alerting and terrain display functions are prohibited within 15 NM of takeoff, approach, or landing on a runway or airport not contained in the GPWS airport database. For runways/airports not contained in the installed GPWS terrain data base, crews will be notified via EFB or flight plan remarks.

Look-ahead and Terrain alerting and terrain display functions must be inhibited by selecting the Ground Proximity Terrain Override switch to OVRD if:

- the FMS is operating in IRS NAV Only
- prior to takeoff, FMS position updating is not accomplished or actual runway position is not verified by ensuring, with the 5 or 10 nm range selected on the EFIS control panel, the airplane symbol is displayed at the appropriate point on the runway symbol.

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Normal Procedures
Philosophy and Assumptions**Chapter NP**
Section 10

General

A procedure, as used in this manual, is a series of tasks that are required during a particular phase of flight. Normal procedures are routinely performed on most flights and are outlined in Section 20 of this chapter. The procedures are arranged in chronological order.

Normal procedures assume:

- All aircraft systems are operating normally
- The flight deck configuration is correct before the procedure commences
- The pilot is employing the use of autoflight systems
- The pilot has knowledge and understanding of aircraft systems and limitations

The above assumptions allow normal procedures to be written to the appropriate level of detail. For additional details including recommendations and techniques, refer to the Flight Crew Training Manual (FCTM).

Philosophy and Compliance with Normal Procedures

Normal procedures provide Delta pilots with the fundamental guidance to operate a flight safely and efficiently. As such, pilots are expected to:

- have a sound knowledge and understanding of normal procedures, and
- routinely use and comply with the procedures on every flight.

Procedures are written considering a normal operating environment. The captain may authorize a deviation from normal procedures when considered in the best interest of safety and/or in the event of a non-normal operating environment.

Normal Procedures and CRM/TEM

Normal procedures are designed to embrace the principles of Delta Air Lines' Crew Resource Management (CRM) and Threat and Error Management (TEM) strategies. For example, embedded in normal procedures are the requirements to provide briefings at key times during the flight. It is not practical, however, to include all aspects of CRM/TEM into normal procedures. Pilots must have a comprehensive understanding of Delta's CRM/TEM philosophy and use it in conjunction with normal procedures.

Terminology

May - The word "may" is used in a permissive sense to state authority or permission. Compliance is not mandatory.

Should - The word "should" is used to indicate that compliance is expected. Deviations are permitted only where an operational requirement exists.

Will, Shall, and Must - The words "will", "shall", and "must" are used in an imperative sense to state the requirement to accomplish the act prescribed. Compliance is mandatory unless an emergency situation exists where compliance would not be in the interest of safety.

Guide - A "guide" is a document that assists the pilot in conducting a normal procedure. The use of a guide is not mandatory.

Crew Duties and Responsibilities

The captain retains final authority for all actions directed and performed.

Crew duties are divided between the pilot flying (PF), pilot monitoring (PM), captain (C), and first officer (F).

The captain's general responsibilities during ground operations include:

- calling for checklists, and
- taxiing.

The first officer's general responsibilities during ground operations include:

- monitoring taxi,
- checklist reading,
- communications, and
- tasks requested by the captain.

The captain is responsible for assigning the PF role. Normally the PF/PM roles remain unchanged throughout the flight but the captain may change the assignments at any time due to operational needs.

The PF's general responsibilities during flight are:

- flight path management and airspeed control,
- aircraft configuration,
- navigation, and
- calling for checklists.

The PM's general responsibilities during flight are:

- monitoring flight path, airspeed, aircraft configuration, and navigation;
- checklist reading;
- communications; and
- tasks requested by the PF.

Tasks Excluded from Normal Procedures

The following procedures are not addressed in NP.20:

- flight deck lighting,
- crew comfort tasks,
- exterior lighting (Refer to NP.12, Exterior Lights Usage), and
- communication procedures.

Aircraft Configuration Changes During Normal Procedures

Prior to taxi, the flaps will be selected to the takeoff or default position.

During flight, the PF will call for any gear or flap change; the PM will verify that the airspeed is appropriate before accomplishing the change. If operational necessity requires an immediate configuration change and the PM is occupied with other duties, the PF may announce the change and move the appropriate control. This should be understood as the exception and not the rule.

After landing, no configuration changes shall be made until clear of the active runway, or until the aircraft has reached taxi speed when a 180° turn is required.

Sequence, Flow and Responsibility for Tasks

The specific tasks within a procedure are arranged in a logical order. The sequence of the tasks within a procedure may be changed as necessary.

Tasks are accomplished from memory (with the exception of the Secure Procedure). This sequence is referred to as a flow pattern. Flow pattern guides assist in learning the sequence and are located in the Flight Crew Training Manual (FCTM).

Tasks are assigned to and normally performed by a specific pilot. The other pilot may perform the task.

Use of Triggers

A “trigger,” is an event that initiates a procedure or task. Procedures start with a trigger statement. For example, the trigger used to commence the Pushback procedure is:

When all exterior doors are closed and the cabin is ready for pushback:

Triggers are also used within a procedure to define when a task or a series of tasks are normally accomplished.

Operational flexibility may dictate adjusting a particular trigger.

Aircraft Limitations in Normal Procedures

Aircraft limitations are generally found in the Limitations chapter of this manual and are not normally repeated in normal procedures. There are procedures, however, that are defined ideally when in context with a limitation. In these cases, the limitation will be referred to or embedded in the normal procedure. Pilots need to be aware that normal procedures do not always refer to limitations when they are applicable. Pilots must have a fundamental knowledge and understanding of aircraft limitations.

AFM limitations incorporated into a normal or supplementary procedure in the Volume 1, any section of the Volume 2, or any section of the QRH are identified with an [AFM] tag.

Relationship Between Procedures and Checklists

A normal checklist usually follows the completion of a normal procedure. The name of the checklist is either identical to the procedure that precedes it or is preceded with “After.” For example:

- After completing the Taxi procedure, the captain calls for the Taxi checklist
- After completing the Takeoff procedure, the PF calls for the After Takeoff checklist

Not all tasks within a procedure appear on the checklist that follows. Delta uses criteria that include input from human factor experts, FAA requirements, and fleet standardization to determine what tasks rise to the level that requires inclusion on a normal checklist.

Normal Procedures Construction

Table Header

Except for inspections and preflight procedures that are assigned to one crewmember, normal procedures are shown in a two-column table format. The column header indicates the crewmember responsible for each task. The pilot normally assigned the task is identified in the table header as follows:

- Pilot Flying,
- Pilot Monitoring,
- Captain,
- First Officer, or
- Any Crewmember (Secure Procedure only).

Table Cells

Each cell represents either:

- a single task,
- multiple related tasks,
- a warning, caution, or note,
- clarifying information, or
- a trigger.

When the cell only appears in one column, the task is assigned to that pilot. When the table cell spans both columns, the task is applicable to both pilots. Due to space limitations and/or complexity, a task can span both columns but will be assigned to one pilot.

The following conventions are used to assign a task within a cell:

- (C) - captain,
- (F) - first officer,
- (PF) - pilot flying, or
- (PM) - pilot monitoring.

Cell Content

Triggers appear across both columns in bold text and do not have a bullet.

A task is identified with a bullet (●). When the task requires a control to be positioned, the name of the control device appears followed by the position in which it is to be placed. When either the control or position is labeled on the flight deck, the terms are capitalized. For example:

- **EMERGENCY LIGHTS** switch - OFF

Warnings and cautions appear before the task they affect. Notes will appear after the task they affect.

References

When it is deemed to be beneficial to refer the reader to another informational source, the notation “Refer to ____” is used.

Separate Tables within a Procedure

On some procedures a separate shaded table is used. The separate table contains tasks that are not part of the associated procedure and have one of the following characteristics:

- The tasks do not fit within the time-ordered flow of the procedure (e.g., transition altitude).
- The tasks are not required on every flight (e.g., runway change procedure).

System Discrepancies during Ground Operations

It is the crewmember's responsibility to verify correct system response.

Before engine start, if there is a discrepancy noted:

- Verify that the system controls are set correctly.
- Check the respective circuit breaker as required.
- Test the respective system light as required.
- Check the Mechanical Dispatch Manual (MDM) to decide if the condition has a dispatch effect.
- Decide if maintenance is needed.

During or after engine start, if there is a discrepancy noted:

- complete the respective non-normal checklist (NNC)
- on the ground, check the MDM

After engine start, the MASTER CAUTION system, annunciator lights and EICAS messages are the primary means of alerting the flight crew to non-normal conditions or incorrect configurations.

After dispatch, there is no requirement to check status messages. Any message that has an adverse affect on safe continuation of the flight appears as an EICAS alert message.

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Normal Procedures

Chapter NP

Normal Checklist Instructions

Section 11

General

The primary purpose of the normal checklists is to ensure that the crew has properly configured the aircraft and to verify essential and critical items have been accomplished.

The explanation of each checklist is found in NP.20, Amplified Procedures section of this chapter.

Checklist Content

The checklist has the minimum items needed to operate the airplane safely.

Normal checklist items meet one or more of the following criteria:

- items essential to safety of flight that are not monitored by an alerting system;
- items essential to safety of flight that are monitored by an alerting system but if not accomplished, would likely result in a catastrophic event;
- items needed to meet regulatory requirements;
- items needed to maintain fleet commonality;
- items that enhance safety of flight and are not monitored by an alerting system;
- items that could result in injury to personnel or damage to equipment if not accomplished.

Normal Checklist Use Policy

The crew will use the checklist on every flight and for every phase of flight for which a checklist has been established.

Normal Checklist Instructions

In the event such as taxi delays where all engines are shut down while off the gate, all procedures and checklists will be performed again starting with the Pushback checklist.

Procedure versus Checklist

Before accomplishing the checklist, each crewmember will configure all controls and systems in accordance with the associated normal procedure.

The checklist is then used to verify essential procedural tasks.

Additionally, when a checklist includes a challenge and response for a briefing, the associated briefing should be completed prior to calling for the checklist that contains the briefing. The checklist functions as a “check” list, not a “do” list.

The Secure checklist is the only exception to this verification philosophy. Since these items are not performed on every flight, the Secure checklist may be accomplished as a “read and do” checklist.

Procedural Errors or Omissions

If during the execution of a checklist the airplane configuration does not agree with the needed configuration:

- Stop the checklist.
- Complete the respective procedural steps.
- Continue the checklist.

If it becomes apparent that an entire procedure was not accomplished:

- Stop the checklist.
- Complete the entire procedure.
- Accomplish the entire checklist from the start.

Checklist Initiation and Completion

On the ground, the captain calls for the checklists and the first officer reads the checklists. In flight, the PF calls for the checklists and the PM reads the checklists. If a checklist is required but has not been called for, the other pilot should query the pilot responsible for calling for the checklist.

Whenever possible, accomplish checklists before or after high workload times.

Normally checklists are not called for until all associated procedural items are complete and there is an expectation that the checklist can be completed without interruption. The Preflight checklist, however, may be initiated before the completion of the logbook and/or fuel required tasks. If either or both of these tasks are not complete, the checklist will be read up to the last completed task. When the remaining task(s) has been completed, the checklist will be continued. Additionally, when the transition level is below 10,000 feet, the Approach checklist should be started, but will not be considered complete until the local altimeter is read.

Crewmembers may need to suspend a checklist for a short time to accomplish other tasks. The checklist should not be stowed prior to completion. If the interruption is short, continue the checklist with the next step. If a crewmember is not sure where the checklist was interrupted or the interruption is for an extended period of time, re-accomplish the checklist from the beginning.

After resuming the checklist, all checklist challenges and responses must be made by the designated pilot(s) before calling the checklist complete and stowing the checklist.

When all items of the checklist have been completed satisfactorily, the pilot reading the checklist shall announce “___ CHECKLIST COMPLETE” and may stow the checklist.

If all pilots vacate the flight deck after accomplishing the Preflight checklist, the checklist must be re-accomplished.

First Flight of the Day and After Shutdown Reminders

The Normal Checklist (hardcard) includes first-flight-of-the-day and after shutdown reminders. They are on the hardcard as a convenient means to recall tasks that may have to be performed.

Checklist Response Designators

Located on the right side of specific checklist response items are designators indicating which crewmembers must verbalize a response. Items that do not have designators are to be accomplished silently.

The following designators are used:

- C - captain,
- F - first officer,
- C&F - captain and first officer,
- PM - pilot monitoring, and
- All - All flight deck crewmembers.

If a checklist item is identified with a C&F, a dual response is required. The first response will be made by the pilot being challenged, the challenger will then respond.

Checklist Challenges

Checklist challenges identify the control or task to be checked. The pilot reading the checklist shall read the specific challenge as written.

When a checklist challenge does not end with “switch” or “lever”, the challenge refers to system status. For example, “Landing Gear...”, refers to the status of the landing gear, not just the position of the lever.

When a checklist challenge ends with “switch” or “lever”, the challenge refers to the position of the switch or lever. For example, “Engine start levers...” refers to the position of the levers.

Checklist Responses

Checklist responses are spoken as written although some items may use abbreviations due to hardcard space limitations.

When a checklist response is shown in all capital letters it refers to switch or lever position. For example, “Engine start levers...CUTOFF.”

When a checklist response is written in lower case it refers to the status of the associated system. For example, “Landing gear...down.”

Tailored responses are included where appropriate.

When a checklist response does not allow the use of a specific switch position, the following terms are used as a response:

- A blank line “_____” requires a unique response and is used when the response is a variable value; such as takeoff thrust, altimeters, bugs, flaps, slats, or stabilizer trim settings.
- **as reqd** means alternatives are available. Respond with the actual position of the control. For example, “Autobrakes.....3”.
- A forward slash “/” means alternatives are required in a checklist response due to aircraft configuration differences. For example, “Engine anti-ice...AUTO / OFF.” Respond with the actual position of the selector or switch.
- **ckd** means that controls or other systems have been evaluated/tested for proper system operation.
- **complete** indicates the associated procedure and/or procedural task in its entirety has been completed.
- **entered** indicates information, values or selections associated with the procedure have been correctly loaded in the appropriate location.
- **set** indicates panel switches, knobs, or bugs are verified to be in the correct position or the correct value has been entered.
- **verified** indicates the challenged items are correctly entered, annunciated, or have otherwise been confirmed to be correctly displayed.
- **xckd** indicates the associated value or setting has been confirmed to have been entered correctly at all locations, as specified.

An explanation of the checklist response appears in the Amplified Procedures section of this chapter when the response:

- is not obvious on how the procedure is verified and/or what needs to be verbalized,
- is not addressed at all in the procedure, or
- has a blank line “_____.”

Verification of Checklist Items

When performing a checklist requiring verbalization, the crew will progress to the next item only after the response is confirmed by the crewmember being challenged.

The crewmember responding to a checklist challenge must confirm the task or procedure was completed by:

- visually verifying the checklist item, or
- observing the item was completed, or
- confirming completion with the crewmember who accomplished the procedure.

When responding to a checklist item, a visual verification must be accomplished, when possible.

Runway, Intersection, Departure, Performance Data, or Approach Changes, or Go-Around

A ■ indicates items that should be considered for re-accomplishment in the event of a runway, intersection, departure, performance data, or approach change, or go-around.

Takeoff

In the event a runway, intersection, departure, or performance data change occurs after completing a checklist the captain should call for the runway/departure change items. After the necessary procedural steps are accomplished, the first officer will verbalize each change item by stating the challenge to the item. The designated crewmember(s) will respond with either:

- “NO CHANGE” for an item, or
- The appropriate checklist response for the item that changed.

Landing

In the event a runway or approach change occurs after completing a checklist the pilot flying (PF) should call for the runway/approach change items. After the necessary procedural steps are accomplished, the pilot monitoring (PM) will verbalize each change item (if not previously briefed) by stating the challenge to the item. The designated crewmember(s) will respond with either:

- “NO CHANGE” for an item, or
- the appropriate checklist response for the item that changed.

Note: If the landing runway assignment is changed and the captain determines the runway change can be accomplished visually, the captain may choose to waive the runway change items.

Intentionally
Blank

Normal Procedures

Operational Procedures

Chapter NP

Section 12

Multi-purpose Control Display Unit (MCDU)

Before taxi, the Captain or First Officer may make MCDU entries. The other pilot must verify the entries.

Make MCDU entries before taxi or when stopped, when possible. If MCDU entries must be made during taxi, the First Officer makes the entries. The Captain must verify the entries.

In flight, MCDU entries will normally be made by the PF. When the autopilot is off, or when operating in a high workload environment, the PF should direct the PM to make MCDU entries. Both pilots should verify MCDU entries affecting lateral or vertical flight path.

Automation Guidelines

The automation policy is described in the FOM. The following guidelines are used to achieve these policies:

- Briefing should include any uncommon levels of automation and related monitoring expectations.
- VNAV should be used when available and appropriate during climb, cruise, and initial descent.
- Both pilots are responsible for comparing the performance of the autoflight system with the desired flight path of the aircraft.
- All pilot-induced lateral, vertical, and speed mode changes should be verbalized by the PF and, after referencing the FMA, the PM should verbally confirm the appropriate FMA status.
- Both pilots are responsible for monitoring the FMA and/or MCP whenever any component of the autoflight system is engaged and a flight mode change occurs.

Autopilot Guidelines

The PF will verbalize when the autopilot is engaged or disengaged.

When an autopilot is engaged:

- the PF should operate the MCP and
- the PM should verbalize that the proper selections have been set.

When an autopilot is not engaged:

- the PM should operate the MCP as directed by the PF and
- the PM should verbalize that the proper selections have been set.

Normal Radio Management

VHF radios should normally be operated as follows:

- VHF L should be used for communications with ATC.
- VHF R should be used for communications with ramp control, station operations, and other company communications. When VHF R is not used for ramp or company communications, a listening watch on 121.5 should be maintained as conditions permit.
- VHF C should be used for ACARS datalink.

The first officer should clearly communicate to the captain the radio being used to receive taxi instructions.

Stabilized Approach

Delta defines a stabilized approach as maintaining a stable speed, descent rate, and lateral flight path while in the landing configuration.

WARNING: At any altitude, if the following stabilized approach criteria cannot be established and maintained, initiate a go-around. Do not attempt to land from an unstable approach.

No lower than 1000 feet AFE:

- Be fully configured for landing (gear and landing flaps extended).
- Maintain a stabilized descent rate not to exceed 1,000 fpm.
- Be aligned with the intended landing runway.

No lower than 500 feet AFE:

- Be on target airspeed.
- The engines are stabilized at the thrust setting required to maintain the desired airspeed and rate of descent.

Crossing the Runway Threshold:

- Positioned to make a normal landing in the touchdown zone.

Planned Deviations

- A circling maneuver and some published approaches (such as the River Visual at DCA) may require a planned deviation to the lateral stabilized approach criteria. Some published approaches require higher than standard descent rates. Verbalize all planned deviations during the approach briefing.

Unplanned Descent Rate Exceedance

- In the event of a momentary descent rate exceedance, crews may proceed as long as the descent rate exceedance is verbally acknowledged and corrective action is immediately initiated.

Standard Callouts

The following callouts will be verbalized by the appropriate crewmember.

Crews should focus on the aircraft state during the level-off period.

Some callouts are made automatically by aircraft aural systems. When a required callout is made automatically, it may be omitted by the appropriate crewmember.

On any approach, when the pilot flying (PF) can maintain visual contact with the runway, the “APPROACHING MINIMUMS” and “MINIMUMS” callouts are not required.

Note: If the Radio Altimeter is inoperative, reference the barometric altimeter for the “1,000” and “500” callouts.

TAKEOFF		
Condition	Crew Member	Callout
At 80 KIAS when THR HLD annunciated	PM	“80 KNOTS, THROTTLE HOLD, THRUST NORMAL”
At V1	PM	“V1”
At VR	PM	“ROTATE”
At positive rate of climb	PM	“POSITIVE RATE”

CLIMB		
Condition	Crew Member	Callout
Approximately 1,000 feet below each assigned altitude	PM	“OUT OF __ FOR __”
Approaching transition altitude (if other than 18,000 feet)	PM	“TRANSITION ALTITUDE”

DESCENT		
Condition	Crew Member	Callout
Approximately 1,000 feet above each assigned altitude	PM	“OUT OF __ FOR __”
Approaching transition level (if other than FL 180)	PM	“TRANSITION LEVEL”

ALL APPROACHES		
Condition	Crew Member	Callout
Any significant deviation from planned flight path, airspeed, or descent rate	PM	“SPEED +/- __” or “SINK __”, etc.
At approximately 1,000 AGL	PM	“1,000, CLEARED TO LAND” or “1,000, NO LANDING CLEARANCE”
Below 1,000 AGL: Any descent exceeding 1,000 feet per minute	PM	“SINK __”
At approximately 500 AGL	PM	“500”
Prior to descending below 100 feet above TDZE/Rwy Threshold Elevation: • With runway in sight (if not already called) • With runway not in sight	C	“RUNWAY IN SIGHT” (F must acknowledge) Note: This call not required on CAT III and visual approaches. “GO AROUND” (F must acknowledge)

NON-ILS, CAT I, & CAT II APPROACHES

Condition	Crew Member	Callout
Approximately 80 feet above minimums	PM	“APPROACHING MINIMUMS”
At or before minimums	C	“APPROACH LIGHTS IN SIGHT”, or “RUNWAY IN SIGHT” or “GO AROUND” (F must acknowledge)
At minimums	PM	“MINIMUMS”

CAT III APPROACHES

Condition	Crew Member	Callout
Approximately 80 feet above alert height (AH)	PM	“APPROACHING MINIMUMS”
At alert height (AH)	PM	“MINIMUMS”
	C	“LAND 3” or “GO AROUND”

GO-AROUND ALL APPROACHES		
Condition	Crew Member	Callout
When a Go-Around is warranted	PF	“GO AROUND”
After proper FMA mode annunciation, announce pitch mode	PM	“GO AROUND VERIFIED”
	PF	“FLAPS ____”
At positive rate of climb	PM	“POSITIVE RATE”
	PF	“GEAR UP”

AFTER ALL LANDINGS		
Condition	Crew Member	Callout
Verify speedbrakes are up	PM	“SPEEDBRAKES UP”
If speedbrakes are not up	PM	“NO SPEEDBRAKES”
At 80 knots	PM	“80 KNOTS”

Clearance Verification Procedures

The pilot flying (PF) and pilot monitoring (PM) should monitor and confirm all issued ATC clearances, unless operational constraints (e.g., PAs, PM leaves flight deck) prohibit. If any pilot is unsure of the stated clearance, contact ATC to verify.

Note: If a clearance, departure procedure, or route is changed, re-accomplish the clearance verification procedure.

Clearance Type	Action	
	PF	PM
Pre-Departure Clearance (PDC)/Departure Clearance (DCL) via ACARS, CPDLC, or voice On voice clearances, both pilots should monitor and at least one pilot must write down the ATC clearance.		Referencing the departure clearance, verbalize the departure, route of flight, altitude, and any speed restriction to the PF.
	Referencing the FMS and MCP, verbalize the departure, route of flight, altitude, and any speed restriction to the PM.	
Taxi	The captain should repeat the taxi clearance after the first officer has read the clearance back to ATC. When issued complex and/or extensive taxi instructions, at least one pilot should write down, or enter into the FMS scratchpad, the taxi clearance.	
Takeoff	Acknowledge clearance items different than previously briefed.	
Altitude	Both pilots should verify the altitude specified by either an ATC clearance or a procedure has been set correctly by stating the altitude and pointing at the altitude display window. Ensure the proper altimeter reference - QNH, QNE, or QFE - is set	

Clearance Type	Action	
	PF	PM
CPDLC	If any clearance is received via CPDLC, clearance must be reviewed by both PF and PM. Ensure the entire uplink is reviewed, referring to page numbers in order to assure the entire content is understood.	
Crossing Restrictions, Headings, and Airspeeds	Acknowledge the clearance received by repeating the new clearance.	
Class I or II Airspace	Refer to Airway Manual, Airspace & Enroute Navigation, CDRC.	

Lights Usage

Exterior Lights Usage

Exterior lights should be used in accordance with the following:

Phase of Flight	Lights Usage
Aircraft is powered	Navigation/Position lights illuminated continuously. • POSITION lights - ON • LOGO lights - ON
Engines running/aircraft moving	Anti-collision lights (beacons) illuminated immediately prior to aircraft movement or engine start, whichever occurs first. • RED ANTI-COLLISION lights - ON
Taxiing	Taxi light illuminated when moving or intending to move. • TAXI light - ON Note: On aircraft not equipped with a taxi light, use the NOSE GEAR LANDING light for taxi operations.
Crossing a runway	All exterior lights illuminated. Note: Avoid using WING and NOSE GEAR LANDING and STROBE lights if they will adversely affect the vision of other pilots. • WHITE ANTI-COLLISION lights - ON • WING lights - ON • WING LANDING lights - ON • NOSE GEAR LANDING lights - ON • RUNWAY TURNOFF lights - ON

Phase of Flight	Lights Usage
Line up and wait	All exterior lights illuminated, except the landing lights. Note: Avoid using WHITE ANTI-COLLISION lights if they will adversely affect the vision of other pilots. • RED & WHITE ANTI-COLLISION lights - ON • TAXI light (as installed) - ON • WING lights - ON • RUNWAY TURNOFF lights - ON
Takeoff	All exterior lights illuminated. • NOSE GEAR LANDING lights - ON • WING LANDING lights - ON • WHITE ANTI-COLLISION lights - ON
In flight (above 18,000 feet)	Exterior lights extinguished, except the anti-collision (beacon), logo, navigation/position, and strobe lights. • RUNWAY TURNOFF lights - OFF • TAXI light (as installed) - OFF • WING lights - OFF • WING LANDING lights - OFF • NOSE GEAR LANDING lights - OFF
In flight (below 18,000 feet)	All exterior lights illuminated. Note: The NOSE GEAR LANDING and TAXI lights may remain OFF until landing clearance has been received. • WING lights - ON • WING LANDING lights - ON • RUNWAY TURNOFF lights - ON • NOSE GEAR LANDING lights - ON

Emergency Lights Usage

Emergency lights must be armed for taxi, takeoff, and landing. They are not required to be armed during either the boarding or deplaning process.

Intentionally
Blank

Interior Inspection - First Officer or Relief Pilot

Normally the first officer or relief pilot accomplishes this procedure. However, it does not preclude the captain from completing all or part of the procedure if time and conditions dictate.

It is the responsibility of the flight leader/purser to verify the cabin emergency equipment inspection is completed. For flights without flight attendants on board, refer to SP.1, Cabin Inspection-Flights without Flight Attendants.

The Interior Inspection procedure assumes that the Electrical Power Up procedure is complete. Refer to SP.6, Electrical Power Up, if required.

WARNING: If a red A/C OUT-OF-SERVICE tag is installed, personnel are not to activate any system, control, switch, or circuit breaker without obtaining verbal approval of maintenance personnel (preferably the mechanic performing the repairs).

First-flight-of-the-day items (if required) Check

These checks or tests need only be accomplished prior to the first departure of the calendar day as noted in the aircraft logbook. These system tests are covered in the Supplementary Procedures chapter of this manual.

Procedure	Location
Ground Proximity Warning Test	SP.15
Flight Deck Access System Test [AFM]	SP.1
Standby Power Test	SP.6
TCAS Test [AFM]	SP.15
Fire Warning Test	SP.8
Observer Oxygen Mask(s) Test	SP.1
Crew Rest Compartment (as installed)	SP.1

Flight deck security search Complete

Refer to FOM, chapter 4, Sensitive Security Information, for information and timing requirements.

Logbook Check

All crewmembers must review the logbook to become familiar with the history and maintenance status of the aircraft.

If there is doubt concerning the status of the logbook, contact MCC via the dispatcher.

- Ensure the logbook matches the aircraft ship number.
- Ensure the Airworthiness Release has been signed by maintenance.

Note: Airworthiness Release sign-off is not required at a Delta non-maintenance station when aircraft airworthiness discrepancies do not exist.

- Review any EP-19s for special equipment and/or operating instructions.
- Consult the MDM for any operating limitations or crew operating procedures as a result of existing MELs/CDLs.
- For ETOPS departures, check for a Pre-Departure Check (PDC).

Potable water and waste tanks Check

- Confirm the potable water supply is sufficient.

Note: Potable water should be serviced to a minimum of 75% for domestic operations, and 100% for international.

- Verify the waste quantity is at an acceptable level.

Note: For international flights, waste tanks should be empty. It is acceptable for the waste quantity gauge to display up to 1/8 full due to pre-charge.

STATUS Check

Verify that only acceptable messages are shown.

Quantities Check

Check the following are sufficient for flight:

- minimum oxygen pressure 1,000 psi;

Note: If crew oxygen pressure is below 1,000 psi, contact maintenance to determine if enough oxygen is available for flight.

- hydraulic quantities: no RF displayed;
- engine oil quantities: 17 quarts recommended for start. If oil quantity less than 17 quarts, verify 8 quarts minimum following engine warm-up with engine at idle. If oil quantity less than 8 quarts following engine warm-up, dispatch approval is required.

Required documents Check

- Aircraft Logbook;
- Normal Checklists (2);
- Jeppesen Airside Flight Kits;
- Quick Reference Handbook (QRH) (2);
- Mechanical Dispatch Manual (MDM);
- Engine Performance Logbook;
- Quick Reference Card.

EFB Mounts Check

Verify 3 EFB mounts on board.

Circuit breakers Check

Verify circuit breakers are in or collared in compliance with dispatch requirements.

Flight deck emergency equipment Check

- Fire extinguisher - Check and stowed;
 - trigger safety pin in place,
 - seal intact,
 - pressure in green band, and
 - properly stowed.
- Crash ax - stowed;
- PBE - check;
 - Verify the PBE is in its stowage bracket and both plastic seals are intact.
- Escape ropes - stowed;
- Life vests - stowed;

6819-6823 with fixed ELTs

- ELT switch - guard closed;
 - Verify the switch guard closed and the EICAS message ELT ON is not shown.

All others with portable ELTs

- ELT - ARMED
 - Verify properly stowed and the mode switch is in the ARMED position.

Jumpseat(s) Secure

Ensure jumpseat(s) that will be unoccupied for the flight are secured and shoulder harnesses are retracted or secured. Lap belts should be fastened in non-folding jumpseats.

Crew luggage Secure

Printer paper Check

Verify LOW PAPER light (as installed) - extinguished.

Verify printer paper quantity, including spare rolls, is sufficient for the duration of the flight.

5635-5657, 5801-5816, 6819-6823

Note: TELEX headsets are part of the aircraft equipment. Do not remove.

757

Flight Deck Access System switch OFF

Guard up, switch up.

767-300

Flight Deck Access System Mechanical Latch Pin Installed

Pilot Crew Rest Area. Check

Verify the security, integrity, and provisioning of the pilot crew rest area (s). Ensure bedding provisions for the pilot crew rest area(s) is sufficient for all flight deck crewmembers. The cabin crew is responsible for the preflight of the flight attendant rest area.

1607-1613

Refer to SP.1, Pilot Lower Lobe Crew Rest Compartment, for additional information.

For aircraft with crew rest seat installed:

- Inspect for the presence of curtain, velcro, and snaps.

757/767-300 Operations Manual

- Fully recline seat and return it to the full upright (takeoff) position.
- Write up any discrepancy in the aircraft logbook.
- Refer to the MEL for inoperative equipment.

Exterior Inspection - Captain or First Officer or Relief Pilot

Before each flight the captain must verify the airplane is in satisfactory condition for flight. Make a complete exterior inspection, and report any discrepancies to the captain and to maintenance as soon as possible. Emphasis should be placed on tire wear, airframe or control damage, and leaking fluids.

Be aware of security issues. Refer to FOM, chapter 4, Sensitive Security Information.

Following the route below, complete the preflight at the point where the inspection began, ensuring a complete circuit around the aircraft.

Items at each location may be checked in any sequence.

Ensure that:

- surfaces and structures are clear, undamaged, not missing parts, and there are no fluid leaks;

Note: Assessing the condition of the upper wing surfaces may require viewing from inside the aircraft.

- hydraulic lines and electrical wires are secure and undamaged;
- installed placards are readable;
- gear struts are not fully compressed;
- gear pins have been removed;
- engine inlets and tailpipes are clear, cowlings are secured and undamaged, and the reversers are stowed;
- doors and access panels that are not in use are latched;
- probes, sensors, ports, vents, and drains are unobstructed, clear, and undamaged;
- skin area adjacent to the pitot probes and static ports is not wrinkled;
- antennas are not damaged;
- light lenses are clean and not damaged;
- exterior lights are illuminated in accordance with NP.12, Lights Usage.

Notify maintenance if any:

- tread groove is worn completely around the tire;
- tires are worn beyond limits, damaged, or tread is separating;
- layer of cord is showing;
- questionable cut exists;
- tire shows appearance of improper inflation;
- wheel through-bolt or nut is missing or damaged.

For Cold Weather Operations, refer to SP.16.

Check the following specific items during the exterior inspection:

Inspection Route



Left Forward Fuselage

Probes, sensors, ports, vents and drains (as applicable) Check

Doors and access panels (not in use) Latched

Nose

Radome Check

Diverter strips - Secure

Doors and access panels (not in use) Latched

Probes, sensors, ports, vents and drains (as applicable) Check

Wipers and windshield Check

Nose Landing Gear and Wheel Well

Tires and wheels	Check
Gear doors	Check
Gear strut and nose wheel steering assembly	Check
Hydraulic lines and electrical wires	Check
Exterior lights	Check
Gear pin	Removed
APU ground control fire panel	Check
Nose gear steering lockout pin	As required
If towbar is attached, towing lever set to bypass, pin installed.	
Wheel well light switches	As needed

Right Forward Fuselage

Probes, sensors, ports, vents, and drains (as applicable)	Check
Doors and access panels (not in use)	Latched
Exterior lights	Check
Pack inlet	Check
Oxygen pressure relief green disc	In place
Negative pressure relief doors	Check

Right Inboard Wing and Lower Fuselage

Probes, sensors, ports, vents, and drains (as applicable)	Check
Doors and access panels (not in use)	Latched
Exterior lights	Check
Pack inlet	Check
Leading edge slat	Check
Fuel sticks	Check

Right Engine

Doors and access panels (not in use)	Latched
Probes, sensors, ports, vents, and drains (as applicable)	Check
Fan blades and spinner	Check
Thrust reverser	Stowed
Exhaust area and tailcone	Check
Pylon	Check
767-300	
Engine strake	Check

Right Wing and Leading Edge

Doors and access panels (not in use)	Latched
Probes, sensors, ports, vents, and drains (as applicable)	Check
Leading edge slats	Check
Fuel sticks	Check
767-300 with Blended Winglets	
Vortilons (5)	Check

Right Wing Tip and Trailing Edge

Exterior lights	Check
Static discharge wicks	Check
Control surfaces	Check
Flaps and fairings	Check
767-300ER	
Fuel jettison nozzle	Check

Right Landing Gear and Wheel Well

Tires, brakes and wheels	Check
Gear strut, actuators, and doors	Check
Hydraulic lines and electrical wires	Check
757	
Gear pin	Removed
767-300	
Gear pins	Removed

Right Aft Fuselage and Upper Wing Surface

Ram air turbine door	Check
Doors and access panels (not in use)	Latched
Probes, sensors, ports, vents, and drains (as applicable)	Check
767-300	
Negative pressure relief doors	Check
Upper wing surface condition	Check

Tail

Doors and access panels (not in use)	Latched
Probes, sensors, ports, vents, and drains (as applicable)	Check
Vertical stabilizer and rudder	Check
Horizontal stabilizer and elevator	Check
Static discharge wicks	Check
Exterior lights	Check
Lower aft fuselage surface	Check

Check for evidence of tail strike damage.

757-300, 767-300	
Tail skid	Check

Left Aft Fuselage and Upper Wing Surface

Doors and access panels (not in use)	Latched
Probes, sensors, ports, vents, and drains (as applicable)	Check
Outflow valve	Check
757	
Positive pressure relief valves	Check
Upper wing surface condition	Check

Left Landing Gear and Wheel Well

Gear strut, actuators, and doors	Check
Hydraulic lines and electrical wires	Check
Tires, brakes and wheels	Check
757	
Gear pin	Removed
767-300	
Gear pins	Removed

Left Wing Tip and Trailing Edge

Exterior lights	Check
Static discharge wicks	Check
Flaps and fairings	Check
Control surfaces	Check
767-300ER	
Fuel jettison nozzle	Check

Left Wing and Leading Edge

Probes, sensors, ports, vents, and drains (as applicable)	Check
Doors and access panels (not in use)	Latched
Fuel sticks	Check
767-300 with Blended Winglets	
Vortilons (5)	Check

Left Engine

Doors and access panels (not in use).....	Latched
Probes, sensors, ports, vents, and drains (as applicable).....	Check
Fan blades and spinner	Check
Exhaust area and tailcone	Check
Thrust reverser	Stowed
Pylon	Check
767-300	
Engine strake	Check

Left Inboard Wing and Lower Fuselage

Doors and access panels (not in use).....	Latched
Probes, sensors, ports, vents, and drains (as applicable).....	Check
Exterior lights	Check
Fuel sticks	Check
Pack inlet	Check
Leading edge slat.....	Check

Left Forward Fuselage

Doors and access panels (not in use) Latched

Probes, sensors, ports, vents, and drains (as applicable) Check

767-300

Negative pressure relief doors Check

767-300

Positive pressure relief valves Check

Preflight Procedure - Pilot Flying

Normally the pilot flying (PF) accomplishes this procedure. However, it does not preclude another crewmember from completing all or part of the procedure if time and conditions dictate. In all cases both the pilot flying (PF) and pilot monitoring (PM) must confirm the FMS preflight entries.

After completing this procedure, the pilot flying (PF) should accomplish a visual scan to ensure the pilot monitoring (PM) has accomplished the flight deck set-up.

The following procedure assumes the flight plan is uplinked. If uplink is unavailable, refer to SP.11, Flight Management, Navigation section for manual flight plan entry procedures.

WARNING: If a red A/C OUT-OF-SERVICE tag is installed, personnel are not to activate any system, control, switch, or circuit breaker without obtaining verbal approval of maintenance personnel (preferably the mechanic performing the repairs).

IRS Panel Set

IRS mode selectors - OFF

IRS mode selectors must be selected OFF for at least 30 seconds and ALIGN lights must be extinguished prior to a full alignment.

IRS mode selectors - NAV

Observe ON DC lights illuminate momentarily.

Observe ALIGN lights illuminate after approximately 10 seconds.

Full Alignment takes 10 minutes - minimum.

Observe ALIGN lights extinguish approximately ten minutes after selecting NAV.

POS INIT page - Select

Verify time correct.

REF AIRPORT - Enter

Present position - Enter

Enter present position using the most accurate latitude and longitude information available (i.e., GPS, gate, parking spot, or airport coordinates).

ACARS Set

Complete ACARS initialization. Refer to SP.5, Aircraft
Communication Addressing and Reporting System (ACARS).

Note: On datalink capable aircraft, do not initialize the ACARS until
ready to upload and accept the flight plan and other associated
data.

FMS Set

Prior to FMS programming, DATALINK "READY" must be displayed on the FMC COMM page. All data link action prompts can be easily accessed via the FMC COMM page.

If datalink is unavailable, refer to SP.11, Manual Flight Plan Entry for manual flight plan and wind entries.

IDENT page – Check

Navigation database - Verify that the current database is active based upon the local date of departure.

Note: Refer to Vol. 1, SP.11, Navigation Database for further information.

Verify aircraft model and engines for currency and correctness.

Compare FF Factor on flight plan to FF at 5R. If values are not identical, update using the following steps:

- Type ARM in the scratchpad and line select to 5R.
- Type forward slash / followed by FF Factor value from FP in scratchpad and line select to 5R. Include negative sign if necessary.

Ex: Enter PLUS 2.7 as /2.7 and MINUS 3.5 as /-3.5

Note: When VHF datalink is not available ensure the IRS is aligned and in NAV mode. This provides the SATCOM (as installed) system with present position which enables datalink via SATCOM.

The PF and PM must verify all data after upload process is complete. An FPS 2.0 flight plan must be available for FMC Data Link to function.

ACARS DATA mode

FMC Current navigation data base

FMC COMM page Data Link "READY" [5R]

When the INIT RQ is sent from the ACARS, the data link process begins. Uplinked data sent via the ACARS network will be stored in the FMC data buffer awaiting crew action. During the FMC loading process, the scratchpad will sequentially display "UPLINK READY" (usually in the following order) for PERF INIT, ROUTE 1, WIND DATA, DES FORECAST, and ROUTE 2.

Note: Receipt of each uplink is accompanied by an EICAS FMC MESSAGE indication and illumination of the FMC Annunciator Light on the Center Forward Panel.

Note: If the automatic uplinks are not received within 2 minutes of ACARS initialization, or an amended flight plan requires new data, refer to FMC Data Link Reset at the end of this section. The INIT RQ key can only be used once per flight segment to start the data link process.

Note: If for any reason it becomes necessary to reload the current release data, refer to SP.5, FMC Data Link Reset.

ACARS PREFLIGHT page Select
INIT DATA Select
INIT RQ Select
FMC COMM page Select
PERF Uplink prompt Select
ACCEPT Select
STEP SIZE Enter 1000 or 2000 (airspace dependent)

Note: All PERF INIT fonts turn to LARGE font. The planned ZFW is uplinked instead of RAMP WT.

Note: Do not enter flight plan step climb or descent altitudes on the LEGS pages when selecting 1000 or 2000 in the step size field.

FMC COMM page Select
RTE 1 Uplink prompt Select
LOAD (on RTE 1 page) Select

After RTE 1 loading is complete (ACTIVATE prompt):

ACTIVATE Select

EXEC Select

Note: The departure runway, SID, STAR, and arrival runway must be manually loaded.

Note: If the RTE 1 is not activated before the ETP data uplink arrives (5 min.) the ETP data will overwrite the RTE 1 uplink. LOAD, ACTIVATE and EXEC ROUTE 1 upon receipt to avoid this. If overwrite occurs, refer to SP.5, FMC Data Link Reset, and send a REQUEST from the RTE 1 page to get new Route and ETP data.

Note: If flight number is not uplinked, enter manually (e.g. DAL62).

Wind uplinks can only be loaded after the ROUTE is loaded, activated, and executed. Adding SID, STAR and transition data to the ROUTE before loading WIND will prevent the loss of any wind data for fixes on those segments.

FMC COMM page Select

WIND Uplink prompt Select

LOAD Select

When wind loading complete (EXEC prompt):

-
- EXEC Select
- Note:** This uplink contains data for selected flight plan wind fixes at FL240, FL300, FL340, and FL390. Since the aircraft senses current altitude and temperature, the Altitude/Temperature data is sent for one pressure level higher than the expected cruise altitudes at the wind fixes based on FPS 2.0 predictions.
- Note:** Due to buffer limits, some wind uplinks may be too large to send all at once. In that event, partial route wind data will be sent followed by an ACARS text message advising crews to load all current uplinks. On the FMC COMM page verify that all the preflight uplinks have been loaded (no "uplink" above prompts) and then send a WIND request from the ACT RTE 1 DATA page, to trigger an uplink of the remaining WIND data.
- FMC COMM page Select
- DESCENT FORECAST Uplink prompt Select
- LOAD Select
- After a delay of approximately 5 minutes from sending the INIT RQ, or any subsequent ROUTE request, ETP airport and waypoint data is sent.
- FMC COMM page Select
- RTE 2 Uplink page Select
- LOAD Select
- Note:** Do not activate. RTE 2 provides ETP and divert airport data. The DEST field is empty so that it may be used for Critical Terrain Diversion Airport entry.
- Note:** If the white FMC comm alert remains displayed on EICAS after all uplinks are loaded, check the FMC COMM page and load/accept/purge/ reject/cancel any remaining uplinks. If the FMC comm alert does not disappear, it does not reflect an FMC malfunction and should not affect dispatch.
- Note:** When uploading reroute information, confirm FMC routing information matches cleared routing prior to executing

TAKEOFF line select key (R6) – Push

Verify PRE-FLT COMPLETE (unless a discontinuity is desired from the runway to the first waypoint).

CLIMB / VNAV key – Push

Verify correct:

- CRZ ALT (initial cruise altitude).
- SPD TRANS (transition speed/altitude).
- TRANS ALT (transition altitude).

Enter

- SPD RESTR (speed restriction, if applicable for departure).

Execute

FIX key - Push

Enter first 2 reporting points or other fixes as desired to monitor departure restrictions.

Departure briefing Complete
Refer to FOM, chapter 3, Briefings.



Intentionally
Blank

Preflight Procedure - Pilot Monitoring

Normally the pilot monitoring (PM) accomplishes this procedure. However, this does not preclude another crewmember from completing all or part of the procedure if time and conditions dictate. In all cases the pilot monitoring (PM) must confirm that the Preflight Procedure – Pilot Monitoring, has been completed.

WARNING: If a red A/C OUT-OF-SERVICE tag is installed, personnel are not to activate any system, control, switch, or circuit breaker without obtaining verbal approval of maintenance personnel (preferably the mechanic performing the repairs).

Aux Maintenance Panel (behind First Officer's seat) Check

767-300

BULK CARGO HEAT selector - VENT

757

POWER TRANSFER UNIT switch (As installed) - Guard closed

ALL

FLIGHT RECORDER switch - NORM

ALL

GENERATOR FIELD lights (as installed) - Extinguished

ALL

SERVICE INTERPHONE switch - OFF

767-300

RESERVE BRAKES and STEERING RESET/DISABLE switch -
Guard closed

767-300

ISLN light extinguished

Some 757s

EEC switch - Guard closed (NORMAL).

Refer to DF.10, Engines, APU for Engine/FADEC
configurations.

Takeoff Configuration Warning Check

Refer to SP.15, Takeoff Configuration Warning Test for procedure.

YAW DAMPER switches ON
INOP lights remain illuminated until IRS alignment is complete.

ANTISKID switch (as installed) ON
Observe INOP / OFF light extinguished.

767-300

EEC switches NORM/ON

GE and P&W with FADEC

EEC switches - NORMAL

GE Non-FADEC

EEC switches - ON

Refer to DF.10, Engines, APU for engine/FADEC configurations.

HYDRAULIC panel Set

L and R ENG/ENG PRIMARY pump switches – ON

Left and right engine pump PRESS lights remain illuminated
until the respective engine is started.

ELECTRIC pump switches – OFF

767-300

DEMAND pump selectors – OFF

757

POWER TRANSFER UNIT switch (as installed) Off
OVRD not visible

767-300

Flight deck door lock selector AUTO

BATTERY/STANDBY CONTROL panel Set

5801-5816, 6819-6823 - with 90 minute battery

BATTERY switch – ON

Verify **MAIN BAT DISCH** and **APU BAT DISCH** lights are
extinguished.

All others - with 30 minute battery

BATTERY switch – ON

Verify **DISCH** light extinguished.

STANDBY POWER selector – AUTO

Verify standby power bus **OFF** light extinguished.

ELECTRICAL panel Set

BUS TIE switches – AUTO

Verify **AC BUS OFF** lights extinguished.

APU GENERATOR switch – ON

UTILITY BUS switches - ON

Utility bus **OFF** lights extinguished.

GENERATOR CONTROL switches – ON

OFF and **DRIVE** lights remain illuminated until respective
engine is started.

Voice recorder Check

Refer to SP.5, Cockpit Voice Recorder Test for procedure.

Lighting panel Set

GLARESHIELD panel light controls – As desired

AISLE STAND panel light controls – As desired

LIGHT OVERRIDE switch – As desired

TAXI light switch (as installed) – OFF

RUNWAY TURNOFF light switches – OFF

EMERGENCY LIGHTS switch ARMED (guard closed)

Verify UNARMED light extinguished.

**CAUTION: Passenger oxygen switch activation causes
deployment of passenger oxygen masks.**

PASSENGER OXYGEN ON light Extinguished

**WARNING: Ram Air Turbine switch activation may cause
deployment of the ram air turbine.**

RAM AIR TURBINE UNLKD light Extinguished

ENGINE CONTROL panel Set

GE FADEC

Engine ignition selector – SINGLE.

All others

Engine ignition selector – 1 for Captain’s leg and 2 for First Officer’s leg.

Engine start selectors – AUTO

FUEL panel	Set
Ensure fueling is in progress or complete.	
767-300ER	
FUEL JETTISON selector – OFF	
767-300ER	
FUEL JETTISON NOZZLE switches – OFF	
CROSSFEED switch(es) – OFF	
Verify VALVE light(s) extinguished.	
FUEL PUMP switches – OFF	
Left and right pump PRESS lights are illuminated.	
Left forward pump PRESS light is extinguished if the APU is running.	
Both center pump PRESS lights are extinguished.	
Anti-ice panel	Set
WING anti-ice selector / switch – OFF	
ENGINE anti-ice selectors / switches – AUTO / OFF	
WIPER selector	OFF
Lighting panel	Set
POSITION light switch – ON	
RED and WHITE ANTI-COLLISION light switches – OFF	
WING light switch – OFF	
WING LANDING light switches – OFF	
NOSE GEAR LANDING light switch – OFF	
WINDOW HEAT switches	ON
Verify INOP lights extinguished.	
Passenger signs	ON
NO SMOKING sign selector - ON	
SEATBELTS sign selector - ON	

Pressurization panel Set

CABIN ALTITUDE CONTROL

AUTO RATE control – Index

LANDING ALTITUDE selector – Destination airport elevation

For landing at airports with elevation between 8,000 feet and 9,500 feet, refer to SP.2, Landing Airport Elevation Between 8,000 and 9,000 Feet for procedure.

MODE SELECTOR – AUTO 1 or AUTO 2

Equipment cooling panel Set

757

EQUIPMENT COOLING switch - Off

767-300

EQUIPMENT COOLING mode selector - AUTO

Lighting panel Set

CIRCUIT BREAKER panel light control – As desired

OVERHEAD PANEL light control – As desired

DOMELIGHT control – As desired

LOGO light switch (as installed) – Refer to NP.12, Lights Usage

INDICATOR LIGHT selector – As desired

INDICATOR LIGHTS - test

Refer to SP.1, Indicator Lights Test for test procedure.

757

Flight deck door lock selector AUTO

757

EEC switches NORM

Refer to DF.10, Engines, APU for engine/FADEC configurations.

767-300

CARGO HEAT switches ON

Air conditioning panel Set

FLIGHT DECK and CABIN temperature control selectors – AUTO

Set as desired.

Verify INOP lights extinguished.

PACK control selectors – as required

If ground conditioned air is in use, refer to SP.2, Ground Air
Conditioning Use for procedure.

TRIM AIR switch – ON

RECIRCULATION FAN switches – as required

If ground conditioned air is in use, refer to SP.2, Ground Air
Conditioning Use for procedure.

Note: When ambient temperatures are greater than 60 degrees
Fahrenheit refer to SP.16, Hot Weather Operation procedure.
This will assist in reducing the heat input from the air
conditioning packs into the center wing tank.

GASPER FAN switch (as installed) – ON

BLEED AIR panel Set

ENGINE bleed air switches – OFF

Verify OFF lights illuminated.

APU bleed air switch – As desired

Verify VALVE light extinguished.

Note: If APU is running and bleed air is not required, ensure
APU bleed valve is closed for increased fuel efficiency
and lower EGT.

ISOLATION switch(es) – ON

Verify VALVE light(s) extinguished.

Mode control panel Set

Both Nav radio AUTO/MANUAL SELECT switches - AUTO

Left and right FLIGHT DIRECTOR switches – ON

AUTOTHROTTLE ARM switch – ARM

**CAUTION: If BANK LIMIT selector is set on other than
AUTO, excessive bank may occur in HDG SEL at
high altitude/airspeed.**

BANK LIMIT selector – AUTO

Initial heading – Set

Initial altitude – Set

Arm VNAV

Autopilot DISENGAGE bar – UP

757

RESERVE BRAKES OFF

767-300

RESERVE BRAKES & STEERING OFF

Verify VALVE light extinguished.

757 ships 6801-6818

TERRAIN SYSTEM OVERRIDE switch OFF

Standby flight instruments Check

Standby ADI – Check

ILS selector – OFF

Verify no flags displayed

Airspeed indicator – Check

Verify instrument indications are correct

Altimeter – Set

Set local altimeter setting.

Verify instrument indications are correct.

5807-5816, 6819-6823

Integrated Standby Flight Display Set

Verify that the approach mode display is blank.

Set local altimeter setting.

Verify that the flight instrument indications are correct.

Verify that no flags or messages are shown.

Standby engine indicator selector AUTO

| AUTOBRAKES selector RTO

Note: RTO may disconnect during power transfers. If this occurs,
reselect RTO.

EICAS Check

Indications – Normal. Verify:

- primary engine indications display existing conditions
- no exceedance values are displayed.

Secondary ENGINE display switch – Push

Secondary ENGINE display – Verify:

- secondary engine indications display existing conditions
- no exceedance displayed
- oil quantity, 17 quarts recommended for start
 - If oil quantity less than 17 quarts, verify 8 quarts minimum following engine warm-up with engine at idle. If oil quantity less than 8 quarts following engine warm-up, dispatch approval is required.

STATUS DISPLAY switch – Push

STATUS display – Verify:

- oxygen pressure
- hydraulic quantities
- status messages

COMPUTER selector – AUTO

THRUST REFERENCE SET selector – BOTH and IN

HEADING REFERENCE switch (As installed) NORM

ALTERNATE FLAPS Set

ALTERNATE FLAPS selector – NORM

ALTERNATE FLAPS switches – OFF

Landing gear panel Set

Landing gear lever – DN

ALTERNATE GEAR EXTEND switch – Guard closed

GROUND PROXIMITY OVERRIDE switches OFF

GROUND PROXIMITY FLAP OVERRIDE switch - OFF

GROUND PROXIMITY GEAR OVERRIDE switch - OFF

GROUND PROXIMITY TERRAIN OVERRIDE switch
(as installed) - OFF

Flight instrument bus power switch (as installed) OFF

Parking brake Set

Verify PARKING BRAKE message displayed.

Note: Accumulator pressure may be insufficient to prevent
airplane from moving.

ALTERNATE STABILIZER TRIM switches Neutral

STABILIZER TRIM cutout switches NORM (guard closed)

SPEEDBRAKE lever DOWN

Ensure the speedbrake lever is stowed in the full DOWN detent.

**WARNING: Movement of the reverse thrust lever could result in
operation of the engine thrust reverser.**

Reverse thrust levers Down

Thrust levers Closed

FUEL CONTROL switches CUTOFF

**WARNING: Do not move flaps without appropriate clearance
from ground personnel.**

Flaps UP

Engine fire panel Set

ENG BTL 1 DISCH and ENG BTL 2 DISCH lights – Extinguished

Engine fire switches – In

Verify LEFT and RIGHT fire warning lights extinguished.

CARGO FIRE panel Set

CARGO FIRE ARM switches – Off

Verify FWD and AFT fire warning lights extinguished.

CARGO FIRE BTL DISCH light(s) – Extinguished

APU fire panel Set

APU BTL 1 DISCH light and

APU BTL 2 DISCH light (as installed) – Extinguished

APU fire switch – In

Verify APU fire warning light extinguished.

Radios, transponder, radar Check & set

Left and right radio tuning panel - Set

Set panel as desired.

5801-5816, 6819-6823

Verify that OFF light is extinguished.

757-300 with HF Data Link installed

HF-L: DATA; HF-R: VOICE. Refer to SP.5, FMC Data Link for procedure.

Center radio tuning panel – Set

Verify DATA (as installed) in active window for ACARS operation.

5801-5816, 6819-6823

Verify that OFF light is extinguished.

Left and right audio control panel - Set

Set panel – as desired

HF System Test - as required

Refer to SP.5, HF System Test for procedure.

Transponder panel – Check

Transponder panel – Set

Enter appropriate code.

Transponder source switch/selector – 1 or 2 / L or R (as appropriate). Use 1/L for L or C autopilot use. Use 2/R for R autopilot use.

Transponder mode selector – STBY

Radar panel - Check

Refer to SP.11, Weather Radar Test for procedure.

Radar panel - Set

Set panel - as desired



757/767-300 Operations Manual

FMS entries Verify

Preflight Procedure - Captain

Logbook Check

All crewmembers must review the logbook to become familiar with the history and maintenance status of the aircraft.

If there is doubt concerning the status of the logbook, contact MCC via the dispatcher.

- Ensure the logbook matches the aircraft ship number.
- Ensure the Airworthiness Release has been signed by Maintenance.

Note: Airworthiness Release sign-off is not required at a Delta non-maintenance station when airworthiness discrepancies do not exist.

- Review any EP-19s for special equipment and/or operating instructions.
- Consult the MDM for any operating limitations or crew operating procedures as a result of existing MELs/CDLs.
- For ETOPS departures, check for a Pre-Departure Check (PDC).

Electronic Flight Bag Set

Prior to the Pushback checklist, turn Airplane mode ON to ensure WiFi and Bluetooth® are turned off. The EFB must be operated in Airplane mode with WiFi disabled from the start of the Preflight checklist through the completion of the Shutdown checklist. Enabling Airplane mode with Bluetooth® off will also conserve battery life.

To turn Airplane mode ON, accomplish the following steps:

- Select SETTINGS
- Select Network icon
- Slide the Airplane mode ON/OFF switch to ON.

JEPPESEN application - Configure

The following steps are mandatory:

- Select the Jepp FliteDeck PRO tile
- Select the route icon.
- Select the down arrow to expand the route drawer
- Select New Flight, if necessary
 - In pop-up window, select OK
- Enter ORIGIN and DESTINATION airports

The following steps are optional:

- Enter ALTERNATE airport as desired
- Enter Nav aids, Airways, and/or Waypoints, as desired
- Select SID
 - Select applicable departure procedure
- Select STAR
 - Select applicable arrival procedure
- Select Terminal Charts View (airplane) icon
- Select REF
 - Select applicable reference documents, e.g., local ramp procedures
- Select CO
 - Select applicable Delta Special Pages, e.g., Engine Out Departure Procedure
- Select TAXI
 - Select applicable taxi charts
- Select enroute icon
 - Select appropriate HIGH/LOW portion of enroute charts and set an appropriate chart scale

Airwatch Secure Content Locker (SCL) - Configure

- Select the DELTA CONTENT LOCKER (Airwatch SCL) tile
- Open the appropriate documents/operating manuals as desired

Window Close and lock

Verify the lock lever is in the locked (forward) position and the WINDOW NOT CLOSED placard is not visible. Pull on lock lever without depressing the release button to ensure lock lever is secure.

Ensure the indicator at the top of window reads CLOSED, and the link arm assembly is approximately perpendicular to the lower track.

Note: It may be necessary to completely open the window prior to closing in order to reset the locking mechanism.

Oxygen mask Check

Refer to SP.1, Oxygen Mask Test for procedure.

Instrument source select panel Set

FLIGHT DIRECTOR selector – L

Aircraft with Alternate Navigation installed

NAVIGATION selector – FMC - L

ALTERNATE source switches - OFF

5801-5816, 6819-6823

AIR DATA SOURCE selector – L

Altimeters Set

Set the local altimeter setting.

Verify RVSM and altimeter crosscheck are within limits. Refer to L.10, Flight Management, Navigation.

Verify no flag displayed.

Flight & nav instruments Check

Note: IRS alignment must be complete before AUTOLAND STATUS, VSI, ADI, HSI, and RDMI checks.

Airspeed indicator – Check

Verify instrument indications are correct.

Verify no flag displayed.

Vertical Speed Indicators – Correct

Verify instrument indications are correct.

Verify no flag displayed.

ADIs – Check

Flight instrument indications are correct.

Verify no flags displayed.

Flight mode annunciations – Verify:

- autothrottle mode is blank
- pitch mode is TO
- VNAV mode is armed
- roll mode is TO
- AFDS status is FD.

HSIs – Check

Verify magnetic track correct.

Verify present heading correct.

Verify map mode displayed.

Verify no flags displayed.

Route – Displayed, correct.

AUTOLAND STATUS annunciators – Check

Verify blank indications.

RDMIs – Check

VOR/ADF switches – As desired.

Verify instrument indications are correct.

Verify no inappropriate flag displayed.

- Clock Set
- Time/date selector (as installed) - UTC
- EFIS control panel Set
- Decision height selector – set to a negative value
- Terrain switch – as desired
- Weather Radar switch – OFF
- Check aircraft versus runway position on HSI (10 nm scale).
- 5801-5816, 6801-6823**
- HSI traffic switch – as desired
- HSI mode selector – MAP
- Map switches – as desired
- HEATERS Set
- FOOT and SHOULDER switches – As needed

Lighting panels	Set
PANEL light control – As needed	
CHART light control – As needed	
FLOOD light control – As needed	
MAP light control - As needed	
Seat	Adjust
Adjust the seat for optimum eye reference.	
Whenever the seat is adjusted, verify a positive horizontal (fore and aft) seat lock by pushing against the seat.	
Rudder pedals	Adjust
Adjust the rudder pedals to allow for full rudder pedal and brake pedal movement.	
Audio control panel	Set
Parking brake	Set
Flight attendant briefing	Complete
Accomplish a flight attendant briefing. Refer to FOM, chapter 3, Communications.	
Fuel required	Verify
Compare flight plan block fuel and actual fuel on board.	
If actual fuel onboard is less than flight plan block fuel, ensure MIN FUEL FOR T/O plus flight plan TAXI FUEL is on board. Refer to FOM, chapter 5.	
ATC clearance	Verify
Refer to NP.12, Clearance Verification procedures.	
Call for the Preflight checklist.	

Preflight Procedure - First Officer

Logbook Check
Refer to Interior Inspection - First Officer or Relief Pilot.

Electronic Flight Bag Set

Prior to the Pushback checklist, turn Airplane mode ON to ensure WiFi and Bluetooth® are turned off. The EFB must be operated in Airplane mode with WiFi disabled from the start of the Preflight checklist through the completion of the Shutdown checklist.

Enabling Airplane mode with Bluetooth® off will also conserve battery life.

To turn Airplane mode ON, accomplish the following steps:

- Select SETTINGS
- Select Network icon
- Slide the Airplane mode ON/OFF switch to ON.

JEPPESEN application - Configure

The following steps are mandatory:

- Select the Jepp FliteDeck PRO tile
- Select the route icon.
- Select the down arrow to expand the route drawer
- Select New Flight, if necessary
 - In pop-up window, select OK
- Enter ORIGIN and DESTINATION airports

The following steps are optional:

- Enter ALTERNATE airport as desired
- Enter Navaids, Airways, and/or Waypoints, as desired
- Select SID
 - Select applicable departure procedure
- Select STAR
 - Select applicable arrival procedure
- Select Terminal Charts View (airplane) icon
- Select REF
 - Select applicable reference documents, e.g., local ramp procedures
- Select CO
 - Select applicable Delta Special Pages, e.g., Engine Out Departure Procedure

- Select TAXI
 - Select applicable taxi charts
- Select enroute icon
 - Select appropriate HIGH/LOW portion of enroute charts and set an appropriate chart scale

Airwatch Secure Content Locker (SCL) - Configure

- Select the DELTA CONTENT LOCKER (Airwatch SCL) tile
- Open the appropriate documents/operating manuals as desired

Window Close and lock

Verify the lock lever is in the locked (forward) position and the WINDOW NOT CLOSED placard is not visible. Pull on lock lever without depressing the release button to ensure lock lever is secure.

Ensure the indicator at the top of window reads CLOSED, and the link arm assembly is approximately perpendicular to the lower track.

Note: It may be necessary to completely open the window prior to closing in order to reset the locking mechanism.

Oxygen mask Check

Refer to SP.1, Oxygen Mask Test for test procedure.

Instrument source select panel Set

FLIGHT DIRECTOR selector – R

Aircraft with Alternate Navigation installed

NAVIGATION selector – FMC - R

ALTERNATE source switches - OFF

5801-5816, 6819-6823

AIR DATA SOURCE selector – R

Altimeters Set

Set the local altimeter setting.

Verify RVSM and altimeter crosscheck are within limits. Refer to L.10, Flight Management, Navigation.

Verify no flag displayed.

Flight & nav instruments Check

Note: IRS alignment must be complete before AUTOLAND STATUS, VSI, ADI, HSI, and RDMI checks.

Airspeed indicator – Check

Verify instrument indications are correct.

Verify no flag displayed.

Vertical Speed Indicators – Correct

Verify instrument indications are correct.

Verify no flag displayed.

ADIs – Check

Flight instrument indications are correct.

Verify no flags displayed.

Flight mode annunciations – Verify:

- autothrottle mode is blank
- pitch mode is TO
- VNAV mode is armed
- roll mode is TO
- AFDS status is FD.

HSIs – Check

Verify magnetic track correct.

Verify present heading correct.

Verify map mode displayed.

Verify no flags displayed.

Route – Displayed, correct.

AUTOLAND STATUS annunciators – Check

Verify blank indications.

RDMIs – Check

VOR/ADF switches – As desired.

-
- Verify instrument indications are correct.
 - Verify no inappropriate flag displayed.
 - Clock Set
 - Time/date selector (as installed) - UTC
 - EFIS control panel Set
 - Decision height selector – set to a negative value
 - Terrain switch – as desired
 - Weather Radar switch – OFF
 - Check aircraft versus runway position on HSI (10 nm scale).
 - 5801-5816, 6801-6823**
 - HSI traffic switch – as desired
 - HSI mode selector – MAP
 - Map switches – as desired
 - HEATERS Set
 - FOOT and SHOULDER switches – As needed
 - Lighting panels Set
 - PANEL light control – As needed
 - CHART light control – As needed
 - FLOOD light control – As needed
 - MAP light control - As needed
 - Seat Adjust
 - Adjust the seat for optimum eye reference.
 - Whenever the seat is adjusted, verify a positive horizontal (fore and aft) seat lock by pushing against the seat.
 - Rudder pedals Adjust
 - Adjust the rudder pedals to allow for full rudder pedal and brake pedal movement.
 - Audio control panel Set

Fuel required Verify

Compare flight plan block fuel and actual fuel on board.

If actual fuel onboard is less than flight plan block fuel, ensure MIN FUEL FOR T/O plus flight plan TAXI FUEL is on board. Refer to FOM, chapter 5.

ATIS Obtain

ATC clearance Obtain

After receiving the clearance:

- Set the MCP, as required.
- Set the transponder code.
- Verify ATC clearance. Refer to NP.12, Clearance Verification procedures.

Read the Preflight checklist when requested.

Preflight Checklist

Interior & exterior inspection	complete	C
Captain ensures the interior and exterior inspections are complete.		
Circuit breakers	ckd	C
Takeoff warning	ckd	C
Voice recorder	ckd	C
Fuel panel	set	C
Passenger signs	ON	C
Pressurization panel	set	C
Equipment cooling panel	set	C
(767-300) Cargo heat switches	ON	C
■ Mode control panel	set	C
Windows	closed & locked	C&F
Oxygen mask	ckd	ALL
Refer to SP.1, Oxygen Mask Test.		
Instrument source selectors	ckd	C&F
Altimeters	____, xckd	C&F
Confirm the captain's, first officer's, and standby altimeter settings are correctly set.		
Verbalize the altimeter setting.		
Flight & nav instruments	ckd	C&F
(757) Reserve brakes	OFF	C
(767-300) Reserve brakes & steering	OFF	C
Standby flight instruments	ckd	C
Heading ref switch (as installed)	NORM	C
Ground proximity override switches	OFF	C

Flt inst bus pwr switch (as installed)	OFF	C
EICAS	ckd	C
Parking brake	set	C
Thrust levers	closed	C
Fuel control switches	CUTOFF	C
■ Radios & transponder	set	C
Ensure the communication radios are set as appropriate.		
Ensure the transponder code is set as appropriate and the Transponder mode select switch is set to STBY.		
Radar	off	C
Flight attendant briefing	complete	C
■ Departure briefing	complete	C
Logbook and QRHs	onboard	C
Ensure the logbook is onboard and logbook review is complete. Ensure that each QRH is onboard.		
Fuel required	___ onboard ___	C&F
Compare and verbalize flight plan block fuel and actual fuel on board.		
If actual fuel onboard is less than flight plan block fuel, ensure MIN FUEL FOR T/O plus flight plan TAXI FUEL is on board. Refer to FOM, chapter 5.		

Pushback Procedure

Captain	First Officer
Operate the APU in accordance with FOM chapter 3, Aircraft Operational Policy. APU selector - START, then ON Rotate the selector to the START position, then slowly release back to ON. Do not allow the APU selector to spring back to the ON position.	
When all exterior doors are closed and the cabin is ready for pushback:	
• Verify exterior doors - Closed • Verify “CABIN IS READY FOR PUSHBACK” advisory has been received	
• Hydraulic panel - Set. Right ELEC DEMAND/ELEC pump selector / switch – AUTO / ON • Verify PRESS lights extinguished. C1 and C2 ELEC/ELEC PRIMARY pump switches – ON • Verify C1 PRESS light extinguished. • C2 PRESS light will be illuminated until after engine start due to load shedding. 767-300 Center AIR DEMAND pump selector – AUTO • Verify PRESS lights extinguished. Left ELEC DEMAND/ELEC pump selector / switch – AUTO / ON • Verify PRESS lights extinguished. Note: Pressurize right system first to prevent fluid transfer between systems.	

Captain	First Officer
• Fuel panel - Set LEFT and RIGHT MAIN (wing) FWD and AFT FUEL PUMP switches – ON • Verify PRESS lights extinguished. If center tank fuel is to be used: • L and R CENTER FUEL PUMP switches – ON • Verify both PRESS lights are illuminated and that CTR L FUEL PUMP and CTR R FUEL PUMP EICAS messages are displayed. Note: CTR pump pressure verification may be accomplished any time after fueling is completed. • L and R CENTER FUEL PUMP switches – Off • Verify both PRESS lights are extinguished and that CTR L FUEL PUMP and CTR R FUEL PUMP EICAS messages are not displayed.	
	• Flight deck door - Closed and locked • Transponder - ON/ ALT ON/ XPDR (as installed), or as required by local airport operating procedures.
Call “PUSHBACK CHECKLIST.”	Accomplish the Pushback checklist.
Note: Pushback checklist must be completed prior to aircraft movement.	

Captain	First Officer
When advised the ground crew is ready for pushback:	
Direct the first officer to call for pushback or engine start clearance as appropriate.	When requested by the captain, call for pushback or engine start clearance.
When pushback clearance has been received:	
• RED ANTI-COLLISION LIGHT - ON • Parking Brake - OFF Note: Do not turn the red anti-collision light on or release brakes until cleared for pushback or engine start.	
Call "BEACON ON, BRAKES RELEASED, CLEARED TO PUSH."	
CAUTION: Do not hold or turn the nose wheel tiller during pushback or towing. This can damage the nose gear or the tow bar. CAUTION: Do not use the brakes to stop the airplane during pushback or towing. This can damage the nose gear or the tow bar.	
With initial aircraft movement:	
If not immediately cleared for engine start, ask: "ARE WE CLEAR TO START ENGINE(S)?"	Plan engine start to be prepared to taxi upon ground crew salute.

Pushback Checklist

Doors	closed	F
Ensure all exterior door annunciator lights extinguished.		
Hydraulic panel.....	set	F
Fuel panel	set	F
Flight deck door	closed & locked	F
Ensure the LOCK FAIL light is extinguished.		
Transponder	ON/ ALT ON/ XPDR	F

Engine Start Procedure

Captain	First Officer
Single engine taxi unless an operational necessity dictates otherwise. The captain should determine engine taxi configuration after considering aircraft weight, ramp conditions, taxiway, and maneuvering requirements. Single engine taxi out using (757) left / (767-300) right engine is the normal procedure, conditions permitting. Single engine taxi out using (757) right / (767-300) left engine is permitted. The tug driver will advise the captain when it is clear to start engine(s).	
Note: One pilot will accomplish the engine start procedure while the other will monitor the pushback. Normally the first officer accomplishes the engine start procedure.	
When cleared and ready to start:	
Announce the engine(s) to be started.	Select the secondary engine indications.
	• Air conditioning panel - Set • APU Bleed Air switch - Off (Wait for VALVE light to extinguish) • PACK Control selectors - OFF • Verify that the PACK OFF lights are illuminated. • APU Bleed Air switch - on
CAUTION: Re-engagement of starter with N2 in excess of 20% will result in serious damage to starter and engine.	
	Engine start selector - GND • Verify oil pressure increase and N2 rotation. Note: During a cold weather start, the oil pressure can increase higher than normal.

757/767-300 Operations Manual

Captain	First Officer
	When N2 is at 25%: • FUEL CONTROL switch - RUN • Verify the SPAR VALVE disagreement light momentarily illuminates, then extinguishes. Note: If a SPAR VALVE light fails to illuminate, prior to flight, make a logbook entry and notify maintenance. • Verify the EGT increases and stays below the EGT limit. Note: If 25% N2 is not possible at maximum motoring, attempt the start at a minimum of (757) 18% / (767) 15% N2.
	After the engine is stabilized at idle (i.e. the red maximum start EGT limit line disappears, starting EGT peaks, and N2 rpm of 60% or greater (enables full EEC authority): • Start the other engine, as desired.
Accomplish the Aborted Engine Start checklist, QRH, NNC.7 for one or more of the following abort start conditions: • Oil pressure rise does not occur; • Fuel flow is abnormally high or fluctuating; • EGT does not increase by 20 seconds after the FUEL CONTROL switch is moved to RUN; • N1 fails to increase after EGT rise; • EGT quickly nears or exceeds the start limit; • Oil pressure indication is not normal by the time the engine is stabilized at idle.	

After Start Procedure

Captain	First Officer
After starting engine(s):	
	In preparation for single-engine taxi: • APU - As required • ENGINE ANTI-ICE selector / switch - As required • Refer to SP.16. • FUEL panel - Set • If usable fuel is in the center tank: • After engine is stabilized at idle - Select CENTER FUEL PUMP switch ON for operating engine. • Recall - Check
• (F) Air conditioning panel - As required • If planning a crossbleed start: • APU bleed air switch - OFF • ENGINE bleed air switch (operating engine) - ON • PACK control selector(s) - AUTO Note: During single-engine taxi, with engine anti-ice required, operate only one pack. • If APU is to be used for subsequent start, and not in icing conditions: • PACK control selectors - AUTO Note: Operating both air conditioning packs from a single engine bleed source is acceptable as long as icing conditions do not exist. If environmental conditions allow, operating only one pack will provide additional fuel savings.	

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	In preparation for two-engine taxi: • APU bleed air switch - OFF • ENGINE ANTI-ICE selectors/ switches - As required • Refer to SP.16. • ISOLATION switch(es) - OFF [AFM] • ENGINE bleed air switch(es) - ON • PACK control selector(s) - AUTO • FUEL panel - Set • If usable fuel is in the center tank: • After engine is stabilized at idle: L and R CENTER FUEL PUMP SWITCHES - ON • Verify both PRESS lights are extinguished and that CTR L FUEL PUMP and CTR R FUEL PUMP EICAS messages are not displayed. Note: If less than 5,000 pounds of center tank fuel is indicated, CTR FUEL PUMP EICAS message(s) may display during takeoff or climb. • Recall - Check
Call “AFTER START CHECKLIST.”	Accomplish the After Start checklist.

Captain	First Officer
Receive and return the marshalling agent's taxi salute.	
Prior to aircraft movement:	
Call "SALUTE RECEIVED, FLAPS ____."	Select flaps as directed.
Note: If the WDR is not available, select flaps to the default setting of flaps 5.	

After Start Checklist

Engine anti-ice	as reqd	C
Ensure the anti-ice selectors/switches are in the correct position for the current environmental conditions.		
Air conditioning panel	set	F
Recall	ckd	F
Ensure only expected EICAS messages are shown.		
Autobrakes	RTO	F

Taxi Procedure

Captain	First Officer
After WDR has been received:	
Performance data may be loaded into the FMS at any point after receipt of the WDR but should not interfere with other critical crew duties and responsibilities. Refer to SP.5, Communications, Takeoff Data Uplink (TDU) for additional information. The captain's analysis of the WDR shall not be completed while the captain is taxiing the aircraft. The balance of the Taxi procedure and the reading of the Taxi checklist should be completed during low workload times.	
• Verify the header block for the correct: • flight number, • ship number, • date, and • release number. • Verify the performance data is available for the FMS entered takeoff runway/position. • Perform a complete analysis of the following WDR blocks: • FMS, • weather, • performance, and • notes. Refer to FOM, chapter 5, Weight Data Record (WDR).	
For PACKS OFF takeoff, refer to SP.2, Air Conditioning Packs.	
After Takeoff Data Uplink arrives:	
• Display FMS PERF INIT page • Compare uplinked ZFW (small font) and FLT PLN ZFW (large font) for reasonableness. • Select • LSK 5R - ACCEPT - or • LSK 5L - REJECT	

Captain	First Officer
	• Display FMS TAKEOFF REF page 1/2 • After performance data populates • Select • LSK 5R - ACCEPT or • LSK 5L - REJECT
Referencing the WDR, verify FMS Takeoff Data Uplink data (if TDU uplink is unavailable, manually enter and verify the data from the WDR). All crewmembers should verify performance data.	
• Verify FMS and WDR data agree: • ZFW • FLAPS • THRUST (assumed temperature roll back to a colder temperature is acceptable) • CG/TRIM (FMS trim data may be used if within .2 units of the WDR value) • RWY/POS (verify planned takeoff position is still valid) • V speeds • GR WT	
• TAKEOFF REF page 2 • Verify/update FMS ACCEL HT as necessary. • Compare STD LIM (lesser of RATOW, CLIMB, or MAX Takeoff) with GR WT (page 1).	
• Reference Airspeed Bugs - Set • Position bugs at V1, VR, VREF 30+40, and VREF 30+80	• Reference Airspeed Bugs - Set • Position bugs at V1, VR, VREF 30+40, and VREF 30+80
• MCP - SET • Set V2 in IAS/MACH window.	• Stabilizer trim - Set • position STAB TRIM indicator to STAB value

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Captain	First Officer
When workload and conditions permit:	
	• EICAS STATUS page - Select
Rudder - Check • Move rudder pedals to full travel in both directions and verify: • freedom of movement • rudder pedals return to center • correct flight control movement on the EICAS display. Note: Hold the nose wheel steering wheel during the rudder check to prevent nose wheel movement.	Aileron and elevator - Check • Move control wheel and column to full travel in both directions and verify: • freedom of movement • controls return to center • correct flight control movement on the EICAS display.
	• SECONDARY ENGINE DISPLAY page - Select
EFBs - Set • Display applicable REF, CO, and Taxi page(s), as needed. • Select the planned assigned SID prior to Departure, as desired.	
Call “TAXI CHECKLIST.”	Accomplish the Taxi checklist.

For extended ground time:

Consider shutting down one or more engines. When departing from ramp areas where taxiing is restricted to both engines, consider shutdown of one engine after exiting the restricted area.

Note: To prevent a center tank UFI lockout, center tank fuel pumps must be turned off prior to engine shutdown. Turn on the center tank fuel pump for the operating engine after a brief delay (e.g., 5 seconds or more).

Taxi Checklist

- Flaps ____, ____, ____ C&F
Ensure the FMS and WDR flap values agree.
Confirm and verbalize:
- FLAP lever position
 - flap value from the FMS
 - indicated flap position.
- Takeoff speeds ____, xckd C&F
- Confirm:
 - V1, VR, V2 on FMS TAKEOFF REF 1/2 page
 - V2 in MCP IAS/MACH window
 - reference Airspeed Bugs on captain's and first officer's Mach/Airspeed Indicators positioned at V1, VR, VREF30+40, VREF30+80.
 - Verbalize V1, VR, V2, VREF30+40, VREF30+80
- Thrust ____ C&F
Referencing the upper EICAS, verbalize TO or, if applicable, assumed temperature.
- Trim ____, 0, 0 C&F
Ensure the STAB TRIM is set to TRIM value from either the WDR or the FMS. The FMS computed value may be used in lieu of the WDR value if the difference is 0.2 or less. "Zero, zero" indicates the rudder and aileron trim are verified '0'.
- Flight controls ckd C&F

Delayed Start Procedure

Captain	First Officer
Initiate the Delayed Start procedure to ensure proper engine warm up. If performing a crossbleed start, refer to SP.7, Engine Crossbleed Start.	
When ready to start:	
Announce engine start.	
	• Select CENTER FUEL PUMP switch OFF for operating engine • Air conditioning panel - Set • APU Bleed Air switch - Off (Wait for VALVE light to extinguish) • PACK Control selectors - OFF • Verify that the PACK OFF lights are illuminated • APU Bleed Air switch - on • ENGINE ANTI-ICE selectors / switches (both) - AUTO / OFF • refer to SP.16.
	• Engine Start procedure - Accomplish

Captain	First Officer
After engine start:	
	• APU - OFF • ENGINE ANTI-ICE selectors / switches (both) - As required • refer to SP.16. • Air conditioning panel - Set • APU bleed air switch - OFF • ISOLATION switch(es) - OFF [AFM] • ENGINE bleed air switches - ON • PACK control selectors - AUTO • FUEL panel - Set • If usable fuel is in the center tank: • After engine is stabilized at idle: L and R CENTER FUEL PUMP SWITCHES - ON • Verify both PRESS lights are extinguished and that CTR L FUEL PUMP and CTR R FUEL PUMP EICAS messages are not displayed. Note: If less than 5,000 pounds of center tank fuel is indicated, CTR FUEL PUMP EICAS message(s) may display during takeoff or climb. • Recall - Check
Call "DELAYED AFTER START CHECKLIST."	Accomplish the Delayed After Start checklist.

Delayed After Start Checklist

Engine anti-ice (both)	as reqd	C
Ensure the anti-ice selectors/switches are in the correct position for the current environmental conditions.		
Air conditioning panel	set	F
Recall	ckd	F
Ensure only expected EICAS messages are shown.		
Autobrakes	RTO	F

Before Takeoff Procedure

Captain	First Officer
When a runway, intersection, departure, or performance change occurs prior to takeoff:	
- FMS data must be modified using the most recent WDR information. Refer to the Taxi Procedure for specifics. - After updating/verifying any changed items, complete the runway change boxed items and any associated procedural steps for all previously completed checklists. Note: Performance data for an intersection departure is also valid for all other takeoff positions on that runway that afford additional runway length.	
Operate the engines for a minimum of 5 minutes before applying takeoff thrust (do not delay takeoff after 3 minute warm-up period).	
When in proximity to the departure runway:	
	Notify the flight attendants to finalize preparations for takeoff with the following PA, "FLIGHT ATTENDANTS, PLEASE PREPARE THE CABIN FOR DEPARTURE."
	Receive "THE CABIN IS READY FOR TAKEOFF" report from the flight leader/purser via the interphone. Refer to FOM chapter 3.
Takeoff briefing - Complete The Pilot Flying (PF) will verify and verbalize: - runway - outside reference and HSI/FMS runway - departure - first fix - H: heading mode - A: altitude constraints - A: airspeed constraints	
- Check aircraft versus runway position on HSI (10 nm scale) [AFM] - Refer to SP.11	
- Fuel - Check - Fuel quantity is equal to or greater than MIN FUEL FOR T/O	
	- Packs - as required - If a PACKS OFF takeoff is required, refer to SP.2, Packs Off Takeoff
	Transponder - TA/RA
Call "BEFORE TAKEOFF CHECKLIST."	Accomplish the Before Takeoff checklist.

Captain	First Officer
Manage the radar and terrain display as required.	
5801-5816, 6801-6823 - EFIS and Weather Radar Control panels - Set - Weather Radar Control panel mode - As required - EFIS control panel, WXR switch - Push - Ensure WX (cyan) is displayed on HSI.	
All other ships Weather Radar Mode Selector - As required	
WARNING: Prior to crossing a runway hold short line to either take off from or cross a runway, both crewmembers should confirm their position by comparing taxiway and runway identification signs to the taxi chart.	

Before Takeoff Checklist

- Runway position ____, ____ C&F
 - Verify and verbalize:
 - the uplinked (or inserted) runway/intersection displayed in the MCDU, and
 - the actual runway takeoff position observed.
- Flaps ____, ____ C&F
 - Confirm and verbalize:
 - the uplinked (or inserted) flap position displayed in the MCDU, and
 - indicated flap position.
- Takeoff briefing complete C
 - Ensure the takeoff briefing has been completed by the PF.
- Transponder TA/RA F
- Flight attendants notified & acknowledged F
- Packs as reqd F
 - If performing a PACKS OFF takeoff, refer to SP.2, Packs Off Takeoff.

Takeoff Procedure

Pilot Flying	Pilot Monitoring
When cleared for takeoff:	
Confirm alignment with the intended departure runway by reference to the HSI.	
Verify brakes are released. Advance thrust levers to approximately 70% N1/1.1EPR. Ensure both engines are accelerating symmetrically prior to calling for N1 or EPR.	
Call for “N1” or “EPR”, as appropriate.	Select N1 or EPR.
Verify takeoff thrust is set by approximately 80 knots. Adjust as necessary.	
	Monitor engine instruments throughout the takeoff.
After takeoff thrust is set, the captain's hand must be on the thrust levers until V1.	
Monitor airspeed.	
At 80 knots:	
Verify 80 knots.	Announce, “80 KNOTS, THROTTLE HOLD, THRUST NORMAL.”
At V1:	
Verify V1 speed	Announce “V1.”
At VR:	
Rotate to the takeoff pitch attitude	Announce, “ROTATE.”
	Monitor airspeed and vertical speed. Verify a positive rate of climb and announce “POSITIVE RATE.”
Verify a positive rate of climb on the altimeter. Call “GEAR UP.”	Position the landing gear lever to UP.

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Pilot Flying	Pilot Monitoring
Above 400 feet AGL:	
Verify LNAV or call "HDG SELECT" as required.	Select or verify roll mode.
At thrust reduction height:	
Call for "CLIMB POWER" If the autopilot is desired, it is normally engaged after a roll mode and VNAV are selected.	Select CLB power.
At the acceleration height:	
Reduce pitch attitude and begin acceleration. Verify acceleration. Call "FLAPS___" according to the flap retraction schedule.	Set the FLAPS as directed.
After flaps are selected up:	
	• Landing GEAR lever - OFF • WING Anti-ice - As required / AUTO. • ENGINE Anti-ice - As required / AUTO.
Call "AFTER TAKEOFF CHECKLIST."	Accomplish the After Takeoff checklist.

After Takeoff Checklist

Flaps up

Ensure flaps up and indications normal.

Landing gear up & OFF

Ensure landing gear up indications normal and landing GEAR lever OFF.

APU off

Packs AUTO

Verify pack selector position.

Anti-ice as reqd / AUTO

Climb Procedure

Pilot Flying	Pilot Monitoring
Approaching transition altitude:	
	If other than 18,000 feet, call “TRANSITION ALTITUDE.”
• Altimeters - Set	

Pilot Flying	Pilot Monitoring
• Anti-Ice - As required	
After climbing through approximately 10,000 feet AFE, signal the end of sterile cockpit environment by:	
• (C) NO SMOKING sign selector - Cycle to sound cabin chime twice. OR, if conditions permit: • (C) SEATBELTS sign - OFF • (C) Ensure PA is made advising passengers to keep seat belts fastened while seated.	
After passing 18,000 feet:	
Call “CLIMB CHECKLIST.”	Accomplish the Climb checklist.

Climb Checklist

Altimeters 29.92, xckd C&F
 Ensure the captain, first officer, and standby altimeters are correctly set.

Cruise Procedure

Pilot Flying	Pilot Monitoring
• Anti-ice - As required	
After reaching top of climb:	
Enroute:	
• Verify/set RNP value for Oceanic airspace. Reference SP.11 for Manual Entry procedures. • Apply Tactical Cost Index procedures as necessary per FOM. • Monitor fuel trend. • Send turbulence report as necessary. • Send position reports as necessary.	
	• APU Hours meter (as installed) - Input the time in the HOURS block of the appropriate ACARS page: • For -501: FLT SUMMARY page. • For -601: ARRIVAL page > DLY REASONS page. • Refer to SP.5.
	Center Fuel Tank Procedures. Refer to SP.12.
• EFB - Manage: • Select enroute icon. • Select appropriate HIGH/LOW portion of enroute charts and set an appropriate chart scale. • Monitor the battery power indicator and connect the powered keyboard when necessary. Note: An electrical outlet in the flight deck is not an approved power source. If possible, charge EFBs on rest break in the cabin or crew rest facility. • Connect the powered keyboard when the EFB battery power indicator displays 20% or less. • Conserve battery power as much as possible. During extended cruise, consider shutting down an EFB to preserve battery life. Note: All EFBs may not be off simultaneously. Maintain at least one EFB in the sleep mode or ON mode to provide ready access to data when operational needs dictate.	

When approach procedure is known:

- FMS ARRIVALS page - Select
 - Insert/modify the STAR, APPROACH, and TRANS as necessary.

To ensure adequate obstacle clearance in conditions of extreme cold weather (-10°C or lower, or as specified in the Delta Special Page), refer to Airway Manual, Weather, Altimeter Corrections.

- FMS APPROACH REF page - Select
 - Note Flaps 25/30 VREF speeds.
- Set reference airspeed bugs to:
 - Vref 25 or 30 (double bug)
 - Vref 30 + 40
 - Vref 30 + 80
- Verbalize and crosscheck the reference airspeed bugs.
- Manually tune radios as necessary.
- Set RADIO and/or BARO minimums as appropriate.

Note: Refer to NOI.3, Approach Selection Table.

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Pilot Flying	Pilot Monitoring
EFB Configure: • JEPPESEN application - Configure • Select the Jepp FliteDeck PRO title. • Select the airport (airplane) icon. • Select DESTINATION airport. • Select REF. • Select applicable reference documents, e.g., local ramp procedures. • Select CO. • Select applicable Delta Special Pages, e.g., Critical Performance procedures. • Select TAXI. • Select applicable Taxi chart(s). • Select APP. • Select applicable approach chart(s). • Select STAR. • Select applicable arrival procedure charts. • Airwatch Secure Content Locker (SCL) - Configure • Select the DELTA CONTENT LOCKER (Airwatch SCL) title. • Open the appropriate document/operating manual as desired. • Check the EFB mount for security. Pilots may hold their respective EFBs in their hands when conducting required briefings. Secure EFB in the mount after completing briefings. EFBs must be secured during critical phases of flight.	
After FMS data has been entered:	
	• FMS data - Verify
• Approach briefing - Accomplish. Refer to FOM, chapter 3.	• AUTOBRAKES - Select as briefed
Prior to top-of-descent:	
	On aircraft with single fuel crossfeed switch, after an extended over water leg (ETOPS), cycle FUEL CROSSFEED switch On then Off and verify normal operation. Make a logbook entry if abnormal operation. [AFM]

Descent Procedure

Pilot Flying	Pilot Monitoring
• Anti-Ice - As required	
At top of descent or approximately 20 minutes prior to landing:	
Notify the flight attendants with a PA that includes “FLIGHT ATTENDANTS PLEASE PREPARE THE CABIN FOR ARRIVAL.” • (C) SEATBELTS sign - ON.	
	Note: To help improve Pneumatic System reliability, press Event Record switch after the descent is established when thrust levers are at or near idle.
	• Pressurization panel - Set • Confirm LDG ALT set to landing airport field elevation. Note: For airports with elevation above 8,000, refer to SP.2.
	• Recall - Check.
Approaching transition level:	
	If other than FL 180, call “TRANSITION LEVEL.”
• Altimeters - Set local altimeter setting	
At FL180 or reaching top-of-descent, whichever occurs later:	
Call “DESCENT CHECKLIST.”	Accomplish the Descent checklist.

Descent Checklist

Altimeters	____, xckd	C&F
Ensure the captain, first officer, and standby altimeters are correctly set.		
Verbalize the altimeter setting (local or 29.92).		
■ Minimums	____, ____, xckd	C&F
Ensure the captain's and first officer's radio and/or baro minimums are set to the approach chart value.		
Verbalize "RADIO" and the numeric value, if required.		
Verbalize "BARO" and the numeric value.		
■ Landing data	____, ____, xckd	C&F
Verbalize the desired landing flap and Vref speed.		
Confirm the captain's and first officer's airspeed reference bugs are correctly set.		
■ Approach briefing	complete	PM
Ensure the Approach Briefing has been completed by the PF.		
■ Autobrakes	as reqd	PM
Seat belt signs	ON	PM
(ETOPS) Fuel crossfeed	cycled	PM
This checklist challenge/response is required for ETOPS flights only.		
Pressurization panel	set	PM
Recall	ckd	PM
Ensure only expected EICAS messages are shown.		

Approach Procedure

Pilot Flying	Pilot Monitoring
Approaching transition level:	
	If other than FL 180, call “TRANSITION LEVEL.”
Altimeters - Set local altimeter setting	

Pilot Flying	Pilot Monitoring
When arrival, approach, or runway changes prior to landing:	
- FMS data must be modified. - After updating/verifying any changed items, complete the Runway Change boxed items for the Descent and Approach checklists and their associated procedures. Note: If the landing runway assignment is changed and the captain determines the runway change can be accomplished visually, the captain may choose to waive the “runway change” items.	

Pilot Flying	Pilot Monitoring
Anti-Ice - As required	
Before descending through approximately 10,000 feet AFE:	
- Flight and navigation instruments - Set - Verify correct arrival and approach selected in FMS. - VHF NAV frequency and course set.	
At approximately 10,000 feet AFE:	
(C) NO SMOKING sign selector - Cycle to sound cabin chime twice.	
Call “APPROACH CHECKLIST.”	Accomplish the Approach checklist.

Approach Checklist

- Flight & nav instruments verified C&F
 - Ensure correct arrival and approach procedures are entered.
 - Ensure the proper frequency and course/radial are set as appropriate.
- Cabin notification complete C
 - Ensure that the cabin chime signal has been sounded twice.
- Altimeters ____, xckd C&F
 - Ensure the captain, first officer, and standby altimeters are correctly set.
 - Verbalize the local altimeter setting.

Landing Procedure

Pilot Flying	Pilot Monitoring
When ready to configure the aircraft for landing:	
Call “FLAPS ____” according to the flap extension schedule.	Set the FLAP lever as directed.
When cleared for the approach:	
WARNING: When using LNAV to intercept the final approach course, LNAV might parallel the localizer without capturing it. The airplane can then descend on the glide slope with the localizer not captured.	
• Manage the approach in accordance with the appropriate Approach Guide and Automation Guidelines.	
Call “GEAR DOWN, FLAPS 20.”	Set the landing gear lever to DN. Set the FLAP lever as directed.
Set the speed brake lever to ARMED.	
At vertical path capture:	
Call “FLAPS ____” as needed for landing.	Set the FLAP lever as directed.
Call “LANDING CHECKLIST.”	Accomplish the Landing checklist.



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Pilot Flying	Pilot Monitoring
No later than 1,000 feet AFE:	
Verify missed approach altitude is set.	
Note: Provided stabilized approach criteria are observed, the timing of the configuration may be modified as necessary for a more fuel-efficient operation.	

Landing Checklist

Landing gear	down	C&F
Flaps	____, ____	C&F
Confirm and verbalize:		
• FLAP lever position, and		
• indicated flap position.		
Speedbrake	ARMED	PM

Go-Around Procedure

Pilot Flying	Pilot Monitoring
When a go-around is warranted:	
Push either GA switch and announce “GO AROUND”.	Verify FMA pitch, roll, and ATs. Announce pitch mode “GO AROUND VERIFIED”
Call “FLAPS 20.”	Set FLAP lever as directed.
Verify: • Rotation to go-around pitch attitude • Thrust setting • Proper FMA mode annunciation	
Verify thrust is sufficient for the go-around or adjust as needed.	
	Monitor rotation, pitch and vertical speed. Verify a positive rate of climb and announce “POSITIVE RATE.”
Confirm a positive rate of climb on the altimeter.	
Call “GEAR UP.”	Position the landing gear lever to UP.
	Verify missed approach altitude is set.
Above 400 feet RA:	
Verify or call for the appropriate roll mode.	Select or verify roll mode.
At acceleration height (normally 1,000 feet AFE):	
Set speed to the maneuvering speed for the planned flap setting.	
Call “FLAPS ____” according to the flap retraction schedule.	Set the FLAP lever as directed.
If another approach is warranted at the destination airport:	
Consider leaving flaps at 5 and maintain appropriate maneuvering speed.	Verify flaps 5 and appropriate maneuvering speed as directed.



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Pilot Flying	Pilot Monitoring
After planned flaps set and above flap maneuvering speed, if a diversion is required:	
Call for “FLCH” or “VNAV” if desired.	Select “FLCH” or “VNAV” as directed.
Call for CLIMB POWER if desired.	Select/verify CLB thrust.
When at the planned flap configuration:	
Call “AFTER TAKEOFF CHECKLIST.”	Accomplish the After Takeoff checklist.

Landing Roll Procedure

Pilot Flying	Pilot Monitoring
At main gear touchdown:	
Verify thrust levers at idle.	
	Verify the SPEEDBRAKE lever is UP. Call “SPEEDBRAKES UP.”
WARNING: After reverse thrust is initiated, a full stop must be made.	
Without delay, move the reverse thrust levers to the interlocks and hold light pressure until the interlocks release. Then apply reverse thrust as needed.	Verify normal reverse thrust operation.
By 80 KIAS initiate movement of reverse thrust levers to reach reverse idle detent prior to taxi speed. Position levers full down (forward thrust) after engines have decelerated to reverse idle.	At 80 KIAS call “80 KNOTS.”
Prior to taxi speed: • Autobrakes - Disengage	

After Landing Procedure

Captain	First Officer
When clear of the active runway and workload permits:	
CAUTION: For aircraft with winglets, the increased wingspan introduces operational considerations. Review Jeppesen airport pages and Delta Special Page for taxiway and terminal restrictions.	
Note: Engine may be shutdown after cool down recommendations have been met.	
• SPEED BRAKE lever - DOWN	• Anti-Ice - As required • ENGINE ANTI-ICE selectors/switches - As required (refer to SP.16) • WING ANTI-ICE selector/switch - OFF • FLAP lever - UP • Weather Radar - Off 5801-5816, 6801-6823 • EFIS and Weather Radar Control panels - Set • EFIS control panel, WXR switch - Push - Ensure WX (cyan) is not displayed on HSI. • Weather Radar Control panel, TEST switch - Push - Select TEST Mode to prevent inadvertent radar operation. All other ships • Weather Radar Mode Selector - OFF • APU - As required (refer to FOM 3.4, APU Policy) • Hold selector in the START position for 3 to 5 seconds, then slowly release back to ON • Transponder - ON / ALT ON / XPDR (as installed)

Captain	First Officer
Call “AFTER LANDING CHECKLIST.”	Accomplish the After Landing checklist.

After Landing Checklist

- Anti-ice as reqd
- Engine anti-ice - Ensure the anti-ice selectors/switches are in the correct position for the current environmental conditions.
- Wing anti-ice - Selector/switch off.
- Flaps UP
- Speedbrake DOWN
- Radar off

Shutdown Procedure

Captain	First Officer
Engine cool down recommendations: • Run the engines for at least 3 minutes. • Shutdown may be accomplished earlier for gate arrival.	
After engine cool down recommendations have been met and single engine taxi is desired:	
Call for engine shutdown. 757 Note: Normally the left engine is shut down. 767-300 Note: Either engine may be shut down.	
	• Bleed air panel - Set • Desired ENGINE bleed air switch - OFF • Verify OFF light illuminated. • Air Conditioning panel - Set • ISOLATION switch(es) - ON • Appropriate FUEL CONTROL switch - CUTOFF
After stopping at the gate:	
• PARK BRAKE - Set • Call for seat belts sign off. • Call for engine shutdown.	• SEAT BELTS sign selector - OFF, as directed • APU RUN light illuminated - Verify • ENGINE anti-ice selectors/switches - AUTO/OFF • Bleed air panel - Set • ENGINE bleed air switches - OFF • Verify OFF lights illuminated. • FUEL CONTROL switches - CUTOFF

Captain	First Officer
- Hydraulic panel - Set - Left ELEC DEMAND / ELEC pump selector - OFF 767-300 - Center AIR DEMAND pump selector - OFF - C1 and C2 ELEC PRIMARY pump switches - OFF - Right ELEC DEMAND/ ELEC pump selector - OFF Note: Depressurize right system last to prevent fluid transfer between systems. - FUEL PUMP switches - OFF - RED ANTI COLLISION light - OFF	- Transponder - STBY - F/D switches - OFF - Autobrake selector - OFF - ILS - standby position
When engines are shut down:	
PARK BRAKE - As required After the chocks are inserted, the brakes should be released for cooling. Refer to FOM, 6.1, Parking, Brake Release. Refer to SP.16, Cold Weather Operations.	
Call "SHUTDOWN CHECKLIST."	Accomplish the Shutdown checklist.

Shutdown Checklist

Hydraulic panel.....	set	C
Fuel pump switches	OFF	C
Seat belt signs	OFF	C
Engine anti-ice	AUTO / OFF	C
Fuel control switches	CUTOFF	C
Transponder	STBY	C
Red anti-collision light	OFF	C
Parking brake	as reqd	C

Captain	First Officer
After the Shutdown Checklist is complete:	
When external power is available:	
• EXT POWER switch - Push • APU selector - OFF • Configure aircraft for ground air conditioning use. Refer to SP.2. • ACARS information - Enter • Complete ACARS Postflight procedures. • RNAV (RNP) approach reports are required. Refer to SP.5. • Autoland attempts must be recorded. Refer to SP.4. • Status Messages - Check • Record messages in the aircraft logbook. • Engine oil, oxygen, and hydraulic quantities - Check • If quantities are less than the following values, make a logbook entry and notify maintenance as soon as possible. • Engine oil: 8 quarts. • Oxygen: 1,000 psi. • Hydraulic fluid: no RFs displayed. • If the aircraft operated in Class II airspace for more than one hour: • IRS drift error rates - Check • Referencing the FMS: • INDEX page - Select MAINT • MAINT page - Select IRS MONITOR • Make a logbook entry if any IRS drift is greater than 2 nm per hour. • Logbook - Make required entries for maintenance discrepancies. • Flight deck lights and electronic displays - Set as required. • Red color-coded circuit breakers - Pull as required. • Pull red color-coded circuit breakers based on estimated ground time. Refer to placard instructions on panel. 5636-5657, 5801-5816 Note: Placards are not installed. There are no red color-coded circuit breakers to be pulled. 757 • Flight Deck Access System switch - Guard up, switch up. 767-300 • Flight deck door mechanical latch pin - Install.	

After shutdown reminders:

- Enter appropriate ACARS information, refer to SP.5.
- Check oxygen, engine oil, and hydraulic quantities.
- Check status messages.
- Check IRS drift error (Class II greater than one hour).
- Make appropriate logbook entries.
- Shut down the APU, unless required for environmental reasons.
- Pull red color-coded circuit breakers as required.

Secure Procedure

Captain	Any Crewmember
After coordination with local maintenance or operations:	
Accomplish the Secure checklist only when the aircraft is to remain for two hours or more. The captain will designate a crewmember to accomplish the Secure checklist. When operating the last flight of any day into a limited or non-maintenance station, accomplish the following: • If a maintenance discrepancy is noted and entered in the logbook, the MCC must be contacted through the dispatcher as soon as possible to facilitate corrective action and avoid delays. If a flight crew placard is applicable, it should be installed prior to departing the aircraft. • Perform a complete exterior inspection, in accordance with the Exterior Inspection - Captain or First Officer or Relief Pilot. If the aircraft will layover in cold weather, ensure it is configured as described in SP.16.	
When ready to secure the aircraft:	
Call "SECURE CHECKLIST."	Accomplish the Secure Checklist as a "read and do" checklist.
• IRS mode selectors - OFF • EMER LIGHTS switch - OFF • WINDOW HEAT switches - OFF • PACKS - OFF • Wait 3-5 seconds before selecting the second PACK to OFF. • APU and External power - Set as required Note: Delay placing the BATTERY switch to OFF until after the APU RUN light extinguishes to allow proper cooling and fire detection. • If only ground service power is required: • Verify EXT PWR AVAIL light illuminated • EXT PWR switch and APU selector - OFF • GROUND SERVICE switch (located on the forward Flight Attendant panel) - Push • STBY POWER selector - OFF • BAT switch - OFF • If electrical power is not required: • APU selector and EXT PWR switch - OFF • STBY POWER selector - OFF • BAT switch - OFF	



Secure Checklist

IRS mode selectors OFF
Emergency lights OFF
Window heat OFF
Packs OFF
APU & external power as reqd
Standby power OFF
Battery switch OFF

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Normal Operational Information

Normal Ops Info

Chapter NOI

Section 1

Normal Ops Info

The Normal Ops Info section includes the Approach Guidance. This section provides quick reference tools for the experienced crew member. For more detailed information, refer to the Airway Manual, the FCTM, the ODM, and the FOM.

Approach Guidance

The approach guidance section begins with the Approach Selection Table. The table lists the approach type, any qualifiers for the approach, and the MCP selection(s). A page number will then direct the pilot to the recommended approach guide to be used.

Following the Approach Selection Table are the Approach Guides. The guides have been developed for each type of authorized approach and are intended to help the pilot prepare for, brief, and conduct the approach procedure. The use of an approach guide is recommended, but not required.

Following the Approach Guides is the RADIO/BARO Minimums Chart. The chart contains the landing minimum settings for all approaches.

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Reserved for future use.

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Normal Operational Information

Approach Guidance

Chapter NOI

Section 3

Approach Selection Table

Approach Type	Qualifier	MCP Selection(s) Page
ILS	For PRM considerations also see pg NOI.3.5	APP CAT I pg NOI.3.4 CAT II pg NOI.3.6 SA CAT II pg NOI.3.6 CAT III pg NOI.3.8
LDA with GS	For PRM considerations also see pg NOI.3.5	APP pg NOI.3.4
RNAV (RNP)	GPS Required	LNAV VNAV pg NOI.3.12
RNAV (GPS) RNAV (GNSS) GPS	GPS Required	LNAV VNAV pg NOI.3.10
ILS (GS out) LOC LOC (BACK CRS) LDA (no GS) VOR NDB	Procedure in FMS Database with GP*	LNAV, LOC, or LOC-B/CRS VNAV pg NOI.3.15
	Procedure in FMS Database without GP*	LNAV, LOC, or LOC-B/CRS V/S pg NOI.3.17
	NO Procedure in FMS Database	LNAV, LOC, LOC-B/CRS, or HDG SEL V/S pg NOI.3.17

*Approach GP angle is confirmed via the FMS.

Approach Type	Qualifier	MCP Selection(s) Page
Charted Visual Flight Procedures	Procedure in FMS Database	LNAV VNAV pg NOI.3.19
	NO Procedure in FMS Database	Fly using visual references
Circling Maneuver		pg NOI.3.20

Using VNAV to Meet Altitude Constraints Prior to the Published FAF/PFAF

If above the published FAF altitude and unsure all altitude constraints outside the FAF will be complied with and:

- established on a published segment of the approach, or
- vectored to a final approach course intercept heading and level at the active waypoint altitude, or
- cleared direct to an approach waypoint and level at that waypoint altitude:

LNAV/LOC Select

MCP altitude Set as follows

 ILS Set Precision Final Approach Fix altitude

 Non-ILS Set DA/DDA rounded up to next 100'

VNAV Select or verify

Speed intervention Set as desired

ILS CAT I, LDA with GS - Approach Guide

APP Mode

For inoperative equipment, refer to the QRH, Non-Normal Ops Info tab, ILS Approach Equipment Requirements.

For any inoperative ground based equipment, refer to the Airway Manual, Ops Specs, IAP.

For ILS Precision Runway Monitor (PRM) Approach, refer to the ILS Precision Runway Monitor (PRM) Approach Breakout Procedures Approach Guide.

Note: Approach may continue to DA(H) if established on the final segment and the controlling visibility decreases below the authorized minimums. Specific foreign country exceptions may apply. For further information, refer to the Airway Manual, Ops Specs, IAP.

Airport diagram Review

Autopilot As required

If operable, both the Autopilot and Flight Director will be utilized for all ILS approaches when the reported weather is below 4,000 feet RVR or 3/4 mile.

FMS approach procedure Select and verify

Flight and nav instruments Set

Minimums Set DA

When cleared for the approach:

If at or above FAF altitude and assured all altitude constraints are complied with:

APP Mode Select

No later than 1,000 feet AGL:

Missed approach altitude Set

Set lowest initial level off altitude on missed approach procedure.

Execute a missed approach after the FAF with the approach lights or runway environment not in sight if any of the following occur:

- criteria listed in the Airway Manual, Ops Specs, IAP.

ILS Precision Runway Monitor (PRM) Considerations

PRM procedure Brief Jeppesen 11-XX Pages

Primary and Monitor Frequencies - Briefed

Breakout procedure Briefed

“Breakout” Procedure

Note: All "Breakouts" must be hand flown.

Pilot Flying	Pilot Monitoring
If ATC call “Traffic Alert” during the PRM approach:	
A/P - Disengage	F/D (both) - OFF
Maneuver as directed by ATC Note: If ATC "breakout" instructions coincide with a TCAS RA, follow the vertical guidance of the RA and the lateral guidance directed by ATC. Note: If descending, vertical speed should not exceed 1,000 FPM.	Communicate with ATC as required.
	When established on the “breakout” heading: • F/D (both) - ON
When "breakout" is complete, reset automation to appropriate level.	

ILS CAT II or SA ILS CAT II - Approach Guide

APP Mode

For inoperative equipment, refer to the QRH, Non-Normal Ops Info tab, ILS Approach Equipment Requirements.

For any inoperative ground based equipment, refer to the Airway Manual, Ops Specs, IAP.

Note: Approach may continue to DA(H) if established on the final segment and the controlling RVR goes below minimums. Specific foreign country exceptions may apply. For further information, refer to the Airway Manual, Ops Specs, IAP.

Approaches must be flown using autoland procedures.

Autoland:

Must be accomplished using flaps 25 or 30.

Maximum reported wind component to initiate approach and land:

25 knots headwind, 15 knots crosswind, 10 knots tailwind

FMS approach procedure Select and verify

Flight and nav instruments Set

Minimums Set

RA Authorized:

- Set BARO to field elevation
- Set published RA.

RA Not Authorized:

- Set BARO to published DA. Set RA to negative value.
- IM beacon is required.
- DA is determined by the IM or the first officer's BARO altimeter, whichever occurs first.

Marker beacon audio (RA Not Authorized) ON

Autobrakes Recommended

Airport diagram and SMGCS chart Review

Callouts Review

FMA Review

When cleared for the approach:

APP mode Select

Select when established on a published inbound segment of the approach or when on a final approach course intercept heading. Adhere to all published step down fix altitudes located outside the final approach segment.

No later than 1000 feet AGL:

Missed approach altitude Set

Set lowest initial level off altitude on missed approach procedure.

Execute a Missed Approach for any of the following:

- Criteria listed in the Airway Manual, Ops Specs, IAP.
- The autopilot is unintentionally disengaged.

Note: If unintentionally disengaged below RA/DA, the landing may be completed if suitable visual reference is established.

- Automatic landing cannot be accomplished in the touchdown zone.
- For all EICAS messages, aural warnings, and warning/system failure flags that occur prior to decision height, the approach may be continued as long as the ASA status annunciates LAND 2 or LAND 3, and LOC and GS are within tolerances. The ASA monitors the required elements of the CAT II airborne system.

ILS CAT III - Approach Guide

APP Mode

For inoperative equipment, refer to the QRH, Non-Normal Ops Info tab, ILS Approach Equipment Requirements.

For any inoperative ground based equipment, refer to the Airway Manual, Ops Specs, IAP.

Note: Approach may continue to AH if established on the final segment and the controlling RVR goes below minimums. Specific foreign country exceptions may apply. For further information, refer to the Airway Manual, Ops Specs, IAP.

Approaches must be flown using autoland procedures.

Autoland:

Must be accomplished using flaps 25 or 30.

Maximum reported wind component to initiate approach and land:

25 knots headwind, 15 knots crosswind, 10 knots tailwind

Airport diagram and SMGCS chart Review

FMS approach procedure Select and verify

Flight and nav instruments Set

Minimums Set

- Set RA to 50’ alert height (AH).
- Set BARO to field elevation.

Autobrakes Required, if operable

Callouts Review

- Captain announces “LAND 3” at AH.

FMA Review

When cleared for the approach:

APP mode Select

Select when established on a published inbound segment of the approach or when on a final approach course intercept heading. Adhere to all published step down fix altitudes located outside the final approach segment.

No later than 1000 feet AGL:

Missed approach altitude Set
Set lowest initial level off altitude on missed approach
procedure.

Execute a Missed Approach for any of the following:

- Criteria listed in the Airway Manual, Ops Specs, IAP.
- The autopilot is unintentionally disengaged.

Note: If unintentionally disengaged below RA/AH, the
landing may be completed if suitable visual
reference is established.

- Automatic landing cannot be accomplished in the
touchdown zone.
- For all EICAS messages, aural warnings, and
warning/system failure flags that occur prior to decision
height, the approach may be continued as long as the ASA
status annunciates LAND 3, and LOC and GS are within
tolerances. The ASA monitors the required elements of the
CAT III airborne system.

GPS, RNAV (GPS), or RNAV (GNSS) - Approach Guide
LNAV & VNAV Modes

For approaches with inoperative equipment refer to QRH, Non-Normal Ops Info tab, RNAV Approach Equipment Requirements.

Airport temperature Confirm within limits

Autopilot Required in IMC

FMS approach procedure Select
Verify waypoints, altitude constraints and descent angle.

Approach RNP Set 0.3
POS REF Page 2/4. Expect VERIFY RNP FMC message.

GPS updating Confirm
POS REF page 2/4.

Minimums Set DA
If LNAV/VNAV minimums are published, they must be used. LPV
minimums are not authorized.

XTK error Monitor
PROG page 2/2.

VTK error Monitor by FAF
PROG page 2/2.

Brief missed approach plan if approach is discontinued prior to DA due to loss of navigation capability.

When cleared for the approach:

LNAV Select

When:

- established on a published segment of the approach, or
- vectored to a final approach course intercept heading and level at the active waypoint altitude, or
- cleared direct to an approach waypoint and level at that waypoint altitude:

MCP altitude Set
Set DA rounded up to the next highest 100 feet.

VNAV Select or verify VNAV PTH

Speed intervention Set

No later than 1,000 feet AGL and at least 300 feet below missed approach altitude:

Missed approach altitude Set
Set lowest initial level off altitude on missed approach procedure.

No later than 50 feet below DA:

Autopilot.....Disengage

Execute a missed approach with the approach lights or runway environment not in sight if any of the following occur:

- criteria listed in the Airway Manual, Ops Specs, IAP.
- VERIFY POSITION FMS message,
- UNABLE RNP EICAS message,
- GPS EICAS message (dual failure only),
- XTK error greater than 0.3,
- additionally, after the FAF with approach lights or runway environment not in sight:
 - VTK error exceeds +/- 50 feet, or
 - loss of VNAV PTH.

RNAV (RNP) - Approach Guide

LNAV & VNAV Modes

For approaches with inoperative equipment refer to QRH, Non-Normal Ops Info tab, RNAV Approach Equipment Requirements.

Airport temperature Confirm within limits

Autopilot Required in IMC

Autopilot required in IMC or whenever a segment of the approach features an RF leg, until visual contact with the runway can be maintained or upon arrival at the DA, whichever occurs first.

FMS approach procedure Select
Verify waypoints, altitude constraints and descent angle.

RNP Set by the IAF
Manually enter published RNP on POS REF Page 2/4 (no lower than 0.15). Expect VERIFY RNP FMC message.

GPS updating Confirm (2)
POS REF page 2/4. Confirm no L or R GPS EICAS advisory message displayed.

VOR and DME updating Inhibit
NAV DATA page.

DME/DME updating Inhibit (if required)
Only if required by Delta Special Pages.

Minimums Set DA
Use only Category D, or highest speed approach minimums.

Altimeters Check within 75 feet

XTK error Monitor
PROG page 2/2.

VTK error Monitor by PFAF/GP Intercept
PROG page 2/2.

Brief missed approach plan if approach is discontinued prior to DA due to loss of navigation capability.

When cleared for the approach:

LNAV Select

When:

- Established on a published segment of the approach, or
- Cleared direct to an approach waypoint and level at that waypoint altitude:

MCP altitude Set

Set DA rounded up to the next highest 100 feet.

VNAV Select or verify VNAV PTH

Speed Intervention Set

165 knots maximum or published lower airspeed past PFAF/
GP Intcpt.

No later than 1,000 feet AGL and at least 300 feet below missed approach altitude:

Missed approach altitude Set

Set lowest initial level off altitude on missed approach procedure.

No later than 50 feet below DA:

Autopilot Disengage

Conducting a missed approach:

**WARNING: Maintaining lateral track is paramount to
avoiding terrain or airspace conflicts, especially
when on an RF leg.**

If at or past the PFAF/GP Intcpt:

GA Select

LNAV Select and Verify

Note: LNAV will not engage below 400 feet RA.

Missed approach altitude Set

Autopilot/LNAV Confirm

Execute a missed approach with the approach lights or runway environment not in sight if any of the following occur:

- criteria listed in the Airway Manual, Ops Specs, IAP.
- VERIFY POSITION message appears,
- UNABLE RNP EICAS message,
- XTK error ≥ 0.2 nm (RNP 0.15 - 0.25), or ≥ 0.3 nm (RNP > 0.25),
- GPS EICAS message (dual failure only),
- additionally, after the PFAF/GP Intcpt with approach lights or runway environment not in sight:
 - loss of VNAV PTH
 - vertical path deviation exceeds +/- 50 feet.

ILS (GS Out), LOC, LOC (BACK CRS), LDA, VOR, or NDB - Approach Guide

LNAV, LOC, or B/CRS LOC & VNAV Modes

If the ground based navaid is out of service or compatible avionics is either not installed or not operational, the NDB, NDB/DME, VOR, or VOR/DME approach may be flown using RNAV procedures as long as one GPS is operational and the approach is authorized on the Delta Special Page (Green Page) or flight plan remark.

For RNAV approaches with inoperative equipment refer to QRH, Non-Normal Ops Info tab, RNAV Approach Equipment Requirements.

Autopilot Required in IMC

FMS approach procedure Select and verify

ILS (GS Out) approaches:

FAF Altitude - Modify, if necessary

Flight and Nav instruments Set

Localizer backcourse approaches - Set front course

Minimums Set DA/DDA

- Set approach chart MDA and use as a DA.
- Set a DDA (MDA + 50 feet) if flying a non-RNAV approach outside the United States and its associated territories.

Raw data and VTK error Monitor

VTK error - PROG page 2/2.

When cleared for the approach:

LNAV or LOC, or B/CRS then LOC Select

When:

- established on a published segment of the approach, or
- vectored to a final approach course intercept heading and level at the active waypoint altitude, or
- cleared direct to an approach waypoint and level at that waypoint altitude:

MCP altitude Set

Set DA/DDA rounded up to the next highest 100 feet.

VNAV Select or verify VNAV PTH

Speed intervention Set

No later than 1,000 feet AGL and at least 300 feet below missed approach alt:

Missed approach altitude Set

Set lowest initial level off altitude on missed approach procedure.

No later than 50 feet below DA or 100 feet below DDA:

Autopilot Disengage

Execute a missed approach after the FAF with the approach lights or runway environment not in sight if any of the following occur:

- criteria listed in the Airway Manual, Ops Specs, IAP.
- loss of VNAV PTH, or
- vertical path deviation exceeds +/- 50 feet.

Additional Considerations:

Non-localizer based approaches with raw data unavailable:

- confirm GPS updating (POS REF page 2/4),
- raw data monitoring not required,
- RNP set to 0.3,
- monitor XTK error,
- additionally, execute a missed approach if any of the following occur:
 - VERIFY POSITION FMC message
 - UNABLE RNP EICAS messages
 - GPS EICAS message (dual failure only)
 - Additionally, after the FAF with approach lights or runway environment not in sight:
 - XTK error greater than 0.3

ILS (GS Out), LOC, LOC (BACK CRS), LDA, VOR, or NDB - Approach Guide

LNAV, LOC, B/CRS LOC, or HDG SEL & V/S Modes

Autopilot Required in IMC

FMS approach procedure (if available) Select and verify
Approaches not in the database may be built.

Flight and nav instruments Set
LOC B/CRS Approaches - Set front course.

Minimums Set DDA
Set MDA + 50 feet.

Raw data Monitor

When cleared for the approach:

LNAV, LOC, B/CRS LOC, or HDG SEL Select

When:

- established on a published segment of the approach, or
- vectored to a final approach course intercept heading and level at the active waypoint altitude, or
- cleared direct to an approach waypoint and level at that waypoint altitude:

MCP altitude Set as required
Set next altitude constraint, or if no constraint, set DDA rounded up to the next highest 100 feet.

When approximately 0.2 nm from the descent point:

V/S Select
Set the descent rate or angle appropriate for the approach.

Speed Set

No later than 1,000 feet AGL:

Missed approach altitude Set
Set lowest initial level off altitude on missed approach
procedure.

No later than 100 feet below DDA:

Autopilot Disengage

Execute a missed approach after the FAF with the approach lights or
runway environment not in sight if any of the criteria listed in the Airway
Manual, Ops Specs, IAP occur.

Charted Visual Approach Guide (Procedure in FMS Database) LNAV & VNAV Modes

The following guidance supplements visual approach preparations. FMS guidance is an aid to promote more precise ground track and altitude control. Do not sacrifice outside visual vigilance while using FMS capabilities.

Delta Special Pages and
Attention All Users page Reference as applicable

Autopilot As desired

FMS approach procedure Select and verify

RNAV Visuals are normally coded in the FMS database as RNVV.

Charted Visual Approaches may include waypoints or reference points which differ by name from FMS coded waypoints.

RNVV Glidepath angles may exceed 3.0 degrees

When cleared for the approach:

LNAV Select

MCP altitude Set

Set TDZE/Rwy Threshold Elevation rounded up to the next highest 100 feet.

VNAV Select or verify VNAV PTH

Speed intervention Set

No later than 1,000 feet AGL:

Missed approach altitude Set as desired

Additional information:

If missed approach instructions are not published, straight-out guidance may be coded into the approach for crew convenience.

Circling Maneuver

Note: Do not use APP mode.

The following guidance supplements normal approach preparations and procedures for the type of approach to be flown.

Weather requirements Check

- Visibility - 3 miles (4800m) or published visibility for the highest circling speed category, whichever is higher.
- Ceiling - 1000 feet (300m) or the published HAA (height above airport) for the highest circling speed category, whichever is higher.

Autopilot Required in IMC

Minimums Set MDA
Set published MDA or airport elevation plus 1000 feet (300m),
whichever is higher.

When cleared for the approach:

LNAV, LOC, B/CRS LOC, or HDG SEL Select

MCP altitude Set
Set published MDA or airport elevation plus 1000 feet (300m),
rounded up to the next highest 100 feet.

At configuration point:

Landing gear and landing flaps Set
Aircraft should be fully configured for landing prior to FAF.

At FAF or descent point:

V/S Select
May be initiated 0.2 nm early.
Do not use APP mode as aircraft will not level off at MDA.

Speed Set

When level at the MDA (ALT HLD):

Missed approach altitude Set
Set lowest initial level off altitude on missed approach
procedure.

When needed to execute circling maneuver:

HDG SEL Select

No later than 50 feet below MDA:

Autopilot Disengage

Execute a missed approach if visual contact with the airport is lost.

Conducting a missed approach:

Use normal missed approach procedures except:

- Make the initial climbing turn towards the landing runway to reach the missed approach heading. Turn may be more than 180 degrees and not in the shortest direction.
- Maintain the missed approach flap setting until close in maneuvering is complete.
- Fly the published missed approach corresponding to the instrument approach procedure just flown until alternate instructions are received.

FMS utilization techniques:

- For situational awareness, consider selecting the landing runway on the DEPARTURES page, if different from the approach runway.

Radio Baro Minimum Chart

APPROACH TYPE	BARO	RADIO ADI
ILS TO CAT I	PUBLISHED DA	N/A
CAT II	AIRPORT ELEVATION	PUBLISHED RA
CAT II RA NOT AUTH	PUBLISHED DA	N/A
CAT III	AIRPORT ELEVATION	50'
STRAIGHT-IN (NON-ILS)	PUBLISHED MDA/DA OR DDA (MDA + 50')	N/A
CIRCLE TO LAND	HIGHER OF: PUBLISHED MDA OR ARPT ELEV + 1000'	N/A
VISUAL	APPROACH MINIMUMS (1)	N/A
(1) Set the approach minimums for the instrument approach used to back up the visual approach. If no instrument approach is available, set field elevation.		

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Supplementary Procedures

Introduction

Chapter SP

Section 05

General

This chapter contains procedures that are organized by system and covers:

- procedures (adverse weather operation, etc.) that are accomplished as required rather than routinely performed on each flight
- any first-flight-of-the-day test or other systems test
- guidance on lengthy operating procedures, and
- adverse weather procedures and guidance

Intentionally
Blank



Airplane General

Pre-Flight Cabin Inspection - Flights without Flight Attendants

For a flight without a Flight Attendant staff (ferry flight, test flight, delivery flight, training flight, etc.), the pilots must secure the cabin.

- Doors - Secured and at least 1L and 1R armed.
- Beverage carts - Stowed and locked in position.
- Galley (coffee pots, doors and drawers, etc.) - Secured.
- Overhead bins - Closed.
- Closets - Closed and locked.
- Lavatories - Inspect for general security; doors closed.

After block-in, pilots must disarm all doors and pass a thumbs up to the gate agent when the main entry door is ready to be opened.

Doors

Entry Door Closing

757

- Gust lock lever Release
- Door Close
 - Manually rotate the door aft and inboard to cover the entry.
- Door handle Rotate
 - Rotate forward to the closed position. The door moves outboard into position, latches, and locks.
- Mode select lever ENGAGE
 - Observe slide placard in view and SLIDE light illuminated.

Entry Door Closing

767-300

- Door Lower
 - Raise door slightly, push and hold uplatch release button, then lower door approximately 2 inches (5 centimeters). Then, release button and continue to lower door until closed.
 - Doors with electrical operating systems may be lowered electrically using the control switch.
- Door handle Down
 - Rotate to the down (flush) position.
- Arming Lever (interior only) SLIDE ARMED
 - While pushing arming lever release, position arming lever to SLIDE ARMED. Observe slide armed light illuminated, armed indicator in view, and Direct Visual Indication of girt bar lockdown is completely yellow.

Entry Door Opening

757

Mode select lever (interior only) DETACH

Observe slide placard out of view and SLIDE light extinguished.

Note: Escape slide and powered door opening is disarmed automatically when the door is opened from outside.

Door handle Rotate

Rotate aft to the open position. The door moves inboard to the cocked position.

Door Open

Manually rotate the door outboard and forward to open. The gust lock lever automatically engages and locks door in the open position.

Entry Door Opening

767-300

Arming Lever (interior only) SLIDE DISARMED

Position arming lever to SLIDE DISARMED. Observe slide armed light extinguished, armed indicator out of view, arming lever release button extended and girt bar lockdown indications show blank.

Note: Slide disarms automatically when the door is opened from outside.

Door handle Up

Rotate aft to the up position.

Door Raise

Raise the door until the uplatch is engaged.

Doors with electrical operating systems may be raised electrically using the control switch.

Flight Deck Access System Test

757 [AFM]

The following procedures must be accomplished prior to the first flight of the day:

Flight Deck Access System switch NORM
Switch down, guard down.

INDICATOR LIGHTS TEST switch Push on
Verify the AUTO UNLK and LOCK FAIL lights on door control
panel illuminate.

INDICATOR LIGHTS TEST switch Push off

With flight deck door open:

Flight deck door lock selector AUTO

Access code Enter

Press the ENT key.

Enter access code in the keypad.

Press the ENT key.

Verify the chime module sounds and the door control panel AUTO
UNLK light illuminates.

Flight deck door lock selector DENY

Verify the AUTO UNLK light extinguishes and red light on
keypad illuminates.

Flight deck door lock selector UNLKD

Verify the green light on keypad illuminates.

Flight Deck Access System switch OFF

Guard up, switch up.

Verify LOCK FAIL light illuminates on door control panel.

Flight Deck Access System switch. NORM

Switch down, guard down.

While on the flight deck side of door:

Flight Deck Door Close and lock

Push on door to verify door is locked.

Flight Deck Access System switch OFF

Guard up, switch up.

Decompression panels Check

Verify decompression panel pins (4 each) are fully engaged.

Flight Deck Access System Test

767-300 [AFM]

The following procedures must be accomplished prior to the first flight of the day:

INDICATOR LIGHTS TEST switch Push and hold
Verify the AUTO UNLK and LOCK FAIL lights on door control panel illuminate.

INDICATOR LIGHTS TEST switch Release

Flight deck door Open

Flight deck door lock selector AUTO

Flight deck door lock catch mechanism Push and hold
Depress and hold door lock catch mechanism, inside strike plate box on door jamb, to simulate a door closed condition.

Access code Enter

Press the ENT key.

Enter access code in the keypad.

Press the ENT key.

Flight deck door lock selector DENY, verify, then release

Verify red keypad LED illuminates for five seconds.

Verify door lock solenoid remains engaged (no audible click).

Verify AUTO UNLK light remains extinguished.

Verify no alert sounds.

Flight deck door lock catch Release

Note: The DENY mode will remain active until the flight deck door lock selector is positioned to UNLK.

Access code Enter

Press the ENT key.

Enter access code in the keypad.

Press the ENT key.

Verify alert sounds.

Verify amber keypad LED illuminates momentarily.

Verify AUTO UNLK light illuminates.

Flight deck door lock selector UNLK

Verify AUTO UNLK light extinguishes.

Verify green keypad LED illuminates.

Verify door lock solenoid disengages (audible click).

Note: The door lock solenoid will remain disengaged until the flight deck door lock selector is released.

Flight deck door lock selector Release

Electronic Flight Bag (EFB) Mount

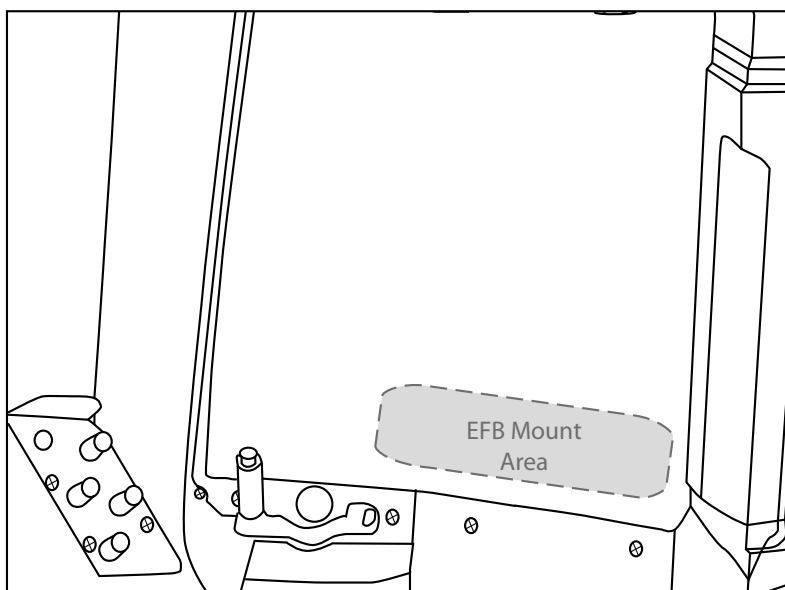
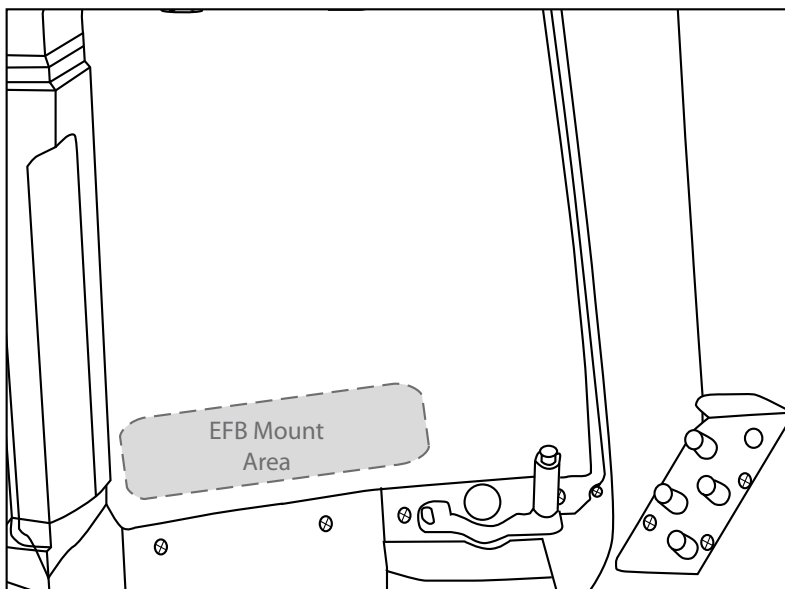
Note: Prior to the first flight of the day, the EFB mounting system must be installed/reinstalled to ensure the mount attachment is secure. During subsequent flights, mount security may be verified with a gentle tug. Reinstall the mount as required.

CAUTION: Do not place the EFB in direct sunlight on the glareshield.

Do not use any other mounting or securing system other than the provided approved system.

To secure the EFB mount in the aircraft:

- Ensure the side window and suction cups are clean. If necessary, wipe with pretreated lens/screen cloth or moist cloth.
- Sunshades (as installed) should be stowed prior to securing the mount.
- Ensure the locking levers are in the OFF position.
- Position the suction cups in the mounting zone indicated in the following diagrams.
- To remove trapped air, press each cup against the window until completely compressed.
- Move the locking levers to the ON position.
- Ensure the EFB and mount are free and clear of all flight controls, and do not restrict access to egress, tiller, oxygen mask, or line of sight.
- Squeeze the gray tabs together to expand the mounting tabs and insert the EFB into the mount.
 - If the EFB is in the portrait mode, the fixed tabs should be positioned at the bottom of the mount to prevent the EFB from slipping.
- Use caution when deploying sunshades with the EFB mount installed to avoid damage.



757 Flat Bed Crew Rest Seat Privacy Divider

Flat bed seat aircraft are equipped with a privacy divider that is located in the left hand forward business class closet. The divider is to be placed over the fixed divider between the pilot rest seat and the adjacent business class seat during rest periods.

The crew rest seat remains a Class 3 rest facility. Refer to the FOM, 3.2, Delta Crew Rest Facility Classification, for seat locations.



Operating Procedures

Preflight

For preflight, follow the guidance in NP.20, Interior Inspection - First Officer or Relief Pilot, for checking the pilot crew rest area.

Deploying

When deploying the privacy divider, remove it from the closet and slide it over the fixed divider.

Stowing

The divider must be stowed in the closet during taxi, takeoff and landing. To stow the divider, place it in the bracket inside the left hand forward business class closet.



767-300ER Pilot Crew Rest Seat Curtain

Operating Procedure

Preflight

For preflight, follow the guidance in Volume 1, NP.20, Interior Inspection - First Officer or Relief Pilot, for checking the pilot crew rest area.

Deploying

To deploy the curtain for rest, unsnap the curtain ties on the forward and aft curtain assemblies. Bring both halves together near the center of the aisle and overlap the forward curtain over the aft. The curtains can be secured together with five magnets embedded in the curtain edges. The inside of the forward curtain has white stitching that should be lined up with the inside of the aft edge. From inside of the facility with the curtain closed, lift up the small folded top edge of the curtain to cover the gap near the rail. Adjust and secure the velcro at the top to mitigate light.

Note: There is no interference with the curtain when opening and closing the overhead bins.

Stowing

To stow the curtain, start from the inside of the facility by folding down the top edge of the curtain. This part of the curtain is labeled "Fold Down To Stow". It is important this flap is folded down or the curtain will bunch at the top and will not fold and stow properly. After sliding both curtain halves against the sidewall, secure with upper and lower tie snaps.



Pilot Lower Lobe Crew Rest Compartment

1607-1613

Vestibule Entry

Normal Vestibule Entry is accomplished by the following procedure:

Door keyhole Depress

On the compartment door, depress the keyhole button beneath the handle.

Door handle Rotate

While keeping the keyhole depressed, turn the latch handle clockwise.

CAUTION: Be careful when opening the vestibule door. There is minimal clearance between the door and the FA jumpseat compartment.

Preflight Procedure

Check the vestibule and the PLLCR as follows:

Vestibule Check

Oxygen Bottle - Checked and stowed.

Crew Rest Compartment Check

Oxygen Bottle - Checked and stowed.

Fire extinguishers - Checked and stowed.

- Verify seals intact
- Verify green pop-out button present, or gauge needle in green band.

PBE (2) – Checked and stowed

Flashlight (1) - Checked and stowed

First Aid Kit (1) - Checked and stowed

Emergency Body Harness - Checked and stowed

LOW AIRFLOW HORN ARM/DISARM switch Check

Verify illuminated green and reads ARMED

If system is not ARMED, press switch to ARM.

Airflow System Additional Information

During normal operation, the system should remain armed at all times.

As part of normal operation, the LOW AIRFLOW alert may sound momentarily during aircraft power transfer or power down. It also may sound if both packs/recirc fans are not operating.

If low airflow is detected in the crew rest area:

An audible alert sounds on the AUX panel and the LOW AIRFLOW ALERT RESET switch will illuminate.

LOW AIRFLOW ALERT RESET switch Push

When RESET switch is pressed, the alert will shut off and the RESET light will extinguish. If low airflow alert continues, evacuate the facility.

Note: The airflow system in the Flight Attendant Crew Rest (FACR) is similar.

Communications

To make a call from the flight deck to the crew rest compartment:

PILOT REST CALL switch Press

A Hi chime in the crew rest compartment sounds and the Interphone Call Light/Switch in each bunk illuminates.

If there is no response from the compartment, calls can be attempted again after 5-second delays.

The PILOT REST CALL switch and both Interphone Call Light/Switches will remain illuminated until either Interphone Call Light/Switch is pressed.

To make a call from the crew rest compartment to the flight deck:

Interphone Call Light/Switch Press

A Hi chime in the flight deck sounds, the CABIN CALL FWD light on the Pilot Call Panel illuminates, and the EICAS CABIN CALL message will appear.

Windows

Flight Deck Window Closing

Window crank Rotate

Crank the window to the full closed position (the WINDOW NOT CLOSED placard is not visible and, the link arm assembly is approximately perpendicular to the lower track).

Note: It may be necessary to completely open the window prior to closing in order to reset the locking mechanism.

Window lock lever Rotate

Rotate the window lock lever forward to the locked position.

Pull on lock lever without depressing release button to ensure lock lever is secure.

Ensure the indicator at the top of window reads CLOSED.

Flight Deck Window Opening

Window lock lever Rotate

Rotate the window lock lever aft to the open position.

Window crank Rotate

Crank the window to the full open position (the WINDOW NOT CLOSED placard is visible).

Lights

Indicator Lights Test

757

INDICATOR LIGHTS TEST switch Push on
Verify all indicator lights in the flight deck, except lights in the fuel control and APU/engine fire switches illuminated.

INDICATOR LIGHTS TEST switch Push off

Indicator Lights Test

767-300

INDICATOR LIGHTS TEST switch Push and hold
Verify all indicator lights in the flight deck, except lights in the fuel control and APU/engine fire switches illuminated.

INDICATOR LIGHTS TEST switch Release

Emergency Equipment

Emergency Oxygen Use

Emergency oxygen should be used when necessary to provide positive pressure in the masks to prevent or evacuate contaminants. When positive pressure is not required, but contamination of flight deck air exists, 100% oxygen must be used. If prolonged use is required and the situation permits, oxygen availability should be extended by selecting normal flow. When oxygen use is no longer required, the oxygen compartment door with the Test/Reset switch must be closed and the Test/Reset switch pushed to restore normal boom microphone operation.

Oxygen Mask Test - B.E. Flexible Full Face O2 Mask

Note: Refer to the Aircraft Differences section for crew oxygen mask configuration.

Mask Stowed

Verify storage box doors closed.

Oxygen pressure Check

Verify 1,000 psi minimum is shown on the STATUS display.

Oxygen mask regulator selector Rotate to EMERGENCY

TEST / RESET switch Push and hold

White OXY ON flag in view.

Verify the yellow cross appears continuously in the flow indicator.
One crewmember must continue to hold the TEST / RESET switch
for 10 seconds.

Verify that the crew oxygen pressure does not decrease more than
100 psi.

If the oxygen cylinder valve is not in the full open position, pressure
can:

- decrease rapidly, or
- decrease more than 100 psi, or
- increase slowly back to normal.

TEST / RESET switch Release

White OXY ON flag removed from view.

Oxygen mask regulator selector Rotate to 100%

TEST / RESET switch Press and hold

White OXY ON flag in view.

The oxygen flow indicator (yellow) should appear until the mask is
fully pressurized, and then disappear.

Regulator operation should be audible during mask pressurization.

Note: If the oxygen flow indicator (yellow) remains visible, a system
leak has been detected.

TEST / RESET switch Release
White OXY ON flag removed from view.

Microphone Test

Audio Control Panel Set

BOOM / OXYGEN switch - OXY

INT MIC SELECT switch - Push

FLT / INT receiver volume - Set

Push-To-Talk (PTT) button..... Push and hold

While holding any PTT switch, tap the top of the oxygen mask to ensure mic feedback through the speaker.

BOOM / OXYGEN switch (audio control panel) BOOM

Oxygen Mask Test - EROS Rigid Full Face O2 Mask

Note: Refer to the Aircraft Differences section for crew oxygen mask configuration.

Oxygen Test and set

Select the EICAS STATUS display.

Oxygen mask – Stowed and doors closed

TEST AND RESET switch – Push and hold

Verify that the yellow cross shows momentarily in the flow indicator.

EMERGENCY/TEST selector – Push and hold

Each crewmember must continue to hold the TEST AND RESET switch and push the EMERGENCY/TEST selector, and verify that the yellow cross shows continuously in the flow indicator.

One crewmember must continue to hold the TEST and RESET switch and push the EMERGENCY/TEST selector for 10 seconds.

Verify that the crew oxygen pressure does not decrease more than 100 psi.

If the oxygen cylinder valve is not in the full open position, pressure can:

- decrease rapidly, or
- decrease more than 100 psi, or
- increase slowly back to normal

Release the TEST AND RESET switch and the EMERGENCY/TEST selector. Verify that the yellow cross does not show in the flow indicator.

Normal/100% selector – 100%

Crew oxygen pressure – Check EICAS

Verify 1,000 psi minimum is shown on the STATUS display.

Microphone Test

Audio Control Panel Set

BOOM / OXYGEN switch - OXY

INT MIC SELECT switch - Push

FLT / INT receiver volume - Set

Push-To-Talk (PTT) button..... Push and hold

While holding any PTT switch, tap the top of the oxygen mask to ensure mic feedback through the speaker.

BOOM / OXYGEN switch (audio control panel) BOOM

Intentionally
Blank



Air Conditioning Packs

Ground Air Conditioning Use

Before connecting ground air conditioning:

APU Bleed Air switch Off

Pack Control selectors OFF

Prevents pack operation if bleed air is supplied to airplane.

RECIRCULATION FAN switch(es) OFF

Allows ground air conditioning to operate at maximum efficiency.

757

Do not turn off L RECIRC FAN.

Note: For hot weather considerations, refer to SP. 16, Adverse Weather, Hot Weather Operations.

After disconnecting ground air conditioning:

Pack Control selectors AUTO

RECIRCULATION FAN switch(es) ON

Packs Off Takeoff

Some takeoffs require Packs Off (POF) for increased performance or to prevent EGT exceedance.

Note: For 757 aircraft operating at high altitude airports, to maintain adequate cabin pressurization above 10,000 feet, consider accomplishing the APU to Pack Takeoff procedure.

Accomplish the following procedure when directed by AWABS:

Before takeoff:

Pack control selectors (both) OFF

Both Packs should be positioned to OFF just prior to commencing the takeoff roll.

Note: An L or R ENG BLEED OFF advisory light may illuminate during takeoff roll due to high engine power setting combined with low bleed air demands. This indication is acceptable for Packs Off Takeoffs.

After takeoff:

Note: If engine failure occurs, pack control selectors should remain OFF until reaching 1,500 feet AFE or until engine-out clean-up altitude, whichever is higher.

Pack control selector (one only) AUTO

After engine thrust is reduced from takeoff, position one pack selector to AUTO.

Pack control selector (remaining pack) AUTO

When cabin pressurization stabilizes, position remaining pack control selector to AUTO.

APU to Pack Takeoff

757

This procedure is used to make a takeoff using no bleed air from the engines. Air for left pack operation is supplied from the APU.

Prior to takeoff, ensure the APU ON performance penalties listed on the Flight Plan Addendum are manually applied unless automatically applied by an existing MEL item.

CAUTION: This procedure is not allowed if icing conditions exist for taxi or takeoff.

After engine start:

APU ON
Leave APU running.

Before takeoff:

Isolation switch OFF
Left engine bleed air switch OFF
APU bleed air switch ON
Right engine bleed air switch OFF
LEFT and RIGHT PACK selectors AUTO
Right PACK OFF light will illuminate.

After takeoff:

Note: If an engine failure occurs, engine bleed air switches should remain OFF until reaching 1,500 feet AFE or until engine-out clean-up altitude, whichever is higher.

After engine thrust is reduced from takeoff power:

Right engine bleed air switch ON
Wait for right PACK OFF light to extinguish.
APU bleed air switch OFF

After cabin rate of climb stabilizes:

Left engine bleed air switch ON
APU OFF

Landing Airport Elevation Between 8,000 Feet and 9,500 Feet

Note: Refer to Limitations chapter if operating above 8,400 feet pressure altitude.

Preflight Procedure - Pilot Monitoring:

Landing Altitude selector 5000 FT
To maintain passenger comfort.

Descent Procedure:

Landing Altitude selector Set
Set to destination altitude.

Note: CABIN ALTITUDE warning may occur with lower than standard barometric conditions.



Supplementary Procedures

Anti-Ice, Rain

Chapter SP

Section 3

Ice Protection

Ice protection is provided by the airplane anti-ice systems.

Anti-Ice Use

Requirements for use of anti-ice and operational procedures for engine and wing anti-ice are located in Supplementary Procedures, Adverse Weather Section SP.16.

Windshield Wiper Use

CAUTION: Do not use windshield wipers on a dry window.

Windshield Wiper selector (as required) LOW/HIGH

Intentionally
Blank

Supplementary Procedures

Automatic Flight

Chapter SP

Section 4

AFDS

AFDS Operation

If Flight Director (F/D) operation is desired:

FLIGHT DIRECTOR switches ON

On ground, observe flight director command wings level and 8° pitch up and flight mode annunciations display TO, TO, FD.

In-flight, observe flight director command and flight mode annunciations display vertical speed (V/S) and heading hold (HDG HOLD) if no autopilot in command (CMD), or display existing autopilot modes if any autopilot in command (CMD).

AFDS Mode(s) Engage as desired

Observe flight director command and selected AFDS mode(s) are displayed.

If the autopilot is desired:

Command switch Engage

Observe flight mode annunciations display V/S and HDG HOLD, or existing AFDS modes if flight director on and not in takeoff or go-around mode.

(If CWS installed)

If the autopilot control wheel (CWS) steering is desired:

Control wheel steering switch Engage

Observe flight mode annunciation displays CWS.

Note: Do not use CWS for takeoff or landing flare maneuver.

Heading Hold

Rolls wings level and maintains the heading that exists at the time the wings become level.

Heading Hold switch Engage

Observe HDG HOLD displayed in the roll mode annunciator.

Heading Select

- Heading selector Set as desired
- Heading selector switch Push
Observe HDG SEL is displayed in the roll mode annunciator.
- Bank Limit selector Set as desired

Altitude Hold

- Altitude Hold switch Engage
Verify ALT HOLD is displayed in the pitch mode annunciator.

Flight Level Change, Climb or Descent

- Altitude selector Set
Set level off altitude in the altitude window.
- Flight Level Change switch Engage
Observe SPD in the pitch mode annunciator and FLCH displayed in the autothrottle mode annunciator.
- IAS/MACH selector Set
Set the desired speed in the speed window.
- Climb Thrust Reference Mode Select switch (if required) Select
If climb initiated, select climb reference N1 or EPR, as appropriate.

Vertical Speed, Climb or Descent

Altitude selector Set

Set level off altitude in the altitude window.

Vertical Speed switch.....Engage

Observe V/S displayed in the pitch mode annunciator.

Note: The vertical speed mode does not provide automatic low speed protection and permits flight away from selected altitude. For level-off protection, always select new level-off altitude prior to engaging vertical speed mode.

Vertical Speed selector.....Set

Set desired rate in vertical speed window.

Climb Thrust Reference Mode Select switch (if required)..... Select

If climb initiated, select climb reference N1 or EPR, as appropriate.

Speed Intervention

IAS/MACH selector Push

Verify IAS/MACH window opens.

IAS/MACH selector Rotate

Set the desired speed in the IAS/MACH window.

To resume FMC speed schedule:

IAS/MACH selector Push

Verify IAS/MACH window blanks.

Note: Speed intervention may cause loss of VNAV PTH during descent, resulting in a possible violation of a crossing restriction altitude.

Intermediate Level Off

Altitude selector Rotate
Set desired altitude in the altitude window.

At MCP altitude:

Verify ALT HOLD is displayed in the pitch mode annunciator.

To resume climb/descent:

Altitude selector Rotate
Set desired altitude in the altitude window.

If using VNAV:

VNAV switch Select
Verify pitch mode annunciation is VNAV SPD or VNAV
PTH as appropriate.

If using Flight Level Change:

Flight Level Change switch Select
Verify pitch mode annunciation is SPD and autothrottle
annunciation is FLCH.

IAS/MACH selector Rotate
Set the desired speed in the IAS/MACH window.

Autothrottle Operation

Autothrottle ARM switch A/T ARM

If N1 or EPR mode (as appropriate) is desired:

Thrust Reference Mode Select switch (As desired) Select
Select desired reference N1 or EPR, as appropriate.

N1 or EPR switch (as appropriate) Engage
Observe N1 or EPR, as appropriate, displayed in the autothrottle
mode annunciator.

If Speed mode desired:

**CAUTION: In some cases, selecting the SPD mode will result in
the V/S window opening and resulting in a possible
climb or descent.**

Thrust Reference Mode Select switch (As desired) Select
Select desired reference N1 or EPR, as appropriate.

Speed switch Engage
Observe SPD displayed in the autothrottle mode annunciator.

IAS/MACH selector Set
Set the desired speed in the IAS/MACH window.

Autoland Status Annunciator Test

AUTOLAND STATUS ANNUNCIATOR TEST switch 1 Push
Observe LAND 3 and NO LAND 3 in view.

AUTOLAND STATUS ANNUNCIATOR TEST switch 2 Push
Observe LAND 2 and NO AUTOLAND in view.

Autoland Status Annunciator Reset

AUTOLAND STATUS ANNUNCIATOR
PUSH/RESET switch Push

Note: Flight in turbulence can cause a NO LAND 3 annunciation that does not reset. If this occurs during a climb, cruise, or descent before selecting APP, disengage the autopilot and turn off both flight directors before resetting the ASA. The flight directors can then be turned back on and the autopilot re-engaged.

Autoland Documentation

When an autoland has not been recorded within a thirty-day period, the MEL ITEMS FOR SHIP NUMBER section of the flight release will contain an “S” item as follows:

- S22-00-00A ACCOMPLISH LLM AUTO LANDING

If the autoland was attempted and unsuccessful, make a logbook write-up. Include as much pertinent information as possible.

Accomplish an autoland and document in ACARS via the following procedures.

Guidance for Satisfactory/Unsatisfactory Autoland

Guidance for identifying and documenting autolands is found in the MDM, TOPP Dispatch Documents Section 50-10-05, Aircraft Log System, Log Sheet.

Procedures

ACARS-601

From the ACARS MENU:

SUMMARY ARR DATA Select

On the ARRIVAL page:

AUTOLAND Select

On the AUTOLAND page:

CATEGORY Toggle

Toggle 1, 2 or 3 (the actual weather conditions) into field.

SUCCESSFUL Toggle

Toggle YES or NO into the field. Yes is default.

RUNWAY Enter

Enter landing runway into field.

REMARKS Enter

Note: EDIT TEXT entry/edit available if autoland was not successful.

The data on the ARRIVAL page must be entered within seven minutes of the “IN” time or the data will be lost.

ACARS-501

Reference SP.5, Communications, Postflight, FLT SUMMARY page 2/2.

Intentionally
Blank

Supplementary Procedures
Communications**Chapter SP**
Section 5

Cockpit Voice Recorder Test

**601-699, 6700-6717, 6801-6818, 6901-6904,
121-199, 1200-1201, 1401-1401, 1501-1506, 1601-1613, 1701-1708**

Voice Recorder Test switch Push

Observe monitor indicator needle moves to the green band. A tone may be heard with headset plugged into headset jack. Test will last approximately 5 seconds.

5635-5657, 5801-5816, 6819-6823

Voice Recorder Test switch Push

Observe Status light flashes once. A tone may be heard with headset plugged into headset jack on the voice recorder panel.

**Aircraft Communication Addressing and Reporting System
(ACARS -501) Collins Touchscreen or FMS MCDU****Pre-Departure Clearance**

The flight crew shall manually verify (compare) the filed flight plan versus the digital pre-departure clearance and shall initiate voice contact with Air Traffic Control if any question/confusion exists between the filed flight plan and the digital pre-departure clearance.

Digital-Automatic Information Service (D-ATIS)

The flight crew shall verify that the D-ATIS altimeter setting numeric value and alpha value are identical. The alpha value is the numeric altimeter setting spelled out (i.e., two niner niner two). This will be depicted on the ACARS ATIS message. If the D-ATIS altimeter setting altimeter numeric value and alpha values are different, the flight crew must not accept the D-ATIS altimeter setting.

Oceanic Clearances

The flight crew shall manually verify (compare) the filed flight plan versus the digital oceanic clearance and shall initiate voice contact with Air Traffic Control if any question/confusion exists between the filed flight plan and the digital oceanic clearance.

AWABS (WDR)

The flight crew shall verify that the flight number, date, and release number on the WDR match the corresponding information on the flight plan.

Company Communications Sequence

The COMMUNICATIONS SEQUENCE chart depicts DATA LINK functions that are currently in effect for Delta Air Lines. The chronological sequence in which DATA LINK messages should be sent is shown as a function of flight phase. The messages that appear above the profile are ROUTINE and should be sent whenever appropriate on every flight. The messages below the profile are NON ROUTINE and should be sent as needed.

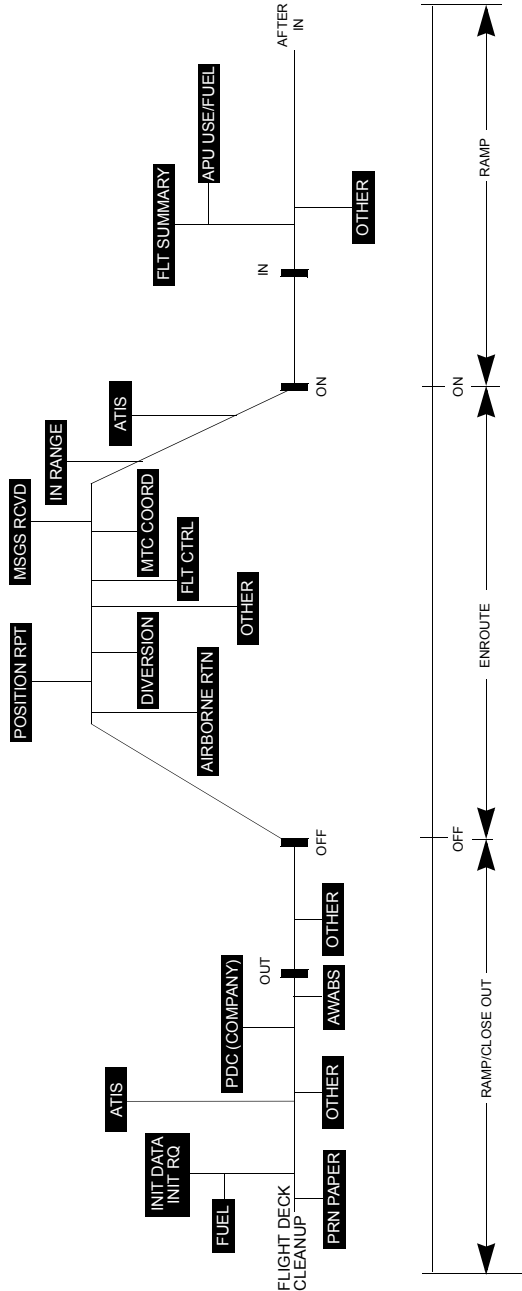
Messages are delivered to the Flight Control dispatcher's queue and are also directly processed by Flight Following. This direct processing of DATA LINK messages results in system wide updates in our host computers.

Communications Sequence Chart

COMPANY COMMUNICATIONS

ABOVE PROFILE LINE – ROUTINE
BELOW PROFILE LINE – NON ROUTINE

NOTE: All items shown on MISC MENU and DOWNLINKS MENU (except CAL-SEL) are operative at any time.

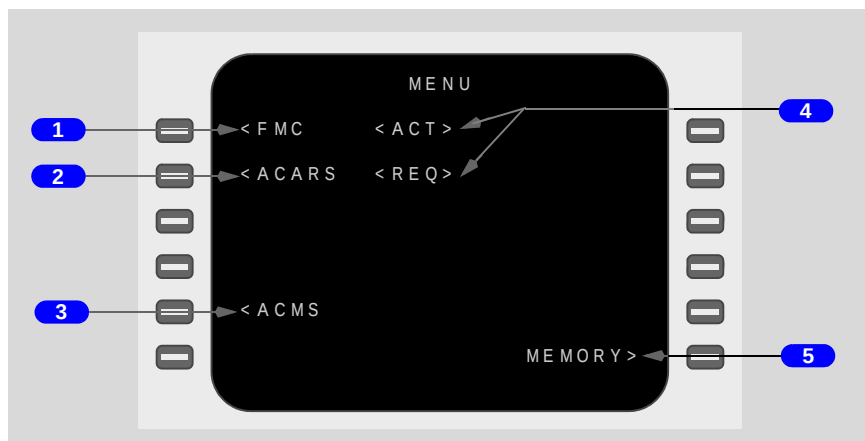


ACARS Control Through MCDU

Push the line select key adjacent to the <ACARS prompt to call up the ACARS Main Menu Page. From this page all ACARS functions may be accessed, such as pre-flight initialization, systems status checks, ACARS radio control, message status or display, printer functions, and ACARS configuration. ACARS may be used on one MCDU at a time.

Menu Page

The MENU page allows access to systems which are controlled with the MCDU.



1 FMC

Push – Connects FMC to MCDU.

2 ACARS

Push –

- activates MCDU control of ACARS
- displays ACARS page

3 ACMS (Airplane Condition Monitoring System)

As installed -

- Used by Maintenance

4 MCDU Status

- <ACT> – indicates system currently controlling MCDU
- <REQ> – indicates inactive MCDU function requiring pilot action
- blank – indicates function is not selected or requiring action

5 MEMORY (not displayed while airborne)

Push – displays maintenance memory page, providing access to computer memory for maintenance while the airplane is on the ground

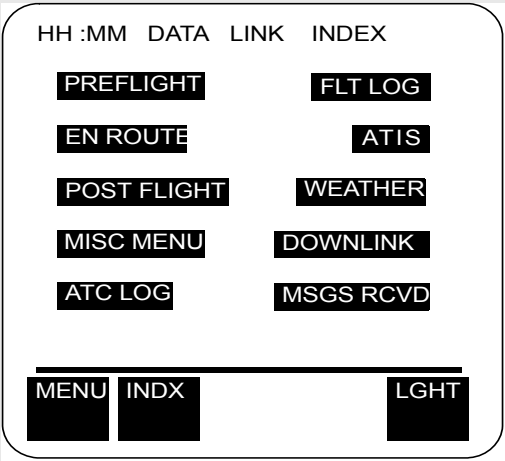
Menu Layout

This section provides general usage information and menu layouts for operating ACARS. The system is interactive, and methods for using it are consistent for all messages. With some experimentation and use, it will become simple to use each feature.

Ground support for some ACARS functions is still in development and therefore these functions should not be used. Refer to the DATA LINK INDEX menu tree on the next page for operational functions. If in doubt about the status of an operational message, use normal company radio procedures.

Reports can be accessed through the DATA LINK INDEX page shown below.

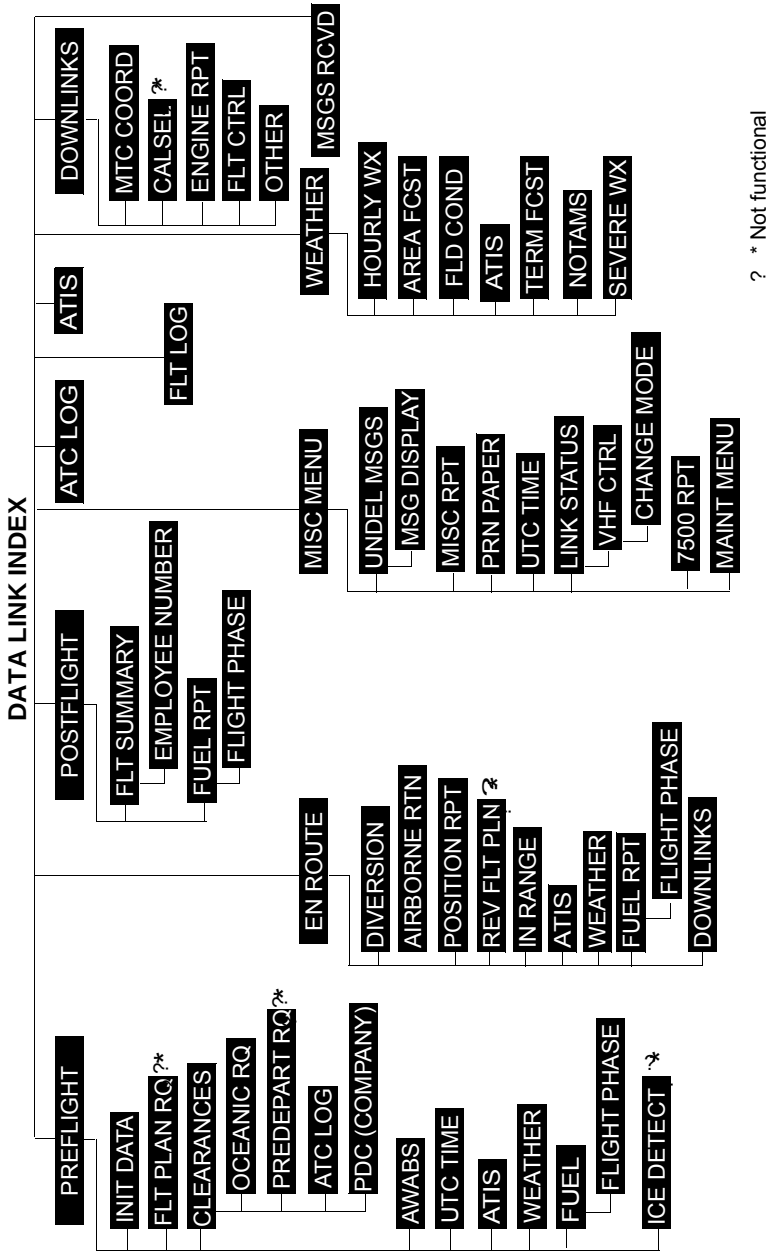
Touchscreen



FMS MCDU


Refer to the following Menu Layout Chart for the ACARS Data Link Index menu/submenu layout. The chart assists the flight crew in locating the proper menus and pages for transmission of desired/required reports.

Menu Layout Chart



Advisory Messages

Alert Advisories

Alert advisories appear on the MCDU signifying that either a condition requires attention, a function is available, or an uplink has been received. Selecting the advisory will access the required menu. The advisories are listed below in order from highest to lowest priority.

FAIL	Internal failure of MU. Refer to the ACARS INOP Non-Normal Checklist in the QRH.
POWER	Power interruption resulting in loss of initialization data.
SELCAL	SELCAL uplink message received.
ATC MSG	ATC uplink message received.
DEPT CL	ATC predeparture clearance message received.
MESSAGE	Non-ATC uplink message received.
INIT	Initialization data incomplete.
DATAMD	Datalink attempted with ACARS in VOICE mode or ACARS in VOICE mode for greater than 105 seconds.
ATIS	ATC ATIS message received and not viewed.
INRANGE	Alert to send the In Range Report.
SUMMARY	Summary Report has not been sent.
PAPER	Printer is out of paper.

Informational Advisories

Informational advisories appear on the MCDU indicating system status. The advisories are listed below in order of priority.

IN PROG	Message is actively being sent.
UTC OK	UTC TIME updated by uplink.
VOICE	VHF is in voice mode.
NO COMM	No DATA LINK is available.
XMIT	Indicates data being transmitted by ACARS.
XNNN.NN	Indicates the current mode of the VHF Transceiver and the frequency being tuned. The mode is represented by a single character preceding the frequency as shown below: • ‘V’ - VHF is currently being used for voice communication. • ‘D’ - VHF data link to ground has been established on a network base frequency. • ‘A’ - VHF data link to ground has been established on an autotuned frequency. • ‘S’ - No VHF data link has been established and the system is scanning frequencies searching for a ground network service provider. Although this informational advisory message is the lowest priority, it is the most often displayed.

Note: If the DATA LINK is functioning normally in the DATA mode, there will be no advisory shown.

Preflight

INIT DATA page

ACARS mode DATA

Ensure NO COMM is not displayed.

Confirm UTC time is correct.

PREFLIGHT Select

INIT DATA Select

The following page will be displayed.

Touchscreen

The screenshot shows the 'HH :MM INIT DATA' touchscreen interface. It features two columns of input fields and several action buttons. Numbered callouts (1-9) point to specific elements:

- 1** points to the 'FLT NO' input field (four digits).
- 2** points to the 'ORIG' input field (four digits).
- 3** points to the 'FOB' input field (four digits with a dash).
- 4** points to the 'GW' input field (four digits with a dash).
- 5** points to the 'DATE' input field (two digits).
- 6** points to the 'DEST' input field (four digits).
- 7** points to the 'FUEL BOARDED' input field (four digits with a dash).
- 8** points to the 'ETE' input field (two digits, colon, two digits).
- 9** points to the 'INIT RQ' button.

Other visible elements include 'PRINT' and 'RETURN' buttons in the center, and 'MENU', 'INDX', and 'LGHT' buttons at the bottom.

FMS MCDU

The diagram illustrates the FMS MCDU interface with the following fields and input buttons:

- 1** FLT NO (Left of the field)
- 2** ORIG (Left of the field)
- 3** FOB (Left of the field)
- 4** GW (Left of the field)
- 5** DATE (Right of the field)
- 6** DEST (Right of the field)
- 7** FUEL [] (Right of the field)
- 8** ETE (Right of the field)
- 9** INIT RQ* (Right of the field)
- * PRINT (Left of the field)
- < RETURN (Left of the field)
- MESSAGE* (Right of the field)
- HH: MM (Bottom center)

1 FLT NO

Automatically updates when INIT RQ selected, or may be manually entered. Ensure correct flight number is displayed as a 4-digit identifier, e.g., "DAL31" will be "0031".

2 ORIG

Automatically updates when INIT RQ selected, or may be manually entered.

3 FOB (Fuel On Board)

Enter fuel on board (1,000 pound increments). Obtained from aircraft fuel gauges.

4 GW

Enter manually, if required.

5 DATE

Automatically updates when INIT RQ selected, or may be manually entered.

6 DEST

Automatically updates when INIT RQ selected, or may be manually entered.

7 FUEL BOARDED

Enter manually. This is the amount of fuel listed on the fuel service record.

Note: Enter 0 in this field if receiving an Electronic Fuel Service Record (EFSR). This will allow for ACARS to send OUT times in a timely fashion.

8 ETE

Enter manually.

9 INIT REQ

Automatically updates FLT NO, DATE, ORIG, and DEST.

I

ATIS

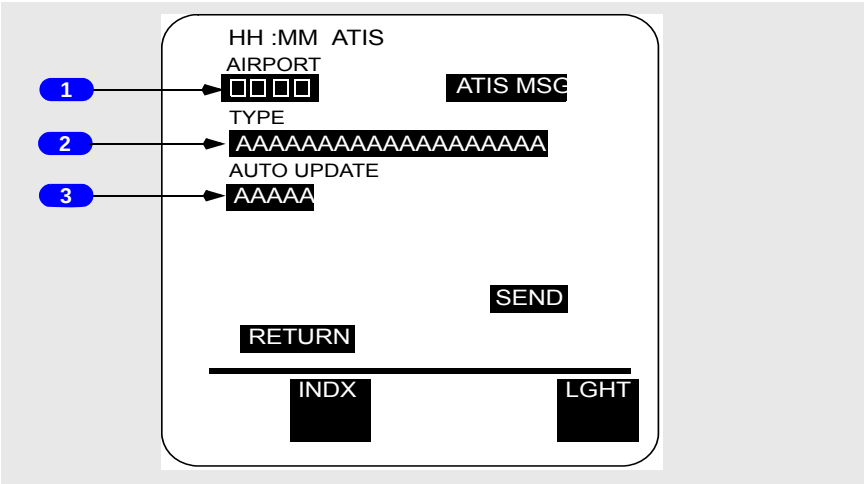
PREFLIGHT Select

ATIS Select

This page allows request of digital ATIS information, when provided by airport.

Note: Availability of digital ATIS is indicated on airport diagrams (10-9 Jeppesen plate) by “D-ATIS” in the “ACARS” communications block.

Touchscreen



FMS MCDU



1 AIRPORT

The AIRPORT field defaults to departure airport prior to “OFF” time, then defaults to arrival airport after “OFF” time. If diversion page is transmitted with an airport other than planned arrival airport, the default will be the diversion airport.

2 TYPE

The TYPE field allows selection of Departure, Arrival, Departure/Arrival (used in conjunction with Auto Update Mode), and Enroute Information Services weather products.

3 AUTO UPDATE

The AUTO UPDATE field allows enabling/disabling of automatic ATIS update feature.

- Sending an ATIS request with START in this field enables the function; sending a request with STOP disables the function
 - When STOP is requested, one more ATIS report will be received, and then the AUTO function is disabled.
- Displays an “ATIS” prompt every time a new ATIS is transmitted at the selected airport
- Selection of Arrival or Departure ATIS is automatic, and is dependent on “OFF” time.

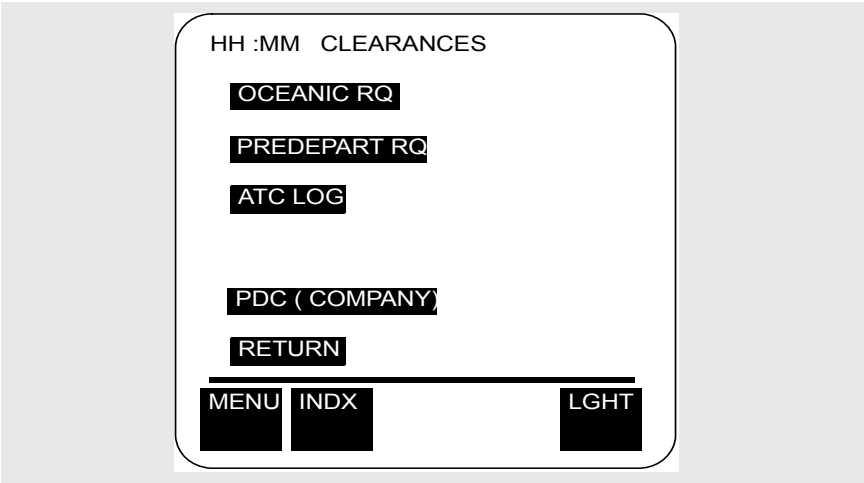
Pre-Departure Clearance

PREFLIGHT Select

CLEARANCES Select

The following page will be displayed.

Touchscreen



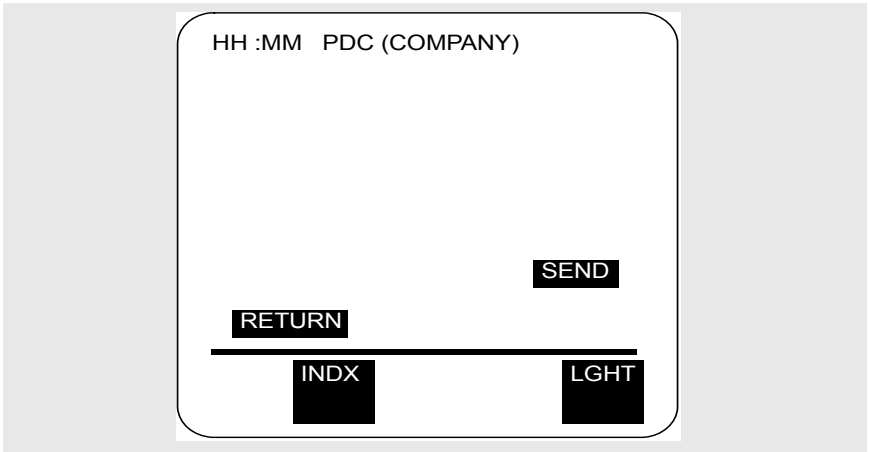
FMS MCDU



PDC (COMPANY) Select

Selecting PDC (COMPANY) causes a delivery request message to be readied for downlink.

Touchscreen



FMS MCDU



SEND Select

AWABS (WDR) Update

If necessary to update the WDR:

- DATA LINK INDEX Select
- PREFLIGHT Select
- AWABS Select

The following page (page 1/2) will be displayed.
Fill in each field as described below.

Touchscreen

1

2

3

HH :MM AWABS

SN / RWY / CONT

FC / CC / YC

TOLERANCE

PRINT

RETURN

MENU

INDX

PREV

NEXT

LGHT

1 / 2

TEMP

WIND (DIR / VEL)

ALTIMETER

4

5

6

FMS MCDU

1

2

3

ACARS - AWABS

SN / RWY / CONT

/

FC / CC / YC

[] / [] / []

TOLERANCE

| - -

* PRINT

< RETURN

HH: MM

1 / 2

TEMP

[] / F

WIND (DIR / VEL)

[] / []

ALTI METER

[]

4

5

6

1 SN/RWY/CONT (Mandatory)

The following fields (boxed fields) on AWABS page 1/2 are Mandatory entries.

- SN (Sequence Number) - is reserved for future use. Enter the digits 88 in order to satisfy ACARS requirements.
- RWY (Runway identifier) - Enter the desired takeoff runway. AWABS data will be sent for this runway and the next two authorized intersections, if available. If an intersection code is entered, only data for that position will be generated.

Examples include:

- 26R - 88/26R/D

Data will be sent for 26R and the next two intersections

- 26L-E13 - 88/26L-E13/D*

Data will only be sent for 26L at taxiway E13

* MCDU ACARS is unable to accept a dash (-) character. An alternative method is to obtain all coded positions for a specific airport by requesting takeoff data for a runway which does not exist (ex: 88/99/D). When this method is used, the alphabet letter associated with the runway or intersection that is desired may be used in lieu of the runway or intersection code (ex: E corresponds to the intersection 26R-E13. Enter 88/E/D.)

- If the runway or taxiway intersection is not recognized, the system will uplink a message with a list of possible takeoff positions.
- CONT (Contamination) - The runway contaminant condition you desire. Choices are:

D	Dry (default entry)
W	Wet
I	Icy
Q	Quarter Clutter (25 CTR)
H	Half Clutter (50 CTR)

If you are overweight for the requested contaminant, you will receive a message uplink advising you of this, but you will not receive a WDR uplink.

Note: The following items (2 through 6) are optional and will automatically populate when the data is entered for item 1.

2 FC/CC/YC (Optional)

Passenger count. Enter only changes from the existing WDR passenger distribution. Refer to WDR to determine class of service.

Examples:

- To change YC from 20/00/200 to 20/00/210, ENTER / /210
- To change FC from 20/00/200 to 25/00/200, ENTER 25/ /

3 TOLERANCE (Optional)

Passenger/Cargo tolerance. Choices are “OFF”, “ON”, and “---”.

- “---” (default) will leave tolerance the same as it was on the latest WDR
- “OFF” forces the tolerance off
- “ON” forces tolerance on.

4 TEMP (Optional)

Current temperature in degrees Fahrenheit (default) or Celsius (C).

5 WIND (DIR/VEL) (Optional)

Use 360 for North. Range of directions is 001 - 360.

6 ALTIMETER (Optional)

Altimeter setting. Any entry greater than 2000 is considered inches of mercury (in HG). Any entry less than or equal to 2000 is considered Hectopascals (hPa).

AWABS (WDR) Update - continued (Page 2/2)

After completing the required entries on AWABS page 1/2, you must move to page 2/2 in order to access the SEND prompt.

NEXT Select

The following page will be displayed.

Note: All fields on AWABS page 2/2 are for future use and should be left blank.

Touchscreen

HH:MM AWABS 2 / 2
C GO - FUEL E1 INC ADJ ZFW
- - - - - / - - - - -
C GO - FUEL MEL CDL
- - - - - / - - - - -

PRINT SEND
RETURN

MENU INDX PREV NEXT LGHT

FMS MCDU

ACARS - AWABS 2 / 2
CGO - FUEL E1 INC ADJ ZFW
[] / [] []
CGO - FUEL E2 MEL CDL
[] / [] []

*PRINT
<RETURN MESSAGE*
HH:MM

SEND Select

En Route

Position Report

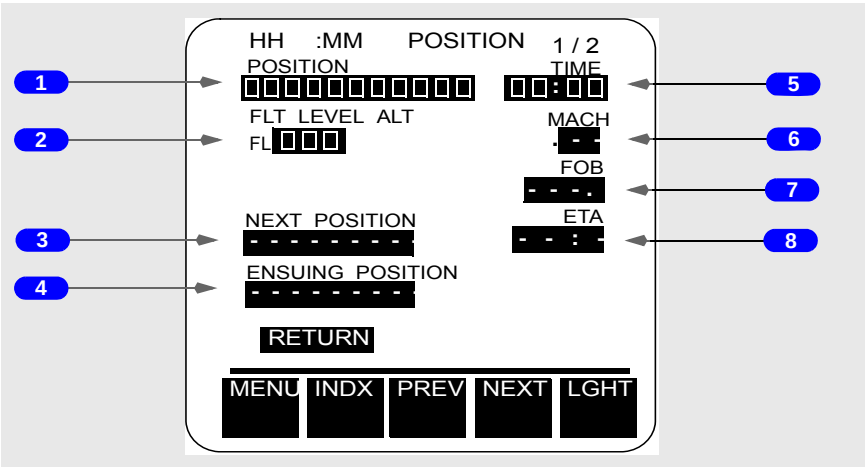
Access the EN ROUTE page from the DATA LINK INDEX page.

EN ROUTE Select
POSITION RPT Select

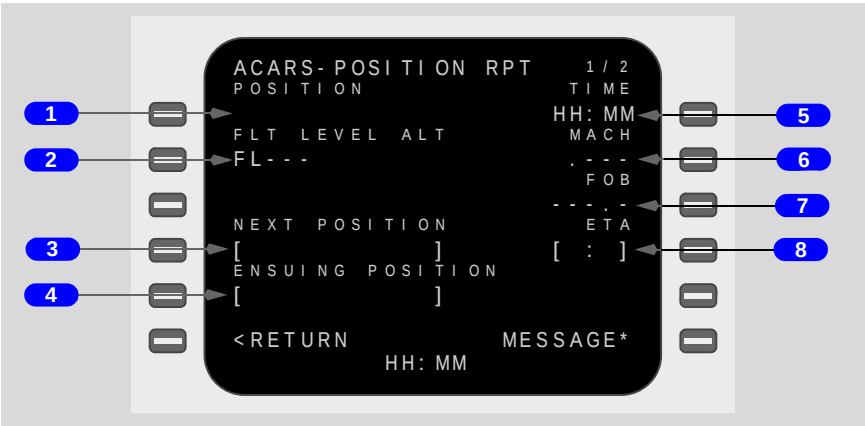
This report consists of 2 pages, the second of which can be accessed through the use of the PREV or the NEXT prompt.

The following page (page 1/2) will be displayed.

Touchscreen



FMS MCDU



1 POSITION

Enter report point (**DAL POSN RPT**) identifier from the flight plan.

2 FLT LEVEL ALT

Verify/enter the current three-digit flight level.

3 NEXT POSITION

- If NEXT POSITION and ETA are entered, they will automatically move to POSITION and TIME for the next POSITION RPT once SEND is pressed.
- Partially completed pages will retain entered data until report is sent or the end of the flight.

4 ENSUING POSITION

Enter fix name as required.

5 TIME

Verify/enter actual reporting point UTC arrival time.

6 MACH

Verify/enter mach number.

7 FOB

Verify/enter FMC-calculated fuel on board.

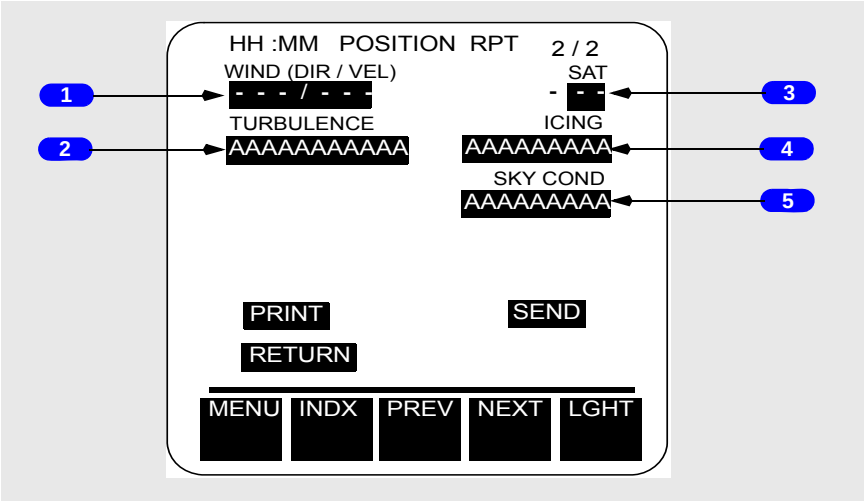
8 ETA

Enter estimated time of arrival at next reporting point from FMC LEGS page or PROGRESS page.

Go to page 2 after entering information on page 1.

Position Report - continued (Page2/2)

Touchscreen



FMS MCDU



1 WIND

Verify/enter direction and velocity.

2 TURBULENCE

Touch to scroll through selections and select one of the following:

SMOOTH	LT CHOP	MOD CHOP	SEV TURB
	LT TURB	MOD TURB	EXT TURB

3 SAT

Verify/enter temperature.

4 ICING

Touch to scroll through selections and select one of the following:

NONE	TRACE	MODERATE
	LIGHT	SEVERE

5 SKY COND

Touch to scroll through selections and select one of the following:

CLEAR	BROKEN	UNDERCAST	BWTN LAYER
SCATTERED	OVERCAST	IN CLOUD	CIRRUS

Note: Select SEND to downlink report before leaving second page.

In Range

Access the EN ROUTE page from the DATA LINK INDEX page.

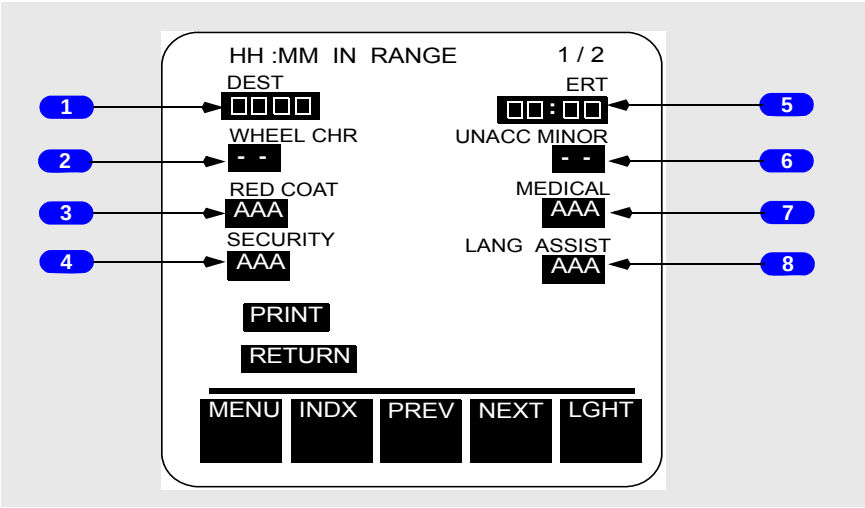
EN ROUTE Select

IN RANGE Select

This report consists of 2 pages, the second of which can be accessed through the use of the PREV or the NEXT prompt. R

The following page (page 1/2) will be displayed.

Touchscreen



FMS MCDU



1 DEST

Automatically fills in using information from INIT DATA or DIVERSION pages (if report was sent).

2 WHEEL CHAIR

Enter total number of wheel chairs required at destination.

3 RED COAT

Toggle YES or NO.

4 SECURITY

Toggle YES or NO.

5 ERT

Automatically fills in using information from INIT DATA or DIVERSION pages (if report was sent).

6 UNACC MINOR

Fill in only if more than what was listed in Flight Attendant Departure Report.

7 MEDICAL

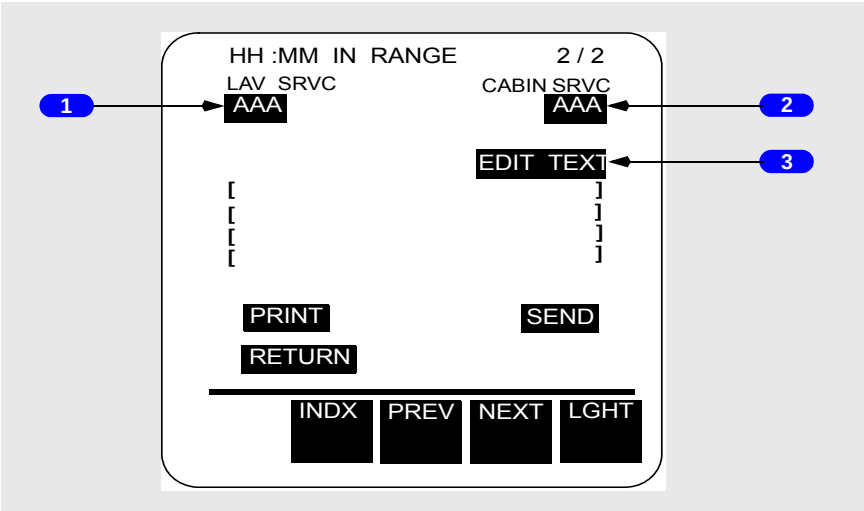
Toggle YES or NO.

8 LANG ASSIST

Toggle YES or NO.

Go to page 2/2 after entering information on page 1/2.

Touchscreen



FMS MCDU



1 LAV SRVC

Toggle YES or NO.

2 CABIN SRVC

Toggle YES or NO.

3 EDIT TEXT

Use text field for sending special requests not listed in the report.

Note: Select SEND to downlink report before leaving second page.

Postflight

FLT SUMMARY page 1/2

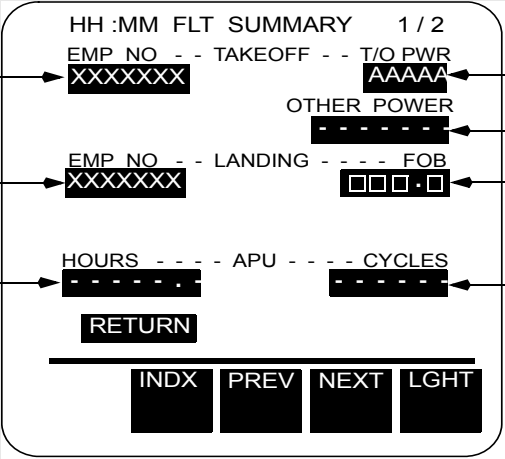
Access the POSTFLIGHT page from the DATA LINK INDEX page.

POSTFLIGHT Select

FLT SUMMARY Select

The following page will be displayed. Fill in each field as described below.

Touchscreen



HH :MM FLT SUMMARY 1 / 2

EMP NO - - TAKEOFF - - T/O PWR
XXXXXXX AAAAA

OTHER POWER

EMP NO - - LANDING - - - - FOB
XXXXXXX □□□.□

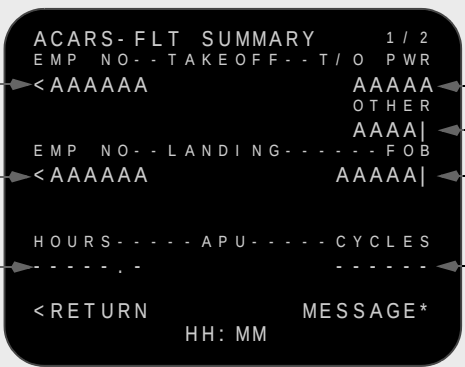
HOURS - - - - APU - - - - CYCLES

RETURN

INDX PREV NEXT LGHT

1 2 3 4 5 6 7

FMS MCDU



ACARS-FLT SUMMARY 1 / 2

EMP NO - - TAKEOFF - - T / O PWR
<AAAAAA AAAAA
OTHER
AAAA|

EMP NO - - LANDING - - - - FOB
<AAAAAA AAAAA|

HOURS - - - - APU - - - - CYCLES

<RETURN MESSAGE*
HH : MM

1 2 3 4 5 6 7

1 EMP NO - TAKEOFF

Note: Enter an employee number or some value, e.g., "999999". It is important that the field is populated so Flight Operations Engineering can distinguish between an actual normal power takeoff by the crew and the ACARS pre-programmed default value of normal power.

Employee number of crew member that performed the takeoff.

- Selection causes EMPLOYEE NUMBER page to be displayed where employee number received in the Init Data uplink when available may be chosen or manual data entry may be made.

2 EMP NO - LANDING

Note: Currently not required.

Employee number of crew member that performed the landing.

- Selection causes EMPLOYEE NUMBER page to be displayed where employee number received in the Init Data uplink when available may be chosen or manual data entry may be made.

3 HOURS - APU

Default is actual APU hours. Enter hours from APU Hours meter (as installed).

4 T/O PWR

Enter takeoff power from the following range:

- TO (Default)
- ALTN (Not used)
- OTHER (Select to input Assumed Temperature takeoffs)

5 OTHER POWER

Selection is available only if OTHER is selected in T/O PWR field. Enter "ATXX" as appropriate.

6 FOB (Fuel on Board)

On arrival, ensure fuel on board (100 pound increments) is entered correctly. This field is usually filled automatically.

757

Note: Ships 670-699 and 6700-6717 automatically fill these fields with **incorrect** fuel data. Delete the numbers and enter correct fuel data; obtained from aircraft fuel gauges.

767-300

Note: Ships 121-139, 1401-1404, 1501-1506, 1521, and 1612-1613 do **not** automatically fill in fuel data. Data must be manually entered; obtained from aircraft fuel gauges.

7 Cycles - APU

No entry required.

FLT SUMMARY page 2/2

After completing the required entries on FLT SUMMARY page 1/2, you must move to page 2/2 in order input autoland information.

NEXT Select

The following pages will be displayed. Fill in each field as described below.

Touchscreen

HH :MM IN RANGE 2 / 2
AUTOLAND IRU ERROR
1 → AA -
2 → [][][][]
3 → [][]
4 → SAT / UNSAT
AAAAA
PRINT
RETURN
5 → LEFT
[- - -]
6 → CENTER
[- - -]
7 → RIGHT
[- - -]
8 → SEND
INDX PREV NEXT LGHT

FMS MCDU - if an autoland was not accomplished

ACARS-FLT SUMMARY 2 / 2
AUTOLAND IRU ERROR
1 → NO
LEFT
[.]
CENTER
[.]
RIGHT
[.]
* PRINT
< RETURN MESSAGE*
HH: MM

FMS MCDU - if an autoland was accomplished

ACARS-FLT SUMMARY 2 / 2
AUTOLAND I RU ERROR

1 → YES
2 → AIRPORT
3 → RUNWAY
4 → SAT / UNSAT
AAAAA
* PRINT
<RETURN
HH: MM

LEFT
[.]
CENTER
[.]
RIGHT
[.]

5 → LEFT
6 → CENTER
7 → RIGHT

MESSAGE*

1 AUTOLAND - Touchscreen

- If an autoland was not performed, enter NO.
- If an autoland was performed, enter YES and complete fields 2, 3, and 4, as appropriate.

1 AUTOLAND - FMS MCDU

- Default value is NO, indicating an autoland was not performed.
- If an autoland was performed, depress 1L key, default will change to YES, then complete the following fields:

2 AIRPORT - Touchscreen

Airport at which autoland was performed.

2 AIRPORT - FMS MCDU

Default value is landing airport.

3 RUNWAY

Runway upon which autoland was performed.

4 SAT/UNSAT

Automatic approach performance; SAT or UNSAT.

Note: Guidance for identifying and documenting autolands is found in the MDM, TOPP Dispatch Documents Section 50-10-05, Aircraft Log System, Log Sheet. Do not record a SATISFACTORY Autoland if there was an associated autoflight malfunction which would have prevented a successful CAT III Approach, e.g., Autoland Status Annunciator (ASA) indicates LAND 2/NO LAND 3 at any time during the approach.

Note: SATISFACTORY autoland information is only required to be recorded under the Autoland column of the aircraft logsheet, next to the T/O Power column.

Note: UNSATISFACTORY autoland attempts must also be recorded in the aircraft logbook as an irregularity.

5 LEFT

No entry required.

6 CENTER

No entry required.

7 RIGHT

No entry required.

8 SEND - Touchscreen

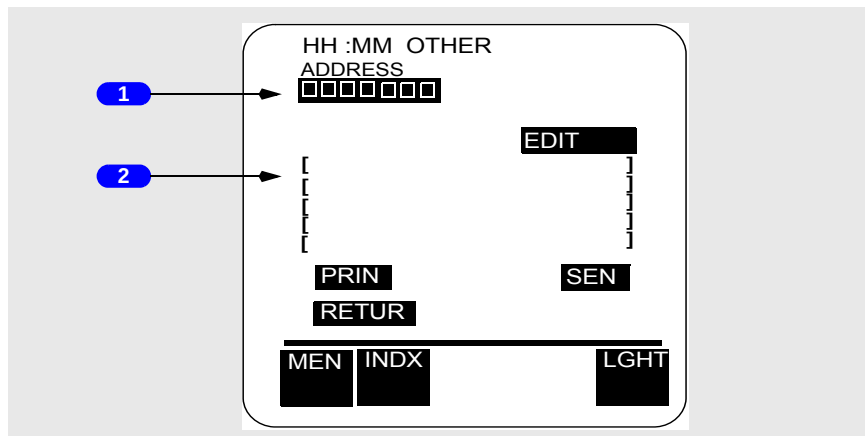
This report is sent automatically five minutes after the cabin door has been opened.

Note: After completing all entries do not manually send the report. Allow ACARS to do so automatically. This will allow for proper sequencing in the Times report (the FLT LOG page will show an IN time). Otherwise, it will cause an arrival Fuel On Board of zero to be sent.

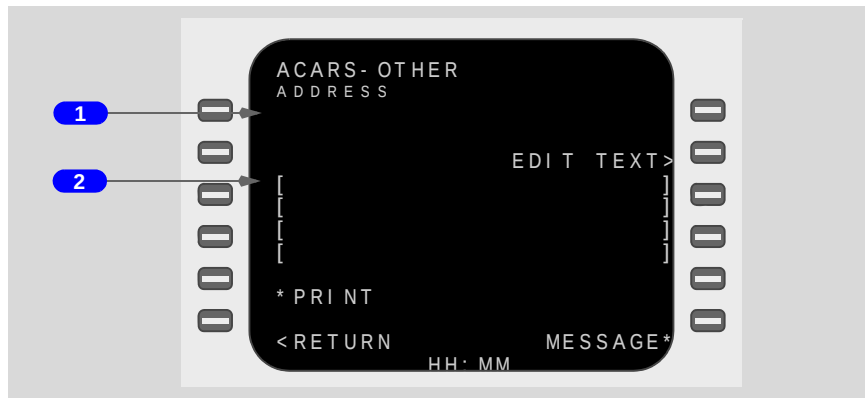
Other

This page can be used to request game scores. Use the address ATLXGDL for game day listings, and place appropriate information in the EDIT TEXT field.

Touchscreen



FMS MCDU



1 Address

Enter ATLXGDL in the address box

2 First line of Edit Text field

Free text remarks may be entered starting on line two.

Send the reports when crew workload permits and safety is not compromised.

Equipment & Furnishings Manual (EFM) Fault Reporting Code (FRC) Downlinks

MTC COORD Page

Access the MTC COORD page from the DOWNLINKS page.

DOWNLINKS Select

MTC REPORT Select

The following page will be displayed. Fill in each field as described below.

Touchscreen

HH :MM MTC COORD

FRM / FIM CODE

000000000

[

[

[

[

[

EDIT TEXT

]

]

]

]

PRINT

SEND

RETURN

INDX

LGHT

FMS MCDU



1 Free Text Field

Follow these procedures for code entry (refer to EFM FAULT REPORTING WORKSHEET):

EDIT TEXT Select

Enter "FRC" or three dashes (FMS MCDU), or three dashes (Touchscreen), followed by the EFM or FRM discrepancy code.

EFM Example: "FRC33230312C" or "---33230312C"

Note: The "-" (dash) following the first three numeric characters indicates a logbook entry is required. If no logbook entry is required, a "." (period) will be in the code from the Cabin Discrepancy Code list. An automated response from MCC will list the code and the description of the logbook entry:

FRC252-1110B/10B SEAT BACK WONT STAY UPRIGHT.
(If further description is needed, the automated response will prompt the crew.)

SEND Select

Aircraft Communication Addressing and Reporting System (ACARS-601, as installed)

Pre-Departure Clearance

The flight crew shall manually verify (compare) the filed flight plan versus the digital pre-departure clearance and shall initiate voice contact with Air Traffic Control if any question/confusion exists between the filed flight plan and the digital pre-departure clearance.

Digital-Automatic Information Service (D-ATIS)

The flight crew shall verify that the D-ATIS altimeter setting numeric value and alpha value are identical. The alpha value is the numeric altimeter setting spelled out (i.e., two nine nine two). This will be depicted on the ACARS ATIS message. If the D-ATIS altimeter setting altimeter numeric value and alpha values are different, the flight crew must not accept the D-ATIS altimeter setting.

Oceanic Clearances

The flight crew shall manually verify (compare) the filed flight plan versus the digital oceanic clearance and shall initiate voice contact with Air Traffic Control if any question/confusion exists between the filed flight plan and the digital oceanic clearance.

AWABS (WDR)

The flight crew shall verify the flight number, date, and release number on the WDR match the corresponding information on the flight plan.

Company Communications Sequence

The COMMUNICATIONS SEQUENCE chart depicts DATA LINK functions that are currently in effect for Delta Air Lines. The chronological sequence in which DATA LINK messages should be sent is shown as a function of flight phase. The messages that appear above the profile are ROUTINE and should be sent whenever appropriate on every flight. The messages below the profile are NON ROUTINE and should be sent as needed.

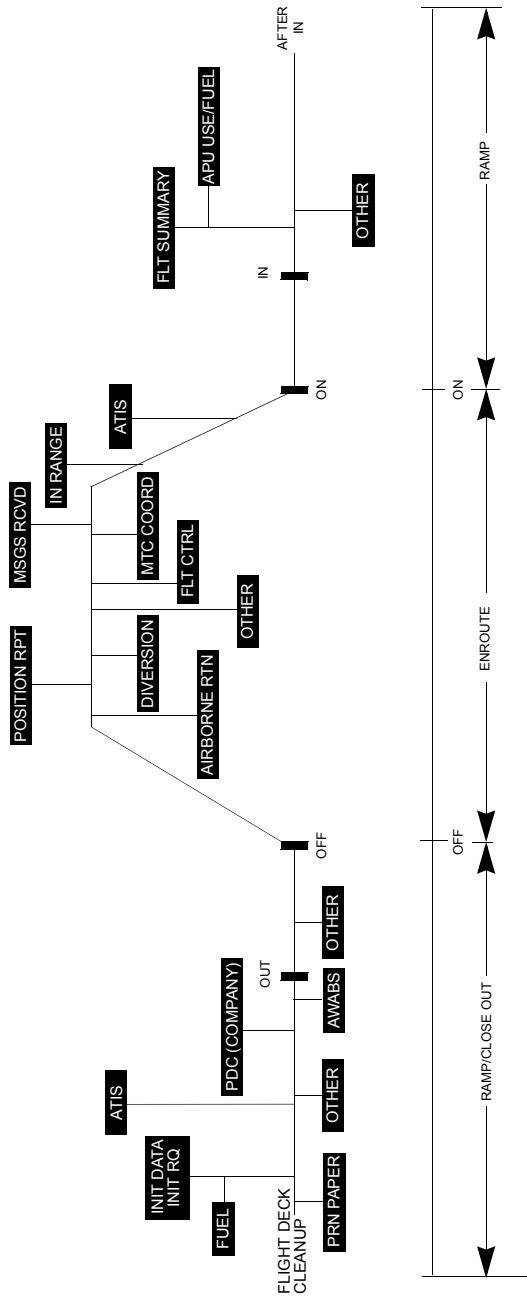
Messages are delivered to the Flight Control dispatcher's cue and are also directly processed by Flight Following. This direct processing of DATA LINK messages results in system wide updates in our host computers.

Communications Sequence Chart

COMPANY COMMUNICATIONS

ABOVE PROFILE LINE – ROUTINE
BELOW PROFILE LINE – NON ROUTINE

NOTE: All items shown on MISC MENU
and DOWNLINKS MENU (except CAL-
SEL) are operative at any time.

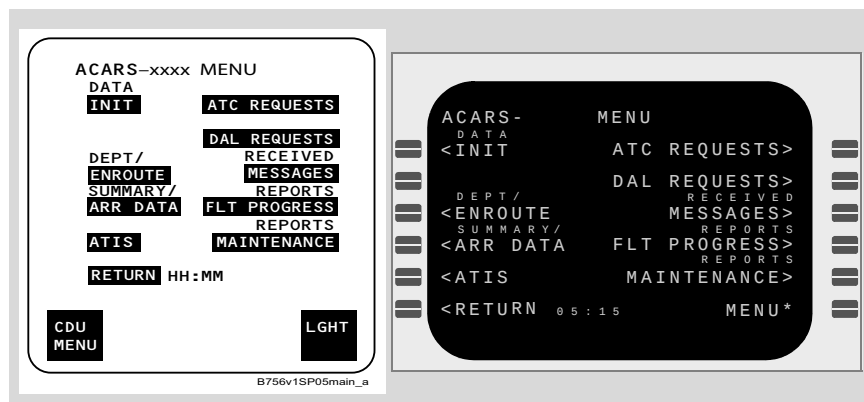


Menu Navigation

Main Menu

The prompts on the main MENU are divided into three general categories: DATA, REQUESTS, and REPORTS.

- Data includes:
 - DATA INIT
 - DEPT / ENROUTE
 - SUMMARY / ARR DATA
 - ATIS
 - RECEIVED MESSAGES
- Requests include:
 - ATC REQUESTS
 - DAL REQUESTS
- Reports include:
 - REPORTS FLT PROGRESS
 - REPORTS MAINTENANCE



Most pages contain RETURN and MENU prompts. When within a sub-menu containing only one page, the RETURN prompt will go back to the most recently viewed page. When within a sub-menu which has multiple pages, use the PREV/NEXT PAGE buttons on the CDU to navigate. The MENU prompt will always return you to the main menu and will appear any time there is not a higher priority message. After the message is read, the MENU prompt will return.

INIT DATA

INIT DATA 1/2

INIT DATA menu page 1/2 has familiar initialization fields, including the INIT RQST prompt which initializes the ACARS for your flight and requests uplinks for aircraft equipped with FMC datalink capability.

Estimated Time Enroute (ETE) must be manually entered. This page displays a UTC clock with seconds as does the DEPT menu page. A new FMC RESET prompt easily resets the datalink function if necessary.

Fuel On Departure (FOD) requires no pilot input. It will automatically capture and downlink with the OUT event.

757

Note: Ships 670-699 and 6700-6717 automatically fill these fields with **incorrect** fuel data. Delete the numbers and enter correct fuel data; obtained from aircraft fuel gauges.

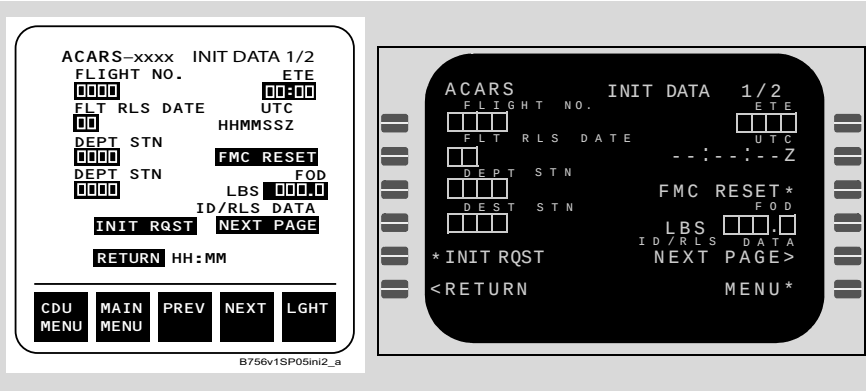
767-300

Note: Ships 121-139, 1401-1404, 1501-1506, 1521, and 1612-1613 do **not** automatically fill in fuel data. Data must be manually entered; obtained from aircraft fuel gauges.

The “!” symbol next to an item indicates that required data has not yet been entered. Select the appropriate field(s) and enter the necessary data.

INIT DATA 1/2 (after initialization):

NEXT PAGE



INIT DATA 2/2

INIT DATA menu page 2/2 is provisioned to record CAPT ID, F/O ID, Flight Release, and Release Amendment numbers.

CAPT ID and F/O ID Enter

Enter employee number(s) for captain or first officer who will be in a control seat for landing.

CAPT 2 ID and F/O 2 ID Enter

Enter employee number(s) for other captain or first officer, as required for augmented crew.

FLT RLS # Enter

Enter flight release number.

Send or *SEND (as applicable) Select

ACARS-xxxx INIT DATA 2/2

CAPT ID [1 2 3 4 5 6] CAPT 2 ID [7 8 9 0 1 2]

F/O ID [3 4 5 6 7 8] F/O 2 ID [9 0 1 2 3 4]

F/A ID [5 6 7 8 9 0] FLT RLS # [0 0]

RLS AMEND [1]

HELP

SEND

RETURN HH:MM

CDU MENU MAIN MENU PREV NEXT LGHT

B756v1SP05ini2_a

ACARS INIT DATA 2/2

CAPT ID [1 2 3 4 5 6] CAPT 2 ID [7 8 9 0 1 2]

F/O ID [3 4 5 6 7 8] F/O 2 ID [9 0 1 2 3 4]

F/A ID [5 6 7 8 9 0] FLT RLS # [0 0]

RLS AMEND [1]

<HELP

*SEND

<RETURN

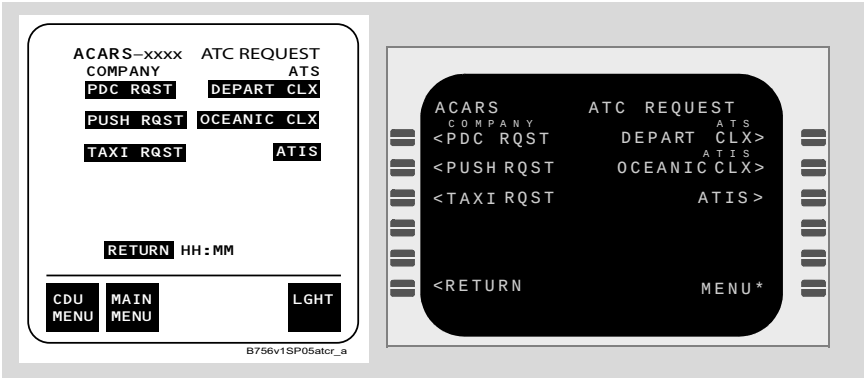
MENU*

ACARS will verify the release number entered is the most current and respond with "RLS OK" message; if not, the crew will be notified by a "RLS ERR" response. If Flight Control issues a new release any time after ACARS initialization, an ACARS message is automatically sent to the aircraft advising the crew of the change.

ATC REQUESTS

The ATC REQUEST menu page contains request prompts for US/Canada Predeparture Clearance (PDC RQST), International DEPART CLX, OCEANIC CLX, and digital ATIS. Most recently received ATC messages can be viewed by reselecting the request prompts.

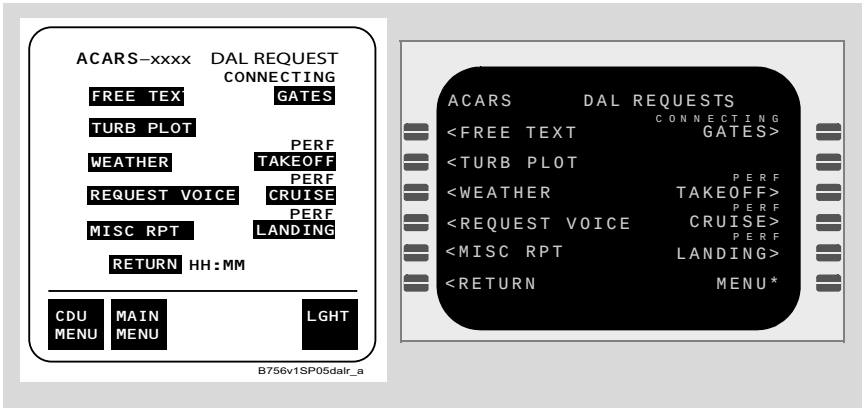
PUSH RQST and TAXI RQST functions are for future use.



DAL REQUESTS

The Delta Air Lines (DAL) REQUESTS menu page provides options to address FREE TEXT and TURB PLOT downlinks to various ground based users, and to make both WEATHER and PERF TAKEOFF requests.

The following are available for use: REQUEST VOICE, CONNECTING GATES, PERF CRUISE, and PERF LANDING.



FREE TEXT REPORT

A FREE TEXT prompt replaces the previous ACARS “Flt Control” and “Other” downlinks, and allows the flight crew to designate an address for free text message routing by entering the corresponding code letter(s). (e.g., to send a message to Flight Control, enter “A” in the scratchpad and line select). Messages can be sent to multiple addresses; use a slash to separate the addresses (e.g., A/D/G).

FREE TEXT messages now support eight lines of text. Also, no “Edit Text” selection is necessary, as text may be entered directly on the applicable pages. To assist in text entry, each line of text (indicated by a bracket symbol “[]”) has an adjacent arrow symbol (<-) that points to its corresponding line select key.

Note: Text must be entered in the first line in order to enable a SEND prompt.

Note: IDU FREE TEXT scrolls with continuous typing.



DEPT/ENROUTE

The DEPT/ENROUTE data page consolidates flight progress information on one page. It can be selected anytime, and is displayed automatically at the OFF event.

The OUT time will transition from the beacon to the first time the parking brake is released after all cabin and cargo doors are closed. Two additional metrics capture the time when all cabin and cargo doors are closed.

Additionally, the INS/GPS OUT time records the first aircraft movement during pushback. This page also displays a Time-To-Go (TTGO) field that counts down the remaining flight time based on the most recent arrival estimate.

The estimated time of arrival is called Estimated On (EON), and ALL arrival estimates are based on this time. This also synchronizes FMC Datalink ETA reporting for aircraft that automatically report ETA updates.

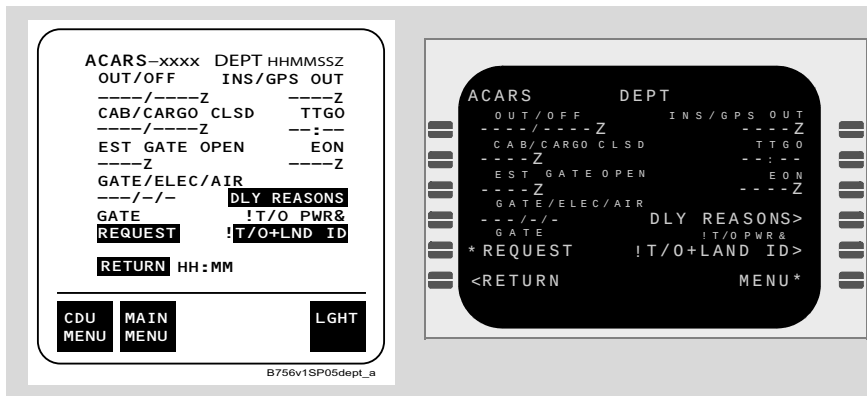
The following are available for use: GATE *REQUEST, GATE/ELEC/AIR indications, and DLY REASONS.

In these examples, the “!” symbol next to an item indicates that required data has not yet been entered. Line select to access the T/O + LAND page, then line select to enter Assumed Temp (AT).

From ACARS Main Menu select DEPT/ENROUTE.

From the DEPT page:

!T/O+LND ID Select

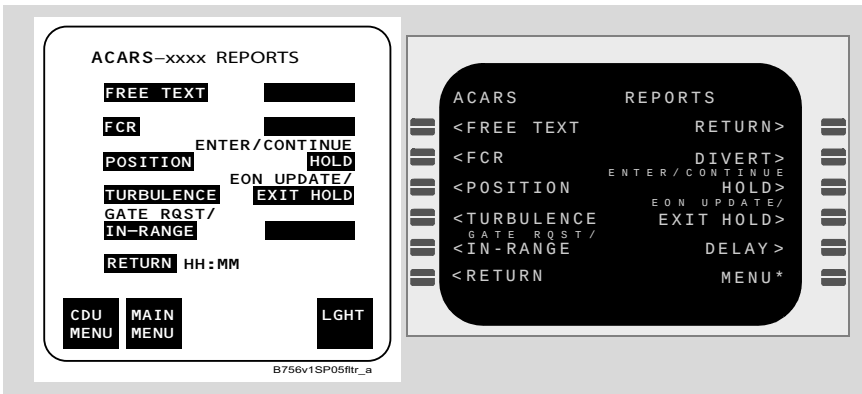


FLT PROGRESS REPORTS

In addition to the Free Text prompt, the REPORTS menu page provides prompts to send In-range Gate Requests and communicate flight progress updates to Flight Control. POSITION, TURBULENCE, DIVERT, ENTER/CONTINUE HOLD, EON UPDATE / EXIT HOLD, and Taxi Out/In DELAY reports are all contained here.

The HOLD report structures communication between pilot and Dispatcher during holding, and has an option to complete “Considering Divert”. This report will alert dispatch to a possible divert decision.

The FCR (Flight Crew Report) prompt is provisioned for future use.



ACARS-xxxx REPORTS

FREE TEXT

FCR

ENTER/CONTINUE HOLD

POSITION

EON UPDATE/EXIT HOLD

TURBULENCE

GATE RQST/IN-RANGE

RETURN HH:MM

CDU MENU MAIN MENU LGHT

B756v1SP05fltr_a

ACARS REPORTS

<FREE TEXT RETURN>

<FCR>

<POSITION>

<TURBULENCE>

<IN-RANGE>

<RETURN>

<DIVERT>

<ENTER/CONTINUE HOLD>

<EON UPDATE/EXIT HOLD>

<DELAY>

<MENU*>

SUMMARY/ARR DATA

The ARRIVAL menu page displays OUT/OFF/ON/IN times and the total (actual) ACT BLOCK time for the segment. Fuel Remaining (FREM) will automatically be filled.

757

Note: Ships 670-699 and 6700-6717 automatically fill these fields with **incorrect** fuel data. Delete the numbers and enter correct fuel data; obtained from aircraft fuel gauges.

767-300

Note: Ships 121-139, 1401-1404, 1501-1506, 1521, and 1612-1613 do **not** automatically fill in fuel data. Data must be manually entered; obtained from aircraft fuel gauges.

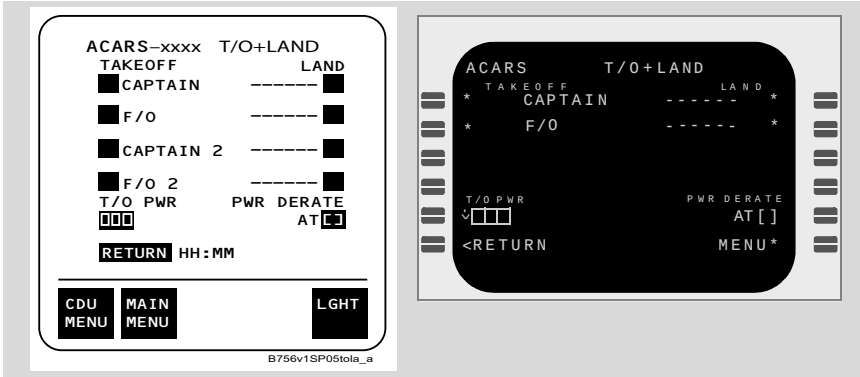
RNP APPR and AUTOLAND allow for reporting and tracking of those events.

Flight times for current or previous flights can be viewed and/or printed by selecting PREV FLTS. PREV FLTS also contains a new metric that captures the number of seconds that elapse from the IN time until the cabin door is opened. To print times for gate agent, select PREV FLTS, then select PRINT.

In these examples, there is missing data. Select to access the T/O + LAND page, then select to enter Assumed Temp (AT).

The following steps must be completed prior to IN time + 7 minutes.
From the T/O+LAND page:

TAKEOFF employee number Select pilot performing the takeoff
LAND employee number Select pilot performing the landing



Note: Normally, the same pilot conducts the takeoff and landing.
However, any flight crewmember may be designated as the takeoff or landing pilot.

ARRIVAL/SUMMARY DATA page:

ACARS--xxxx ARRIVAL
OUT/OFF FREM
-----Z 000.0
ON/IN
-----Z RNP APPR
ACT BLOCK AUTOLAND
GATE/ELEC/AIR TAXI IN
----- DLY REASONS
 !T/O PWR&
PREV FLTS !T/O+LND ID

RETURN HH:MM

CDU
MENU

MAIN
MENU

LGHT

B756v1SP05arri_a

ACARS ARRIVAL

OUT/OFF FREM

-----Z 000.0

ON/IN

-----Z RNP APPR>

ACT BLOCK AUTOLAND>

GATE/ELEC/AIR TAXI IN

----- DLY REASONS>

 !T/O PWR&

<PREV FLTS !T/O+LAND ID>

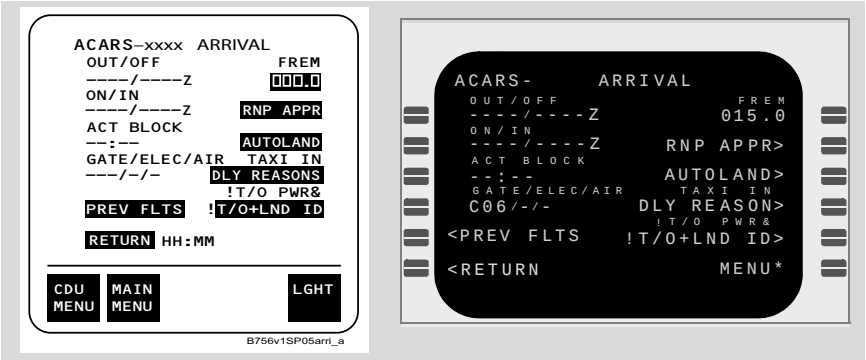
<RETURN MENU*

- Autoland entry credits the aircraft but is not programmed to credit pilots at this time. This must still be done in i-Crew.

Arrival Delay Reporting

Arrival Delay Reporting utilizes common arrival delay categories to identify delays affecting ramp and gate operations at destination airports. Use the ACARS Taxi-In Delay Reason function to report the reason(s) for delays incurred while taxiing to the gate. This function is selected directly from the ACARS Arrival Data page, which is automatically displayed after landing. The arrival gate number displays on this page (including any gate change after landing). After reviewing the gate assignment, Delay Reasons can be selected, and delay times should be entered by delay category (in minutes). Additional text is not necessary in this report. This data will be automatically sent with the Arrival/Summary Data Report.

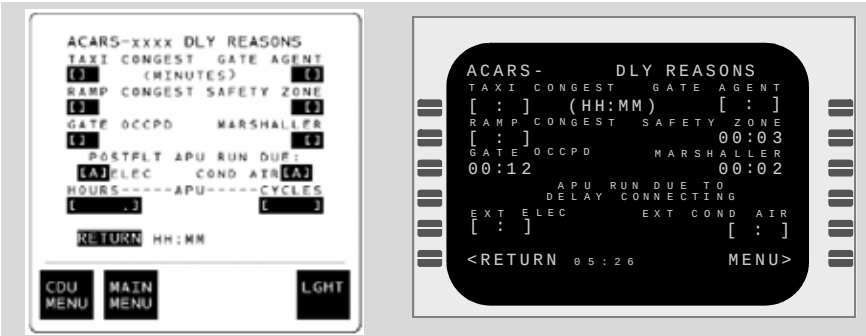
Select Delay Reason page



Enter delay minutes in applicable categories

Example of a completed arrival delay report with three entries:

- 3 min. delay for Safety Zone Not Clear
- 12 min. delay for Gate Occupied
- 2 min. delay for Awaiting Marshaller



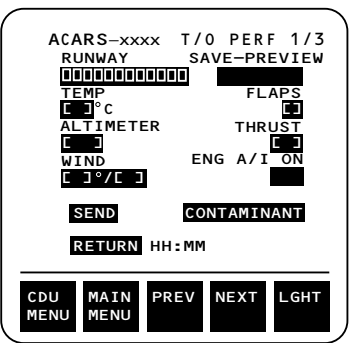
TAKEOFF PERF

The T/O PERF menu page 1/3 allows data request for a particular RUNWAY similar to the previous AWABS request prompt. With ACARS -601 software, an entry of “88” preceding the runway is not allowed (will result in an uplink error). Runway entries may also now include a dash (-) to request an intersection (e.g. 27R-M18).

FLAPS, THRUST, and ENG A/I ON are all provisioned for future use.

T/O PERF page 2/3 offers easy to use runway contaminant choices of WET, DRY, ¼ or ½ INCH SLUSH EQUIVALENT, and ICY.

The T/O PERF menu pages no longer support tolerance, passenger, or cargo load adjustments via ACARS. Instead, these adjustments should be coordinated with station operations.

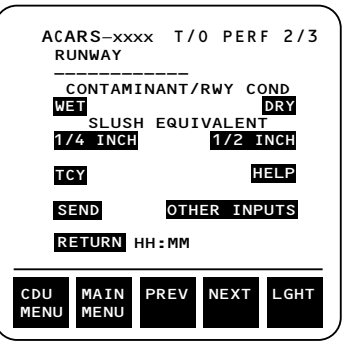


ACARS-xxxx T/O PERF 1/3
RUNWAY SAVE-PREVIEW
000000000000
TEMP []°C FLAPS []
ALTIMETER [] THRUST []
WIND []°/[] ENG A/I ON []
[SEND] [CONTAMINANT]
[RETURN] HH:MM
[CDU MENU] [MAIN MENU] [PREV] [NEXT] [LGHT]

B756v1SP05top1_a



ACARS T/O PERF 1/3
RUNWAY ZZ ZZZZZZ
TEMP []°C FLAPS []
ALTIMETER [] THRUST []
WIND []°/[] ENG A/I ON ZZ Z
*SEND CONTAMINANT>
<RETURN MENU*



ACARS-xxxx T/O PERF 2/3
RUNWAY

CONTAMINANT/RWY COND
WET DRY
SLUSH EQUIVALENT
1/4 INCH 1/2 INCH
TCY HELP
[SEND] [OTHER INPUTS]
[RETURN] HH:MM
[CDU MENU] [MAIN MENU] [PREV] [NEXT] [LGHT]

B756v1SP05stop2_a



ACARS T/O PERF 2/3
RUNWAY -----
CONTAMINATE / RWY COND
>WET DRY<
>SLUSH EQUIVALENT
>1/4 INCH 1/2 INCH<
>ICY HELP>
*SEND OTHER INPUTS>
<RETURN MENU*

MAINTENANCE REPORTS

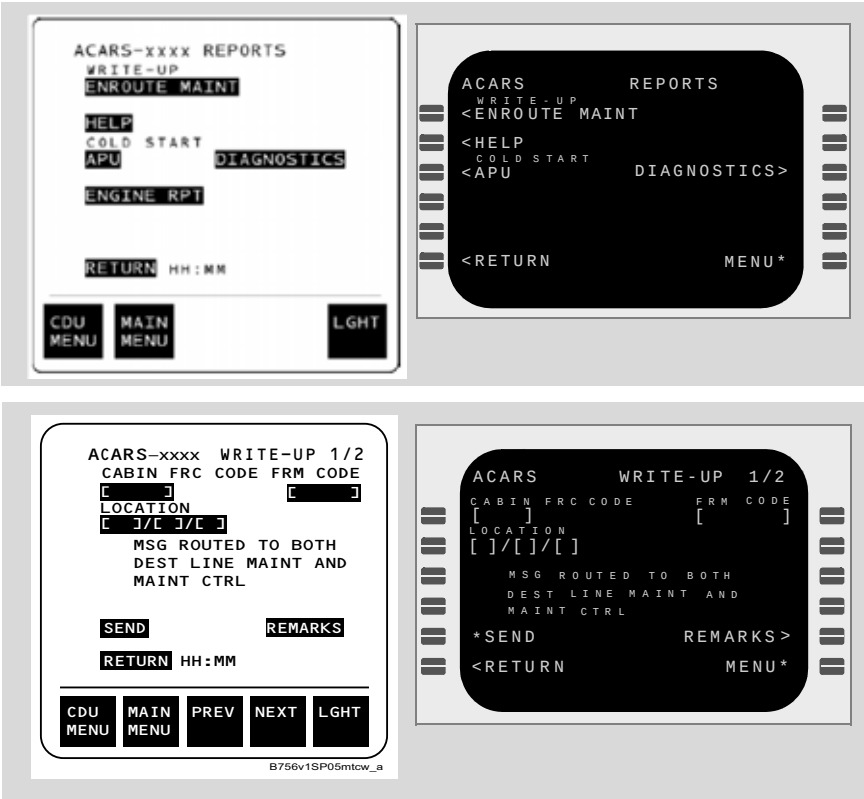
Cabin FRC Codes, or other discrepancies may be sent using the WRITE-UP ENROUTE MAINT prompt on the REPORTS MAINTENANCE menu (refer to EFM FAULT REPORTING WORKSHEET).

Enter the numeric code (e.g. 253-12) and the three-character location (e.g. 401 or 01A). Do not enter the letters “FRC”.

Engine Data and APU Time/Cycle data is sent automatically and therefore is not displayed with use of this menu.

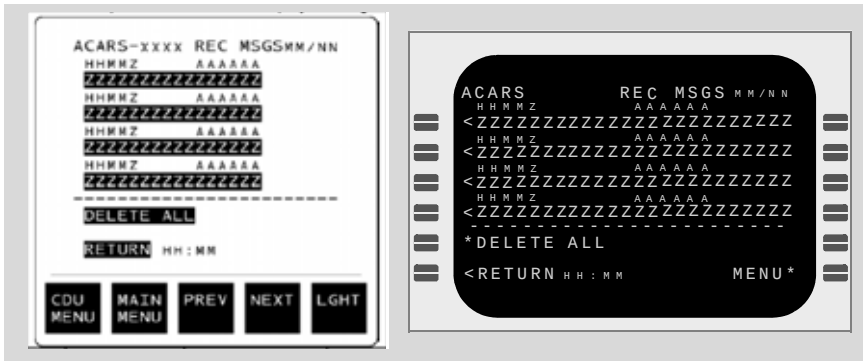
For APU cold soak procedures, refer to SP.7, APU Cold Soaked Start Procedures for ETOPS Aircraft.

DIAGNOSTICS is provisioned for future use.



RECEIVED MESSAGES

The REC MSGS menu page allows the flight crew to retrieve previously viewed messages. *DELETE ALL prompt allows the flight crew to manually delete all messages (with confirmation selection) instead of automatic deletion of messages after the arrival data is sent during post flight.



To view a log of previously received ATS messages DEPT CLX / OCEANIC CLX:

- From main MENU, select RETURN
- Select ATS
- Select ATS LOG

Note: This information can also be accessed via the ATC REQUEST page.

FMC Worldwide Waypoint Position Reporting (FMC WPR)

(For aircraft with ACARS-601, as installed)

Crews can expect FMC WPR to be automatically enabled after the 'OUT' event. With FMC WPR enabled, the FMC will report at every ****DAL POSN RPT**** fix on the flight plan. There is no need for regular ACARS position reports.

ABEAM Points

Automatic FMC WPR will not report at abeam points of ****DAL POSN RPT**** fixes. When over ABEAM PTS, use the Company SEND prompt on the FMS POS REPORT page in lieu of a full ACARS Position Report. If the SEND prompt is used, the position report must be sent as soon after crossing the fix as possible. This report sends the aircraft's current LAT/LON and, if delayed, the system will not link your current position to the proper ****DAL POSN RPT**** fix for flight following updates.

Note: A manual ACARS company report may also be sent using the original fix name, as is current practice.

Track Change

The current practice of enabling FMC WPR via the REPORT SEND prompt on ROUTE 1, after receipt of track clearance, will no longer function.

Worldwide FMC WPR is enabled at the 'OUT' event and will report fixes on the current flight plan designated as position reports (****DAL POSN RPT****). In the event of a track change, manually load the new route to comply with ATC clearance, and then contact the dispatcher to request a flight plan revision for the new track/route. Expect a compacted (22 column) revised flight plan uplink when the revision is complete. An In-flight revision may take ten to fifteen minutes.

When a flight plan revision is initiated due to a track change, FPS 2.0 will update the domestic (European or Canada/US) route to align it with the preferred routing based upon the coast in fix and your destination. Similar to current practice, when a track change is received leave a discontinuity after the track endpoint and confirm domestic clearance with ATC.

CAUTION: This may not be your previously filed route.

After receiving ACARS notification that a flight plan revision is complete, perform a WPR RESET (see below) to enable FMC WPR for the new ****DAL POSN RPT**** fixes added to the flight plan. If the revised flight plan is uplinked to the FMC, best practice is to LOAD and then ERASE (do not activate) the data. This will leave the current route in place and clear the MCDU memory buffer. Wind data for the added fixes will be extrapolated from the existing wind package. To request a new wind package for the revised flight plan, first perform a FMC RESET and then request new wind data.

If a new route is uplinked to the FMC and LOADED and ACTIVATED, verify the current route is accurate. This includes verifying fixes leading to the track entry point and domestic segment upon coast in. Enhancements are under development to make this the preferred procedure.

WPR RESET

Certain events require 'resetting' the configuration uplink to allow proper FMC WPR operation. A WPR Reset will re-send the configuration uplink based on the current FPS release number.

WPR Reset should be used for any of the following reasons:

- The dispatcher/ATC advises WPR is not working
- A reroute or track change occurs

Prior to sending a WPR Reset, ensure the route in the FMC matches the current ATC clearance. Ensure notification is received that the Flight Planning System has been updated if applicable (e.g., track change).

From the ACARS Main Menu

DAL REQUESTS Select

MISC RPT Select

Enter key phrase WPR RESET.

Enter 00 in the code box (activates SEND prompt.)

SEND Select

Note: Revert to manual ACARS or HF reporting if WPR VERIFIED message is not received after two attempts or the dispatcher/ATC advises that FMC WPR is not working.

FMC RESET

A FMC RESET must be performed after a track change to enable wind data for the new position fixes. To perform a FMC RESET:

From the ACARS Main Menu

INIT Select

FMC RESET Select

After a successful reset, new wind data may be requested.

Manual ACARS Position Reporting

The ACARS 601 position report page can be used for full latitude Standard Navigation Fix reports. However, the position report page only accepts waypoint names of up to eight characters in length. ACARS position reports for half degree fixes (N5530.0W04000.0) can be made via the WAYPT POS RPT page:

From the ACARS Main Menu

RETURN Select

ATS Select

WAYPT POS RPT Select

Turbulence Reporting

FMC WPR downlinks do not report turbulence. Accordingly, flight crews should report any significant turbulence to Flight Control, via the ACARS-601 Turbulence Report Page. These reports will supplement the TP system and provide better turbulence avoidance information.

RNAV (RNP) Approach Documentation

Data Collection ACARS - 601

Complete the RNP Approach documentation as follows:

From the ARRIVAL page:

RNP APPR Select

RNP APPR page 1/2:

The image displays two versions of the RNP APPR 1/2 ACARS data collection screen. The left version is a standard white-on-black text interface. It includes fields for 'ACARS-xxxx', 'RNP APPR 1/2', 'SAT / UNSAT' (with a toggle), 'RUNWAY' (6-character field), 'TYPE' (toggle), 'RNP LEVEL' (3-character field), and 'PROCEDURE NAME' (24-character field). Below these are 'SEND', 'RETURN', and 'REMARKS' buttons, and a row of navigation buttons: 'CDU MENU', 'MAIN MENU', 'PREV', 'NEXT', and 'LGHT'. The right version is a dark-themed interface with a black background and white text, showing the same fields and buttons in a more modern, rounded design.

SAT/UNSAT Toggle

Toggle to select SAT or UNSAT.

RUNWAY Enter

Enter approach runway 1-6 characters.

TYPE Toggle

Toggle to select the RNP Approach type.

RNP LEVEL Enter

Enter the RNP level (i.e., 0.3).

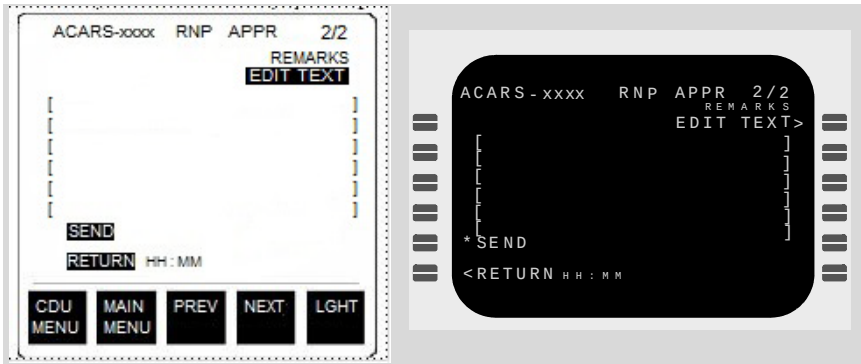
PROCEDURE NAME Enter

Enter the procedure name 1-24 characters.

REMARKS Select

Pulls up page 2/2.

RNP APPR page 2/2:



EDIT TEXT Select
Add comments 1-24 characters.

SEND Select
Sends report and displays the MENU page.

Data Collection ACARS - 501

There are two methods for reporting and collecting data for RNAV (RNP) approaches. The primary method will be through an ACARS downlink to the address ATLWDDL. This is accomplished using the following path: ACARS > ENROUTE > DOWNLINKS > OTHER. The second method for reporting will be on the Flight Ops web page via the link "RNAV SID, STAR and RNP Feedback" under Pilot Feedback and Reporting.

Enter the Airport, Approach, SAT or UNSAT and specific reason for any approach considered UNSAT into the Text entry field. Examples are depicted below:

- Satisfactory
 - KATL RNAV (RNP) Z 27L SAT
- Unsatisfactory
 - KATL RNAV (RNP) Z 27L UNSAT
 - UNABLE RNP CAUTION MESSAGE

Operational reports are required and will allow Delta to exercise the full potential of RNAV (RNP) operations worldwide.

FMC Data Link

FMC Data Link ACARS Messages

Message (Preceded by ** FMC DATA LINK ADVISORY**)	Condition
SHIP XXX NOT DATALINK CAPABLE	Aircraft is not data link capable
SHIP XXX IS CPDLC/ADS CAPABLE. USE CPDLC/ADS PROCEDURES	Aircraft is data link capable
UNABLE FMC UPLINK - NO FPS 2.0 FLIGHT PLAN AVAILABLE FOR DALXXX - USE MANUAL FMC LOADING PROCEDURES	The FPS 2.0 flight plan cannot be retrieved
ACARS INIT REQ MUST BE SENT TO RECEIVE FMC PRE-FLIGHT UPLINKS	Individual request are made before ACARS INIT RQ
UPLINK FAILED DUE TO BUFFER FULL CONDITION. CHECK FMC COMM PAGE FOR UPLINK STATUS AND SELECT PROMPTS WITH UPLINK DISPLAYED ABOVE THEM. ACCEPT, LOAD, CANCEL OR REJECT ANY REMAINING UPLINKS. SELECT LOAD ON ANY REMAINING ROUTE AND WIND UPLINKS AND THEN SELECT ERASE TO CLEAR THEM IF ACTIVE CONTENT EXISTS AND IS NOT INTENDED TO BE REPLACED	Pegasus buffer is full
PARTIAL FMC WIND UPLINK SENT DUE TO MESSAGE SIZE LIMITS ** CHECK FMC COMM PAGE-CONFIRM ALL UPLINKS ARE LOADED THEN SEND A WIND REQUEST FROM THE FMC RTE-DATA PAGE-6R	Wind Uplink too big - split into multiple uplinks
CURRENT XXX UPLINK ALREADY SENT. PERFORM - FMC RESET - IF UPLINK OF SAME DATA REQUIRED XXX can be RTE, PERF, WIND or INIT	Release number hasn't changed and request is made
FMC XXX UPLINK FAILED. SEND FMC XXX REQUEST. XXX can be RTE, PERF or WIND	Uplink error (CRC) reject
FMC DATALINK STATUS SUCCESSFULLY RESET	FMC Reset
WPR VERIFIED	WPR Enabled or WPR Reset

Takeoff Data Uplink (TDU)

Takeoff Data Uplink (TDU) enables uplinking of WDR performance values directly to the FMS on data-link capable aircraft. This reduces manual key strokes and the likelihood of entry errors. When the WDR is sent, two FMS uplinks will follow:

- PERF INIT (with actual GR WT and ZFW)
- TDU (with performance data)

Note: Once takeoff data is received, ACCEPT or REJECT the uplink. In both cases, comparison of the FMS entries to the WDR is mandatory.

CAUTION: If differences exist between the TDU and the WDR, the WDR is the controlling document.

Uplink Logic For Runways:

- Only runways and intersections on the WDR.
- Cutbacks (27R-L2000CB) will not be uplinked.
- Only the Primary Contaminant data will be uplinked.
- If ****RWY IS OVERWT FOR ALL THRUST/FLAPS****, scratchpad will display “INVALID TAKEOFF XXX”.
- Only one takeoff position per runway. If a runway and intersection exist on the WDR, the intersection has priority unless OVERWT. This is to allow the uplinked data to be valid for that intersection and any intersection beyond it, including full length.
- Only the requested position of an ACARS Takeoff Performance Update will be uplinked.

Note: An anomaly exists that doesn't allow TDU for a center “C” runway. Manually entering data is acceptable.

Uplink Logic For Thrust:

- Default thrust uplink is the second AT Thrust/Flap line of the WDR (unless only one AT exists) with FULL (TO) thrust as a backup.
- The thrust logic reduces engine wear and minimizes being overweight when taxi fuel burn is required. Taxi fuel burn analysis is required to ensure T/O weight is within limits. Full thrust is available during unstable weather.
- If only full thrust (TO) is uplinked, the temp derate on EICAS and Takeoff Ref pg 1 (2L) may indicate a zero value.

Operating Procedures

After the WDR is produced and sent for uplink, a chime will sound, an “● FMC” EICAS message will be displayed, and “PERF INIT UPLINK” message will appear in the scratchpad. The PERF INIT page will display the uplinked ZFW and the new GR WT in small font with the previous values (in large font) displaced to the right.

Note: The boxed WDR data below is uplinked to the PERF INIT and TAKEOFF REF pages for the selected runway. Due to message size, TDU may arrive before the WDR

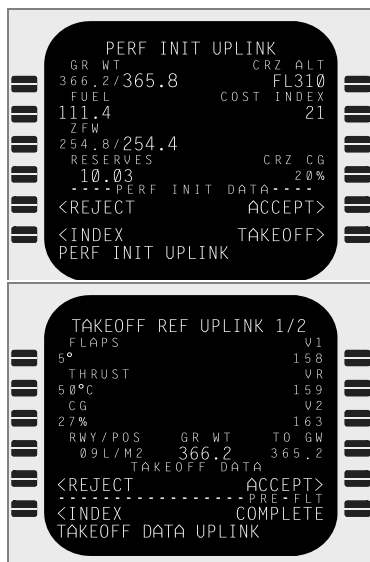
RMWT 366.2 ZFWT 254.8
TOWT 365.2 OCG 273
FLAP/STAB 05/03.4

WX 32404KT 12C A30.26

(Runway 9L Taxiway M2)

ATL <u>0L</u> TWY <u>M2</u>	11000FT	02HW	03XW
T/F	CLIMB	RATOW	WIND V1 VR V2
D52/05	365.4	368.3	58 60 64
D <u>50/05</u>	<u>372.4</u>	373.3	<u>58 59 63</u>
D49/05	375.8	375.8	58 59 63
DTO/05	441.2	422.0	52 57 63
WTO/15	423.6	422.0	47 50 57

After selecting ACCEPT, small font numbers will change to large font.



PERF INIT UPLINK

GR WT	CRZ ALT
366.2/365.8	FL310
FUEL	COST INDEX
111.4	21
ZFW	
254.8/254.4	
RESERVES	CRZ CG
10.03	20%
--- PERF INIT DATA ---	
<REJECT	ACCEPT>
<INDEX	TAKEOFF>
PERF INIT UPLINK	

TAKEOFF REF UPLINK 1/2

FLAPS	V1
5°	158
THRUST	VR
50°C	159
CG	V2
27%	163
RWY/POS	GR WT
09L/M2	366.2
	365.2
TAKEOFF DATA	
<REJECT	ACCEPT>
<INDEX	PRE-FLT
COMPLETE	
TAKEOFF DATA UPLINK	

Takeoff Data Uplink

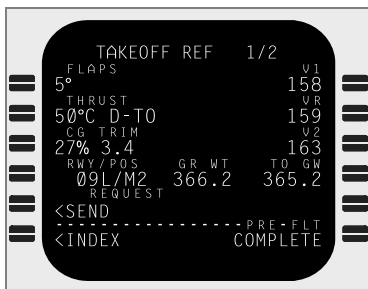
After the PERF INIT is accepted, a chime will sound, an “● FMC” EICAS message will be displayed, and “TAKEOFF DATA UPLINK” will appear in the scratchpad.

Review the data on TAKEOFF REF page 1. GR WT is the aircraft current weight and TO GW is the planned TOWT from the WDR.

On TAKEOFF REF page 2, wind, wind component, temperature, ACCEL HT and STD LIM TOGW are uplinked. STD LIM TOGW is the lesser of the RATOW, CLIMB limit, or MAX T/O weight and must be greater than or equal to GR WT (page 1) at takeoff.

Use the <TO prompt at line select key 2L to toggle between AT and TO thrust. New TDU numbers will be uplinked for TO thrust. Normal takeoff power (full thrust) may be displayed as 0°.

Note: TDU ACCEL HT is designated by airport, not runway.
Therefore, verify and manually correct ACCEL HT as required.



TAKEOFF REF 1/2			
FLAPS		V1	
5°		158	
THRUST		VR	
50°C D-T0		159	
CG TRIM		V2	
27% 3.4		163	
RWY/POS	GR WT	TO GW	
09L/M2	366.2	365.2	
REQUEST			
<SEND			
<INDEX		PRE-FLT	COMPLETE



TAKEOFF REF 2/2			
ALTN THRUST		ACCEL HT	
<TO		3000	FT
WIND			
324/04 8KT			
RWY WIND	STD LIM	TOGW	
2ktH		372.4	
		REF DAT	
		12°C	
<INDEX			

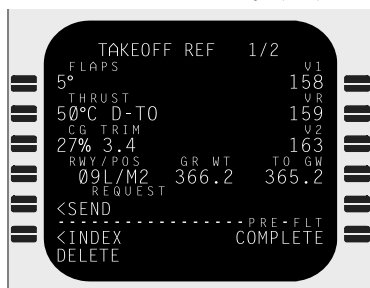
Runway Changes and Intersections

Desired WDR Data is available:

If a different takeoff runway is required, select the desired runway from the DEP/ARR page and clean up any DP route changes. TAKEOFF DATA will automatically load if the new position is listed on the WDR.

Data for a runway intersection should automatically load on the initial uplink (09L/M2). If the desired intersection is on the WDR but does not appear in the RWY/POS field on TAKEOFF REF page 1, type "/intersection" (for example /M2) and place it over the runway (4L).

If an intersection is displayed (ATL 09L/M2) and a different takeoff runway is desired, first select the DELETE key and then line select 4L to remove the intersection. In some cases, the intersection identifier may not be removed when a new runway is selected from the DEP/ARR page.



B757v1SP05idu3_a

Note: If multiple takeoff positions for the same runway exist on the initial WDR (JFK 31L and 31L-KE) data for the shortest available intersection will be uplinked and will be valid for that intersection and any intersection beyond it, including full length.

Desired WDR Runway Data is not available:

If data is required for a takeoff position not listed on the WDR, an ACARS Takeoff Performance Update must be sent. In addition, use this option for any changes to runway contaminants.

Note: If an update is requested for a runway, WDR data will be transmitted via ACARS for the runway and up to two intersections. TDU Data will only be uplinked for the exact runway position requested (e.g., 31L at JFK will produce TDU data for 31L full length, or 31L-KE request will retrieve data for 31L intersection KE).



ACARS -601 TAKEOFF Performance Update

From ACARS Main menu:

- DAL REQUESTS (2R) Select
- TAKEOFF PERF (3R) Select
- Desired takeoff position Enter
- SEND Select

Note: Crews have the option to REJECT uplinks and enter takeoff data manually. Once accepted, crews can manually overwrite CG, V-speeds or ACCEL HT. Other manual changes on either TAKEOFF REF page will delete previously accepted values and cause the scratchpad message “TAKEOFF SPEEDS DELETED” to display. Deleted data can be retrieved by reentering the runway on RWY/POS.

Takeoff data without the ACCEPT or REJECT prompt usually indicates a missing value in the intersection field. Manually enter the appropriate intersection as listed on the WDR.

Missing takeoff data indicates the runway selected on the DEP/ARR page is not on the WDR or a TDU failure.

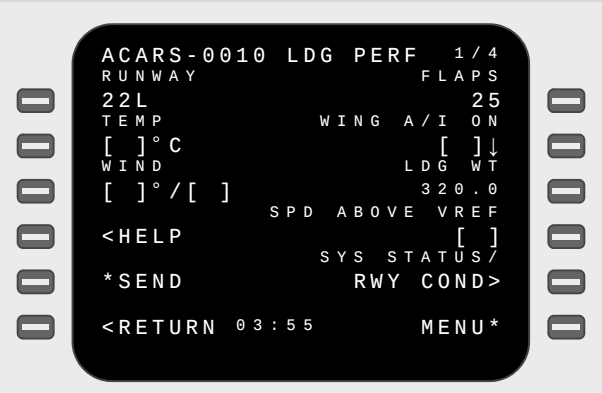
ACARS Landing Performance Request (LPR)

Note: LPR is intended for normal landing distances. For non-normal landing configurations, use the ODM charts.

Ships 5650-5657 and 5801-5816, 6819-6823 with ACARS 501 should use the ACARS Free Text or Misc report function to obtain LPR.

Note: The following show screen shots for the 767-300ER-GE.

From the ACARS 601 main menu page, line select DAL REQUESTS, then PERF LANDING.



Desired runway must be entered. If flap and landing weight are not entered, they will default to Flaps 25 (757-200/767-300); Flaps 30 (757-300) and estimated or max landing weight. Temperature and wind are automatically captured but may be entered manually if desired. Wing A/I can be toggled on if necessary.

Calculations assume the aircraft will decelerate during the flare and touchdown at VREF minus 5 knots. Speed above VREF is not entered for headwinds; however, additives for gusts are carried through to touchdown and should be entered.

Entering a value in the SPD ABOVE VREF block increases the touchdown speed by the same amount and landing distance will increase.

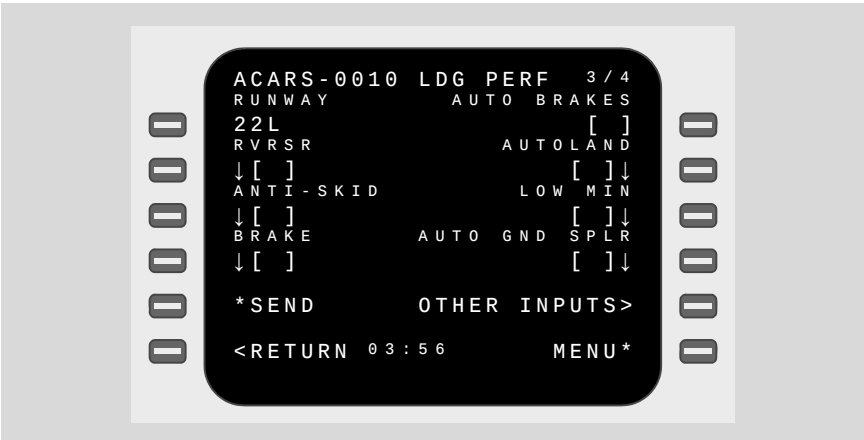
Select the RWY COND prompt, then line select the desired Runway Condition Code (e.g. 5) or Braking Action Report (e.g. GOOD).



Select SYS STATUS to display page 3.

Enter desired autobrake selection.

- 0 = Max manual
- 1-4 = Normal
- 5 = Max



Pg 3 also allows calculation adjustments for inoperative braking systems. LOW MIN is not used.

757/767-300 Operations Manual

Defaults: If the blocks for flaps, autobrakes, and landing weight are left blank, the system will default to Flaps 25, Autobrakes 3 (757-200/767-300); Flaps 30, Autobrakes 3 (757-300) and estimated or max landing weight. Crews must always enter weight when landing above the aircraft max landing weight.

Landing Performance Request Uplink

'*' Indicates fields selected or default.

LDIST = Calculated Landing Distance includes a 1500' air run from threshold to touchdown, plus stopping distance, plus a 15% safety margin. LDIST will never be greater than the available runway length.

LTP = Latest Touchdown Point to protect the LDIST on the available runway (default is 1500'). LTP varies between 1000' to 3000'. A landing beyond the LTP reduces the 15% safety margin included in the LDIST.

'()' = The LDIST and LTP are in parentheses when LTP is less than 1500'.

'- - -' = Dashes appear when the 15% safety margin cannot be met or data is not available for requested conditions.

Page 1: Provides station, runway and available runway landing distance.

Flaps 25, Autobrakes 3 and GOOD braking action were requested (*).

The LDIST for the requested conditions is 7500'. The actual stopping distance is less since LDIST includes a 15% safety margin. LDIST is 900' shorter than the available runway length; therefore LTP can increase from 1500' to 2400'. As autobrake and flap selections increase, LDIST decreases and LTP increases. LTP will never be greater than 1/3rd of the runway length up to 3000'.

JFK 22L		8400
5*GOOD	LDIST	LTP
F25*B-AB3	7500	2400
F25 B-AB4	6600	2800
F25 B-MAX	6400	2800
F30 B-AB3	7300	2600
W 304/05	HW01	XW05
*PRINT		

Page 2: Provides additional data for requested conditions as well as other Runway Condition Codes or Braking Actions Reports.

F25 B-AB3	LDIST	LTP
6 DRY	7500	2400
5*GOOD	7500	2400
4 G/M	7700	2200
3 MED	7800	2100
2 M/P	(8400)	(1400)
1 POOR	----	----
*PRINT		

Page 3: System status page. Includes ship number, flight number/date, landing weight as well as braking system status and production time stamp.

SHIP 1602	FLT 0130/08
WT 320.0	VREF PLUS 00
TEMP 7	A29.92
REVSER OK	WING AI OFF
ANTSKD OK	ASPOIL OK
END ACARS	LPR 2011Z
* PRINT	

ACARS Misc Report LPR Request

An ACARS MISC RPT message may be used to obtain landing data for airports other than the current destination.

Only default flap/autobrake and max landing weight are available.

Format: LPR4ATL27L

LPR = Landing Performance Request

4 = Runway Condition Code/Braking Action Report

ATL = Arrival Airport

27L = Desired Runway

Runway Condition Code/Braking Action Report:

6 = DRY

5 = GOOD

4 = GOOD/MED

3 = MED

2 = MED/POOR

1 = POOR

ACARS Free Text Dispatcher LPR Request

This method is used to request a desired weight and configurations from the Dispatcher. Send the following information via Free Text:

- Airport
- Runway
- Flap and autobrake setting
- Estimated landing weight
- Braking action
- Any additional data (inop items)

The dispatcher will manually enter the data in the online tool and uplink the requested report.

Automatic Enroute Wind Update (FMC Data Link Capable Aircraft)

Automatic wind updating provides automatic uplinks of enroute and descent forecast winds. At wind forecast times (0430z, 1030z, 1630z, and 2230z), a communications alert and chime will accompany the automatic WIND DATA UPLINK READY message in the scratchpad. After loading and executing, the DES FORECAST UPLINK READY message will be displayed. Load the descent forecast winds and updating is complete.

If less than 3 hrs of flight time remain at the new forecast times, only descent forecast winds will be sent. Wind updates that occur after the "out" event will not be sent until 30 min after takeoff.

If automatic uplinks are not received within 15 min of a new forecast time, perform an FMC RESET and then send a manual request. Sending a request for either Wind or Descent Forecast will deliver both uplinks. The dispatcher has no role in FMC Data Link functions.

Vertical Profile

Aircraft

At typical weights, the OPT ALT will change by 1000' every 1+45. Remember OPT ALT is based solely on "weight and speed"; it does not factor in winds.

Step Climb Guidance

FPS 2.0 will not suggest "wrong for direction of flight" step climbs or any step climbs on an organized track. Entering 1000 for the STEP SIZE allows the FMC to suggest and/or confirm the most economical altitude selections.

If actual ramp weight and flight plan ramp weight are close in value (+ or - 2000#):

- FPS 2.0 flight plan should be accurate except for "wrong for direction of flight" climbs, climbs on an organized track, or a change in enroute winds.

If actual ramp weight and flight plan ramp weight are not close in value:

- FMC calculated step climbs should be more accurate than FPS 2.0 flight plan.
- Use the LEGS page down track computed fix altitudes and VNAV CRUISE page RECMD ALT for vertical planning. Avoid "chasing" RECMD ALT.

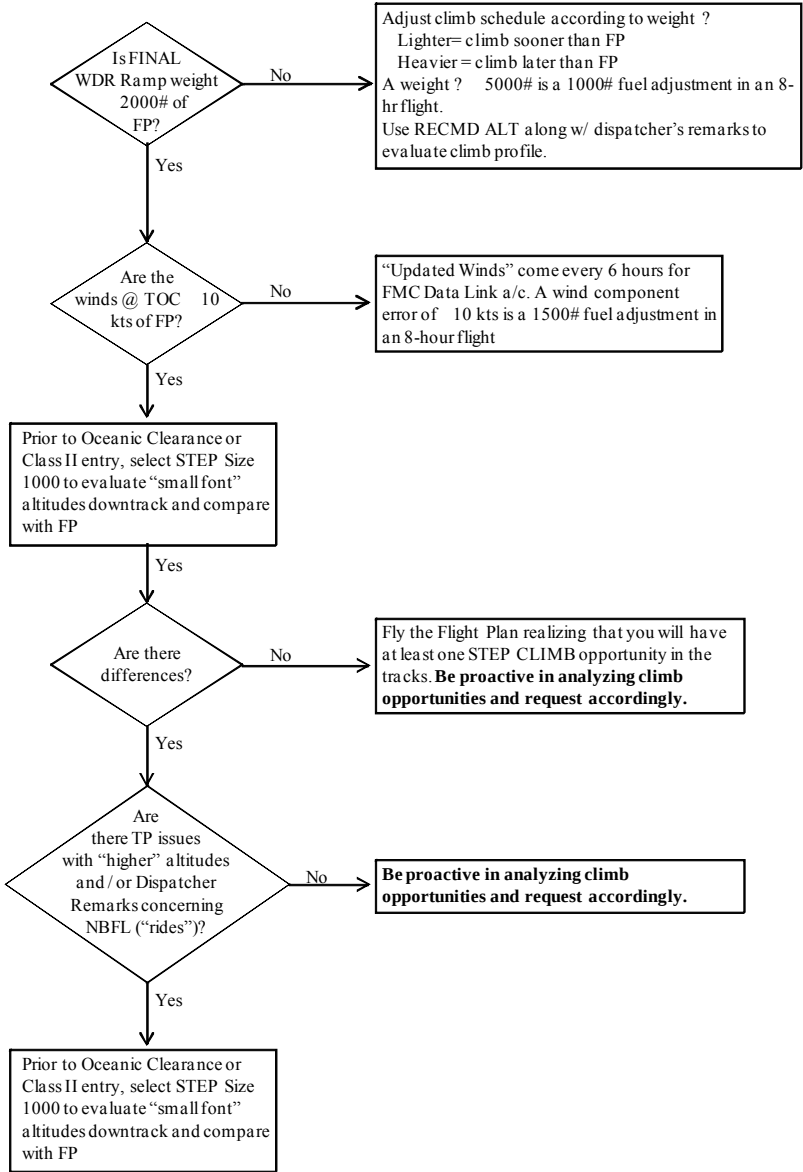
Note: Non-FMC Data Link capable aircraft will have crew-entered winds only.

Note: Crews should use all available resources such as the dispatcher, flight plan remarks, possibility of a "wrong for direction of flight" climb, forecast turbulence, and ATC limitations to assess any altitude changes.

Vertical Profile Planning

Use the Vertical Profile Planning Chart to evaluate the best altitude to fly and when to fly it. Remember that FPS 2.0 is a very complex and accurate program when FP and ramp weight are close to the same ($\pm 2000\#$). It should be followed as closely as possible factoring in all of the variables. Also remember that although the OPT ALT will increase approximately every 1+45, the winds may be more favorable at lower altitudes. RECMD altitude provides accurate climb or descent guidance using FMC winds to suggest best ECON altitude for the next 250-500NM.

Vertical Profile Planning Chart



FMC Data Link Reset

Use of the INIT RQ prompt on the ACARS PREFLIGHT page to uplink FMC data is limited to once per release number. A new release number unlocks the limit and will allow FMC data requests (one each) of the needed data. If inadvertent or additional FMC requests for current release number data are made, expect to receive the following ACARS message:

**** FMC DATA LINK ADVISORY* * CURRENT XXX UPLINK
ALREADY SENT. PERFORM - FMC RESET - IF UPLINK OF SAME
DATA REQUIRED.**

Note: XXX is the type of data, e.g., ROUTE, WIND, etc.

If it becomes necessary to re-request current release number uplinks, perform an FMC RESET by sending the key words FMC RESET in the text block of a MISC RPT via ACARS.

ACARS Menu:

MISC MENU Select
MISC RPT Select
EDIT TEXT Select
TYPE FMC RESET

For aircraft with ACARS control through MCDU:

ENTER Select
SEND Select

After a successful reset the following ACARS message will be received:

FMC DATALINK STATUS SUCCESSFULLY RESET

After receipt of the above ACARS message:

ROUTE, WIND, or PERF REQUEST Select

Once the reset message is received the necessary data can be requested individually from the request prompt on the appropriate page. The INIT RQ prompt on the ACARS INIT DATA page can only be used once per flight segment to initiate the FMC data link process.

Note: Do not send FMC RESET to FLT CTRL. FMC RESET is a fully automatic function that does not involve the dispatcher or the FMC itself.

Note: If unwanted FMC uplinks are received select LOAD in order to reveal the ERASE prompt and then select ERASE to discard the uplink.

Controller Pilot Data Link Communications and Automatic Dependent Surveillance (CPDLC/ADS)

Equipment Requirements

The following equipment must be operational for CPDLC/ADS:

- ACARS
- SATCOM, for operations beyond VHF coverage
- Pegasus FMC with DATALINK and active ATC functions (ATC INDEX page and sub-menu pages available when ATC button is selected on the MCDU).

During the ACARS INIT RQ process crews will receive the following message:

AIRCRAFT IS CPDLC/ADS CAPABLE-USE CPDLC/ADS PROCEDURES

Note: Refer to the Operations Manual, Volume 2, Communications Section, Air Traffic Control Data Link, for a detailed explanation of all CPDLC/ADS functions.

CPDLC/ADS Enroute Procedures

Crew should LOGON 15 minutes before entry into CPDLC/ADS airspace (Oceanic Entry Point for OCAs, or the FIR boundary). Both CPDLC and ADS logon are initiated simultaneously from the same ATC LOGON/STATUS page and SEND prompt; the subsequent connections may occur at different times.

A LOGON request initiates the data link process and is required prior to ATC establishing CPDLC and/or ADS-C connections.

Note: If the logon is REJECTED, the crew should confirm that the proper flight number and aircraft tail (registration) number are correctly entered on the LOGON page:

- Make the necessary corrections, or
- Contact ATC or Company to correct the flight plan, and then
- Reinitiate the logon

A CPDLC connection will be initiated by ATC prior to OCA airspace / FIR boundary. Confirm that ADS connects after LOGON by noting an (ACT) next to the ADS on the ATC LOGON/STATUS page 2.

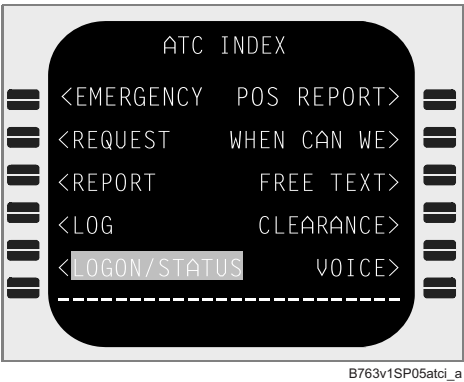
ADS reports are defined by ATC and include the following: periodic (time function), event (waypoint passage, along with lateral or vertical deviations), or demand (present position).

ADS position reports include weather, but do not include fuel and cannot be used by company. Unusual weather conditions should be reported to ATC via voice and to company via ACARS. ADS operation is transparent and crew monitoring is not possible.

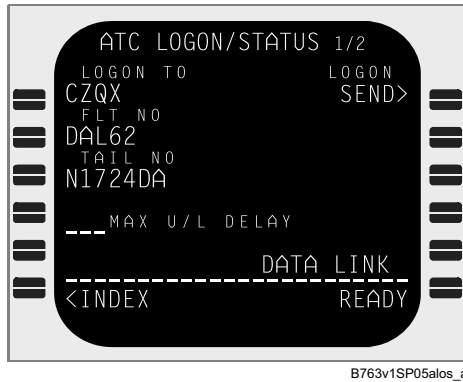
Note: Delta is charged for ADS reports. ADS should disconnect automatically when the a/c is in radar contact; if not, toggle ADS OFF, and then ARM again for automatic logon to any subsequent ADS operational FIR.

Logon Procedure

MCDU ATC button Select
The ATC INDEX page is displayed if aircraft is CPDLC/ADS capable.



LOGON/STATUS Select
Displays the ATC LOGON/STATUS page, used to initiate an ATC data link connection.



LOGON TO Insert the FIR or CPDLC identifier

Example: CZQX for Gander. Identifiers are listed in AM 6, on the Orientation Charts, and Enroute Charts.

CPDLC Logon code for New York Oceanic (KZWY) and Anchorage Oceanic (PAZN) are different from their FIR identifiers.

FLT NO Confirm or insert FLT NO, e.g. DAL62

Note: Do not insert spaces or leading zeros.

TAIL NO Enter

Insert full aircraft tail number (registration) as placarded on instrument panel or in logbook.

Max U/L Delay Leave blank

The maximum uplink delay defaults to 5 minutes when left blank.

LOGON SEND

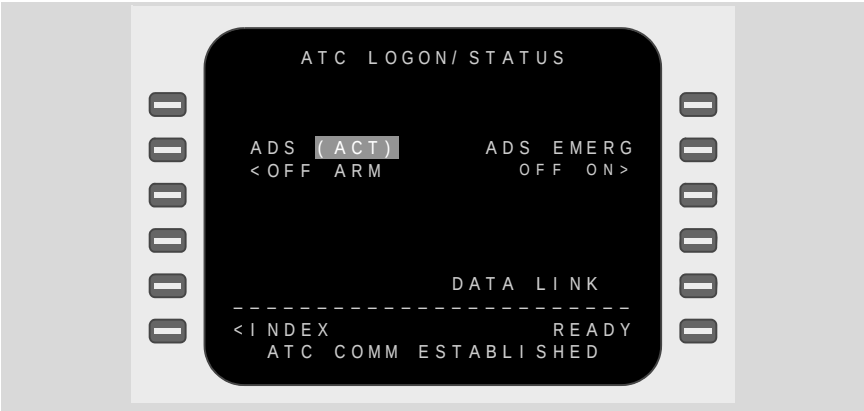
- 15 minutes prior to the Oceanic Entry Point (OEP) or FIR boundary
- Prompt will show SENDING, followed by SENT
- After an ATC response, displays ACCEPTED
- If data on LOGON page does not match precisely with ICAO flight plan data, REJECTED displays
- If there is no connection within 10 minutes, a RESEND prompt will appear

When a CPDLC connection is established , an uplink message [ATC COMM ESTABLISHED] will be displayed in the FMC scratchpad along with an FMC EICAS message, an FMC discrete light, and an MCDU MSG light.



Check ATC LOGON/STATUS page 2 for ADS connection.

ADS Ensure ARM displays in large font
ACT appears when an ADS connection exists. This may or may not be coincidental with CPDLC logon depending on how the controlling ATC manages ADS.



Note: For aircraft departing from an airport in proximity to the FIR (e.g. PDX, SEA, SNN, DUB), the crew should initiate logon after passing 10,000 feet and 15 minutes prior to the FIR boundary estimate.

Procedures

ATC Uplink

When a CPDLC uplink message is received by the aircraft, the crew is alerted by a chime and the EICAS communication message [·ATC]. The PF and PM should silently read and consider the message content individually, and then after confirming the content, decide whether to ACCEPT or REJECT the message. The crew must read the entire uplink, referring to page numbers in order to assure that the entire content is understood.

Pilots should respond to uplinks as soon as is operationally feasible. If a significant period of time will pass before responding, send a STANDBY response. Once the uplink has been accepted, enter and execute any required data to comply.

In response to an uplink message that requires a response element (WILCO, ROGER, AFFIRM, UNABLE, or NEGATIVE), the crew is presented with two prompts: ACCEPT and REJECT. When the crew selects either the ACCEPT or the REJECT prompt, CPDLC automatically transmits the correct response (WILCO, ROGER, AFFIRM, UNABLE, or NEGATIVE) for the corresponding message.

- If the correct response to the uplink message is affirmative (WILCO, ROGER, or AFFIRM), select the ACCEPT prompt.
- If the correct response to the uplink message is negative (UNABLE or NEGATIVE), select the REJECT prompt.

If an uplink is received that contains data that can be loaded into the FMC, a LOAD prompt is provided on the uplink page. The crew should load the data into the FMC and evaluate it before accepting the clearance. During the loading process, the FMC checks the uplinked data to ensure it is compatible.

- If the correct response to the uplink message is negative (UNABLE or NEGATIVE), select the REJECT prompt.
- If the FMC cannot accept the uplinked data, a message is provided to the crew (i.e., PARTIAL CLEARANCE LOADED or UNABLE TO LOAD). If either loading failure message is displayed, REJECT the clearance.
- If the uplink data is loaded without display of any failure messages, the crew should check to ensure the route modification created during the loading process does not contain any discontinuities. If a discontinuity exists in the route modification, REJECT/UNABLE the uplink and clarify using voice communications.
- If uplink data loads without any failure messages or discontinuities, execute the FMC route modification and ACCEPT the clearance.

Conditional Clearances

CAUTION: Use extreme caution when dealing with Conditional Clearances. Numerous ATC violations have resulted from crews missing the “conditional” nature of the clearance and climbing either early or late.

ATC will precede a conditional clearance with MAINTAIN FLXXX, indicating that the flight crew should maintain their present altitude until the conditions of the clearance are met. The condition will be a time or position, e.g. "AT (time or position) CLIMB TO AND MAINTAIN FLXXX".

Example: ATC conditional response to a crew request to climb to FL310:

ATC MAINTAIN FL310
 AT MICKY CLIMB TO AND MAINTAIN FL350
 REPORT LEVEL FL350

Both the PF and PM should study the clearance individually, then agree precisely upon the intent of the clearance and assure that all conditions are met. If any doubt exists, REJECT the clearance and revert to voice procedures.

Expect Message

CAUTION: Crews should use caution when dealing with EXPECT messages.

An EXPECT message is not a clearance. If any doubt exists, revert to voice procedures.

Aircraft Downlink

Ensure each pilot has read the downlink message before it is sent. To avoid potential ambiguity, do not send multiple clearance requests within a single downlink message. Utilize separate templates for each request.

To maximum extent possible, pilots should use the preformatted downlink pages to compose and send clearance requests, CPDLC position reports, and other requested reports. Additional qualifiers such as DUE TO WEATHER are provided on the downlink pages and should be used as needed (e.g. OFFSET REQUEST for weather deviation).

When the crew does not receive a response to a message after a reasonable period of time, and no error message has been received, send an inquiry message rather than resending the message. Alternately, revert to voice procedures.

Only use free text messages when an appropriate preformatted element does not exist. Preformatted elements minimize likelihood of crew or ATC error or misunderstanding.

Note: ETA changes of 3 minutes or more at the next compulsory reporting point can be reported via CPDLC free text.

CPDLC/ADS Automatic Functions

Transfer to Next FIR

Once logged on to an Air Traffic Service Unit (ATSU) that provides CPDLC and/or ADS services, transfer to a subsequent ATSU that provides CPDLC and/or ADS should be automatic.

- When approaching a FIR boundary, display the ATC LOGON/STATUS page to monitor the transition from the current ATC facility to the next.
- Approximately 60 minutes prior to the FIR boundary, in addition to the ACT CTR, the NEXT CTR identifier will populate. Approaching the boundary, the ACT CTR will populate with the identifier of the new ATSU.

Note: If an automatic transfer does not occur at the FIR boundary, crews should send a new LOGON request

CPDLC/ADS Radio Communications

Refer to AM, ATC & Flt Control Communications and AM, Intercontinental Ops & Theaters for additional information.

Atlantic

All coast in frequencies are sent via CPDLC.

- [AT 0430Z Contact Shannon on 135.6].

Note: Flights Over-Flying Bermuda Airspace:

Prior to entering Bermuda airspace, aircraft will receive an END OF SERVICE message that will result in termination of CPDLC. Aircraft shall re-log-on to KZWH prior to re-entering the New York Oceanic FIR when they are advised by ATC to contact ARINC on HF.

Pacific

The active OCA will uplink a CONTACT message:

- [Contact San Francisco Center on 8843 for HF SELCAL].

Note: This is actually ARINC, not Center, and should be addressed as follows:

San Francisco, Delta 786 CPDLC DCBA.

- All coast-in frequencies are sent via CPDLC.
- A CPDLC position report after crossing the FIR boundary is required in all Pacific OCAs (Oakland, Anchorage, and Fukuoka) for data authority confirmation; (ATC POS REPORT; ATC SEND>); ADS is then used for all subsequent position reporting.

CPDLC/ADS Termination

Exiting CPDLC and ADS airspace, the crew will receive an [ATC COMM TERMINATED] message in the MCDU scratchpad. Upon radar contact crews should check to see that there is no active ADS connection [ADS (ACT)] on the LOGON/STATUS page 2. If the automatic disconnect does not occur, crews should manually disconnect CPDLC/ADS modes as required to avoid unnecessary fees.

CPDLC and ADS Non-normal Procedures

Re-log on:

- If the automatic transfer between FIRs fails

Revert to Voice:

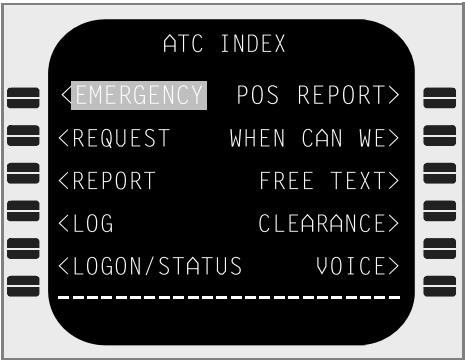
- If an abnormal data link condition exists, or there is a question about the validity or sequence of data link transmissions.
- If a valid downlink response is not received within a reasonable amount of time. Pilots should consider all open messages as not delivered and resolve via voice.
- If unable to re-establish a CPDLC connection after EICAS advisory message DATALINK LOST.
- If a discontinuity exists in the route modification. The crew should REJECT/UNABLE the uplink and clarify using voice.
- If UPLINK DELAY EXCEEDED message is received

CPDLC and ADS Emergency Modes

- Note:** Revert to voice any time voice is the best method to communicate their situation/intentions.
- Note:** Normally use the CPDLC EMERGENCY template rather than the ADS emergency prompt to declare an emergency. This will trigger both CPDLC and ADS emergency modes. ATC facilities receiving ADS only emergency communications will send a confirmatory CPDLC message (see below) to ensure intentional activation and determine if the crew is under duress.

CPDLC Emergency Procedure

- MCDU ATC button Select
- EMERGENCY Select



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The EMERGENCY REPORT page is used to generate an emergency message to ATC. The following prompts can be selected:

- MAYDAY inserts MAYDAY MAYDAY MAYDAY and displays the VERIFY EMERGENCY page. If a message is sent with MAYDAY selected, the system automatically transmits a position report and activates ADS in the emergency mode.
- PAN inserts PAN PAN PAN and displays the VERIFY EMERGENCY page.
- DIVERT TO defaults to the destination airport. If selected, the remaining route to destination will be included in the message. If an airport other than destination (i.e. alternate airport) is entered, a direct route to the new airport will be included in the message.
- DESCEND TO defaults to current MCP altitude. A new value, in feet XXXXX, or flight level, such as FLXXX, indicates intent to descend to the selected value.
- SOB allows entry of people on board. Fuel and time remaining is displayed when a number is entered.
- ERASE EMERGENCY appears when any message elements are entered. If pushed, it erases all the entered data. If the EMERGENCY REPORT has been transmitted, this display changes to CANCEL EMERGENCY which can be used to cancel the message.

VERIFY EMERGENCY Report send

The VERIFY EMERGENCY page is used to verify content, and transmit an emergency message to ATC after it has been generated on the EMERGENCY REPORT page. It also allows inserting a free text message into the generated message to further convey the emergency situation to ATC.

Note: After sending CPDLC/ADS logon (15-25 min prior to OEP), pre-populate the EMERGENCY page with the appropriate ETP airport, SOBs, leave offset blank, and a Descend To altitude. Crews can update the page as ETP airports change. In an actual emergency, the only other choice to fill in would be MAYDAY or PAN before sending. This could reduce response time if an emergency must be declared.

Note: If the crew inadvertently sends a CPDLC emergency downlink message or resolves the emergency situation, they should send CANCEL EMERGENCY, as soon as possible, to advise the controller and automatically set the ADS-C emergency mode to off. After sending CANCEL EMERGENCY, the crew should confirm the status of the flight and their intentions via either voice or CPDLC.

To check for inadvertent activation of the ADS C emergency mode using CPDLC, the controller may send the following CPDLC free text uplink or use similar phraseology using voice communication.

Controller CONFIRM ADS C EMERGENCY

The crew should then check the status of the aircraft's ADS C emergency mode and if the emergency mode has been activated inadvertently, the crew should select ADS C emergency mode to off and advise the controller either by voice or by CPDLC free text message.

ATC Response to an EMERGENCY Message

When a CPDLC or ADS emergency message is received, ATC may immediately send an ON DEMAND contract to determine the current position. They also may increase the PERIODIC contract reporting rate to 5 minutes.

Confirmation of Emergency Activation

When the ADS emergency mode is activated without a CPDLC emergency message or voice confirmation, and the demand contract report appears to indicate that the aircraft is maintaining normal operations (e.g. the aircraft is not in descent or involved in abrupt maneuvers), the aircraft may be subject to unlawful interference. To check for covert or inadvertent activation of the ADS emergency contract the following data link or voice phraseology shall be used:

Controller	Confirm ADS
Crew	"ROGER"

If the aircraft continues with the ADS emergency mode activated, ATC shall assume the aircraft is in emergency conditions and follow normal alerting procedures.

Acknowledgement of an EMERGENCY message

When an ADS emergency accompanied by a CPDLC emergency message is received by ATC, crews should expect immediate acknowledgement of the emergency by the most appropriate means (CPDLC or voice).

CPDLC acknowledgment

- A CPDLC acknowledgment shall be in the form of a free text message using the words ROGER MAYDAY or ROGER PAN. This uplink free text message requires a response from the pilot to close the CPDLC exchange. Depending on the nature of the emergency, the free text message may or may not be acknowledged by the pilot.

Voice Contact

- When an emergency is acknowledged by CPDLC, controllers may also attempt to make voice contact with the aircraft.



ADS Emergency Procedure

Note: The crew should use the CPDLC emergency downlink messages to automatically select the ADS C function to emergency mode. ADS emergency controls should only be used when situations prohibit sending a CPDLC emergency message.

- MCDU ATC Select
- LOGON/STATUS Select
- LOGON/STATUS Page 2
- ADS EMERG Select

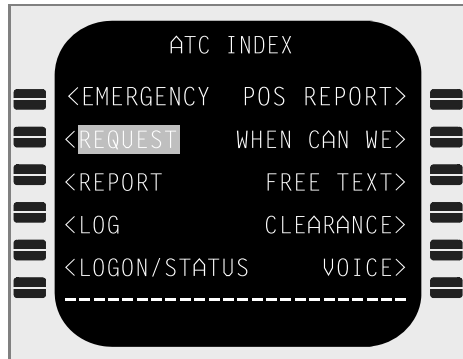
ATC will acknowledge an ADS Emergency message by contacting the aircrew by voice procedures or by a text message via CPDLC.

CPDLC REQUEST Examples

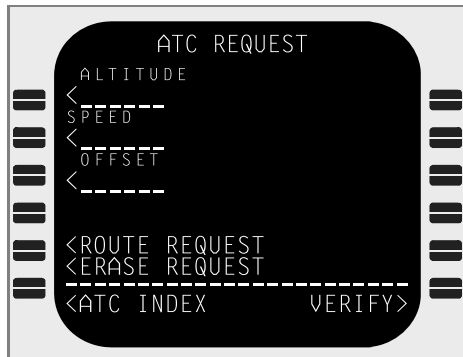
Requesting a Higher Altitude

MCDU ATC Select

REQUEST Select

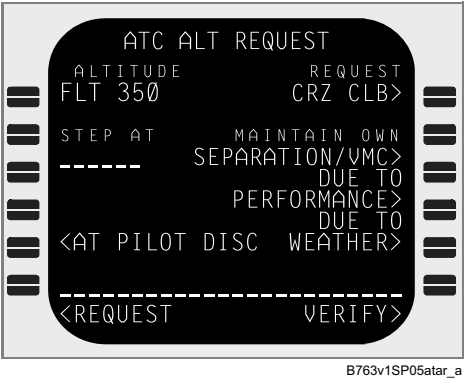


B763v1SP05atci_c

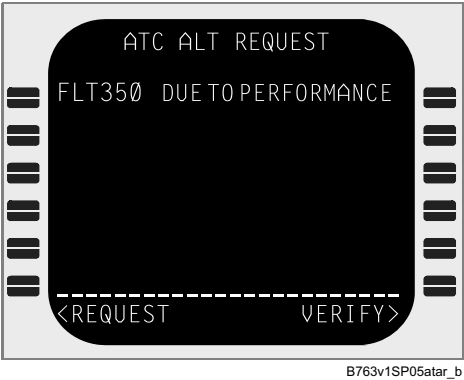


B763v1SP05atcr_a

350 Insert under ALTITUDE



Reason for request (if desired) Select
Example: DUE TO PERFORMANCE
VERIFY Select



A REQUEST requires the VERIFY page. A review should be made prior to selecting the SEND prompt.

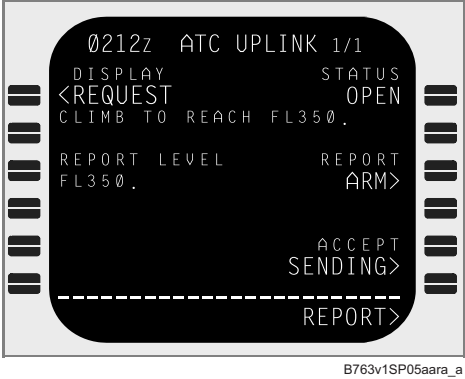


SEND Select

Once the request is sent the ATC LOG will populate showing a downlink has been made.

ATC will respond with STANDBY (while they evaluate the request). ATC will send either an UNABLE CLEARANCE, UNABLE HIGHER DUE TO TRAFFIC, give a conditional clearance, or accept the request and send CLIMB TO AND MAINTAIN FL350, REPORT REACHING LEVEL FL 350 BY N47° 00.0 W025° 00.00.





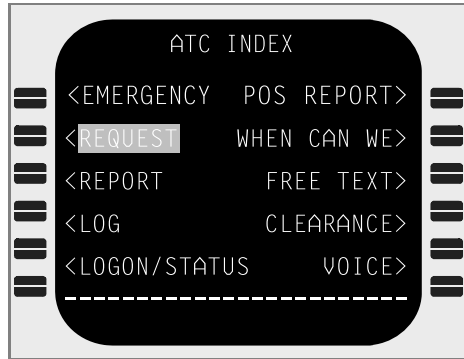
Report Functions

When a clearance to climb is ACCEPTED, a REPORT LEVEL prompt will appear that can be ARMED to allow for an automatic report to ATC when level.



Requesting a Deviation Due to Weather

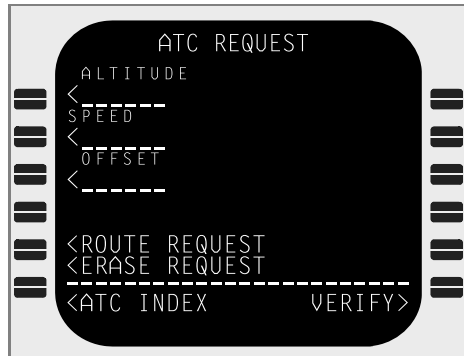
- MCDU ATC button Select
- REQUEST Select

757/767-300 Operations Manual


ATC INDEX

<EMERGENCY	POS REPORT>
<REQUEST	WHEN CAN WE>
<REPORT	FREE TEXT>
<LOG	CLEARANCE>
<LOGON/STATUS	VOICE>

B763v1SP05atci_c



ATC REQUEST

ALTITUDE

<-----

SPEED

<-----

OFFSET

<-----

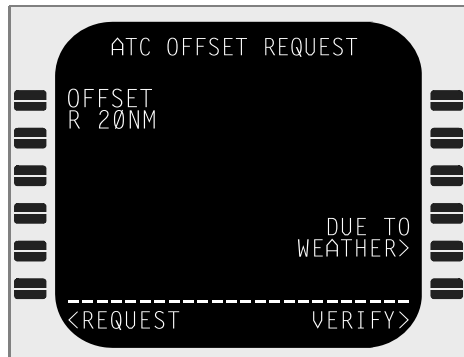
<ROUTE REQUEST

<ERASE REQUEST

<ATC INDEX

VERIFY>

B763v1SP05atcr_a



ATC OFFSET REQUEST

OFFSET

R 20NM

DUE TO WEATHER>

<REQUEST

VERIFY>

B763v1SP05atco_a

R20 Insert under OFFSET

DUE TO WEATHER Select

Note: DUE TO WEATHER must be selected when requesting a weather related deviation



VERIFY Select



SEND Select

Note: SLOP is standard procedure. Do not use CPDLC request for SLOP.

Deviation offsets other than SLOP should be requested via the ATC REQUEST page. When the deviation is no longer needed, confirm BACK ON ROUTE with ATC via CPDLC.

The off route distance in a weather deviation request/clearance is measured from the original route of the aircraft (the magenta line). If the crew receives a clearance off route and then requests and receives a subsequent deviation clearance, they should execute the new clearance, which supersedes the previous clearance. Only the most recent clearance is valid

Example:

Crew REQUEST WEATHER DEVIATION UP TO 20NM RIGHT
 OF ROUTE

Controller CLEARED TO DEVIATE UP TO 20NM RIGHT OF
 ROUTE. REPORT BACK ON ROUTE.

To deviate an additional 30nm right:

Crew REQUEST WEATHER DEVIATION UP TO 50NM RIGHT
 OF ROUTE

Controller CLEARED TO DEVIATE UP TO 50NM RIGHT OF
 ROUTE. REPORT BACK ON ROUTE.

Note: If diverting off track due to weather and a waypoint is passed abeam by more than 21nm in heading select mode, the FMC will not sequence the active waypoint on the LEGS and POSITION REPORT pages. The PF should re-program the FMC (execute an FMC offset that is within 21nm of the flight track or fly direct to the next waypoint if cleared so) to enable subsequent waypoints to be sequenced correctly.

HF System Test

CAUTION: Do not operate the HF transmitter while fueling operations are in progress.

Mode Selector (HF comm panel) USB or AM
Use of USB is preferable for all the HF communications.

HF Frequency Select
See Airway Manual, ATC & Flt Control Communications for HF frequency chart.

Note: Some HF control panels, to select a frequency below 3.000, require an 8 or 9 in the “tenths” position before a 2 can be selected in the “ones” position.

RF/HF Sensitivity Increase
Rotate Radio Frequency Sensitivity (RF SENSE) control knob clockwise to increase sensitivity.

HF MIC Selector Switch (Audio Control Panel) Push
MICROPHONE/INTERPHONE switch. MIC

Note: A 1,000 Hz coupler tone can be heard up to 20 seconds during HF antenna tuning. When the HF antenna is tuned to that frequency, the 1,000 Hz ceases and the HF system is ready to transmit.

Listen for good side tone.

Listen for other traffic on same frequency.

RF/HF Sensitivity Decrease
Rotate RF SENSE control knob counter clockwise to decrease sensitivity, and reduce noise and static.

Note: Decreasing sensitivity too far prevents reception, including SELCAL monitoring of HF radio.

Note: A SELCAL check is not required prior to departure. Obtain SELCAL Check with each agency to be utilized.

Once a SELCAL check is made with GP radio, flights are expected to remain on that frequency as required by Airway Manual and FIR.

For enroute HF communication information, refer to the Airway Manual, ATC & Flt Control Communications.

North Atlantic Oceanic Clearances via Datalink (Collins Touchscreen / MCDU)

Note: Datalink clearance is available only with Gander, Shanwick, Santa Maria, Reykjavik, and Bodo.

Request clearance 30-90 minutes prior to the Oceanic Boundary (Gander, Shanwick and Santa Maria).

Request clearance 20-25 minutes prior to the Oceanic Boundary (Reykjavik and Bodo).

ATC REQUESTS Select

OCEANIC CLX Select

Ensure the ACARS-OCEANIC CLX RQ pages have the following information entered:

Page 1/2:

ATS FLT ID Verify

Ensure correct flight ID has DAL followed by flight number with no leading spaces, zeros, or extra letters (e.g., DAL31, DAL1).

FACILITY Select

Toggle to select ATC facility for oceanic clearance request.

ENTRY POINT Enter

Enter the entry point fix (Oceanic Boundary Point or the last named fix prior to a LAT/LONG fix).

AT TIME Enter

Enter the ETA (e.g., HH.MM) for crossing entry point fix.

MACH Enter

Enter the requested mach number (e.g., .80) for cruise.

FLT LEVEL Enter

Enter the requested flight level (e.g., 330) at entry point.

Page 2/2:

REMARKS

EDIT TEXT Enter

Enter free text message for the following:

- Gander, Shanwick, Reykjavik, Santa Maria: max “acceptable” altitude (MAX F350).
- Shanwick and Reykjavik only: alternative track and/or flight level (e.g., 2ND NAT C 2ND F330 MAX F350).

SEND Select

SEND is not displayed until all fields are filled.

An acknowledgment of the request for clearance will be received within 5 minutes stating if no clearance received within specified time,
REVERT TO VOICE.

Note: Reference Chart AT 1/2 for voice procedures.

Upon receipt of clearance, review the message for the following:

- Check Flight Identification.
- Check clearance for additional information and/or changes.
- Check that the route coordinates received match with the published NAT track message.
- Advise the appropriate clearance delivery of any discrepancies via voice.
- Check Clearance ends with END OF MESSAGE.

Note: If there any discrepancies with the information above, contact the appropriate clearance delivery facility via voice.

If the oceanic clearance is acceptable:

ACCEPT Select

A CLEARANCE CONFIRMED message should be received within a few minutes.

If the oceanic clearance is NOT acceptable:

Contact the appropriate clearance delivery facility via voice.

System Problems

Any problem with the datalink Clearance System should be reported to the appropriate clearance delivery facility by voice.

SATCOM Operation for 757

Operating Procedures

5635-5650

Note: IRU alignment is not required for SATCOM system to operate normally.

To place a call:

SAT L MIC selector switch Press
Located on ACP

HOOK Press
Located on the Dialer / Controller panel
The HOOK LED will illuminate

Desired phone number Enter

Dial the desired number using the keypad. Use 1 (to call a US-based number) or 011 (to call a non-US-based number) + Country Code (as appropriate) + City Code (as appropriate) + Phone Number.

Examples:

ATL RADIO is entered as 1 404 715 1317

Iceland is entered as 011 354 5 694 141

ENTR Press

If ENTR is not pressed, the call will still connect after a short delay.

Note: It may take several seconds for the call to connect.

Push-to-talk / transmit switch Press
Release switch to listen.

To terminate the call:

HOOK Press

To answer a call:

The flight crew is notified by a single high chime (same as SELCAL) and the SAT CALL annunciator illuminates. The HOOK LED will flash.

HOOK Press

Puts unit in Call mode.

Push-to-talk / transmit switch Press

Release switch to listen.

To terminate the call:

HOOK Press

Additional Information

If the SATCOM system fails or in any way interferes with required aircraft systems, contact the Maintenance Control Coordinator for guidance.

The circuit breaker for the SATCOM system is located on the P11-1 circuit breaker panel, Row G, position 2, and is labeled SATCOM. It is powered by the left DC bus.

In the event SATCOM becomes inoperative, refer to the Airway Manual, ATC & Flt Control Communications for specific theater guidance. For SATCOM dispatch relief, refer to applicable MEL item in the MDM, Theater Restrictions Tab.

Operating Procedures

6801-6823

- Note:** IRU alignment is not required for SATCOM system to operate normally.
- Note:** SATCOM cannot be dialed using touchscreen. SATCOM calls are placed from the FMS MCDU only.

To prepare to place a call

On the HF/SAT SELECT Panel:

HF/SAT XFER R switch SAT

On the Audio Control Panel:

HF/SAT R microphone selector switch Press

The call light (in the HF/SAT R selector) is illuminated during a call.

From the MCDU MENU page.

SAT Press

The SAT-PHONE page will appear.

Directory Dialing

When channel status is SAT-1 READY:

<DIRECTORY Press

Pilots may select pre-stored ATC DIR or AOC DIR phone numbers. The AOC directory is provisioned for future company phone numbers; currently, only ATL Radio is displayed. Due to limited geographic coverage, the <EMERGENCY prompt should not be used. In an emergency, contact ATL Radio.

Push-To-Talk (PTT) or

MICROPHONE/INTERPHONE switch Press

Use Push-To-Talk button on the Audio Control Panel or yoke switch to transmit.

Note: If desired, the switch may be held continuously and the system will function like a normal telephone.

To terminate the call:

<END CALL Press

All calls should be terminated by the pilot on the MCDU to ensure release of system resources and prevent additional charges from accruing.

Using ATC DIR

The ATC directory phone numbers are stored in a hierarchy. Theaters are displayed as the top level followed by countries and facilities.

<ATC DIR Press

Theater Directory (e.g., PACIFIC) Press

Country Sub-Directory (e.g., JAPAN) Press

Note: ATL RADIO is displayed at 1L on all SUB-DIR pages.

Facility (e.g., FUKUOKA) Press

<MAKE CALL Press

Initiates the calling sequence.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Press

Use Push-To-Talk button on the Audio Control Panel or yoke
switch to transmit.

Note: If desired, the switch may be held continuously and the
system will function like a normal telephone.

To terminate the call:

<END CALL Press

All calls should be terminated by the pilot on the MCDU to
ensure release of system resources and prevent additional
charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Using AOC DIR

<AOC DIR Press

<ATL RADIO Press

<MAKE CALL Press

Initiates the calling sequence.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Press

Use Push-To-Talk button on the Audio Control Panel or yoke
switch to transmit.

Note: If desired, the switch may be held continuously and the
system will function like a normal telephone.

To terminate the call:

<END CALL Press

All calls should be terminated by the pilot on the MCDU to
ensure release of system resources and prevent additional
charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Manual Dialing

When channel status is SAT-1 READY:

Desired phone number Enter
Number will display in scratchpad.

Phone numbers may be dialed in any of the following ways:

- US phone numbers: Enter 1+Area Code+Phone Number (e.g., 14047151317) for ATL Radio.

Note: Do not enter plus signs (+), minus signs (-), or spaces.

- International phone numbers: Enter 00+Country Code+City Code+Phone Number.

Note: Note: Do not use 011 to dial the U.S from an international location.

- Short Codes: Enter the six digit ATS short code from HIGH/LOW charts (e.g., 436697)
- Speed Dialing: Enter 001 to connect with ATL Radio.

Note: A manually entered and selected phone number cannot be cleared, only replaced by entering and line selecting another number.

<MANUAL ENTRY Press

This will transfer the phone number in the scratchpad to the line below <MAKE CALL. This will initiate the calling sequence.

The channel status will indicate RINGING. When the call connects to the ground telephone network, the channel status shows as ACTIVE.

Once the call is in progress, the <MAKE CALL will change to <END CALL.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Press

Use Push-To-Talk button on the Audio Control Panel or yoke switch to transmit.

Note: If desired, the switch may be held continuously and the system will function like a normal telephone.

To terminate the call:

<END CALL Press

All calls should be terminated by the pilot on the MCDU to ensure release of system resources and prevent additional charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Answering Ground-to-Air Calls

When there is an incoming call, the flight crew is notified by a single high chime (same as SELCAL), the SAT R call light on the HF/SAT SELECT panel will illuminate, and the SAT channel status will change to INCOMING. The <ANSWER prompt will appear on the left and the <REJECT prompt will appear beneath the <ANSWER prompt.

To answer a call using MCDU:

On the HF/SAT SELECT Panel:

HF/SAT XFER R switch Press

On the Audio Control Panel:

HF/SAT R microphone selector switch Press

The call light (in the HF/SAT R selector) is illuminated during a call.

MENU function key Press

SAT Press

The SAT-PHONE page will appear.

INCOMING is displayed next to SAT 1.

<ANSWER Press

The call status will display ACTIVE and the <ANSWER prompt will change to <END CALL.

Note: To reject the call, press the <REJECT key.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Press

Use Push-To-Talk button on the Audio Control Panel or yoke switch to transmit.

Note: If desired, the switch may be held continuously and the system will function like a normal telephone.

To terminate the call:

<END CALL Press

All calls should be terminated by the pilot on the MCDU to ensure release of system resources and prevent additional charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Placing a Call on Hold

On the audio control panel:

Any MIC selector switch (other than HF/SAT R selector) Press

Places SATCOM call on hold and CALL light will remain illuminated.

To reconnect the phone line:

HF/SAT R selector switch Press

Reconnects to the SATCOM call.

Air/Ground Initiated Call Termination

When a call ends, initiated by either air or ground, the SAT channel status displays CALL ENDED, and the prompt <CLR STATUS appears. After a short period of time, the SAT channel status reverts back to READY and the prompt <MAKE CALL re-appears.

Additional Information

If the SATCOM system fails or in any way interferes with required aircraft systems, contact the Maintenance Control Coordinator for guidance.

The circuit breaker for the SATCOM system is located on the P11-1 circuit breaker panel, Row G, position 2, and is labeled SATCOM. It is powered by the left DC bus.

In the event SATCOM becomes inoperative, refer to the Airway Manual, ATC & Flt Control Communications for specific theater guidance. For SATCOM dispatch relief, refer to applicable MEL item in the MDM, Theater Restrictions Tab.

SATCOM Operation for 767-300ER

Note: IRUs must be aligned for SATCOM system to operate properly.

Note: SATCOM cannot be dialed using touchscreen. SATCOM calls are placed from the FMS MCDU only.

Operating Procedures

171-199, 1200-1201, 1501-1506, 1521, 1601-1613

Programmed call

HF/SAT XFER L or R switch Select SAT position

Select L SAT radio transmit/receive control switch. System defaults to left channel. If right channel is desired, push R SAT switch.

HF/SAT MIC selector (audio selector panel) Push

Pushing appropriate HF/SAT MIC selector (L or R) will connect respective Audio Control Panel to SATCOM L or R.

Pushing other than HF/SAT MIC selector will place call on hold.

MENU key (MCDU) Push

Note: If SAT is not displayed when selecting the MENU key on the MCDU, SATCOM and FMC WPR are not available.

SAT Select

Note: If SAT is not promptly selected, ACARS touchscreen will return to normal display.

The SATCOM MAIN MENU and SAT 1 AND/OR SAT 2 AVAILABLE should be displayed.

If SAT 1 and/or SAT 2 NOT AVAILABLE is displayed, accomplish the SAT 1 AND/OR SAT 2 NOT AVAILABLE NNC.

DIRECTORY Select

Observe priority:

- PRI 3 - Default (normal priority for company calls).
- PRI 2 - Safety of flight calls.
- PRI 1 - Emergency or distress calls.

Note: Use PRI 1 for emergency or distress calls only, since it may activate an alarm in ground earth stations (GES).

Select region:

Select appropriate region (ASIA, PACIFIC, ATLANTIC/SA, EUROPE).

Selected region page should be displayed.

Verify channel:

Ensure appropriate channel (SAT 1 or 2) agrees with respective XFER switch (L or R) on overhead panel.

Note: The left channel is the default channel and 1 will appear at 1R. If R SATCOM was selected on the overhead panel, 2 must be entered in the scratchpad and line selected to 1R.

Note: A list of selected facilities with their phone numbers will be displayed for one touch dialing.

Note: ATL radio is available from all regions.

Select desired facility:

Call will be initiated and system will return to the MAIN MENU page.

Observe the page for call status.

Note: When the call is connected, the SELCAL chime will sound, dialing will be heard and the SAT L or R light on the overhead panel will illuminate.

Note: Do not press the SAT L or SAT R light when it is illuminated or the call will be disconnected.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Push

Use Push-To-Talk button on the Audio Control Panel or yoke switch to transmit.

Note: If desired, the switch may be held continuously and the system will function like a normal telephone.

To terminate the call:

END CALL* Select
All calls should be terminated by the pilot on the MCDU to ensure release of system resources and prevent additional charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Manual call

HF/SAT XFER switch (overhead panel) SAT

Select L or R SATCOM switch.

SAT MIC selector (audio control panel)..... Push

Pushing appropriate SAT MIC selector (L or R) will connect respective Audio Control Panel to SATCOM (L or R).

Pushing other than SAT MIC selector on all Audio Control Panels will place call on hold.

MENU key (MCDU)..... Push

SAT Select

DIRECTORY Select

Observe priority.

- PRI 3 - Default (normal priority for company calls).
- PRI 2 - Safety of flight calls.
- PRI 1 - Emergency or distress calls.

Note: Use PRI 1 for emergency or distress calls only, since it may activate an alarm in ground earth stations (GES).

Verify channel:

Ensure appropriate channel is selected (SAT 1 or 2) for respective XFER switch (L or R).

Enter phone number:

Enter desired phone number in the scratchpad as follows:

Access code (00) - Country Code - City Code - Phone Number. For example: ATL Radio would be dialed as 00 1 404 715 1317.

Note: Once a number has been entered, it cannot be cleared, but may be replaced by entering a new number.

Select manual dial*

This initiates the call and returns the system to the MAIN menu.

Observe the SATCOM menu for call status (allow a short delay for connection).

When the call is connected, a chime will sound and the SAT L or R light on overhead panel will illuminate.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Push

Use Push-To-Talk button on the Audio Control Panel or yoke switch to transmit.

Note: If desired, the switch may be held continuously and the system will function like a normal telephone.

To terminate the call:

END CALL* Select
All calls should be terminated by the pilot on the MCDU to ensure release of system resources and prevent additional charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Receiving calls

Note: A chime will sound and the SAT L or R light on the overhead panel will illuminate to indicate an incoming ground-to-air call.

HF/SAT XFER switch (overhead panel) SAT

SAT MIC selector Push

Pushing appropriate SAT MIC selector (L or R) will connect respective Audio Control Panel to SATCOM (L or R).

Pushing other than SAT MIC selector on all Audio Control Panels will place call on hold.

MENU key (MCDU) Push

SAT Select
Allows crew member to monitor status of incoming call.

Push-To-Talk (PTT) or
MICROPHONE/INTERPHONE switch Push

Use Push-To-Talk button on the Audio Control Panel or yoke switch
to transmit.

Note: If desired, the switch may be held continuously and the
system will function like a normal telephone.

To terminate the call:

END CALL* Select
All calls should be terminated by the pilot on the MCDU to
ensure release of system resources and prevent additional
charges from accruing.

HF/SAT XFER switch (overhead panel) HF

Additional Information

In the event SATCOM becomes inoperative, refer to the Airway Manual,
ATC & Flt Control Communications for specific theater guidance. For
SATCOM dispatch relief, refer to applicable MEL item in the MDM,
Theater Restrictions Tab.

Operating Procedures

1701-1708

Placing Air-to-Ground Calls

Pre-Programmed Dialed Calls:

On the HF/SAT SELECT Panel:

HF/SAT XFER L or R switch Select SAT position

On the ACP:

HF/SAT L or R Microphone Selector Switch Select
The light is illuminated during a call.

From the MCDU:

MENU function key Push

SATCOM page (SAT) Select

The SATCOM Main Menu is displayed.

INDEX Select

Displays SATCOM DIRECTORY INDEX.

Region of operation Select

Select appropriate region of operation (ASIA/PAC,
ATLNTC/SA, EUROPE, etc.)

Pre-programmed facilities for the region selected, and
their associated phone numbers, are displayed for
one-touch dialing.

Note: ATL RADIO will always be first on the list in all
regions.

Desired facility Select
PLACE CALL Push

A phone call is initiated and the SATCOM MAIN MENU displays an IN PROGRESS call status. Audible ring tone should be heard.

When the call is connected, an ANSWERED call status is displayed and the CALL light (internal to transmit button) illuminates on the audio control panel.

Push-to-talk / transmit switch Press
If desired, the switch may be held continuously to conduct a telephone style conversation.

To terminate the call

END CALL Press

Manually Dialed Calls

On the HF/SAT SELECT Panel:

HF/SAT XFER L or R switch Select SAT position

On the ACP:

HF/SAT L or R Microphone Selector Switch Select
The light is illuminated during a call.

From the SATCOM MAIN MENU:

Desired phone number Enter

Use the following format, enter the phone number into the
MCDU scratch pad: [Access code (00) - Country Code - City
Code - Phone Number]

Example: ATL RADIO is entered as 00 1 404 715 1317.

SAT 1 or SAT 2 Select

Line select the manually entered phone number from the
scratch pad.

Note: A manually entered and selected phone number
cannot be cleared, only replaced by entering and line
selecting another number.

PLACE CALL Select

Select PLACE CALL for appropriate SAT1 or SAT 2 channel.

A phone call is initiated and the SATCOM MAIN MENU
displays an IN PROGRESS call status. Audible ring tone
should be heard.

When the call is connected, an ANSWERED call status is
displayed and the CALL light (internal to transmit button)
illuminates on the audio control panel.

Push-to-talk / transmit switch Press
If desired, the switch may be held continuously to conduct a telephone style conversation.

To terminate the call

END CALL Press

Answering Ground-to-Air Calls

Crews will be notified of a ground-to-air SATCOM call by a single high chime (same as SELCAL), illumination of the SAT L or R call light on the HF/SAT SELECT panel, a SELCAL alert message (displayed on EICAS), and illumination of the corresponding HF/SAT L or R Microphone Selector Switch light on all ACPs. Incoming calls will normally be received on SAT 1; however, if SAT 1 is in use, it will be received on SAT 2

Answering Calls Using ACP

When ground-to-air notification is received:

On the HF/SAT SELECT Panel:

HF/SAT XFER L or R switch Select SAT position

On the ACP:

HF/SAT L or R Microphone Selector Switch Select

Push switch associated with an illuminated light.

The microphone and headset are connected and the MIC/INTERPHONE switch controls transmission.

If desired, the switch may be held continuously to conduct a telephone style conversation.

Answering Calls Using MCDU

When ground-to-air notification is received:

On the HF/SAT SELECT Panel:

HF/SAT XFER L or R switch Select SAT position

On the ACP:

HF/SAT L or R Microphone Selector Switch Select

Push switch associated with an illuminated light.

The microphone and headset are connected and the
MIC/INTERPHONE switch controls transmission.

If desired, the switch may be held continuously to conduct
a telephone style conversation.

MENU function key Push

SATCOM page (SAT) Select

The INCOMING CALL is displayed next to either SAT 1 or SAT
2.

ANSWER CALL Select

The call-status will display CONNECTED.

To terminate the call

END CALL Press

Other SATCOM Features

Placing a Call On Hold

On the ACP:

Any MICROPHONE switch (other than SAT MIC) Push

Places SATCOM call on hold and CALL light will remain
illuminated.

To reconnect the phone line:

HF/SAT L or R Microphone Selector Switch Select

Reconnects the SATCOM phone line previously established.

Changing Call Priority

A SATCOM call can be made using one of three levels of priority, OPERATIONAL LOW, OPERATIONAL HIGH, and EMERGENCY. The system defaults to LOW priority for all calls and is the priority normally used. The OPERATIONAL HIGH and EMERGENCY priorities must be manually selected.

From the SATCOM MAIN MENU:

PRIORITY Select

Based on need, select level of priority:

- LOW - OPERATIONAL LOW
- HGH - OPERATIONAL HIGH
- EMG - EMERGENCY

Note: Using HGH may override and disconnect other SATCOM users.

Note: Using EMG may activate an alarm in ground earth stations (GES).

Using Both Voice Channels at the Same Time

Both SATCOM channels can be used simultaneously for conversations between two different parties (e.g., UPMC & Dispatch). Use the calling procedures, above, for SAT 1 and SAT 2. Also, if a voice channel is in use, an inbound call will be received on the opposite SAT channel.

Conference Calling

SATCOM does not have the capability to initiate a conference call; however, a conference call can be accomplished by the ground parties.

Additional Information

If the SATCOM system fails or in any way interferes with required aircraft systems, contact the Maintenance Control Coordinator for guidance.

In the event SATCOM becomes inoperative, refer to the Airway Manual, ATC & Flt Control Communications for specific theater guidance. For SATCOM dispatch relief, refer to applicable MEL item in the MDM, Theater Restrictions Tab.

HF Data Link (HFDL) Operations (757-300)

HFDL is enabled when one or both HF data radios are in the DATA mode, indicated when DATA is displayed in the Radio Tuning Panel ACTIVE frequency window. No further aircrew action is required when HFDL is enabled. The Communications Management Unit automatically selects when to use HFDL, using VHF in lieu of HFDL when available to reduce communication costs.

Note: HFDL is disabled when both HF data radios are in the VOICE mode.

If DATA mode is link is in question, downlink an information request (ATIS, weather report, question to Dispatch, etc.) and look for a response.

Although both HF-L and HF-R can operate in the DATA and VOICE modes, the convention is to use HF-L for DATA and HF-R for VOICE, both selected during preflight. This choice is important because only the radio that is selected in the DATA mode receives datalink program update messages. These messages, which are received continually, upload the most current frequency files and frequency selection strategy from the previous and present flights, and result in that receiver being the "smart" radio. If the crew elects to change the DATA receiver to HF-R, it will take 10 to 45 minutes to become fully operational. However, if the EICAS advisory message HF DATA is displayed, the other radio must be selected to DATA.

HFDL Ground Inhibit

HFDL transmissions are inhibited during all ground operations, even if the Radio Tuning Panel displays DATA in the ACTIVE frequency window. The aircraft weight-on-wheels discrete inhibits HFDL transmissions during ground operations to ensure the safety of aircraft and ground crew personnel. HF voice communication is available during ground operations even though HFDL transmissions are inhibited.

Selecting HF Data Mode

During Preflight:

HF-L button (either) Press

Press the HF-L button on one of the Radio Tuning Panels

Frequency Selector knob Rotate

Rotate the outer knob beyond the upper or lower HF frequency range.

The word DATA will appear in the STANDBY window.

Frequency Transfer switch Press

Moves the word DATA to the ACTIVE frequency window and places the selected HF radio in the DATA mode, enabling HF DL.

The HF data radio will automatically tune to an HF data ground station and requires no further aircrew action.

Selecting HF Voice Mode

HF-R button Press

If a frequency is displayed in the ACTIVE frequency window:

The selected radio is in VOICE mode

If the ACTIVE frequency window displays the word DATA:

Desired frequency Set

Set the frequency in the STANDBY frequency window.

Frequency Transfer switch Press

Moves the desired frequency to the ACTIVE window.

The selected radio is now in the VOICE mode. Tune the HF antenna coupler and transmit using normal HF operating procedures.

Note: If HF voice on HF-R is inoperative, changing to HF-L may restore voice communications.

Messages

The following EICAS messages may display:

- HF DATA (EICAS Advisory) - the DATA mode has failed
- DATALINK LOST (EICAS Advisory) - appears if the VHF and/or HF data link path is not available after a 90-second initial display
- DATALINK AVAIL (EICAS Advisory) - only appears when the data link connection is restored following a data link lost situation
- ACARS NO COMM (scratchpad) - data link path is interrupted
- HF DATA OFF (EICAS Memo) - neither radio is selected to DATA

Crew Rest Facility Communications

Pilot Crew Rest Compartment

1607-1613

To make a call from the flight deck to the pilot crew rest compartment:

PILOT REST CALL switch Press
Bottom half background illuminates blue and reads CALL and a hi chime sounds.

If there is no response from the compartment, calls can be attempted again after 5-second delays. The PILOT REST CALL switch and both Interphone Call Light/Switches will remain illuminated until either Interphone Call Light/Switch is pressed.

To make a call from the pilot crew rest compartment to the flight deck:

Interphone Call Light/Switch Press
On the flight deck the blue PILOT REST CALL switch on the overhead panel illuminates, a hi chime sounds, and the EICAS message CABIN CALL is displayed..

To make a call from the crew rest compartment to a flight attendant station, operation is similar to normal interphone operation. Calls cannot be made to the mid flight attendant station.

Flight Attendant Crew Rest Compartment (as installed)

To make a call from the flight deck to the flight attendant crew rest compartment:

Interphone handset Press MID (CR/MID, as installed)
A hi/low chime will sound and interphone call light will illuminate above the interphone and also in the Leader bunk.

Note: When calling the mid cabin flight attendant station from the flight deck, the flight attendant crew rest compartment Purser handset will ring. Use discretion so as not to disturb the flight attendant crew rest compartment inadvertently.

Communication from the flight attendant crew rest compartment to the flight deck and other flight attendant stations are via standard procedure.

Cabin Medical Communication Procedure (as installed)

At the captain's discretion, this procedure may be used during a medical emergency to allow direct communication between the cabin and a ground based medical consultant (currently Stat-MD).

Note: Audio jacks are installed above center seats at select rows, and the cabin is equipped with headsets. Inform Flight Attendants to ensure headset jacks are well-seated for proper connectivity.

When cabin medical communication is required:

Medical consultant communications Establish

First observer's Audio Control Panel (AUX panel) Set
Configure speaker and microphone select buttons. Select the appropriate radio system using the MIC. SELECTOR switches, make sure that the BOOM/OXY or MASK/BOOM switch is set to BOOM, and set the receiver volume control to the middle position. Use the hand microphone and headset.

Cabin communications Initiate
Inform cabin crew that communication with the medical consultant has been established and is available for their use. In addition, brief FA to press mic switch to transmit and release mic switch to listen.

If possible, monitor the cabin/medical communication through first observer's Audio Control Panel.

When cabin medical communication is no longer required:

First observer's Audio Control Panel Reset
Reconfigure first observer's audio control panel and instruct Flight Attendants to stow headset.

Note: Under no circumstances should a passenger be allowed to plug a personal headset into a cabin medical communications audio jack.

Wi-Fi

Wi-Fi Handset Procedures

The following procedure describes using voice over internet using either Wi-Fi handset. Using the handset for voice over internet is considered a backup if SATCOM is inoperative. Both the cabin and cockpit handsets are available for crew use above 10,000 feet. Similar to SATCOM, there is no satellite coverage near the poles so service interruptions can be expected when above 75° latitude.

The guarded INTERNET SWITCH above the cabin handset must be ON. To operate the phone pick up handset and accomplish the following:

SND key Press and hold for approximately 5 seconds
Turns phone on and illuminates screen.

3-2-5 (D-A-L) Dial
Unlocks phone handset.

RCL key Press
Accesses the phone book menu.

UP/DOWN keys Press
Scroll to desired pre-programmed contact.

SND key Press
Initiates call to selected contact.

Note: To adjust earpiece volume, press FCN key, select 4, User Configuration, Earpiece Volume.

Note: Voice communications will have a significant delay. This is a characteristic of geosynchronous satellites.

END key Press
Hangs up call.

FCN key Press
Select 5, then STO to re-lock the handset.

- Note:** The INTERNET switch should not be used to restore Wi-Fi service.
- Note:** The handset display will blank after 30-60 seconds of inactivity. Press the END key to recover the display. Always use the END key to recover the display. Use of other keys may trigger an undesired function, e.g., redial of last number.

Non-Normal Procedures

If smoke, fire, or fumes are thought to be caused by the Onboard Broadband Wi-Fi Internet System, accomplish the Smoke, Fire or Fumes non-normal checklist in the QRH.

- Note:** Wi-Fi system power is removed when the right UTILITY BUS switch is OFF.

Wi-Fi System Deactivation

There are two types of system deactivation, complete deactivation and passenger deactivation. Complete deactivation disconnects the Wi-Fi system for all users. Passenger deactivation disconnects Wi-Fi for the passengers, but allows the crew to use voice over internet via handset.

Complete Wi-Fi Deactivation (passenger & both handsets):

- 1. Contact cabin crew
- 2. Instruct them to turn the INTERNET switch OFF

Passenger Wi-Fi Deactivation (passenger only):

- SND key Press and hold for approximately 5 seconds
Turns phone on and illuminates screen.
- 3-2-5 (D-A-L) Dial
Unlocks phone handset.
- FCN key Press
Select 8.
- UP/DOWN keys Press
Scroll to select PAX WiFi Network.
- SND key Press

UP/DOWN keys Press
Scroll to select PAX WiFi OFF.

SND key Press

Note: If the flight crew determines a need to depower the Wi-Fi System, pull the INTERNET DC circuit breaker, located on the P11 panel.

Flights with Nontraditional Call Signs

Delta flights occasionally operate with an ATC-filed call sign that differs from the Delta flight number. This occurs on certain military charter flights (e.g. "Camber") and on stub flights. (Refer to FOM chapter 5.2, Stub Flights.)

Verify or enter the ATC-filed call sign in the FMS. This will assure ADS and transponder information are properly transmitted to ATC. The ACARS flight number will be populated with the ATC-filed number and must remain unchanged. ACARS messages will be received by Delta OCC dispatchers as a result of an automated process; however, an ACARS error message will be transmitted to the flight. This message can be ignored.

The flight plan will include the following dispatcher remarks for any flight operated with a call sign differing from the Delta flight number:

FLIGHT PLAN FILED AS CMBxxx
CMB CALL SIGN MUST BE ENTERED IN THE FMS AND USED FOR
ALL ATC COMMUNICATIONS
DO NOT ATTEMPT TO ENTER ENTER DELTA FLIGHT NUMBER IN
FMS OR ACARS

The message below will be sent via ACARS:

--DATALINK ADVISORY- - FLIGHT TO BE OPERATED AS xxx

DO NOT CHANGE UPLINKED FLIGHT NO IN FMS
CONFIRM CITY PAIR AND FLT RLS DATE ON ACARS FLT DATA PAGE
IGNORE FLT DATA ERROR MESSAGES WHEN RECEIVED. ACARS
MESSAGES WILL BE DELIVERED AS EXPECTED.

Intentionally
Blank

Supplementary Procedures
Electrical**Chapter SP**
Section 6

Electrical Power Up

The following procedure is accomplished to permit safe application of electrical power.

Battery switch ON

Standby Power selector AUTO

5801-5816, 6819-6823 with 90 minute battery

Verify APU BAT DISCH and MAIN BAT DISCH lights illuminated and standby bus OFF light extinguishes.

All others with 30 minute battery

Verify battery DISCH light illuminated and standby bus OFF light extinguishes.

757

Hydraulic Electric Pump switches Off

767-300

Hydraulic Electric Primary Pump switches Off

767-300

Hydraulic Demand Pump selectors Off

Landing Gear Lever DN

Alternate Flaps selector NORM

Bus Tie switches AUTO

Electrical Power Establish

If external power is desired and the EXTERNAL POWER AVAIL light is illuminated:

External Power switch Push

If APU power is desired:

APU selector START, then ON

Hold selector in the START position for 3 to 5 seconds, then slowly release back to ON.

Note: Do not allow the APU selector to spring back to the ON position

Observe starter duty cycle of 3 start attempts within a 60-minute period.

The APU should be started five (5) minutes prior to scheduled departure to ensure that the aircraft systems will function/operate properly on ships power.

APU Generator switch ON

Electrical Power Down

The following flight deck procedures are accomplished to permit removal of electrical power from the airplane.

APU selector/External Power switch Off

When APU RUN light extinguishes:

Standby Power selector OFF

Battery switch OFF

Operation With Less Than 90 KVA External Power Source

When external power source is less than required (90 KVA), airplane electrical loads must be minimized by supplementing normal procedures as follows:

Preflight Procedure

Accomplish normal Exterior Inspection - Captain or First Officer, Preflight Procedure – Pilot Monitoring, Preflight Procedure – Pilot Flying, Preflight Procedure - Captain and First Officer, and Preflight Procedure through “Start Clearance.....Obtain”.

Confirm cargo loading complete.

Utility Bus switches OFF

Hydraulic System Set

757

Electric Pump switch (right) ON

Observe PRESS light extinguished.

767-300

Demand Pump selector (right) AUTO

Observe PRESS light extinguished.

Fuel Pump switches (one left and one right main wing) ON

Observe PRESS lights extinguished.

Note: Delay activation of the remaining hydraulic and fuel pumps, setting trim and checking flight controls until after engines are started.

Complete the normal Preflight and Engine Start procedures.

After Start Procedure

- Hydraulic System Set
- 757**
Electric Pump switches (remaining pumps) ON
Observe PRESS lights extinguished.
- 767-300**
Electric Primary Pump switches (both) ON
Observe PRESS lights extinguished.
- 767-300**
Demand Pump selectors (remaining pumps) AUTO
Observe PRESS lights extinguished.
- Utility Bus switches ON
- Fuel Pump switches (remaining pumps) ON
Position switches ON for all tanks containing fuel.
- Trim Set
- Complete normal After Start procedure.

Shutdown Procedure

After park brake is set and prior to establishing external power:

- Hydraulic System Set
- 757**
Electric Pump switches (All) OFF
- 767-300**
Electric Primary Pump switches (both) ON
- 767-300**
Demand Pump selectors (All) OFF
- Fuel Pump switches OFF
- Accomplish normal Shutdown procedure.

Transfer From External Power To APU Power

Prior to disconnecting external power:

- External Power switch Push
- Observe ON light extinguish.

Standby Power Check

Prior to the aircraft’s first flight of the day, perform a standby power test.
Airplane must be on the ground with all buses powered.

- Standby Power selector BAT
 - 5801-5816, 6819-6823 with 90 minute battery**
Observe APU BAT DISCH and MAIN BAT DISCH lights illuminate and standby bus OFF light remains extinguished.
 - All others with 30 minute battery**
Observe battery DISCH light illuminates and standby power OFF light remains extinguished.
- Standby Power selector AUTO

Hydraulic Generator Test - 757

5635-5649, 5801-5816, 6801-6823, 6901-6904

Electrical power must be established on the airplane.

L and R Hydraulic Electric Pump Switches ON
EICAS Status Display On
PTU Switch ON

CAUTION: If the Hydraulic Generator Test switch is held in the HYD GEN position for longer than 10 seconds with the Left Hydraulic system turned OFF (Left Electric Pump OFF and engine shutdown), the Hydraulic Driven Generator will be "latched out" with no indications that it is now unusable. Completely removing electrical power from the airplane (with battery off) ensures that the Hydraulic Driven Generator Control Unit is reset following the test.

Hydraulic Generator Test Switch HYD GEN

While holding the test switch in the HYD GEN position, verify the HYD GEN ON and HYD GEN VAL Status messages appear on EICAS, and Captain ADI and HSI are powered with no flags displayed. The HYD GEN ON and HYD GEN VAL messages should no longer be displayed when the test switch is released.

Hydraulic Generator Test - 767-300

171-199, 1200-1201, 1401-1401, 1501-1506, 1521, 1601-1613, 1701-1708

Electrical and pneumatic power must be established on the airplane.

- Center 1/2 Electric Primary Pump Switches OFF
- Center Air Demand Pump Selector AUTO
- EICAS Status Display ON
- Hydraulic Generator Test Switch HYD GEN

While holding the test switch in the HYD GEN position, verify the HYD GEN ON and HYD GEN VAL Status messages appear on EICAS, and Captain ADI and HSI are powered with no flags displayed. The HYD GEN ON and HYD GEN VAL messages should no longer be displayed when the test switch is released.

Supplementary Procedures
Engines, APU**Chapter SP**
Section 7

Engines**Engine Battery Start**

The following BATTERY START procedure is provided to establish AC electrical power when the APU generator and external power are not available. Two ground pneumatic air sources (or one pneumatic source with two hoses) are required with APU bleed air unavailable. Some stations are equipped with High Volume start carts (Super Huffers). High Volume start carts can be used with only one hose. Start the remaining engine using an engine crossbleed start; refer to the Engine Crossbleed Start procedure, this section.

Accomplish the exterior and interior preflight.

Logbook Check

Circuit breakers Check

Electrical panel Set

BAT switch - ON

STBY POWER selector - AUTO

Hydraulic panel Set

Both engine pump switches - ON

Right electric/demand pump switch/selector - ON / AUTO

All other pump switches/selectors - OFF

Engine ignition selector 1 or 2 / SINGLE

PACK control selectors OFF

Pack valves, if open, must be closed manually prior to engine start.

757

ISOLATION valve OPEN

The isolation valve must be opened manually, if not already open.

767-300

ISOLATION valve As required

The left engine may be started with no regard to isolation valve position.

If starting the right engine, the right isolation valve must be opened manually, if not already open.

Landing gear lever DN

Verify position indication.

Alternate Flaps Set

Alternate Flaps Selector - NORM

Alternate Flaps Switches - Off

Flaps Set

Position FLAP lever to agree with flap position.

FUEL CONTROL switches CUTOFF

Parking brake Set

Communications Establish

Establish communications with ground crew (check service interphone on).

Accomplish engine start

Observe engine start parameters on standby engine indicator.

Observe EGT start limits (refer to L.10, EGT Limitations).

Electrical panel Check

Observe AC BUS OFF and utility BUS OFF lights extinguished.

Accomplish entire PREFLIGHT checklist.

Engine Crossbleed Start

Crossbleed start guidelines while attached to the tug:

- Cross-bleed starts are not permitted during pushback or when an aircraft is under tow.
- Cross-bleed starts are permitted when attached to a pushback tug provided the parking brake is set.

The APU must be shut down or the APU bleed air switch must be OFF.

The area behind the airplane should be considered. However, the thrust required for an engine crossbleed start is usually less than break away thrust for single engine taxi.

Engine Bleed Air switch (operating engine) ON

Advance thrust on operating engine to approximately 70% N2.

Accomplish normal Engine Start procedure.

Engine Ground Pneumatic Start

Check duct pressure 30 psi or greater.

Start engine using normal Engine Start procedure.

Note: Two ground pneumatic air sources (or one pneumatic source with two hoses) are required with APU bleed air unavailable. Some stations are equipped with High Volume start carts (Super Huffers). High Volume start carts can be used with only one hose.

Assumed Temperature Thrust Rollback

[AFM]

If the TMC reduces the AT to a cooler value, accept the new AT and use the corresponding V-speeds from the originally entered AT. Use only the V-speeds from the entered AT and do not attempt to match the TMC produced AT with another on the WDR.

Example:

T/F	CLIMB RATE			WIND	V1	VR	V2
D57/05	207.1	197.5			44	44	45
D54/05	209.9	199.9			43	43	45
D51/05	212.9	202.4			43	43	45
DTO/05	270.4	252.3			35	38	45
WTO/15	255.0	248.8			28	32	37

****ATTN MULTI FLAP****

From the WDR, D57 is entered into the FMS or the TMC panel and the TMC rolls back to AT53. The crew will accept AT53 and use the D57 WDR V-speeds of 144, 144, and 145 with a limiting weight of 197.5 for takeoff.

This procedure only applies to TMC generated AT rollbacks and is not approval to manually input ATs not listed on the WDR.

Log the TMC generated AT value via the logbook or ACARS.

Reduced Takeoff Thrust Change or Cancellation

[AFM]

If change desired:

Assumed Temperature Set

Enter new temperature selector and set new temperature value.

If cancellation desired:

Thrust Reference Mode Select switch As desired

Select desired thrust reference mode; TO/GA, CLB, CON or CRZ.

Observe associated mode displayed.

Note: If full takeoff thrust desired during takeoff following 80 knots (autothrottle in THR HOLD mode) thrust levers must be adjusted manually.

Reduced Climb Thrust Change or Cancellation

If change desired:

Thrust Reference Mode Select switch 1 or 2

Select desired climb thrust reference; 1 or 2.

Observe CLB 1 or CLB 2 displayed.

If cancellation desired:

Thrust Reference Mode Select switch 1 or 2

Push switch associated with current thrust reduction.

Observe CLB or TO (ground only) displayed.

Note: If preselected reduced climb thrust is changed or cancelled and reduced takeoff thrust is still desired, reduced takeoff thrust must be reselected.

Reduced Climb Thrust Selection In-flight

[AFM]

Thrust Reference Mode Select switch CLB
Observe CLB displayed.

Thrust Reference Mode Select switch 1 or 2
Select desired thrust reference; 1 or 2.
Observe CLB 1 or CLB 2 displayed.

Engine Condition Monitoring (ECM) Report Documentation

Accomplish an ECM report when directed by an MEL (O) Procedure or when the MEL ITEMS FOR SHIP NUMBER section of the flight release contains an “S” item as follows:

- S72-00-82E ACCOMPLISH ENGINE ECM REPORT

Accomplish the report(s) during cruise for flights over one hour. For flights over one hour, accomplish once every three hours.

Procedure

When the aircraft is stabilized in cruise:

Autothrottles Disengage
Allow engines to stabilize (3 to 5 minutes).

EVENT RECORD switch Press
Pressing the EVENT RECORD switch on the EICAS Control Panel takes a snapshot of the required engine parameters and stores them in EICAS memory.

Autothrottles Re-engage

Perform the following steps on the EICAS Maintenance panel:

Note: The following steps are not applicable to ships 5501-5534, 5635-5645.

PERF/APU DISPLAY SELECT switch Press

MAN EVENT READ switch Press

Record displayed data onto Engine Performance Report form located in the Engine Performance Log Book (green binder). Refer to TOPP 50-10-25 in the TDD section of the MDM.

APU Cold Soaked Start Procedures for ETOPS Aircraft

General

APU cold soaked start attempts are routinely required by an MEL (O) procedure or when scheduled by the ETOPS maintenance program. In either case, an ACARS message should be sent to remind the crew.

MEL Required Start Attempt

When a cold soaked start is required by the MEL, an M item will be listed on the flight release under the MEL ITEMS FOR SHIP NUMBER section:

- M49-11-01 APU SYSTEM - COLD SOAK NOT VERIFIED

Prior to dispatch, refer to the MDM and accomplish the appropriate MEL (O) Procedures.

All MEL required start attempts (successful or unsuccessful) must be documented in the aircraft logbook.

Routine Start Attempt

When a cold soaked start is required by the ETOPS maintenance program, the following “S” item will be listed on the flight release under the MEL ITEMS FOR SHIP NUMBER section:

- S49-00-00A COLD START RQRD-SEE AOM VOL1 SP.7

Document APU start attempts using the procedures below.

Procedures

Attempt the APU start prior to the TOD between FL270-FL410, after at least two hours at cruise altitude. If the APU fails to start on the first attempt, two subsequent start attempts may be attempted. The APU must maintain a stable operating speed for at least five minutes to be considered a successful APU in-flight start.

Note the following:

- APU Start Successful or Unsuccessful
- Number of start attempts required
- Static Air Temperature
- Flight Level
- Peak EGT during start

ACARS Documentation of Routine Start Attempt

Note: For ships 5801-5816, 6819-6823 with ACARS-501, or if ACARS is INOP, a logbook entry is required whether the APU start was successful or unsuccessful.

Complete the COLD START APU report via the following:

From the ACARS MENU:

REPORTS MAINTENANCE Select
COLD START APU Select

On the APU DATA page:

START IN 3 ATTEMPTS? Toggle
Toggle YES or NO into field.

Note: If unsuccessful (NO), a logbook entry is required.

SAT Enter
Enter SAT from PROG Page 2.

PEAK EGT Enter
Enter peak EGT from STATUS page.

START ATTEMPTS Enter
Enter number of start attempts.

FLIGHT LEVEL Enter

SEND Select

Full Thrust Takeoff Documentation

When a Full Thrust Takeoff has not been recorded within a sixty-day period, the MEL ITEMS FOR SHIP NUMBER section of the flight release will contain an “S” item as follows:

- S72-00-83F ACCOMPLISH FULL THRUST TAKEOFF REF VOL1 SP.7

A log book entry and subsequent maintenance action are required if an engine fails to attain takeoff thrust.

Accomplish a full thrust takeoff and document in ACARS via the following procedures.

Procedures

ACARS-601

From the ACARS MENU:

SUMMARY ARR DATA Select

On the ARRIVAL page:

T/O+LAND ID Select

T/O POWER Toggle

Ensure TO is displayed in the field.

PWR DERATE - ensure the AT[] field is blank.

The data on the ARRIVAL page must be entered within seven minutes of the “IN” time or the data will be lost.

ACARS-501

Reference SP.5, Communications, Postflight, FLT SUMMARY page 1/2.

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Supplementary Procedures
Fire Protection**Chapter SP**
Section 8**Fire and Overheat Test**

Note: Prior to the aircraft's first flight of the day, perform a fire/overheat test.

ENG/APU/Cargo Fire Test

ENG/APU/Cargo test switch Push

Verify the fire bell rings intermittently.

Observe the following lights:

Master Warning

Discrete FIRE warning

Fuel CONTROL switches

Left and Right ENG OVHT

LEFT ENG, RIGHT ENG, and APU FIRE handles

FWD and AFT cargo fire

The following EICAS messages appear:

L ENGINE FIRE

R ENGINE FIRE

APU FIRE

FWD CARGO FIRE

AFT CARGO FIRE

L ENG OVHT

R ENG OVHT

Wheel Well Fire Detection Test

WHL WELL test switch..... Push

Verify the fire bell rings intermittently.

Observe the following lights:

Master Warning

Discrete FIRE warning

WHL WELL FIRE

The following EICAS message appears:

WHEEL WELL FIRE



Flight Recorder Test

Flight Recorder switch Test
Observe OFF light extinguish.

HSI Heading Reference Switch Operation

Use TRUE when flying in regions where true referencing is required. Use NORM at other times.

Heading Reference switch NORM or TRUE

Note: The following information applies when using the Heading Reference switch:

- If the AFDS is in the HDG SEL mode and the Heading Reference switch position is changed, the AFDS mode changes to HDG HOLD; HDG SEL may be reselected.
- If making an ILS approach using true referencing, the localizer course referenced to true north must be set on the ILS control panel.
- When in TRUE, HSI and RDMI heading will disagree by an amount equal to the local magnetic variation.

QNH Procedures in Moscow

Departing the United States

Preflight

Landing Altitude selector Set
Set Landing Altitude Indicator to field elevation 630'.

Arriving in Moscow

Cruise/Descent

Entering Russian airspace and during descent use the International Conversion Chart to fly assigned altitudes.

Approach/Landing

Request QNH from Approach control before descending below the Transition Level. (Use hourly ACARS weather as a backup. "Qxxxx" is the QNH altimeter setting).

When below the transition level:

Set QNH (ignore QFE setting given by Krug) and use the ALT/HEIGHT conversion chart on the STAR/Approach plate to fly assigned altitude.

Example: "Delta 30, descend to 900m." On the STAR/Approach plate the ALT/HEIGHT conversion table shows 3600' (3590' rounded up).

Typical descent profile is 900m/3600' followed by 600m/2600' for glideslope intercept.

The approach plate depicts all QNH altitudes first. Bold italicized altitudes in parenthesis are QFE.

Example: ILS 25R DA (H) 822' (200'). Baro bug should be set to 822'.
The missed approach altitude is 3600'.

Altimeters should read Field Elevation on landing.

Note: The requirement remains to back up all approaches with raw data (ADFs, VOR, and ILS) and be prepared to use HDG select for LOC intercept.

Departing from Moscow

Takeoff/Departure

Altimeter Set

Request QNH from Ground Control.

Altimeter should read field elevation.

Initial climb on SID is 900m/3600'.

Transition Altitude on the SID and FMS climb page is 3900'.

Use the "ALT/HEIGHT conversion" chart on SID to fly
published/assigned altitudes.

Set QNE when cleared to an altitude above the Transition Altitude and use
the International Conversion Chart to fly assigned altitudes.

**CAUTION: Use only the ALT/HEIGHT conversion chart
published on the STAR/SID for operations below the
Transition Level / Transition Altitude.**

Intentionally
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Supplementary Procedures

Flight Management, Navigation

Chapter SP

Section 11

Transponder Test

This procedure requires the IRS to be aligned and in NAV mode.

Aircraft with Transponder Mode Selector

Transponder Mode selector TEST

Verify "TCAS SYSTEM TEST OK" aural sounds.

Aircraft with TCAS TEST switch

TCAS TEST switch Push

Verify "TCAS SYSTEM TEST OK" aural sounds.

or

Verify "TCAS TEST" and "TCAS TEST PASS" aural sound

Weather Radar Test

This procedure requires the IRS to be aligned and in NAV mode.

Note: To prevent the appearance of nuisance WXR SYS STATUS messages, ensure the radar is turned on first and turned off last, and the HSI WXR display is turned on last and turned off first.

Weather Radar Mode TEST

Note: The TEST mode presents no hazard to personnel or equipment.

5801-5816, 6801-6823

Select TEST mode on the Weather Radar Control panel.

All other ships

Select TEST mode on the Weather Radar Indicator panel.

HSI Mode selector MAP

Weather Radar switch ON

Press the WXR switch on the EFIS control panel. Observe radar test pattern on the Weather Radar Indicator/HSI as shown below.

Observe radar test pattern as shown below.

Note: For aircraft with predictive windshear system (PWS) installed, when the airplane is on the ground and the thrust levers are not advanced for takeoff, the WXR tests the predictive windshear system indications. These include the WINDSHEAR SYS EICAS advisory, the PWS caution, and PWS warning. Deactivating WXR on the EFIS control panel will discontinue the test. The PWS test lasts approximately 15 seconds.

Weather Radar switch OFF

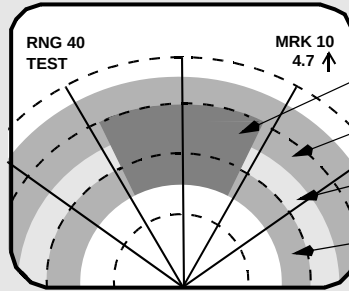
Press the WXR switch on the EFIS control panel to select Captain’s and First Officer’s weather radar displays off.

Weather Radar Mode As desired

5801-5816, 6801-6818

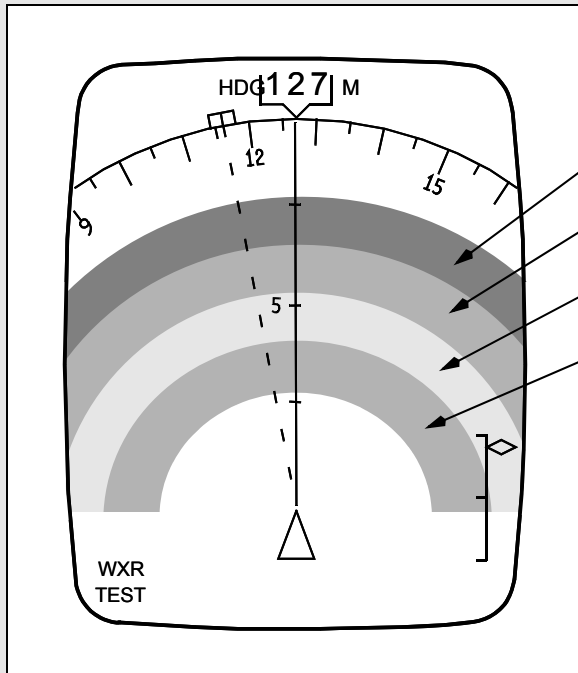
Leave TEST mode selected on the Weather Radar Control panel to prevent inadvertent radar operation.

757-200/-300 / 767-300 (except ships 5801-5816, 6801-6818)



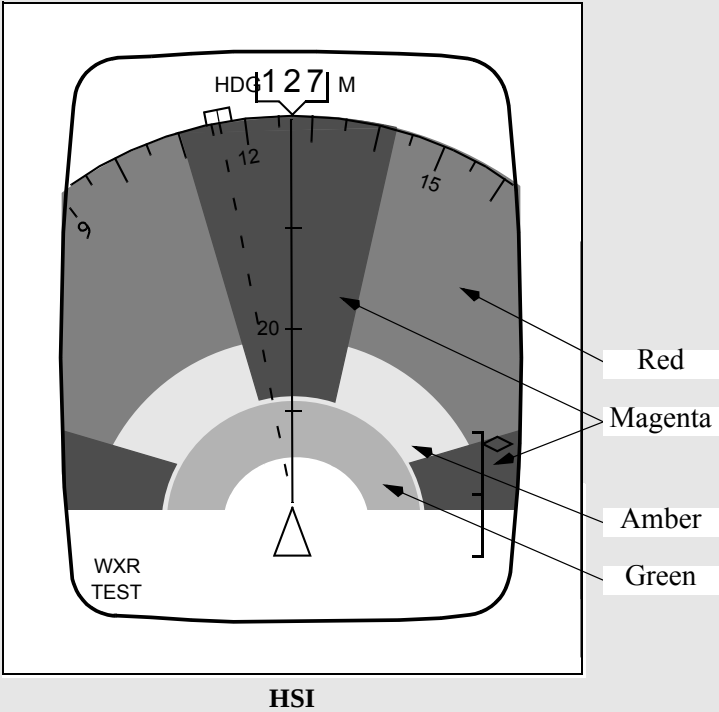
WEATHER RADAR INDICATOR

757-200/-300 / 767-300 (except ships 5801-5816, 6801-6818)



HSI

5801-5816, 6801-6823



Radar Operation - MultiScan

6819-6823

Automatic Mode (Recommended)

The Automatic mode is the standard mode of operation for this radar. The automatic antenna tilt and gain, Ground Clutter Suppression (GC), Path Attenuation Compensation (PAC) and OverFlight protection features are enabled in this mode.

If automatic operation fails, no radar returns will be displayed and a "NO AUTOTILT" annunciation will appear on the navigation display. Select the Manual mode when the NO AUTOTILT alert is annunciated.

Manual Mode

In the Manual mode, the radar can be operated in the same manner as the previous radar system. However, the features provided in the Automatic mode have proven to be far superior in conveying comprehensive weather information with greater accuracy.

Note: Ground Clutter Suppression (GC) is not active when the manual mode is selected.

Radar Operation Conventional - (Non MultiScan)

The recommended tilt and range settings are guidelines for good radar operation. The flight crew is not limited to these settings. Operational needs often dictate flexibility in tilt and range selections.

Before Takeoff

Confirm RADAR operation with a confidence check.

Set tilt 15° UP, WX mode, and short range.

Slowly lower tilt until weather or ground returns are displayed.

If no returns can be detected, suspect an inoperative radar.

To evaluate terminal area weather before takeoff:

Set tilt at 15° UP, RANGE at 40 nm or less.

The radar height of weather targets displayed is at least (Tilt x Distance x 100). Weather targets displayed at:

10 nm	are at least 15,000 feet AGL
15 nm	are at least 22,500 feet AGL
20 nm	are at least 30,000 feet AGL

Slowly lower tilt from 15° UP to 4° UP while evaluating weather returns in the area.

Takeoff

During takeoff, tilt is initially set at 4° UP, with range at shortest appropriate for terminal area conditions.

During initial climb (below 10,000 feet AGL) gradually lower tilt to 1° - 2° UP. (Maintain the radar display clear of ground returns while allowing weather returns to be displayed).

Climb

As climb continues above 10,000 feet AGL, lower tilt as necessary to maintain ground returns at the outer edge of the display.

A range selection of 80 nm or less is optimal during climb, unless a longer range setting is needed for deviation planning.

Cruise

To establish enroute park:

Set RANGE at 80 nm or less.

Adjust tilt to produce ground returns at the outer edge of radar display.

This tilt setting guards against overscanning nearby weather areas and provides continuous confirmation that the radar is working. Weather targets will separate from ground returns and move toward the bottom of the display.

Range settings above 100 nm should be selected occasionally for long-range planning.

Set tilt to produce a scattering of ground returns beyond 100 nm.

Storms detected at long range will increase in displayed intensity as they are approached. Plan early deviations accordingly.

Note: Nearby weather areas may not be detected due to overscanning. When returning to a shorter range, lower tilt to enroute park position.

At cruise altitudes above 30,000 feet:

Use sufficient down tilt to direct the beam into unfrozen areas of nearby storms.

Confidence Check:

Enroute radar performance can be checked by adjusting tilt to display farthest possible ground returns.

In WX mode and with GAIN control in AUTO, a properly functioning radar should detect ground returns to the following distances:

10,000 feet AGL	100 nm
20,000 feet AGL	140 nm
30,000 feet AGL	175 nm
40,000 feet AGL	200 nm

Descent

On descent from cruise altitude, raise tilt as necessary to maintain ground returns at the outer edge of the display.

Low Altitude Park

Generally used at altitudes below 10,000 feet AGL.

To observe weather:

Set tilt 1 1/2° to 2° UP, range at shortest appropriate distance.

Note: If ground returns flood display, raise tilt until ground returns are removed, and weather can be displayed.

Approach

Approach Park

On final approach:

Set tilt at 10° UP, range at 20 nm.

At 10° UP tilt the radar height of weather returns displayed will be above aircraft altitude by at least (Tilt x Distance x 100). Weather areas will be developed above aircraft altitude by at least:

10 nm	10,000 feet
15 nm	15,000 feet
20 nm	20,000 feet

Strong returns at mid to upper levels indicates hazardous convective activity.

In a thunderstorm environment, occasionally lower tilt to produce ground returns and detect radar shadows, then return tilt to approach park.

Radar Guidelines

Tilt Formula

Using ground returns as a reference provides quick and effective tilt management. When more precise tilt management is desired, the tilt formula can be used.

$\text{Tilt} \times \text{Distance} \times 100 = \text{feet (above or below) aircraft altitude.}$

Example: With 5° DOWN tilt, the radar beam would be centered approximately 20,000 feet below aircraft altitude 40 nm ahead.

$5 \times 40 \times 100 = 20,000 \text{ feet (below aircraft altitude).}$

Tilt Accuracy Check

To check the accuracy of tilt control the following exercise can be conducted. Optimal conditions for this check are straight and level flight, altitude 10,000 feet AGL or higher, level terrain, and no intervening weather.

Adjust tilt until the yellow ground return arc starts at a distance equal to $[2 \times \text{AGL altitude}/1,000]$.

Example: If aircraft at 34,000 feet AGL, yellow ground returns start at 68 nm on the display (2×34) .

Check tilt setting.

Tilt should be at 3 1/2° DOWN $\pm 1/2^\circ$ (acceptable limits 2° - 5° DOWN).

If tilt is not within 2° - 5° DOWN, note difference between tilt setting and 3 1/2° DOWN. This is the amount of tilt error present and should be applied to all tilt settings.

Gain Control

For proper calibration of the receiver, GAIN control must be in AUTO. Manual GAIN can be used to evaluate the relative strength of surrounding weather areas.

Observe weather targets while slowly reducing the GAIN.

Weaker targets will shrink and disappear while stronger targets persist. At minimum GAIN any weather targets still displayed contain extremely heavy rain.

If display becomes filled with red returns:

Check tilt, raise if necessary to remove ground returns from the display.

Weather area being scanned may be Level 3 in strength.

Reduce GAIN level until only heavier areas display as red, to differentiate rain intensity within the weather area.

If GAIN control is out of AUTO:

- A blue CAL legend will be displayed on the radar scope.
- No blue CAL legend will be displayed on HSI display.

WARNING: At reduced levels of GAIN, some weather targets will disappear from the indicator. Targets which are displayed will understate the true strength of the weather. Return GAIN to AUTO, immediately after using manual GAIN.

Attenuation

Expect attenuation any time weather targets reach Level 3, when the radome is wet or ice covered, or when operating within precipitation.

To locate intense rain areas that may be totally attenuated:

- Watch for crescent shaped returns, concave on the back side.

- Note an absence of returns or shadow beyond the target.

- Use ground returns to confirm radar penetration, and locate radar shadows.

When flying through areas of moderate to heavy rain, radar range may become limited by attenuation:

- Set tilt to attempt to produce ground returns beyond the weather returns. If attenuation is confirmed:

 - Monitor the outer edge of the weather returns.

 - Turn away from shadows that dip towards the bottom of the display.

 - Fly towards the area of farthest returns (this is the area of lightest precipitation).

 - Advise ATC that your radar range is limited and request vectors away from known thunderstorm areas.

WARNING: Radar shadows are areas of unknown weather intensity. Never penetrate a storm that produces a radar shadow.

Turbulence Avoidance

When using radar to avoid turbulence enroute:

Deviate upwind of storms when possible.

Expect turbulence to be present in any convective activity, regardless of intensity level displayed on radar.

When convective storms reach Level 3 (red), expect moderate to severe turbulence in all areas of the storm, including the Level 1 and 2 areas.

TURB mode can be used to detect areas of horizontal rain movement within 40 nm. Set tilt to insure beam is sweeping at flight altitude.

WARNING: An absence of indicated turbulence in TURB mode does not mean it is safe to penetrate a weather area that by other indications is hazardous.

IRS

Fast Realignment

For non-GPS aircraft with autothrottle or N1/EPR switch inoperative, immediately prior to pushback, consider a Fast Realignment of the IRSs to refine aircraft NAV position.

Parking brake As required

IRS mode selectors ALIGN

MCDU Set

Enter present position on SET IRS POS line of MCDU POS INIT page.

IRS mode selectors NAV



High Latitude Alignment

This procedure applies to alignment at latitudes greater than 70°12.0' and less than 78°15.0'.

IRS mode selectors OFF, then ALIGN

POS INIT page Set

Enter present position from the scratchpad into the SET IRS POS boxes using the most accurate latitude and longitude available.

IRS mode selectors NAV

Select NAV after remaining in ALIGN for 17 minutes minimum.
Verify ALIGN lights extinguished.

Align Lights Flashing

Do not move IRS Mode selector to OFF except where called for in procedure.

POS INIT page Select

Set IRS position Enter present position

Enter present position using most accurate latitude and longitude available. If a position is already displayed on the SET IRS POS line, enter new position over displayed position.

If ALIGN light continues to flash:

Set IRS position Enter present position

Re-enter same present position.

If ALIGN light continues to flash after re-entry:

IRS OFF

Rotate IRS Mode selector to OFF and verify ALIGN light extinguished.

Note: Light must be extinguished before continuing with procedure (approximately 30 seconds).

IRS NAV

Rotate IRS Mode selector to NAV and verify ALIGN light illuminated.

Set IRS position Enter

Enter present position in boxes. If ALIGN light flashes, re-enter same present position over displayed position.

Note: Approximately ten minutes is required for realignment.

If ALIGN light continues to flash, maintenance action is required.



Position Entry Using IRS Mode Selector Panel

Latitude Enter
Begin with N or S, followed by latitude including trailing zeros, e.g.,
N003°30.0' entered as N3300.

Longitude Enter
Begin with E or W, followed by longitude including trailing zeros,
e.g., E001°11.0' entered as E1110.

Lateral Navigation

Alternate Route Entry/Activation

Desired RTE page 1 Select

If desired route (1 or 2) not displayed, select desired route.

Route (if required) Enter

Enter route using preflight procedure.

ACTIVATE Select

If in flight, use DIRECT TO or INTC LEG TO boxes to enter desired course from present position to new route.

EXEC key Push

Direct To A Waypoint Using Direct Intercept

DIR INTC key Push

Direct To Waypoint Enter

Enter waypoint in the DIRECT TO boxes.

Note: If waypoint not previously in route, a discontinuity occurs.

Waypoint sequence Check

Enter waypoints in desired sequence.

EXEC key Push

Direct To A Waypoint Using Overwrite

RTE LEGS page Select

Desired waypoint Enter

Enter the desired waypoint over the active waypoint.

Waypoint sequence Check

Enter waypoints in desired sequence.

EXEC key Push



Estimate For Alternate

PROGRESS page 1 Select

Desired destination Enter

Note: Estimates displayed are for present position direct.

Holding Pattern Entry

Holding fix must be a route waypoint or present position before accomplishing following steps.

HOLD key Push

NEXT HOLD (if displayed)..... Select

Holding Fix Enter

To hold at present position, select PPOS. To hold at waypoint, enter waypoint identifier in HOLD AT boxes.

HOLD page Check

EXEC key Push

Holding Pattern Exit

To exit holding accomplish the following procedure or refer to one of the “Direct to a Waypoint” procedures.

EXIT HOLD..... Select

EXEC key Push

Intercept A Leg Or Course To A Waypoint Using Direct Intercept

DIR INTC key Push

Desired waypoint Enter

Enter waypoint in the INTC LEG TO boxes.

Note: If waypoint not previously in route, a discontinuity occurs.

If waypoint was previously in route, the inbound course is set to same inbound great circle course. For airways, displayed course may not be identical to charted value.

If inbound course not correct:

Intercept Course Enter

Enter course desired at waypoint in INTC CRS TO boxes.

EXEC key Push

Waypoint sequence Check

Enter waypoints in desired sequence.

EXEC key Push

If necessary, use Heading Select mode to change intercept heading. Then, arm LNAV mode.

Intercept A Leg Or Course To A Waypoint Using Overwrite

RTE LEGS page Select

Desired waypoint Enter

Note: If waypoint not previously in route, a discontinuity occurs.

Note: If waypoint was previously in route, the inbound course is set to same inbound great circle course. For airways, displayed course may not be identical to charted value.

If inbound course is correct:

Intercept course Line select

Line select FMS computed course in INTC CRS TO boxes.

If inbound course not correct:

Intercept course Enter

Enter course desired at waypoint in INTC CRS TO boxes (or over existing intercept course to value if waypoint was already in route).

EXEC key Push

Waypoint sequence Check

Enter waypoints in desired sequence.

EXEC key Push

If necessary, use Heading Select mode to change intercept heading. Then, arm LNAV mode.

Lateral Offset

RTE page Select

Offset Enter

Enter desired offset direction and distance over OFFSET dashes.

EXEC key Push

To remove offset, accomplish Direct To procedure or enter “0” in OFFSET line.

Leg Modification

To modify active waypoint or leg, accomplish one of the Direct To or Intercept A Leg Or Course procedures except when entering along track waypoints.

RTE LEGS page Select

To change waypoint sequence:

Desired Waypoint Sequence Enter

Note: If waypoint not previously in route a discontinuity occurs except when entering along track waypoints.

EXEC key Push

To delete a waypoint at end of route:

DEL key Push

Waypoint Select

EXEC key Push

To enter along track waypoints:

Along Track Displacement Enter

Select reference waypoint to scratch pad and modify for desired displacement.

Reference Waypoint Select

The FMC will automatically position the created waypoint to the appropriate position.

EXEC key Push

Route Removal

RTE page 1 Select

Origin Enter

If EXEC key illuminates:

EXEC key Push

DP (SID) Programming

This entire procedure must be accomplished when a DP / SID is used. Some Departure Procedures / SIDs are runway dependent. Use caution to ensure the correct runway is selected when this is the case.

DEP/ARR page Select
Runway Select
DP/SID Select
Transition (if required) Select
RTE LEGS page Select
Waypoint Sequence and Altitudes Check
 Modify as necessary to agree with clearance.
EXEC key Push

This entire procedure must be re-accomplished when a SID is used and the runway or SID is changed. This will prevent the possibility of incorrect routing or inadequate obstacle clearance.

STAR, Profile Descent Or Approach Programming

Associated airport must be entered as route origin or destination.

DEP/ARR page Select
STAR or Profile Descent (if required) Select
Transition (if required) Select
Approach Select
Approach Transition (if required) Select
LEGS page Select
 Clean up any route discontinuities to the clearance limit
Waypoint sequence, altitudes, and airspeeds Check
 Modify as necessary to agree with clearance.
EXEC key Push

Runway Dependent (R/D) STAR Programming

Runway Dependant STARs are procedures that require pilots to select a specific runway in order for the FMC to properly load the entire STAR.

When programming an R/D STAR, it is important to verify that the waypoints and any associated altitude and airspeed restrictions match the charted procedure prior to selecting the EXECUTE key. Ensure FMC programming will comply with the ATC clearance.

DEP/ARR page Select

Arrival Select

Transition (if required) Select

Approach Select

Approach Transition (if required) Select

Note: Modifying the existing approach may modify the arrival routing legs sequence. Check the legs page and adjust to match ATC clearance when any changes to the landing runway approach are made.

LEGS page Select

Clean up any route discontinuities to the clearance limit

Waypoint sequence, altitudes, and airspeeds Check

Modify as necessary to agree with clearance.

EXEC key Push

Vertical Navigation

Climb, Cruise, Or Descent Speed Schedule Change

CLB or CRZ or DES page Select

To change schedule:

Desired schedule Select

To enter fixed speed schedule:

Desired speed Enter

Enter speed on ECON/SEL SPD line (line 2L).

EXEC key Push

Climb Or Descent Direct To MCP Altitude

This procedure deletes all waypoint altitude constraints between current airplane altitude and altitude set in MCP.

Altitude window Set

CLB or DES page Select

CLB DIR or DES DIR Select

EXEC key Push

Cruise Altitude Change

Altitude window Set

CRZ page Select

Cruise altitude Enter

EXEC key Push

Speed/Altitude Constraint At Waypoint

RTE LEGS page Select

To enter or modify constraint:

Speed/altitude Enter

Note: Speed entry requires “/” mark and altitude.

EXEC key Push

To delete constraint:

DEL key Push

Speed/altitude Select

Select undesired constraint and observe estimated values appear.

EXEC key Push

Speed/Altitude Transition And Restriction

CLB or DES page Select

To enter speed/altitude restriction:

Speed/altitude Enter

EXEC key Push

To delete speed/altitude restriction or transition:

DEL key Push

Speed/altitude Select

EXEC key Push

Temporary Altitude Restriction

Altitude window Set

To resume climb or descent:

Altitude window Set

VNAV Engage

Temporary Speed Restriction

IAS/MACH selector Push

Speed window Set

To resume FMC speed schedule:

IAS/MACH selector Push

FMS CLIMB Page Anomaly

Inability to select CLB thrust or engage VNAV may indicate an FMC CLB page anomaly. The FMC may erroneously sense an engine failure condition during single engine taxi. The anomaly causes the Command Bug to slew to VREF+80, the CLB PAGE (VNAV Page 1/3) reverts to VREF+80 CLB, and selection of CLB thrust and VNAV is inhibited. Fuel and time data will not be displayed on the PROG or LEGS DATA pages. FLCH and V/S function normally.

On CLB page:

ALL ENG Select and execute

If ALL ENG not displayed:

ENG OUT Select

ALL ENG Select and execute CLB thrust

VNAV Engage

Performance Data Entries

Descent Forecast

DES page	Select
DESCENT FORECAST page	Select
Transition Level	Check
Thermal Anti-ice On Altitude (if required)	Enter
Wind altitude	Enter
Enter altitude over dashes on left.	
Wind direction/speed	Enter

Step Climb Evaluation

CRZ page	Select
Step to Altitude	Enter
Savings	Check

Waypoint Winds

RTE LEGS page	Select
RTE DATA page	Select
WINDS page	Select
Altitude and temperature (SAT)	Enter
Winds	Enter
EXEC key	Push

Additional MCDU Functions

Fix Page Entries

FIX page Select
Fix identifier Enter
Bearing or distance from fix Enter
 Enter desired bearing or distance or select ABEAM.

Note: Bearing/distance from fix may be used as route waypoint.

HSI Plan Mode Control

HSI Mode PLAN
RTE LEGS page Select
Map Center Step Select

Required Time of Arrival (RTA) FMC Entry

Note: RTA function is applicable only to cruise operations.

LEGS page Select RTA fix to scratchpad
PROG page 3/3 Select
FIX (1L) Enter fix from scratchpad
RTA (1R) Enter fix RTA

Note: The FMC will adjust airspeed as necessary to comply with RTA, if possible. If unable to comply, an FMC message UNABLE RTA will display alerting crew.

Radio Update /Navaid Inhibit

To inhibit use of radio navigation aids from position updating:

INIT REF page Select

INDEX page Select

NAV DATA page Select

Navaid Identifier Enter

To inhibit use of the navaid:

NAVAID INHIBIT line Enter

To inhibit use of the VOR only:

VOR ONLY INHIBIT line Enter

To inhibit use of all VORs:

VOR/DME NAV OFF/ON prompt Select

ALL is displayed in the VOR ONLY INHIBIT line and OFF
is displayed in large font.

Update Active Navigation Database

The navigation database can be changed only on the ground. Changing the database removes all previously entered route data.

INIT REF Select

IDENT page Enter

Inactive Date line Enter

Transfers inactive date range to scratchpad

Active Date line Enter

Transfers inactive database line to active database line. Transfers active database line to the inactive database line.

Navigation Database

Operation and appearance of the PEGASUS 09 Operational Program Software (OPS) are identical to other PEGASUS OPS programs with one important exception. Winglet performance configuration will be noted on the IDENT page with a W following the aircraft model (e.g., 757-200W, 767-3003W, etc.).

Crews should confirm the correct Nav Database is installed.

Version	OP PROGRAM ends with	NAV DATA begins with
PEG09	C10	DL6

Navigation Database Swap/Cycle

Definitions

Swap - Refers to replacing an out-of-date active database with a current database.

Cycle - Refers to replacing the current active database with an inactive database, and then reverting to the original database.

Procedures

Note: The active navigation database can be changed only while on the ground.

Database Swap

To swap the database:

Inactive database..... Select

Line select the inactive database (LSK 3R). The inactive database displays in the scratchpad.

Activate database Select

Line select the database in the scratchpad to the ACTIVE database (LSK 2R). The database will now be displayed as ACTIVE.

Database Cycle

To cycle the database:

Inactive database..... Select

Line select the inactive database (LSK 3R). The inactive database displays in the scratchpad.

Activate database Select

Line select the database in the scratchpad to the ACTIVE database (LSK 2R). The database will now be displayed as ACTIVE.

Inactive database..... Select

Line select the inactive database (LSK 3R). The inactive database displays in the scratchpad.

Activate database Select
Line select the database in the scratchpad to the ACTIVE database
(LSK 2R). The database will now be displayed as ACTIVE.

Considerations

Either swapping or cycling the navigation database from the active to the inactive status causes the following results:

- deletes all route data for route 1 and route 2
- erases any information entered on the route and initial position, the en route or alternate destination on PROGRESS page 1, and the manually entered step size on the PERF INIT and CRZ pages
- clears all pending uplink status and pending uplink data
- purges the uplinked alternate airports list, if it exists
- if the previously displayed page on the other MCDU is the:
 - DEPARTURES or ARRIVALS page, then the DEP/ARR INDEX page is displayed.
 - RTE DATA, RTE LEGS DIRECT TO PENDINGS or WINDS page, then RTE 1 LEGS page 1 is displayed.
 - HOLD page, then RTE 1 LEGS Hold At page 1 is displayed.
 - SELECT DESIRED WPT page, then the page before the SELECT DESIRED WPT page is displayed

RNP-4 Manual Entry Procedures

All flights operating in Oceanic airspace will verify/set FMC value to RNP-4. Automatic switching normally occurs in Class II airspace when radio updating is not available.

If manual entry of RNP-4 value is required, accomplish the following:

Oceanic Entry Point

- Manually enter 4.0 in the FMS scratch pad and select it into POS REF page 2, 5L position
- Verify RNP 4.0 and ANP is less than RNP

Oceanic Exit Point

- Select the MCDU DELETE key to place the DELETE message into the scratch pad and select it into the 5L position to return RNP to the appropriate cruise value
- If RNP 4.0 value is left in the FMS at oceanic exit point, the FMS will prompt a VERIFY RNP ENTRY scratch pad message

Navigation Accuracy Check

Reference Airway Manual, Airspace & Enroute Navigation, CDRC for accomplishing and logging requirements.

Non-GPS FMS

While still within VOR reception range, FMS position and aircraft position are compared.

The check is performed as follows:

Manually tune a VOR that is between 30 - 130 nm from the known aircraft position.

Select expanded VOR on the HSI selector.

Enter the same VOR on an FMS FIX page.

Center the VOR deviation "from" indicator on the HSI.

Compare the RDMI distance and VOR radial with the FIX page bearing and distance.

The acceptable tolerances are ± 4 degrees and ± 4 nm, respectively.

Note: If a VOR is not available in order to conduct a Navigation Accuracy Check, then the following sources for position verification may be used as an alternative:

- ATC radar verification of position.
- A suitable ground based navigation facility (such as an NDB) that provides azimuth information combined with a DME.

Place check in Flight Plan block indicating NAV Accuracy Checks completed, if required.

GPS FMS

The check is performed as follows:

Select POS - Page 2 in the FMS.

Verify RNP/Actual (ANP) values are displayed and that ANP is less than RNP.

Place check in Flight Plan block indicating NAV Accuracy Checks completed, if required.

Note: UNABLE RNP EICAS message will not be displayed if ANP is less than RNP.

Class II ETP and Alternate Airport Entry

For flights requiring ETP alternates:

Load the FMS in the following order (or as appropriate for the theater of operation):

RTE 2 line select key Push

RTE key Push

Complete the following entries:

- ORIGIN: First alternate airport
- DEST: Last alternate airport

Note: It is not necessary to insert a DEST airport.

NEXT PAGE key Push

Enter routing:

- First alternate airport
- First ETP
- Next alternate airport
- Next ETP
- Last alternate airport

Note: Do not ACTIVATE/EXECUTE RTE 2.

Critical Terrain Box FMS Loading Procedures

If the Dispatcher Remarks and body of the flight plan are annotated with THEATER CO ROUTES and CO ROUTE/TERRAIN BOX remarks, the flight is planned to enter or be in close proximity to a Critical Terrain Box. When this occurs, prior to the entry point, accomplish the following:

Identify the CO ROUTE theater designation associated with the Critical Terrain Box entry point (e.g., SAT01) on the flight plan.

Note: Refer to the Airway Manual, Mountainous Terrain.

- Identify and review the relevant Coverage Area chart associated with the theater on the flight plan
- Referencing the terrain box and routing, locate and assess the suitability of the divert/alternate airports listed in the remarks section of the flight plan

Load the appropriate CO ROUTE into Route 2 of the FMS:

RTE 2 Select
Load the Critical Terrain Box CO ROUTE (e.g., SAT01).

Note: The origin and destination airports that are automatically loaded have no operational significance.

LEGS (RTE 2 LEGS) Select

- Page through and delete all DLETE waypoints
- Do not close the route discontinuities

Note: Do not activate or execute RTE 2.

Note: Repeat process whenever a new CO RTE is loaded.

Prior to entering Restricted Critical Terrain areas:

One pilot should have RTE 2 displayed on the HSI (for situational awareness).

Check weather at Diversion Airport.

Note: Do not ACTIVATE/EXECUTE RTE 2.

RNAV Departure Procedures

Preflight

Accomplish a full inertial/navigation system alignment prior to taxi (refer to steps in NP.20, Preflight Procedure - Pilot Flying).

Ensure the waypoints, speed, and altitude constraints of the RNAV SID selected from the database match those depicted on the published Jeppesen procedure for the departure runway.

Ensure that critical DMEs (if identified in any RNAV procedure) are operative.

Note: Critical DMEs do NOT apply to aircraft with GPS operative. All other aircraft depend on DME radio updating for navigation accuracy during RNAV DPs. Therefore, when operating ships with GPS inoperative check the NOTAMS section of the flight plan to ensure that all critical DMEs are operative.

For ships with GPS inoperative and with autothrottle or N1/EPR switch inoperative, immediately prior to pushback, consider a Fast Realignment of the IRSs to refine aircraft NAV position (refer to Fast Realignment procedure earlier in this chapter section).

Before Takeoff

Ensure the departure runway selected in the FMS is consistent with the assigned departure runway, and the associated first fix in the FMS/HSI match the assigned RNAV DP/ATC departure clearance.

All Non-GPS Ships

When approaching the departure runway check aircraft versus runway position on the HSI (10 nm scale).

On takeoff, FMC will not update position to the runway landing threshold for aircraft dispatched with the autothrottle or N1/EPR switch inoperative. Verify the aircraft symbol is in close proximity to the departure end of the runway symbol with the HSI in the 10 NM scale. Do not use LNAV for departure if FMS position is incorrect.

Note: For lateral alignment, when on the runway, the nose-tip of the aircraft triangle should be between, or very close to, the runway symbol edge lines. In 10 NM scale of the HSI map display, the width of the runway symbol is 1,515 feet. Check position is also within 1,000 feet longitudinally.

CAUTION: If aircraft map position is greater than 1,000 feet from the actual runway takeoff position, or cannot be determined, for an RNAV departure request radar vectors to the first fix.

FMS will begin to search for suitable radio updates after the aircraft reaches 100 knots on takeoff roll.

Takeoff

The appropriate roll mode should be selected to comply with the departure procedure and clearance. If the departure procedure and clearance requires an LNAV track from the runway, arm LNAV before takeoff.

Pay close attention to takeoff clearance. "Delta 123, cleared for takeoff" is the standard clearance issued to fly the RNAV SID as published.

Use of the autopilot is strongly encouraged. Optimum course adherence is ensured if the autopilot is engaged at approximately 1,000 feet AFE. Recommend engaging autopilot after VNAV is selected and Climb Power is set.

Whenever a significant course change is depicted, expect the FMC to use turn anticipation for fly-by waypoints (waypoints depicted on Jeppesen charts without a circle around them).

RNAV SID/STAR design is based on path keeping accuracy bounded within 0.5nm. Deviations are not acceptable. On the HSI map display, the tip of the airplane symbol represents the precise present position of the aircraft. On straight-line flight path segments, the base of the airplane symbol approximates one-tenth of the selected HSI map scale (e.g., in the 10 nm scale, the base of the airplane symbol represents approximately 1 nm.) Pilots may use the airplane symbol or the appropriate progress page in the FMS to monitor path-keeping accuracy. Use PROG page 2/2 to monitor XTK error. During turns, commands from the flight director may direct an overshoot. Overlay the trend vector on the magenta line (or use an autopilot) to accurately fly the depicted route.

Notify ATC of any degradation of performance or inability of the FMS to provide accurate navigation and request amended clearance.

FMS Preflight for Origins/Destinations not contained in FMS Database

Certain Offline Airports may not be in the FMS Database. If necessary use the following procedures when FMS database support is unavailable:

Conduct a full alignment of the IRS using the most accurate information available; GPS coordinates, gate coordinates, or Airport Reference Point.

Enter the closest online airport as the airdrome of Origin/Destination on the FMS Route page.

If GPS inoperative

CAUTION: Do not select a runway associated with the closest online airport. The FMS will update the aircraft position to that runway when N1 or EPR (as appropriate) is selected.

Create a waypoint for the actual Offline Airport using Lat/Long or an available navaid collocated on the field; load this waypoint in the appropriate sequence on the Route Legs page.

Display and use Raw data as applicable for all Departures/Arrivals/ Approaches/ Missed Approaches at airports not supported by the FMC database.

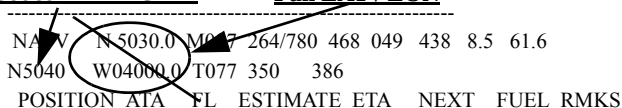
Full LAT/LON Format and Class II Off-Airways Waypoint Verification

Standard Nav Format

Because of character space limitations on the FMS displays, LAT/LON waypoints are displayed in a "truncated" 7-character format known as Standard Nav Format. For example, both N5000.0 W04000.0 and the half-latitude N5030.0 W04000.0 will display exactly the same on the FMC Legs/RTE page, and will show as N50W040. Note that the minutes and seconds are hidden from view. Line selecting the 7-character Standard Nav Format to the scratch pad will display the full 13-character LAT/LON. This is the only way to verify the exact coordinates of LAT/LON for truncated waypoints. This Standard Nav Format does not currently appear on the flight plan. The left margin of the flight plan displays the 5-character ARINC 424 coded format with the ICAO radio phraseology for the waypoint below it in the beginning of the AIREP line. The full LAT/LON is to the right of the coded format in the HOWGOZIT line.

"Coded" ARINC 424

Full LAT / LON



"Coded" ARINC 424	Full LAT / LON
N5030.0	N5030.0
W04000.0	W04000.0
T077	264/780
FL	468 049 438 8.5 61.6
ESTIMATE	350 386
ETA	
NEXT	
FUEL	
RMKS	

5030N04000W 5130N030W 5230N020W

** DAL POSN RPT **

ICAO Radio Phraseology

Flight Plan & FMC LAT/LON Format & Display Differences

Format	Whole Latitude	Half Latitude	On FMC & ND	Comments
Standard Nav	N50W040 (FMS Entry)	N5030W040* (FMS Entry)	N50W040** (FMS Display)	• NOT on Flt Plan • CPDLC/ADS & WPR compatible • Manual entry and FMC uplink format* • Line selects to full 13 character value
Full 13-Character*	N5000.0 W04000.0 (FMS Entry)	N5030.0 W04000.0 (FMS Entry)	N50W040** (FMS Display)	• On flt Plan HOWGOZIT • On Aeronautical Charts • CPDLC/ADS & WPR compatible
ARINC 424 (Coded) Waypoint	5040N	N5040	5040N or N5040	• On Flt Plan HOWGOZIT • FMC FIX page entry if stored in the FMC Nav Database
ICAO Radio Phraseology	50N040W	5030N040W	On FMC POS RPT page	• On Flt Plan AIREP • Only on FMC POS REPORT Page

* The half-latitude waypoint in this example could be entered into FMC as N5030W040 or N5030.0W04000.0

**On LEGS page, RTE page and ND, only whole degree values are visible, minutes and seconds are "hidden" (e.g., N5030.0 W04000.0 would be displayed as N50W040).

Operating Procedure

All Standard Nav Format Class II waypoints need to be line selected to the scratchpad for full LAT/LON verification.

Note: For Preflight Verification (off airways) or Oceanic Clearance Confirmation, refer to Airway Manual, Airspace & Enroute Navigation, CDRC.

Approaching Waypoint Procedure

- PF reads approaching, next, and subsequent waypoint from the FMC.
- PF line selects each Standard Nav Format waypoint to the scratchpad to confirm actual LAT/LON and then clears.
- PM reads back each waypoint from the flight plan as confirmation.

Note: It is not necessary to verbalize all 13 characters; e.g. N5030.0 W04000.0 could be spoken as "Fifty thirty north, forty west" or "North fifty thirty, west forty".

CAUTION: Ensure the scratchpad is completely clear before line selecting the next waypoint to avoid inadvertent route modifications. If a route modification is accidentally created, use the ERASE prompt [5L].

Note: The Standard Nav Format cannot be entered into the FIX page. Crews still need to use the coded waypoint for entering a waypoint on the FIX page. A time dot (versus a mileage circle) can be used as an alternate reminder.

Non FMC Data Link Capable Aircraft/Data Link Failure

The Standard Nav Format is intrinsically tied to Waypoint Position Reporting (WPR), wind uplinks and the use of CPDLC. For a non-FMC data link capable aircraft or in the event of a data link failure, the flight plan must be manually entered using the Standard Nav Format to allow for full functionality and procedural standardization. Reference the full LAT/LON next to each Class II waypoint and enter that on the RTE page.

Note: Trailing zeros after degrees and minutes need not be entered. Cardinal LAT/LON waypoints such as N5000.0 W04000.0 can be entered as N50W040 and half-LAT/LON waypoints such as N5030.0 W04000.0 as N5030W040.

Manual Flight Plan Entry

IDENT page – Check

Navigation database - Verify that the current database is active based upon the local date of departure.

Verify aircraft model and engines for currency and correctness.

Compare FF Factor on flight plan to FF at 5R. If values are not identical, update using the following steps:

- Type ARM in the scratchpad and line select to 5R.
- Type forward slash / followed by FF Factor value from FP in scratchpad and line select to 5R. Include negative sign if necessary.

Ex: Enter PLUS 2.7 as /2.7 and MINUS 3.5 as /-3.5

POS INIT page - Select

Verify time correct.

REF AIRPORT - Enter

Present position - Enter.

Enter present position using the most accurate latitude and longitude information available (i.e., GPS, gate, parking spot, or airport coordinates).

ROUTE line select key – Push

Enter:

- ORIGIN and DEST airports
- RUNWAY (if known)
- FLT NO (Flight Number) (e.g., DAL31)
- SID (DEP ARR key)
- Route
- Arrival (DEP ARR key).

Verify route is correct

Activate

Execute

PERF INIT line select key – Push

Enter:

- ZFW (zero fuel weight) or GR WT (gross weight), as desired.
- RESERVES (FMS RESERVE FUEL on the flight plan).
- CRZ ALT (initial cruise altitude).
- COST INDEX (enter the initial cost index).

When wind data is uploaded (via Data Link), or higher and lower altitudes with forecast winds are manually entered:

Set STEP SIZE to 1000 or 2000 as appropriate for airspace.

Note: For non-data link capable aircraft, a STEP SIZE of 0 may be used for flight plan comparisons on shorter legs.

TAKEOFF line select key (R6) – Push

Verify PRE-FLT COMPLETE (unless a discontinuity is desired from the runway to the first waypoint).

When a Special Takeoff (Close-In/ICAO NADP 1) climb profile is planned, select TAKEOFF REF Page 2 and enter "3000" on the ACCEL HT prompt.

CLIMB / VNAV key – Push

Verify correct:

- CRZ ALT (initial cruise altitude).
- SPD TRANS (transition speed/altitude).
- TRANS ALT (transition altitude).

Enter

- SPD RESTR (speed restriction, if applicable for departure).

Execute

LEGS Key - Push

If desired, enter step climb information from flight plan and execute. This overrides PERF page STEP SIZE information.

Wind Page - Display

Enter altitudes and winds for applicable waypoints along route of flight. Entering higher and lower altitudes and forecast winds for these waypoints allows for optimum FMS altitude data.

For these waypoints, enter planned altitude and temperature from the flight plan.

Refer to SP.11, Performance Data Entries, for procedures.

FIX key - Push

Enter first 2 reporting points or other fixes as desired to monitor departure restrictions.

For flights requiring ETP alternates, or flight over restricted critical terrain, refer to SP.11, Class II ETP and Alternate Airport Entry, or Restricted Critical Terrain Route Entry for programming procedures.

Note: Enroute winds and ETP alternate information may be entered after takeoff but prior to entering Class II airspace.

Note: Restricted critical terrain route entry may be accomplished after takeoff, but prior to actual flight over restricted critical terrain.



Supplementary Procedures

Chapter SP

Fuel

Section 12

Fuel Balancing

If fuel leak is suspected:

Accomplish the Fuel Leak Engine non-normal checklist in the QRH.

Note: Fuel pump pressure should be supplied to the engines at all times. At high altitude, without fuel pump pressure, thrust deterioration or engine flameout may occur.

When the fuel quantities in left main and right main tanks differ by an appreciable amount: [AFM]

Fuel crossfeed switch(es) ON

Fuel pump switches (low quantity tank) OFF

When fuel load balanced:

Fuel pump switches ON

Fuel crossfeed switch(es) OFF

Center Fuel Tank Procedures

[AFM]

Summary of Crew Duties

Phase of Flight	With any amount of Center Tank Fuel
Pushback Start	After selecting all fuel pumps switches ON (and prior to engine start), verify the amber PRESS lights illuminate and the CTR L FUEL PUMP and CTR R FUEL PUMP messages are displayed on EICAS. (This verifies that the fuel pump pressure sensors are operating normally).
In Flight (all phases)	When either CTR L or CTR R FUEL PUMP message is shown, select the respective CENTER FUEL PUMP switch off. Select both CENTER FUEL PUMP switches off when either CTR L or CTR R FUEL PUMP message is shown and the center tank is empty. Note: During cruise flight, whenever center tank usable fuel is indicated with CENTER FUEL PUMP switches off, both CENTER FUEL PUMP switches may be re-selected on.
Non-Normal	If either the CTR L FUEL PUMP or CTR R FUEL PUMP message is displayed with an appreciable amount of center tank fuel indicated, a pump failure should be assumed and the QRH FUEL PUMP procedure should be accomplished.

WARNING: DO NOT RESET A TRIPPED FUEL PUMP CIRCUIT BREAKER.

Abnormal Conditions

Fuel Configuration

The FUEL CONFIG light will illuminate when there is fuel in the center tank that exceeds 1,200 pounds and the center tank fuel pump switches are OFF. Do not accomplish the associated non-normal checklist prior to or during takeoff with less than 5,000 pounds of center tank fuel, unless there is an imbalance between main tanks or fuel is low in either main tank. After canceling the FUEL CONFIG message, monitor fuel quantity indications and accomplish the appropriate non-normal checklist if a main tank imbalance or main tank low fuel quantity occurs.

Center Tank Pump Failure

If a center tank fuel pump fails with fuel in the center tank, accomplish the FUEL PUMP non-normal checklist.

If one center tank fuel pump fails with fuel in the center tank, the failed pump should be positioned OFF. The crossfeed valve(s) should be opened to prevent a fuel imbalance. The remaining center tank pump may remain ON until FUEL CONFIG light extinguished.

Defueling

When defueling center or main wing tanks, the Fuel Pump Low Pressure indication lights must be monitored and the fuel pumps positioned to OFF at the first indication of fuel pump low pressure. The first indication of fuel pump low pressure is the brief, intermittent illumination of the amber Pump Pressure (PRESS) Light before the tank quantity indicates zero.

Fuel System Imbalance Anomaly

767-300

An anomaly exists of simultaneous fuel consumption from the center fuel tank and either the left or right main fuel tank, or simultaneous fuel consumption between the center fuel tank and both left and right main fuel tanks.

This anomaly is a result of the center fuel tank pumps not producing adequate pressure to override the main tank fuel pumps. This anomaly can occur on any given flight or flight condition.

Operating Instructions

The objective of this procedure is to stop the imbalance and **not** to balance the left and right main tanks when fuel remains in the center tank. Fuel imbalances are of less concern than trapped fuel or exceeding the aircraft structural limits.

Note: For both procedures below, leave both center fuel pump switches ON until all fuel is burned from the center fuel tank.

If fuel quantity decreases simultaneously from the center tank and either the left or right main fuel tank without the FUEL CONFIG advisory EICAS message displayed, accomplish the Fuel Balancing supplementary procedure.

If the FUEL CONFIG advisory EICAS message is displayed, and fuel quantity decreases simultaneously from the center tank and either the left or right main fuel tank, accomplish the FUEL CONFIGURATION non-normal in the QRH.

These procedures may result in extended flight with the left and right main tanks imbalanced until all center fuel is depleted.

Document each occurrence in the aircraft logbook.

Fuel Crossfeed Valve Check

- Fuel crossfeed switch(es) ON
Verify VALVE light(s) extinguished.
- Fuel crossfeed switch(es) OFF
Verify VALVE light(s) extinguished.
-

Fuel Quantity Test

- Fuel Quantity Test switch FUEL QTY
Observe FUEL CONFIG light illuminate and LOW FUEL message display.
- Observe fuel quantity indicators display all eight (8) except initial digit in total fuel quantity indicator which displays one (1). Observe fuel temperature indicator display - 188 degrees Centigrade.

Intentionally
Blank



EICAS Status Message Erase Policy

If an EICAS status message is displayed prior to dispatch:

Accomplish the EICAS Status Message Erase Procedure.

If the EICAS status message erases:

No further action is required.

Note: Any EICAS status message remaining after the erase procedure indicates an existing condition.

If the EICAS status message does not erase:

Locate applicable EICAS status message in the MEL to determine dispatch status.

Refer to the MDM, Pilot Procedure for Placarding section (Delta Special Pages), for further guidance.

If an EICAS status message is displayed following dispatch:

Do not accomplish the EICAS Status Message Erase Procedure. Enter the status message in the aircraft logbook.

EICAS Status Message Erase Procedure

If an EICAS status message is displayed:

ECS/MSG switch Press

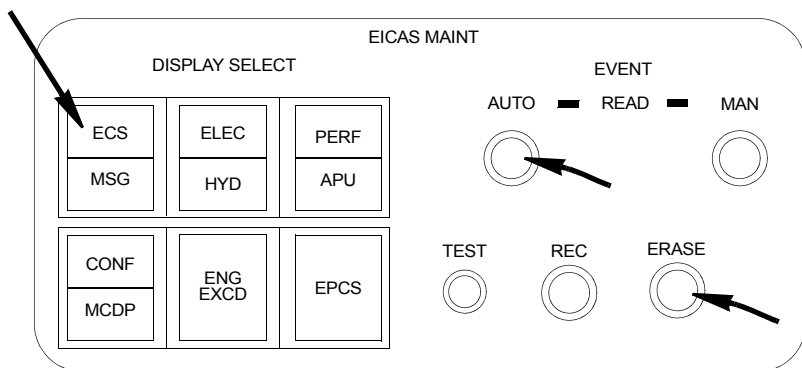
Observe the ECS/MSG page appears on the lower EICAS display.

AUTO EVENT READ switch Press

Observe that the words AUTO EVENT appear at the bottom of the page.

ERASE switch Press and hold

Press and hold the ERASE switch for approximately 3 seconds.



AUXILIARY PANEL

Note: The ERASE switch is used to erase the current page of displayed messages and also to advance the display to the next page if additional messages are present. All the data displayed on the ECS/MSG and auto event pages will be erased when the ERASE switch is pressed.

If additional EICAS messages are still present:

ERASE switch Press and hold

Press and hold the ERASE switch for approximately 3 seconds.

Repeat the steps listed previously until the page readout goes blank or displays Page 1.

EICAS Test

This procedure requires the airplane to be on the ground and parking brake set.

EICAS Test switch Push

Wait 5 seconds and switch to L then R.

Observe TEST OK message displayed on CRTs in both positions.

Note: Standby engine indications will be displayed during test and siren aural will sound.

EICAS Test switch Push

Event Record

Event Record switch Push

Use as directed by Flight Operations for maintenance analysis or at the discretion of the Captain to manually record parameters for a suspect condition.

Ground Proximity Warning Test

Note: Prior to the aircraft's first flight of the day, perform a Ground Proximity Warning Test.

This procedure requires the IRSs to be aligned and in NAV mode.

757 Ships 0601-0696, 6901-6904, 6801-6818

WXR switch Press

All

GPWS TEST switch Hold to GND PROX and release

Verify the following aural annunciation:

- "Glideslope, Whoop Whoop, Pull-Up, Windshear, Windshear, Windshear, Obstacle, Obstacle (as installed), Terrain Terrain, Pull-Up"

Verify the following lights illuminate:

- GND PROX
- PULL UP
- MASTER WARNING
- WINDSHEAR
- TERR
- FAIL in the TERR OVRD switch

Observe terrain test pattern displays on the HSI.

Landing Configuration Warning Test

Configuration Test switch LDG

Observe CONFIG light illuminate and GEAR NOT DOWN message display.

Stall Warning Test

757

CAUTION: With leading edge slats in takeoff position and left hydraulic system pressurized, leading edge slats will extend to landing position during test.

All

L Stall Warning Test switch STALL
Observe control columns vibrate.

All

R Stall Warning Test switch STALL
Observe control columns vibrate.

767-300

L and R Stall Warning Test switches STALL
Observe that each stall warning system vibrates control columns and moves control columns forward.

Note: A minimum of one hydraulic system must be pressurized for proper verification of the control column nudger.

Takeoff Configuration Warning Test

Establish one or more of the following conditions:

- Flaps not in takeoff position
- Speedbrakes not down
- Stabilizer units set greater than green band
- Parking brake set

Configuration Test switch T/O

Observe:

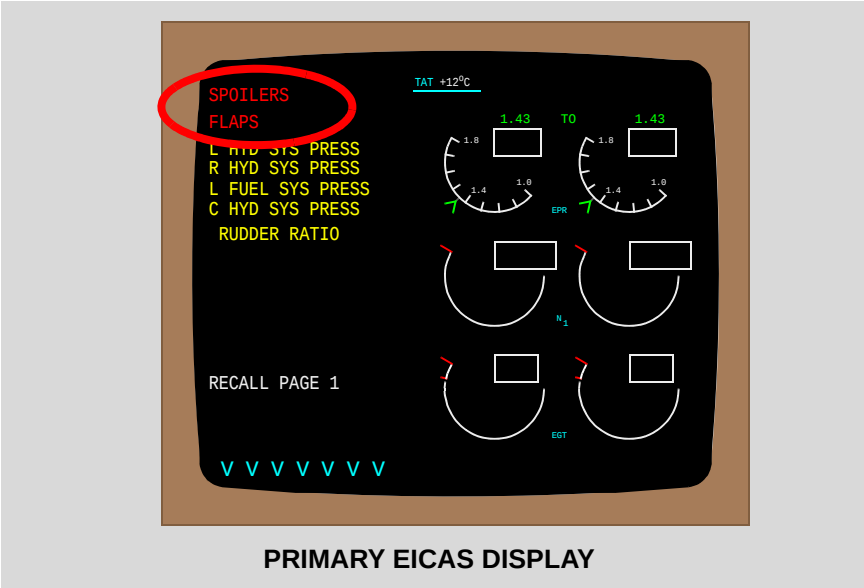
- Master WARNING lights illuminate
- Siren aural warning activates
- Applicable EICAS warning alert message(s) are shown

Establish appropriate configuration.

Configuration Test switch T/O
Observe CONFIG light illuminates, and monitor the upper EICAS
screen to ensure:

- the red SPOILERS message does not display, and
- appropriate configuration warning message(s) display.

Establish appropriate configuration.



Traffic Alert and Collision Avoidance System (TCAS) Test

Note: Prior to the aircraft’s first flight of the day, perform a TCAS test.

This procedure requires the IRSs to be aligned and in NAV mode.

Transponder Mode selector TEST
Verify aural annunciation "TCAS SYSTEM TEST OK".

Supplementary Procedures

Adverse Weather

Chapter SP

Section 16

Introduction

Airplane operation in adverse weather conditions may require additional considerations due to the effects of extreme temperatures, precipitation, turbulence, and windshear. Procedures in this section supplement normal procedures and should be observed when applicable.

Cold Weather Operation

Considerations associated with cold weather operation are primarily concerned with low temperatures and with ice, snow, slush, and standing water on the airplane, ramps, taxiways, and runways.

Icing conditions exist when OAT (on the ground) or TAT (in flight) is 10°C or below and any of the following exist [AFM]:

- visible moisture (clouds, fog with visibility of one statute mile (1600m) or less, rain, snow, sleet, ice crystals, etc.) is present; or
- ice, snow, slush or standing water is present on the ramps, taxiways, or runways.

CAUTION: Do not use engine anti-ice when OAT (on the ground) is above 10°C. Do not use engine or wing anti-ice when TAT (in-flight) is above 10°C.

Preflight Procedure

Although removal of surface snow, ice or frost is normally an ACS function, the flight crew should carefully inspect areas where surface snow, ice or frost could change or affect normal system operations.

Exterior Inspection

Do the normal Exterior Inspection with the following additional steps:

Surfaces Check

Ensure all leading edge devices, all control surfaces, and the upper wing and winglets (if installed), are free of snow, ice, and frost. The upper wing surfaces should be confirmed free of frozen contamination by inspection from the best vantage points.

Note: After inspection, monitor environmental conditions and ensure control surfaces remain free of contamination.

Note: Takeoff with light coatings of frost, up to 1/8 inch (3mm) in thickness on lower wing surfaces due to cold fuel is allowable.

Thin hoarfrost is acceptable on the upper surface of the fuselage provided all vents and ports are clear. Thin hoarfrost is a uniform white deposit of fine crystalline texture, which usually occurs on exposed surfaces on a cold and cloudless night, and which is thin enough to distinguish surface features underneath, such as paint lines, markings or lettering.

Probes, sensors, ports, vents, and drains (as applicable) Check

Check all probes, sensors, ports, vents, and drains are free of ice and snow. Water rundown after snow removal may refreeze immediately forward of static ports and cause an ice buildup which disturbs airflow over the static ports resulting in erroneous static readings even when static ports themselves are clear.

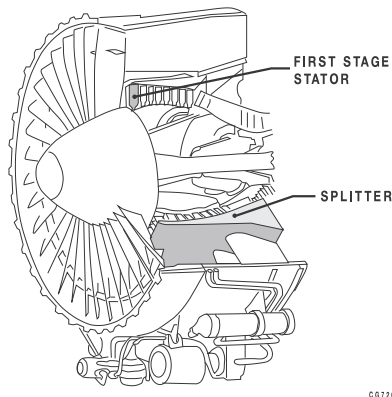
Pack inlets and outlets Check

Verify the air inlets and outlets, including the outflow valve, are free of snow and ice.

Engine inlets Check
Verify the inlet cowling is free of snow and ice.

757

When engine anti-ice will be required and the outside air temperature is + 3°C or less, perform a visual check for ice build-up on the first stage of the Low Pressure Compressor (LPC) stator (shown below).



CGT20068

Landing gear Check
Gear strut, actuators, doors, tires, brakes, and wheels should be free of snow or ice.

APU air inlet Check
The APU inlet door must be free of snow or ice prior to APU start.

Engine Start Procedure

Note: When anticipating taxiing on a slippery or contaminated surface, consider starting both engines.

Do the normal Engine Start procedure with the following modifications:

- Oil pressure may be slow to rise
- Initial oil pressure rise may be higher than normal
- Additional warm-up time may be needed to allow oil temperature to reach the normal range
- Display units may require additional warm-up time before displayed engine indications accurately show changing values.
- Display units may appear less bright than normal.

Note: P&W Engines - Do not advance thrust beyond that required for taxi until oil temperature reaches 50°C.

Engine Anti-ice Operation - On the Ground

Engine anti-ice must be selected ON immediately after engine start and remain on during all ground operations when icing conditions exist or are anticipated except when the temperature is below -40°C OAT. [AFM]

WARNING: Do not rely on airframe visual icing cues before activating engine anti-ice. Use the temperature and visible moisture criteria because late activation of engine anti-ice may allow excessive ingestion of ice and result in engine damage or failure. [AFM]

CAUTION: Do not use engine anti-ice when OAT is above 10°C.

When engine anti-ice is needed: [AFM]

ENGINE ANTI-ICE selector(s)/switch(es) ON

When engine anti-ice is required on the ground during single engine taxi:

ENGINE ANTI-ICE selector / switch ON

Air conditioning panel Set

APU bleed air switch OFF

ISOLATION switch(es) ON

ENGINE bleed air switch ON

PACK control selector AUTO

Note: During single-engine taxi, with engine anti-ice required, operate only one pack.

Prior to accomplishing a delayed engine start:

If performing a crossbleed start:

ENGINE ANTI-ICE selector/switch AUTO/OFF

Air conditioning panel Set

PACK control selector - OFF

If not performing a crossbleed start:

ENGINE ANTI-ICE selector/switch AUTO/OFF



-
- Air conditioning panel Set
 - PACK control selector - OFF
 - ENGINE bleed air switch (operating engine) - OFF
 - APU bleed air switch - ON

After accomplishing a delayed engine start:

- ENGINE ANTI-ICE selectors / switches (both) ON
- Air conditioning panel Set
- ISOLATION switch(es) OFF
- APU bleed air switch OFF
- ENGINE bleed air switches ON
- PACK control selectors AUTO

When engine anti-ice is no longer needed:

- ENGINE ANTI-ICE selector(s)/switch(es) AUTO/Off

Taxi Procedure

Do the normal Taxi procedure with the following modifications:

CAUTION: Avoid taxiing in deep snow or slush since steering will be more difficult. Brakes, landing gear and flaps may also freeze after takeoff if contaminated with snow or slush.

CAUTION: Taxi at a reduced speed. Use smaller tiller and rudder inputs, and apply minimum thrust smoothly. Differential thrust may be used to help maintain airplane momentum during turns. At all other times, apply thrust evenly. Taxiing on slippery taxiways or runways at excessive speed or with high crosswinds may start a skid.

CAUTION: When operating the engines over significant amounts of standing deicing or anti-icing fluid, limit thrust to the minimum required. Excessive ingestion of deicing or anti-icing fluid can cause the fluid to build up on the engine compressor blades resulting in compressor stalls and engine surges.

When engine anti-ice is required and the OAT is 3°C or below, do an engine run up, as needed, to minimize ice build-up. Use the following procedure: [AFM]

- Check that the area behind the airplane is clear.

757

WARNING: Ground operation in icing conditions without the required engine run-ups to a minimum of 50% N1 may result in severe engine damage and possible surge.

- Run the engines up to a minimum of 50% N1 for approximately 1 second duration at intervals no greater than 15 minutes.

757

If operationally necessary, time may be extended to, but shall not exceed, 30 minutes.

If the time limit of 30 minutes is exceeded without performing a run-up, the airplane must be taxied to an area where the engine can be shutdown and inspected for ice. Any ice detected must be removed prior to the next run-up or takeoff and if these requirements cannot be met, takeoff is not authorized. During taxi to areas for visual inspection, engine RPM greater than 40% N1 should be avoided to minimize the potential for ice shedding and possible engine damage.

767-300 PW

WARNING: Ground operation in icing conditions without the required engine run-ups to a minimum of 50% N1 may result in severe engine damage and possible surge.

- Run the engines up to a minimum of 50% N1 for approximately 1 second duration at intervals no greater than 15 minutes.

767-300 GE

WARNING: Ground operation in icing conditions without the required engine run-ups to a minimum of 60% N1 may result in severe engine damage and possible surge.

- Run the engines up to a minimum of 60% N1 for approximately 30 second(s) duration at intervals no greater than 30 minutes.

Before Takeoff Procedure

Refer to the Takeoff Runway Contaminant Decision Tree in this section. For performance corrections, refer to the WDR.

Takeoff Procedure

Refer to the Takeoff Runway Contaminant Decision Tree in this section, if applicable.

Do the normal Takeoff Procedure with the following modifications:

When engine anti-ice is required and the OAT is 3°C or below, the takeoff must be preceded by a standing takeoff.

A standing takeoff is accomplished by holding the brakes while in position on the assigned runway until the engines are stabilized at or above 60% N1 before the start of the takeoff roll.

Climb, Cruise, and Descent Procedures

Engine Anti-Ice Operation – In Flight

Engine anti-ice must be AUTO or ON during all flight operations when icing conditions exist or are anticipated, except during climb and cruise when the temperature is below -40°C SAT. Engine anti-ice must be AUTO or ON before, and during descent in all icing conditions, including temperatures below -40°C SAT. [AFM]

When operating in areas of possible icing, activate engine anti-ice before entering icing conditions.

CAUTION: Do not use engine anti-ice when TAT is above 10°C.

121, 124-139

In flight, maintain N1 at or above the TAI reference bug (45% N1 at or above 10,000 feet, 40% N1 below) except as required for landing. A 3% tolerance is permitted when operating with autothrottles on.

When engine anti-ice is needed: [AFM]

ENGINE ANTI-ICE selectors / switches AUTO / ON

When engine anti-ice is no longer needed:

ENGINE ANTI-ICE selectors / switches AUTO / Off

Fan Ice Removal

1501-1506, 1521, 1601-1708

CAUTION: Avoid prolonged operation in moderate to severe icing conditions.

During flight in moderate to severe icing conditions for prolonged periods with N1 settings at or below 70%, or if fan icing is suspected due to high engine vibration, increase thrust on one engine at a time to a minimum of 70% N1 for 10 to 30 seconds every 10 minutes.

Wing Anti-Ice Operation – In Flight

Ice accumulation on the flight deck window frames, windshield center post, side windows, or windshield wiper arm may be used as an indication of structural icing conditions and the need to turn on wing anti-ice.

For aircraft with WING ANTI-ICE selectors installed, wing anti-ice system operation is automatic through the ice detection system.

For aircraft with WING ANTI-ICE switches installed, the system operates in an advisory capacity only. Flight crew action is required to activate and deactivate the wing anti-ice system.

(Aircraft with WING ANTI-ICE selectors)

The WING ANTI-ICE selector is placed to the AUTO position when accomplishing the After Takeoff checklist. The selector is left in the AUTO position until the After Landing checklist unless needed for engine flameout protection in flight (see Engine Flameout Protection later in this chapter). This allows the wing anti-ice to automatically cycle on and off as necessary according to the automatic ice detection system. This automatic operation allows ice to accumulate before turning wing anti-ice on. This provides the cleanest airfoil surface, the least possible run-back ice formation, and the least fuel penalty.

(Aircraft with WING ANTI-ICE switches)

When the amber ICING light and the ICE DET ON EICAS advisory message (as installed) illuminate, visually check for indications of airframe icing conditions (see description above). If indications of airframe icing exist, turn the WING ANTI-ICE switch ON.

CAUTION: Do not use wing anti-ice when TAT is above 10°C.

757-300

Note: If the wing anti-ice is selected on at any time during the flight, the flaps up maneuver margin to stick shaker is reduced. Additional airspeed (up to 5 knots) may be added to flaps up maneuvering speed. This additive ensures full maneuver margin (40° bank capability).

When wing anti-ice is needed:

WING ANTI-ICE selectors / switches AUTO / ON

When wing anti-ice is no longer needed:

WING ANTI-ICE selectors / switches AUTO / OFF

Cruise Procedure

Cold Temperature Altitude Corrections

Extremely low temperatures create significant altimeter errors and greater potential for reduced terrain clearance. When the temperature is colder than ISA, true altitude will be lower than indicated altitude.

To ensure adequate obstacle clearance in conditions of extreme cold weather (-10°C or lower, or as specified in the Delta Special Page), refer to Airway Manual, Weather, Altimeter Corrections.

Descent Procedure

Engine Flameout Protection

767-300 GE

Prior to reducing thrust for descent in visible moisture and TAT less than 10° C, including SAT less than -40° C, nacelle anti-ice switch must be in the ON position. At or below 22,000 ft, wing anti-ice selector must be in the ON position.

CAUTION: Do not use engine or wing anti-ice when TAT is above 10°C.

ENGINE ANTI-ICE selectors/switches ON
Increases bleed air extraction to improve engine flameout margin.

At or below 22,000 feet:

WING ANTI-ICE selector/switch ON
Increases bleed air extraction to improve engine flameout margin.

During flight in IMC, avoid flying directly over significant amber or red depicted map weather radar regions. Use of the weather radar gain and tilt functions are recommended to assess weather radar return reflectivity.

During airplane descent and ATC permitting, attempt a continuous descent at idle thrust to decrease exposure to ice crystal conditions.

Entering the TAI/ON ALT on the DESCENT FORECAST page adjusts the VNAV path calculation for approach idle with engine anti-ice on.

When these icing conditions (visible moisture and TAT less than 10° C, including SAT less than -40° C) are no longer present or anticipated, place the nacelle and wing anti-ice selectors/switches in the AUTO/OFF position.

Approach and Landing Procedures

Refer to the Guidelines for Contaminated Runways procedure in this section, if applicable.

Airframe Buffet on Approach in Icing Conditions

767-300

171-1201, 1601-1708

Note: Operations in icing conditions have resulted in rare occurrences of higher than normal airframe buffet upon selection of landing flaps. No flight crew action is needed.

After Landing Procedure

Do the normal After Landing procedure with the following modifications:

After prolonged operation in icing conditions with the flaps extended, or when an accumulation of airframe ice is observed, or when landing on a runway contaminated with ice, snow, or slush:

Do not retract the flaps to less than flaps 20 until the flap areas have been checked to be free of contaminants.

Refer to Taxi procedure in this section for engine anti-ice, engine run up, and taxi guidance.

Secure Procedure

Do the normal Secure procedure with the following modifications whenever the temperature falls below 0°C (32°F) or the aircraft may be de/anti-iced during overnight parking:

Parking brake As required

 If the ramp is contaminated with ice or snow, parking brake should remain set.

CABIN ALTITUDE CONTROL
MODE SELECT MAN

CABIN ALTITUDE CONTROL
MANUAL selector DESCEND

The above procedure positions the outflow valve fully closed to inhibit intake of snow, ice, or deicing fluid.

Note: Additional cold weather securing procedures are required to be accomplished by maintenance and/or ACS personnel. Stations have the responsibility for draining the water system.

Guidelines for Takeoff on Contaminated Runways or Landing with Braking Action Less than Good

When there is contamination on the runway or the braking action is less than good, captains must evaluate crew, aircraft, and environmental conditions in determining the safety of operating their flight.

Procedure Guidance

General

- Consider crew capability.
- Consider current Maintenance Carry Overs (MCOs) - reversers, antiskid, etc.
- Consider type and amount of contaminant.
- Consider source and age of reported braking action.
- Consider usable runways and taxiways (NOTAMS, ATIS, etc.).

Taxi

- Be aware that ramps and taxiways may be very slippery.
- Be cautious of jet blast effect on ground personnel and equipment.
- Taxi onto and off runways at an extremely slow speed. Nose wheel slippage may occur causing the aircraft to continue straight ahead and possibly off the paved surface.

Crosswind Guidance

- On slippery runways, crosswind guidelines are a function of runway surface condition, airplane loading, and proper pilot technique.
- The following crosswind guidelines are applicable for takeoff and landing:

Braking Action	Runway Condition	ICAO	MU	RCR	Takeoff Crosswind Component *	Landing Crosswind Component ***	Tailwind *
---	Dry	6	≥40	≥19	40	40	10 (15)
Good	Damp Frost (<1/8")	5					
Good/ Medium	Wet	4					
Medium (Fair)	Dry Snow**	3	35-30	13-18	20	35	5
Medium / Poor	Wet Snow / Standing Water / Slush	2	29-26	--	15	20	0
Poor	Ice - No Melting**	1	25-21	6-12		17	
Nil	Do Not Operate						

* Recommend rolling takeoff above 20 knots crosswind or 10 knots tailwind (15 knots where approved).

** Takeoff on untreated ice or snow should only be attempted when no melting is present.

*** Sideslip only (zero crab) landings are not recommended with crosswind components in excess of 25 knots. This recommendation ensures adequate ground clearance and is based on maintaining adequate control margin.

Note: Crosswind guidelines are not considered limitations. Refer to the Limitations chapter for crosswind limits.

Note: Reduce crosswind guidelines by 5 knots on wet or contaminated runways whenever asymmetric reverse thrust is used.

Note: When multiple reports are present, e.g. "Braking Action Fair to Good", use the lower crosswind value.

Takeoff

- Refer to the Takeoff Runway Contaminant Decision Tree, this section.
- Do not take off with braking action report of NIL by any air carrier aircraft or airport operator.
- A rolling takeoff is strongly advised when the crosswind exceeds 20 knots.
- Do not take off with standing water, slush, or wet snow in excess of 1/2 inch (1.2 cm) depth.
- Do not take off in dry snow in excess of four inches (10 cm) depth.

AWABS Determinations

Airport Customer Service (ACS) maintains a template in AWABS which describes conditions on each runway. ACS will enter the runway contaminant type and depth when more than 25% of the runway is affected. AWABS interprets this information according to rules established by Flight Operations to automatically select the contaminant type.

Note: For the A319, A320, A321, B717, B737NG, B757-300, B767-400, A330 and B777-200LR, W (WET) is automatically selected by AWABS when the runway is reported wet. For other aircraft types, the Captain must notify the gate agent or Operations if he wants Load Control Center (LCC) to load plan for W (WET) numbers.

AWABS limits the takeoff weight, as appropriate, based upon the selected contaminant type.

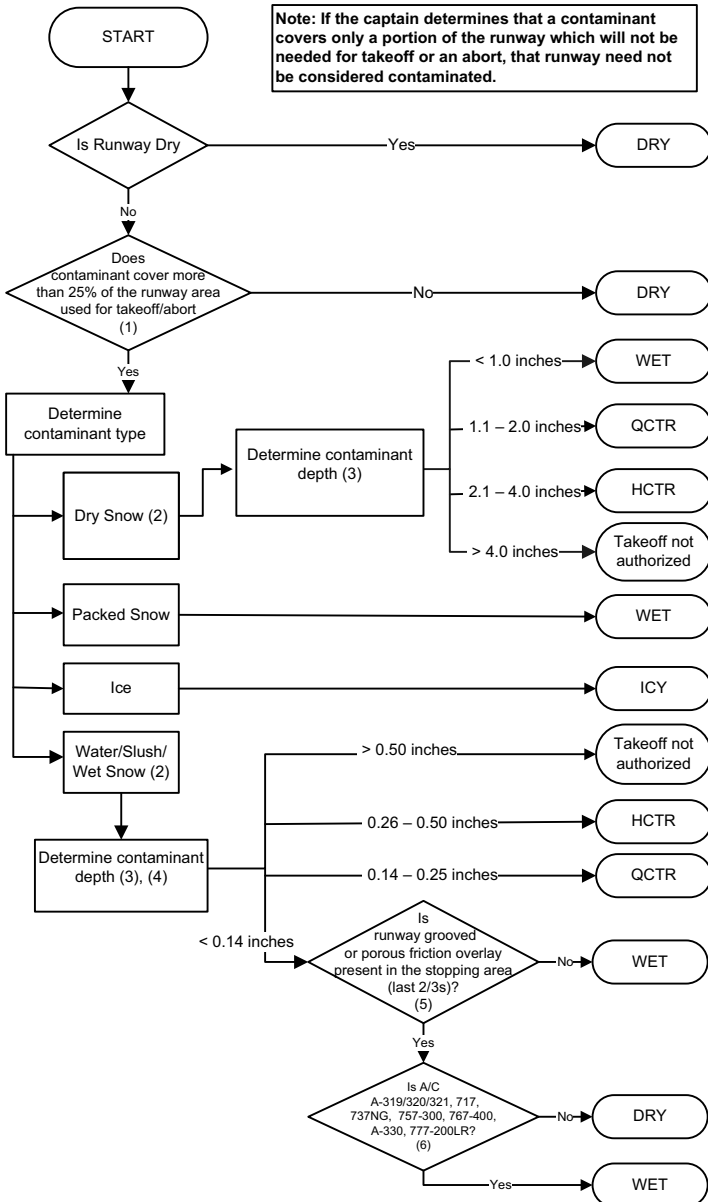
If the captain determines that a contaminant covers only a portion of the runway which will not be needed for takeoff or an abort, that runway need not be considered contaminated. The captain's determination affects his flight only and should be communicated to the dispatcher so AWABS can be updated appropriately, via LCC.

Category Definitions

- **DRY** - A runway is dry, or can be considered dry, based upon the considerations discussed in the Takeoff Runway Contaminant Decision Tree.
- **Slippery** - Under slippery conditions it is assumed that only the aircraft's braking capability is degraded; the aircraft's ability to accelerate is assumed to be unaffected.
 - **W (WET)** - A runway which is wet and on which the Captain considers the aircraft's braking capability to be degraded, or a runway covered with packed snow.
 - **I (ICY)** - A runway whose surface is covered by ice.
- **Cluttered** - Under cluttered conditions it is assumed that there is sufficient depth of contaminant that both the aircraft's acceleration and braking capability are degraded.
 - **QCTR (1/4 inch clutter)** - A runway whose surface is covered by an equivalent standing water depth of between .14 and .25 inches.
 - **HCTR (1/2 inch clutter)** - A runway whose surface is covered by an equivalent standing water depth of between .26 and .50 inches. Refer to the Takeoff Runway Contaminant Decision Tree, this section, for dry snow equivalent depths.

Takeoff Runway Contaminant Decision Tree

Use the following decision tree to determine runway condition for takeoff.



Takeoff Runway Contaminant Decision Tree Notes

1	If the captain determines that a contaminant covers only a portion of the runway which will not be needed for takeoff or an abort, that runway need not be considered contaminated. Note: There are circumstances that permit the Airport Authority to clear only the center 100 feet of the runway. In those circumstances, only the contaminant coverage within the cleared area is used to establish the percentage coverage.	
2	Snow	AWABS determines if snow is dry or wet on the basis of temperature. Snow is considered: • Wet when the temperature is 30 deg F or above • Dry when the temperature is below 30 deg F Note: A good operational test is: If a well compacted snowball can be made, the snow is wet; if the snowball falls apart, then the snow is dry.
3	A runway can be covered at varying depths over its length/width. When contaminant depths vary along the runway, a weighted average may be required. The contaminant depth along the runway where the aircraft will be at higher speeds should be weighed more heavily than at other points.	
4	A weighted average depth: • Less than or equal to 1/4 inch equates to QCTR, • Over 1/4 inch and up to 1/2 inch equates to HCTR Note: When the average depth exceeds 1/2 inch, takeoff will not be attempted.	
5	Grooved runways and runways with special porous overlays are designed to drain water from the runway surface in order to reduce the possibility of hydroplaning and increase the effective friction coefficient. Properly maintained runways with grooves or porous pavement have been shown to provide braking action approximately equivalent to a dry runway.	
6	A319, A320, A321, B717, B737NG, B757-300, B767-400, A330 and B777-200LR aircraft cannot consider a wet runway dry even if it is grooved or has a porous friction course overlay.	

Contaminant Millimeters to Inches Conversion

Use the following table for foreign stations that report runway clutter depth in millimeters (mm).

mm	0	6.35	12.7	25.4	50.8	101.6	152.4
Inches	0	1/4	1/2	1	2	4	6

Landing

- If FCTM, Quick Reference Landing Length chart does not apply, determine braking action. If braking action is less than good, accomplish an ACARS Landing Performance Request or refer to the ODM, Quick Reference Tab, Operational Landing Distance table.
- Do not land with a braking action report of NIL by any air carrier aircraft or airport operator in the landing or rollout portion of the runway.
- Do not land with standing water, slush, or wet snow in excess of one inch (2.5 cm) depth.
- Do not land in dry snow in excess of four inches (10 cm) depth.
- Consider using autobrakes for maximum stopping effectiveness.
- Land as early in the touchdown zone as possible.
- Do not assume the last 2,000 feet of the runway will have braking action as good as the touchdown zone.
- Avoid abrupt steering inputs.
- Use maximum allowable symmetrical reverse thrust.
- If side slipping off the runway, select reverse idle and release brakes to return to centerline.
- Aircraft will tend to drift off the runway nose first with forward thrust and tail first with reverse thrust.
- Be aware of the possibility of white out effect from reverse thrust use in dry snow.

Ground De/Anti-Icing Procedure

Pre-Gate Departure Communication

The captain can expect to talk to several different people during the deicing process, however, only two call signs are used.

- “Iceman” is a person who communicates with the captain via the VHF radio from a position within operations, the control center or the deice pad tower. This person will refer to the aircraft’s “Ship Number” in all communications.
- “Deicer/Coordinator” is the person who will be in direct control of the actual deicing operation on the aircraft. He/she will be plugged into the aircraft interphone system or on VHF radio and must be in direct communication with the captain at all times. This person will not know the flight number and will refer to the aircraft’s “Ship Number” in all communications.

The following communication procedures will be used:

PRE-GATE DEPARTURE COMMUNICATION	
CAPTAIN:	“This is ship #_____, we will require deicing.”
ICEMAN:	“Ship #_____, your aircraft will be deiced with the engine (s) running. OR “Ship #_____, your aircraft will be deiced_____ (at the gate, off the gate, or at the remote) with the engines shut down.”
CAPTAIN:	“Roger, ship #_____.”

Use the appropriate procedure for deicing at the gate or at the remote site with engines running or shut down.

Note: Advise deicer/coordinator if the APU will be running during de/anti-icing.

Note: Ensure engine inlets have been inspected and are clear prior to engine start.

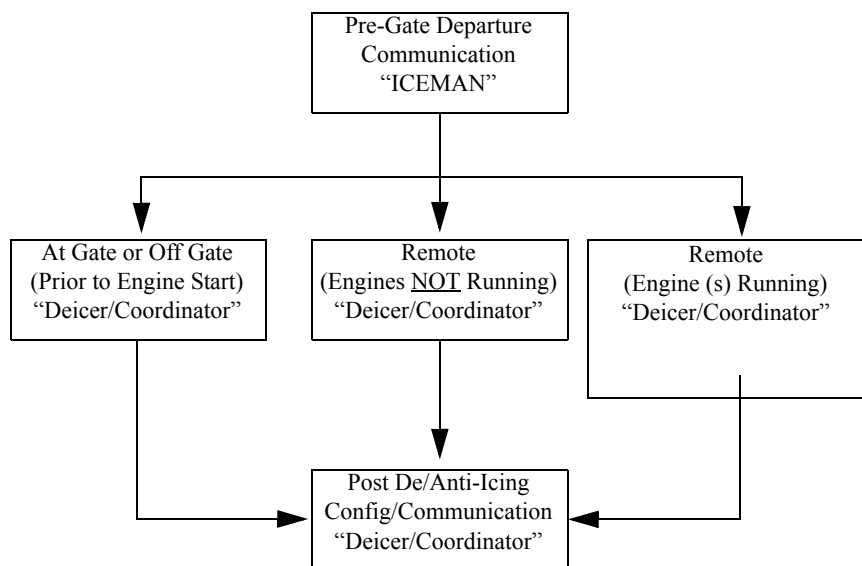
Aircraft Configuration and Communication

Prior to departure from the gate, when conditions warrant, the captain will contact “Iceman” and follow the Pre-Gate Departure Communication. The Iceman will describe one of three de/anti-icing scenarios:

- At Gate or Off Gate (Prior to Engine Start)
- Remote (Engines Not Running)
- Remote (Engine(s) Running)

Follow the communication and configurations described in the appropriate procedure. Once complete, follow the Post De/Anti-Icing configuration and communication.

Note: If the APU is inoperative, advise Iceman.



At Gate or Off Gate (Prior to Engine Start)

Make a PA to the passengers regarding the deicing process.

Approximately one minute prior to deicing:

PRE-DEICING COMMUNICATION	
DEICER/COORD:	“Ship # ____, brakes set?”
CAPTAIN:	“Roger, ship # ____, brakes set.”
DEICER/COORD:	“Ship # ____ Type II / IV with (fluid brand name) will be used for anti-icing (if anti-icing required).”
CAPTAIN:	“Roger, ship # ____.”
DEICER/COORD:	“Ship # ____, ready for deicing?”
CAPTAIN:	“Stand by.” (Follow procedure below).

OR

PRE-DEICING COMMUNICATION USING FORCED AIR	
DEICER/COORD:	“Ship # ____, brakes set?”
CAPTAIN:	“Roger, ship # ____, brakes set.”
DEICER/COORD:	“Ship # ____, the final process used will be forced air with Type I fluid (or forced air only) with no holdover time.”
CAPTAIN:	“Roger, ship # ____.” OR “Negative, ship # ____, holdover time required.”
DEICER/COORD:	“Ship # ____, ready for deicing?” OR “Ship # ____, Type II / IV with (fluid brand name) will be used for anti-icing (if anti-icing required). Ready for deicing?”
CAPTAIN:	“Stand by.” (Follow procedure below).

Prior to de/anti-icing:

Aircraft configuration for de/anti-icing:

CAUTION: Snow, slush, or ice ingestion in the APU inlet duct while the APU is running can cause serious damage. Coordinate with ground personnel to ensure that APU inlet area is clear before starting APU. Ingestion of deicing fluid causes objectionable fumes and odors to enter the airplane.

APU or external power As required

HYDRAULIC panel Set

Refer to Pushback procedure.

Flaps Extend

Extend the flaps to the anticipated takeoff position.

PACK control selectors OFF

APU bleed air switch (when tail deiced) OFF

Reduces the possibility of fumes entering the air conditioning system.

WARNING: Once the deicing operation begins, any aircraft movement or changes in configuration must be coordinated with the ground crew.

CAPTAIN:	“Ship # ____, aircraft ready for deicing.”
POST DE/ANTI-ICING COMMUNICATION	
DEICER/COORD:	“Ship # __ de/anti-icing and aircraft inspection complete.” OR “Ship # __ de/anti-icing and aircraft inspection complete. The final process used was forced air with Type I fluid (or forced air only) with no holdover time.”
CAPTAIN:	“Roger, ship # ____.”
DEICER/COORD:	“Ship # __ Type I fluid application started ____ minutes ago. The freeze point is ____°C”. No Type II or IV was used.” OR “Ship # __ Type II/IV fluid application with (fluid brand name) started ____ minutes ago.” OR (Non-US locations): “Ship # __ Type II/IV fluid application (fluid brand name) started ____ minutes ago using a fluid mixture of ____ (% concentrate).”
CAPTAIN:	“Roger, ship # __ Type I started ____ minutes ago. The freeze point is ____°C. No Type II or IV was used.” OR “Roger, ship # __ Type II/IV (fluid brand name) started ____ minutes ago.” OR (Non-US locations): “Roger, ship # __ Type II/IV (fluid brand name) started ____ minutes ago using a fluid mixture of ____ (% concentrate).”
DEICER/COORD:	“Ship # ____, clear to start engines (when applicable). Do not move the aircraft under power until you have been given the all clear salute.”
CAPTAIN:	“Roger, ship # ____.”

Post de/anti-icing:

WARNING: An All Clear salute is required to verify de/anti-icing procedures are complete.

Aircraft configuration post de/anti-icing:

Complete the Pushback procedure, if not already accomplished.

APU As required

Wait approximately 1 minute after deicing is complete to restore bleed air for pack operation to ensure deicing fluid has been cleared from the engines and APU.

APU bleed air switch ON

Engine(s) Start

Accomplish the After Start procedure.

Engine BLEED air switches ON

PACK control selectors As required

Accomplish the Taxi procedure.

Remote (Engines Not Running)

If remote deicing with engines not running is anticipated, the APU should be left operating. If the APU or a portion of the APU is inoperative, confirm that electric and/or air carts are available at the remote location before departing the gate.

CAUTION: Snow, slush, or ice ingestion in the APU inlet duct while the APU is running can cause serious damage. Coordinate with ground personnel to ensure that APU inlet area is clear before starting APU. Ingestion of deicing fluid causes objectionable fumes and odors to enter the airplane.

Approaching the icepad:

- Contact “Iceman”.
- Start the APU if it is not already operating.
- Make a PA to the passengers regarding the deicing process.

Just prior to entering the deicing area:

- Verify flaps are in the intended takeoff position.

When the aircraft is in position for deicing:

PRE-DEICING COMMUNICATION	
DEICER/COORD:	“Ship # ____, brakes set?”
CAPTAIN:	“Roger, ship # ____, brakes set.”
DEICER/COORD:	“Ship # ____ Type II / IV with (fluid brand name) will be used for anti-icing (if anti-icing required).”
CAPTAIN:	“Roger, ship # ____.”
DEICER/COORD:	“Ship # ____, ready for deicing?”
CAPTAIN:	“Stand by.” (Follow procedure below).

OR

PRE-DEICING COMMUNICATION USING FORCED AIR	
DEICER/COORD:	“Ship # ____, brakes set?”
CAPTAIN:	“Roger, ship # ____, brakes set.”
DEICER/COORD:	“Ship # ____, the final process used will be forced air with Type I fluid (or forced air only) with no holdover time.”
CAPTAIN:	“Roger, ship # ____.” OR “Negative, ship # ____, holdover time required.”
DEICER/COORD:	“Ship # ____, ready for deicing?” OR “Ship # ____, Type II / IV with (fluid brand name) will be used for anti-icing (if anti-icing required). Ready for deicing?”
CAPTAIN:	“Stand by.” (Follow procedure below).

Prior to de/anti-icing:

Aircraft configuration for de/anti-icing.

APU or external power As required

PACK control selectors OFF

Wait 3-5 seconds before turning the second pack to off.

APU bleed air switch OFF

Reduces the possibility of fumes entering the air conditioning system.

Engines Shut down

WARNING: Once the deicing operation begins, any aircraft movement or changes in configuration must be coordinated with the ground crew.

CAPTAIN:	“Ship # ____, aircraft ready for deicing.”

POST DE/ANTI-ICING COMMUNICATION	
DEICER/COORD:	“Ship # __ de/anti-icing and aircraft inspection complete.” OR “Ship # __ de/anti-icing and aircraft inspection complete. The final process used was forced air with Type I fluid (or forced air only) with no holdover time.”
CAPTAIN:	“Roger, ship # ____.”
DEICER/COORD:	“Ship # __ Type I fluid application started __ minutes ago. The freeze point is __ °C”. No Type II or IV was used.” OR “Ship # __ Type II/IV fluid application with (fluid brand name) started __ minutes ago.” OR (Non-US locations): “Ship # __ Type II/IV fluid application (fluid brand name) started __ minutes ago using a fluid mixture of __ (% concentrate).”
CAPTAIN:	“Roger, ship # __ Type I started __ minutes ago. The freeze point is __ °C. No Type II or IV was used.” OR “Roger, ship # __ Type II/IV (fluid brand name) started __ minutes ago.” OR (Non-US locations): “Roger, ship # __ Type II/IV (fluid brand name) started __ minutes ago using a fluid mixture of __ (% concentrate).”
DEICER/COORD:	“Ship # ____, clear to start engines (when applicable). Do not move the aircraft under power until you have been given the all clear salute.”
CAPTAIN:	“Roger, ship # ____.”

Post de/anti-icing:

WARNING: Do not move aircraft until ATC taxi clearance and the All Clear Salute have been received.

Aircraft configuration post de/anti-icing:

APU As required

Wait approximately 1 minute after deicing is complete to restore bleed air for pack operation to ensure deicing fluid has been cleared from the engines and APU.

APU bleed air switch ON

Engine(s) Start

Accomplish the After Start procedure.

Engine BLEED air switches ON

PACK control selectors As required

Accomplish the Taxi procedure.

Remote (Engine(s) Running)

Note: Deicing with the engines running is authorized only at stations identified in the Delta Special Pages.

Approaching the icepad:

- Contact “Iceman”
- Make a PA to the passengers regarding the deicing process.

Just prior to entering the deicing area:

- Verify flaps are in the intended takeoff position.

When the aircraft is in position for deicing:

PRE-DEICING COMMUNICATION	
DEICER/COORD:	“Ship # ____, brakes set, engines at idle?”
CAPTAIN:	“Roger, ship # ____, brakes set, engines at idle.”
DEICER/COORD:	“Ship # ____ Type II / IV with (fluid brand name) will be used for anti-icing (if anti-icing required).”
CAPTAIN:	“Roger, ship # ____.”
DEICER/COORD:	“Ship # ____, ready for deicing?”
CAPTAIN:	“Stand by.” (Follow procedure below).

OR

PRE-DEICING COMMUNICATION USING FORCED AIR	
DEICER/COORD:	“Ship # ____, brakes set, engines at idle?”
CAPTAIN:	“Roger, ship # ____, brakes set, engines at idle.”
DEICER/COORD:	“Ship # ____, the final process used will be forced air with Type I fluid (or forced air only) with no holdover time.”
CAPTAIN:	“Roger, ship # ____.” OR “Negative, ship # ____, holdover time required.”
DEICER/COORD:	“Ship # ____, ready for deicing?” OR “Ship # ____, Type II / IV with (fluid brand name) will be used for anti-icing (if anti-icing required). Ready for deicing?”
CAPTAIN:	“Stand by.” (Follow procedure below).

Prior to de/anti-icing:

Aircraft configuration for de/anti-icing:

Thrust levers IDLE

APU OFF

PACK control selectors OFF

APU bleed air switch OFF

Reduces the possibility of fumes entering the air conditioning system.

WARNING: Once the deicing operation begins, any aircraft movement or changes in configuration must be coordinated with the ground crew.

CAPTAIN:	“Ship # ____, aircraft ready for deicing.”

POST DE/ANTI-ICING COMMUNICATION	
DEICER/COORD:	“Ship # __ de/anti-icing and aircraft inspection complete.” OR “Ship # __ de/anti-icing and aircraft inspection complete. The final process used was forced air with Type I fluid (or forced air only) with no holdover time.”
CAPTAIN:	“Roger, ship # ____.”
DEICER/COORD:	“Ship # __ Type I fluid application started __ minutes ago. The freeze point is __ °C”. No Type II or IV was used.” OR “Ship # __ Type II/IV fluid application with (fluid brand name) started __ minutes ago.” OR (Non-US locations): “Ship # __ Type II/IV fluid application (fluid brand name) started __ minutes ago using a fluid mixture of __ (% concentrate).”
CAPTAIN:	“Roger, ship # __ Type I started __ minutes ago. The freeze point is __ °C. No Type II or IV was used.” OR “Roger, ship # __ Type II/IV (fluid brand name) started __ minutes ago.” OR (Non-US locations): “Roger, ship # __ Type II/IV (fluid brand name) started __ minutes ago using a fluid mixture of __ (% concentrate).”
DEICER/COORD:	“Ship # ____, clear to start engines (when applicable). Do not move the aircraft under power until you have been given the all clear salute.”
CAPTAIN:	“Roger, ship # ____.”

Post de/anti-icing:

WARNING: Do not move aircraft until ATC taxi clearance and the All Clear Salute have been received.

Taxi may be commenced prior to restoring bleed air and pack operation.

Aircraft configuration post de/anti-icing:

Wait approximately 1 minute after deicing is complete to restore bleed air for pack operation to ensure deicing fluid has been cleared from the engines and APU.

APU bleed air switch As required

PACK control selectors As required

Accomplish the Taxi procedure.

Hot Weather Operation

During ground operation the following considerations will help keep the airplane as cool as possible:

- If a ground source of conditioned air is available, the supply should be plugged in immediately after engine shutdown and should not be removed until just prior to engine start.
- If a ground source of conditioned air is not available, use both air conditioning packs and ensure recirculation fan(s) are off.

Note: Turning on the recirculation fan(s) has a negative effect on passenger comfort. This introduces hot ambient air from around the cargo compartments to the mix manifold. This impedes the flow of cool air from the ground conditioned air or packs into the cabin air distribution system.

- All doors, including cargo doors, and windows should be closed as much as possible.
- Electronic components which contribute to a high temperature level in the flight deck should be turned off while not needed.
- All flight deck air outlets should be opened.
- All passenger cabin gasper outlets should be opened and all window shades on the sun-exposed side of the passenger cabin should be closed.

Note: If only cooling air from a ground air conditioning cart is supplied (no pressurized air from the APU or ground external air), then the TAT probes are not aspirated. Because of high TAT probe temperatures, the FMS may not accept an assumed temperature derate. Delay selecting an assumed temperature derate until after bleed air is available.

Takeoff EGT Exceedance Mitigation

121-139, 1501-1506

These aircraft can experience EGT exceedance during takeoff when operating in moderate to high ambient temperatures. To help mitigate these events, Packs Off Takeoff Procedures (POF) are used. POF reduces the maximum EGT by approximately 3-5°. When applicable, POF will be indicated on the AWABS WDR. Additionally, assumed temperature derates may be used. Refer to SP.2, Packs Off Takeoff procedure.

Before Takeoff

To optimize cabin and flight deck comfort, both pack selectors should be positioned to OFF immediately prior to commencing the takeoff roll.

Takeoff

During takeoff roll, do not reduce takeoff power settings to reduce the EGT within limits. The engines are capable of normal operation past the takeoff limit.

Note: Do not reject a takeoff due to EGT going into the red if other engine indications are normal.

EGT will return to within normal limits as engine airflow increases during takeoff or after selection of climb power.

With the packs selected OFF on the ground, the Engine Bleed Air OFF light(s) and L or R ENG BLEED OFF EICAS advisory message may display.

Note: Do not reject the takeoff for the above light(s) and message(s).

After Takeoff

If the Engine Bleed Air OFF light(s) remain illuminated after packs have been selected to AUTO, accomplish the ENGINE BLEED OFF NNC in the QRH and contact the MCC.

If an overtemp occurs, coordinate with the MCC to evaluate the event. The engine is typically able to perform the rest of the flight in normal operations.

Moderate to Heavy Rain, Hail or Sleet

Flight should be conducted to avoid thunderstorms, hail activity or visible moisture over storm cells. To the maximum extent possible, moderate to heavy rain, hail or sleet should also be avoided.

If moderate to heavy rain, hail or sleet is encountered:

- Engine Start selectors CONT
- This selection maintains a minimum thrust setting of approach idle and provides continuous ignition.

Engine Flameout Protection**767-300 GE**

Prior to reducing thrust for descent in visible moisture and TAT less than 10° C, including SAT less than -40° C, nacelle anti-ice switch must be in the ON position. At or below 22,000 ft, wing anti-ice selector must be in the ON position.

CAUTION: Do not use engine or wing anti-ice when TAT is above 10°C.

ENGINE ANTI-ICE selectors/switches ON

Increases bleed air extraction to improve engine flameout margin.

At or below 22,000 feet:

WING ANTI-ICE selector/switch ON

Increases bleed air extraction to improve engine flameout margin.

During flight in IMC, avoid flying directly over significant amber or red depicted map weather radar regions. Use of the weather radar gain and tilt functions are recommended to assess weather radar return reflectivity.

During airplane descent and ATC permitting, attempt a continuous descent at idle thrust to decrease exposure to ice crystal conditions.

Entering the TAI/ON ALT on the DESCENT FORECAST page adjusts the VNAV path calculation for approach idle with engine anti-ice on.

When these icing conditions (visible moisture and TAT less than 10° C, including SAT less than -40° C) are no longer present or anticipated, place the nacelle and wing anti-ice selectors/switches in the AUTO/OFF position.

Operation in a Sandy or Dusty Environment

The main hazards of a sandy or dusty environment are airplane surface erosion, especially of engine fan blades, accumulation of sand or dust on critical surfaces, and blockage. The effects of sand ingestion occur predominantly during takeoff, landing, and taxi operations. The adverse effects, however, can occur if the airplane’s flight path was through a cloud of visible sand or dust, or the airplane was parked during a sand or dust storm. Premature engine deterioration can result from sand or dust ingestion, causing increased fuel burn and reduced EGT margins.

CAUTION: After a sandstorm, if all taxiways and runways are not carefully inspected and swept for debris before flight operations are conducted, the risk of engine damage and wear is increased.

Exterior Inspection

Although removal of sand and dust contaminants is primarily a maintenance function, during the exterior inspection, the captain or first officer should carefully inspect areas where accumulation of sand or dust could change or affect normal system operations.

Do the normal Exterior Inspection with the following additional steps:

Windshield Check
Verify that the windshield has been cleaned.

Note: Do not use windshield wipers for sand or dust removal.

CAUTION: Particular care should be taken to ensure that the fuselage and all surfaces are clean after a sand storm that occurs with rain.

Surfaces Check
Verify that the upper surfaces of the wings and other control surfaces are free of sand.

Air conditioning inlets and exits Check
Verify that the left and right air inlets are free of sand and dust.
Verify that the cabin pressure outflow valves and both positive pressure relief valves are free of sand and dust

Leading edge flaps Check
Verify that all leading edges are undamaged.

Engine inlets Check

Verify that the inlet cowling is free of sand and dust.

Verify that the fan is free to rotate and fan blades are undamaged.

Fuel tank vents Check

Verify that all vents are free of sand and dust.

Landing gear Check

Verify that gear struts and doors are free of sand and dust build-up.

Vertical and horizontal stabilizers Check

Verify that all leading edges are undamaged.

APU air inlet Check

Ensure that the APU inlet door and cooling air inlet are free of sand and dust before APU start.

Note: Minimize the use of air conditioning, other than from a ground air conditioner, as much as possible. If the APU must be used for air conditioning, maintain a temperature as high as possible while still providing a tolerable flight deck and cabin environment.

Preflight Procedure - Pilot Monitoring

Do the normal Preflight Procedure - Pilot Monitoring with the following modifications:

Note: Minimize the use of air conditioning, other than from a ground air conditioner, as much as possible. If the APU must be used for air conditioning, maintain a temperature as high as possible while still providing a tolerable flight deck and cabin environment.

APU BLEED air switch OFF

If APU bleed air will be used and the APU is not operating:

APU START, then ON

Do not allow the APU selector to spring back to the ON position.

Note: Run the APU for one full minute before using it as a bleed air source.

Engine BLEED air switches OFF

APU BLEED air switch ON

Engine Start Procedure

Do the normal Engine Start Procedure with the following modifications:

Note: Use a filtered ground cart for pneumatic air for engine start, if available.

ENGINE START switch GRD

Verify that the N2 RPM increases.

Motor the engine for the remainder of the starter duty cycle to help remove contaminants. Do not exceed 2 minutes for the entire start cycle.

ENGINE START switch OFF

When N2 is 0%:

ENGINE START switch GRD

Verify that the N2 RPM increases.

FUEL CONTROL switch RUN

After Start Procedure

Do the normal After Start Procedure with special emphasis on the following steps:

If bleed air is needed to maintain tolerable flight deck and cabin temperatures, use APU bleed air rather than engine bleed air during the taxi out. Limit APU bleed air use as much as possible to reduce sand and dust ingestion.

If APU bleed air will be used and the APU is not operating:

APU BLEED air switch OFF

APU START, then ON

Do not allow the APU selector to spring back to the ON position.

Note: Run the APU for one full minute before using it as a bleed air source.

Engine BLEED air switches OFF

APU BLEED air switch ON

Flight controls Check

Verify that there is no increase in control forces due to sand or dust contaminants.

Taxi-Out

Do the following, conditions permitting, to minimize sand and dust ingestion by the engines and to improve visibility during taxi:

- Use all engines during taxi and taxi at low speed. Limit ground speed to 10 knots and maintain thrust below 40% N1 whenever possible to avoid creating engine vortices during ground operations.
- Maintain a greater than normal separation from other aircraft while taxiing and avoid the ingestion of another engine's wake.
- Avoid engine overhang of unprepared surfaces.
- Minimize thrust on the outboard engine during 180° turns.
- In the event of a crosswind during 180° turns, turn away from the wind if possible to minimize sand and dust ingestion.
- Whenever possible, avoid situations that would require the airplane to be brought to a complete stop.
- Avoid excessive braking. The presence of sand or dust will increase brake wear.

Takeoff

Do the following to minimize sand and dust ingestion by the engines during takeoff:

- Use the full fixed derate and/or assumed temperature thrust reduction that meets performance requirements.
- If cabin and flight deck temperatures can be maintained at a tolerable temperature, consider a Packs Off Takeoff
- Prior to takeoff, allow sand and dust to settle.
- Do not take off into a sand or dust cloud.
- Use a rolling takeoff. Whenever possible, avoid setting high thrust at low speed.
- When visible sand and dust exist, consider delaying flap retraction until above the dust cloud, if operations permit.
- Use maximum climb power to minimize time spent in dusty conditions.

Landing

Do the following to minimize sand and dust ingestion by the engines during landing:

- Use autobrakes on landing to help minimize the need for reverse thrust.
- Performance permitting, minimize the use of reverse thrust to prevent ingestion of dust and sand and to prevent reduction of visibility. Reverse thrust is most effective at high speed.

The presence of sand or dust will increase brake wear. A light layer of sand or dust on the runway may reduce tire-to-runway frictions.

After Landing Procedure

Do the normal After Landing Procedure with the following modifications:

If bleed air is needed to maintain tolerable flight deck and cabin temperatures, use APU bleed air rather than engine bleed air during the taxi in. Limit APU bleed air use as much as possible to reduce sand and dust ingestion.

If APU bleed air will be used and the APU is not operating:

APU BLEED air switch OFF

APU BLEED air switch START, then ON

Do not allow the APU selector to spring back to the ON position.

Note: Run the APU for one full minute before using it as a bleed air source.

Engine BLEED air switches OFF

APU BLEED air switch ON

Taxi-In

Do the following, conditions permitting, to minimize sand and dust ingestion by the engines and to improve visibility during the taxi-in:

- Use all engines and taxi at low speed. Limit ground speed to 10 knots and maintain thrust below 40% N1 whenever possible.
- Maintain a greater than normal separation from other aircraft while taxiing and avoid the ingestion of another engine's wake.
- Avoid engine overhang of unprepared surfaces.
- Minimize engine thrust on the outboard engine during 180° turns.

- In the event of a crosswind during 180° turns, turn away from the wind if possible to minimize sand and dust ingestion.
- Whenever possible, avoid situations that would require the airplane to be brought to a complete stop.
- Avoid excessive braking. The presence of sand or dust will increase brake wear.

Secure Procedure

Do the normal Secure Procedure with the following modifications:

Cabin altitude mode selector MAN

Cabin altitude manual control DESCEND

Position the outflow valves fully closed to inhibit the intake of sand and dust.

Additional procedures for securing the airplane during sandy or dusty conditions may be needed. These procedures are normally done by maintenance personnel, and include, but are not limited to:

- Verify that engine covers, if applicable, are in place while the airplane is parked.
- Verify that airplane doors are closed.
- Verify that all openings are plugged or covered while the airplane is parked. Streamers should be used to remind personnel to remove before flight.
- Ensure all compartments are closed.

Turbulence

During flight in light to moderate turbulence, the autopilot and/or autothrottle may remain engaged unless airspeed, altitude or attitude deviations require use of manual control.

The turbulent air penetration speed provides ample protection from stall and high speed buffet, while also providing protection from exceeding the structural limit. Refer to the Limitations section for the turbulent air penetration speed. Below 10,000 feet, a speed between 240 and 250 knots provides adequate buffet margin.

- Passenger signs ON
- Advise passengers to fasten seat belts prior to entering areas of reported or anticipated turbulence. Instruct flight attendants to check that all passengers' seat belts are fastened.

Severe Turbulence

Severe turbulence should be avoided if at all possible. If severe turbulence cannot be avoided, an increased buffet margin is recommended. This can be obtained by descending approximately 4,000 feet below optimum altitude. The autothrottle should be off in severe turbulence.

- Engine Start Selectors CONT

Note: If an approach must be made into an area of severe turbulence, delay flap extension as long as possible. The airplane can withstand higher gust loads in the clean configuration. Diversion to another airfield is the best policy if severe turbulence persists in the area.

Volcanic Ash Encounter

Ground Operations

Aircraft should not operate into or out of airports where there is falling ash and/or ash-covered runways/taxiways. If an airport's operational surfaces are contaminated with ash, the taxiways and runways to be used must be swept prior to use, and if possible, sprayed with water to minimize aircraft contamination from any remaining ash.

Restrict ground use of the APU to engine starts. Use ground starting air and electrical power, if available.

Do not use windshield wipers for dust removal. Coordinate with Maintenance to hose off ash deposits with water and wipe residue away with a soft cloth.

Avoid the use of air conditioning packs on the ground as long as recirculation fans will maintain adequate cabin comfort. If air conditioning is required, operate at full cold setting. Use preconditioned air at the terminal from a filtered ground cart, if available. If possible, keep engine bleeds off.

Avoid static operations of engines above idle power.

To prevent contamination of air conditioning system, consider a takeoff with packs off.

Use rolling takeoff procedures to minimize engine dust ingestion.

During landing, limit reverse thrust to avoid impairing visibility and minimize ingesting dust into the engines. Exercise caution as braking may be less effective than normal due to contamination on the runway.

In Flight

CAUTION: If volcanic ash is encountered in flight, refer to the QRH, section 0, Volcanic Ash.

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Differences Introduction

Chapter DF Section 05

General

The following 757 and 767 aircraft differences section must be reviewed every 6 months (PIC) or 12 months (SIC) to comply with variant currency requirements. Review of differences may be accomplished concurrently with Continuing Qualification.

Signing in for a rotation certifies that the pilot has fulfilled this requirement.

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**Differences****757 Differences****Chapter DF****Section 10****General**

The following tables show differences between aircraft models. Only items that are different are listed; if an item or tail number is not listed, there are no associated differences.

Note: These are differences only. Refer to Volume 2 for complete systems descriptions.

Aircraft General, Emergency Equipment, Doors, Windows

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
ETOPS	691 - No 6819-6823 - Yes	No	Yes	
Overwater Equip	Yes			
Minimum pavement width for 180° turn	120 feet			
Wing Tips	Winglets	Winglets, as installed	Winglets	Conventional
Logo Lights	Installed	Not installed	Installed	
Taxi Light	691 - 1 light 6819-6823 - 2 lights	2 lights	Not installed; Use the Nose Gear Landing Light for taxi operations	1 light
Waste System	691 - Recirculating 6819-6823 - Vacuum	Recirculating		
Emergency Equip	Refer to the Emergency Equipment Locations graphics in Volume 2			
Crew O2 Masks	B.E. Flexible Full Face			
Passenger Oxygen	12 minutes			22 minutes
Entry/Service Doors	6 doors (in-out, plug type)			
Overwing Exit Doors	691 - 4 doors 6819-6823 - Not installed	4 doors	Not installed	4 doors
Emergency Exit Doors	691 - Not installed 6819-6823 - 2 doors aft of wing	Not installed	2 doors aft of wing	Not installed
ELT	691 - Portable 6819-6823 - Fixed	Portable		

Aircraft General, Emergency Equipment, Doors, Windows

Item	757-251 5635-5657	757-351 5801-5816
ETOPS	5635-5649: Yes 5650-5657: No	Yes
Overwater Equip	5635-5649: Yes 5650-5657: No	Yes
Minimum pavement width for 180° turn	120 feet	141 feet
Wing Tips	Winglets, as installed	
Logo Lights	5635-5649: Installed 5650-5657: Not installed	Installed
Taxi Light	Not installed; Use the Nose Gear Landing Light for taxi operations.	2 lights
Waste System	Recirculating	Vacuum
Emergency Equip	Refer to the Emergency Equipment Locations graphics in Volume 2	
Crew O2 Masks	5635-5649: B.E. Flexible Full Face 5650-5657: Eros Rigid Full Face	Eros Rigid Full Face
Passenger Oxygen	12 minutes.	
Entry/Service Doors	6 doors (in-out, plug type)	
Overwing Exit Doors	4 doors	
Emergency Exit Doors	Not installed	2 doors aft of wing
ELT	Portable	

Air Systems

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Gasper Air System	Not installed.	Installed, no switch.		Not installed.
Cabin Temperature Control	Temperature control for 3 compartments (flight deck, forward cabin, aft cabin).			
Cargo Heat	Forward & aft cargo compartments are heated automatically.			
Crew Heat	Low heat available on ground.			
E / E Cooling System 2 systems (forward & aft). Left recirculation fan must on at all times for E / E cooling.	Alternate fan must be selected on.	601-619: Alternate fan is automatic. 620 -690, 692-699, 6700-6717: Alternate fan must be selected on.	Alternate fan must be selected on.	Alternate fan is automatic.
E / E Cooling Smoke Clearance	Aft system smoke sensors not installed.	601-617: Aft system smoke sensors installed. 618 -690, 692-6099, 6700-6717: Not installed.	Aft system smoke sensors not installed.	Aft system smoke sensors installed.
Bleed Leak Indication	BLEED and/or HI STAGE lights illuminate for abnormal duct condition.			
Center Duct	Center duct is a supply duct from the APU to the crossover manifold. Center duct leak detection is part of the left duct detection system.			
Pressure Relief Valve	2 negative pressure relief valves			
Strut Overheat	Not installed.			

Air Systems

Item	757-251 5635-5657	757-351 5801-5816
Gasper Air System	Installed, no switch.	
Cabin Temperature Control	Temperature control for 3 compartments (flight deck, forward cabin, aft cabin).	Temperature control for 4 compartments (flight deck, forward cabin, mid cabin, and aft cabin)
Cargo Heat	Forward & aft cargo compartments are heated automatically	
Crew Heat	Low heat available on ground	
E / E Cooling System 2 systems (forward & aft). Left recirculation fan must on at all times for E / E cooling.	Alternate fan must be selected on	
E / E Cooling Smoke Clearance	Aft smoke sensors not installed	
Bleed Leak Indication	BLEED and/or HISTAGE lights illuminate for abnormal duct condition	
Center Duct	Center duct is a supply duct from the APU to the crossover manifold. Center duct leak detection is part of the left duct detection system.	
Pressure Relief Valve	2 negative pressure relief valves	3 negative pressure relief valves
Strut Overheat	Not installed	

Anti-Ice, Rain

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Engine Anti-Ice System	Engine anti-ice valves are located downstream of the engine bleed valves. The engine BLEED switches must be latched OPEN for engine anti-ice to operate.			
Bleed Air Correction	In flight, with engine anti-ice on, idle speed is automatically increased to approach idle. The minimum N1 cursor is displayed only when operating on a single bleed source.			
Wing Anti-Ice System	Wing anti-icing is applied to 3 slats outboard of each engine.			
Wing Anti-Ice Test	After a time delay of 12 seconds, the wing anti-ice valves are automatically closed to protect the wing structure.			
Wing Anti-Ice Switches	Latch type.			
Ice Detection	Not Installed.	Installed.	Not installed.	
TAT Probe	691 - 1 installed 6819-6823 - 2 installed	1 installed		

Anti-Ice, Rain

Item	757-251 5635-5657	757-351 5801-5816
Engine Anti-Ice System	Engine anti-ice valves are located downstream of the engine bleed valves. The engine BLEED switches must be latched OPEN for engine anti-ice to operate.	
Bleed Air Correction	In flight, with engine anti-ice on, idle speed is automatically increased to approach idle. The minimum N1 cursor is displayed only when operating on a single bleed source.	
Wing Anti-Ice System	Wing anti-icing is applied to 3 slats outboard of each engine.	
Wing Anti-Ice Test	After a time delay of 12 seconds, the wing anti-ice valves are automatically closed to protect the wing structure.	
Wing Anti-Ice Switches	Latch type	
Ice Detection	Not installed	
TAT Probe	1 installed	2 installed

Autoflight

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Autopilot Engagement	Requires 1 FCC	Requires 2 FCCs	Requires 1 FCC	Requires 2 FCCs



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Autoflight

Item	757-251 5635-5657	757-351 5801-5816
Autopilot Engagement	Requires 2 FCCs	Requires 1 FCC

Communications

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
ACARS	Touchscreen or MCDU (as installed)			MCDU
ACARS Datalink Transmission (when out of VHF range)	691 - None 6819-6823 - via SATCOM	None	via SATCOM	None
ACMS Pitch Report	Not operational	601-699, 6700-6704: Not operational 6705-6717: Operational	Not operational	
HF	2 installed	631, 633-635, 652-655, 667-690, 692-699, 6700-6717: 2 installed. All others: Not installed.	2 installed	
VHF	3 installed.			
SATCOM	691 - Not installed 6819-6823 - Installed	Not installed	Installed	Not installed
Flight Deck Handset	691 - Installed 6819-6823 - Not installed	Installed		
Headset Mfg	691 - David Clark 6819-6823 - TELEX	David Clark		

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Communications

Item	757-251 5635-5657	757-351 5801-5816
ACARS	5635-5649: Touchscreen. 5650-5657: MCDU	MCDU.
ACARS Datalink Transmission (when out of VHF range)	5635-5649: via SATCOM 5650-5657: None	Via HF
ACMS Pitch Report	5635-5649: Not operational 5650-5657: Operational	Operational
HF	5635-5650: 2 installed 5651-5657: Not installed	2 installed
VHF	3 installed	
SATCOM	5635-5650: Installed 5651-5657: Not installed	Not installed
Flight Deck Handset	Not installed	
Headset Mfg	TELEX	

Electrical

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Flight Instrument Bus Power Switch	Not installed.			
Hydraulic Driven Generator (HDG)	691 - Not installed 6819-6823 - Installed. If both the left and right main AC busses are lost, the HDG powers AC and DC power for essential equipment.	Not installed	Installed. If both the left and right main AC busses are lost, the HDG powers AC and DC power for essential equipment.	
Standby Power Operation	691 - Approximately 30 min. from main aircraft battery. 6819-6823 - Approximately 90 min. from main aircraft and APU battery.	Approximately 30 min. from main aircraft battery.		

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Electrical

Item	757-251 5635-5657	757-351 5801-5816
Flight Instrument Bus Power Switch	Not installed	
Hydraulic Driven Generator (HDG)	5635-5649: Installed. If both the left and right main AC busses are lost, the HDG powers AC and DC power for essential equipment. 5650-5657: Not installed.	Installed. If both the left and right main AC busses are lost, the HDG powers AC and DC power for essential equipment.
Standby Power Operation	Approximately 30 min. from main aircraft battery	Approximately 90 min. from main aircraft and APU battery

Engines, APU

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Engine Type	Pratt & Whitney PW2037.			
Electronic Engine Control (EEC)	One dual channel EEC per engine, powered by dedicated alternator. EEC computed thrust limit is presented as amber radial on the EPR display.			
EEC Switches	Single switch on sidewall accessory panel. Controls both EECs simultaneously.	Two switches on overhead panel.	Single switch on sidewall accessory panel. Controls both EECs simultaneously.	
Engine Thrust Reverse	Hydraulically powered			
Pressure Regulating Valve (PRV)	Not installed			
APU	No differences.			

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Engines, APU

Item	757-251 5635-5657	757-351 5801-5816
Engine Type	Pratt & Whitney PW2037	Pratt & Whitney PW2040
Electronic Engine Control (EEC)	One dual channel EEC per engine, powered by dedicated alternator. EEC computed thrust limit is presented as amber radial on the EPR display.	
EEC Switches	Single switch on sidewall accessory panel	
Engine Thrust Reverse	Hydraulically powered	
Pressure Regulating Valve (PRV)	Not installed	
APU	No differences	

Fire Protection

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
APU Fire Extinguishing	One extinguishing bottle: (activated by pulling and rotating fire handle in either direction).	Two extinguishing bottles.	One extinguishing bottle: (activated by pulling and rotating fire handle in either direction).	
Cargo Compartment Fire Extinguishing	Two extinguishing bottles, two discharge switches.			
Lav Smoke Light	Not installed			

Fire Protection

Item	757-251 5635-5657	757-351 5801-5816
APU Fire Extinguishing	One extinguishing bottle: (activated by pulling and rotating fire handle in either direction)	
Cargo Compartment Fire Extinguishing	Two extinguishing bottles, two discharge switches	Two extinguishing bottles, one discharge switch
Lav Smoke Light	Not installed	Installed

Flight Controls

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Ailerons	One aileron on each wing.			
Elevator Feel System	Powered by Center and Right hydraulic systems.			
Mach / Speed Trim	Trims stabilizer in response to computed Mach (flaps fully retracted) or computed airspeed (flaps not fully retracted). MACH/SPEED TRIM light and MACH/SPEED TRIM advisory message indicate fault in system.			
Pitch Enhancement System (PES)	Not installed.			
Stabilizer	Powered by Center and Right hydraulic systems.			
Speedbrake Load Alleviation System	Installed.	Installed on aircraft with blended winglets.	Installed.	Not installed.
Yaw Damper	Left yaw damper powered by the left hydraulic system. Right yaw damper powered by center hydraulic system.			
Flap / Slat System	Two power drive units (PDU): • 1 PDU drive for the trailing edge flaps. • 1 PDU drive for the leading edge slats. • Both PDUs powered by Left hydraulic system.			
Flap / Slat Control	Selecting flaps 1 extends flaps to 1 position and slats to T/O position.			
Flap Speeds	Refer to aircraft placard for flap speed operation limits.			
Flap Load Relief	Selecting flaps 30 arms flap load relief. If flaps 30 speed is exceeded, flaps will automatically retract to 25 position.			

Flight Controls

Item	757-251 5635-5657	757-351 5801-5816
Ailerons	One aileron on each wing	
Elevator Feel System	Powered by Center and Right hydraulic systems	
Mach / Speed Trim	Trims stabilizer in response to computed Mach (flaps fully retracted) or computed airspeed (flaps not fully retracted). MACH/SPEED TRIM light and MACH/SPEED TRIM advisory message indicate fault in system.	
Pitch Enhancement System (PES)	Not installed	Elevator feel shift module installed
Stabilizer	Powered by Center and Right hydraulic systems.	
Speedbrake Load Alleviation System	5635-5638, 5644-5649: Installed	Not installed
Yaw Damper	Left yaw damper powered by the left hydraulic system. Right yaw damper powered by center hydraulic system.	Yaw stabilizer module installed
Flap / Slat System	Two power drive units (PDU): • 1 PDU drive for the trailing edge flaps. • 1 PDU drive for the leading edge slats. • Both PDUs powered by Left hydraulic system.	
Flap / Slat Control	Selecting flaps 1 extends flaps to 1 position and slats to T/O position.	
Flap Speeds	Refer to aircraft placard for flap speed operation limits.	
Flap Load Relief	Selecting flaps 30 arms flap load relief. If flaps 30 speed is exceeded, flaps will automatically retract to 25 position.	

Flight Instruments, Displays

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Standby Airspeed Indicator	Connected directly to Right Auxiliary pitot system.			
Vertical Speed Indicator	Displays: Traffic and Resolution Advisories.		Displays Resolution Advisories only	Displays: Traffic and Resolution Advisories.
HSI Heading Reference Switch	691 - Only functional in NORM. 6819-6823 - Functions in both NORM and TRUE.	Only functional in NORM.	Functions in both NORM and TRUE.	
TAS / SAT indicator	Not installed.	Installed. First Officer's forward instrument panel.	Not installed.	Installed. First Officer's forward instrument panel.
FMC Source Select Switches	NAV rotary			
Integrated Standby Flight Display	691 - Not installed 6819-6823 - Installed	Not installed		

Flight Instruments, Displays

Item	757-251 5635-5657	757-351 5801-5816
Standby Airspeed Indicator	Connected directly to Right Auxiliary pitot system.	Connected to Standby Instrument pitot system.
Vertical Speed Indicator	Displays Traffic and Resolution Advisories.	Displays VS only. (TCAS TFC displayed on HSI TCAS RA displayed on ADI).
HSI Heading Reference Switch	Not installed	Functions in both NORM and TRUE
TAS / SAT indicator	Not installed	
FMC Source Select Switches	5635-5649: Latch Type 5650-5657: NAV rotary	NAV rotary
Integrated Standby Flight Display	Not installed	5807-5816: Installed

Flight Management, Navigation

Item	757-26D 691. 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
IRU Power Source when AC Power is Lost (battery supplying standby power) NOTE: Alignment lost when AC and DC power is lost.	Left and Center IRU: 5 minutes on DC power. Right IRU: Continuously on DC power until battery depletion. 6819-6823: See description for ships 6801-6818.		Left and Center IRU: Continuously on DC power until battery depletion. Right IRU: 5 minutes on DC power. If HDG is operative: Left IRU powered by Left AC transfer bus and Center IRU powered by hot battery bus.	
Automatic Direction Finding Equipment	691 - Single 6819-6823 - Dual	Single	Dual	Dual
Flight Management System (FMS)	Pegasus 2009			
GPS	Installed.			
Weather Radar Type	691 - Conventional 6819-6823 - MultiScan	Conventional		
Weather Radar Indicator	691 - Installed 6819-6823 - Not installed	Installed	Not installed	Installed
Weather Radar Control Panel	691 - Located on Weather Radar Indicator. 6819-6823 - Located on aft aisle stand.	Located on Weather Radar Indicator.	Located on aft aisle stand.	Located on Weather Radar Indicator.
ADIRU	691 - Not installed 6819-6823 - 3 installed	Not installed		

Flight Management, Navigation

Item	757-251 5635-5657	757-351 5801-5816
IRU Power Source when AC Power is Lost (battery supplying standby power) NOTE: Alignment lost when AC and DC power is lost.	5635-5649: Left and Center IRU: Continuously on DC power until battery depletion. Right IRU: 5 minutes on DC power. If HDG is operative: Left IRU powered by Left AC transfer bus and Center IRU powered by hot battery bus. 5650-5657: Left and Center IRU: 5 minutes on DC power. Right IRU: Continuously on DC power until battery depletion	Left and Center IRU: Continuously on DC power until battery depletion. Right IRU: 5 minutes on DC power. If HDG is operative: Left IRU powered by Left AC transfer bus and Center IRU powered by hot battery bus.
Automatic Direction Finding (ADF) Equipment	Single ADF installed	
Flight Management System (FMS)	Pegasus 2009	
GPS	Installed	
Weather Radar Type	Conventional	
Weather Radar Indicator	Installed	Not installed.
Weather Radar Control Panel	Located on Weather Radar Indicator	Located on aft aisle stand.
ADIRU	Not installed	3 installed

Fuel

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Left Main Tank Quantity	691 - 14,600 lbs. 6819-6823 - 15,000 lbs.	14,600 lbs.	15,000 lbs.	14,600 lbs.
Right Main Tank Quantity	691 - 14,600 lbs. 6819-6823 - 15,000 lbs.	14,600 lbs.	15,000 lbs.	14,600 lbs.
Center Tank Quantity	691 - 46,400 lbs. 6819-6823 - 47,000 lbs.	601-686: 46,200 lbs. 687-690, 692-699, 6701-6717: 46,400 lbs.	47,000 lbs.	46,200 lbs.
Total Fuel Quantities	691 - 75,600 lbs. 6819-6823 - 77,000 lbs.	601-686: 75,400 lbs. 687-690, 692-699, 6701-6717: 75,600 lbs.	77,000 lbs.	75,400 lbs.
Fuel Temperature	Measured at Right Main tank.			
Fueling Station	Located on right wing.			
Fuel Jettison	Not installed.			
Fuel Caps	Not installed.			
Fuel Crossfeed Valve	2 installed.	601-682: 1 installed. 683-690, 692-699, 6701-6717: 2 installed.	2 installed.	1 installed.

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Fuel

Item	757-251 5635-5657	757-351 5801-5816
Left Main Tank Quantity	5635-5638, 5644-5649, 5654-5657: 15,000 5639-5643, 5650-5653: 14,600	14,900
Right Main Tank Quantity	5635-5638, 5644-5649, 5654-5657: 15,000 5639-5643, 5650-5653: 14,600	14,900
Center Tank Quantity	5635-5638, 5644-5649, 5654-5657: 47,000 5639-5643, 5650-5653: 46,400	47,000
Total Fuel Quantity	5635-5638, 5644-5649, 5654-5657: 77,000 5639-5643, 5650-5653: 75,600	77,000
Fuel Temperature	Measured at Right Main tank.	
Fueling Station	Located on right wing.	
Fuel Jettison	Not installed.	
Fuel Caps	Not installed.	
Fuel Crossfeed Valve	2 installed	

Hydraulics

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Electric Pumps	Latch type switch. Latched (ON) position provides continuous operation.			
Power Transfer Unit (PTU)	Hydraulic motor pump uses right system to pressurize part of the left system.			
PTU Switch	Installed on auxiliary panel.	Installed on overhead panel.	Installed on auxiliary panel.	
RSVR Lights	Light indicates either low quantity or low bleed air pressure.			
Reservoir Standpipe	Installed in left, right, and center hydraulic reservoirs. • Left system: reserve fluid supplies Power Transfer Unit (PTU). • Right system: reserve fluid supplies Reserve Brakes. • Center system: reserve fluid supplies Ram Air Turbine (RAT).			
Air Demand Pump (ADP)	Not installed.			
Hydraulic Driven Generator (HDG)	691 - Not installed. 6819-6823 - Installed on Left hydraulic system; operates automatically when power from both main AC busses is lost.	Not installed.	Installed on Left hydraulic system; operates automatically when power from both main AC busses is lost.	

Hydraulics

Item	757-251 5635-5657	757-351 5801-5816
Electric Pumps	Latch type switch. Latched (ON) position provides continuous operation.	
Power Transfer Unit (PTU)	Hydraulic motor pump uses right system to pressurize part of the left system.	
PTU Switch	Installed on auxiliary panel.	
RSVR Lights	Light indicates either low quantity or low bleed air pressure.	
Reservoir Standpipe	Installed in left, right, and center hydraulic reservoirs. • Left system: reserve fluid supplies Power Transfer Unit (PTU). • Right system: reserve fluid supplies Reserve Brakes. • Center system: reserve fluid supplies Ram Air Turbine (RAT).	
Air Demand Pump (ADP)	Not installed.	
Hydraulic Driven Generator (HDG)	5635-5649: Installed on Left hydraulic system; operates automatically when power from both main AC busses is lost 5650-5657: Not installed	Installed on Left hydraulic system; operates automatically when power from both main AC busses is lost.

Landing Gear

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Brake Temperature Monitoring System (BTMS)	Installed.		Not Installed.	Installed.
Brakes	Carbon disk type.			
Anti-Skid Switch	Not installed (automatic operation).	601-690, 692: Installed on overhead panel. 693-699, 6700-6717: Not installed (automatic operation).	Not installed (automatic operation).	
Alternate Brake System	Powered by left hydraulic system.			
Alternate Gear Extension	Electric hydraulic pump releases gear doors and uplocks. Main gear doors remain open.			
Reserve Brakes and Steering	The RESERVE BRAKES switch allows right electric hydraulic pump to pressurize reserve fluid to power the normal brakes. PTU is automatically activated to supply hydraulic pressure for nose wheel steering when the left engine hydraulic pump pressure is low.			
Tailskid	Not installed.			
Parking Brake	Uses right, left, or accumulator hydraulic pressure.			
Autobrake	RTO installed.			

Landing Gear

Item	757-251 5635-5657	757-351 5801-5816
Brake Temperature Monitoring System (BTMS)	Not installed.	
Brakes	Steel	Carbon disk type
Anti-Skid Switch	Not installed	
Alternate Brake System	Powered by left hydraulic system.	
Alternate Gear Extension	Electric hydraulic pump releases gear doors and uplocks. Main gear doors remain open.	
Reserve Brakes and Steering	The RESERVE BRAKES switch allows right electric hydraulic pump to pressurize reserve fluid to power the normal brakes. PTU is automatically activated to supply hydraulic pressure for nose wheel steering when the left engine hydraulic pump pressure is low.	
Tailskid	Not installed	Installed
Parking Brake	Uses right, left, or accumulator hydraulic pressure.	
Autobrake	RTO installed	

Warning Systems

Item	757-26D 691, 6819-6823	757-232 601-690, 692-699, 6700-6717	757-2Q8 or 757-231 6801-6818	757-212 6901-6904
Predictive Windshear System (PWS)	Not installed.	601-690, 692-696: Not installed. 697-699, 6700-6717: Installed.	Not installed.	
Control Column Nudger	Not installed.			



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Warning Systems

Item	757-251 5635-5657	757-351 5801-5816
Predictive Windshear System (PWS)	5635-5649: Not installed 5650-5657: Installed	Installed
Control Column Nudger	Not installed	Installed

Intentionally
Blank



Differences

767-300 Differences

Chapter DF

Section 20

General

The following tables show differences between aircraft models. Only items that are different are listed; if an item or tail number is not listed, there are no associated differences.

Note: These are differences only. Refer to Volume 2 for complete systems descriptions.

Aircraft General, Emergency Equipment, Doors, Windows

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
ETOPS	1401-1404	Yes		
Overwater Equip	Yes			
Minimum pavement width for 180° turn	146 feet			
Wing Tips	Conventional	Winglets, as installed		
Logo Lights	Not installed	Installed		
Taxi Light	2 lights.			1521: 1 light. All others: 2 lights.
Waste System	Vacuum system with tank level sensors 171-176: Sensor ON/OFF switch installed. 177 and subsequent: Level indicator switches installed		Vacuum.	
Emer Equipment	Refer to the Emergency Equipment Location graphics in Volume 2.			
Passenger Oxygen	12 minutes			
Crew O2 Masks	B.E. Flexible Full Face			
Entry/Service Doors	4 doors (in-up, plug type).		6 doors (in-up, plug type).	1521: 6 doors, All others: 4 doors (in-up, plug type).
Overwing Exit Doors	4 doors		2 doors	1521: 2 doors All others: 4 doors.
Emergency Exit Doors	Not installed.			
ELT	Portable.			

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Air Systems

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Gasper Air System	Installed, switch on overhead panel.		Not installed.	1521: not installed. All others: installed, switch on overhead panel.
Cabin Temperature Control	Temperature control for 3 compartments (flight deck, forward cabin, mid cabin, aft cabin).			
Cargo Heat	Forward & aft cargo compartments controlled by latch type switches on flight deck.			
Crew Heat	Operates only in flight.			
E / E Cooling System	3 position selector switch: AUTO, STBY, OVRD. 171-199, 1200-1201, 1401-1404, 1501-1506, 1521, 1601-1708: monitoring system installed on flight deck.			
E / E Cooling Smoke Clearance	OVRD position selected when smoke or overheat is detected and remains after STBY is selected.			
Bleed Leak Indication	BLEED and/or HI STAGE lights illuminate for abnormal duct condition.			
Center Duct	Center duct supplies pneumatics for cargo heat, the center hydraulic system ADP and reservoir, and provides APU air to the crossover manifold. Center duct leak detection illuminates the center DUCT LEAK light and displays a BODY DUCT LEAK EICAS message.			
Strut Overheat	Not installed.	Duct leak detection for engine strut area.		

Anti-Ice, Rain

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Engine Anti-Ice System	Engine anti-ice valves are located upstream of the engine bleed valves.			
Bleed Air Correction	121, 124-139: Refer to 767-300ER ships 1501-1506, 1521, 1601-1613, 1701-1708. 1401-1404: Refer to 767-300ER ships 171-199, 1200-1201.	The engine thermal anti-ice (TAI) annunciation appears above the EICAS N1 indication when an engine anti-ice valve is open.	The engine thermal anti-ice (TAI) annunciation appears above the EICAS EGT indication when an engine anti-ice valve is open.	
Wing Anti-Ice System	Wing anti-icing is applied to three outboard slats.			
Wing Anti-Ice Test	The wing anti-ice valves are automatically closed if an overheat occurs.			
Wing Anti-Ice Switches	Latch type.	3 position selector (OFF, AUTO, ON).	Latch type.	1521: Latch type. All others: 3 position selector (OFF, AUTO, ON).
Ice Detection	Installed.		Not installed.	1521: Not installed. 1601-1613, 1701-1708: Installed.
TAT Probe	1 installed.			

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Autoflight

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Autopilot Engagement	Requires 2 FCCs.			

Communications

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
ACARS	Touchscreen.			
ACARS Datalink Transmission (when out of VHF range)	None.	Via SATCOM.		
ACMS Pitch Report	121-136: Not operational 137-139, 1401-1404: Operational	Operational		
HF	2 installed.			
VHF	3 Installed.	3 Installed.	3 Installed.	3 Installed.
SATCOM	Not Installed.	Installed.	Installed.	Installed.
Flight Deck Handset	Installed.			
Headset Mfg	David Clark			

Electrical

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Flight Instrument Bus Power Switch	Not installed.	Installed.	Not installed.	1521: Not installed. 1601-1613, 1701-1708: Installed.
Hydraulic Driven Generator (HDG)	121, 124-139: Not installed. 1401-1404: Installed. If both the left and right main AC busses are lost, the HDG powers 2 AC transfer busses to provide electrical power for essential equipment.	Installed. If both the left and right main AC busses are lost, the HDG powers 2 AC transfer busses to provide electrical power for essential equipment.		
Standby Power Operation	Approximately 30 min.			

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Engines, APU

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Engine Type	121, 124-139: GE CF6-80A2. 1401-1404: P&W PW4060.	Pratt & Whitney PW4060.	GE CF6-80C2	GE CF6-80C2
Electronic Engine Control (EEC)	1401-1404: FADEC system. All others: conventional fuel controller and EEC. Thrust limit amber radial on N1 display.	FADEC system.	Conventional fuel controller and EEC. Thrust limit amber radial on N1 display.	FADEC system.
EEC Switches	121, 124-139: ON: Over-speed protect. OFF: No over-speed protect. 1401-1404: Refer to 767-300ER ships 171-199, 1200-1201.	NORM: EPR controlling mode for thrust. Over-boost/ speed protect. ALTN: N1 controlling mode for thrust. No over-boost protect.	Refer to 767-300 ships 121, 124-139.	NORM: N1 controlling mode for thrust. Over-speed protect. ALTN: N1 controlling mode for thrust. No over-speed protect.
Engine Thrust Reverse	Hydraulically powered.		Pneumatically powered.	
Pressure Regulating Valve (PRV)	121, 124-139: Not installed 1401-1404, 171-199, 1200-1201, 1501-1506, 1521, 1601-1613, 1701-1708: Installed each engine			
APU	No Differences.			

Fire Protection

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
APU Fire Extinguishing	Two extinguishing bottles.			1521: One extinguishing bottle (activated by pulling and rotating fire handle in either direction). 1601-1613, 1701-1708: Two extinguishing bottles.
Cargo Compartment Fire Extinguishing	121, 124-139: Two extinguishing bottles, one discharge switch. 1401-1404: Three extinguishing bottles, one discharge switch.	Three extinguishing bottles, one discharge switch.		

Flight Controls

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Ailerons	One inboard and outboard aileron per wing. Inboard ailerons droop in conjunction with trailing edge flap extension. Outboard ailerons are locked out in high speed flight.			
Elevator Feel System	Powered by Left and Center hydraulic systems.			
Mach / Speed Trim	Mach trim installed. Provides stabilizer trim inputs in response to computed Mach (in the air and flaps fully retracted). There is no flight deck indication for failure of the Mach Trim system.			
Pitch Enhancement System (PES)	PES operates the stabilizer with loss of Left and Center hydraulic systems. Trim operation is 1/4 the normal rate using yoke trim switches only.			
Stabilizer	Powered by Left and Center hydraulic systems.			
Speedbrake Load Alleviation System	Not installed.	Installed on ships 172, 174, 179, 185-187, 191-192, 194, 1607-1613. All others not installed.		
Yaw Damper	Left yaw damper powered by the center hydraulic system. Right yaw damper powered by left hydraulic system.			
Flap / Slat System	Three power drive units (PDU): • 1 PDU drive for the trailing edge flaps. • 1 PDU drive for the inboard leading edge slats. • 1 PDU drive for the outboard leading edge slats. • All PDUs powered by Center hydraulic system.			
Flap / Slat Control	Selecting flaps 1, extends slats to T/O position, flaps remain retracted.			
Flap Speeds	Refer to aircraft placard for flap speed operation limits.			
Flap Load Relief	121, 124-139: Flaps 30, arms flap load relief. If flaps 30 speed exceeded, flaps automatically retract to 25 position. All others: Flaps 25 or 30, arms flap load relief. If flaps speed is exceeded, flaps will automatically retract to 20 position.			

Flight Instruments, Displays

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Standby Airspeed Indicator	Connected directly to Left Auxiliary pitot system.			
Vertical Speed Indicator	Displays: Traffic and Resolution Advisories.			
HSI Heading Reference Switch	121, 124-139: Only functions in NORM. 1401-1404: Functions in both NORM and TRUE.	Functions in both NORM and TRUE.		
TAS / SAT indicator	Installed.		Not installed.	Not installed on: 1521. All others: Installed.
FMC Source Select Switches	NAV rotary.			
Integrated Standby Flight Display	Not installed.			

Flight Management, Navigation

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
IRU Power Source when AC Power is Lost (battery supplying standby power) NOTE: Alignment lost when AC and DC power is lost.	121, 124-139: Left and Center IRU: 5 minutes on DC power. Right IRU: Continuously on DC power until battery depletion. 1401-1404: Refer to 767-300ER.	Left and Center IRU: Continuously on DC power until battery depletion. Right IRU: 5 minutes on DC power. If HDG is operative: Left IRU powered by Left AC transfer bus and Center IRU powered by hot battery bus.		
Automatic Direction Finding (ADF) Equipment	Single ADF	Dual ADF		
Flight Management System (FMS)	Pegasus 2009			
GPS	Installed.			
Weather Radar Type	Conventional.			
Weather Radar Indicator	Installed			
Weather Radar Control Panel	Located on Weather Radar Indicator			
ADIRU	Not installed			

Fuel

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Left Main Tank Quantity	41,000 lbs.	41,000 lbs.		
Right Main Tank Quantity	41,000 lbs.	41,000 lbs.		
Center Tank Quantity	30,000 lbs.	80,400 lbs.		
Total Fuel Quantities	112,000 lbs.	162,400 lbs.		
Fuel Temperature	Measured at Left Main tank.			
Fueling Station	Located on Left wing.			
Fuel Jettison	Not installed.	Installed. Fuel jettison controls on overhead panel.		
Fuel Caps	Not installed.	Installed.		
Fuel Crossfeed Valve(s)	121, 124-139: 1 installed. 1401-1404: 2 installed.	171-180: 1 installed. 181-199: 2 installed. 1200-1201: 2 installed.	1 installed.	2 installed.

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Hydraulics

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Electric Pumps	Rotary type switches: • OFF • AUTO - pump operates when respective engine pump pressure is low. • ON - continuous pump operation.			
Power Transfer Unit (PTU)	Not installed.			
PTU Switch	Not installed.			
RSVR lights	Lights indicate low quantity.			
Reservoir Standpipe	Installed in center hydraulic reservoir only. Center system reserve fluid supplies reserve brakes and steering.			
Air Demand Pump (ADP)	Installed on center hydraulic system to supplement both electric pumps. May be operated using APU bleed air.			
Hydraulic Driven Generator (HDG)	121, 124-139: Not installed. 1401-1404: Installed on center hydraulic system; operates automatically when power from both main AC busses is lost	Installed on center hydraulic system; operates automatically when power from both main AC busses is lost.		

Landing Gear

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Brake Temperature Monitoring System (BTMS)	Installed.			
Brakes	Steel disk type.	Carbon disk type.		
Anti-Skid Switch	Installed on overhead panel. 1403-1404: not installed (automatic operation).		Not installed (automatic operation).	
Alternate Brake System	Powered by center hydraulic system.			
Alternate Gear Extension	Electric motor releases gear doors uplocks. Main gear doors remain open.			
Reserve Brakes and Steering	The RESERVE BRKS & STEERING switch allows nose wheel steering and reserve brakes to be powered from the C1 center system electric hydraulic pump using reserve fluid.			
Tailskid	Installed and powered by center hydraulic system.			
Parking Brake	Uses right, center, or accumulator hydraulic pressure.			
Autobrake	RTO installed.			



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Warning Systems

Item	767-300 121, 124-139, 1401-1404	767-300ER 171-199, 1200-1201	767-3P6ER 1501-1506	767-300ER 1521, 1601-1613, 1701-1708
Predictive Windshear System (PWS)	Not installed.	Not installed.	Not installed.	1521, 1601-1602, 1701-1704: Not installed. 1603-1613, 1705-1708: Installed.
Control Column Nudger	Installed.			

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