TYPE-CERTIFICATE

DATA SHEET

No. IM.A.196

Boeing 747

Type Certificate Holder:
The Boeing Company

P.O. Box 3707
Seattle, WA 98124-2207
USA

Airworthiness Category: Large Aeroplanes

For Models:	747-100	747-200B 747-200C 747-200F	747-300 747SP	747-400 747-400F	747-8F 747-8
Major Modification:				747-400BCF	

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TABLE OF CONTENT

SECTION 1: GENERAL (ALL VARIANTS)

1. Data Sheet No: IM.A.196

2. Performance Category: A

3. Certifying Authority: Federal Aviation Administration (USA)
(Address) Seattle Aircraft Certification Office,
1601 Lind Avenue S.W.
Renton, WA 98055-4056
United States of America

4. Type Certificate Holder: The Boeing Company
(Address) P.O. Box 3707
Seattle, WA 98124-2207
United States of America

5. NOTE:

The 747-100, -200B, -200F, -200C, SP and -300 series were not subject to a validation by JAA prior to EASA, therefore they are accepted by EASA under the provisions of EU Regulation 1702/2003.
The 747-400 and -400F were validated in a cooperative effort by 4 (5) EU Nationalities. In 2003, the 747-400 and -400F models were the subject of a JAA "catch-up" validation; this TCDS provides both the information as agreed for the 4(5) Authorities validation, as the agreed "catch-up" information.

The 747SR, 747-100B, 747-100B SUD and 747-400D series are not included in this TCDS as none has been identified as being eligible under Regulation 1702/2003.

6. EASA Type Certificate Data Sheet for Noise:

Refer to TCDSN.IM.A.196.
Note some early variants of the B747-100, -200 and -300 are accepted by EASA on the basis that they comply only with Chapter 2 of ICAO Annex 16, Volume I. Any such aircraft registered in the EU may not be operated within the EU.

7. FAA Type Certificate Data Sheet
A20WE

8. Part 26 Compliance Information

For all models, compliance with point 26.300(a) of Part 26 is demonstrated by complying with points:
- 26.301 Compliance Plan for (R)TC holders
- 26.302 Fatigue and damage tolerance evaluation
- 26.303 Limit of Validity
- 26.304 Corrosion prevention and control programme
- 26.305 Validity of the continuing structural integrity programme
- 26.306 Fatigue critical baseline structure
- 26.307 Damage tolerance data for existing changes to fatigue critical structure
- 26.308 Damage tolerance data for existing repairs to fatigue critical structure
- 26.309 Repair Evaluation Guidelines

SECTION 2: 747-100, -200B, -200C, -200F, SP, -300 VARIANT

I. General

1.	Aircraft:	Boeing 747
2.	EASA Validation Date:	03 September 1970 (-100) 16 January 1971 (-200B) 03 March 1972 (-200F) 23 February 1987 (-200C) 22 February 1984 (-300) 28 March 1996 (SP)

II. Certification Basis

1.	FAA Certification Date:	30 December 1969 (-100) 23 December 1970 (-200B) 07 March 1972 (-200F) 17 April 1973 (-200C) 01 March 1983 (-300) 04 February 1976 (SP)

2. FAA Certification Basis:

Refer FAA Type Certificate Data Sheet No. A20WE

3. EASA Validation Basis:

Special Conditions:
SC H-01 Instructions for Continued Airworthiness (ICA) on Electrical Wiring Interconnecting Systems (EWIS)

SC F-GEN11 Non-rechargeable Lithium Batteries Installations

SC D-GEN8 Installation of oblique Seats

SC D-GEN9 Incorporation of Inertia Locking Device in Dynamic Seats

In accordance with Regulation (EC) 1702/2003:

Certification basis:
FAA Certification Basis as listed in FAA Type Certification Data Sheet No. A20WE

Noise
ICAO Annex 16, Volume I (Refer to TCDSN.IM.A.196 for details)

Prevention of Intentional Fuel Venting
ICAO Annex 16, Volume II, Part II, Chapter 2

Adopted FAA Special Conditions:
Refer to FAA TCDS A20WE

Adopted FAA Exemptions Granted:
Refer to FAA TCDS A20WE

Adopted FAA Equivalent Safety Findings:
Refer to FAA TCDS A20WE

SECTION 2: 747-100, -200B, -200C, -200F, SP, -300 VARIANT - continued

III. Technical Characteristics and Operational Limitations

1. Type Design Definition: Boeing Top Collector Drawing No. 65B00003

2. Description: Low wing jet transport with a conventional tail unit configuration, powered by four high bypass turbofan engines mounted on pylons beneath the wings.

3. Dimensions:

Length	70.6 m (231 ft 10.2 ins)
Wing Span	59.6 m (195 ft 8 ins)
Height	19.3 m (63 ft 5 ins)

747SP only

Length	56.25 m (184 ft 9.2 ins)
Wing Span	59.6 m (195 ft 8 ins)
Height	20.2 m (66 ft 4 ins)

4. Engines:

-100 4 Pratt and Whitney JT9D-3, JT9D-3A, or JT9D-7, JT9D-7A, JT9D-7F, JT9D-7J.

-200B: 4 Pratt and Whitney JT9D-3A, JT9D-7, JT9D-7A, JT9D-7F, JT9D-7J, JT9D-70A, JT9D-7Q, JT9D-7Q3, JT9D-7R4G2, or 4 General Electric CF6-50E, CF6-50E1, CF6-50E2, CF6-80C2B1 or 4 Rolls Royce RB211-524B2-19, RB211-524C2-19, RB211-524D4-19, RB211-524D4-39.

-200F: 4 Pratt and Whitney JT9D-3A, JT9D-7, JT9D-7A, JT9D-7F, JT9D-7J, JT9D-70A, JT9D-7Q, JT9D-7Q3, JT9D- R4G2, or 4 General Electric CF6-50E, CF6-50E1, CF6-50E2 or 4 Rolls Royce RB211-524B2-19, RB211-524C2-19, RB211-524D4-19, RB211-524D4-39.

-200C: 4 Pratt and Whitney JT9D-3A, JT9D-7, JT9D-7A, JT9D-7F, JT9D-7J, JT9D-70A,JT9D-7Q, JT9D-7Q3, JT9D-7R4G2, or 4 General Electric CF6-50E, CF6-50E1,CF6-50E2, or 4 Rolls Royce RB211-524B2-19, RB211-524C2, RB211-524D4.

-300: 4 Pratt and Whitney JT9D-7R4G2 or 4 General Electric CF6-50E2, CF6-80C2B1, or 4 Rolls Royce RB211-524B2-19, RB211-524C2-19, or RB211-524D4-19, RB211-524D4-39.

SP: 4 Pratt and Whitney, JT9D-7, JT9D-7A, JT9D-7F, JT9D-7J

Engine data sheets:

FAA TCDS E20EA	Pratt and Whitney JT9D-3, JT9D-3A, JT9D-7, JT9D-7A, JT9D-7F, JT9D-7J.
FAA TCDS E3NE	Pratt and Whitney JT9D-70A,JT9D-7Q, JT9D-7Q3, JT9D-7R4G2

SECTION 2: 747-100, -200B, -200C, -200F, SP, -300 VARIANT - continued

FAA TCDS E23EA	General Electric CF6-50E, CF6-50E1,CF6-50E2
FAA TCDS E13NE	General Electric CF6-80C2B1,
CAA-UK ETCDS 1043	Rolls Royce RB211-524B2-19, RB211-524C2-19, or RB211-524D4-19, RB211-524D4-39

See Note 5 of FAA TCDS A20WE regarding intermixing of engines.
For limitations see engine datasheets or Airplane Flight Manual

5. Auxiliary Power Unit: Garret Turbine Engine Co. Model GTCP660-4 and 4R

6. Propellers: N/A

7. Fuel: See approved Airplane Flight Manual and FAA TCDS A20WE Note 3

8. Oil: Refer to applicable approved manuals

9. Air Speeds: VMO/MMO 375/0.92 (KEAS) For other airspeed limits see the appropriate FAA Approved Airplane Flight Manual.

10. Maximum Operating Altitude: 13,750m (45,100 ft) pressure altitude

11. All Weather Capability: See approved FAA Airplane Flight Manual

12. Maximum Certified Weights: (At Type Certification)

-100

	Kilograms	Pounds
MTW	334750	738000
MTOW	333400	735000
MLW	265350	585000
MZFW	238816	526500

-200B

	Kilograms	Pounds
MTW	379202	836000
MTOW	377842	833000
MLW	285762	630000
MZFW	247207	545000

-200F

	Kilograms	Pounds
MTW	379202	836000
MTOW	377842	833000
MLW	285762	630000
MZFW	272154	600000

SECTION 2: 747-100, -200B, -200C, -200F, -SP, -300 VARIANT - continued

-200 C

	Kilograms	Pounds
MTW	379202	836000
MTOW	377842	833000
MLW	285762	630000
MZFW	256279	565000

SP

	Kilograms	Pounds
MTW	318875	703000
MTOW	315700	696000
MLW	215465	475000
MZFW	192776	425000

-300

	Kilograms	Pounds
MTW	379202	836000
MTOW	377842	833000
MLW	285762	630000
MZFW	247207	545000

See Airplane Flight Manual for actual approved maximum weights

13. Centre of Gravity: See Airplane Flight Manual

14. Datum: See Weights and Balance Manual and FAA TCDS A20WE

15. Mean Aerodynamic Cord. See Weights and Balance Manual

16. Levelling Means: See Airplane Flight Manual and FAA TCDS A20WE

17. Minimum Flight Crew: Three (3): Persons (Pilot, Co-pilot, and flight Engineer).When passengers are being carried, one attendant is required at each No. 3 over-wing exit. At least one flight attendant is required on the upper deck during taxi, takeoff and landing when passengers occupy the upper deck.

18. Maximum Seating Capacity:

The maximum number of passengers approved for emergency evacuation is dependant on door configuration, see 19 below. See interior layout drawing for the maximum passenger capacities approved for each aeroplane delivered.
All cabin interior and seating configurations have to be approved.

SECTION 2: 747-100, -200B, -200C, -200F, SP, -300 VARIANT – continued

19. Exits:

For 747-100, -200B, -200C airplanes the total passenger capacity is limited to:

550 with 5 pair of Type "A" exits on main deck
440 with 4 pair of Type "A" exits on main deck

Upper deck passenger capacity is limited to:

8 with one exit on the upper deck 16 with one exit, improved slide and smoke barrier
24 with one exit, straight stairway, smoke barrier, and escape slide capable of operation in 25 kt. wind
32 if in compliance with the requirements of Special Condition No. 25-61-NW-1
45 if in compliance with the requirements of Special Condition No. 25-71-NW-3
5 persons on upper deck per Exemption 1870D.
(747-100 and 747-200)

For 747SP the total passenger capacity is limited to:

400 passengers with the same upper deck limits as listed above

For 747-200F the total occupant capacity is limited to:

19 persons on upper deck with 2 doors, 25 knot slides, C.G. Limitation, and compliance shown with AD 93-07-15; or 19 persons on upper deck equipped with emergency descent reels and harnesses, 2 doors and 25 knot slides.

5 persons on upper deck per Exemption 1870D.

For 747-300 the total passenger capacity is limited to:

660 passengers with 5 pair of Type "A" exits on the main deck plus one pair of Type "A" exits on the upper deck. Main deck limited to 550 and upper deck limited to 110 if in compliance with the requirements of modified Special Condition No. 25-71-NW-3, transmitted to Boeing by FAA letter dated August 3, 1981.) See NOTE 9.
550 passengers with 4 pair of Type "A" exits on the main deck limited to 440 and upper deck limited to 110 if in compliance with the requirements of modified Special Condition No. 25-71-NW-3, transmitted to Boeing by FAA letter dated August 3, 1981.

20. Baggage/Cargo Compartment:

See appropriate Weight and Balance Control and Loading Manual: D6-13700 (for 747-100, -200B, -200C, -200F, -300 Variant and D6-33800 for 747SP variant

21. Wheels and Tyres: See appropriate Airplane Flight Manual for details

SECTION 2: 747-100, -200B, -200C, -200F, SP, -300 VARIANT – continued

IV Operating and Service Instructions

1. Flight Manual:

According to Regulation 1702/2003, the FAA approved Airplane Flight Manuals, as listed in FAA TCDS A20WE, are considered to be the EASA approved Airplane Flight Manuals for the applicable models. In addition, according to Regulation 1702/2003, Airplane flight Manuals that were specifically approved for some individual Member States are also considered to be EASA approved in combination with the design details as specified by these authorities for the applicable models. Information on these latter Airplane flight Manuals can be obtained by the responsible Member States authorities.

2. Mandatory Maintenance Instructions:

Scheduled Maintenance	Scheduled Maintenance Checks: DOT/FAA Maintenance Review Board Report Boeing 747/747SP (MRB) July 1978.
Life Limited Parts:	Note 4 of FAA Type Certificate Data Sheet A20WE
Structural Repairs:	"Structural Repair Manual" Boeing Reports D6-13592 (except for 747SP) "Structural Repair Manual" Boeing Reports D6-34024 (for 747 SP)

3. Service Letters and Service Bulletins: As published by Boeing and approved by FAA

4. Required Equipment: All equipment as prescribed in Section II (Certification Basis) above must be installed in the aircraft.

V Notes

See also FAA TCDS A20WE for additional notes, applicable for all models unless otherwise specified

SECTION 3: 747- 400 VARIANT

I. General

1. Aircraft: Boeing 747-400

2. EASA Validation Date: 12 June 1989
(First TC issued within EU MS by Austro Control)

II. Certification Basis

1. FAA Certification Date: 10 January 1989

2. FAA Certification Basis:

Refer to FAA Type Certificate Data Sheet No. A20WE

3. EASA Validation Basis In accordance with Regulation (EC) 1702/2003

Special Conditions:
SC H-01 Instructions for Continued Airworthiness (ICA) on Electrical Wiring Interconnecting Systems (EWIS)

SC F-GEN11 Non-rechargeable Lithium Batteries Installations

SC D-GEN8 Installation of oblique Seats

SC D-GEN9 Incorporation of Inertia Locking Device in Dynamic Seats

Equivalent Safety Finding:
ESF G-GEN2 Engine and APU Fire Switch Handle Design (25.1555(d)(1))

Certification Basis following the JAA Catch-Up exercise:

It was agreed within the JAA that for the B747-400 the Certification basis as defined by the FAA in their Type Certification data Sheet A20WE, is acceptable to the JAA with the addition of two special conditions:

Special Condition 1; JAR 25.365(e)(2), Change 13, on the subject of the Presurized cabin Loads. Installation of floor venting ports in the upper cabin floor is required;

Special Condition 2: JAR 25.1309, on the subject of attitude Comparison. Installation of a Comparator Warning that is not inhibits during any phase of the flight is required.

The Catch-up exercise for the 747-400 was finalized on 26 September 2003, when the recommendation by the JAA for the issuance of national type certificates was issued, followed by the issuance of the Netherlands Type Certificate on the same day.

SECTION 3: 747- 400 VARIANT – continued

Certification Basis following the joint validation exercises of the UK, French, German and Dutch aviation authorities:

a) JAR 25 at Change 10 plus amendments 84/11, 84/2 and 84/13, of which the Following National Variants have been deleted: JAR 25.341 (a) and ACJ 25.341(a)(4). JAR 1 JAR/AWO at Change 1.

Plus for the purposes of deleting National Variants and thus harmonizing requirements to a maximum extent, the following paragraphs of specified later JAR 25 amendments.

(a) Amendment 87/2:
JAR 25.107 (d)
JAR (BB) 25.107 (d)
JAR 25 X 519 (a)
JAR 25.735 (f) (1) and (h) (1)
JAR 25.1303 (b) (4) and (c) (1)
JAR 25 X 1328
JAR 25.1333 (b)
JAR 25.1459 (b)
(b) JAR 25 Change 12:
JAR 25.341 (a)
(c) Notices of Proposed Amendment:
NPA 258, G -1 94 to JAR 25
NPA 25C-211 (Improved Seat Safety Standards)

b) Plus, for the purposes of reflecting current thinking JAR 25 Change 12:
JAR 25.149 (e)

c) Excepting the following paragraphs of JAR 25 where, for features Unchanged in design and usage with respect to earlier variants and having a satisfactory service record, compliance with the stated Requirements have been accepted instead:

JAR 25.107 (a)	Replaced by FAR 25.107 (a) at amendment 41.
JAR 25.109 (a)	Replaced by FAR 25.109 (a) at amendment 41.
JAR 25.149 (e)	Replaced by FAR 25.149 (el at amendment 41.
JAR 25.345 (g)	Not applicable
JAR 25.479 (c) (4) and JAR 25.483	Replaced by FAA Special Condition A-4.
JAR 25.499 (e)	Replaced by FAR 25.499 (e) at amendment 59.
JAR 25.561 (b) (3)	With respect to the interface loads at the airplane Side of the seats and commercial equipment installed in the passenger cabin. Compliance to the following requirement has been accepted: All combinations up to a maximum of 8g at the following Conditions: 4.5g downwards 2.0g upwards 8.0g forwards 1.5g rearwards 2.25g sidewards

SECTION 3: 747- 400 VARIANT – continued

JAR 25.571 (a)	On the basis of compliance with FAR 25.571 through (d) amendment 9 and acceptance of the initial maintenance program and sublet 3 to the introduction of an acceptable structural inspection program by January 1. 1994 full compliance with JAR 25.57 l(a) through (d) may be waived until January 1.1994.
JAR 25.675	Replaced by BCAR Section D for UK certification and by FAR 25.675 amendment 37 for CAA-NL, DGAC and LBA.
JAR 25.683 (b)	Not applicable to unchanged parts of and (c) control systems.
JAR 25.729(f)	Replaced by FAR 25.729(f) at amendment 59.
JAR 25.772	Replaced by FAR 25.772 amendment 46.
JAR 25.785 (i)	As for JAR 25.561 (b) (3)
JAR 25.787 (a)	With respect to the open closets located on the upper deck (normally at Station no. 956) and just aft of door 5 (normally at Station no. 2300), replaced by FAR 25.787 (a) at amendment 31.
JAR 25.812 (g) (1)	Replaced by FAR 25.812 (g) at amendment 31.
JAR 25.903 (dl (1)	With respect to the provision of separate Power supplies to the engine shut-off valve close coils, replaced by FAR 25.903 (d) (1) at amendment 31.
JAR 25.1309	Not applicable to parts of a/c that are unchanged in both design and usage from earlier models and that have shown satisfactory service experience.
JAR 25.1435 (a) (1)	Replace by BCAR Section D, Chapter 06-2; 6 for UK certification and FAR 25.1435 (a)(l) at amendment 59 for CAA-NL, DCAC and L8A.

Note: references to FAR 25 imply the FAA interpretations of FAR 25.

Exemptions have been granted against compliance with the following paragraphs of JAR 25:

JAR 25.671 (c) (3)
JAR 25.561 (d) with respect to the wing fuel tanks
JAR 25.1529 based upon manual system that meets the intent of FAR 25.1529 at Amendment 21 and the data presentation and accuracy equivalent safety to FAR 25.1629 at Amendment 21

d) Equivalent safety findings against the following requirements based on Boeing applications:

Due to the use of Vs1g as the basis for Reference Speeds:

JAR 25.21 (c), 103, 107, 119, 121, 125, 145, 147, 149, 161, 175, 177, 201, 207, 233, 237.
JAR 25.101(c) See Joint Evaluation summary Part 4

SECTION 3: 747- 400 VARIANT – continued

JAR 25.X 132	See Joint Evaluation summary Part 4
JAR 25.X.745	See Joint Evaluation summary Item 3.4(10)
JAR25.783(e)	See Boeing Letter B-221T-89-2569
JAR 25.785(c)	See Joint Evaluation summary Part 4
JAR 25.809(f)(1)(iii)	See Boeing Letter B-221T-89-1744 E.S. item 3.21(6)
JAR25.863(a)	See Boeing Letter B-221T-89-1541
JAR 25.1303(c)(1))	See Joint Evaluation summary Part 4
JAR25.1389(b)(3)	See Boeing Letter B-221T-89-639
JAR 25.1435(a)(2)	See Joint Evaluation summary Part 4
JAR25.1438	See Boeing Letter B-221T-89-1493
JAR25.1447(c)(3)	See Boeing Letter B-221T-89-991
JAR25.1453(a)	See Boeing Letter B-221T-89-0694
JAR 25.101(c)	See Joint Evaluation summary Part 4
JAR25.A1103(b)(2)	See Boeing Letter B-221T-89-1019
JAR25.A1193(e)(3)	See Boeing Letter B-221T-89-1254

Noise
ICAO Annex 16, Volume I, Chapter 3 (Refer to TCDSN.IM.A.196 for details)

Prevention of Intentional Fuel Venting
ICAO Annex 16, Volume II, Part II, Chapter 2

III. Technical Characteristics and Operational Limitations

1. Design Standard: Design Standards identified as the basis for this Type Certificate is that of the Series Design defined by Top Drawing No. 65 B00002 747 Final Assembly

2. Description: Low wing jet transport with a conventional tail unit configuration, powered by four high bypass turbofan engines mounted on pylons beneath the wings.

3. Dimensions:

Length	70.6 m	(231 ft 10.2 in)
Span	64.44 m	(211 ft 5 in)
Height	19.4 m	(63 ft 8 in)

4. Engines: 4 Pratt and Whitney PW4056, General Electric CF6-80C2B1F, CF6-80C2B5F; or Rolls Royce RB211-524G2-19, RB211-524G3-19, RB211-524H2-19, RB211-524G2-T-19, RB211-524G3-T-19, RB211-524H2-T-19.

Engine data sheets:

FAA TCDS E24NE	Pratt and Whitney 4056
FAA TCDS E13NE	General Electric CF6-80C2B1F, CF6-80C2B5F,
CAA-UK ETCDS 1046	Rolls Royce RB211-524G2-19, RB211-524G3-19, RB211-524G2-T-19, RB211-524G3-T-19,
CAA-UK ETCDS 1048	Rolls Royce RB211-524H2-19, RB211-524H2-T-19

SECTION 3: 747- 400 VARIANT - continued

WARNING: To prevent unsafe airplane handling characteristics, PW4000 series engines with electronic engine control (EEC) part number 791100-14-102 (Pratt & Whitney part number 54D043) must not be installed on the same airplane as PW4000 series engines that have the ring case compressor configuration. This combination of engine configurations is not approved because of a significant difference in engine acceleration rates and the effect of that difference on airplane handling characteristics. Ring case compressor equipped engines were approved with the same engine model number as previously approved PW4000 configurations, and must be identified by the presence of a "/A5" marked at the end of the "INSTL ARR" block on the engine data plate.
See FAA TCDS A20WE NOTE 5 for further information regarding intermixing engines

5. Auxiliary Power Unit: Pratt and Whitney of Canada Type PW901A

6. Propellers: N/A

7. Fuel: See approved Airplane Flight Manual and FAA TCDS A20WE Note 3

8. Oil: Refer to applicable approved manuals

9. Air Speeds: VMO/MMO 375/0.92 (KCAS) For other airspeed limits see the appropriate FAA Approved Airplane Flight Manual

10. Maximum Operating Altitude: 13,750m (45,100 ft) pressure altitude

11. All Weather Capability: See approve Airplane flight Manual

12. Maximum Certified Weights: (At Type Certification) See approved Airplane Flight Manual for the appropriate weights.

	Pounds	Kilograms
MTW	877.000	397,800
MTOW	875.000	396.893
MLW	630,000	285.762
MZFW	544,000	246.754

13. Centre of Gravity: See Airplane Flight Manual

14. Datum: See Weights and Balance Manual

15. Mean Aerodynamic Cord (MAC): See Weights and Balance Manual

16. Levelling Means: See Airplane Flight Manual

17. Minimum Flight Crew: Two (2): Persons (Pilot and Co-pilot)
When passengers are being carried, one attendant is required at each No. 3 over-wing exit. At least one flight attendant is required on the upper deck during taxi, takeoff and landing when passengers occupy the upper deck.

SECTION 3: 747- 400 VARIANT – continued

18. Maximum Seating Capacity:

The maximum number of passengers approved for emergency evacuation is: 660

Upper deck: 110 persons
Main deck: 550 persons

See interior layout drawing for the maximum passenger capacities approved for each aeroplane when delivered.

19. Minimum Cabin Crew

The table below provides the certified Maximum Passenger Seating Capacities (MPS), the corresponding cabin configuration (exit arrangement and modifications) and the associated numbers of cabin crew members used to demonstrate compliance with the evacuation certification requirements of JAR 25.803. Additional cabin crew members may be required to comply with other regulatory requirements (e.g., cabin attendant direct view or ditching).

Passenger Deck	Passenger Seating Capacity & Cabin Configuration	Cabin crew
Main	550 passengers: (A, A, A, A, A) exit arrangement	11
Upper	110 passengers: (A) exit arrangement	3
Upper	100 passengers: (A) exit arrangement	2
Upper	45 passengers: (I) exit arrangement	1

20. Exits:

660 passengers with 5 pair of Type "A" exits on main deck plus one pair of Type "A" exits on the upper deck. (Main deck limited to 550 and upper deck limited to 110 if in compliance with the requirements of modified Special Condition Number 25-71-NW-3, transmitted to Boeing by FAA letter dated August 3, 1981.) See FAA TCDS A20WE NOTE 9.

21. Baggage/Cargo Compartment:

See the appropriate FAA approved Weight and Balance Control manual (D043U400).

22. Wheels and Tyres: See approved FAA Airplane flight Manual for details.

SECTION 3: 747- 400 VARIANT – continued

IV. Operating and Servicing Instructions

1. Flight Manual:

   FAA Approved flight Manuals: D6-U10001, D6-U10002 and D6-U10003.
   For airplanes delivered according the JAA Certification Basis (3 A), JAA approved supplements are applicable.

2. Mandatory Maintenance Instructions:

   Scheduled Maintenance Checks as for Boeing MRB Report Boeing Maintenance Manual Doc. D633U101-05 and D633U101-54

   Life Limited Parts and required inspection intervals are listed in the FAA approved Airworthiness Limitations Section of the Boeing Maintenance Planning Data Document D621U400.

   Structural Repair Manual – Boeing Document D634U102

3. Service Letters and Service Bulletins: As published by Boeing and approved by FAA.

4. Required Equipment: All equipment as prescribed in Section II (Certification Basis) above must be installed in the aircraft.

V. Operational Suitability Data (OSD)

The Operational Suitability Data constituents listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate (original TC number) as per Commission Regulation (EU) 748/2012 as amended by Commission regulation (EU) No 69/2014

1. Master Minimum Equipment List

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

2. Flight Crew Data

   a. The Operational Suitability Data for Flight Crew are contained in Boeing Document Reference D926U004-01, dated December 7, 2015 or later approved revisions. FC OSD certification basis is CS-FCD, Initial Issue, dated 31 January 2014.

3. Cabin Crew Data

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

4. SIM Data

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

SECTION 3: 747- 400 VARIANT – continued

5. Maintenance Certifying Staff Data

    a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

6. Other

    a. Not applicable.

VI. Notes

See also FAA TCDS A20WE for additional notes, applicable for all models unless otherwise specified

SECTION 4: 747- 400F VARIANT

I. General

1.	Aircraft:	Boeing 747-400F
2.	EASA Validation Date: (First TC issued within EU by CAA-NL)	01 November 1993

II. Certification Basis

1.	FAA Certification Date:	14 October 1993
	FAA Type Certificate Data Sheet No.	A20WE
2.	FAA Certification Basis:	See FAA TCDS A20WE

3. EASA Validation Basis In accordance with Regulation (EC) 1702/2003

Special Conditions:
SC H-01 Instructions for Continued Airworthiness (ICA) on Electrical Wiring Interconnecting Systems (EWIS)

SC F-GEN11 Non-rechargeable Lithium Batteries Installations

Equivalent Safety Finding:
ESF G-GEN2 Engine and APU Fire Switch Handle Design (25.1555(d)(1))

Certification Basis following the JAA Catch-Up exercise:

it was agreed within the JAA that for the B747-400F the Certification basis as defined by the FAA in their Type Certification data Sheet A20WE, is acceptable to the JAA with the addition of two special conditions:

Special Condition 1; JAR 25.365(e)(2), Change 13, on the subject of the Presurized cabin Loads. Installation of floor venting ports in the upper cabin floor is required;

Special Condition 2: JAR 25.1309, on the subject of attitude Comparison. Installation of a Comparator Warning that is not inhibits during any phase of the flight is required.

The Catch-up exercise for the 747-400F was finalized on 26 September 2003, when the recommendation by the JAA for the issuance of national type certificates was issued, followed by the issuance of the Netherlands Type Certificate on the same day.

SECTION 4: 747- 400F VARIANT - continued

Certification Basis following the joint validation exercise of the UK, French, German and Dutch aviation authorities:

a) The reference certification basis for the B747-400 series (See "Boeing 747-400 Joint Certification Basis and Additional Requirements for certification in Germany, France, United Kingdom and the Netherlands" issue 2 of April 14. 1992), plus

For the components or areas affected by the change: JAR 25, Change 12 and Amendment 88/1.

Note

Exceptions listed in the 747-400 series Joint Certification basis apply to the 747-400F, except for the following two which are modified as follows:
JAR 25.365 Boeing has committed to comply with the intent of FAR 25.365, Amendment 25-54 by assuring continued safe flight and landing with a 20 square foot hole in the main deck cargo compartment or lower lobe cargo compartment or upper deck (exclusive of flight deck). Boeing will provide protection for systems critical for continued safe flight and landing and allow miscellaneous structure to fail as long as these failures do not affect flight safety. These miscellaneous structure components are main deck floor in Section 46, partitions and lavatory walls. This is the compliance method for JAR 25.365 used for the 747-400 series airplane and will also be used for the 747-400F (Reference. FAA 747-400F Certification Basis issue Paper G-1, Stage 5 and CRI C-5, stage 3).

JAR 25.571(a) through (d): On the basis of compliance with FAR 25.571, Amendment 9, and acceptance of the initial maintenance program and subject to the introduction of an acceptable structural inspection program by January I , 1999 full compliance with JAR 25.571 (a) through (d) may be waived until January 1. 1999. (Ref. CRI C-3. stage 3).

b) Special Conditions related to novel or unusual design features or unconventional usage (ref. draft JAR 21 .I6 (a) (1) and (2)).
None identified

c) Special conditions related to general experience (ref. Draft JAR 21.16(a)(3))

CRI D-4	Cargo and Service Doors	
CRI F-7	Lightning protection, indirect effects	
CRI F-8	HIRF	

d) Exemptions (ref. Draft JAR 21.17(a)(1)(i))

CRI F-1	Crew Slide	JAR 25.809(f)(1)(v)
CRI F04	Fireworthiness requirements for Ceiling and sidewall panels in the Lower lobe cargo compartments	JAR 25.855(a)(1)(i)
CRI F-5	Maindeck Cargo Compartment Firedetection response time	JAR 25.858
CRI F-10	Upper Deck occupancy	JAR 25.807, 25.809, 25.813
CRI F-12	Floor proximity escape path Marking	JAR 25.812(e)

SECTION 4: 747- 400F VARIANT – continued

e) AA Airworthiness Standards for which Boeing elected to comply (ref. Draft JAR 21.17 (a)(1)(ii) and JAR 21.17 (e))

5.1 The later effective amendments to JAR that Boeing has chosen to comply with : JAR 25 Change 13, except
NPA 25C, D-211

5.2 AA approved NPAs
NPA 25B,D,G-244 Accelerate-Stop Distance

f) Equivalent Safety Findings

CRI D-1	Nose Cargo door Locking	JAR 25.783
CRI F-11	Oxygen Dispensing Units	JAR 25.1447(c)(3)

Note 1:
For the purpose of showing compliance to this type certification basis, Compliance must be demonstrated with the FAA certification basis (see FAA IP G-1, stage 5) and the Additional Technical conditions of the AA as defined in CRI A-8.

Note 2:
Some AA countries have issued Additional National requirements to be complied with for the issue of a Type Certificate. These requirements are laid down in:

CRI A-2	Additional National Design standards for type certification
CRI A-3	National Environmental Standards

4. Environmental Protection Standards:

Noise: ICAO Annex 16, Vol. I
(further details see TCDSN EASA.IM.A.196)

III. Technical Characteristics and Operational Limitations

1. Design Standard: Design Standards identified as the basis for this Type Certificate is that of the Series Design defined by Top Drawing No. 65 B00002 747 Final Assembly

2. Description: Low wing jet transport with a conventional tail unit configuration, powered by four high bypass turbofan engines mounted on pylons beneath the wings.

3. Dimensions: Length 70.66 m (231 ft 10 in)
Span 64.44 m (211 ft 5 in)
Height 19.33 m (63 ft 5 in)

SECTION 4: 747- 400F VARIANT - continued

4. Engines: 4 Pratt and Whitney PW4056, PW4062A, General Electric CF6-80C2B1F, CF6-80C2B5F; or Rolls Royce RB211-524G2-19, RB211-524G3-19, RB211-524H2-19, RB211-524G2-T-19, RB211-524G3-T-19, RB211-524H2-T-19.

Engine data sheets:

FAA TCDS E24NE	Pratt and Whitney PW4056, PW4062A
FAA TCDS E13NE	General Electric CF6-80C2B1F, CF6-80C2B5F,
CAA-UK ETCDS 1046	Rolls Royce RB211-524G2-19, RB211-524G3-19, RB211-524G2-T-19, RB211-524G3-T-19,
CAA-UK ETCDS 1048	Rolls Royce RB211-524H2-19, RB211-524H2-T-19

WARNING: To prevent unsafe airplane handling characteristics, PW4000 series engines with electronic engine control (EEC) part number 791100-14-102 (Pratt & Whitney part number 54D043) must not be installed on the same airplane as PW4000 series engines that have the ring case compressor configuration. This combination of engine configurations is not approved because of a significant difference in engine acceleration rates and the effect of that difference on airplane handling characteristics. Ring case compressor equipped engines were approved with the same engine model number as previously approved PW4000 configurations, and must be identified by the presence of a "/A5" marked at the end of the "INSTL ARR" block on the engine data plate.

See FAA TCDS A20WE NOTE 5 for further information regarding intermixing engines

5.	Auxiliary Power Unit:	Pratt and Whitney of Canada Type PW901A
6.	Propellers:	N/A
7.	Fuel:	See approved Airplane Flight Manual and FAA TCDS A20WE Note 3
8.	Oil:	Refer to applicable approved manuals
9.	Air Speeds:	VMO/MMO 375/0.92 (KCAS). For other airspeed limits see the appropriate FAA Approved Airplane Flight Manual
10.	Maximum Operating Altitude:	13,750m (45,100 ft) pressure altitude
11.	All Weather Capability:	See approve Airplane flight Manual

SECTION 4: 747- 400F VARIANT - continued

12. Maximum Certified Weights: (At Type Certification)

	Pounds	Kilograms
MTW	877.000	397.800
MTOW	875.000	396.894
MLW	666,000	302.092
MZFW	635.000	288.030

Increased Gross Weight
747-400ERF, 747-400F (910K) Version:

	Pounds	Kilograms
MTW	913.000	414.129
MTOW	910.000	412.769
MLW	666.000	302.092
MZFW	635.000	288.030

See approved Airplane Flight Manual for the appropriate weights.

13. Centre of Gravity: See Airplane Flight Manual

14. Datum: See Weights and Balance Manual

15. Mean Aerodynamic Cord (MAC): See Weights and Balance Manual

16. Levelling Means: See Airplane Flight Manual

17. Minimum Flight Crew: Two (2): Persons (Pilot and Co-pilot)

18. Maximum Seating Capacity:

For 747-400F airplanes the total persons capacity is limited to: Six (6) persons on the upper deck per FAA Exemption 1870E.

19. Baggage/Cargo Compartment:

See the appropriate FAA approved Weight and Balace Control manual (D043U550)

20. Wheels and Tyres: See approved FAA Airplane flight Manual for details.

IV. Operating and Servicing Instructions

1. Flight Manual:

FAA Approved flight Manuals : D6-U10001, D6-U10002 and D6-U10003.
For airplanes delivered according the JAA Certification Basis (A), JAA approved supplements are applicable.

SECTION 4: 747- 400F VARIANT – continued

2. Mandatory Maintenance Instructions:

Scheduled Maintenance Checks as for Boeing MRB Report Boeing Maintenance Manual Doc. D633U101-05 and D633U101-54

Life Limited Parts and required inspection intervals are listed in the FAA approved Airworthiness Limitations Section of the Boeing Maintenance Planning Data Document D621U400.

Structural Repair Manual – Boeing Document D634U102

3. Service Letters and Service Bulletins: As published by Boeing and approved by FAA.

4. Required Equipment: All equipment as prescribed in Section II (Certification Basis) above must be installed in the aircraft.

V. Operational Suitability Data (OSD)

The Operational Suitability Data constituents listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate (original TC number) as per Commission Regulation (EU) 748/2012 as amended by Commission regulation (EU) No 69/2014

1. Master Minimum Equipment List

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

2. Flight Crew Data

   a. The Operational Suitability Data for Flight Crew are contained in Boeing Document Reference D926U004-01, dated December 7, 2015 or later approved revisions. FC OSD certification basis is CS-FCD, Initial Issue, dated 31 January 2014.

3. Cabin Crew Data

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

4. SIM Data

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

5. Maintenance Certifying Staff Data

   a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

6. Other

   a. Not applicable.

SECTION 5: 747-400 BCF (Major Modification)

I. General

1.	Aeroplane:	Boeing 747-400 BCF (Boeing Converted Freighter)
2.	Reference Application Date for EASA Validation:	09 September 2005
3.	FAA Certification Date:	13 December 2005
4.	EASA Validation Date:	03 May 2007

II. Certification Basis

1. TCDS of Certifying Authority:

Number: A20WE
Issued by: FAA

3. EASA Validation Basis:

The basic aircraft as defined by the JAA Type Certification Data Sheet, JAA/25/03-28, for unaffected areas and CS 25 @ initial issue for changed areas except for the following:

Passenger to Freighter Modification (Significant change per Part 21A.101(a)).

Paragraph (FAR)	Title	Amendment
25.305 (a)(b)	Strength and Deformation	25-22
25.365	Pressurized Compartment Loads	25-53 (Affected areas comply with the intent of the applicable parts of Amendment 25-54 or 25-71/-72)
25.561	Emergency Landing Conditions	Compliance demonstrated with Amendment 25-91.
25.561(b)(c)(1)(ii)		25-59
25.571	Damage - Tolerance and Fatigue Evaluation of Structure	25-22 (and the intent of compliance with Amendment 25-54)
25.831(a)	Ventilation	25-41
25.787(a)	Protection of upper deck occupants	25-91, limited to 2g upwards, special condition C-01

NPA 25D-301 Revision 1

SECTION 5: 747-400 BCF (Major Modification) - continued

Upper Deck Interior Reconfiguration (Non-Significant change per Part 21A.101(a))

The validation basis for the changed aspects associated with the upper deck interior configuration rearrangement is unchanged from the 747-400 Series in accordance with Part 21A.01(b)(1).

The details of the Certification basis are documented in CRI A-01 for the B747-400BCF

4. Special Condition:

SC D-02 Carriage of Couriers without complying with specified passenger-carrying requirements

SC F-GEN11 Non-rechargeable Lithium Batteries Installations

SC H-01 Instructions for Continued Airworthiness (ICA) on Electrical Wiring Interconnecting Systems (EWIS).

5. Equivalent Safety Findings:

ESF G-GEN2 Engine and APU Fire Switch Handle Design (25.1555(d)(1)).

6. Means of Compliance:

CRI D-01 Requirements for fuselage doors (NPA 25D-301 revision 1)

7. Reversion request:

CRI C-01 Crash loads 2G upwards for Emergency Landing Condition

III. Technical Characteristics and Operational Limitations

1. Major Change Design Definition:

Boeing Service Bulletin 747-00-2004

2. Maximum Certified Weights:

Maximum Taxi Weight	873.000 lbs.	(395,986 kg)
Maximum Take-off Weight	870.000 lbs.	(394.625 kg)
Maximum Landing Weight	652.000 lbs.	(295.742 kg)
Maximum Zero Fuel Weight	610.000 lbs.	(276.691 kg)

SECTION 5: 747-400 BCF (Major Modification) - continued

3. Operating Limitations

Refer to approved Airplane Flight Manual.

4. Maximum number of Passengers

There are no provisions for the carriage of passengers. A maximum of 19 couriers can occupy the aft cabin of the upper deck as defined in AFM.

5. Other relevant information
Relevant information not included in this Type Certificate Data Sheet may be found in the FAA Type Certificate Data Sheet No A20WE.

IV Operating and Service Instructions

1. Flight Manual Supplement

FAA approved Flight Manual Boeing Document:	D6U10001/2/3 depending on installed engines, with Supplement
FAA approved Weight and Balance Manual:	Boeing Document D043-U544

2. Mandatory Maintenance Instructions

High Cycle Maintenance Planning Data (MPD) Document D621U400.

3 Service Bulletins and Airworthiness Directives

A 747-400 SF (Special Freighter), or optionally known as a 747-400 BCF (Boeing Converted Freighter), is a 747-400 Series passenger airplane that has been modified in accordance with FAA-approved Boeing Service Bulletin 747-00-2004 to operate in a freighter configuration.
These aircraft remain as 747-400 Series aircraft for documentation purposes on this TCDS and with regard to the applicability of airworthiness directives.

V Notes

1. Special Conditions, exemptions and Equivalent Safety Findings:

Special conditions, Exemptions and Equivalent Safety Findings that are part of the certification basis for the 747-400 Series apply to the airplane operating in the 747-400 SF configuration, unless otherwise noted in FAA Type Certificate data sheet A20WE.

SECTION 6: 747-8F

I. General

1.	Aircraft	Boeing 747-8F
2.	Models	Boeing 747-8F
3.	EASA Validation Application Date (Reference date for EASA validation)	05 March 2007
4.	EASA Validation Date	19 August 2011

II. Certification Basis

1.	Reference Application Date for FAA Certification:	31 December 2006
2.	Certification Date: (FAA Type Certification Data Sheet No. A20WE)	19 August 2011

3. FAA Certification Basis:

Part 25 through Amendment 25-120
Part 26, as amended at the time of certification
Part 34, as amended at the time of certification
Part 36, Stage 4, through Amendment 36-28

For details of Exceptions, Exemptions, Special Conditions and Equivalent Safety Findings granted by FAA, refer to FAA TCDS A20WE.

4. EASA Airworthiness Requirements

CS 25 at Amendment 2 and, for unaffected areas, Boeing 747-400F EASA Type Certification Data Sheet IM.A.196 (Section 4 above),

Note: Further details may be seen under CRI A-01 “EASA Certification Basis”

4.1 Reversions from CS 25 Amendment 2

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Aero - Configurations	25.1323(b) and (c)	Airspeed indicating system.	CFR 25-108
	25.1325(b) and (e)	Static air vent and pressure altimeter systems.	CFR 25-108
Airframe - Empennage: Outboard Elevator Balance Weight Tower	25.305(b)	Strength and deformation.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.613	Material strength properties and design values.	CFR 25-46
	25.615	Design properties.	CFR 25-23

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Airframe - Empennage: Forward fin box of vertical stab - unpressurized area	25.365(e)(2)	Pressurized compartment loads.	CFR 25-54
Airframe - Fuselage: Section 41 lower lobe skin panels and flight deck skin panels - pressurized area only, below WL 200, between STA 140 and 460	25.365(e)(2)	Pressurized cabin loads.	CFR 25-54
Airframe - Fuselage: Section 41 main deck floor side of body shear trusses and side of body shear webs.	25.365(e)(2)	Pressurized compartment loads.	CFR 25-54
Airframe - Fuselage: ECS pack bay access panels	25.783	Doors.	CFR 25-23
Airframe - Fuselage Doors: Bulk Cargo Door	25.783(f)	Doors.	CFR 25-23
Airframe - Fuselage and Floors: Section 41 Lower Lobe	25.365(e)(2)	Pressurized Compartment Loads.	CFR 25-54
Airframe - Fuselage and Floors: Section 46 Floor Beams and Frames	25.561(c)(1)(ii)	General.	CFR 25-64
Airframe - Landing Gear: Main Gear The main landing gears shall comply with 747-8F/-8 Special Condition CRI C-05. *Compliance to be shown to CFR25.573 Amdt 25-0 in lieu of CS25.571 Amdt 2, per CRI C-12.*	25.471 through 25.511, and 25.723	Structural Design Requirements for Four-Post Main Landing Gear System.	Equivalent to CS 25-2
	25.571 (25.573(a) and (c))	Damage-tolerance and fatigue evaluation of structure.	CFR 25-0
Airframe - Loads	25.341	Gust and turbulence loads	CS 25-0
	25.343(b)(1)(ii)	Design fuel and oil loads	CS 25-0
	25.371	Gyroscopic loads	CS 25-0
	25.373	Speed control devices	CS 25-0
Airframe - Stowage Compartments: Main and Upper Deck	25.787(a)	Cargo and baggage compartments.	CFR 25-51
Airplane Systems and Equipment: *Compliance to be shown to CFR25.1301 and CFR25.1309 in lieu of CS25.1301, CS25.1309, and CS25.1310, per CRI F-17.*	25.1301	Function and installation	CFR 25-0
	25.1309	Equipment, systems and installations.	CFR 25-41
	25.1310 (25.1309)	Power source capacity and distribution.	CFR 25-41
Payloads - Escape Systems	25.810(a)(1)(v)	Escape Slide	CFR 25.809(f)(1)(v) at 25-34

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Payloads - Supernumerary Area: Galley and Lavatory	25.365(e),(f), and (g)	Pressurized cabin loads.	CFR 25-0
Payloads - Supernumerary Area *Compliance to be shown to CFR25.785(a), (b), (c), (d), (e) and (j) Amdt 25-64 in lieu of CS25.785(b), (c), (d), (f), (j) and (k) Amdt 2.* *Compliance to be shown to CFR25.1413 Amdt 25-51 in lieu of CS25.785(i) Amdt 2.* *Compliance to be shown to CFR25.1447(a), (c)(1), (c)(3)(i) and (c)(3)(ii) Amdt 25-41 in lieu of CS25.1447(a), (c)(1) and (c)(3) Amdt 2.*	25.562	Emergency landing dynamic conditions.	N/A
	25.785 (b), (c), (d), (f), (j) and (k) (25.785(a), (b), (c), (d), (e) and (j)	Seats, berths, safety belts, and harnesses.	CFR 25-64
	25.785(i) (25.1413)	Seats, berths, safety belts, and harnesses.	CFR 25-51
	25.811(a),(b),(d), (e), and (g)	Emergency exit marking.	CFR 25-46
	25.812	Emergency Lighting	CFR 25-28
	25.1439	Protective breathing equipment.	CFR 25-38
	25.1447(a), (c)(1) and (c)(3) (25.1447(a), (c)(1), (c)(3)(i), and (c)(3)(ii))	Equipment standards for oxygen dispensing units.	CFR 25-41
Propulsion - APU *Compliance to be shown to the 747-400F TCDS Title 14 Part 25 of the CFR APU specific requirements in lieu of the CS25 Subpart J APU specific requirements.*	25.1353(a)	Electrical equipment and installations.	CFR 25-42
	25J901 (25.901(b)(2), (b)(3), (b)(4), and (d))	Installation.	CFR 25-46
	25J903 (25.903(c))	Auxiliary power unit.	CFR 25-57
	25J903 (25.903(d), (e)(1), (e)(2), and (f)) (25.1142)	Auxiliary power unit.	CFR 25-100
	25J939 (25.939(a) and (c))	APU operating characteristics.	CFR 25-40
	25J943 (25.943)	Negative acceleration.	CFR 25-40
	25J951 (25.951(a),(b)(2),(c))	General.	CFR 25-73
	25J952 (25.952(a))	Fuel system analysis and test.	CFR 25-40
	25J955 (25.955(a) and (b)(2))	Fuel flow.	CFR 25-11
	25J961 (25.961(a), (a)(2), (a)(5), and (b))	Fuel system hot weather operation.	CFR 25-57

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
	25J993 (25.993)	Fuel system lines and fittings.	CFR 25-15
	25J1011 (25.1011(a) and (b))	Oil system general.	CFR 25-0
	25J1017 (25.1017)	Oil lines and fittings.	CFR 25-0
	25J1019 (25.1019(a)(1))	Oil filter.	CFR 25-57
	25J1021 (25.1021)	Oil system drains.	CFR 25-57
	25J1023 (25.1023(a))	Oil radiators.	CFR 25-0
	25J1041 (25.1041)	General.	CFR 25-38
	25J1043 (25.1043(a)(1), (a)(2), (b), and (c))	Cooling tests.	CFR 25-42
	25J1045 (25.1045(a), (b), and (c))	Cooling test procedures.	CFR 25-57
	25J1091 (25.1091(a)(1), (c)(1), and (d)(2))	Air intake.	CFR 25-100
	25J1093 (25.1093(b)(1)	Air intake system icing protection.	CFR 25-57
	25J1103 (25.1103(b)(2))	Air intake system ducts.	CFR 25-23
	25J1103 (25.1103(a), (b)(1), (c), and (f))	Air intake system ducts.	CFR 25-46
	25J1106 (25.1103(c) and (d))	Bleed air duct systems.	CFR 25-46
	25J1121 (25.1121(a), (b), (c), (d), (f), and (g))	General.	CFR 25-40
	25J1123 (25.1123)	Exhaust piping.	CFR 25-40
	25J1141 (25.1141(f)(2))	APU controls.	CFR 25-40
	25J1141 (25.1141(a), (b), (c), and (d)) (25.1142)	APU controls.	CFR 25-72
	25J1163 (25.1163(a)(1), (a)(2), and (b))	APU accessories.	CFR 25-57
	25J1181 (25.1181(b))	Designated fire zone.	CFR 25-23
	25J1181 (25.1181(a)(4))	Designated fire zone.	CFR 25-72
	25J1183 (25.1183)	Lines, fittings and components.	CFR 25-57

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
	25J1185 (25.1185(c))	Flammable fluids.	CFR 25-94
	25J1187 (25.1187)	Drainage and ventilation of fire zones.	CFR 25-0
	25J1189 (25.1189)	Shut-off means.	CFR 25-57
	25J1193 (25.1193(d) and (e))	APU compartment.	CFR 25-0
	25J1195 (25.1195)	Fire extinguishing systems.	CFR 25-46
	25J1197 (25.1197)	Fire extinguishing agents.	CFR 25-40
	25J1201 (25.1201)	Fire extinguishing system materials.	CFR 25-0
	25J1203 (25.1203(b)(2) and (b)(3))	Fire-detector system.	CFR 25-26
	25J1207 (25.1207)	Compliance.	CFR 25-46
	25J1305 (25.1305(a)(7))	APU instruments.	CFR 25-54
	25J1305 (25.1305(a)(3), (a)(4), (a)(5), (a)(6), (c)(1), (c)(3), (c)(6), and (c)(7))	APU instruments.	CFR 25-72
	25J1337 (25.1337(a) and (d))	APU instruments.	CFR 25-40
	25J1521 (25.1522)	APU Limitations.	CFR 25-46
	25J1549 (25.1549)	APU instruments.	CFR 25-40
	25J1551 (25.1551)	Oil quantity indicator.	CFR 25-0
	25J1557 (25.1557(b)(2))	Miscellaneous markings and placards.	CFR 25-72
Propulsion - APU: Electrical Subsystems	25.1353(a)	Electrical equipment and installations.	CFR 25-42
	25.1431(d)	Electronic equipment	CFR 25-0
Propulsion - APU *Compliance to be shown to the 747-400F TCDS Title 14 Part 25 of the CFR APU specific requirements in lieu of the CS25 Subpart J APU specific requirements.*	25J1191 (25.1191)	Firewalls.	CFR 25-0
	25J1199 (25.1199(a), (b), and (d)(2))	Extinguishing agent containers.	CFR 25-40
Systems - Avionics: ADIRS	25.1323(b), (c), (d), (e), and (f)	Airspeed indicating system.	CFR 25-108
	25.1325(a), (b), (c), (d), and (e)	Static air vent and pressure altimeter	CFR 25-108

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
		systems.	
	25.1333(a), (b), and (c)	Duplicate instrument systems.	CFR 25-41
Systems - Flight Controls Elevator and Lateral Control: Control Wheels, Left and Right Forward Cable Quadrants, Forward Load Limiter Device, Right and Left Cable Systems, Aileron Feel and Centering Unit, Aileron Trim System, Lateral Central Control Actuator, Third Autopilot Servo, Aileron Programmer, Wing Cable System to Inboard Aileron PCU, No-back Brake Assembly, Autospeedbrake System to drive Speedbrake Lever, Elevator Control System components, Control Columns, Cable Tension Regulator, Cable System, Aft Quadrant, Elevator Control Rods, Inboard and Outboard Elevator PCUs, Outboard Elevator PCU Input Linkage, Elevator Feel Computer.	25.607	Self-locking nuts.	CFR 25-0
	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a) and (b)	Stops.	CFR 25-0
	25.677(a), (b), (c), and (d)	Trim systems.	CFR 25-23
	25.685(a), (b), and (c)	Control system details.	CFR 25-0
	25.863(a) and (b)	Flammable fluid fire protection.	CFR 25-0
	25.865	Fire protection of flight controls.	CFR 25-23
	25.1309(a) and (b)	Equipment systems and installations.	CFR 25-0
	25.1329(f)	Flight Guidance system.	CFR 25-46
	25.1435(a) and (b)	Hydraulic systems.	CFR 25-0
Systems - Flight Controls Flight Deck Instrumentation: Integrated Standby Flight Display	25.1323(a), (b), and (c)	Airspeed indicating system.	CFR 25-108
	25.1325(d) and (e)	Static air vent and pressure altimeter systems.	CFR 25-108
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
Systems - Flight Controls High Lift *Compliance to be shown to CFR25.1359(d) Amdt 25-32 in lieu of CS25.869(a)(4) Amdt 2.*	25.581	Lightning Protection	CFR 25-23
	25.607	Self-locking nuts.	CFR 25-0
	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a) and (b)	Stops.	CFR 25-0
	25.701(a)	Flap interconnection.	CFR 25-23
	25.869(a)(4) (25.1359(d))	Fire Protection. (Electrical system fire and smoke penetration.)	CFR 25-32
	25.1353(a)	Electrical equipment and installations.	CFR 25-42
	25.1435(a)(1), (a)(5), (a)(6), (a)(7), and (b)(2)	Hydraulic systems.	CFR 25-41
Systems - Flight Controls Rudder:	25.671(a), (b), (c), and (d)	General.	CFR 25-23

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Rudder cables, Rudder PCMs, Rudder PCAs, Press-to-Center function, Remote compensators, Rudder Anti-cav/relief valves. Systems - Flight Controls Stabilizer: Trim arm and control wires	25.675(a), (b), and (c)	Stops.	CFR 25-0
	25.677(a), (b), and (c)	Trim systems.	CFR 25-23
	25.865	Fire protection of flight controls.	CFR 25-23
	25.1435(a) and (b)	Hydraulic systems.	CFR 25-41
Systems - Flight Controls Rudder: Primary control linkage aft of aft quadrant, secondary linkage (buss linkage).	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a), (b), and (c)	Stops.	CFR 25-0
	25.865	Fire protection of flight controls.	CFR 25-23
	25.1435(a) and (b)	Hydraulic systems.	CFR 25-41
Systems - Flight Controls Stabilizer: Stabilizer trim and greenband indication display on EICAS.	25.677(b)	Trim systems.	CFR 25-23
Systems - Hydraulics (except RAT and hydraulics assoc. with engine installations)	25.607	Self-locking nuts.	CFR 25-0
	25.1435(a)(1), (a)(2), (a)(4), (a)(5), (a)(6), (a)(7), (a)(8), (b)(1), (b)(2), and (c)	Hydraulic systems.	CFR 25-41
Systems - Hydraulics: Reservoir pressurization system.	25.1438	Pressurization and pneumatic systems.	N/A
Systems - Hydraulics: Hydraulic reservoirs and air drive units.	25.1438	Pressurization and pneumatic systems.	CFR 25-41
Systems - Hydraulics Electrical: Hydraulics system fire shutoff valve and flight control shutoff valve, and Air Drive Unit *Compliance to be shown to CFR25.1359(d) Amdt 25-32 in lieu of CS25.869(a)(4) Amdt 2.*	25.869(a)(1)	Fire Protection.	N/A
	25.869(a)(4) (25.1359(d))	Fire Protection. (Electrical system fire and smoke penetration.)	CFR 25-32
	25.1353(a)	Electrical equipment and installations.	CFR 25-42
Systems - Hydraulics-Electrical: Hydraulic fluid quantity probe in each reservoir	25.1431(d)	Electronic equipment.	CFR 25-0
Systems - Hydraulics-Electrical: Ground Fault Interrupt *Compliance to be shown to CFR25.1359(d) Amdt 25-32 in lieu of CS25.869(a)(4) Amdt 2.*	25.869(a)(4) (25.1359(d))	Fire Protection. (Electrical system fire and smoke protection.)	CFR 25-32

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Systems Stress - Flight Controls Rudder Control: Cables, mech components installations, upper/lower actuator installation. Systems Stress - Flight Controls Elevator Control: Cables, mech components installations, Elevator Feel computer. Horizontal stabilizer trim actuator - trim arm switch and control wire. Systems Stress - Flight Controls High Lift: Flap Detents vs Dspeed, LE/TE components, flap drive stroke, flap skew detection.	25.305(b)	Strength and deformation.	CFR 25-0
	25.395(a), (b) and (c)	Control system.	CFR 25-23
	25.397	Control system loads.	CFR 25-38
	25.415	Ground gust conditions.	CFR 25-0
	25.571(a) and (c)	Damage-tolerance and fatigue evaluation of structure.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
	25.675(c)	Stops.	CFR 25-0
	25.683	Operation tests.	CFR 25-0
	25.693	Joints.	CFR 25-0
Systems Stress - Hydraulics: Hydraulic reservoirs, hydraulic line, Rudder PCA tubing, LG retract actuators, aileron and spoiler PCUs, Hydraulic Systems 1 and 4 electric pump , PACS actuator and elevator feel shift module hydraulic tubing, Aft strut hydraulic installations.	25.305(b)	Strength and deformation.	CFR 25-0
Systems Stress - Landing Gear Systems: Landing gear alternate extend cables and brake cables, Body gear truck positioner mounting features	25.305(b)	Strength and deformation.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
Systems Stress - Landing Gear Systems: Nose landing gear steering system and actuators	25.745	Nose-wheel steering.	N/A
Systems Stress - Flight Controls: Rudder input linkage	25.305(b)	Strength and deformation.	CFR 25-0
	25.395(a), (b), and (c)	Control system.	CFR 25-23
	25.397	Control system loads.	CFR 25-38
	25.415	Ground gust conditions.	CFR 25-0
	25.571(a) and (c)	Fatigue evaluation of flight structure.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
	25.675(c)	Stops.	CFR 25-0

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
	25.683	Operation tests.	CFR 25-0
	25.693	Joints.	CFR 25-0
Systems Stress - Flight Deck: Linings, stowages, and latches, oxygen mask stowage box	25.365(e), (f), and (g)	Pressurized cabin loads.	CFR 25-0

SECTION 6: 747-8F - continued

4.2 Special Conditions

SC F-GEN11 Non-rechargeable Lithium Batteries Installations

CRI	Project	Title	Special Condition Number
B-02	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Human Factors	SC B747-8F/B-02
C-02	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fuel Tank Pressure Loads	SC B747-8F/C-02
C-05	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Landing Gear Criteria	SC B747-8F/C-05
C-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Sustained Engine Imbalance	SC B747-8F/C-06
C-16	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Design Roll Maneuver	SC B747-8F/C-16
C-18	P.EASA.IM.A.164 (747-8F)	Installation of Flutter Suppression System	SC B747-8F/C-18
D-02	P.EASA.IM.A.164 (747-8F)	Fire Protection of Essential Systems/Equipment within Class E Cargo Compartments	SC B747-8F/D-02
D-03	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	High Altitude Operation/ High Cabin Heat Load	SC B747-8F/D-03
D-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fire Resistance of Thermal Insulation Material	SC B747-8F/D-06
D-07	P.EASA.IM.A.164 (747-8F)	Installation of Courier Area on an all Freighter Aircraft	SC B747-8F/D-07
D-13	P.EASA.IM.A.164 (747-8F)	Access to Class E Compartment in Flight	SC B747-8F/D-13
D-18	P.EASA.IM.A.164 (747-8F)	Design for Security	SC B747-8F/D-18
E-14	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fuel Quantity Indication System	SC B747-8F/E-14
F-01	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	HIRF Protection	SC B747-8F/F-01
F-22	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Security Assurance Process to Isolate or Protect the Aircraft Systems and Networks from Internal and External Security Threats	SC B747-8F/F-22

CRI	Project	Title	Special Condition Number
H-01	P.EASA.IM.A.164 (747-8F) P.EASA.IM.A.165 (747-8F/747-8)	Instructions for Continued Airworthiness for Electrical Wiring Interconnection Systems (EWIS)	SC B747-8F/H-01
N/A	TCDS EASA.IM.A.196 (B747-400F, Section 4, 3A)	Attitude Comparison	Special Condition 2: JAR 25.1309

SECTION 6: 747-8F - continued

4.3 EASA Equivalent Safety Findings

ESF G-GEN2 Engine and APU Fire Switch Handle Design (25.1555(d)(1))

ESF G-GEN1 Instructions for Continued Airworthiness (25.1529, CS25 Appendix H)

CRI	Project	Title	Applicable Part 25 Section
B-11	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Transition Speed of Ground Proximity Warning System (EGPWS) Mode 4 Alerts; Too Low Flaps/Too Low Terrain Alert	CFR 25.1301(a)(c); CFR 25.1309(a)(d)
B-12	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Standby Air Data	25.1325
B-13	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Longitudinal Trim	25.161
D-01	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fuselage Doors	25.783 NPA 25D-301, Issue 1
D-10	P.EASA.IM.A.164 747-8F	Inadvertent Smoke Detection in Lower Lobe Class C Cargo Compartments	25.857(c)(1)
D-14	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Control Cables	25.689(a)(1)
D-17	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Ventilation Pack off Takeoff	25.831(a)
D-24	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Exterior Exit Markings	25.811(f)
D-25	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Door Sill Reflectance	25.811(f)
D-31	P.EASA.IM.A.164 747-8F	Escape Slide Auto Deploy and Length	25.810(a)(1)(i) and (a)(1)(iii)
D-32	P.EASA.IM.A.164 747-8F	Inertia Reels Use on Freighters	25.810(a)(1)(i) and (a)(1)(iii)
E-03	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Powerplant Fire Protection	25.1181(a)(6)
E-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Ignition Switches	25.1145(a) and (b)
E-09	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Nacelle Areas Behind Firewalls and Flammable Fluid Carrying Components for PDOS	25.1182(a) 25.1183(a)
E-12	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Engine Fuel Filter Location	25.997(d) 25.1305(c)(6)

CRI	Project	Title	Applicable Part 25 Section
E-13	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Engine Thrust Reverser Endurance Test	25.934
E-15	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Nacelle Areas Behind Firewalls for Thrust Reverser Directional Control Valve (DCV)	25.1182(a) 25.1183(a)
E-19	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Hydraulic Components in Engine Aft Fairing Compartment	25.1182(a) 25.1183(a)
F-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Reset Switch for Overspeed Warning	25.1303(c)(1)
F-21	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Overspeed Warning Aural	25.1303(c)(1)

4.4 Exemptions

No exemptions have been granted.

4.5 Elect to Comply Requirements

Area or System - Comments	Applicable Part 25 Section	Title	Proposed Compliance Amdt Level
Airframe – Wing (CRI C-11)	25.963(e)	Fuel Tank Access Covers	CS 25-3
Propulsion - Engine/APU Structures (CRI C-09)	25.361	Engine and APU Load Conditions	NPA 25C-305
Fuels (CRI E-11)	25.981	Fuel Tank Ignition	CS 25-6
Airframe – Empennage (Inboard Elevator)	25.571(a) and (b)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
	25.571(d) and (e)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
Airframe – Fuselage (Not Affected portions of the fuselage, floors and doors, as defined in CRI A-01,Table 2.3)	25.305(a), (b), and (c)	Strength and deformation.	CS 25-2
	25.571(a) and (b)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
	25.571(d) and (e)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
Airframe - Fuselage: Flight deck floor beams/frames (not affected from decompression standpoint)	25.365(e)	Pressurized cabin loads.	CFR 25-54

Area or System - Comments	Applicable Part 25 Section	Title	Proposed Compliance Amdt Level
Airframe - Fuselage: #2 and #3 flight deck windshield, window for main entry door #1, window for upper deck crew door, fuselage viewport windows, and supernumerary compartment windows	25.303	Factor of safety.	CS 25-2
	25.305(a), (b), and (c)	Strength and Deformation	CS 25-2
	25.307(a) and (d)	Proof of structure.	CS 25-2
	25.365(a), (b), and (d)	Pressurized cabin loads.	CS 25-2
	25.571(b)(5)(ii)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
	25.601	Design & Construction - General.	CS 25-2
	25.603	Materials.	CS 25-2
	25.605	Fabrication methods.	CS 25-2
	25.609	Protection of structure.	CS 25-2
	25.611	Inspection provisions.	CS 25-2
	25.775	Windshields and windows.	CS 25-2

4.6 All Weather Operation

CS AWO Initial Issue, effective 17 October 2003.

4.7 EASA Environmental Standards

Noise ICAO Annex 16, Volume I, 5th Edition, Chapter 4, Amendment 9

Emissions ICAO Annex 16, Volume II, 3rd Edition, Amendment 6

III. Technical Characteristics and Operational Limitations

1. Production Basis — Manufactured under Production Certificate 700

2. Type Design Definition — Design Standard identified as the basis for this Type Certificate is that of the Series Design defined by “Submittal of Descriptive Data List (DDL) for the 747-8F Amended Type Design Configuration, Rev D,” as enclosed in Boeing Internal Letter B-H320-2011-01283, dated August 10, 2011.

SECTION 6: 747-8F - continued

3.	Description	Low wing jet transport with a conventional tail unit configuration, powered by four high bypass turbofan engines mounted on pylons beneath the wings.
4.	Dimensions	Span, m (ft): 68.5 m (224 ft 7 in) Length, m (ft): 76.3 m (250 ft 2 in) Height, m (ft): 19.4 m (63 ft 6 in)
5.	Engines	Four (4) General Electric GEnx-2B67, -2B67B, -2B67/P Engine data sheet EASA IM.E.102

WARNING: To prevent unsafe airplane handling characteristics, electronic engine control (EEC) software C060 (or newer) cannot be intermixed on the same aircraft with older EEC software: C032, C040, or C045. The idle selection logic is different in GE C060 software compared to older versions of EEC software. This difference can potentially provide large unsafe thrust asymmetries during acceleration from lower power if C060 EEC software is mixed with older EEC software (i.e. one or more engine at a high idle, while the rest are at minimum idle. The engines at high idle will respond much quicker if there is a rapid throttle advance). See Boeing Service Bulletin 747-73A2083

See FAA TCDS A20WE NOTE 4 (after section XVI) for further information regarding intermixing engines

6.	Auxiliary Power Unit	Pratt and Whitney of Canada Type PW901C
7.	Propellers	None
8.	Fluids (Fuel/Oil)	Refer to approved Airplane Flight Manual
9.	Airspeed Limitations	V_{MO}/M_{MO} 365/0.9 (KCAS) For other airspeed limits see the appropriate FAA Approved Airplane Flight Manual
10.	Operating Limitations	Maximum Operating Altitude, m (ft): 13,137 m (42,100 ft) Maximum Airfield Elevation for take-off, m (ft): 2896 m (9500 ft)
11.	All Weather Capability	See approved Airplane Flight Manual

SECTION 6: 747-8F - continued

12. Maximum Certified Masses — (At Type Certification) See approved Airplane Flight Manual for the appropriate weights.

	Pounds	Kilograms
MTW	990,000	449,056
MTOW	987,000	447,695
MLW	773,000	350,626
MZFW	737,000	334,297

13. Centre of Gravity Range — See Airplane Flight Manual

14. Datum — See Weights and Balance Manual

15. Mean Aerodynamic Cord (MAC) — See Weights and Balance Manual

16. Levelling Means — See Airplane Flight Manual

17. Minimum Flight Crew — Two (2) Persons (Pilot and Co-pilot)

18. Maximum Seating Capacity — For 747-8F airplanes the total occupant capacity is limited to eight (8) persons on the upper deck.

19. Baggage/Cargo Compartment — See Weights and Balance Manual

20. Wheels and Tyres — See Airplane Flight Manual

IV Operating and Service Instructions

1. Airplane Flight Manual (AFM)

FAA Approved Flight Manual: D631U004.
For airplanes delivered according to the EASA Certification Basis, EASA approved supplements are applicable.

2. Mandatory Maintenance Instructions

Scheduled Maintenance Checks as per Boeing MRB Report Boeing Maintenance Manual Doc. D633U8101.

Life Limited Parts and required inspection intervals are listed in the FAA approved Airworthiness Limitations Section of the Boeing Maintenance Planning Data Document D011U721-02.

Structural Repair Manual – Boeing Document D634U210.

3. Universal Airplane Network Security Operator Guidance (UANSOG)

The Boeing Commercial Airplanes Universal Airplane Network Security Operator Guidance, D925W704-04, contains required Instructions for Continued Airworthiness and security guidance that when followed meets compliance requirements of the Network Cybersecurity Special Conditions.

SECTION 6: 747-8F - continued

V Operational Suitability Data (OSD)

The Operational Suitability Data constituents listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate (original TC number) as per Commission Regulation (EU) 748/2012 as amended by Commission regulation (EU) No 69/2014

1. Master Minimum Equipment List

    a. EASA 747-8 MMEL D639U200-ESEM. MMEL OSD certification basis is JAR-MMEL Section 1 Subpart A and Subpart B at Amendment 1 (01 August 2005) with the MoC specified in applicant position as recorded in Boeing ORI 4.

2. Flight Crew Data

    a. The Operational Suitability Data for Flight Crew are contained in Boeing Document Reference D926U004-01, dated December 7, 2015 or later approved revisions. FC OSD certification basis is CS-FCD, Initial Issue, dated 31 January 2014.

3. Cabin Crew Data

    a. Not applicable.

4. SIM Data

    a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

5. Maintenance Certifying Staff Data

    a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

6. Other

    a. Not applicable.

VI Notes

1. Boeing and GE have determined that the GEnx engines on these aircraft intermittently emit a sometimes clearly visible fuel vapor fog after shutdown, as a result of a small quantity of fuel being released from the engine's fuel system. These emissions do not present a safety issue or appreciable environmental impact. Boeing and GE will modify the design of the aircraft and engines by December 31, 2012 to completely eliminate this fuel venting on new aircraft. Boeing has included an airworthiness limitation in the instructions for continued airworthiness for the affected aircraft requiring incorporation of the modified design by December 31, 2014.

SECTION 7: 747-8

I. General

1. Aircraft — Boeing 747-8
2. Models — Boeing 747-8
3. EASA Validation Application Date (Reference date for EASA validation) — 05 March 2007
4. EASA Validation Date — 15 December 2011

II. Certification Basis

1. Reference Application Date for FAA Certification: — 31 December 2006
2. Certification Date: (FAA Type Certification Data Sheet No. A20WE) — 14 December 2011
3. FAA Certification Basis:

   Part 25 through Amendment 25-120
   Part 26, as amended at the time of certification
   Part 34, as amended at the time of certification
   Part 36, through Amdt 36-28

   For details of Exceptions, Exemptions, Special Conditions and Equivalent Safety Findings granted by FAA, refer to FAA TCDS A20WE.

4. EASA Airworthiness Requirements

   CS 25 at Amendment 2 and, for unaffected areas, Boeing 747-400 EASA Type Certification Data Sheet IM.A.196 (Section 3 above),

   Note: Further details may be seen under CRI A-01 “EASA Certification Basis”

   4.1 Reversions from CS 25 Amendment 2:

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Aero - Configurations	25.1323(b) and (c)	Airspeed indicating system.	CFR 25-108
	25.1325(b) and (e)	Static air vent and pressure altimeter systems.	CFR 25-108
Airframe - Empennage: Outboard Elevator Balance Weight Tower	25.305(b)	Strength and deformation.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.613	Material strength properties and design values.	CFR 25-46
	25.615	Design properties.	CFR 25-23
Airframe - Empennage:	25.365(e)(2)	Pressurized compartment	CFR 25-54

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Forward fin box of vertical stab - unpressurized area		loads.	
Airframe - Fuselage: Section 41 lower lobe skin panels and flight deck skin panels - pressurized area only, below WL 200, between STA 140 and 460 Section 41 main deck floor side of body shear trusses and side of body shear webs.	25.365(e)(2)	Pressurized cabin loads.	CFR 25-54
Airframe - Fuselage: ECS pack bay access panels	25.783	Doors.	CFR 25-23
Airframe - Fuselage Doors: Passenger entry doors 1 – 5, Bulk cargo door	25.783	Doors.	CFR 25-23
Airframe - Fuselage and Floors: Section 41 Lower Lobe DNCMLS reversion granted on the 747-8F and proposed to be carried over for application to the 747-8.	25.365(e)(2)	Pressurized Compartment Loads.	CFR 25-54
Airframe - Landing Gear: Main Gear The main landing gears shall comply with 747-8F/-8 Special Condition CRI C-05. *Compliance to be shown to CFR25.573 Amdt 25-0 in lieu of CS25.571 Amdt 2, per CRI C-12.*	25.471 through 25.511, and 25.723	Structural Design Requirements for Four-Post Main Landing Gear System.	Equivalent to CS 25-2
	25.571 (25.573(a) and (c))	Damage-tolerance and fatigue evaluation of structure.	CFR 25-0
Airframe - Loads	25.341	Gust and turbulence loads	CS 25-0
	25.343(b)(1)(ii)	Design fuel and oil loads	CS 25-0
	25.371	Gyroscopic loads	CS 25-0
	25.373	Speed control devices	CS 25-0
Airplane Systems and Equipment: *Compliance to be shown to CFR25.1301 and CFR25.1309 in lieu of CS25.1301, CS25.1309, and CS25.1310, per CRI F-17.*	25.1301	Function and installation	CFR 25-0
	25.1309	Equipment, systems and installations.	CFR 25-41
	25.1310 (25.1309)	Power source capacity and distribution.	CFR 25-41
Flight Deck: Wall mounted flight deck crew rest seat	25.561	General.	CFR 25-23
	25.562	Emergency landing dynamic conditions.	NA
	25.785	Seats, berths, safety belts and harnesses.	CFR 25-32

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Flight Deck: Flight Deck Seats *Compliance to be shown to CFR 25.785(a) Amdt 25-32 in lieu of CS 25.785(b) Amdt 25-2*	25.562	Emergency Landing Dynamic Conditions.	N/A
	25.785(b) (25.785(a))	Seats, berths, safety belts, and harnesses.	CFR 25-32
Propulsion - APU *Compliance to be shown to the 747-400 TCDS Title 14 Part 25 of the CFR APU specific requirements in lieu of the CS25 Subpart J APU specific requirements.*	25.865	Fire protection of flight controls.	CFR 25-23
	25.1353(a)	Electrical equipment and installations.	CFR 25-42
	25J901 (25.901(b)(2), (b)(3), (b)(4), and (d))	Installation.	CFR 25-46
	25J903 (25.903(c))	Auxiliary power unit.	CFR 25-57
	25J903 (25.903(d), (e)(1), (e)(2), and (f)) (25.1142)	Auxiliary power unit.	CFR 25-100
	25J939 (25.939(a) and (c))	APU operating characteristics.	CFR 25-40
	25J943 (25.943)	Negative acceleration.	CFR 25-40
	25J951 (25.951(a), (b)(2), and (c))	General.	CFR 25-73
	25J952 (25.952(a))	Fuel system analysis and test.	CFR 25-40
	25J955 (25.955(a) and (b)(2))	Fuel flow.	CFR 25-11
	25J961 (25.961(a),(a)(2), (a)(5), and (b))	Fuel system hot weather operation.	CFR 25-57
	25J993 (25.993)	Fuel system lines and fittings.	CFR 25-15
	25J1011 (25.1011(a) and (b))	Oil system general.	CFR 25-0
	25J1017 (25.1017)	Oil lines and fittings.	CFR 25-0
	25J1019 (25.1019(a)(1))	Oil filter.	CFR 25-57
	25J1021 (25.1021)	Oil system drains.	CFR 25-57
	25J1023 (25.1023(a))	Oil radiators.	CFR 25-0
	25J1041 (25.1041)	General.	CFR 25-38
	25J1043 (25.1043(a)(1), (a)(2), (b), and (c))	Cooling tests.	CFR 25-42

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Propulsion - APU (cont.) *Compliance to be shown to the 747-400 TCDS Title 14 Part 25 of the CFR APU specific requirements in lieu of the CS25 Subpart J APU specific requirements.*	25J1045 (25.1045(a), (b), and (c))	Cooling test procedures.	CFR 25-57
	25J1091 (25.1091(a)(1), (c)(1), and (d)(2))	Air intake.	CFR 25-100
	25J1093 (25.1093(b)(1)	Air intake system icing protection.	CFR 25-57
	25J1103 (25.1103(b)(2))	Air intake system ducts.	CFR 25-23
	25J1103 (25.1103(a), (b)(1), (c), and (f))	Air intake system ducts.	CFR 25-46
	25J1106 (25.1103(c) and (d))	Bleed air duct systems.	CFR 25-46
	25J1121 (25.1121(a), (b), (c), (d), (f), and (g))	General.	CFR 25-40
	25J1123 (25.1123)	Exhaust piping.	CFR 25-40
	25J1141 (25.1141(f)(2))	APU controls.	CFR 25-40
	25J1141 (25.1141(a), (b), (c), and (d)) (25.1142)	APU controls.	CFR 25-72
	25J1163 (25.1163(a)(1), (a)(2), and (b))	APU accessories.	CFR 25-57
	25J1181 (25.1181(b))	Designated fire zone.	CFR 25-23
	25J1181 (25.1181(a)(4))	Designated fire zone.	CFR 25-72
	25J1183 (25.1183)	Lines, fittings and components.	CFR 25-57
	25J1185 (25.1185(c))	Flammable fluids.	CFR 25-94
	25J1187 (25.1187)	Drainage and ventilation of fire zones.	CFR 25-0
	25J1189 (25.1189)	Shut-off means.	CFR 25-57
	25J1191 (25.1191)	Firewalls.	CFR 25-0
	25J1193 (25.1193(d) and (e))	APU compartment.	CFR 25-0
Propulsion - APU (cont.) *Compliance to be shown to the 747-400 TCDS Title 14 Part 25 of the CFR APU specific requirements in lieu of the CS25 Subpart J APU specific requirements.*	25J1195 (25.1195)	Fire extinguishing systems.	CFR 25-46
	25J1197 (25.1197)	Fire extinguishing agents.	CFR 25-40
	25J1199 (25.1199(a), (b), and (d)(2))	Extinguishing agent containers.	CFR 25-40

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
	25J1201 (25.1201)	Fire extinguishing system materials.	CFR 25-0
	25J1203 (25.1203(b)(2) and (b)(3))	Fire-detector system.	CFR 25-26
	25J1207 (25.1207)	Compliance.	CFR 25-46
	25J1305 (25.1305(a)(7))	APU instruments.	CFR 25-54
	25J1305 (25.1305(a)(3), (a)(4), (a)(5), (a)(6), (c)(1), (c)(3), (c)(6), and (c)(7))	APU instruments.	CFR 25-72
	25J1337 (25.1337(a) and (d))	APU instruments.	CFR 25-40
	25J1521 (25.1522)	APU Limitations.	CFR 25-46
	25J1549 (25.1549)	APU instruments.	CFR 25-40
	25J1551 (25.1551)	Oil quantity indicator.	CFR 25-0
	25J1557 (25.1557(b)(2))	Miscellaneous markings and placards.	CFR 25-72
Systems - Avionics: ADIRS	25.1323(b), (c), (d), (e), and (f)	Airspeed indicating system.	CFR 25-108
	25.1325(a), (b), (c), (d), and (e)	Static air vent and pressure altimeter systems.	CFR 25-108
	25.1333(a), (b), and (c)	Duplicate instrument systems.	CFR 25-41
Systems - Electrical Subsystems: APU	25.1353(a)	Electrical equipment and installations.	CFR 25-42
	25.1431(d)	Electronic equipment.	N/A

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Systems - Flight Controls Elevator and Lateral Control: Control Wheels, Left and Right Forward Cable Quadrants, Forward Load Limiter Device, Right and Left Cable Systems, Aileron Feel and Centering Unit, Aileron Trim System, Lateral Central Control Actuator, Third Autopilot Servo, Aileron Programmer, Wing Cable System to Inboard Aileron PCU, Elevator Feel Computer and Autospeedbrake system to drive speedbrake lever.	25.607	Self-locking nuts.	CFR 25-0
	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a), (b), and (c)	Stops.	CFR 25-0
	25.677(a), (b), (c), and (d)	Trim systems.	CFR 25-23
	25.685(a), (b), and (c)	Control system details.	CFR 25-0
	25.863(a) and (b)	Flammable fluid fire protection.	CFR 25-0
	25.865	Fire protection of flight controls.	CFR 25-23
	25.1309(a), (b), (c), and (d)	Equipment systems and installations.	CFR 25-0
	25.1329(f)	Flight Guidance system.	CFR 25-46
	25.1435(a) and (b)	Hydraulic systems.	CFR 25-0
Systems - Flight Controls Flight Deck Instrumentation: Integrated Standby Flight Display	25.1323(a), (b), and (c)	Airspeed indicating system.	CFR 25-108
	25.1325(d) and (e)	Static air vent and pressure altimeter systems.	CFR 25-108
Systems - Flight Controls High Lift *Compliance to be shown to CFR25.1359(d) Amdt 25-32 in lieu of CS25.869(a)(4) Amdt 2.*	25.581	Lightning Protection	CFR 25-23
	25.607	Self-locking nuts.	CFR 25-0
	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a) and (b)	Stops.	CFR 25-0
	25.701(a)	Flap interconnection.	CFR 25-23
	25.869(a)(4) (25.1359(d))	Fire Protection. (Electrical system fire and smoke penetration.)	CFR 25-32
	25.1353(a)	Electrical equipment and installations.	CFR 25-42
	25.1435(a)(1), (a)(5), (a)(6), (a)(7), and (b)(2)	Hydraulic systems.	CFR 25-41
Systems - Flight Controls Rudder: Primary control linkage aft of aft quadrant, secondary linkage (buss linkage).	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a), (b), and (c)	Stops.	CFR 25-0
	25.865	Fire protection of flight controls.	CFR 25-23
	25.1435(a) and (b)	Hydraulic systems.	CFR 25-41
Systems - Flight Controls Rudder: Rudder cables, Rudder PCMs, Rudder PCAs, Press-to-Center function, Remote compensators, Rudder Anti-cav/relief valves. Systems - Flight Controls Stabilizer: Trim arm and control wires	25.671(a), (b), (c), and (d)	General.	CFR 25-23
	25.675(a), (b), and (c)	Stops.	CFR 25-0
	25.677(a), (b), and (c)	Trim systems.	CFR 25-23
	25.865	Fire protection of flight controls.	CFR 25-23
	25.1435(a) and (b)	Hydraulic systems.	CFR 25-41
Systems - Flight Controls Stabilizer: Stabilizer trim and greenband indication display on EICAS.	25.677(b)	Trim systems.	CFR 25-23

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Systems - Hydraulics (except for the portions associated with the RAT and engine installations)	25.607 25.1435(a)(1), (a)(2), (a)(4), (a)(5), (a)(6), (a)(7), (a)(8), (b)(1), (b)(2), and (c)	Self-locking nuts. Hydraulic systems.	CFR 25-0 CFR 25-41
Systems - Hydraulics: Reservoir pressurization system.	25.1438	Pressurization and pneumatic systems.	N/A
Systems - Hydraulics: Hydraulic reservoirs and air drive units.	25.1438	Pressurization and pneumatic systems.	CFR 25-41
Systems - Hydraulics Electrical: Hydraulics system fire shutoff valve and flight control shutoff valve. *Compliance to be shown to CFR25.1359(d) Amdt 25-32 in lieu of CS25.869(a)(4) Amdt 2.*	25.869(a)(1)	Fire Protection.	N/A
	25.869(a)(4) (25.1359(d))	Fire Protection. (Electrical system fire and smoke penetration.)	CFR 25-32
	25.1353(a)	Electrical equipment and installations.	CFR 25-42
Systems - Hydraulics-Electrical: Hydraulic fluid quantity probe in each reservoir.	25.1431(d)	Electronic equipment.	N/A
Systems - Hydraulics-Electrical: Ground Fault Interrupt *Compliance to be shown to CFR25.1359(d) Amdt 25-32 in lieu of CS25.869(a)(4) Amdt 2.*	25.869(a)(4) (25.1359(d))	Fire Protection. (Electrical system fire and smoke penetration.)	CFR 25-32

Area/System Comments	Applicable Part 25 Section	Title	Reversion Amdt Level
Systems Stress - Flight Controls: Rudder input linkage	25.305(b)	Strength and deformation.	CFR 25-0
	25.395(a), (b), and (c)	Control system.	CFR 25-23
	25.397	Control system loads.	CFR 25-38
	25.415	Ground gust conditions.	CFR 25-0
	25.571(a) and (c)	Fatigue evaluation of flight structure.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
	25.675(c)	Stops.	CFR 25-0
	25.683	Operation tests.	CFR 25-0
	25.693	Joints.	CFR 25-0
Systems Stress - Flight Controls Rudder Control: Cables, mechanical component installations, upper/lower actuator installation. Systems Stress - Flight Controls Elevator Control: Cables, mechanical component installations, Elevator Feel computer. Horizontal stabilizer trim actuator - trim arm switch and control wire. Systems Stress - Flight Controls High Lift: Flap Detents vs Dspeed, LE/TE components, flap drive stroke, flap skew detection.	25.305(b)	Strength and deformation.	CFR 25-0
	25.395(a), (b), and (c)	Control system.	CFR 25-23
	25.397	Control system loads.	CFR 25-38
	25.415	Ground gust conditions.	CFR 25-0
	25.571(a) and (c)	Damage-tolerance and fatigue evaluation of structure.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
	25.675(c)	Stops.	CFR 25-0
	25.683	Operation tests.	CFR 25-0
	25.693	Joints.	CFR 25-0
Systems Stress - Flight Deck: Linings, stowages, and latches, oxygen mask stowage box	25.365(e), (f), and (g)	Pressurized cabin loads.	CFR 25-0
Systems Stress - Hydraulics: Hydraulic reservoirs, hydraulic lines, Rudder PCA tubing, LG retract actuators, aileron and spoiler PCUs, Hydraulic Systems 1 and 4 electric pumps, PACS actuator and elevator feel shift module hydraulic tubing, Aft strut hydraulic installations.	25.305(b)	Strength and deformation.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
Systems Stress - Landing Gear Systems: Landing gear alternate extend cables and brake cables, Body gear truck positioner mounting features	25.305(b)	Strength and deformation.	CFR 25-0
	25.607	Self-locking nuts.	CFR 25-0
	25.625(a), (b), and (c)	Fitting factors.	CFR 25-23
Systems Stress - Landing Gear Systems: Nose landing gear steering system and actuators	25.745	Nose-wheel steering.	N/A

SECTION 7: 747-8 - continued

4.2 Special Conditions

SC F-GEN11 Non-rechargeable Lithium Batteries Installations
SC D-GEN8 Installation of oblique Seats
SC D-GEN9 Incorporation of Inertia Locking Device in Dynamic Seats
SC D-GEN10 Installation of Suite Type Seating
SC D-GEN11 Installation of structure mounted airbags

CRI	Project	Title	Special Condition Number
B-02	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Human Factors	SC B747-8/B-02
C-02	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fuel Tank Pressure Loads	SC B747-8/C-02
C-05	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Landing Gear Criteria	SC B747-8/C-05
C-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Sustained Engine Imbalance	SC B747-8/C-06
C-16	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Design Roll Maneuver	SC B747-8/C-16
C-18	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Installation of Flutter Suppression System	SC B747-8/C-18
D-03	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	High Altitude Operation/High Cabin Heat Load	SC B747-8/D-03
D-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fire Resistance of Thermal Insulation Material	SC B747-8/D-06
D-09	P.EASA.IM.A.165 (747-8)	Installation of Crew Rest Compartment (passenger aircraft)	SC B747-8/D-09
D-16	P.EASA.IM.A.165 (747-8)	Application of Heat Release and Smoke Density Requirements to Seat Materials	SC B747-8/D-16
D-22	P.EASA.IM.A.165 (747-8)	Type C Passenger Exits	SC B747-8/D-22
D-23	P.EASA.IM.A.165 (747-8)	Design for Security	SC B747-8/D-23
D-30	P.EASA.IM.A.165 (747-8)	Installation of seats with inflatable restraints	SC B747-8/D-30
D-37	P.EASA.IM.A.165 (747-8)	Door 2 Stairs	SC B747-8/D-37
D-44	P.EASA.IM.A.165 (747-8)	Upper Deck Occupancy	SC B747-8/D-44
D-45	P.EASA.IM.A.165 (747-8)	Door 1 Extendable Slide	SC B747-8/D-45

CRI	Project	Title	Special Condition Number
E-14	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fuel Quantity Indication System	SC B747-8/E-14
F-01	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	HIRF Protection	SC B747-8/F-01
F-22	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Security Assurance Process to Isolate or Protect the Aircraft Systems and Networks from Internal and External Security Threats	SC B747-8/F-22
H-01	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Instructions for Continued Airworthiness (ICA) on Electrical Wiring Interconnenting Systems (EWIS)	SC B747-8/H-01

SECTION 7: 747-8 - continued

4.3 EASA Equivalent Safety Findings

ESF D-GEN7 Flammability Testing Hierarchy (25.853(a))

ESF G-GEN2 Engine and APU Fire Switch Handle Design (25.1555(d)(1))

ESF G-GEN1 Instructions for Continued Airworthiness (25.1529, CS25 Appendix H)

CRI	Project	Title	Applicable Part 25 Section
B-12	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Standby Air Data	25.1325
B-13	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Longitudinal Trim	25.161
D-01	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Fuselage Doors	25.783 NPA 25D-301, Issue 1
D-14	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Control Cables	25.689(a)(1)
D-17	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Ventilation Pack off Takeoff	25.831(a)
D-19	P.EASA.IM.A.165 (747-8)	Slide Raft Pressure Vessels	25.1436
D-20	P.EASA.IM.A.165 (747-8)	Aisle Width for Front Row of Zone A (2 Passengers)	25.815
D-21	P.EASA.IM.A.165 (747-8)	Aisle Width for Front Row of Zone A (6 Passengers)	25.815
D-24	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Exterior Exit Markings	25.811(f)
D-25	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Door Sill Reflectance	25.811(f)
D-27	P.EASA.IM.A.165 (747-8)	Oxygen Outlets in the Galley Work Areas	25.1447(c)(3)
D-28	P.EASA.IM.A.165 (747-8)	Remote Stowage of the Door 1 Slide/Raft Survival Kit	25.1415(c)
E-03	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Powerplant Fire Protection	25.1181(a)(6)
E-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Ignition Switches	25.1145(a) and (b)
E-09	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Nacelle Areas Behind Firewalls and Flammable Fluid Carrying Components for PDOS	25.1182(a) 25.1183(a)
E-12	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Engine Fuel Filter Location	25.997(d) 25.1305(c)(6)
E-13	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Engine Thrust Reverser Endurance Test	25.934

CRI	Project	Title	Applicable Part 25 Section
E-15	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Nacelle Areas Behind Firewalls for Thrust Reverser Directional Control Valve (DCV)	25.1182(a) 25.1183(a)
E-19	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Hydraulic Components in Engine Aft Fairing Compartment	25.1182(a) 25.1183(a)
F-06	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Reset Switch for Overspeed Warning	25.1303(c)(1)
F-21	P.EASA.IM.A.164 P.EASA.IM.A.165 (747-8F/747-8)	Overspeed Warning Aural	25.1303(c)(1)

4.4 Exemptions

No exemptions have been granted

4.5 Elect to Comply Requirements

Area or System - Comments	Applicable Part 25 Section	Title	Proposed Compliance Amdt Level
Airframe – Wing (CRI C-11)	25.963(e)	Fuel Tank Access Covers	CS 25-3
Propulsion - Engine/APU Structures (CRI C-09)	25.361	Engine and APU Load Conditions	NPA 25C-305
Interiors – Insulation (CRI D-29)	25.856(b)	Thermal/Acoustic Insulation Material	CS 25-6
Fuels (CRI E-11)	25.981	Fuel Tank Ignition	CS 25-6
Airframe – Empennage (Inboard Elevator)	25.571(a) and (b)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
	25.571(d) and (e)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
Airframe – Fuselage (Not Affected portions of the fuselage, floors and doors, as defined in Table 2.3)	25.305(a), (b), and (c)	Strength and deformation.	CS 25-2
	25.571(a) and (b)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
	25.571(d) and (e)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
Airframe - Fuselage: Flight deck floor beams/frames (not affected from decompression standpoint)	25.365(e)	Pressurized cabin loads.	CFR 25-54
Airframe - Fuselage: #2 and #3 flight deck windshield, window for main entry door #1, window for upper deck crew door, fuselage viewport windows, and supernumerary compartment windows	25.303	Factor of safety.	CS 25-2
	25.305(a), (b), and (c)	Strength and Deformation	CS 25-2
	25.307(a) and (d)	Proof of structure.	CS 25-2
	25.365(a), (b), and (d)	Pressurized cabin loads.	CS 25-2
	25.571(b)(5)(ii)	Damage-tolerance and fatigue evaluation of structure.	CS 25-2
	25.601	Design & Construction - General.	CS 25-2
	25.603	Materials.	CS 25-2

Area or System - Comments	Applicable Part 25 Section	Title	Proposed Compliance Amdt Level
	25.605	Fabrication methods.	CS 25-2
	25.609	Protection of structure.	CS 25-2
	25.611	Inspection provisions.	CS 25-2
	25.775	Windshields and windows.	CS 25-2

SECTION 7: 747-8 – continued

4.6 All Weather Operation

CS AWO Initial Issue, effective 17 October 2003.

4.7 EASA Environmental Standards

Noise: ICAO Annex 16, Volume I, 5th Edition, Chapter 4, Amendment 9

Emissions: ICAO Annex 16, Volume II, 3rd Edition, Amendment 6

III. Technical Characteristics and Operational Limitations

1. Production Basis	Manufactured under Production Certificate 700
2. Type Design Definition	Design Standards identified as the basis for this Type Certificate is that of the Series Design defined by the "Submittal of Descriptive Data List (DDL) for the 747-8 Amended Type Design Configuration, Rev J," as enclosed in Boeing Internal Letter B-H320-2011-02221, dated December 9, 2011.
3. Description	Low wing jet transport with a conventional tail unit configuration, powered by four high bypass turbofan engines mounted on pylons beneath the wings.
4. Dimensions	Span, m (ft) 68.5 m (224 ft 7 in) Length, m (ft) 76.3 m (250 ft 2 in) Height, m (ft) 19.4 m (63 ft 6 in)
5. Engines	Four (4) General Electric GEnx-2B67, -2B67B, -2B67/P Engine data sheet EASA TCDS Im.E.102

WARNING: To prevent unsafe airplane handling characteristics, electronic engine control (EEC) software C060 (or newer) cannot be intermixed on the same aircraft with older EEC software: C032, C040, or C045. The idle selection logic is different in GE C060 software compared to older versions of EEC software. This difference can potentially provide large unsafe thrust asymmetries during acceleration from lower power if C060 EEC software is mixed with older EEC software (i.e. one or more engine at a high idle, while the rest are at minimum idle. The engines at high idle will respond much quicker if there is a rapid throttle advance). See Boeing Service Bulletin 747-73A2083

See FAA TCDS A20WE NOTE 4 (after section XVI) for further information regarding intermixing engines

SECTION 7: 747-8 – continued

6. Auxiliary Power Unit	Pratt and Whitney of Canada Type PW901C
7. Propellers	None
8. Fluids(Fuel/Oil)	Refer to approved Airplane Flight Manual
9. Airspeed Limitations	V_{MO}/M_{MO} 365/0.9 (KCAS) For other airspeed limits see the appropriate FAA Approved Airplane Flight Manual
10. Operating Limitations	Maximum Operating Altitude 13,137 m (43,100 ft) Maximum Airfield Elevation for take-off 2896 m (9500 ft)
11. All Weather Capability	See approved Airplane Flight Manual
12. Maximum Certified Weights	(At Type Certification) See approved Airplane Flight Manual for the appropriate weights.

	Pounds	Kilograms
MTW	990,000	449,056
MTOW	987,000	447,696
MLW	688,000	312,072
MZFW	651,000	295,289

13. Centre of Gravity	See Airplane Flight Manual
14. Datum	See Weights and Balance Manual
15. Mean Aerodynamic Cord (MAC)	See Weights and Balance Manual
16. Levelling Means	See Airplane Flight Manual
17. Minimum Flight Crew	Two (2) Persons (Pilot and Co-pilot)
18. Maximum Seating Capacity	The maximum number of passengers approved for emergency evacuation is: 605 Upper deck: 110 persons Main deck: 495 persons See interior layout drawing for the maximum passenger capacities approved for each aeroplane when delivered.

SECTION 7: 747-8 - continued

19. Minimum Cabin Crew

The table below provides the certified Maximum Passenger Seating Capacities (MPS), the corresponding cabin configuration (exit arrangement and modifications) and the associated numbers of cabin crew members used to demonstrate compliance with the evacuation certification requirements of CS 25.803. Additional cabin crew members may be required to comply with other regulatory requirements (e.g., cabin attendant direct view or ditching).

Passenger Deck	Passenger Seating Capacity & Cabin Configuration	Cabin crew
Main	495 passengers: (C, A, A, A, A) exit arrangement	10
Main	440 passengers: (C, A, A, A, C) exit arrangement	9
Upper	110 passengers: (A) exit arrangement	3
Upper	100 passengers: (A) exit arrangement	2
Upper	45 passengers: (I) exit arrangement	1

20. Baggage/Cargo Compartment See Weights and Balance Manual

21. Wheels and Tyres See Airplane Flight Manual

IV Operating and Service Instructions

1. Flight Manual

FAA Approved Flight Manual: D631U004.
For airplanes delivered according to the EASA Certification Basis, EASA approved supplements are applicable.

2. Mandatory Maintenance Instructions

Scheduled Maintenance Checks as per Boeing MRB Report Boeing Maintenance Manual Doc. D633U8101.

Life Limited Parts and required inspection intervals are listed in the FAA approved Airworthiness Limitations Section of the Boeing Maintenance Planning Data Document D011U721-02.

Structural Repair Manual – Boeing Document D634U201.

3. Universal Airplane Network Security Operator Guidance (UANSOG)

The Boeing Commercial Airplanes Universal Airplane Network Security Operator Guidance, D925W704-04, contains required Instructions for Continued Airworthiness and security guidance that when followed meets compliance requirements of the Network Cybersecurity Special Conditions.

SECTION 7: 747-8 - continued

V Operational Suitability Data (OSD)

The Operational Suitability Data constituents listed below are approved by the European Aviation Safety Agency under the EASA Type Certificate (original TC number) as per Commission Regulation (EU) 748/2012 as amended by Commission regulation (EU) No 69/2014

1. Master Minimum Equipment List

    a. EASA 747-8 MMEL D639U200-ESEM. MMEL OSD certification basis is JAR-MMEL Section 1 Subpart A and Subpart B at Amendment 1 (01 August 2005) with the MoC specified in applicant position as recorded in Boeing ORI 4.

2. Flight Crew Data

    a. The Operational Suitability Data for Flight Crew are contained in Boeing Document Reference D926U004-01, dated December 7, 2015 or later approved revisions. FC OSD certification basis is CS-FCD, Initial Issue, dated 31 January 2014.

3. Cabin Crew Data

    a. The Cabin Crew Data has been approved as per the defined Operational Suitability Data Certification Basis, and as demonstrated by Boeing Document D221U000-01 – Operational Suitability Data – Cabin Crew Data – Boeing 747, dated December 04, 2015 or later approved revisions.
    b. Required for entry into service by EU operator.
    c. The B747-8 aircraft is determined to be a new type for cabin crew.

4. SIM Data

    a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

5. Maintenance Certifying Staff Data

    a. Not required per COMMISSION REGULATION (EU) No 69/2014 January 2014.

6. Other

    a. Not applicable.

SECTION 7: 747-8 - continued

VI Notes

1. Boeing and GE have determined that the GEnx engines on these aircraft intermittently emit a sometimes clearly visible fuel vapor fog after shutdown, as a result of a small quantity of fuel being released from the engine's fuel system. These emissions do not present a safety issue or appreciable environmental impact. Boeing and GE will modify the design of the aircraft and engines by December 31, 2012 to completely eliminate this fuel venting on new aircraft. Boeing has included an airworthiness limitation in the instructions for continued airworthiness for the affected aircraft requiring incorporation of the modified design by December 31, 2014.

SECTION 8: ADMINISTRATIVE

I. Acronyms and Abbreviations

N/A

II. Type Certificate Holder Record

The Boeing Company
P.O. Box 3707
Seattle, WA 98124-2207
United States of America

III. Change Record

Issue	Date	Changes
Issue 01	05/03/10	First issue of EASA TCDS.
Issue 02	23/03/10	Section 2/III/2. Description (page 5): Number of engines corrected to four
Issue 03	31/03/10	Issue number and date corrected on cover page (editorial change only)
Issue 04	06/10/10	Correction of APU for B747-400
Issue 05	19/08/11	Addition of variant B747-8F/Section 6 B747-400BCF/Section 5: I/4 Addition of EASA Validation Date IV/2 Correction of document reference Editorial changes
Issue 06	15/09/11	Correction of 747-8F Maximum Operating Altitude, Maximum Certified Weights,and Maximum Seating Capacity Editorial changes
Issue 07	28/10/11	Additional of Engine variant GEnx-2B67B to section 6.III.5
Issue 08	23/11/11	Correction of paragraphs and references in Section 6, B747-8F
Issue 09	15/12/11	Addition of variant B747-8/Section 7 Correction of paragraphs and references in Section 6, B747-8F
Issue 10	29/06/12	Addition of SC B747-8/H-01 in Section B747-8/Section 7 Revision of 747-8F certified weights
Issue 11	05/02/14	Addition of GEnx-2B67/P and related Warning for Engine Interchangeability in Sections B747-8F (Section 6) and B747-8 (Section 7). Correction of APU for 747-400F
Issue 12	9/30/15	Modifying the Maximum Certified Masses on the MLW aand MZFW.
Issue 12	09/30/15	Addition of information regarding the 747SP
Issue 13	17/3/2016	Information regarding the OSD changes
Issue 14	31/10/2016	Addition of new Section 4.II.4, Environmental Protection Standards. Addition of increased gross weights information regarding the 747-400F, version 747-400ERF, 747-400F (910K) in section 4.III.4 Addition of engine variant PW4062A to section 4.III.12
Issue 15	08/12/2016	For the 747-400 and 747-8 models, the corresponding Section 19 regarding Minimum Cabin Crew is updated
Issue 16	30/10/2017	For all 747 models, the certification basis section is modified to introduce generic Boeing CRI F-GEN-11 (Special Conditions for Non-rechargeable Lithium Batteries Installations)
Issue 17	18/12/2018	For the 747-400 and 747-8 models, the certification basis section is modified to introduce generic Boeing CRIs D-GEN-7 (Equivalent Safety Finding for Flammability Testing Hierarchy) and CRI G-GEN2 (Equivalent

		Safety Finding for Engine and APU Fire Switch Handle Design)
Issue 18	01/10/2024	Part 26 Compliance information added in Section 1 (All Models) Section 2.III.19 & Section 6.III.18: improved wording for occupant capacity on freighter aircraft. For several models, the certification basis section is modified to introduce generic Boeing CRIs: - D-GEN8 (Special Conditions on Installation of oblique Seats) - D-GEN9 (Special Conditions on Incorporation of Inertia Locking Device in Dynamic Seats) - D-GEN10 (Special Conditions on Installation of Suite Type Seating) - D-GEN11 (Special Conditions on Installation of structure mounted airbags) - G-GEN1 (Equivalent Safety Finding on Instructions for Continued Airworthiness)
Issue 19	17/12/2024	UANSOG information added in Section 6.IV.3 & Section 7.IV.3 Operating and Servicing Instructions