



**I. Model 777-200 (cont'd):**

Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable. The fuel and any fuel additives must conform to the relevant Engine Operating Instructions.

**Engine Ratings & Operating Limits:****Pratt & Whitney Engines:**

See the FAA approved Flight Manual for engine ratings and operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.

**General Electric Engines:**

See the FAA approved Airplane Flight Manual for engine ratings. See the FAA approved Airplane Flight Manual and Note 6 for engine operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.

**Rolls-Royce Engines:**

See the FAA approved Airplane Flight Manual for engine ratings. See the FAA approved Airplane Flight Manual and Note 6 for engine operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.

**Airspeed Limits:**

VMO/MMO = 330KIAS/.87M.

For other airspeed limits, see the appropriate FAA approved Airplane Flight Manual.

**CG Range:**

See the appropriate FAA approved Airplane Flight Manual.

**Maximum Weights:**

See the appropriate FAA approved Airplane Flight Manual.

**Model****Eligible Serial Numbers**

777-206

28691, 29397-29399, 32704, 32705, 32720, 32721, 33711-33714, 34711, 34712, 35295

777-212

28507-28514, 28518-28527, 28529-28533, 28998, 28999, 30866-30875, 32316, 32318, 32320, 32321, 32334-32336, 33368-33373

777-219

29401, 29403, 29404, 32712, 34376-34379

777-222

26916-26919, 26921, 26924-26948, 26950, 26951, 26953, 26954, 28713, 28714, 30212-30226, 30549-30557

777-223

29578-29588, 29955, 29956, 30003-30005, 30010-30012, 30250-30264, 30797-30798, 31477-31479, 32636-32638, 32879, 32880, 33539, 33540

777-224

27577-27581, 28678, 28679, 29476-29480, 29859-29862, 31679, 31680, 31687, 35547, 39776, 39777

777-228

27609, 28675, 28682-28684, 29002-29011, 30456-30457, 30614-30615, 32305, 32306, 32308-32311, 32698

777-232

29734-29738, 29743, 29951, 29952

777-236

27105-27109, 27483-27493, 28840, 28841, 29319-29323, 29962-29967, 30302-30317, 36516-36519

777-240

33775-33777, 35296

777-243

32781-32784, 32855-32860

777-246

27364-27366, 27651-27653, 27656, 27657, 32889-32896, 33394-33396

777-258

30831-30833, 33169, 36083, 36084

777-266

28423-28425, 32629, 32630

777-267

27263-27266, 27116

777-268

28344-28366

777-269

28743, 28744

777-281

27027-27037, 27938, 28276-28279, 29029, 32646, 32647, 33406, 33407, 33414, 33415, 40900-40904

777-289

27636-27642

777-21B

27357-27360, 27524, 27525, 27604-27606, 32703

777-21H

27247-27253, 29324, 29325

777-24Q

29271

777-26K

33502-33505

777-28E

28681, 28685, 28686, 29171, 29174, 29175, 30859-30862, 35525, 40198, 40199

**I. Model 777-200 (cont'd):**

777-2AN	29953, 29956
777-2B5	27945-27947, 27949, 27951, 28372, 28444, 28445, 33727, 34206-34214
777-2D7	27726-27733, 34586-34591
777-2H6	28408-28422, 29065, 29066
777-2J6	29153-29157, 29744-29748
777-2M2	34565-34567
777-2Q8	27607, 27608, 28676, 28688, 28689, 28692, 29402, 29908, 32701, 32716-32719
777-2U8	33681-33683, 36124
777-2Z9	28698, 28699, 29313, 35960

**PERTINENT DATA**

Minimum Crew: Two (2): pilot and copilot

Maximum Passengers: 440

Maximum Baggage/Cargo: See appropriate FAA approved Weight and Balance Manual.

Fuel and Oil Capacities: See appropriate FAA approved Weight and Balance Manual.

Certification Basis: A. 14 CFR part 25 of the Federal Aviation Regulations:  
Amendment 25-1 through 25-82, except for:  
§25.571(e)(1) which remains at amendment 25-71 level.  
§25.1457 at amendment 25-124 applicable to Line Number 858 and on.  
§25.1459 at amendment 25-124 applicable to Line Number 858 and on.

**Optional Design Regulations:**

Ditching: §25.801, 25.1411(d), (e), (f), (g) and 25.1415

Ice Protection: §25.1419

**14 CFR part 26:**

Based on 14 CFR §21.101(g) for changes made to TCs applicable provisions of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections

Compliance has been found for the following regulations at Amendment 26-0: §26.11

Compliance has been found for the following regulations at Amendment 26-1: §26.43, 26.45, 26.47, and 26.49

Compliance has been found for the following regulations at Amendment 26-3: §26.33 and §26.39

In addition to 14 CFR part 25 of FARs, the type certification basis for the Model 777-200 airplane includes compliance with the emissions standards of 14 CFR part 34, Amendment 34-1 through 34-3, and with the noise standards of 14 CFR part 36, Amendment 36-1 through 36-28.

**Exemptions from 14 CFR part 25:**

1. Floor Warpage for Flight Deck Seats Exemption from 14 CFR 25.562(b)(2). (Exemption No. 5436, April 1, 1992).
2. Partial Exemption from 14 CFR 25.1435(b)(1), Hydraulic Proof Pressure Test. (Exemptions No. 5758, Oct. 1, 1993 and No. 5758A, Oct. 29, 1993).
3. Partial Exemption from 14 CFR 25.901(c), No single powerplant or auxiliary power unit failure will jeopardize the safe operation of the airplane. (Exemption No. 7955, January 17, 2003) See Note 8
4. Partial Time-Limited Exemption from 14 CFR §25.853(a), appendix F, paragraph (a)(1)(i), Testing on Large Interior Panels, granted through November 28, 2011. (Exemption No. 9791, November 28, 2008, Exemption No. 9791B, March 1, 2010, Exemption No. 9791C, February 4, 2011)
5. Partial Time Limited Exemption from 14 CFR 25.301, 25.303, 25.305, 25.307, 25.601, 25.603, 25.613, 25.901(b)(2), 25.901(c), 25.1103(d), 25.1191, and 25.1301(d), Thrust reverser inner wall damage and pneumatic duct failures on all Rolls Royce engine powered 777 series aircraft production line numbers 1 through 796, granted through October 27, 2015. (Exemption No. 9949, October 27, 2009)

**I. Model 777-200 (cont'd):**

6. Time-Limited Exemption from 14 CFR 25.1535 as specified in Appendix K, §K25.1.4(a)(3) as the regulation applies to low-fuel alerting for approval extended operations (ETOPS) beyond 180 minutes, granted through January 11, 2015 (Exemption No. 10193, January 11, 2011) (Exemption No. 10193A, December 17, 2013)
7. Time-Limited Exemption from 14 CFR 25.901(c), Amendment 25-126 and 25.981(a)(3), Amendment 25-125, as they pertain to fuel-tank-ignition prevention associated with the FQIS, limited to design changes within the FQPU in support of parts obsolescence, for in-service Model 777-200 and -300 series airplanes prior to line number 562. (Exemption No. 10922, January 31, 2014)

Equivalent Safety Findings exist with respect to the following regulations:

14 CFR §25.125(a)(2) and §25.149 - Landing Minimum Control Speed.

14 CFR 25.331(d), 25.333, 25.335(d), 25.341, 25.345, 25.349(b), 25.351(b), 25.371, 25.373, 25.391, and 25.427 - Design Gust Criteria.

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS09-0445-CS-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS13-0075-C-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - for Single Occupant Side-Facing Seats.(documented in ELOS Memo PS13-0216-C-1)

14 CFR 25.562(b)(2) - Emergency Landing Dynamic Conditions

14 CFR 25.785(f)(3) - for Flexible Interior Items Track Mounted 1.33 Fitting Factor.

14 CFR 25.791(a) and FAR 25.853(d) – “No Smoking” Limitation in the passenger compartment

14 CFR 25.803(c) - for Inoperative Floor Proximity Light System during the Full Scale Evacuation Demonstration.

14 CFR 25.811 - Exterior Exit Markings

14 CFR 25.811(f) - Door sill reflectance

14 CFR 25.813(e) – Doors between passenger compartments (documented in Transport Airplane Directorate ELOS Memo PS05-0272-C-1)

14 CFR 25.819 - Lower Lobe Attendant Rest (LLAR)

14 CFR 25.853(a) – Adhesives used in interior panel bent joint potting applications (documented in TAD ELOS Memo PS08-0670-C-1)

14 CFR 25.869(a)(4) - for Fiber Optic Cables used in the Model 777.

14 CFR 25.933(a)(1)(ii) - Inflight Thrust Reverser Deployment Demonstration.

14 CFR 25.981, Amdt 25-125 - Fuel tank ignition prevention (see Note 12)

14 CFR part 25.981, Amdt 25-125 - for the Fuel Tank Flammability Rule (FTFR). (documented in ELOS Memo PS05-0177-P-2)

14 CFR 25.1182(a) and 25.1183(a) - for Fire Resistant Requirement for Hydraulic Components Located in the Strut Aft Fairing.

14 CFR 25.1183(a) - Fire Resistance of Power Door Opening System on Engine Compartments (GE Engines)

14 CFR 25.1303(c)(1) - Overspeed Aural Warning.

14 CFR 25.1305(c)(7) - Warning Means for Engine Oil Filter Indication Contamination. (PW engines only)

14 CFR 25.1351(b)(5) - Flight Controls DC Power

14 CFR 25.1387(b) & (c) - for Forward Position Lights.

14 CFR 25.1389(b)(3) – Red and Green Position Lights - Aft Lamps Only

14 CFR 25.1441(c) Crew Determination of the Quantity of Oxygen Available in the Lavatory Passenger Service Units Bottles (documented in ELOS Memo PS13-0901-ES-1)

14 CFR 25.1443(c) Determination of Minimum Oxygen Flow for the Lavatory Oxygen System (documented in TAD ELOS Memo TS13-0005-S-1)

14 CFR 25.1459(a)(2) - for Flight Data Recorder Accelerometers.

14 CFR 25. (several sections) Use of 1g Speed Instead of Minimum Speed in the Stall as a Basis for Compliance. (All 14 CFR 25 Sections, except structural, dealing with stall speeds/related factors for turbojet airplanes).

Special Conditions with respect to the following subjects apply to the Model 777-200:

Special Conditions No. 25-ANM-78, effective on December 10 1993, addressed the following issues:

1. Operation without Normal Electrical Power
2. Integrated Command Signal Integrity
3. Protection from Lightning and High-Intensity Radiated Fields Protection
4. Effect of Flight Control Systems on Structure

**I. Model 777-200 (cont'd):**

5. Design Maneuver Requirements
6. Limit Engine Torque Loads for Sudden Engine Stoppage
7. Flight Characteristics Compliance via Handling Qualities Rating Method
8. Electronic Flight Control System - Control Surface Awareness

Note: (Special Conditions on lightning are no longer part of the Type Certificate as a result of Boeing's voluntary compliance with Amendment 25-80 which resulted in issuance of 14 CFR 25.1316, "System Lightning Protection").

Special Conditions No. 25-ANM-84A, effective on October 8, 2003, addressed airplane type design approval for Extended Range Operation With Two-Engine Airplanes (ETOPS).

Special Conditions No. 25-141-SC, effective on December 7, 1998, Seats With Articulating Seat Backs

Special Conditions No. 25-187A-SC, effective on October 29, 2004, addressed seats with inflatable lapbelts.

Special Conditions No. 25-192-SC, effective on November 6, 2001, addressed Overhead Crew Rest Compartments.

Special Conditions No. 25.230-SC, effective on April 9, 2003, addressed Overhead Crew Rest Compartments

Special Conditions No. 25-260-SC, effective on April 14, 2004, addressed the Overhead Crew Rest Compartment Occupiable During Taxi, Take-off, and Landing

Special Conditions No. 25.295-SC, effective on August 9, 2005, Side-Facing Single-Occupant Seats equipped with inflatable lapbelts

Special conditions No. 25-336-SC, published in the Federal Register on November 15, 2006, addressed overhead cross aisle stowage compartments

Special Conditions No. 25-367-SC, effective on February 7, 2008, addressed Seats With Non-Traditional, Large, Non-Metallic Panels

Special Conditions No. 25-503-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized Internal Access

Special Conditions No. 25-504-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized External Access

**II - Model 777-300 Series (Transport Category) Approved May 4, 1998**

Engines: 2 Rolls-Royce Turbofan Model: RB211-Trent 884-17, RB211-Trent 884B-17, or RB211-Trent 892-17  
(Engine Type Certificate E00050EN)

2 Pratt & Whitney Turbofan Model: PW4090, PW4098  
(Engine Type Certificate E46NE)

Fuel: Rolls-Royce Engines:  
Fuel conforming to:  
ASTM D-1655 grades Jet-A and Jet A-1,  
MIL-T-5624 grade JP-5, and  
MIL-T-83133 grade JP-8, and  
Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable. The fuel and any fuel additives must conform to the relevant Engine Operating Instructions.

Pratt & Whitney Engines:  
ASTM D-1655 grades Jet-A and Jet A-1,  
MIL-T-5624 grade JP-5, and  
MIL-T-83133 grade JP-8 are acceptable.  
Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable. The fuel and any fuel additives must conform to the latest approved version of P&W Service Bulletin 2016.

Engine Ratings &  
Operating Limits:

Rolls-Royce Engines:

See the FAA approved Airplane Flight Manual for engine ratings. See the FAA approved Airplane Flight Manual and Note 6 for engine operating limits. The normal 5 minute takeoff time limit may

**II. 777-300 (cont'd):**

be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.

Pratt & Whitney Engines:

See the FAA approved Flight Manual for engine ratings and operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.

Airspeed Limits:

VMO/MMO = 330KIAS/.89M.

For other airspeed limits, see the appropriate FAA approved Airplane Flight Manual.

CG Range:

See the appropriate FAA approved Airplane Flight Manual.

Maximum Weights:

See the appropriate FAA approved Airplane Flight Manual.

**Model**

777-312

777-346

777-367

777-381

777-3B5

777-3D7

777-31H

**Eligible Serial Numbers**

28515-29517, 28528, 28531, 28534, 30868, 32317, 32327, 33374-33376

27654, 27655, 28393-28397

27504-27510, 33702-33704, 34243, 34244

27039, 27040, 27939, 28272-28275

27948, 27950, 27952, 28371

29150, 29151, 29211-29214

28680, 28687, 29062-29064, 29067, 29395-29397, 32699, 32700, 32702

**PERTINENT DATA**

Minimum Crew:

Two (2): pilot and copilot. One flight attendant is required at each door no. 3 overwing exit.

Maximum Passengers:

550 For passenger capacity above 500, an 11th flight attendant is required at door 3 exit.

Maximum Baggage/Cargo:

See appropriate Weight and Balance Manual.

Fuel and Oil Capacities:

See appropriate Weight and Balance Manual.

Minimum Required Fuel:

See appropriate FAA approved Airplane Flight Manual.

Maximum Operating

Altitude:

43,100 feet

Certification Basis:

A. Part 25 of the Federal Aviation Regulations:

Amendment 25-1 through 25-86, except for

14 CFR 25.201 which remains at Amendment 25-83,

14 CFR 25.203 which remains at Amendment 25-83,

14 CFR 25.571(e)(1), which remains at Amendment 25-71 (remains from 777-200 certification basis),

14 CFR 25.335(d) which remains at Amendment 25-85,

14 CFR 25.853(d)(3), which remains at Amendment 25-82,

14 CFR 25.1457, which is at Amendment 25-124 applicable to Line Number 858 and on,

14 CFR 25.1459, which is at Amendment 25-124 applicable to Line Number 858 and on.

14 CFR part 26:

Based on 14 CFR §21.101(g) for changes made to TCs applicable provisions of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections

Compliance has been found for the following regulations at Amendment 26-0§26.11

Compliance has been found for the following regulations at Amendment 26-1: §26.43, 26.45, 26.47, and 26.49

Compliance has been found for the following regulations at Amendment 26-3: §26.33 and §26.39

14 CFR part 34 of the Federal Aviation Regulations:

Amendment 34-1.

14 CFR part 36 of the Federal Aviation Regulations:

Amendment 36-1 through 36-20

**II. 777-300 (cont'd):****Optional Design Regulations:**

Ditching: 14 CFR 25.801, 25.1411(d), (e), (f), (g) and 25.1415

Ice Protection: 14 CFR 25.1419

Exemptions from 14 CFR part 25:

1. Floor Warpage for Flight Deck Seats Exemption from 14 CFR 25.562(b)(2) (Exemption No. 5436, April 1, 1992 and No. 5436A, January 3, 1997).
2. Partial Exemption from 14 CFR 25.1435(b)(1), Hydraulic Proof Pressure Test. (Exemptions No. 6504, September 3, 1996).
3. Partial Exemption from 14 CFR 25.901(c), No single powerplant or auxiliary power unit failure will jeopardize the safe operation of the airplane. (Exemption No. 7955, January 17, 2003) See Note 8.
4. Partial Time-Limited Exemption from 14 CFR §25.853(a), appendix F, paragraph (a)(1)(i), Testing on Large Interior Panels, granted through November 28, 2011. (Exemption No. 9791, November 28, 2008, Exemption No. 9791B, March 1, 2010, Exemption No. 9791C, February 4, 2011)
5. Partial Time Limited Exemption from 14 CFR 25.301, 25.303, 25.305, 25.307, 25.601, 25.603, 25.613, 25.901(b)(2), 25.901(c), 25.1103(d), 25.1191, and 25.1301(d), Thrust reverser inner wall damage and pneumatic duct failures on all Rolls Royce powered 777 series aircraft production line numbers 1 through 796, granted through October 27, 2015. (Exemption No. 9949, Oct 27, 2009)
6. Time-Limited Exemption from 14 CFR 25.901(c), Amendment 25-126, and 25.981(a)(3), Amendment 25-125, as they pertain to fuel-tank-ignition prevention associated with the FQIS, limited to design changes within the FQPU in support of parts obsolescence, for in-service Model 777-200 and -300 series airplanes prior to line number 562. (Exemption No. 10922, January 31, 2014)

Equivalent Safety Findings exist with respect to the following regulations:

14 CFR 25.201 – Stall Demonstration (documented in TAD ELOS Memo AT3908SE-T-F-8)

14 CFR 25.201(d) – Stall identification/characteristics (documented in TAD ELOS Memo AT3907SE-T-F-8)

14 CFR 25.203 – Stall Characteristics (documented in TAD ELOS Memo AT3908SE-T-F-8)

14 CFR 25.203(a) – Stall identification/characteristics (documented in TAD ELOS Memo AT3907SE-T-F-8)

14 CFR 25.331(d), 25.333, 25.341, 25.345, 25.349(b), 25.351(b), 25.371, 25.373, 25.391, and 25.427 - Design Gust Criteria.

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS09-0445-CS-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS13-0075-C-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - for Single Occupant Side-Facing Seats.(documented in ELOS Memo PS13-0216-C-1)

14 CFR 25.785(f)(3) - for Flexible Interior Items Track Mounted 1.33 Fitting Factor.

14 CFR 25.791(a) and 14 CFR 25.853(d) – “No Smoking” Limitation in the passenger compartment

14 CFR 25.803(c) – Inoperative Floor Proximity Light System during Full Scale Evacuation Demonstration

14 CFR 25.807(g) – Emergency Exits, Type and Number Required

14 CFR 25.810 - Off-wing Escape System/Bottle Loss During Landing Gear Collapse

14 CFR 25.811(f) - Door Sill Reflectance

14 CFR 25.811(f) - Exterior Exit Marking

14 CFR 25.813(e) – Doors between passenger compartments (documented in Transport Airplane Directorate ELOS Memo PS05-0272-C-1)

14 CFR 25.853(a) – Adhesives used in interior panel bent joint potting applications (documented in TAD ELOS Memo PS08-0670-C-1)

14 CFR 25.869(a)(4) - for Fiber Optic Cables used in the Model 777.

14 CFR 25.933(a)(1)(ii) - Inflight Thrust Reverser Deployment Demonstration.

14 CFR 25.981, Amdt 25-125 - Fuel tank ignition prevention (see Note 12)

14 CFR part 25.981, Amdt 25-125 - for the Fuel Tank Flammability Rule (FTFR). (documented in ELOS Memo PS05-0177-P-2)

14 CFR 25.1182(a) and 25.1183(a) - for Fire Resistant Requirement for Hydraulic Components Located in the Strut Aft Fairing.

14 CFR 25.1303(c)(1) - Overspeed Aural Warning.

14 CFR 25.1305 and 25.1501(b) - APU Instrumentation and Monitoring Requirements.

**II. 777-300 (cont'd):**

- 14 CFR 25.1305(c) (7) - Warning Means for Engine Oil Filter Indication Contamination.
  - 14 CFR 25.1351(b)(5) - for Flight Controls DC Power.
  - 14 CFR 25.1387(b) & (c) - for Forward Position Lights.
  - 14 CFR 25.1389(b)(3) - for Red and Green Position Lights, Aft Lamps Only.
  - 14 CFR 25.1441(c) Crew Determination of the Quantity of Oxygen Available in the Lavatory Passenger Service Units Bottles (documented in ELOS Memo PS13-0901-ES-1)
  - 14 CFR 25.1443(c) Determination of Minimum Oxygen Flow for the Lavatory Oxygen System (documented in TAD ELOS Memo TS13-0005-S-1)
  - 14 CFR 25.1459(a)(2) - for Flight Data Recorder Accelerometers.
  - 14 CFR 25. (several sections) Use of 1g Speed Instead of Minimum Speed in the Stall as a Basis for Compliance. (All 14 CFR 25 Sections, except structural, dealing with stall speeds/related factors for turbojet airplanes).
- Special Conditions with respect to the following subjects apply to the Model 777-300:  
 Special Conditions No. 25-ANM-78, effective December 10, 1993, addressed the following issues:
1. Operation without Normal Electrical Power
  2. Integrated Command Signal Integrity
  3. Protection from Lightning and High-Intensity Radiated Fields Protection
  4. Effect of Flight Control Systems on Structure
  5. Design Maneuver Requirements
  6. Limit Engine Torque Loads for Sudden Engine Stoppage
  7. Flight Characteristics Compliance via Handling Qualities Rating Method
  8. Electronic Flight Control System - Control Surface Awareness

Note: (Special Conditions on lightning are no longer part of the Type Certificate as a result of Boeing's voluntary compliance with Amendment 25-80 which resulted in issuance of 25.1316, "System Lightning Protection").

- Special Conditions No. 25-ANM-84A, effective on October 8, 2003, addressed airplane type design approval for Extended Range Operation With Two-Engine Airplanes (ETOPS).
- Special Conditions No. 25-141-SC, effective on December 7, 1998, Seats With Articulating Seat Backs
- Special Conditions No. 25-187A-SC, effective on October 29, 2004, addressed seats with inflatable lapbelts.
- Special Conditions No. 25.230-SC, effective on April 9, 2003, addressed Overhead Crew Rest Compartments
- Special Conditions No. 25-260-SC, effective on April 14, 2004, addressed the Overhead Crew Rest Compartment Occupiable During Taxi, Take-off, and Landing
- Special Conditions No. 25.295-SC, effective on August 9, 2005, Side-Facing Single-Occupant Seats equipped with inflatable lapbelts
- Special conditions No. 25-336-SC, published in the Federal Register on November 15, 2006, addressed overhead cross aisle stowage compartments
- Special Conditions No. 25-367-SC, effective on February 7, 2008, addressed Seats With Non-Traditional, Large, Non-Metallic Panels
- Special Conditions No. 25-503-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized Internal External Access
- Special Conditions No. 25-504-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized External Access

**III - Model 777-300ER Series (Transport Category) Approved March 16, 2004**

- Engines: 2 General Electric Turbofan Model: GE90-115B  
(Engine Type Certificate No. E00049EN)
- Fuel: General Electric Engines:  
 Fuels conforming to:  
 ASTM D-1655 grades Jet-A and Jet A-1,  
 MIL-T-5624 grade JP-5, and  
 MIL-T-83133 grade JP-8, and  
 Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable. The fuel and any fuel additives must conform to the latest approved version of GE Aviation Turbine Fuels Specification D50TF2.
- Engine Ratings & Operating Limits: General Electric Engines:



**III. 777-300ER (cont'd):**

See the FAA approved Airplane Flight Manual for engine ratings. See the FAA approved Airplane Flight Manual and Note 6 for engine operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual

Airspeed Limits: VMO/MMO = 330KEAS/.89M.

For other airspeed limits, see the appropriate FAA approved Airplane Flight Manual.

CG Range: See the appropriate FAA approved Airplane Flight Manual.

Maximum Weights: See the appropriate FAA approved Airplane Flight Manual.

<u>Model</u>	<u>Eligible Serial Numbers</u>
777-306ER	35671, 35947, 35979, 36145, 37582, 38867, 39972, 42172
777-312ER	34568-34585, 42235, 42236, 42237
777-319ER	38405-38407, 39041, 40689, 44546,44547
777-323ER	31543, 31546- 31548, 31550, 31553, 31554, 33125, 33127, 33522, 33523, 33541, 41665, 41666. 41668
777-328ER	32711, 32723-32727, 32846-32854, 32960-32964, 32968, 35297, 35542-35544, 35676, 35677, 35678, 37432, 37433, 38665, 38706, 39971, 39973, 40063, 40376
777-333ER	35240-35242, 35248-35251, 35254-35256, 35298, 35784, 42218, 42219, 43249-43251
777-336ER	38430, 38431, 40542, 40543, 42121, 42124, 42143, 43702, 43703
777-337ER	36308-36319
777-340ER	33778-33780
777-346ER	32430-32437, 36126-36130
777-367ER	34432, 35299-35301, 36154-36165, 36832, 36833, 37896, 37897-37901, 39232-39237, 41428, 41429- 41433, 41757-41759, 41760-41762, 42142- 42144
777-368ER	41048-41055, 41057, 41058, 41059
777-381ER	27038, 27041, 27940 ,28281, 32649-32651, 33416, 34892-34894, 34895, 37948-37951, 40686, 40687
777-31BER	43219-43222
777-31HER	32706-32710, 32713-32715, 32728 -32730, 33501, 34481-34484, 35574, 35575, 35579-35581, 35583-35585, 35588, 35591-35605, 38980-38991, 41070-41087, 41359, 41360, 41361-41364, 41365, 41366-41368, 41370
777-32WER	37664-37667, 38886-38889, 40588, 40589, 41361
777-35EER	32639-32645, 33750-33757, 43289
777-35RER	35157-35166, 36563
777-36NER	32785, 32787-32795, 33862-33865, 37703-37707, 37709, 37712, 38284-38291, 38695, 38696, 41740, 41818-41822, 42101-42103
777-39LER	38666- 38680, 41441-41443, 44931, 60374
777-39MER	37434
777-39PER	43269, 43288
777-3ALER	41520- 41527
777-3DZER	36009-36011, 36014, 36095, 36096, 36097, 36103, 36104, 37661, 37662, 38244-38248, 41062, 41738, 41739, 41741, 41778, 41779, 41780, 41781, 43215, 43216, 60330
777-3FXER	34597-34601, 39681, 39683-39690, 39700,41699, 41700,41701,44548
777-3ZGER	35302, 37938-37940, 37943
777-3B5ER	37136, 37643-37651, 40377, 41998
777-3D7ER	42110- 42112
777-3E9ER	40120-40123
777-3F2ER	40707-40711, 40791-40797,44116-44118
777-3F6ER	35555, 35556, 38718,38719
777-3M0ER	41679- 41684, 41686-41689
777-3M2ER	40805, 40806, 43252
777-3Q8ER	35782, 35783
777-3U3ER	29143,29146-29148, 40074, 40075
777-3U8ER	42097

**PERTINENT DATA**

Minimum Crew: Two (2): pilot and copilot. One flight attendant is required at each door no. 3 overwing exit.

Maximum Passengers: 550. For passenger capacity above 500, an 11th flight attendant is required at door 3 exit.

**III. 777-300ER (cont'd):**

Maximum Baggage/Cargo: See appropriate FAA approved Weight and Balance Manual.

Fuel and Oil Capacities: See appropriate FAA approved Weight and Balance Manual.

Minimum Required Fuel: See appropriate FAA approved Airplane Flight Manual.

Maximum Operating Altitude: 43,100 feet

Certification Basis: A. 14 CFR part 25 of the Federal Aviation Regulations: Amendment 25-1 through 25-98, except for:  
 §14 CFR 25.3(b)(2) at amendment 25-120  
 §25.831(a) and (g) which remains at amendment 25-86,  
 §25.841(a), which remains at amendment 25-86, and  
 §25.853(d)(3), which remains at amendment 25-82.  
 §25.1457 at amendment 25-124 applicable to Line Number 858 and on.  
 §25.1459 at amendment 25-124 applicable to Line Number 858 and on.  
 §25.1517 is not part of the TC  
 §25.1535 at amendment 25-120

14 CFR part 26:

Based on 14 CFR §21.101(g) for changes made to TCs applicable provisions of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections

Compliance has been found for the following regulations at Amendment 26-0: §26.11

Compliance has been found for the following regulations at Amendment 26-1: §26.43, 26.45, 26.47, and 26.49

Compliance has been found for the following regulations at Amendment 26-3: §26.33 and §26.39

14 CFR part 34 of the Federal Aviation Regulations:

Amendment 34-1 through 34-3.

14 CFR part 36 of the Federal Aviation Regulations:

Amendment 36-1 through 36-24.

**Optional Design Regulations:**

Ditching: 14 CFR 25.801, 25.1411(d), (e), (f), (g) and 25.1415

Ice Protection: 14 CFR 25.1419

Exemptions from 14 CFR Part 25:

1. Floor Warpage for Flight Deck Seats Exemption from 14 CFR 25.562(b)(2). (Exemption No. 5436, April 1, 1992 and No. 5436A, January 3, 1997 and No. 5436B, November 15, 2000).
2. Partial Exemption from 14 CFR 25.1435(b)(1), Hydraulic Proof Pressure Test. (Exemption No. 7478, March 28, 2001).
3. Partial Exemption from 14 CFR 25.901(c), Thrust Control Malfunction Accommodation and Single Failures of Thrust Levers (Exemption No. 7955, January 17, 2003).
4. Partial Time-Limited Exemption from 14 CFR §25.853(a), appendix F, paragraph (a)(1)(i), Testing on Large Interior Panels, granted through November 28, 2011. (Exemption No. 9791, November 28, 2008, Exemption No. 9791B, March 1, 2010, Exemption No. 9791C, February 4, 2011)
5. Business Class Seat installation on Boeing model 777-300ER aircraft from 14 CFR 853(d) and Special Condition 25-367-SC, condition 1, granted October 25, 2010 (Exemption No. 10156, October 25, 2010)
6. Time-Limited Exemption from 14 CFR 25.1535 as specified in Appendix K, §K25.1.4(a)(3) as the regulation applies to low-fuel alerting for approval for extended operations (ETOPS) beyond 180 minutes, granted through January 11, 2015 (Exemption No. 10193, January 11, 2011) (Exemption No. 10193A, December 17, 2013)

Equivalent Safety Findings exist with respect to the following regulations:

14 CFR 25.201(d) – Stall Demonstration

14 CFR 25.203(a) – Stall Characteristics

14 CFR 25.335(b) – Dive Speed Definition with Dive Speed Protection

**III. 777-300ER (cont'd):**

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS09-0181-C-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS09-0445-CS-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS13-0075-C-1)

14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - for Single Occupant Side-Facing Seats.(documented in ELOS Memo PS13-0216-C-1)

14 CFR 25.571(b) – Freedom from Wide Spread Structural Fatigue Damage

14 CFR 25.613 – Material strength properties and material design vaules (documented in Transport Airplane Directorate ELOS Memo AT3907SE-T-A-15)

14 CFR 25.723(a) – Shock Absorption

14 CFR 25.791(a) and 25.853(d) – “No Smoking” Limitation in the passenger compartment

14 CFR 25.809(b)(2) and 25.810(a)(1) – Escape Slide Inflation Times

14 CFR 25.810 - Off-wing Escape System/Bottle Loss During Landing Gear Collapse

14 CFR 25.811 - Exterior Exit Marking

14 CFR 25.811(f) - Door Sill Reflectance

14 CFR 25.813(e) – Doors between passenger compartments (documented in Transport Airplane Directorate ELOS Memo PS05-0272-C-1)

14 CFR 25.831(a) – Airplane Operation with Air Conditioning Packs Off During Takeoff

14 CFR 25.853(a) – Adhesives used in interior panel bent joint potting applications (documented in TAD ELOS Memo PS08-0670-C-1)

14 CFR 25.869(a)(4) - for Fiber Optic Cables used in the Model 777.

14 CFR 25.933(a)(1)(ii) - Inflight Thrust Reverser Deployment Demonstration

14 CFR 25.934 – Thrust Reverser Installation for Engine Endurance Testing

14 CFR 25.981, Amdt 25-125 - Fuel tank ignition prevention (see Note 12)

14 CFR part 25.981, Amdt 25-125 - for the Fuel Tank Flammability Rule (FTFR). (documented in ELOS Memo PS05-0177-P-2)

14 CFR 25.1182(a) and 25.1183(a) - for Fire Resistant Requirement for Hydraulic Components Located in the Strut Aft Fairing.

14 CFR 25.1183(a) – Fire Resistance of Power Door Opening system on Engine Compartments (GE Engines)

14 CFR 25.1303(c)(1) - Overspeed Aural Warning.

14 CFR 25.1305 and 25.1501(b) - APU Instrumentation and Monitoring Requirements.

14 CFR 25.1351(b)(5) - for Flight Controls DC Power.

14 CFR 25.1389(b)(3) – Red & Green Position Lights (documented in TAD ELOS Memo AT3908SE-T-SE-25)

14 CFR 25.1395 - Red & Green Position Lights (documented in TAD ELOS Memo AT3908SE-T-25)

14 CFR 25.1441(c) Crew Determination of the Quantity of Oxygen Available in the Lavatory Passenger Service Units Bottles (documented in ELOS Memo PS13-0901-ES-1)

14 CFR 25.1443(c) Determination of Minimum Oxygen Flow for the Lavatory Oxygen System (documented in TAD ELOS Memo TS13-0005-S-1)

14 CFR 25.1459(a)(2) - for Flight Data Recorder Accelerometers.

14 CFR 25. (several sections) Use of 1g Speed Instead of Minimum Speed in the Stall as a basis for Compliance.

Special Conditions with respect to the following subjects apply to the Model 777-300ER:  
Special Conditions No. 25-ANM-78, effective on December 10, 1993, addressed the following issues:

1. Operation without Normal Electrical Power
2. Integrated Command Signal Integrity
3. Protection from Lightning and High-Intensity Radiated Fields Protection
4. Effect of Flight Control Systems on Structure
5. Design Maneuver Requirements
6. Limit Engine Torque Loads for Sudden Engine Stoppage
7. Flight Characteristics Compliance via Handling Qualities Rating Method
8. Electronic Flight Control System - Control Surface Awareness

Note: (Special Conditions on lightning are no longer part of the Type Certificate as a result of Boeing’s voluntary compliance with Amendment 25-80 which resulted in issuance of 25.1316, “System Lightning Protection”).

**III. 777-300ER (cont'd):**

Special Conditions No. 25-ANM-84A, effective on October 8, 2003, addressed airplane type design approval for Extended Range Operation With Two-Engine Airplanes (ETOPS).

Special Conditions No. 25-07-12-SC, effective on June 1, 2007, Lithium Ion Battery installation

Special Conditions No. 25-141-SC, effective on December 7, 1998, Seats With Articulating Seat Backs

Special Conditions No. 25-187A-SC, effective on October 29, 2004, addressed seats with inflatable lapbelts.

Special Conditions No. 25.230-SC, effective on April 9, 2003, addressed Overhead Crew Rest Compartments

Special Condition No. 25-260-SC, effective on April 14, 2004, addressed Overhead Crew Rest Compartment Occupiable During Taxi, Takeoff, and Landing.

Special Conditions No. 25.295-SC, effective on August 9, 2005, Side-Facing Single-Occupant Seats equipped with inflatable lapbelts

Special conditions No. 25-336-SC, published in the Federal Register on November 15, 2006. addressed overhead cross aisle stowage compartments

Special Conditions No. 25-367-SC, effective on February 7, 2008, addressed Seats With Non-Traditional, Large, Non-Metallic Panels

Special Conditions No. 25-503-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized Internal Access

Special Conditions No. 25-504-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized External Access

Special Conditions No. 25-569-SC, effective on September 25, 2014, addressed Model 777-300ER airplanes with single-occupant, oblique (side-facing) seats equipped with inflatable lapbelts.

**IV - Model 777-200LR Series (Transport Category) Approved February 2, 2006**

Engines:	2 General Electric Turbofan Model: GE90-110B1 2 General Electric Turbofan Model: GE90-115B (Engine Type Certificate No. E00049EN)
Fuel:	General Electric Engines: Fuels conforming to: ASTM D-1655 grades Jet-A and Jet A-1, MIL-T-5624 grade JP-5, and MIL-T-83133 grade JP-8, and Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable. The fuel and any fuel additives must conform to the latest approved version of GE Aviation Turbine Fuels Specification D50TF2.
Engine Ratings & Operating Limits:	General Electric Engines:  See the FAA approved Airplane Flight Manual for engine ratings. See the FAA approved Airplane Flight Manual and Note 6 for engine operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.
Airspeed Limits:	VMO/MMO = 330KEAS/.89M. For other airspeed limits, see the appropriate FAA approved Airplane Flight Manual
CG Range:	See the appropriate FAA approved Airplane Flight Manual.
Maximum Weights:	See the appropriate FAA approved Airplane Flight Manual.
<b><u>Model</u></b>	<b><u>Eligible Serial Numbers</u></b>
777-2FBLR	40668
777-2DZLR	36012, 36013, 36015-36018, 36101, 36102, 41061, 41062
777-2KQLR	40753
777-21HLR	35572, 35573, 35576-35578, 35582, 35586, 35587, 35589, 35590
777-22KLR	39548, 42296, 42297
777-29MLR	40955, 40993
777-232LR	29739-29742, 30440, 32222, 39091, 39254, 40559, 40560

**IV - Model 777-200LR (cont'd)**

777-233LR	35239, 35243-35247
777-237LR	36300-36307
777-240LR	33781, 33782
777-260LR	40770-40774, 43814

**PERTINENT DATA**

Minimum Crew: Two (2): pilot and copilot.

Maximum Passengers: 440

Maximum Baggage/Cargo: See appropriate FAA approved Weight and Balance Manual.

Fuel and Oil Capacities: See appropriate FAA approved Weight and Balance Manual.

Minimum Required Fuel: See appropriate FAA approved Airplane Flight Manual.

Maximum Operating Altitude: 43,100 feet

Certification Basis: A. 14 CFR part 25 of the Federal Aviation Regulations: Amendment 25-1 through 25-100, except for :  
 14 CFR 25.3(b)(2) at amendment 25-120  
 14 CFR 25.831(a) and (g) which remains at amendment 25-86,  
 14 CFR 25.841(a), which remains at Amendment 25-86, and  
 14 CFR 25.853(d)(3), which remains at Amendment 25-82 level.  
 14 CFR 25.1457 at amendment 25-124 applicable to Line Number 858 and on.  
 14 CFR 25.1459 at amendment 25-124 applicable to Line Number 858 and on.  
 14 CFR 25.1517 is not part of the TC

14 CFR 25.1535 at amendment 25-120

14 CFR part 26:

Based on 14 CFR §21.101(g) for changes made to TCs applicable provisions of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections

Compliance has been found for the following regulations at Amendment 26-0: §26.11

Compliance has been found for the following regulations at Amendment 26-1: §26.43, 26.45, 26.47, and 26.49

Compliance has been found for the following regulations at Amendment 26-3: §26.33 and §26.39

In addition to 14 CFR part 25 of FARs, the type certification basis for the Model 777-200LR airplane includes compliance with the emissions standards of 14 CFR part 34, Amendment 34-1 through 34-3, and with the noise standards of 14 CFR part 36, Amendment 36-1 through 36-28.

B. This Amended Type Certification was obtained under the delegation option authorization provisions of 14 CFR part 21

**Optional Design Regulations:**

Ditching: 14 CFR 25.801, 25.1411(d), (e), (f), (g) and 25.1415

Ice Protection: 14 CFR 25.1419

Exemptions from 14 CFR part 25:

1. Floor Warpage for Flight Deck Seats Exemption from 14 CFR 25.562(b)(2).

(Exemption No. 5436, April 1, 1992 and No. 5436A, January 3, 1997 and No. 5436B, November 15, 2000).

2. Partial Exemption from 14 CFR 25.1435(b)(1), Hydraulic Proof Pressure Test the static pressure test requirement (Exemption No 7478, March 28, 2001)

3. Partial Exemption from 14 CFR 25.901(c), Thrust Control Malfunction Accommodation and Single Failures of Thrust Levers (Exemption No. 7955, January 17, 2003).

4. Partial Time-Limited Exemption from 14 CFR §25.853(a), appendix F, paragraph (a)(1)(i), Testing on Large Interior Panels, granted through November 28, 2011. (Exemption No. 9791, November 28, 2008, Exemption No. 9791B, March 1, 2010, Exemption No. 9791C, February 4, 2011)

**IV - Model 777-200LR (cont'd)**

5. Time-Limited Exemption from 14 CFR 25.1535 as specified in Appendix K, §K25.1.4(a)(3) as the regulation applies to low-fuel alerting for approval for extended operations (ETOPS) beyond 180 minutes, granted through January 11, 2015 (Exemption No. 10193, January 11, 2011) (Exemption No. 10193A, December 17, 2013)

Equivalent Safety Findings exist with respect to the following regulations:

- 14 CFR 25.201(d) – Stall Demonstration
- 14 CFR 25.203(a) – Stall Characteristics
- 14 CFR 25.335(b) – Dive Speed Definition with Dive Speed Protection
- 14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS09-0445-CS-1)
- 14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - Dynamic Test Requirements for Single Occupant Side-Facing Seats on Boeing Model 777 (documented in ELOS Memo PS13-0075-C-1)
- 14 CFR 25.562, 25.785, Special Condition No. 25-295-SC - for Single Occupant Side-Facing Seats.(documented in ELOS Memo PS13-0216-C-1)
- 14 CFR 25.571(b) – Freedom from Wide Spread Structural Fatigue Damage
- 14 CFR 25.613 – Material strength properties and material design vaules (documented in Transport Airplane Directorate ELOS Memo AT3907SE-T-A-15)
- 14 CFR 25.723(a) – Shock Absorption
- 14 CFR 25.791(a) and 25.853(d) – “No Smoking” Limitation in the Passenger Compartment
- 14 CFR 25.809(b)(2) and 25.810(a)(1) – Escape Slide Inflation Times
- 14 CFR 25.811 - Exterior Exit Marking
- 14 CFR 25.811(f) - Door Sill Reflectance
- 14 CFR 25.813(e) – Doors between passenger compartments (documented in Transport Airplane Directorate ELOS Memo PS05-0272-C-1)
- 14 CFR 25.831(a) – Airplane Operation with Air Conditioning Packs Off During Takeoff
- 14 CFR 25.853(a) – Adhesives used in interior panel bent joint potting applications (documented in TAD ELOS Memo PS08-0670-C-1)
- 14 CFR 25.869(a)(4) - for Fiber Optic Cables used in the Model 777.
- 14 CFR 25.933(a)(1)(ii) - Inflight Thrust Reverser Deployment Demonstration.
- 14 CFR 25.934 – Thrust Reverser Installation for Engine Endurance Testing
- 14 CFR 25.981, Amdt 25-125 - Fuel tank ignition prevention (see Note 12)
- 14 CFR 25.981, Amdt 25-125 - for the Fuel Tank Flammability Rule (FTFR). (documented in ELOS Memo PS05-0177-P-2)
- 14 CFR 25.1182(a) and 25.1183(a) - for Fire Resistant Requirement for Hydraulic Components Located in the Strut Aft Fairing
- 14 CFR FAR 25.1183(a) – Fire Resistance of Power Door Opening system on Engine Compartments (GE Engines)
- 14 CFR 25.1303(c)(1) - Overspeed Aural Warning.
- 14 CFR 25.1305 and 25.1501(b) - APU Instrumentation and Monitoring Requirements.
- 14 CFR 25.1351(b)(5) - for Flight Controls DC Power.
- 14 CFR 25.1389(b)(3) – Red & Green Position Lights, Aft Lamps Only.
- 14 CFR 25.1441(c) Crew Determination of the Quantity of Oxygen Available in the Lavatory Passenger Service Units Bottles (documented in ELOS Memo PS13-0901-ES-1)
- 14 CFR 25.1443(c) Determination of Minimum Oxygen Flow for the Lavatory Oxygen System (documented in TAD ELOS Memo TS13-0005-S-1)
- 14 CFR 25.1459(a)(2) - for Flight Data Recorder Accelerometers.
- 14 CFR 25. (several sections) Use of 1g Speed Instead of Minimum Speed in the Stall as a Basis for Compliance

Special Conditions with respect to the following subjects apply to the Model 777-200LR:

Special Conditions No. 25-ANM-78, effective on December 10, 1993, addressed the following subjects:

1. Operation without Normal Electrical Power
2. Integrated Command Signal Integrity
3. Protection from Lightning and High-Intensity Radiated Fields Protection
4. Effect of Flight Control Systems on Structure
5. Design Maneuver Requirements
6. Limit Engine Torque Loads for Sudden Engine Stoppage
7. Flight Characteristics Compliance via Handling Qualities Rating Method
8. Electronic Flight Control System - Control Surface Awareness

Note: (Special Conditions on lightning are no longer part of the Type Certificate as a result of Boeing’s voluntary compliance with Amendment 25-80 which resulted in issuance of 25.1316, “System Lightning Protection”)

**IV - Model 777-200LR (cont'd)**

Special Conditions No. 25-ANM-84A, effective on October 8, 2003 , addressed airplane type design approval for Extended Range Operation With Two-Engine Airplanes (ETOPS).

Special Conditions No. 25-141-SC, effective on December 7, 1998, Seats With Articulating Seat Backs

Special Conditions No. 25-187A-SC, effective on October 29, 2004, addressed seats with inflatable lapbelts.

Special Conditions No. 25-230-SC, effective on April 9, 2003, addressed Overhead Crew Rest Compartments

Special Conditions No. 25-260-SC, effective on April 14, 2004, addressed the Overhead Crew Rest Compartment Occupiable During Taxi, Take-off, and Landing

Special Conditions No. 25-230-SC, effective on April 9, 2003, addressed Overhead Crew Rest Compartments

Special Conditions No. 25-260-SC, effective on April 14, 2004, addressed the Overhead Crew Rest Compartment Occupiable During Taxi, Take-off, and Landing

Special Conditions No. 25-295-SC, effective on August 9, 2005, Side-Facing Single-Occupant Seats equipped with inflatable lapbelts

Special Conditions No. 25-336-SC, published in the Federal Register on November 15, 2006. addressed overhead cross aisle stowage compartments

Special Conditions No. 25-367-SC, effective on February 7, 2008, addressed Seats With Non-Traditional, Large, Non-Metallic Panels

Special Conditions No. 25-503-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized Internal Access

Special Conditions No. 25-504-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized External Access

**V-Model 777F Series (Transport Category) Approved February 3, 2009**

Engines: 2 General Electric Turbofan Model: GE90-110B1  
2 General Electric Turbofan Model: GE90-115B  
(Engine Type Certificate No. E00049EN)

Fuel: General Electric Engines:  
Fuels conforming to:  
ASTM D-1655 grades Jet-A and Jet A-1,  
MIL-T-5624 grade JP-5, and  
MIL-T-83133 grade JP-8, and  
Fuels produced to other specifications and having properties meeting the requirements of the above specifications are acceptable. The fuel and any fuel additives must conform to the latest approved version of GE Aviation Turbine Fuels Specification D50TF2.

Engine Ratings & Operating Limits: General Electric Engines:  
See the FAA approved Airplane Flight Manual for engine ratings. See the FAA approved Airplane Flight Manual and Note 6 for engine operating limits. The normal 5 minute takeoff time limit may be extended to 10 minutes for engine out contingency if permitted by the Limitations Section of the FAA approved Airplane Flight Manual.

Airspeed Limits: VMO/MMO = 330KEAS/.89M.  
For other airspeed limits, see the appropriate FAA approved Airplane Flight Manual.

CG Range: See the appropriate FAA approved Airplane Flight Manual.

Maximum Weights: See the appropriate FAA approved Airplane Flight Manual.

<u>Model</u>	<u>Eligible Serial Numbers</u>
777F16	38091, 41518
777F28	32965-32967, 32969
777F60	42031
777F1B	37309-37314, 41632, 41633
777F1H	35606-35613, 42230-42233
777F6N	37708, 37710, 37711, 37713-37717, 41817, 41846
777FBT	41674-41677
777FDZ	36098-36100, 39644, 39645, 41427, 42299

**V. 777F (cont'd)**

777FFT	44678-44682
777FFX	39682, 39691-39692
777FHT	37138, 38969, 39285, 39286
777FZB	37986-37989
777FZN	36001-36004, 36198- 36201
777FB5	37638-37641
777FS2	37137, 37721-37730, 37732-37735, 38707, 41064-41067,41439,41749

**PERTINENT DATA**

Minimum Crew:	Two (2): pilot and copilot.
Maximum Passengers:	For 777F total persons capacity is limited to: Maximum of eleven (11) persons per Exemption 9779 and limitations outlined in the FAA approved Airplane Flight Manual.
Maximum Baggage/Cargo:	See appropriate FAA approved Weight and Balance Manual.
Fuel and Oil Capacities:	See appropriate FAA approved Weight and Balance Manual.
Minimum Required Fuel:	See appropriate FAA approved Airplane Flight Manual.
Maximum Operating Altitude:	43,100 feet
Certification Basis:	A. 14 CFR part 25 of the Federal Aviation Regulations (FAR) as amended by Amendments 25-1 through 25-117, with the exceptions listed below:

<u>SECTION NO.</u>	<u>TITLE</u>	<u>AT AMDT. 25-</u>
25.3(b)(2)	Special provisions for ETOPS type design approvals	120
25.103	Performance – stalling speed	108
25.107	Takeoff speeds	108
25.111	Takeoff path	115
25.119	Landing Climb: All engines operating	108
25.121	Climb: One Engine Inoperative	108
25.125	Landing	108
25.143	Controllability and Maneuverability General	108
25.149	Minimum control speed	108
25.201	Stall demonstration	108
25.207	Stall warning	108
25.233	Directional stability and control	108
25.237	Wind velocities	108
25.473	Ground load conditions and assumptions	103
25.613	Material strength properties and design values	112 (1)
25.723	Shock Absorbtion Test	103
25.731	Wheels	72 (2)
25.735	Brakes	92 (3)
25.773	Pilot Compartment View	108 (4)
25.783	Doors	114 (5)
25.807	Passenger Emergency Exits	114 (6)
25.812	Emergency Lighting	116 (7)
25.813	Emergency Exit Access	116
25.820	Lavatory Doors	114
25.841(a)	Pressurized Cabins	86
25.853	Compartment Interiors	116
25.855	Cargo or Baggage Compartments	116
25.856	Thermal/Acoustic insulation materials	111
25.869	Fire Protection: Systems	113
25.981(a)(b)	Fuel Tank temperature	102
25.1001(f)	Fuel jettisoning system	108
25.1141	Powerplant Controls: General	115
25.1305	Powerplant Instruments	115



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25.1323	Airspeed Indicating System	109
25.1325	Static Pressure Systems	108
25.1353	Electrical Equipment & Installation	113 (8)
25.1411	Safety Equipment: General	116
25.1431	Electronic Equipment	113 (9)
25.1439	Protective Breathing Equipment	115
25.1447	Oxygen Dispensing Units	116
25.1457	Cockpit Voice Recorder	124 (10)
25.1459	Flight Data Recorder	124 (10)
25.1516	Other Speed Limitations	105
25.1527	Ambient Air Temperatures and Operating Altitude	105
25.1535	ETOPS Approval	120
25.1583	Operating Limitations	105
25.1585	Operating Procedures	105
25.1587	Performance Information	108

(1) Comply with Amendment 25-112 except that Not Significant changes comply with 25.613(c) at Amdt 25-72: existing doors, wing, keel/wheelwell, fairings, empennage, landing gear, propulsion structure, lower lobe cargo structure, flight controls, high lift

(2) Main and nose wheels from both suppliers (Messier-Bugatti and Goodrich) are unchanged. (Goodrich nose wheel is unchanged, but the TSO load rating for the wheel has been increased compared to the 777-200LR due to increased loads on the 777F). 14 CFR 25.731(a), (b), (c) amendment 72 for wheels, tires, brakes, and landing gear systems.

(3) Complies with Amendment 25-92 due to Not Significant changes to brake control cable (rerouting of cable runs 3" inboard due to installation of the new aluminum floor beams) and unchanged main wheel brakes and reassessed for landing brake kinetic energy for increased landing weights, Landing gear systems and Hydraulic controls – mechanical.

(4) Complies with Amendment 25-108 except for the window heat control unit which remains at amendment level 25-72.

(5) Complies at Amendment 25-114 for the new Main Deck Cargo Door only. All other pressurized doors remain at amendment 25-88.

(6) Complies with Amendment 25-114 for weights only. Escape systems are not effected by this change and comply with 25-94

(7) Complies with amendment 116 except for: 25.812(g) is not applicable to 777F. Physical lighting of the emergency escape means complies with 25.812(h) at amendment 25-88.

(8) Complies with Amendment 25-113 except for Avionics – SATCOM complies with Amendment 25-42 for 25.1353(a) due to Not Significant changes to the system

(9) Complies with Amendment 25-113 except for Avionics – SATCOM complies with Amendment 25-0 for 25.1431(a), (c) due to Not Significant changes to the system. Avionics- CVR and FDR comply with Amendment 25-0 for 25.1431(c). Cabin Systems – PAS complies with Amendment 25-0 for 25.1431

(10) Compliance to amendment 25-124 applicable to Line Number 858 and on.

**Following Optional Design Regulations have been complied with:**

Ditching: 14 CFR 25.801, 25.1411(d), (e), (f) and 25.1415

Ice Protection: 14 CFR 25.1419

Exemptions from 14 CFR part 25:

1. Floor Warpage for Flight Deck Seats Exemption from 14 CFR 25.562(b)(2).

(Exemption No. 5436, April 1, 1992 and No. 5436A, January 3, 1997 and No. 5436B, November 15, 2000).

2. Partial Exemption from 14 CFR 25.785(j), Seat Back Hand hold  
(Exemption No. 9779, October 31, 2008)

3. Partial Exemption from 14 CFR 25.857(e), Class E Cargo Compartments  
(Exemption No. 9779, October 31, 2008)

4. Partial Exemption from 14 CFR 25.901(c), Thrust Control Malfunction Accomodation and Single Failures of Thrust Levers

(Exemption No. 7955, January 17, 2003)

5. Partial Exemption from 14 CFR 25.1447(c)(1), Equipment standards for oxygen dispensing units  
(Exemption No. 9779, October 31, 2008, Exemption 9779A, September 15, 2009)

**V. 777F (cont'd)**

6. Partial Time-Limited Exemption from 14 CFR §25.853(a), appendix F, paragraph (a)(1)(i), Testing on Large Interior Panels, granted through November 28, 2011. (Exemption No. 9791, November 28, 2008, Exemption No. 9791B, March 1, 2010, Exemption No. 9791C, February 4, 2011)

7. Time-Limited Exemption from 14 CFR 25.1535 as specified in Appendix K, §K25.1.4(a)(3) as the regulation applies to low-fuel alerting for approval for extended operations (ETOPS) beyond 180 minutes, granted through January 11, 2015 (Exemption No. 10193, January 11, 2011) (Exemption No. 10193A, December 17, 2013)

The following regulations have been complied by Equivalent Level of Safety:

14 CFR 25.201(d), Amdt 25-84 – Stall Demonstration  
 14 CFR 25.203(a), Amdt 25-84 – Stall Characteristics  
 14 CFR 25.335(b), Amdt 25-91 – Dive Speed Definition with Dive Speed Protection  
 14 CFR 25.341, Amdt 25-86 – Design Gust Criteria  
 14 CFR 25.343, Amdt 25-86 – Design Gust Criteria  
 14 CFR 25.345, Amdt 25-91 – Design Gust Criteria  
 14 CFR 25.371, Amdt 25-91 – Design Gust Criteria  
 14 CFR 25.373, Amdt 25-86 – Design Gust Criteria  
 14 CFR 25.391, Amdt 25-86 – Design Gust Criteria  
 14 CFR 25.571(b), Amdt 25-96 – Freedom from Wide Spread Structural Fatigue Damage  
 14 CFR 25.791(a), Amdt 25-72 – “No Smoking” Limitation in the Passenger Compartment  
 14 CFR 25.809(b)(2), Amdt 25-72 – Escape Slide Inflation Times  
 14 CFR 25.810(a)(1), Amdt 25-88 - Escape Slide Inflation Times  
 14 CFR 25.811, Amdt 25-79 - Exterior Exit Marking  
 14 CFR 25.811(f), Amdt 25-88 - Door Sill Reflectance  
 14 CFR 25.831(g), Acceptable High Temperature Physiological Environment During Failure Conditions. (documented in ELOS Memo PS05-0020-ES-3)  
 14 CFR 25.853(d), Amdt 25-83 - “No Smoking” Limitation in the Passenger Compartment  
 14 CFR 25.855, Amdt 25-116 - Inadvertent Smoke Detection in Lower Lobe Cargo Compartments  
 14 CFR 25.857, Amdt 25-93 - Inadvertent Smoke Detection in Lower Lobe Cargo Compartments  
 14 CFR 25.858(a), Amdt 25-93 – Inadvertent Smoke Detection in Lower Lobe Cargo Compartments  
 14 CFR 25.933(a)(1)(ii), Amdt 25-72 - Inflight Thrust Reverser Deployment Demonstration.  
 14 CFR 25.934, Amdt 25-23 – Thrust Reverser Installation for Engine Endurance Testing  
 14 CFR 25.981, Amdt 25-125 - Fuel tank ignition prevention (see Note 12)  
 14 CFR part 25.981, Amdt 25-125 - for the Fuel Tank Flammability Rule (FTFR). (documented in ELOS Memo PS05-0177-P-2)  
 14 CFR 25.1182(a), Amdt 25-11 - for Fire Resistant Requirement for Hydraulic Components Located in the Strut Aft Fairing  
 14 CFR 25.1183(a), Amdt 25-57 – Fire Resistance of Power Door Opening system on Engine Compartments (GE Engines)  
 14 CFR 25.1303(c)(1), Amdt 25-90 - Overspeed Aural Warning.  
 14 CFR 25.1305, Amdt 25-72 - APU Instrumentation and Monitoring Requirements.  
 14 CFR 25.1351(b)(5), Amdt 25-72 - for Flight Controls DC Power.  
 14 CFR 25.1389(b)(3), Amdt 25-0 – Red & Green Position Lights, Aft Lamps Only.  
 14 CFR 25.1435(a),(b)(1), Amdt 25-104 - Hydraulic Systems (documented in ELOS Memo PS05-0020-S-1)  
 14 CFR 25.1459(a)(2), Amdt 25-65 - for Flight Data Recorder Accelerometers  
 14 CFR 25.1501(b), Amdt 25-42 - APU Instrumentation and Monitoring Requirements  
 14 CFR 25. (several sections), Amdt 25-75 Use of 1g Speed Instead of Minimum Speed in the Stall as a Basis for Compliance.

Special Conditions with respect to the following subjects apply to the Model 777F:

Special Condition No. 25-ANM-78, effective on December 10, 1993, addressed the following subjects:

1. Operation without Normal Electrical Power
2. Integrated Command Signal Integrity
3. Protection from Lightning and High-Intensity Radiated Fields (HIRF) Protection
4. Effect of Flight Control Systems on Structure
5. Design Maneuver Requirements
6. Limit Engine Torque Loads for Sudden Engine Stoppage
7. Flight Characteristics Compliance via Handling Qualities Rating Method
8. Electronic Flight Control System - Control Surface Awareness

**V. 777F (cont'd)**

Note: (Special Conditions on lightning are no longer part of the Type Certificate as a result of Boeing's compliance with 14 CFR part 25 Amendment 25-80 which resulted in issuance of 25.1316, "System Lightning Protection").

Special Condition No. 25-ANM-84A, effective on October 8, 2003, addressed airplane type design approval for Extended Range Operation With Two-Engine Airplanes (ETOPS).

Special Condition No. 25-187A-SC, effective on October 29, 2004, addressed seats with inflatable lapbelts.

Special Conditions No. 25-462-SC, effective on March 22, 2012, 777F; Enhanced Flight Vision System.

Special Conditions No. 25-503-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized Internal Access

Special Conditions No. 25-504-SC, effective on November 18, 2013, addressed Aircraft Electronic System Security Protection From Unauthorized External Access

14 CFR part 26:

Based on 14 CFR §21.101(g) for changes made to TCs applicable provisions of 14 CFR part 26 are included in the certification basis. For any future 14 CFR part 26 amendments, the holder of this TC must demonstrate compliance with the applicable sections

Compliance has been found for the following regulations at Amendment 26-0: 26.11

Compliance has been found for the following regulations at Amendment 26-1: §26.43, 26.45, 26.47, and 26.49

Compliance has been found for the following regulations at Amendment 26-3: §26.33 and §26.39

In addition to 14 CFR part 25 of FARs, the type certification basis for the Model 777F airplane includes compliance with the emissions standards of 14 CFR part 34, Amendment 34-1 through 34-3, and with the noise standards of 14 CFR part 36, Amendment 36-1 through 36-28.

**THE FOLLOWING INFORMATION AND NOTES APPLY TO ALL MODELS UNLESS OTHERWISE NOTED:**

B. This type certificate was obtained under the delegation option authorization provisions of 14 CFR part 21.

Certification Maintenance

Requirements (CMRs):

CMRs are listed in the FAA approved Section 9 of Boeing Maintenance Planning Data Document D622W001-9 and the applicable engine Type Certificate Data Sheet. The more restrictive requirement from these two documents shall be in force

Production Basis:

Production Certificate 700. See Note 4 and Note 11

Leveling Means:

A plumb bob attachment and leveling provision scale are provided in the right hand body wheel well.

Datum:

Sta 0.0, located 92.5 in forward of airplane nose (B.S. 92.5).

Mean Aerodynamic Chord:

278.51 inches

Control Surface

Movements:

To insure proper operation of the airplane, the movement of the various control surfaces must be carefully controlled by proper rigging of the flight control systems. The airplane must, therefore, be rigged according to the following FAA-approved data:

Boeing Drawing Numbers:

251W1001	Rigging Instructions	Lateral Control
251W2001	Rigging Instructions	Elevator Control
251W3001	Rigging Instructions	Rudder Control
251W4001	Rigging Instructions	Stabilizer Trim Control System
256W2001	Systems Rigging	Leading Edge Slat
256W3001	Rigging Instructions	Drive System Flap Actuation

Required Equipment:

The basic required equipment as prescribed in the applicable Federal Aviation Regulations must be installed in the aircraft.

Service Information:

Boeing Documents D634W201 "777-200 Structural Repair Manual", D634W210 "777-300 Structural Repair Manual", and D634W215 "777F Structural Repair Manual" are FAA-approved. Service Bulletins and other service information when FAA-approved will carry a statement to that effect.

**THE FOLLOWING INFORMATION AND NOTES APPLY TO ALL MODELS UNLESS OTHERWISE NOTED:****(cont'd)**

- Note 1. A current Weight & Balance Report must be in each aircraft at the time of original airworthiness certification and at all times thereafter except in the case of an operator having an FAA approved loading system for weight and balance control.
- Note 2. Airplane operation must be in accordance with the FAA Approved Airplane Flight Manual. All placards required by either FAA Approved Airplane Flight Manual, the applicable operating rules, or the Certification Basis must be installed in the airplane.
- Note 3. Required structural inspections and the retirement times for safe-life parts are listed in the FAA Approved Airworthiness Limitations Section (Section 9) of Boeing Document D622W001-9. The inspection intervals for those inspections are based upon the curves contained in Boeing Document D101W801-36.
- Note 4. The following Serial Number Airplanes were produced under Type Certificate only:  
 777-200: 26916-26919, 26921, 26925, 26929, 26930, 26932, 26936, 27105, 27106, 27116, 27265  
 777-300: 27507, 27506, 28275, 27505, 27950, 28273, 27504, 28272
- Note 5. The Models 777-200 and 777-300 have been evaluated in accordance with FAA Special Conditions Number 25-ANM-84, and found suitable for 180-minute Extended Range Operations with Two-Engine Airplanes (ETOPS) operations when operated and maintained in accordance with Boeing Document D044W054 "Model 777 ETOPS Configuration, Maintenance, and Procedures." This finding does not constitute approval to conduct ETOPS operations.  
 The Models 777-200LR, 777-300ER, and 777F have been evaluated in accordance with FAA Special Conditions Number 25-ANM-84A, and found suitable for 180-minute Extended Range Operations with Two-Engine Airplanes (ETOPS) operations when operated and maintained in accordance with Boeing Document D044W054 "Model 777 ETOPS Configuration, Maintenance, and Procedures." This finding does not constitute approval to conduct ETOPS operations.  
 The Models 777-200, 777-200LR and 777-300ER have been evaluated in accordance with the type design requirements contained in FAA ETOPS Policy Letter EPL 20-1, dated March 21, 2000, and approved for 207-minute ETOPS when configured in accordance with Boeing Document D044W054. The use of 207-minute maximum diversion time is limited to a flight-by-flight exception basis from normal 180-minute ETOPS operations, as authorized in the FAA policy letter. This finding does not constitute approval to conduct 207-minute ETOPS operations.  
 The airplane/engine combinations 777-200/GE90-85B/-90B, 777-200/GE90-94B, 777-200/PW4084D/PW4090/PW4090-3, 777-300ER/GE90-115B, 777-200LR/GE90-110B1/-115B, and 777F/GE90-110B1/-115B have been evaluated in accordance with the type design requirements of 14 CFR 25.3(b)(2) and 25.1535 and found suitable for greater than 180-minute ETOPS operations when operated and maintained in accordance with Boeing Document D044W054 "Model 777 Configuration, Maintenance, and Procedures." This finding does not constitute approval to conduct ETOPS operations.
- Note 6. For General Electric and Rolls-Royce engines only: The engines must be operated at idle for at least 10 minutes prior to shutdown after static operation at N1 settings greater than 70%. This limitation applies to static operation only; under normal operation conditions, the idle cooling instructions contained in the engine manufacturers operating instructions are acceptable.
- Note 7. The Model 777 has been approved to operate in "Reduced Vertical Separation Minimum" (RVSM) airspace. Continued airworthiness and operational approval aspects of RVSM must be constructed according to Advisory Circular (AC) 91-RVSM, titled "Approval of Aircraft and Operators for Flight in Airspace Above Flight Level (FL) 290 Where a 1,000 Foot Vertical Separation Minimum is Applied."
- Note 8. The FAA has determined that the occurrence of any uncontrollable high thrust failure condition, or any of the associated causal failures listed within the Boeing 777 Maintenance Planning Document, "may endanger the safe operation of an airplane" and hence are reportable under FAR 121.703, 125.409, and 135.415.
- Note 9: Mandatory replacement times, inspection intervals, related inspection procedures and all critical design configuration control limitations for the fuel tank system determined during the Special Federal Aviation Regulation No. 88 program and for compliance with 14 CFR 25.981 are listed in the FAA-approved Airworthiness Limitations and Certification Maintenance Requirement, Section 9, of Boeing 777 Maintenance Planning Data Document D622W001-9, Revision February 2006 or later FAA-approved revision. All Model 777-200, -300, -300ER, and -200LR series airplanes, production line number 569 and on, must comply with Revision March 2006, or a later FAA-approved revision. The FAA has issued airworthiness directive 2008-11-13 mandating compliance with Revision March 2006, or a later FAA-approved revision, applicable to all Model 777-200, -300, -300ER, and - 200LR series airplanes with

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**THE FOLLOWING INFORMATION AND NOTES APPLY TO ALL MODELS UNLESS OTHERWISE NOTED:****(cont'd)**

production numbers lower than 569. The Maintenance Planning Data Document, Section 9 for the 777F meets Special Federal Aviation Regulation No. 88 and compliance to 14 CFR 25.981.

Note 10. For Model 777-200LR an optional single auxiliary body fuel tank cell may be installed for use with this airplane. This auxiliary tank adds another 1,875 USG of airplane fuel capacity. The certification basis for this auxiliary body fuel tank includes §25.981 Amendment 25-102.

Note 11. A production certificate number 700 was amended to include the 777F and issued. Boeing is authorized to issue airworthiness certificates under the delegation option authorization provisions of 14 CFR part 21.

Note 12. Certification basis for §25.981 at amendment 25-125, and Equivalent Safety Finding for the Flammability Reduction System (FRS), is applied if fuel tank inerting is installed in new airplane production (starting with Line # 772) or as a modification on existing aircraft per Boeing Service Bulletin 777-47-0002. Airworthiness Limitations for the FRS are contained in Section 9 of the applicable Maintenance Planning Document.

.....END.....