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# Flight Standardization Board (FSB) Report

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## **Boeing 777** **B-777-200/-200ER/-200LR/-200F, B-777-300/-300ER**

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- Added reference to CFR Part 91
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## 1. PURPOSE AND APPLICABILITY

1.1 Flight Standardization Board (FSB) Report Specifications. This FSB report specifies FAA master training, checking, and currency requirements applicable to crews operating B-777 Aircraft under CFR Part 121 and CFR Part 91. Various sections within the report are qualified as to whether compliance is required (considering the provisions of AC 120-53A), recommended, or advisory in nature. Provisions of the report:

- a. Identify a common pilot type rating assigned to the B-777 and B-787,
- b. Identify the B-777 and B-787 as “related aircraft”,
- c. Describe “Master Difference Requirements” for crews requiring differences qualification for mixed-fleet-flying or transition,
- d. Provide examples of acceptable “Operator Difference Requirements (ODR)” tables,
- e. Describe acceptable training program and device characteristics when necessary to establish compliance with pertinent MDRs,
- f. Identify checking and currency standards including specification of those checks that must be administered by FAA or operators,
- g. List regulatory compliance status (compliance checklist) for the B-777 for CFRs Part 91, 121, and 125, Advisory Circulars, or other operational criteria for information of FAA field offices.

1.2 This report addresses the B-777 series aircraft as specified in the FAA Type Certificate Data Sheet (TDCS).

1.3 The provisions of this FSB report are effective until amended, superseded, or withdrawn by subsequent revisions to this report.

1.4 FSB Responsibility/Authority. Determinations made in this report are based on the evaluations of specific B-777 and B-787 aircraft models equipped in a given configuration and in accordance with (IAW) current regulations and guidance. Modifications and upgrades made to the models described herein, or introduction of other related aircraft, may require amendment of the findings in this report. The FSB reserves responsibility and authority to re-evaluate and modify sections of this report based on new or revised Advisory Circular material, pertinent CFRs, aircraft operating experience, or the testing of new or modified aircraft under the provisions of AC 120-53A.

1.5 AQP/FSB Report Relationship. Differences between this report and an operator’s proposed training, checking, and currency requirements under an Advanced Qualification Program (AQP) must be justified and documented as part of the applicant’s AQP approval process. Program approvals under AQP need to ensure the basic provisions and requirements of this report have been

addressed, and where necessary, coordination with the appropriate Flight Standardization Board has been completed.

1.6 Terminology. The term "must" is used in this FSB report and certain MDR footnotes, even though it is recognized that this report (as well as AC 120-53A, on which it is based) provides one acceptable means, but not necessarily the only means of compliance with CFR requirements. This terminology acknowledges the need for operators to fully comply with this FSB report and MDR and ODR provisions if AC 120-53A, is to be used by the operator as the means of complying with the pertinent CFRs. Operators who choose this method must comply with each applicable MDR provision, including any footnotes.

1.7 FSB Report Comprehensiveness. This report includes:

- a. Minimum requirements for approval by FAA field offices, (e.g., MDRs, Type Rating designations, etc.),
- b. Information which is advisory in general, but may be mandatory for particular operators if the designated configurations apply and if approved for that operator (e.g. MDR footnotes, acceptable ODR tables), and
- c. Information which is used to facilitate FAA review of an aircraft type or related aircraft proposed for the use by an operator (e.g. compliance checklist for FAA Field Office use)

Various sections of this report are qualified as to whether compliance (considering the provisions of FAA Advisory Circular 120-53A) is required, or is advisory in nature.

## 2. PILOT "TYPE RATING" REQUIREMENTS

2.1 Type Rating. The Boeing 777 is designated B-777. In accordance with the provisions of FAA Order 8900.1 and AC 120-53A, the B-777 and B-787 are assigned a common pilot type rating.

2.2 Second-In-Command (SIC) Type Rating. In accordance with the provisions of the pertinent CFR, FAA Order 8900.1 and AC 120-53A, a SIC type rating is assigned to the B-777 and is designated "B-777" with Limitations for "B-777 SIC Privileges Only".

## 3. "MASTER DIFFERENCE REQUIREMENTS" (MDRs)

3.1 Common requirements (all B-777s).

3.1.1 Autopilot Engage/Disengage Altitudes.

- a. The autopilot must not be engaged below a minimum engage altitude of 200 feet after takeoff.

- b. Without LAND 2 or LAND 3 annunciated, the autopilot must be disengaged below 200 feet AGL.

### 3.1.2 Aircraft Approach Category and Circling Minima:

- a. For “straight-in approaches”, the aircraft approach category to be used for the following aircraft is:
  - All B-777-200/-200ER/-200LR aircraft are considered Category C
  - All B-777-300/-300ER and 777F aircraft are considered Category D
- b. For circling, the aircraft approach category to be used for determining the circling minima is as specified in the Operations specifications for each operator.

3.1.3 Normal "Final Landing Flap Setting". The normal "final landing flap setting" per CFR 91.126(c) is considered to be either "Flaps 25" or “Flaps 30” for all B-777s.

### 3.2. Master Difference Requirements.

3.2.1 Requirements (MDRs) for particular B-777/B-787 related aircraft combinations. MDRs are shown in Appendix 1. These provisions apply when differences between related aircraft exist which affect crew knowledge, skills, or abilities related to flight safety (e.g., Level A or greater differences).

3.2.2 MDR Footnotes. Footnotes to MDR requirements define acceptable "required means" or "alternate means" of compliance. A footnote can indicate requirements that are less restrictive than the basic designation, or more restrictive than the basic designation depending on the significance of the differences between particular related aircraft.

## 4. ACCEPTABLE "OPERATOR DIFFERENCE REQUIREMENTS" (ODR) TABLES

4.1 ODR tables - Used to Show an Operator's Compliance Method. Acceptable Operator Difference Requirements tables for operators conducting mixed fleet operations, using particular combinations of B-777 and B-787 related aircraft are shown in Appendix 2. The ODR tables represent an acceptable means to comply with MDR provisions for this combination of aircraft, based on differences and compliance methods shown. The tables do not necessarily represent an acceptable means of compliance for operators with aircraft having other differences, where compliance methods (e.g., devices or simulators) are different, or for combinations of aircraft not evaluated. For operators flying related aircraft, which are the same as the aircraft used for the ODR table development and using the same compliance methods, the ODR tables in Appendix 2 have been found acceptable by the FAA. Thus, equivalent tables may be approved by the POI for a particular operator.

4.2 Operator Preparation of ODR Tables. Operators flying “mixed-fleet” related aircraft must have approved ODR tables. Operators flying B777 and B787 related aircrafts similar to those covered by the acceptable ODR tables shown in Appendix 2 may use those tables. Operators with differences not shown on, or addressed by, the tables of Appendix 2, or operators seeking

different means of compliance, must prepare and seek FAA approval of specific ODR tables pertinent to their fleet.

4.3 ODR Table Coordination. Unless identical or equivalent ODR tables have been previously approved by the FAA, new ODR tables proposed by operators should be coordinated with their POI and the FSB prior to FAA approval and implementation. By coordination, the FSB ensures consistent treatment of related aircraft between various operators, and compatibility of each ODR table with MDR provisions.

4.4 ODR Table Distribution. Original approved ODR tables are retained by the operator. Copies of approved ODR tables are retained by the Certificate Holding District Office (CHDO). Copies should also be forwarded to the B-777 and/or B-787 FSB Chairman, Seattle AEG (SEA-AEG).

## 5. FSB SPECIFICATIONS FOR TRAINING

### 5.1 General.

5.1.1 Assumptions Regarding Airmen Previous Experience. The provisions of this section apply to programs for airmen who have experience in both CFR Part 121 air carrier operations and CFR Part 91 operations. For airmen not having this experience, additional requirements may be appropriate as determined by the POI, FSB, and AFS-200.

5.1.2 Training for Seat Dependent Tasks. Accomplishment of certain tasks, procedures, or maneuvers requires training of a crewmember for a particular crew position (e.g. captain, first officer, international relief officer, check airman, etc.). Training programs should recognize and address the necessary seat/position related tasks for the applicable crewmember. Accordingly, training programs should address seat dependent tasks or maneuvers to the extent necessary to satisfy crew qualification objectives and should be in accordance with ODR tables when applicable.

5.1.3 Second-In-Command (SIC) Training Tasks. Flight Crews qualify to serve as SIC must accomplish certain tasks, procedures or maneuvers for the SIC crew position. Training programs should address all training elements of the pertinent CFR in accordance with FAA Order 8900.1. SIC pilot type rating may be issued in accordance with the pertinent CFR provided training required by the pertinent CFR and FAA Order 8900.1, including tasks stipulated by this report, are completed.

5.1.4 Future Air Navigation Systems (FANS)/RNP/ANP/CNS/CPDLC/ADS. Flight Crews operating aircraft equipped with FANS software should receive appropriate instruction in its general operational functions, appropriate uses for areas of operation, routes, or procedures to be flown. General training should address communications, navigation, and surveillance (CNS) functions covered by FANS, RNP, and ANP. In addition, sufficient training in use of data link communication and Automatic Dependent Surveillance (ADS) to ensure adequate knowledge, skill, and proficiency for flight crews to operate the above system(s) in typical daily operations (requiring their use) should be provided.

5.1.5 B-777 Full Course programs. Training programs for the B-777 model that do not take credit for previous EFIS/FMS experience should include provisions of Appendix 6. Principal Inspectors for operators initially introducing a B-777 type may approve programs consistent with programs previously approved or those of Appendix 6. For information regarding previously approved programs, FAA Principal Inspectors for other existing B-777 operators may be consulted. In the event of uncertainty regarding evaluation of a proposed program, the FSB should be consulted.

5.1.6 B-777 Programs Crediting Previous Boeing EFIS/FMS Experience (AQP or STARS). Training programs for the B-777 may take credit for previous Boeing EFIS/FMS experience. An example of a B-777 training course crediting previous Boeing model FMS flight deck experience is shown in Appendix 7. Principal Inspectors for operators initially introducing a B-777 type may approve programs consistent with programs previously approved or those of Appendix 7. For information regarding previously approved programs or programs crediting previous non-Boeing FMS/EFIS flight deck experience, FAA Principal Inspectors for other existing B-777 operators may be consulted.

5.1.7 B-777 Heads Up Display (HUD). Training in accordance with Appendix 11 or equivalent must be provided. If mixed fleet flying of HUD and non-HUD equipped aircraft occurs, the operator should have approved ODR tables reflecting the HUD installation.

5.1.8 B-777 Electronic Flight Bag (EFB). Refer to the Boeing EFB Flight Standardization Board Report, located on the FAA's Flight Standards Information System (FSIMS) web site.

## 5.2 Initial, Upgrade, or Transition Training

5.2.1 Pilots: Initial, Transition and Upgrade Ground Training. Initial, transition, or upgrade ground training for either the B777 or B787 or both is accomplished as specified by the pertinent CFR. No unique provisions or requirements are specified. However, when more than one model is flown, or transition from one related aircraft to another is accomplished, appropriate instruction in unique aircraft systems will be required for each related aircraft, consistent with MDR provisions. Training program hours may be reduced as specified in the pertinent CFR, but not in a manner or in areas which invalidate compliance with provisions of the MDRs.

5.2.2 Pilots: Initial, Transition, and Upgrade Flight Training. Initial, transition, or upgrade flight training for either the B-777 or B-787 or both is accomplished as specified by the pertinent CFR. No unique provisions or requirements are specified. When initial, transition, or upgrade flight training and practice specified in the pertinent CFR are accomplished, and several related aircraft are to be flown, training is considered to suitably address each related aircraft, since flight characteristics of all related aircraft are the same or equivalent. Training program hours may be reduced as specified in the pertinent CFR, but not in a manner or in areas which invalidate compliance with provisions of the MDR or ODR tables.

5.2.3 Crewmember Emergency Training. IAW pertinent CFRs, appropriate emergency training must be given to each crewmember on the location, function, and operation of emergency equipment that is different in each related aircraft of the B-777 or B-787. Where equipment is common, instruction may be adjusted for those crewmembers qualified and current on other related aircraft, provided records are available, which demonstrate that crewmembers meet the pertinent CFR requirements. For example, where elements of interior configurations are common, training may be simultaneously credited for related aircraft. Conversely, for different emergency equipment, doors, slides, slide/rafts, or other interior configuration elements, even when within the same model or related aircraft (e.g., B-777-200LR and B-777-300ER), training on emergency equipment for each related aircraft is required in accordance with MDRs. Training on the location, type, or operation of this equipment may be accomplished by pictures or electronic media, provided adequate knowledge of its use is demonstrated to an authorized representative of the operator.

Emergency training also consists of instruction in crewmember emergency assignments and procedures including crew coordination and communication, the handling of emergency or other unusual situations, and emergency performance and observation drills that are specific to each related aircraft flown.

IAW CFR Part 121.417 and FAA Order 8900.1, Flight Standards Information Management System, emergency training requirements refer to two types of training: “general” and “aircraft specific” emergency training. General emergency training is instruction on those emergency items that are common to the B-777 and/or B-787 and all aircraft in an operator’s fleet, e.g., instruction on fire extinguishers and fire fighting procedures, if common to all aircraft. Aircraft-specific emergency training is training on those items that are specific to the B-777 or B-787 aircraft. An example of aircraft-specific emergency training is instruction on the location of emergency equipment.

As part of an approved training program, an operator may use many methods when conducting aircraft-specific emergency training including classroom instruction, pictures or electronic media, ground training devices, Computer-Based Training (CBT), and/or static aircraft training.

There is no specified training program hours for Crewmember Emergency Training, however, a chart in FAA Order 8900.1 (Volume 3, Chapter 19, Section 4) provides “national norms” for the approval of general emergency training program hours related to new hires. The complexity of the different related aircraft flown and the complexity of the type of operations conducted should be considered when approving B-777 and B-787 aircraft-specific emergency training.

5.2.4 Automatic Landings. If an operator conducts automatic landings in either the B-777 or B-787 then appropriate training must occur. This training must be conducted either in a B-777 or B-787 simulator or in the actual airplane, and may apply to one or both aircraft.

5.2.5 Areas of Emphasis. B-777 systems including bank angle indications and protection, enhanced underspeed (stall) and overspeed protection, fly-by-wire speed stability characteristics, (C\*U) aircraft response and primary flight displays. The requirement to train certain traditional maneuvers to proficiency, such as steep turns and stalls may be addressed as a training proficiency issue. Therefore, steep turns and approach to stalls will be demonstrated during training and are not typically checked in a B-777 training program.

5.2.5.1 The B-777 additionally incorporates a thrust asymmetry compensation (TAC) system which significantly reduces uncommanded flight path changes associated with an engine failure. Training should encompass both TAC ON and TAC OFF operations.

5.2.6 Electronic Checklists. The electronic checklist (ECL) display system should be utilized when available to reduce crew workload. Use of the paper backup should also be trained. Standard practices and crew coordination should be established for use of ECL. To reduce workload, line items, which are sensed and indicate “completed” by the ECL system would not normally be read aloud.

5.2.7 Overhead flight crew rest (OFCR) and overhead flight attendant rest (OFAR) facilities for all B-777 related aircrafts:

5.2.7.1 Occupancy. Only approved crewmembers, trained in OFCR/OCFR evacuation procedures, may occupy the OFCR. Clear definition of “crewmembers” allowed to occupy the OFCR must be specified in the operational approval to use this facility.

5.2.7.2 Crew Rest Quality. The B-777 OFCR has been reviewed by the FAA and has been determined to meet requirements of the pertinent CFR, and FAA AC 121-31. However, specific operational approval for an operator to use the OFCR is still required.

5.2.7.3 Approval will be based on the following guidance:

5.2.7.3.1 Rescue and Emergency Evacuation. Operators should have written procedures regarding rescue and evacuation pertaining to occupants of the OFCR compartment, (if OFCR is used for Taxi, Takeoff or Landing (TTL)). As a minimum the following is needed:

For planned evacuations, OFCR occupants should be relocated to the main deck prior to landing if seats are available and time permits.

- a. If an in-flight emergency occurs where an evacuation is possible, and the situation permits, the crew must inform the appropriate Air Traffic Services Unit that there is an occupied OFCR on board. This information should include the number of occupants and the location of the OFCR on board.
- b. At least one cabin crew member is given responsibility to ensure occupants of the OFCR are evacuated if an evacuation command is given.

5.2.7.3.2 Training – Occupants. As a minimum, prior to occupying the OFCR/OCFR, crewmembers must be familiarized with the conditions for occupancy and the safety provisions and equipment of the OFCR facility, to include the following:

- a. Maximum allowable occupancy for TTL and in flight
- b. Fire extinguishers and smoke hoods (fire fighting procedures)
- c. Emergency oxygen (decompression procedures)
- d. Primary and secondary escape routes (evacuation procedures)
- e. Reminder that Flight Attendants will provide further direction after reviewing the outside conditions
- f. Communication system
- g. Occupant use of seat and ancillary equipment, seat belts and bunk restraints during turbulence and critical phases of flight
- h. Restrictions prohibiting bunk use during takeoff and landing, (as appropriate)

5.2.7.3.3 Procedures and Training - Flight Attendant. OFCR/OCFR familiarization must also be included in flight attendant training to include the above items and an additional responsibility for ensuring the OFCR, if occupied, is evacuated during an airplane evacuation.

Procedures must be developed and included in training for the following:

- a. Closing the OFCR door after takeoff, and opening the door prior to landing.
- b. Requirement to minimize rest disruptions
- c. Prevention of unauthorized entry to the OFCR/OCFR compartment.

### 5.3 Differences Training.

5.3.1 General. Unless an initial or transition program is completed for each related aircraft, differences training is necessary for each B-777 and B-787 as provided in MDR and ODR tables. A training program addressing pertinent differences described by individual operator ODRs, including normal, non-normal, and alternate operations, is required for each related aircraft flown.

- a. A Differences Training Program prerequisite is that a trainee has completed initial, upgrade, or transition training in one related aircraft and will receive differences training for the other related aircraft.
- b. When a Differences Training Program involves related aircraft having the same Pilot Type Rating, coverage of differences may be completed either coincident with each phase of an initial, upgrade, or transition training course, or following completion of that training course. The differences training must be consistent with the provisions of the approved applicable MDR/ODR Tables.
- c. When a Differences Training Program involves related aircraft having different Pilot Type Ratings, coverage of a differences course must be completed in accordance with the prerequisites defined in 5.1.1, and applicable MDR/ODR provisions.

5.3.2 Ground Training. Differences ground training is required on the topics applicable to the pertinent related aircraft. Training is shown by applicable ODR tables in the following subjects:

- a. General description of the aircraft
- b. Performance characteristics
- c. Engines
- d. Airplane Systems (e.g. EICAS, hydraulics, electrical, HUD...)
- e. Normal, Non-normal, and Alternate Procedures
- f. Limitations
- g. Other instruction in features unique to the operator's fleet of B-777/B-787 airplanes

5.3.3 Flight Training. Difference flight training is required in the topics and maneuvers applicable to the pertinent related aircraft that is shown by applicable ODR tables. For an Advanced Qualification Program (Part 121 Subpart Y), "flight qualification events" must be consistent with items specified by the applicable ODR tables.

A sample of an acceptable minimum program for differences is shown in Appendix 3.

5.3.4. Engine Intermix. Engine intermix operations (e.g. Pratt & Whitney with different levels of rated thrust) is acceptable. Provided engine intermix limits and performance are clearly addressed (Vmcg, airport analysis, CFR 121.189 obstacle clearance, etc.), and this information is readily available to the flight crew and easily interpreted, then Level A/A/A is acceptable.

5.3.5 Fleets with different Engine Types. Mixed flying of B-777 fleets with different engine types (e.g. B-777 fleet with P&W, GE, or RR engines) may require additional training. Although not explicitly addressed by MDRs, a minimum of A/A/B is designated for such operations, unless otherwise approved by the FSB.

5.3.6. B-777-200/-200ER/-200LR and -200F to B-777-300/-300ER Differences Training. B-777-300/-300ER differences training for pilots qualified on the -200/-200ER/-200LR and -200F related aircraft must address the techniques required to taxi the aircraft to include use of the Ground Maneuver Camera System (GMCS) and proper thrust and speed use during taxiing. Emphasis should be made on avoidance of pilot distraction, inappropriate fixation on the displays, inappropriate uses of the GMCS, and proper speed management using sufficient engine thrust as to not create hazards to persons or property on the ground. Operators may use an approved training video or training in the aircraft to accomplish this taxi training. See Appendix 2 for examples of acceptable ODR tables for the B-777-200/-200ER/-200LR and -200F to the B-777-300/-300ER differences training. Flight maneuvers, techniques and handling qualities are common between the two related aircraft.

## 5.4 Recurrent Training

5.4.1 Recurrent Training. Recurrent training must include appropriate training in accordance with the pertinent CFRs, or an approved AQP program, for each related aircraft (e.g., B-777 and/or B-787). When recurrent training addresses more than one related aircraft, the differences

must be covered in accordance with the items and levels specified by MDR and ODR tables for initial differences training, unless otherwise approved by the FSB.

5.4.2 Recurrent Ground Training Time Reductions. If recurrent ground training is reduced below programmed hours required in CFR Part 121.427(c), in accordance with CFR Part 121.405, such reductions must be consistent with MDR and ODR table provisions.

5.4.3 Recurrent Flight Training. Recurrent flight training requires appropriate maneuvers and procedures identified in the pertinent CFR, or an approved AQP program, for either related aircraft (e.g. B-777 or B-787). Appropriate emphasis should be placed on systems and procedures that may not have been used operationally, and are expected to be used prior to the next recurrent training event (e.g. Electronic checklist, Data Link, RNAV, FANS, RNP, HUD, Electronic Flight Bag, Communications, etc.). As permitted by the pertinent CFR, satisfactory completion of a proficiency check, in accordance with the pertinent CFR, may be substituted for training. When ODR table provisions identify differences in maneuvers or procedures between related aircraft, such differences must be addressed in the operators' recurrent program.

5.4.4 Recurrent Training Simulator Requirements. Pilots qualified on either the B-777-200/-200ER/-200LR/-200F or the B-777-300/-300ER related aircraft may receive recurrent training in either a B-777-200/-200ER/-200LR/-200F or the B-777-300/-300ER simulator. Flight maneuvers, techniques and handling qualities are common between the two related aircraft.

5.4.5 Recurrent Training Level Adjustments. The FSB will consider proposals to establish recurrent differences training at levels other than for the initial differences training on a case by case basis. Requests for changes should be made to the FSB through the POI. If the FSB accepts different levels for recurrent training, and AFS-200 approves those changes, such provisions will be identified in amended MDR footnotes.

5.4.6 For Flight Attendants, B-777 recurrent training consists of instruction as necessary in the B-777 general operational subjects, as addressed in Paragraph 5.6.2, "Flight Attendants: Initial and Transition Ground Training" and in the B-777 aircraft-specific emergency subjects, as addressed in Paragraph 5.2.3, "Crewmember Emergency Training".

## 5.5 Operating Experience:

5.5.1 Operating Experience Pertinent to Each Flight Crewmember. Operating experience must be obtained while serving in a primary crew position.

5.5.2 Separate Operating Experience for Single Fleet Operations. Operating experience for the B-777 may be accomplished in any related B-777 aircraft.

5.5.3 Operating experience for Mixed Fleet Flying Operations. Separate operating experience in accordance with the pertinent CFR applies to the B-777 and other related aircraft (e.g. B-787, B-737, etc).

## 5.6 Other Training

5.6.1 LOFT Programs. When operators have LOFT programs, POIs should review those programs to assure their suitability for the related aircraft flown. For example the LOFT programs include scenarios flown in either the B-777 or B-787. If simulators used for LOFT have differences from the related aircraft, LOFT credits may be reduced or eliminated if such differences are determined to have a significant adverse effect on the effectiveness of LOFT.

5.6.2 Flight Attendants, Initial and Transition Ground Training. Due to differences in cabin configuration, flight attendants should be separately qualified in B-777 and B-787 aircraft. Such qualification, however, may be conducted concurrently when qualification is for both B-777 and B-787 aircraft. Credit is permitted for common subjects. See Appendix 8.

5.6.3 Aircraft Dispatchers, Initial and Transition. Dispatchers may be simultaneously qualified for B777 and B787 aircraft. Provisions of the pertinent CFR are applicable to each related aircraft. If the aircraft are used in Extended Range (ER) operations, dispatchers must be suitably qualified to address ER issues. Dispatchers must also be suitably trained to address any (all) differences in related aircrafts related to ER performance, procedures, or limitations.

## 6. FSB SPECIFICATIONS FOR CHECKING

### 6.1 General.

6.1.1 Checking Items. Knowledge, procedures, and maneuvers specified by the applicable CFR, FAA Order 8900.1, or FAA Practical Test Standards (PTS), pertinent to multi-engine turbojet transport aircraft apply to all B-777 related aircraft, with the exception that approach to stalls and steep turns are not required for the B-777 aircraft. CFR Part 121 or CFR Part 61, checking items are accomplished as specified by the MDR and ODRs to qualify in pertinent B-777 aircraft.

6.1.2 Areas of Emphasis. The following areas of emphasis should be addressed during checks as necessary:

- a. Proficiency with manual and automatic flight must be demonstrated,
- b. Proper outside visual scans without prolonged fixation on FMS operation should be demonstrated, and failure of component(s) of the FMS should be addressed,
- c. Proper selection and use of map displays, raw data, flight director, and AFDS should be demonstrated, particularly during instrument approaches,
- d. Demonstrations of FMS/GPS navigation (departures and approaches) proficiency if these type operations are approved for the operator,
- e. Demonstration on the use of electronic checklists (ECL) during normal and non-normal procedures,
- f. Understanding of speed and attitude stability characteristics (C\*U) of B-777 flight controls in normal operations,

- g. Proper use and knowledge of the Look ahead Terrain Function of the EGPWS (if installed),
- h. Proper use and knowledge of the Predictive wind shear system (if installed),
- i. Proper use of the Heads Up display, and
- j. Proper use of the Electronic flight Bag/Flight Deck Video Security System.

6.1.3 “No-Flap” Landings. Due to redundant flap system features of all B-777 aircraft, demonstration of a “No Flap” approach and landing during the pertinent CFR check is unnecessary, provided alternate flap systems operations (flaps-only or partial-flap) is evaluated.

6.1.4 When TAC is operating, the pilot can still recognize the initial onset of an engine failure through airplane roll/yaw cues. Transition and proficiency checks may be conducted with TAC ON or OFF when evaluating an engine failure. There is no requirement to conduct a V1 cut with the TAC OFF; therefore V1 cuts should be randomly checked with the TAC ON or TAC OFF in a B-777 training program.

6.1.5 Steep turns, approach to stalls, and manually flown non-precision approaches. Steep turns, approach to stalls and manually flown non-precision approaches will be demonstrated during training and are not evaluated in the B-777.

#### 6.1.6 MMEL/MEL Use

Dispatch relief under the provisions of the Operator’s MEL should receive appropriate emphasis as part of the normal checking process in order to address those issues related to crew workload and safety. Since an individual operator may elect to take advantage of the full range of relief provided under the MMEL, Certificate Holding District Offices should closely review specific MEL proposals to ensure that training and checking are sufficient to ensure satisfactory crew performance in both the normal and non- normal flight regimes. MEL relief should be granted only where it can be confirmed that safety will not be compromised as a function of crew experience, qualifications and training. Special attention should be given to checking to ensure that adequate training is provided to address dispatch with systems operated in alternate/degraded modes. Training and checking should also emphasize the crewmember’s ability to cope with the subsequent airborne failure of the next most critical system failure, e.g., failure of one or more features of the autoflight system.

## 6.2 Type Ratings.

6.2.1 Oral and Written Tests. Oral examinations for the B-777 will be conducted prior to the Practical Test. If qualified on the B-787, the B-777 oral examination addresses differences between the two aircraft.

6.2.2 Practical Test. Practical tests may follow standard provisions of the pertinent CFR, or approved Line Operational Evaluation (LOE) provisions of AQP. If AQP LOEs apply, suitable LOEs should be available that are pertinent to the intended operations expected (e.g. oceanic scenarios, etc).

6.2.2.1 If qualified on the B-787, the B-777 practical test is a Differences Check as defined in AC 120-53A, with the purpose of addressing those differences between the two aircraft. The Differences Check is a partial proficiency check which does not fully satisfy the recency requirements of a full proficiency check as defined in CFR part 61.58. The elements of the Differences Check are designed to evaluate the differences between the 787 and 777, and are listed in Appendix 10. Operators choosing to reset the recency requirements for proficiency checks should administer a full proficiency check in lieu of the partial proficiency check.

6.2.3 Application for and Issuance of Type Ratings. Airmen completing pertinent CFR requirements in a B-777 with FSB requirements described in this report may apply to FAA for the appropriate B-777 type rating endorsement. The B-777 and B-787 are a common pilot type rating, however requirements described in this report must be complied with before the B-777 type rating endorsement is issued. Upon completion of requirements and submission of an application (FAA Form 8710-1), authorized FAA inspectors or designees, may issue the necessary pilot certificate with type rating.

### 6.3 Proficiency Checks.

6.3.1 General. Proficiency checks are administered as designated in the pertinent CFR, or IAW an approved AQP program, for either the B-777 or B-787 aircraft, except as specified or permitted by MDR and ODR tables. A proficiency check in either a B-777 or a B-787 suffices for the other aircraft if initial and recurrent qualification is conducted IAW MDRs and approved ODR tables for that operator. Such checks should assess knowledge and acceptable levels of skill, considering related aircraft flown and crew position. When checks are conducted for mixed fleet flying between the B-777 and the B-787, one aircraft is typically selected as the base aircraft, and a sufficient number of questions on the other related aircraft are covered to ensure effectiveness of differences preparation. The preflight and equipment examination portion of initial and recurrent proficiency checks should address each aircraft operated by the flight crewmember in mixed fleet flying. Satisfactory completion of a proficiency check may be substituted for recurrent flight training as permitted in the pertinent CFR.

6.3.2 Heads Up Display. Evaluation must include suitable demonstration of HUD use for modes and phases of flight and is equivalent to those for non-HUD operations except when low visibility takeoff operations using the HUD are authorized.

6.3.3 Alternating B-777 and B-787 Proficiency Checks. For mixed-fleet flying between B-777 and B-787 types, Proficiency Checks should alternate for PICs and other flight crewmembers. Academic requirements mixed fleet flying between the B-777 and the B-787 should include differences between the alternating aircraft.

6.4 Line Checks. Line checks completed for either a B-777 or B-787 may satisfy requirements for both aircraft. However, for specific operations separate line checks may be appropriate, such as for initial oceanic operations, CFR Part 121.445 "special routes or airports," or other factors which may be unique to either the B-777 or the B-787 related aircraft groups for that operator.

6.5 Both the 777 and 787 require Operating Experience, operating cycles, and consolidation of knowledge and skills in accordance with the pertinent CFR.

## 7. FSB SPECIFICATIONS FOR RECENCY OF EXPERIENCE

7.1 Recency of Experience is common between the B-777 and the B-787. Recency of experience required by the pertinent CFRs may be maintained for the B-777 and the B-787 by accomplishing the required takeoffs and landings in either aircraft. Segment currency may be maintained in the B-777 and the B-787 by accomplishing the required segment currency in either aircraft.

7.2 Currency (Recency of Experience).

7.2.1 Alternate means of compliance with the pertinent CFR

- a. Pilots that are dual qualified in the B-777 and B-747-400 may satisfy the provisions of the pertinent CFR by accomplishing three takeoffs and landings total, provided at least one takeoff and landing is accomplished in each type, each 90 days.
- b. Pilots that are dual qualified in the B-757/767 and B-777 may satisfy the provisions of the pertinent CFR by accomplishing three takeoffs and landings in either type, each 90 days.

Note: To reestablish takeoff and landing currency, the requirements of the pertinent CFR must be complied with, except that at least one takeoff and landing must be accomplished in each type of aircraft or an advanced simulator approved for the takeoff and landing maneuvers.

7.2.2 Airman Experience (Prerequisite)

7.2.2.1 Provisions within this section of the report apply to training programs for experienced flight crew members who have previous experience in both CFR 121 air carrier operations and multi-engine wide body heavy transport turbojet aircraft. Flight crews not having prerequisite experience shall not use the provisions of this report.

7.2.2.2 In addition, all flight crew participating in the landing currency provisions prescribed in this report must meet the following pre-qualification requirements:

- a) The B-747-400 and the B-777 aircraft (including IOE in both aircraft types) require 3 months of line operations in both aircraft.
- b) The B-757/767 and the B-777 aircraft (including IOE in both aircraft types) require 3 months of line operations in both aircraft.
- c) A minimum of 150 hours of line experience in both aircraft types (B-747-400 and B-777) (must be while serving in a primary crew position).
- d) A minimum of 150 hours of line experience in both aircraft types (B-757/767 and B-777) (must be while serving in a primary crew position).

## 8. AIRCRAFT COMPLIANCE CHECKLIST

### 8.1 Compliance Checklist (see Appendix 4).

Compliance checklists are provided as an aid to FAA Certificate Holding District Offices (CHDOs) to identify those specific rules or policies for which compliance has already been demonstrated to FAA for an aircraft having a particular aircraft type certificate. The checklist also notes rules or policies which remain to be demonstrated to CHDOs by operators. Not all rules or policies are necessarily listed or addressed. When differences exist between the aircraft evaluated with the compliance checklist and aircraft used by an operator, the CHDO evaluates those differences and approves use of that aircraft if that aircraft provides equivalent compliance with CFR Parts or FAA policies. It remains the responsibility of a Certificate Holding District Office to review compliance with pertinent rules or policies not already satisfactorily addressed in the compliance checklist, prior to the pertinent CFR Part 121 or CFR Part 91 approval of an operator for use of particular B-777 aircraft

### 8.2 Discussion of Specific Compliance Checklist Items

8.2.1 B-777 Observer Seat. On B-777 aircraft with two observer seats installed, one or both seats may satisfy the requirements of the pertinent CFR. Either seat may be used by FAA inspectors at their discretion.

8.2.2 Emergency Evacuation. On March 7, 1998, the B-777-300 successfully demonstrated for equivalent egress from door 3 to show compliance with CFR 25.810(b). An analysis was utilized to comply with the pertinent CFR for 550 passenger capability with 11 flight attendants which the FAA approved May 1, 1998.

The flight attendant procedures for the B-777-300/-300ER are identical to those used on the B-777-200 with the addition of the unique configuration and procedural information required for the overwing exit pair, including supplemental information outlining the differences between door 3 and the other type A doors on the B-777-300/-300ER. Normal procedures are unchanged from the other doors except that the visible sign of slide readiness is a barber pole and initial verbal instruction to passengers is "STEP DOWN" and "FOLLOW THE ARROWS" until flow is established at the door 3 overwing exits. Should the slide not automatically deploy/inflate (barber pole visible), the manual inflation handle in the upper door still must be pulled. If the slide becomes deflated, it may be used as hand held chute. Late in the evacuation, flight attendants should give consideration to the time required for the last evacuees to traverse the overwing egress path of the door 3 overwing exits and re-direct evacuees to the appropriate alternate exit as required to minimize the time necessary to get all evacuees to the ground. In a ditching situation requiring evacuation to the wing or launching of life rats from the wing, door 3 should be opened in the manual mode and the life line, stowed in the upper door sill, attached to the fitting outboard of the engine, on the leading edge of on the wing.

8.2.3 Proving Runs. Initial CFR 121 proving runs in accordance with provisions of the pertinent CFR for the B-777 are based on an approved program completed by United Airlines.

8.2.3.1 Proving runs in accordance with the pertinent CFR are appropriate in accordance with FAA Order 8900.1, Vol. 3, Chapter 9, for other operators of the B-777 other than United Airlines. Proving run requirements and reductions are as designated by FAA Order 8900.1 and the Certificate Holding District Office, or as otherwise specified by the FSB or AFS-200.

## 9. FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS

9.1 Standard Devices and Simulators. Device and Simulator characteristics pertinent to B-777 and B-787 aircraft are as designated in AC 120-40 and 120-45 (as amended), except as described below.

9.2 Special Requirements. Special device or simulator characteristics are described for training, checking, and re-establishing currency as follows:

9.2.1 When different EICAS engine display formats are used, due to operation with different engine types (GE, PW, and RR), crews should be exposed to the alternate EICAS presentations by some means (e.g. photos, drawings CBT, etc.), which would assure proper display interpretation and use by the flight deck crew (See paragraph 5.3.4).

9.3 Devices Used for Recurrent Proficiency Checks. Recurrent checking may be accomplished in either B-777 or B-787 simulators. However, recurrent proficiency checks are to be accomplished in relevant B-777 or B-787 simulators or combinations of simulators as suited to the particular operator's fleet, fleet mix, types of operations, and approved training program. For example, if crews predominantly or exclusively operate extended range oceanic flights in a B-777, it would be expected that checks (and LOFT scenarios if used), would address the thrust to weight characteristics, non-normal planning and decision making, and include a discussion of systems configurations typical of those operations. Even though the B-777 and B-787 aircraft have a common pilot type rating, in this situation exclusive or predominant use of non-ER configured simulators, using typical weights and scenarios for domestic operations would only be considered an acceptable recurrent checking program when some means is provided to determine proficiency in the unique areas. Checking and simulator use proposals where simulators do not closely match the related aircraft to be flown are evaluated on a case by case basis by the POI, in consultation with the FSB. A POI, FAA inspectors, designated examiners, or check airmen may require demonstration of competency in a simulator or the aircraft representing the related aircraft to be flown, when doubt exists regarding training program adequacy, or an airman's preparation or competency.

## 10. APPLICATION OF FSB REPORT

10.1 Operators of B-777 Aircraft Without Differences. Relevant parts of this report (e.g. type rating designation, checking maneuvers, etc.,) are effective when the report is approved by the FAA. Sections or paragraphs of this report related to differences (e.g. MDRs, ODRs, etc.) may be voluntarily applied to facilitate transition programs, when approved by the FAA.

10.2 Operators of B-777s and B-787s in Mixed Fleets. For Mixed- Fleet-Flying of B-777s and B-787s, unless otherwise approved, operators must be in accordance with relevant provisions of this report, including approved MDR and ODR tables. This includes items in 10.1 above. It is recognized that a time period may be required for operator specific ODR table preparation, device approvals, bulletin issuance, etc. to establish compliance. Accordingly, when ODR tables describing compliance methods for an operator are approved by FAA, interim programs or interim extension of present programs may be made until a mutually agreed compliance date.

## 11. ALTERNATE MEANS OF COMPLIANCE

11.1 Approval Level and Approval Criteria. Alternate means of compliance to differences requirements of pertinent CFRs for B-777 aircraft, other than as specified in provisions of this report or as approved under an AQP, must be approved by the Flight Standards, Air Transportation Division (AFS-200). Any differences petitioned under AQP must be coordinated with AFS-230, the POI, and the FSB. If alternate means of compliance is sought, operators will be required to establish that the proposed alternate means of compliance provide an equivalent level of safety to the provisions of AC120-53A and this FSB report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

11.2 Equivalent Safety. In the event alternate means of compliance is sought, training program hour reductions, simulator approvals, and device approvals, may be significantly limited and reporting requirements may be increased to assure equivalent safety. AFS-200 will generally not consider relief by alternate means of compliance unless sufficient lead time has been planned by an operator to allow for any necessary testing and evaluation.

11.3 Interim Programs. In the event unforeseen circumstances make it impossible for an operator to comply with MDR provisions, the operator may seek interim program approval rather than a permanent, alternate compliance method. Financial arrangements, scheduling adjustments, and similar justifications are not considered to be "unforeseen circumstances" for the purposes of this provision.

## 12. APPENDICES

## **APPENDIX 1**

### **MASTER DIFFERENCES REQUIREMENTS**

MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE

<b>Airplane Type Rating: B-777</b>					
			<b>FROM AIRPLANE</b>		
		B-777-200/-200ER/-200LR/-200F	B-777-300	B-777-300ER	B-787-8
	B-777-200/200ER/-200LR/-200F		A/A/A (1) SATCOM B/A/A (2) FANS/DATALINK/RNP B/A/A	A/A/A (1) SATCOM B/A/A (2) FANS/DATALINK/RNP B/A/A	(3) D/D/C
<b>TO AIRPLANE</b>	B-777-300	B/A/A (1) SATCOM B/A/A (2) FANS/DATALINK/RNP B/A/A		A/A/A (1) SATCOM B/A/A (2) FANS/DATALINK/RNP B/A/A	(3) D/D/C
	B-777-300ER	B/A/A (1) SATCOM B/A/A (2) FANS/DATALINK/RNP B/A/A	A/A/A (1) SATCOM B/A/A (2) FANS/DATALINK/RNP B/A/A		(3) D/D/C
	B-787-8	D/D/C	D/D/C	D/D/C	

- Notes: (1) Addition of SATCOM may require additional training.  
(2) Addition of FANS/DATA LINK may require additional training.  
(3) D level device required for "TAC-off" training requirement.

## **APPENDIX 2**

### **ACCEPTABLE ODR TABLES AND RELATED NOTES**

The following ODR tables are provided:

- \* B-777-300 to -300ER Systems
- \* B-777-300 to -300ER Design
- \* B-777-200, -200ER to -300ER Design & Systems
- \* B-777-200, -200ER, -300, -300ER to -200LR, -200F Design
- \* B-777-200, -200ER, -300, -300ER to -200LR , -200F Systems
- \* B-777-200, -200ER, -300, -300ER to -200LR , -200F Maneuver
- \* B-777 to B-757/767 Maneuver
- \* B-777 to B-747-400 Maneuver
- \* B-777-300ER to B-787-8 Design
- \* B-777-300ER to B-787-8 Systems
- \* B-777-300ER to B-787-8 Maneuver
- \* B-787 to B-777-300ER Design
- \* B-787 to B-777-300ER Systems
- \* B-787 to B-777-300ER Maneuver

<b>SYSTEMS OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 777-300</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>SYSTEMS</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHG</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
21 AIR CONDITIONING 36 PNEUMATIC	APU -PK takeoff	NO	YES	TNG HAND OUT					A	A
27 FLIGHT CONTROLS	Supplementary electronic tail skid: revised flap placard speeds	NO	NO	TNG HAND OUT					A	A
28 FUEL	Increases fuel capacity	NO	NO	TNG HAND OUT					A	A
73 ENG FUEL/CONT 74 IGNITION 77 ENG INDICATING 80 STARTING	GE90-115B engine differences; cannot be started simultaneously, TO-B thrust limit	NO	YES	TNG HAND OUT						A
32 LANDING GEAR	Semi-levered gear, EICAS messages added	NO	YES	TNG HAND OUT					A	A
31 INDICATING/RECORDING SYSTEMS	- Minor EICAS message changes	NO	YES	TNG HAND OUT					A	A

30 ICE ANDRAIN	Auto anti-ice must be selected manually to ON	NO	YES	TNG HAND OUT					A	A
<b>DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 777-300</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHG	A	B	C	D	E	FLT CHK	CURR
LIMITATIONS	Growth-related changes, 330KEAS design speed	NO	NO	TNG HAND OUT					A	A
BODY/WING GEOMETRY	Increased wingspan and raked wingtips	NO	NO	TNG HAND OUT					A	A

<b>DESIGN &amp; SYSTEMS OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>								
<b>DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 777-200, 777-200ER</b>				<b>COMPLIANCE METHOD</b>				
				<b>TRAINING</b>			<b>CHKG/CURR</b>	
<b>FEATURE/ SYSTEMS/ MANEUVER</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHNG</b>	<b>LVL A</b>	<b>LVL B</b>	<b>LVL C</b>	<b>FLT CHK</b>	<b>CURR</b>
BODY GEOMETRY	- Increased body length	NO	NO	TNG HAND OUT			A	A
27 FLIGHT CONTROLS	- Spoiler auto retract for overwing exit operation	NO	NO	TNG HAND OUT			A	A
28 FUEL	- Increases fuel capacity; center fuel pump inhibit during fuel jettison	NO	NO	TNG HAND OUT			A	A
INDICATING/RECORDING SYSTEMS	- Addition of Ground Maneuver Camera system; added CAM switch to EFIS control panel, Ground speed display on PFD.	NO	NO	TNG HAND OUT	Video		A	A
32 LANDING GEAR	-Tail skid added; EICAS messages added	NO	NO	TNG HAND OUT			A	A
33 LIGHTS	- Added Camera Lights switch	NO	NO	TNG HAND OUT			A	A
52 DOORS	- Overwing exits added	NO	NO	TNG HAND OUT			A	A
31 INDICATING/RECORDING SYSTEMS	- Minor EICAS message changes	NO	NO	TNG HAND OUT			A	A

<b>DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>											
<b>DIFFERENCE AIRCRAFT: 777-200LR , -200F BASE AIRCRAFT: 777-200, -200ER, -300, 300ER</b>				<b>COMPLIANCE METHOD</b>							
				<b>TRAINING</b>					<b>CHKG/CURR</b>		
<b>Design</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>REC EXP</b>	
GENERAL	Range/payload Raked wingtips – same as -300ER	No	No	HND OUT							
DIMENSIONS	Geometry and size related differences (body length same as -200/200ER, wingspan is the same as -300ER)	No	No	HND OUT							
CABIN	max passenger capacity according to related aircraft; exit configuration same as -200, -200ER	No	No	HND OUT							
LIMITATIONS	Weight/CG envelope – size related differences	No	No	HND OUT							
LIMITATIONS	VMO/MMO: same as -300/-300ER; Flap placard speeds same as -300ER VMCA, VMCG are different due to additional thrust	No	No	HND OUT							
LIMITATIONS	Misc – related aircraft dependent limitations	No	No	HND OUT							

<b>SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>											
<b>DIFFERENCE AIRCRAFT: 777-200LR, -200F BASE AIRCRAFT: 777-200, -200ER, -300, 300ER</b>				<b>COMPLIANCE METHOD</b>							
				<b>TRAINING</b>					<b>CHKG/CURR</b>		
<b>System</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>REC EXP</b>	
26- FIRE PROTECTION	CARGO FIRE: - Maximum protection time same as -300ER	No	No	HND OUT							
28- FUEL	TANKS: - Auxiliary tank option – up to 3 in aft cargo compartment	No	Yes	HND OUT							
28- FUEL	CONTROLS AND INDICATORS: - Panel Layout to include aux tanks on overhead panel (option) - Fuel synoptic revision for aux tanks (option)	No	No	HND OUT							
28- FUEL	FUEL PUMPS: - Aux tank AC fuel pump primary, bleed air secondary fuel transfer method	No	Yes	HND OUT							
28- FUEL	FUEL JETTISON: - Aux tank jettison	No	Yes	HND OUT							
31- INDICATING/ RECORDING SYSTEMS	STANDBY FLIGHT INSTRUMENTS - ISFD option (already available as a delivery option on all related aircraft)	No	No	HND OUT							
32- LANDING GEAR	- No semi-levered gear (vs. -300ER system) - Similar taller nose strut to -300ER	No	No	HND OUT							
34 – NAVIGATION	AIMS Block Point Updates	No	minor	HND OUT							
70- POWER PLANT	ENGINES: - GE90-115B derated to 110K; operation identical to -300ER	No	Yes	HND OUT							
77- ENGINE INDICATING	INDICATORS - No N3 – engine option dependent - N1 replaces EPR – engine option dependent	No	Yes	HND OUT							

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
DIFFERENCE AIRCRAFT: 777-200LR, -200F BASE AIRCRAFT: 777-200, -200ER, -300, 300ER				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
Maneuver	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
Exterior Preflight		NO	NO							
Preflight Procedures		NO	NO							
Before Start Procedures	Aux fuel tank management (option)	NO	Yes	HND OUT						
Engine Start Procedures		NO	NO							
Taxi		NO	NO							
Normal takeoff		NO	NO							
Engine failure/V1		NO	NO							
Climb		NO	NO							
Cruise	Aux fuel tank management (option)	NO	Yes	HND OUT						
Descent		NO	NO							
Approach		NO	NO							
Manual landing		NO	NO							
Autoland		NO	NO							
ILS Normal		NO	NO							
Go-Around (All Eng)		NO	NO							
ILS Eng Inop		NO	NO							
Go-Around (One Eng)		NO	NO							
Manual Landing (One Eng)		NO	NO							
Non-ILS app		NO	NO							
Circling App		NO	NO							
After landing/Shutdown	Aux fuel tank management (option)	NO	Yes	HND OUT						
Non-normal maneuvers		NO	NO							
Training Maneuvers		NO	NO							
Steep turn, Approach to Stall Recovery										
Notes:										

## 777 to 757/767 Maneuver ODR Table

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 757/767</b>				<b>COMPLIANCE METHOD</b>						
<b>BASE AIRCRAFT: 777</b>				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>MANEUVER</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHG</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
<b>Preflight</b>	Differences due to systems, no ECL, etc	NO	YES		CBT		FBS		D	D
<b>Taxi</b>	Body length/span etc.	YES	NO		CBT			FFS	C	E
<b>Normal takeoff</b>	Conventional vs. FBW handling; no auto trim in the climb	YES	NO		CBT			FFS	E	A
<b>Engine failure/V1</b>	Conventional vs. FBW handling; no auto trim in the initial climb; no TAC,	YES	NO		CBT			FFS	E	E
<b>Climb</b>	Minor differences; flap retraction speeds	YES	NO		CBT				B	B
<b>Cruise</b>	Minor differences	YES	YES		CBT				B	B
<b>Descent</b>	Minor differences	YES	NO		CBT				B	B
<b>Approach</b>	Conventional vs FBW handling	YES	YES		CBT			FFS	E	E
<b>Manual landing</b>	Same	NO	YES					FFS	E	A
<b>Autoland</b>	Same	NO	NO		CBT			FFS	E	A <sup>6</sup>
<b>ILS Normal + Eng Inop</b>	Conventional vs. FBW handling, no TAC	YES	YES		CBT			FFS	E	E
<b>Non-precision app</b>	Conventional vs. FBW handling, no TAC. Same AFDS modes possible	YES	YES		CBT			FFS	E	E

777 to 757/767 Maneuver ODR Table (CONT'd)

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 757/767</b>				<b>COMPLIANCE METHOD</b>						
<b>BASE AIRCRAFT: 777</b>				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>MANEUVER</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHG</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
<b>Non-normal maneuvers</b>	2-eng inop; conventional vs. FBW handling, no TAC	YES	YES		CBT			FFS	E	E
<b>Training Maneuvers</b>	Steep turns, app to stalls required on PCs, no FBW handling/protections	YES	YES					FFS	E	E

*∂* At least one automatic landing may be credited for landing currency

## 777 to 747 Maneuver ODR Table

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 747-400</b>				<b>COMPLIANCE METHOD</b>						
<b>BASE AIRCRAFT: 777</b>				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>MANEUVER</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHG</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
<b>Preflight</b>	Differences due to systems, no ECL, etc	NO	YES		CBT		FBS		D	D
<b>Taxi</b>	Body length/span etc.	YES	NO		CBT			FFS	C	E
<b>Normal takeoff</b>	Conventional vs. FBW handling; no auto trim in the climb	YES	NO		CBT			FFS	E	A
<b>Engine failure/V1</b>	Conventional vs. FBW handling; no auto trim in the initial climb; no TAC,	YES	NO		CBT			FFS	E	E
<b>Climb</b>	Minor differences; flap retraction speeds	YES	NO		CBT				B	B
<b>Cruise</b>	Minor differences, no ETOPS	YES	YES		CBT				B	B
<b>Descent</b>	Minor differences	YES	NO		CBT				B	B
<b>Approach</b>	Conventional vs. FBW handling; 747 uses F10 during approach	YES	YES		CBT			FFS	E	E
<b>Manual landing</b>	Slightly higher flare height	YES	YES					FFS	E	A <sup>o</sup>
<b>Autoland</b>	Same	NO	NO		CBT			FFS	E	A*
<b>ILS Normal + Eng Inop</b>	Conventional vs. FBW handling, no TAC	YES	YES		CBT			FFS	E	A
<b>Non-precision app</b>	Conventional vs. FBW handling, no TAC. Same AFDS modes possible	YES	YES		CBT			FFS	E	E

**777 to 747 Maneuver ODR Table (CONT'd)**

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 747-400</b>				<b>COMPLIANCE METHOD</b>						
<b>BASE AIRCRAFT: 777</b>				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>MANEUVER</b>	<b>REMARKS</b>	<b>FLT CHAR</b>	<b>PROC CHG</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
<b>Non-normal maneuvers</b>	2-eng inop; conventional vs. FBW handling, no TAC	YES	YES		CBT			FFS	E	E
<b>Training Maneuvers</b>	Steep turns, app to stalls required on PCs, no FBW handling/protections	YES	YES					FFS	E	E

∂ For common landing currency at least one landing is required in each type each 90 days, 3 landings total.  
 • One automatic landing may be credited toward the common landing currency.

<b>DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>General</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
GENERAL	LONG RANGE	No	No	HND OUT						
DIMENSIONS	787-8 - Length = 186 feet 1 inches (56.74 meters) - Height = 55 feet 6 inches (16.92 meters) - Wing Span = 197 feet 4 inches (60.12 meters) - Nose gear to main gear = 74 feet 9 inches (22.80 meters)	No	No	HND OUT						
FLIGHT DECK	FLIGHT DECK ARRANGEMENT - PFD/ND format, large displays PILOT'S FIELD OF VIEW: - Pilot eye height (above ground) - minor differences FLIGHT DECK OVERHEAD HATCH	No	No	HND OUT						
CABIN	787 max passenger capacity is variable by customer choice	No	No	HND OUT						
CARGO	BULK CARGO - Left side	No	No	HND OUT						
ENGINES	Rolls Royce Trent 1000 General Electric GEN X	No	Yes	HND OUT						
LIMITATIONS	WEIGHT/CG DIFFERENCE - Size/type/system limitations VMO/MMO - Per placard Max slats speed, stalling speed, VMCA, VMCG	No	Yes	HND OUT						

<b>SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>System</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
21 – AIR CONDITIONING	<b>CONTROLS AND INDICATORS</b> - Panel layout <b>PACKS:</b> - Electric compressors <b>ALTERNATE VENTILATION:</b> - New Function <b>EQUIPMENT COOLING:</b> - Forward and Aft System - Smoke EICAS message <b>CARGO HEAT SYSTEM:</b> - Switch types - Automated functions	No	Yes		CBT					
21 - PRESSURIZATION	<b>SYSTEM,CONTROLS &amp; INDICATORS:</b> - Same as 777	No	No							
22- AUTOFLIGHT	<b>MODE CONTROL PANEL</b> - MCP 2 line windows (Speed, Heading, and Altitude) <ul style="list-style-type: none"> <li>o Future uplink feature</li> </ul> - Integrated Approach Navigation - Bank limit selector <b>AFDS FLIGHT MODE ANNUCIATIONS:</b> - Same except addition of Integrated Approach Navigation and GLS <b>AUTOMATIC FLIGHT APPROACH AND LANDING:</b> - Same except addition of Integrated Approach Navigation and GLS	No	Yes		CBT					
23- COMMUNICATIONS	<b>CONTROLS AND INDICATORS:</b> - New Tuning Control Panel (TCP) <b>VHF, HF, PA, CABIN/FLIGHT AND SERVICE INTERPHONE</b> - Control resides in Tuning Control Panel (TCP) <b>SATCOM</b> - Control resides in Tuning Control Panel (TCP) <b>AUDIO CONTROL PANEL</b> - Same except PA MIC switch function	No	Yes		CBT					

<b>SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>System</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
24- ELECTRICAL POWER	ELECTRICAL CONTROL PANEL - System architecture – functionally equivalent - No bus tie switches - Additional Engine Generator and Drive Disconnect switches - Additional APU Generator switch - Additional external power switches AC ELECTRICAL - Four Engine Starter Generators - Two APU Starter Generators - No backup generators AC ELECTRICAL POWER DISTRIBUTION - No flight instrument transfer busses DC ELECTRICAL - System architecture – functionally equivalent BATTERY/STANDBY POWER SYSTEM - System architecture – functionally equivalent AUTOLAND - System architecture – functionally equivalent	No	Yes		CBT					
25- EQUIPMENT/FURNISHING	FLIGHT DECK GENERAL ARRANGEMENT: - Non-opening number two windows - Flight deck door controls to aisle stand and alerting on EICAS - Overhead hatch - C/Bs panels location – Main display system	No	Yes	HND OUT						
25- EMERGENCY EVAC	EMERGENCY EVACUATION PANEL - Same functions – Integrated aisle stand panel	No	No	HND OUT						
26- FIRE PROTECTION	APU FIRE CONTROLS AND INDICATORS: - Same panel/location - More automation CARGO FIRE CONTROLS AND INDICATORS: - Same panel/location - Additional automation for composite structure protection	No	Yes	HND OUT						

<b>SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>System</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
27 – FLIGHT CONTROLS	PRIMARY FLIGHT CONTROL SURFACES - Roll: different mix same roll effect FLIGHT CONTROL SYSTEMS - Roll - Roll rate command – same handling - Yaw - Yaw rate command – same handling FLIGHT ENVELOPE PROTECTION: - Enhanced Stall Protection (ESP) STABILIZER TRIM: - Electrical back-up trim control - Electrically actuated TRIM INDICATORS: - Indicator location on primary EICAS display - Aileron trim eliminated THRUST ASYMMETRY COMPENSATION: - No TAC Switch – available full time - Embedded in flight control law - Yaw rate based FLAP LOAD RELIEF - Functionally equivalent but different threshold sensing ALTERNATE FLAP OPERATION - Alternate mode – minor differences CRUISE FLAPS SYSTEM - New performance enhancement system with EICAS message	No	Yes	HND OUT						

<b>SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>System</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
28- FUEL	<b>FUEL TANKS:</b> - Fuel Tank Capacities, o Left Main      37,500 lbs o Right Main     37,500 lbs o Center         150,800 lbs o Total Fuel     225,800 lbs (33,700 US GAL) - Fuel tank inerting system <b>CONTROLS AND INDICATORS:</b> - Panel layout – minor differences - One Crossfeed - Fuel balance switch <b>FUEL PUMPS:</b> - Center tank pump operation – minor differences	No	Yes		CBT					
29 – HYDRAULIC POWER	<b>CONTROLS AND INDICATORS:</b> - Panel layout <b>HYDRAULIC SYSTEMS:</b> - 5000 psi <b>CENTER HYDRAULIC SYSTEM</b> - No Air-driven demand pumps - Electric pumps	No	Yes	HND OUT						
30- ICE AND RAIN	<b>WIPER PANEL</b> - Same panel location - Washer switches <b>WING ANTI-ICE</b> - Electric heater blankets	No	Yes	HND OUT						

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE										
DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	CURR
31- FLIGHT INSTRUMENT DISPLAYS	EFIS CONTROL PANEL PFD/ND CONTROLS - Map switches moved to soft controls - minor - ND mode selector – rotary control display selection - ND range selector - .5 – 1280 NM DISPLAY SELECT PANEL - Panel layout - four DSPs - Synoptic soft switches – software menu - EICAS display position switch PFD/MFD SELECTOR - PFD/MFD functionally similar to INBD DSPL selector - Different location INSTRUMENT SOURCE SELECTORS - Air data/attitude different switch type - NAV switch eliminated - DSPL CTRL switch eliminated CURSOR CONTROL - Minor differences - additional rotary control DISPLAY FORMATS: - Enhanced large format capabilities - Clock integrated in display format - Airport map - Vertical Situation Display (VSD) STANDBY FLIGHT INSTRUMENTS - Same instrument minor relocation HEAD UP DISPLAY (HUD): - Dual installation	No	Yes			FTD				
		No	Yes				FFS			

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE										
DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	CURR
32- LANDING GEAR	MAIN GEAR: - Twin tandem bogie assembly (4 wheels) - No aft axle steering NOSE WHEEL STEERING TILLER: - Steer by wire - Functionally equivalent - Nose gear cut-out switch BRAKES: - System operation – functionally equivalent - Electric brakes - Battery indication vs. accumulator									
34 – NAVIGATION	CONTROL DISPLAY UNIT - Display based CDU - Cursor Controls - Message/Help window FLIGHT MANAGEMENT SYSTEM - Added design features INERTIAL REFERENCE SYSTEM - Air data system separate TRANSPONDER PANEL - Control integrated into the <b>Tuning Control Panel (TCP)</b> WEATHER RADAR CONTROL PANEL - Control integrated into the <b>Tuning Control Panel (TCP)</b> Alternate NAV - Function in <b>Tuning Control Panel (TCP)</b>	No	Yes		CBT					
36- PNEUMATIC	BLEED AIR CONTROL PANEL - Eliminated									
49- APU	SYSTEM OPERATION - No Bleed Air - No Air Turbine Starter - Electric starter Starter Duty cycle Limitation	No	No	HND OUT						
52- DOORS	DOORS: - Eight entry doors - same	No	No	HND OUT						
70- POWER PLANT	ENGINES: - GE & RR - engine type design differences	No	Yes	HND OUT						

<b>SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>System</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
73- ENGINE FUEL AND CONTROL	EEC SYSTEM - Functionally equivalent	No	No	HND OUT						
77- ENGINE INDICATING	INDICATORS - RR Engine - TPR replaces EPR	No	Yes		CBT					
78- EXHAUST	THRUST REVERSER SYSTEM - Same	No	No							
80 STARTING	CONTROLS AND INDICATORS - Panel layout - System operation - Electric starter - Starter Duty cycle Limitation	No	Yes		CBT					

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 787-8 BASE AIRCRAFT: 777-300ER</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>Maneuver</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>CURR</b>
<b>Exterior Preflight</b>	Minor differences	No	No							
<b>Preflight Procedures</b>	Minor Differences due to systems	No	Yes	HND OUT						
<b>Before Start Procedures</b>	Minor differences	No	Yes		CBT					
<b>Taxi</b>	Minor differences (Airport Map)	No	Yes		CBT					
<b>HUD operations</b>	Minor Differences all phases of flight	No	Yes				FFS			
<b>Engine failure/V1</b>	Minor differences (TAC embedded in control law)	No	No							
<b>ILS/GLS Normal</b>	No differences (GLS added)	No	No							
<b>Go-Around (All Eng)</b>	Minor differences (LNAV auto engage)	No	Yes	HND OUT						
<b>ILS Eng Inop</b>	Minor differences (TAC embedded in control law)	No	No							
<b>Go-Around (One Eng)</b>	Minor differences (TAC embedded in control law)	No	No							
<b>Manual Landing (One Eng)</b>	Minor differences (TAC embedded in control law)	No	No							
<b>Non-ILS app</b>	Minor differences (Integrated Approach Navigation)	No	Yes			FTD				

<b>DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>General</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>REC EXP</b>
GENERAL	LONG RANGE	No	No	HND OUT						
DIMENSIONS	777-300ER - Length = 242 feet 4 inches (73.9 meters) - Height = 60 feet 10 inches (18.54 meters) - Wing Span = 212 feet 7 inches (64.8 meters) - Nose gear to main gear = 102 feet 5 inches (31.2 meters)	No	No	HND OUT						
FLIGHT DECK	FLIGHT DECK ARRANGEMENT - PFD/ND format, smaller displays PILOT'S FIELD OF VIEW: - Pilot eye height (above ground) - minor differences Flight deck windows	No	No	HND OUT						
CABIN	777 max passenger capacity is variable by customer choice	No	No	HND OUT						
CARGO	BULK CARGO - Right side	No	No	HND OUT						
ENGINES	General Electric Model GE90-115B	No	Yes	HND OUT						
LIMITATIONS	WEIGHT/CG DIFFERENCE - Size/type/system limitations VMO/MMO - Per placard Max slats speed, stalling speed, VMCA, VMCG	No	Yes	HND OUT						

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE										
DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
21 – AIR CONDITIONING	CONTROLS AND INDICATORS - Panel layout PACKS: - Engine Bleed Air ALTERNATE VENTILATION: - N/A EQUIPMENT COOLING: - Forward System Only CARGO HEAT SYSTEM: - Switch types - Automated functions	No	Yes		CBT					
21 - PRESSURIZATION	SYSTEM CONTROLS & INDICATORS: - Same as 787	No	No							
22- AUTOFLIGHT	MODE CONTROL PANEL - MCP single windows (speed, heading, and altitude) - Bank limit selector AFDS FLIGHT MODE ANNUCIATIONS: - Same except no Integrated Approach Navigation or GLS AUTOMATIC FLIGHT APPROACH AND LANDING: - Same except no Integrated Approach Navigation or GLS	No	Yes		CBT					
23- COMMUNICATIONS	CONTROLS AND INDICATORS: - Radio Tuning Panel VHF, HF, SATCOM, PA, CABIN/FLIGHT AND SERVICE INTERPHONE - Controlled by audio control panel - Tuning on radio control panel (VHF and HF) AUDIO CONTROL PANEL - Same except PA MIC switch function	No	Yes		CBT					

## SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
24- ELECTRICAL POWER	ELECTRICAL CONTROL PANEL - System architecture – functionally equivalent - Bus tie switches - One Engine Generator and Drive Disconnect switch per engine - One APU Generator switch - Two external power switches AC ELECTRICAL - Two Engine Starter Generators - One APU Starter Generators - Two backup generators AC ELECTRICAL POWER DISTRIBUTION - Two flight instrument transfer busses DC ELECTRICAL - System architecture – functionally equivalent BATTERY/STANDBY POWER SYSTEM - System architecture – functionally equivalent AUTOLAND - System architecture – functionally equivalent	No	Yes		CBT					
25- EQUIPMENT/ FURNISHING	FLIGHT DECK GENERAL ARRANGEMENT: - Two opening number two windows - Flight deck access system switch to flight deck side door post - C/Bs panels location – overhead panel	No	Yes	HND OUT						
25- EMERGENCY EVAC	EMERGENCY EVACUATION PANEL - Same functions – Integrated aisle stand panel	No	No	HND OUT						
26- FIRE PROTECTION	APU FIRE CONTROLS AND INDICATORS: - Same panel/location - Less automation CARGO FIRE CONTROLS AND INDICATORS: - Same panel/location	No	Yes	HND OUT						

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE										
DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
27 – FLIGHT CONTROLS	PRIMARY FLIGHT CONTROL SURFACES - Roll: different mix same roll effect FLIGHT CONTROL SYSTEMS - Roll - Roll rate command – same handling - Yaw - Yaw rate command – same handling FLIGHT ENVELOPE PROTECTION: - Functionally equivalent STABILIZER TRIM: - Alternate pitch trim levers TRIM INDICATORS: - Pitch trim on Control Stand - Aileron trim on control wheel/column - Rudder trim on aft aisle stand THRUST ASYMMETRY COMPENSATION: - TAC Switch on overhead panel - Engine thrust based FLAP LOAD RELIEF - Functionally equivalent but different threshold sensing ALTERNATE FLAP OPERATION - Alternate mode – minor differences CRUISE FLAPS SYSTEM - None	No	Yes	HND OUT						

## SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
28- FUEL	<p>FUEL TANKS:</p> <ul style="list-style-type: none"> <li>- Fuel Tank Capacities,                             <ul style="list-style-type: none"> <li>o Left Main 69,000 lbs                                     <ul style="list-style-type: none"> <li>▪ (31,300 kgs)</li> </ul> </li> <li>o Left Main 69,000 lbs                                     <ul style="list-style-type: none"> <li>▪ (31,300 kgs)</li> </ul> </li> <li>o Center 182,800 lbs                                     <ul style="list-style-type: none"> <li>▪ (82,900 kgs)</li> </ul> </li> <li>o Total Fuel 320,800 lbs                                     <ul style="list-style-type: none"> <li>▪ (145,500 kgs)</li> </ul> </li> <li>o (470,890 US GAL)</li> </ul> </li> <li>- Nitrogen generating system (NGS)</li> </ul> <p>CONTROLS AND INDICATORS:</p> <ul style="list-style-type: none"> <li>- Panel layout – minor differences</li> <li>- Two Crossfeed</li> <li>- No fuel balance switch</li> </ul> <p>FUEL PUMPS:</p> <ul style="list-style-type: none"> <li>- Center tank pump operation – minor differences</li> </ul>	No	Yes		CBT					
29 – HYDRAULIC POWER	<p>CONTROLS AND INDICATORS:</p> <ul style="list-style-type: none"> <li>- Panel layout</li> </ul> <p>HYDRAULIC SYSTEMS:</p> <ul style="list-style-type: none"> <li>- 3000 psi</li> </ul> <p>CENTER HYDRAULIC SYSTEM</p> <ul style="list-style-type: none"> <li>- Two air-driven demand pumps</li> <li>- Two electric pumps</li> </ul>	No	Yes	HND OUT						
30- ICE AND RAIN	<p>WIPER PANEL</p> <ul style="list-style-type: none"> <li>- Same panel location</li> <li>- Washer switches</li> </ul> <p>WING ANTI-ICE</p> <ul style="list-style-type: none"> <li>- Bleed air heats three midwing leading edge slats on each wing</li> </ul>	No	Yes	HND OUT						

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE										
DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
31- FLIGHT INSTRUMENT DISPLAYS	EFIS CONTROL PANEL PFD/ND CONTROLS - Map switches on EFIS panel - ND mode selector – EFIS control panel - ND range selector – 10 - 640 NM DISPLAY SELECT PANEL (DSP) - Panel layout - One DSP INBOARD DISPLAY CONTROLS - functionally similar to PFD/MFD selector - Different location INSTRUMENT SOURCE SELECTORS - Air data/attitude different switch type - NAV switch - DSPL CTRL switch CURSOR CONTROL - Minor differences - no rotary control DISPLAY FORMATS: - Smaller format capabilities - Clock on left and right forward panels - Airport map on EFB - No Vertical Situation Display (VSD) STANDBY FLIGHT INSTRUMENTS - Same instrument minor relocation	No	Yes			FTD				
31- FLIGHT INSTRUMENT DISPLAYS	HEAD UP DISPLAY (HUD): - None									

## SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE

DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
32- LANDING GEAR	MAIN GEAR: - Each gear has six wheels in tandem pairs - Has aft axle steering NOSE WHEEL STEERING TILLER: - Hydraulic powered - Functionally equivalent BRAKES: - System operation – functionally equivalent - Hydraulic brakes - Brake accumulator pressure indicator	No	Yes	HND OUT						
34 – NAVIGATION	CONTROL DISPLAY UNIT - Conventional CDU FLIGHT MANAGEMENT SYSTEM - Functionally equivalent AIR DATA INERTIAL REFERENCE SYSTEM (ADIRU) - One ADIRU, one SAARU, eight air data modules TRANSPONDER PANEL - On aft aisle stand WEATHER RADAR CONTROL PANEL - On aft aisle stand Alternate NAV - CDUs can be used if both FMCs fail	No	Yes		CBT					
36- PNEUMATIC	BLEED AIR CONTROL PANEL - Overhead panel									
49- APU	SYSTEM OPERATION - Bleed Air and electric power - Air Turbine Starter	No	No	HND OUT						
52- DOORS	DOORS: - Eight entry doors - same	No	No	HND OUT						
70- POWER PLANT	ENGINES: - GE90-115B - engine type design differences	No	Yes	HND OUT						
73- ENGINE FUEL AND CONTROL	EEC SYSTEM - Functionally equivalent	No	No	HND OUT						

## SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE

<b>DIFFERENCE AIRCRAFT: 777-300ER</b> <b>BASE AIRCRAFT: 787-8</b>				COMPLIANCE METHOD						
				TRAINING					CHKG/CURR	
System	Differences	Flt char	Proc chg	A	B	C	D	E	FLT CHK	REC EXP
77- ENGINE INDICATING	INDICATORS - GE Engines - N1 replaces TPR	No	Yes		CBT					
78- EXHAUST	THRUST REVERSER SYSTEM - Same	No	No							
80 STARTING	CONTROLS AND INDICATORS - Panel layout - System operation - Pneumatic starter - Starter Duty cycle limitation monitored automatically	No	Yes		CBT					

<b>MANEUVER OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>										
<b>DIFFERENCE AIRCRAFT: 777-300ER BASE AIRCRAFT: 787-8</b>				<b>COMPLIANCE METHOD</b>						
				<b>TRAINING</b>					<b>CHKG/CURR</b>	
<b>Maneuver</b>	<b>Differences</b>	<b>Flt char</b>	<b>Proc chg</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>FLT CHK</b>	<b>REC EXP</b>
<b>Exterior Preflight</b>	Minor differences	No	No	HND OUT						
<b>Preflight Procedures</b>	Minor Differences due to systems	No	Yes	HND OUT						
<b>Before Start Procedures</b>	Minor differences	No	Yes		CBT					
<b>Taxi</b>	Minor differences (Airport Map on EFB)	No	Yes		CBT					
<b>HUD operations</b>	None									
<b>Engine failure/V1</b>	Minor differences (TAC off)	No	No				FFS			
<b>ILS/GLS Normal</b>	No differences (no GLS)	No	No							
<b>Go-Around (All Eng)</b>	Minor differences	No	Yes	HND OUT						
<b>ILS Eng Inop</b>	Minor differences (TAC off)	No	No				FFS			
<b>Go-Around (One Eng)</b>	Minor differences (TAC off)	No	No				FFS			
<b>Manual Landing (One Eng)</b>	Minor differences (TAC off)	No	No				FFS			
<b>Non-ILS app</b>	Minor differences (no Integrated Approach Navigation)	No	Yes	HND OUT						

## APPENDIX 3

### AIRCRAFT COMPLIANCE CHECKLIST

This checklist applies to the B-777. Compliance with the following Federal Aviation Regulations and FAA policies have been established, based on B-777 configuration for WA004 (UAL-N773UA) or equivalent. Items that are identified as “CHDO” need to be evaluated by Principal Inspectors at the Certificate Holding District Office prior to the B-777 aircraft being used in CFR 121 revenue service or CFR Part 91 general operations. Items marked “complies” have either been found to directly comply with the applicable rule, or the necessary data or procedures are available to permit assessment for compliance of a B-777 for a particular operation (e.g. as for takeoff obstacle clearance assessment pertinent to CFR 121.189). Items marked NA are not applicable to B-777 aircraft.

#### Part 91

##### Subpart A - General

- 91.215 ATC transponder and altitude reporting equipment and use**  
(a) - (c) The B-777-200 design includes controls and displays necessary to support this requirement.  
(d) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 91.221 Traffic alert and collision avoidance system**  
(a) - (b) The B-777-200 design includes controls and displays necessary to support this requirement.
- 91.203 Civil aircraft: Certifications required**  
(a) - (b) The B-777-200 is delivered with a current airworthiness certificate appropriately displayed.  
(c) The B-777-200 design does not include provisions for fuel tanks in the passenger compartment or the baggage compartment.  
(d) The fuel design complies with these requirements.
- 91.9 Civil aircraft flight manual, marking, and placard requirements**  
(a) - (b) The B-777-200 design supports this requirement by documenting the airplane limitations in the Airplane Flight Manual.  
(c) The B-777-200 design meets the marking requirements of part 45.  
(d) This requirement is for rotorcraft and does not apply to the B-777-200.
- 91.211 Supplemental oxygen**  
(a) Not applicable to a pressurized airplane.  
(b) B-777-200 crew oxygen system supports the operation of the airplane as defined by this requirement.

**91.205**

**Powered civil aircraft with standard category US airworthiness certificates; instrument and equipment requirements**

- (a) B-777-200 instrumentation supports this operational requirement.
- (b)(1) - (b)(5) This B-777-200 instrumentation meets these requirements.
- (b)(6) This requirement does not apply to turbine powered aircraft.
- (b)(7) The B-777-200 instrumentation meets these requirements.
- (b)(8) This requirement does not apply to turbine powered aircraft.
- (b)(9) - (b)(10) The B-777-200 instrumentation meets these requirements.
- (b)(11) B-777-200 slide/raft survival kit includes a smoke flare.
- (b)(12) B-777-200 seat belt design supports this requirement.
- (b)(13) This requirement applies to small civil aircraft and as such does not apply to the B-777-200.
- (b)(14) An emergency transmitter locator is not required by 91.207, however the B-777-200 is furnished with a minimum of 2 ELTs.
- (b)(15) This requirement does not apply to the B-777-200.
- (b)(16) This requirement applies to rotorcraft and as such does not apply to the B-777-200.
- (c)(1) Requirements for instruments and equipment in paragraph (a) are addressed above.
- (c)(2) - (c)(5) The B-777-200 instrumentation meet these requirements.
- (c)(6) This requirement does not apply to the B-777-200 design which does not have fuses in the flight deck.
- (d)(1) Requirements for instruments and equipment in paragraph a and b are addressed above.
- (d)(2) B-777-200 instrumentation supports this requirement.
- (d)(3) This requirement for gyroscopic instruments does not apply to the B-777-200 because the B-777-200 has a third attitude instrument which meets these requirements.
- (d)(4) - (d)(9) The B-777-200 instrumentation meets these requirements.
- (e) The B-777-200 instrumentation meets these requirements.
- (f) This paragraph does not apply to operations conducted under part 121.

**91.191**

**Category II manual**

- (a) - (b) Although the B-777-200 is designed to operate in Category II operations this requirement does not apply to operations conducted under part 121, as stated in 91.191(c).

- 91.609 Flight recorders and cockpit voice recorders**  
(a) The B-777-200 flight data recorder and cockpit voice recorder were approved per the requirements in section 25.1457 and 25.1459 (reference S247W018-6 and S247W018-7).  
(b) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(c) - (d) The B-777-200 flight data recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1459.  
(e) - (f) The B-777-200 cockpit voice recorder was designed and tested to meet all part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1457.  
(g) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 91.217 Data correspondence between automatically reported pressure altitude data and the pilots altitude reference**  
(a) - (c) The B-777-200 design includes instrumentation necessary to support this requirement.
- 91.605 Transport category civil airplane weight limitations**  
(a) This requirement does not apply to turbine-engine powered airplanes certificated after September 30, 1958.  
(b) The B-777-200 design and Airplane Flight Manual provide sufficient information necessary for the operator to conduct operations defined in this requirement.
- 91.317 Provisionally certificated civil aircraft; operating limitations**  
(a) - (k) This requirement applies to provisionally certificated civil aircraft and as such does not apply to the B-777-200 airplane.
- 91.607 Emergency exits for airplanes carrying passengers for hire**  
(a) - (c) The B-777-200 emergency exits comply with part 25 and meet the requirements of this paragraph.
- 91.603 Aural speed warning devices**  
The B-777-200 aural speed warning device design meets the overspeed warning requirements of 25.1303(c)(1).
- 91.219 Altitude alerting system or device; turbojet powered civil airplanes**  
(a) - (b) B-777-200 altitude alerting system design supports this requirement.  
(c) - (d) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

- 91.207      Emergency locator transmitter**  
This requirement does not apply to the B-777-200 when it is operated in scheduled flight by scheduled air carriers (paragraph (f)). Four options are available for ELT installation with either slide/raft or airplane installation.
- 91.209      Subpart B - Flight Rules  
Aircraft lights**  
All requirements of this paragraph are met by the aircraft lights design of the B-777-200 with the exception of the lighting requirements for an anchored airplane (subparagraph c) which do not apply to the B-777-200 airplane.
- 91.409      Subpart C - Maintenance, preventive maintenance, and alterations  
Inspections**  
(a) - (h) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 91.411      Altimeter system and altitude reporting equipment tests and  
inspections**  
(a) - (d) Initial altimeter system and altitude reporting equipment tests are made on the B-777-200 airplane prior to delivery meeting the requirements of this paragraph.
- 91.413      ATC transponder and inspections**  
(a) - (c) Initial ATC transponder inspections are made on the B-777-200 airplane prior to delivery meeting the requirements of this paragraph.
- 91.503      Subpart D - Large and Turbine-powered multi-engined airplanes  
Flying equipment and operating information**  
(a) Stowage provisions are provided for the necessary flying equipment and aeronautical charts and data required by this subparagraph.  
(b) - (c) Checklists for normal and non-normal operation of the B-777-200 airplane are provided to the certificate holder.  
(d) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 91.517      Passenger Information**  
(a) This requirement is operational in nature, however the B-777-200 is compliant with section 25.791, and the passenger cabin signs are controlled by overhead panel selectors in the flight deck.  
(b) This requirement does not apply to the B-777-200 airplane because the airplane is marked with all the necessary signs.  
(c) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

- 91.521      Shoulder harness**  
(a) - (b) Flight crew and flight attendant combined seat belt and shoulder harnesses meet the requirements of 25.785 and thus met this requirement.
- 91.523      Carry-on baggage**  
(a) - (b) The B-777-200 carry-on baggage stowage areas are designed to be used as is provided in 91.525 and meet the load requirements of 25.561(b)(3).
- 91.525      Carriage of cargo**  
(a) B-777-200 cargo compartment design meets the requirements of this paragraph and allows for the operations defined.  
(b) This requirement does not apply to the B-777-200 airplane because the cargo compartments are not designed to require physical entry of the crewmember to extinguish any fire.
- 91.527      Operating in icing conditions**  
(a) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(b) - (c) B-777-200 ice protection provisions meet the requirements which allow operations defined in this paragraph.  
(d) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

- App A      Category II Operations: Manual, Instruments, Equipment and Maintenance**
1. The Airplane Flight Manual provided with the B-777-200 contains information relating to Category I, II, and III demonstrations.
  2. B-777-200 instrumentation includes controls and displays necessary to support this requirement.
  3. All instruments are approved for Category II operations upon delivery.
  4. Maintenance programs are the responsibility of the airline and as such compliance is not directly dependent on the B-777-200 design.

**Part 121**

- Subpart G - Manual requirements**
- 121.141      Airplane or rotorcraft flight manual**  
(a) The B-777-200 is furnished with an FAA approved Airplane Flight Manual as required per section 25.1581.  
(b) This requirement is operational in nature, however the B-777-200 design supports the carriage of manuals by providing stowage in the flight deck.

**Subpart H - Aircraft requirements**

**121.157 Aircraft certification and equipment requirements**

- (a) This section applies to aircraft certified before June 1, 1942 and as such does not apply to the B-777-200.
- (b) Aircraft certified after June 1, 1942 must comply with 121.73 (a), (b), (d) and (e). Part 121.73 (b) applies to the B-777-200. Refer below for compliance with 121.73 (b).
- (c) - (e) These sections are not applicable to the B-777-200 because they apply to C-46 type airplanes and helicopters.

**121.161 Airplane limitations: Type of routes**

- (a) The B-777-200 (PW) has been found suitable for ETOPS operations up to a 180 minutes diversion time (ref: CFR 25 Issue Paper EE-1, dated March 3, 1993. Other engine related aircraft(GE, RR are TBD)
- (b) The B-777-200 is certified under Part 25.

**Subpart I - Airplane performance operating limitations**

**121.173 General**

- (a) This section applies to reciprocating engine aircraft and is not applicable to the B-777-200.
- (b) This section requires compliance with sections 121.189 through 121.197 and is applicable to the B-777-200. Refer below to CFRs 121.189 through 121.197 for specifics.
- (c) This section applies to non-transport aircraft and is not applicable to the B-777-200.
- (d) This section requires compliance with sections 121.189 through 121.197 and is applicable to the B-777-200. Refer below to CFRs 121.189 through 121.197 for specifics.
- (f) This section describes deviation methods and as such is not applicable to the B-777-200 design.
- (g) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.189 Transport category airplanes: Turbine engine powered; takeoff limitations**

- (a) The B-777-200 design and documentation in the Airplane Flight Manual provides necessary information to operations which comply with this requirement.
- (b) This section applies to aircraft certified after August 26, 1957 and before August 30, 1959 and as such does not apply to the 777 -200 design.
- (c) - (d) The B-777-200 design and the Airplane Flight Manual provide the necessary information to operations which comply with these requirements.
- (e) - (g) This section provides definitions for determining compliance to this section.

**121.191**      **Transport category airplanes: Turbine engine powered; Enroute limitations: One engine inoperative**  
(a) The B-777-200 design and documentation provided in the Airplane Flight Manual provides necessary information to operations which comply with this requirement.  
(b) This section provides definitions for determining compliance to this section.

**121.195**      **Transport category airplanes: Turbine engine powered: Landing limitations: Destination airports**  
(a) - (b) The B-777-200 design and the Airplane Flight Manual contain the necessary information to operations which comply with this requirement.  
(c) This section applies to turbopropeller powered airplanes and does not apply to the B-777-200.  
(d) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.197**      **Transport category airplanes: Turbine engine powered; Landing limitations: Alternate airports**  
The B-777-200 design and documentation provide the necessary information to determine whether the operation can be conducted with the B-777-200 airplane.

**121.305**      **Subpart K - Instruments and Equipment Requirements  
Flight and navigation equipment**  
(a) - (j) B-777-200 instrumentation design provides the necessary controls and designs to meet this requirement.

**121.307**      **Engine instruments**  
(a) - (c) B-777-200 engine instrumentation is designed in accordance with 25.1305(c) and does not have carburetor air, head temperature indications or fuel pressure indications for each engine.  
(d) - (e) B-777-200 engine instrumentation design has the necessary controls and displays necessary to meet this requirement.  
(f) This requirement is not applicable to the B-777-200.  
(g) - (k) B-777-200 engine instrumentation design has the necessary controls and displays necessary to meet this requirement.  
(l) This requirement is not applicable to the B-777-200.

**121.308**      **Lavatory fire protection**  
(a) Each lavatory is equipped with a smoke detector which provides an aural alert in the lavatory and cabin and additionally a light at the associated attendant station.  
(b) Each lavatory has an automatic fire extinguisher located in the waste container cabinet.

**121.309 Emergency equipment**

- (a) Emergency equipment provided with the B-777-200 meet this requirement with the exception of those items listed below.
- (b) Emergency equipment provided with the B-777-200 meet this requirement except subparagraph (1) and (4) which are operational in nature.
- (c) Water and Halon fire extinguishers are located throughout the passenger cabin and flight deck. Requirement (c)(2) is not applicable to the B-777-200. All cargo compartment fire extinguishers are controlled by switches on the Cargo Fire Panel on the flight deck.
- (d) Four first aid kit locations are provided in the passenger cabin and one medical kit location is provided in the flight deck. First aid kits are buyer furnished equipment (BFE).
- (e) A crash axe is located in the flight deck.
- (f) Three megaphone locations are provided in the passenger cabin. Megaphones are buyer furnished equipment (BFE).

**121.310 Additional emergency equipment**

- (a) Each passenger entry door emergency evacuation slide/raft and pneumatic door opening system contains an assisting means approved per section 25.809(f).
- (b) Interior exit emergency markings are approved per sections 25.811 and 25.812.
- (c) Lighting for interior exit emergency markings are approved per section 25.812.
- (d) Emergency lighting is controlled by the EMERGENCY LIGHTS switch on the overhead panel in the flight deck. The switch can be used to manually activate or arm the system for automatic operation. Automatic operation occurs if DC power fails or is turned off when the system is armed. Lighting for interior exit emergency markings is approved per section 25.812.
- (e) Emergency exit operating handles are approved per section 25.811(e).
- (f) Access to emergency exits is approved per section 25.813.
- (g) Exterior exit marking are approved per section 25.811(f).
- (h) Exterior emergency lighting is approved per section 25.812(g).
- (i) Each of the passenger emergency exits is approved per the requirements in Part 25.
- (j) This requirement is not applicable to the B-777-200 because there are no emergency exits in the passenger compartment in excess of the minimum required.
- (k) This requirement is not applicable to the B-777-200 because there are no ventral or tailcone exits in the passenger compartment.
- (l) Each attendant seat bustle contains a flashlight.
- (m) No passenger emergency exit is more than 60 feet from any adjacent passenger emergency exit on the same side of the fuselage.

**121.311 Seats, safety belt, and shoulder harnesses**

- (a) These requirements are operational in nature, however the B-777-200 passenger seats and safety belts are approved per section 25.562 and 25.785.
- (b) - (c) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (d) This requirement is not applicable to the B-777-200 because there are no side facing seats.
- (e) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (f) - (g) The flight deck station and flight attendant seats comply with section 25.785.
- (h) This requirement is operational in nature. Pilot reach to controls with belts fastened was shown to be compliant with section 25.777(c).
- (i) This requirement is operational in nature, however the flight deck station seats include a stowage pocket for the buckle and shoulder harnesses that retract into the seat when not in use.

**121.312 Materials for compartment interiors**

- (a) - (b) Materials in compartments used by crewmembers or passengers were approved per the requirements in section 25.853, amendment level 25-74, June 19, 1990.

**121.313      Miscellaneous equipment**

- (a) This requirement is not applicable to the B-777-200 because fuses are not installed on the airplane.
- (b) A windshield wiper is installed for each pilot's front window.
- (c) The power supply and distribution system has been shown compliant with the specified part 25 CFRs.
- (d) Displays do not operate without adequate power. Electrical power source failures are annunciated on EICAS.
- (e) Three pairs of static ports are located on each side of the airplane and are cross-plumbed to pneumatically average the static pressure on each side of the airplane to eliminate the impact of maneuvering and out of trim flight. Static source is normally selected automatically by the Air Data Inertial Reference System (ADIRS). A means is provided to manually select an off-side single channel air data source. When an air data source select switch is in the alternate position, the switch is depressed inward and "ALTN" is annunciated on the switch face. If both PFDs are receiving air data from the same single channel source, the EICAS advisory "SGL SOURCE AIR DATA" is annunciated.
- (f) The flight deck door between the passenger compartment and the flight deck has an electric lock latch mechanism, controlled by the FLIGHT DECK DOOR switch on the aft aisle stand panel.
- (g) A key to the flight deck door is located outside the flight deck and is accessible by the flight attendants.
- (h) This requirement is not applicable to the B-777-200 because there is no door that is the means of access to a required passenger emergency exit.
- (i) A means to unlock the lavatory doors are located outside each door.

**121.314      Cargo and baggage compartments**

- (a) - (b) Cargo and baggage compartments ceiling and sidewall liner panels are constructed of glass fiber reinforced resin and meet the test requirements of the specified Part 25 requirements.

**121.315 Cockpit check procedure**

(a) This requirement is operational in nature, however the B-777-200 is furnished with cockpit normal and non-normal procedures as part of the Airplane Flight Manual, and Boeing Operations Manual supplied with the airplane.

(b) The B-777-200 normal checklists are: PREFLIGHT, BEFORE START, AFTER START, BEFORE TAKEOFF, AFTER TAKEOFF, APPROACH, LANDING, SHUTDOWN, and SECURE. Normal checklists are used to verify that certain critical procedural steps have been accomplished. Non-normal procedures are for use by the flight crew to cope with non-normal situations, including engine and system emergencies. Non-normal procedures were designed so that the only items required to be recalled from memory are critical steps. The non-normal checklist contains the recall items to allow the pilots to verify that each item has been accomplished, and contains reference items to be done while reading the checklist.

(c) This requirement is operational in nature, however the B-777-200 includes a stowage slot for a normal checklist card under the glareshield, and a stowage compartment for the checklist manual outboard of each pilot seat.

**121.316 Fuel tanks**

Compliance has been demonstrated to the specified part 25 CFR.

**121.317 Passenger information**

(a) The B-777-200 is compliant with section 25.791, and the passenger cabin signs are controlled by overhead panel selectors in the flight deck.

(b) - (c) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

(d) The B-777-200 is compliant with section 25.791.

(e) This placard is installed on the lavatory ceiling next to the smoke detector.

(f) - (k) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.318 Public address system**

- (a) Operation of the PA system is independent from operation of the crew interphone system. The PA system is accessed through the pilot's boom microphone and audio control panels, or through a handset on the aft aislestand.
- (b) The PA system complies with CFR 21.305 (c).
- (c) The PA handset on the flight deck is located on the aft aislestand between the two pilots. The pilot's audio control panels are located on the forward aislestand.
- (d) Every exit door has at least one PA handset equipped with a microphone. Note: UAL configuration does not have a PA handset equipped with a microphone at door 1R.
- (e) Operation of the PA can be accomplished within 10 seconds.
- (f) Rapid Audible Speech Transmission tests demonstrated compliance with this requirement.
- (g) The PA system complies with CFR 25.1423.

**121.319 Crewmember interphone system**

- (a) The crew interphone system operation is independent from the PA system operation.
- (b) The crew interphone system complies with CFR 21.305 (c).
  - (b)(1)(i) Each flight attendant handset can be called from the flight deck through the CDUs.
  - (b)(1)(ii) Handsets are located within reach of each galley.
  - (b)(2) The interphone system is accessed through the pilot's audio control panels, which are located on the forward aislestand.
  - (b)(3) Every exit door has at least one handset equipped with a microphone.
  - (b)(4) Operation of the interphone can be accomplished within 10 seconds.
  - (b)(5)(i) Every exit door has at least one handset equipped with a microphone. Handsets are located within reach of each galley.
  - (b)(5)(ii) There are chimes as well as lights to alert the flight and cabin crews.
  - (b)(5)(iii) Both the chimes and lights differentiate between normal and emergency alerting.
  - (b)(5)(iv) An interphone jack on the APU ground control panel in the nose landing gear well enables communication between either pilot and ground personnel. The APU ground control panel is not visible from either the flight deck or cabin.

**121.323 Instruments and equipment for operations at night**

- (a) The B-777-200 is equipped with white position lights on the rear wing tip of each wing. The left forward wing tip has a red navigation position light. The right forward wing tip has a green navigation position light.
- (b) A red strobe anti-collision light is located on the top of the fuselage. A red strobe anti-collision light is located on the bottom of the fuselage.
- (c) The left and right landing lights are located in the left and right wing root and are optimized for flare and ground roll. Two landing lights are located on the nose gear and are optimized for approach.
- (d) Anti-reflective coating is used to reduce reflections and glare off the displays. Overhead dome lights use louvers to prevent glare off the forward and side displays. Floodlighting is shielded. The aislestand floodlight was also designed to eliminate reflection off the bezel. Individual lighting controls are provided for all displays and panels. A master brightness control system provides simultaneous brightness adjustment for all panel lighting and displays. When the master brightness control is engaged, individual lighting controls can be used for adjustments over a limited range. Additionally, an automatic brightness control system adjusts display brightness of all main displays, CDUs, mode control panel displays, standby instruments, and aislestand displays, based on sensed ambient light.
- (e) Airspeed is provided to the primary displays by three pitot and three static air data modules (ADM) through the ADIRU and SAARU. In normal operations, the displayed airspeed is a voted solution using inputs from all six ADMs. In addition, airspeed is provided to the standby airspeed indicator through a dedicated pitot ADM and a dedicated static ADM. Pitot heat is provided to the left, center, right and standby pitot ADMs.
- (f) Altitude is provided to the primary displays by three static ADMs through the ADIRU and SAARU. In normal operations, displayed altitude is voted solution using all three static ADMs. In addition, altitude is provided to the standby altimeter through a dedicated static ADM.

**121.325 Instruments and equipment for operations under IFR or over-the-top**

- (a) See response to CFR 121.323(e) for compliance.
- (b) See response to CFR 121.323(f) for compliance.
- (c) See response to CFR 121.323(d) for compliance.

**121.329 Supplemental oxygen for sustenance: turbine engine power airplanes**

- (a) See (b) and (c)
- (2) The basic chemical and optional gaseous passenger oxygen system and the flight crew oxygen system will provide the required quantity of oxygen dependent on the customer's intended route structure.
- (3) See response to section 121.329(a)(2).
- (4) The basic chemical and optional gaseous passenger oxygen system and the flight crew oxygen system are designed and approved per section 25.1441(d).
- (b)(1) - (b)(2) The flight crew oxygen system will provided the required quantity of oxygen dependent on the customer's intended route structure.
- (b)(3) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (c) See response to section 121.329(a)(2).

**121-333 Supplemental oxygen for emergency descent and for first aid; turbine engine powered airplanes with pressurized cabins**

- (a) See response to (b) through (e).
- (b) Flight crew oxygen systems are sized to meet the requirements of this requirement (it is one of the primary sizing parameters).
- (c) (1) The B-777-200 is approved per the requirements in section 25.447(c)(2).
- (2) The B-777-200 is approved per the requirements in section 25.1436(b)(1) through (b)(4).
- (3) - (4) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (d) Portable oxygen equipment is installed for each attendant's seat. While attendants are between attendants seat locations, oxygen is available from 10% additional oxygen masks installed (vs. number of passenger seats) at the Passenger Service Units [per 25.1447(c)(1)].
- (e)(1) - (e)(2) The basic chemical and optional gaseous passenger oxygen system are sized to meet requirements based on the customer's intended route structure.
- (e)(3) The number and size of portable oxygen bottles has been determined based on these requirements.
- (f) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.335 Equipment standards**

- (a) This requirement is for reciprocating engine powered airplanes and does not apply to B-777-200.
- (b) The oxygen system meets the equipment standards of section 25.1443.

**121.337 Protective breathing equipment**

(a) - (b) The protective breathing equipment is buyer furnished equipment (BFE) which must be approved per TSO-C99 (mask and goggles) and TSO-C116 (smoke hoods).

(c) - (d) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.339 Emergency equipment for extended over-water operations**

(a) The B-777-200 includes a life preserver equipped with a survivor locator light for each occupant of the airplane, slide/rafts to cover rated capacity, a smoke flare for each raft, and a minimum of 2 survival type emergency locator transmitters.

(b) Slide/rafts and located at each passenger emergency exit, life preservers are located under each passenger seat, and emergency locator transmitters are located adjacent to emergency exits (2 minimum).

(c) A survival kit is contained within each slide/raft unit.

**121.340 Emergency floatation means**

(a) A life vest is located under each passenger seat.

(b) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.341 Equipment for operations in icing conditions**

(a) The B-777-200 is approved per the ice protection requirements in section 25.1419 for the engine anti-ice system, wing anti-ice system, flight deck window heats, and probe heat.

(b) This requirement is operational in nature, however the B-777-200 provides wing lights installed on the fuselage to illuminate the leading edge of the wing, and it was shown by flight tests that there was no glare or reflection that would handicap crewmembers in the performance of their duties.

**121.342 Pitot heat indication system**

(a) The B-777-200 complies with section 25.1326 and provides advisory level EICAS alerts for failure of one or more pitot heat systems (HEAT PITOT C, HEAT PITOT L, HEAT PITOT R, HEAT PITOT L+C+R).

(b) This requirement is not applicable to the B-777-200 because of its date of certification.

- 121.343 Flight recorders**  
(a) The B-777-200 flight data recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1459.  
(b) - (c) These requirements do not apply to the B-777-200 because the more restrictive requirements (d) is applicable (see below).  
(d) - (g) The B-777-200 flight data recorder was designed and tested to meet all part 25, 19, 121, and 125 requirements and approved per the requirements of section 25.1459.  
(h) - (i) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(j) - (k) The B-777-200 flight data recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1459.
- 121.345 Radio equipment**  
(a) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(b) All VHF systems have separate antennas for signal reception. HF and VOR have common but rigid antennas.  
(c) Specified aircraft ATC equipment is classified as mode S.
- 121.347 Radio equipment for operations under VFR over routes navigated by pilotage**  
(a) The B-777-200 is dual redundant with HF comm radios and triple redundant with VHF comm radios.  
(b) ADF, VOR, and DME is installed to receive navigational signals (all nav systems are dual redundant). All comm devices mentioned in (a) are still operative at night.
- 121.349 Radio equipment for operations under VFR over routes not navigated by pilotage and for operations under IFR or over-the-top**  
(a) All comm devices mentioned in section 121.347(a) are still active for this condition. Dual redundant ADF, VOR, and DME installed. Triple redundant ILS and marker beacon receiver are installed.  
(b) Two VORs and at least one ADF installed.  
(c) Two DMEs installed.  
(d) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 121.351 Radio equipment for extended overwater operations and certain other operations**  
(a) - (b) The B-777-200 is dual redundant with HF comm radios and triple redundant with VHF comm radios. ADF, VOR, and DME is installed to receive navigational signals (all nav systems are dual redundant). Additional non-audio comm systems are installed.

- 121.353      Emergency equipment for operations over uninhabited terrain areas: flag and supplemental air carriers and commercial operators**
- (a) Each slide/raft contains a pyrotechnic signaling device.
  - (b) There are at a minimum 2 survival type emergency locator transmitters furnished with the B-777-200.
  - (c) This requirement is operational in nature due to the intended airline routes, however each slide/raft contains a survival kit.
- 121.355      Equipment for operations on which specialized means of navigation are used**
- (a)(1) The ADIRU is certified to meet the requirements of CFR 121.355 Appendix G.
  - (b) This requirement is not applicable to the B-777-200.
- 121.356      Traffic alert and collision avoidance equipment requirements**
- (a) The B-777-200 is equipped with a TCAS II system certified to TSO-C119a (MOPS level 6.04A). The associated Mode S transponder is certified to TSO-C112.
  - (b) This requirement is not applicable to the B-777-200.
  - (c)(1) Aircrew procedures are addressed in the B-777-200 Airplane Flight Manual Sections 1 (Certificate Limitations) and 3 (Normal Procedures). In addition, operation of TCAS is covered in the B-777-200 Boeing Operations Manual: Chapter NP (Normal Procedures), Chapter NNM (Non-Normal Maneuvers), Chapter NNC (Non-Normal Checklists), Chapter 10 (Flight Instruments, Displays), Chapter 15 (Warning Systems).
  - (c)(2) Input sources are provided in the Wiring Diagram Manual, as part of the instructions for continued airworthiness under CFR 25.1529, Appendix H.
- 121.357      Airborne weather radar equipment requirements**
- (a) The B-777-200 is equipped with a weather radar system certified to TSO-C63B.
  - (b) This requirement is not applicable to the B-777-200.
  - (c) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 121.358      Low-altitude windshear equipment requirements**
- (a) The B-777-200, with PW engines, received FAA/JAA certification approval for its airborne windshear warning and flight guidance system on April 19, 1995.
  - (b) - (d) These requirements are not applicable to the B-777-200 because of its date of manufacture.

- 121.359 Cockpit voice recorders**  
(a) The B-777-200 cockpit voice recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1457.  
(b) This requirement is not applicable to the B-777-200 because it is installed with a cockpit voice recorder that meets the requirements of paragraph (a).  
(c) - (e) The B-777-200 cockpit voice recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1457.  
(f) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 121.360 Ground proximity warning-glide slope deviation alerting systems**  
(a) The B-777-200 is equipped with a ground proximity warning system that is TSO approved.  
(b) This requirement is not applicable to the B-777-200 because of its date of certification.  
(c) The B-777-200 Airplane Flight Manual contains the appropriate procedures for item (c)(1)(i) through (c)(1)(iv) and an outline of all input sources that must be operating.  
(d) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(f) The B-777-200 is equipped with a ground proximity warning glide slope deviation alerting system that meets the requirements and is approved under TSO-C926.  
(g) - (h) These requirements are not applicable to the B-777-200 because of its date of certification.  
(i) The ground proximity warning glide slope deviation alerting system meets the requirements of TSO-C926 as required in section 121.360(e), and uses the same warning envelopes and warning modes as other Boeing airplanes.
- 121.369 Subpart L - Maintenance, Preventive Maintenance and Alterations Manual requirements**  
(a) - (c) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 121.574 Subpart T - Flight Operations Oxygen for medical use by passengers**  
(a) - (c) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 121.576 Retention of items of mass in passenger and crew compartments**  
The B-777-200 is approved per the requirements in section 25.787.

**121.577 Food and beverage service equipment during takeoff and landing**

(a) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.578 Cabin ozone concentration**

(a) - (c) The B-777-200 has been approved per the cabin ozone concentration requirements of section 25.832.

(d) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**121.587 Closing and locking of flight crew compartment door**

(a) - (b) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design

**121.589 Carry-on baggage**

(a) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

(f) The B-777-200 is approved per the requirements in section 25.787.

(g) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**Part 125**

**Subpart C - Manual Requirements**

**125.75 Airplane Flight Manual**

(a) The B-777-200 is furnished with an FAA approved Airplane Flight Manual as required per section 25.1581.

(b) This requirement is operational in nature, however the B-777-200 design supports the carriage of manuals by providing stowage in the flight deck.

**Subpart D - Airplane Requirements**

**125.93 Airplane limitations**

The B-777-200 has an approved DITCHING PREPARATION non-normal procedure in the Boeing Operations Manual.

**Subpart E - Special Airworthiness Requirements**

**125.183**

**Carriage of cargo in passenger compartments**

(a) - (c) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**125.185**

**Carriage of cargo in cargo compartment**

This requirement is not applicable to the B-777-200. All cargo compartment fire extinguishers are controlled by switches on the Cargo Fire Panel on the flight deck.

**125.187**

**Landing gear: Aural warning device**

(a) - (c) These requirements are not applicable to the B-777-200 because it complies with the requirements of section 25.729.

**125.189**

**Demonstration of emergency evacuation procedures**

(a) The B-777-200 has demonstrated compliance with section 25.803(c) for 419 passengers (reference D462W018-4, "B-777-200 full Scale Evacuation Demonstration FAA/JAA Certification").

(b) This requirement is not applicable because compliance has been shown with section 25.803 during type certification.

(c) - (d) These requirements are airline dependent.

**Subpart F - Instrument and Equipment**

**125.203**

**Radio and navigation equipment**

(a) Three independent VHF radios provided two-way radio communications up to a line of sight distance to the horizon.

(b) Over-the-top operations are supported by the following B-777-200 radio navigational equipment: 2 VOR receivers, 2 ADF systems, and the global positioning system (GPS).

(c) The B-777-200 contains the following radio communication and navigational equipment to support this requirement: 2 independent HF radios, 2 speakers, 4 headset jacks and 4 microphone jacks, and 2 independent GPS receivers.

(d) The dual HF radios are independent as are the GPS receivers.

**125.205 Equipment requirements: Airplanes under IFR**

- (a) Vertical speed is indicated on the right hand side of each pilot's primary flight display.
- (b) Total air temperature is indicated on the EICAS display.
- (c) The air data inertial reference system contains three heated pitot probes.
- (d) If DC power to the air data inertial reference unit (ADIRU) fails, the ADIRU is then powered by the standby hot battery bus. ADIRU failure causes the NAV ADIRU INERTIAL caution message to be displayed to the flight crew on the EICAS display.
- (e) Three air data modules (ADM) serve as the sources of static pressure for the flight displays; an independent ADM provides static pressure input to the standby displays.
- (f) Each engine contains an integrated drive generator. There is one backup generator per engine, an auxiliary power unit (APU) generator, and the ram air turbine generator (RAT). The RAT and battery alone provide sufficient power of safe emergency operation of the airplane.
- (g) The engine integrated drive generators are independent, as are the APU generator and the RAT generator.
- (h) This definition is consistent with compliance to paragraph (f).
- (i) The air data inertial reference system contains three heated pitot probes.
- (j) Barometric pressure is sensed by the three static air data modules and the standby static air data module.
- (k) Instrument lighting, reflections, and illumination intensity controls were shown to be compliant with section 25.1381.

**125.206 Pitot heat indication systems**

- (a) The B-777-200 complies with section 25.1326 and provides advisory level EICAS alerts for failure of one or more pitot probe heat systems (HEAT PITOT C, HEAT PITOT L, HEAT PITOT R, HEAT PITOT L+C+R).
- (b) This requirement is not applicable to the B-777-200 because of its date of certification.

**125.207 Emergency equipment requirements**

- (a) Four first aid kit locations are provided in the passenger cabin and one medical kit location is provided in the flight deck. First aid kits are buyer furnished equipment (BFE). A crash axe is located in the flight deck. The B-777-200 is compliant with section 25.791, and the passenger cabin signs are controlled by overhead panel selectors in the flight deck. The B-777-200 has been demonstrated to be compliant with the emergency provision requirements contained in section 25.801 through 25.817.
- (b) Three megaphone locations are provided in the passenger cabin. Megaphones are buyer furnished equipment (BFE).

**125.209      Emergency equipment: extended overwater operations**

- (a)(1) A life preserver with a survivor locator light is under each passenger seat. Each raft has a locator light.
- (a)(2) Slide/rafts are approved under the requirements in TSO-C69B.
- (b) This requirement is operational in nature, however there are a minimum of two survival type locator transmitters on the B-777-200.

**125.211      Seat and safety belt**

- (a) These requirements are operational in nature; however the B-777-200 passenger seats safety belts are approved per section 25.562 and 25.785.
- (b) - (c) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (d) This requirement is not applicable to the B-777-200 because there are no side facing seats.
- (e) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (f) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design. Passenger seats do not include shoulder harnesses. Flight attendant seat shoulder harnesses are required per section 25.785(h)(6); flight deck station seats shoulder harnesses are required per section 25.785(g).

**125.213      Miscellaneous equipment**

- (a) This requirement is not applicable to the B-777-200 because fuses are not installed on the airplane.
- (b) A windshield wiper is installed for each pilot's front window.
- (c) The power supply and distribution system has been shown compliant with the specified part 25 CFRs.
- (d) Displays do not operate without adequate power. Electrical power source failures are annunciated on EICAS.
- (e) Three pairs of static ports are located on each side of the airplane and are cross-plumbed to pneumatically average the static pressure on each side of the airplane to eliminate the impact of maneuvering and out of trim flight. Static source is normally selected automatically by the Air Data Inertial Reference System (ADIRS). A means is provided to manually select an off-side single channel air data source. When an air data source select switch is in the alternate position, the switch is depressed inward and "ALTN" is annunciated on the switch face. If both PFDs are receiving air data from the same single channel source, the EICAS advisory "SGL SOURCE AIR DATA" is annunciated.
- (f) This requirement is not applicable to the B-777-200 because there is no door that is the means of access to a required passenger emergency exit.
- (g) A means to unlock the lavatory doors are located outside each door.

- 125.215      Operating information required**  
(a) These requirements are operational in nature, however the B-777-200 is furnished with cockpit normal and non-normal procedures, and one engine inoperative performance data as part of the Airplane Flight Manual.  
(b) The B-777-200 normal procedures are: PREFLIGHT, BEFORE START, AFTER START, BEFORE TAKEOFF, AFTER TAKEOFF, APPROACH, LANDING SHUTDOWN, AND SECURE.  
(c) The B-777-200 non-normal procedures contain the categories of procedures specified in this requirement.
- 125.217      Passenger information**  
(a) This requirement is operational in nature, however the B-777-200 is compliant with section 25.791, and the passenger cabin signs are controlled by overhead panel selectors in the flight deck.  
(b) - (d) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 125.219      Oxygen for medical use by passengers**  
(a) - (e) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 125.221      Icing conditions: Operating limitations**  
(a) - (b) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(c) - (d) The B-777-200 has demonstrated compliance with the CFR part 25 requirements relating to ice protection.  
(e) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- 125.223      Airborne weather radar equipment requirements**  
(a) The B-777-200 is equipped with a weather radar system certified to TSO-C63B.  
(b) - (d) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.  
(e) This requirement is not applicable to the B-777-200.

**125.224 Traffic alert and collision system**

(a) The B-777-200 is equipped with a TCAS II system certified to TSO C119a (MOPS level 6.04A). The associated Mode S transponder is certified to TSO C112.

(b)(1) Aircrew procedures are addressed in the B-777-200 Airplane Flight Manual Sections 1 (Certificate Limitations) and 3 (Normal Procedures). In addition, operation of TCAS is covered in the B-777-200 Boeing supplied Operations Manual: Chapter NP (Normal Procedures), Chapter NNM (Non-Normal Maneuvers), Chapter NNC (Non-Normal Checklists), Chapter 10 (Flight Instruments, Displays), Chapter 15 (Warning Systems).

(b)(2) Input sources are provided in the Wiring Diagram Manual, as part of the instructions for continued airworthiness under CFR 25.1529, Appendix H.

**125.225 Flight recorder**

(a) - (c) These requirements are not applicable to the B-777-200 because the more restrictive requirement (d) is applicable (see below).

(d) The B-777-200 flight data recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1459.

(f) - (g) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

(h) - (i) The B-777-200 flight data recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1459.

**125.227 Cockpit voice recorders**

(a) The B-777-200 cockpit voice recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1457.

(b) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

(c) - (e) The B-777-200 cockpit voice recorder was designed and tested to meet all Part 25, 91, 121, and 125 requirements and approved per the requirements of section 25.1457.

(f) This requirement is operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**Subpart G - Maintenance**

**125.249 Maintenance manual requirements**

(a) (b) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.

**Subpart H - Airman and Crewmember Requirements**

**125.269 Flight Attendants**

- (a) - (b) These requirements are operational in nature and as such compliance is not directly dependent on the B-777-200 design.
- (c) This requirement is operational in nature; however flight attendant seats are located next to emergency exits.

**Subpart J - Flight Operations**

**125.327 Briefing of passengers before flight**

- (a) - (e) These requirements are operational in nature And as such compliance is not directly dependant on the 777 design.

**125.329 Minimum Altitude for Use of Autopilot**

- (a) - (c) For takeoff, the autoflight system design supports these requirements with an autopilot engage inhibit to 200ft RA. For approach, the Airplane Flight Manual provides operating limitations for operational compliance.
- (d) – (e) These requirements are operational in nature and as such compliance is not directly dependent on the 777 design

## MISCELLANEOUS

### a. ADVISORY CIRCULARS

- 1) AC 00-50A - Low Level Wind Shear - Aircraft operating procedures are consistent with this AC. Windshear alerting and flight guidance system installed meets CFR 121.358.
- 2) AC 25-15
- 3) AC 20-129
- 4) AC 20-130 and AC 90-45A - Area Navigation/Multi Sensor Navigation Systems in US NAS - Meets or exceeds all requirements for enroute or approach area navigation systems. Aircraft may file "/G" flight plan suffix for pertinent routes.
- 5) AC 90-79 - Use of Electronic navigation in Remote Areas - Aircraft systems and procedures are consistent with this AC.
- 6) AC 91-6A - Water, Slush, and Snow on Runway - Aircraft systems and procedures are consistent with this AC.
- 7) AC 91-53A - Noise Abatement Departure Profile - Aircraft systems and procedures are consistent with this AC. Both U.S. and ICAO A and B procedures may be flown by appropriate FMS data entries.
- 8) AC 120-28D - Category III - AFM provisions address Category III requirements. Cat IIIb minima are based on fail operational autoland ("LAND 3" mode). Fail passive autoland ("LAND 2" mode) is limited to Cat IIIa. Irregular terrain clearance (Case I) demonstrations have been successfully completed for the B-777 (KSEA).
- 9) AC 120-29A - Category II - Aircraft systems and procedures are consistent with this AC. AFM and MMEL include reference to configurations approved, as addressed by standard operations specifications.
- 10) AC 120-33 - Navigation Systems For Approval in MNPS - Aircraft systems and procedures are consistent with this AC.
- 11) AC 120-35A - LOFT - Aircraft systems and procedures, and training, checking, and currency identified by the FSB are consistent with this AC. Specific provisions related to LOFT are addressed by paragraph 6.5.1 of this report.
- 12) AC 120-38 - Cabin Ozone Concentrations - B-777 systems and procedures are consistent with this AC and qualified for operations in areas of high ozone concentration without special flight procedure.

13) AC 120-42A - Extended Range Operations With Two-Engine Airplanes (ETOPS) - The B-777 has been shown to meet type design requirements for extended range operations (ETOPS) as specified by its AFM.

14) AC 120-ECL (Pending) - Operational Use and Modifications of Electronic Checklists (ECLs) - Aircraft systems and procedures are consistent with this AC. A current paper backup to the ECL must be carried on board and be readily accessible to the crew.

15) AC 121-13 - Self Contained Navigation Systems - Aircraft systems and procedures are consistent with this AC.

**b. FAA DIRECTIVES, POLICIES, AND US AIRMAN'S INFORMATION MANUAL**

1) The B-777 is considered a "Heavy" aircraft and flight plans should be so designated.

2) For the B-777, airspeeds in excess of US standard limits (greater than 250 KIAS below 10,000 MSL) may require routine crew advisories to ATC regarding deviation from speed limits when operating at heavy gross weights.

3) Flight Plan designator is B-777. No unique air traffic requirements are applicable to the B-777.

**APPENDIX 4**

EXAMPLE FULL TRANSITION FOOTPRINT

Flight Training Curriculum

B-777 Transition Footprint (CFR 121.424 Appendix E)

From all non-FMS flight decks (full transition)

CBT/Academics, Performance, and Exam.	FFS	FFS
10 FBS	LOS/LOFT	Ck

12 days	9 days
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21 days total
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## APPENDIX 5

### EXAMPLE SHORTENED TRANSITION FOOTPRINT

#### Flight Training Curriculum

B-777 Shortened Footprint (CFR 121.424 Appendix E)

From all other Boeing FMS flight decks (shortened transition)

CBT/Academics, Performance, and Exam.	FFS	FFS
6 FBS	LOS/LOFT	Ck

6 days	5 days
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13 days total
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Previous Boeing FMS flight deck experience  
Similar airplane systems, autopilot/autothrottle, FMC operation,  
EFIS and overall flight deck design. B-737-Classic, NG, B-757/767, 747-400/-8

## APPENDIX 6

### EXAMPLE DIFFERENCES COURSE

#### Flight Training Curriculum

B-777 Transition Footprint (CFR 121.424 Appendix E)

From B-787 to B-777

CBT/Academics, Performance, and Exam.	FFS	FFS
1 FBS	2 FFS	Ck

2 days	3 days
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5 Days Total
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Note: The B-777 differences curriculum requires the pilot to be type rated in the B-787, with a current proficiency check as specified in CFR 61.57.

Note 2: The B-777 FBS must be qualified at a Level 4 FTD or higher for the B-787 to B-777 Differences course.

## APPENDIX 7

### EXAMPLE FLIGHT ATTENDANT TRAINING

#### B-777 Flight Attendant Transition Training (CFR 121.421)

##### **Description of the B-777 “Baseline Training” as Determined by Boeing’s Flight Attendant Training for the Full-Scale Evacuation Demonstration**

On February 10, 1995, the Boeing Company conducted training for the flight attendants scheduled to participate in the B-777 Full-Scale Evacuation Demonstration at the Boeing Facility in Everett, WA. The A.M. Session, conducted from 0930 to 1150 by Boeing Instructor Doug Barker, addressed general test information. The P.M. Session, conducted from 1300 to 1630 by UAL Instructor Paul Smith, addressed the B-777 Transition/Adaptation Training.

Boeing’s training was successfully conducted in agreement with Advisory Circular 25.803.1, entitled “Emergency Evacuation Demonstrations,” dated November 13, 1989, and with Part 121 operational requirements. In accordance with Air Carrier Operation’s Bulletin No. 1-94-21, “Crewmember Training for Emergency Evacuation Demonstrations”, dated August 25, 1994, this training will be considered the “baseline” training against which all certificate holders’ emergency evacuation training for crewmembers, who will serve on the B-777 aircraft, must be compared.

The pre-demonstration training adhered to the following guidance as outlined in Advisory Circular No. 25.803-1:

- Training focused on those areas that deal directly with the emergency evacuation systems, equipment, and procedures needed to prepare passengers and cabin for a normal takeoff and unplanned aborted takeoff.
- Training was based on an aircraft-specific emergency evacuation training program similar in content and duration to the emergency evacuation portion of the Initial Equipment or the Transition Categories of Training Programs approved by the FAA under Part 121.
- The aircraft emergency equipment familiarization and emergency training, including the training on exit operation and passenger management, was not excessive with respect to the content and duration of the training that is considered to be typical of standard industry practice for the Transition Category of Training.
- The evacuation commands and actions outlined in the training curriculum were typical of standard industry practice.

The training modules addressed in the B-777 pre-demonstration training are considered to reflect the minimum training requirements for an emergency evacuation of the B-777 aircraft. In addition, these training modules were designed to train to the minimum evacuation performance

standards required for optimum flight attendant performance proficiency when evacuating the B-777 aircraft. When approving B-777 training programs, the FAA must consider the category of training to be addressed, the complexity of the different related aircraft of the B-777 aircraft, and the complexity of the type of operation to be conducted. The B-777 pre-demonstration training consisted of the following training modules:

1. B-777 Aircraft Familiarization and Systems Orientation

- Aircraft characteristics and description including cabin configuration
- Description of the function and operation of the flight attendant jumpseat restraint system
- Description and location of emergency exits
- Door opening controls and indicators
- Arming and disarming of emergency evacuation system
- Door operating procedures in the normal mode
- Door operating procedures in the emergency mode including slide/raft deployment  
Note: The slides and rafts were not actually deployed during the pre-demonstration training.
- Description of the emergency communication and lighting systems

2. B-777 Flight Attendant-Evacuation Responsibilities

- Flight attendant numbering system and duty stations
- Flight attendant jumpseat restraint system and protective position at jumpseat
- Switches and controls to be used at assigned station
- Exit assignment(s) including where and how to assess conditions outside the aircraft
- Operation of exit controls including location of manual inflation handle
- Protective position at exit and dedicated assist space
- Evacuation commands and actions
- Helper requirements

3. B-777 Evacuation Procedures

- Flight attendant readiness including assuming protective position
  - Maintaining brace position until aircraft comes to a complete stop
  - Releasing seatbelt and getting out of seat
  - Assessing conditions
  - Decision to evacuate and initiation of evacuation
  - Ensuring activation of emergency lights
  - Commanding passengers to release seatbelts and evacuate
  - Assessing exit condition while commanding passengers to stand back
- 
- IF EXIT IS USABLE: opening of exit and assuming protective position in dedicated assist space.

NOTE: One area of training that needs to be emphasized in respect to an inoperative or blocked door is redirecting passengers in a positive and persuasive manner to an operative door. This would maximize the flow rates to an operative door which would aid in reducing the evacuation times.

- Pulling manual inflation handle
- Commanding passengers to stand back until slide/raft fully deployed
- Commanding passengers to evacuate at exit and run away from aircraft
- Continuing to assess conditions inside and outside the aircraft to ensure passenger flow is maintained
- Taking appropriate action to assist hesitant passengers
- When passenger flow has ceased at exit, taking appropriate actions to assist and redirect passengers at adjacent exit(s)
- Exiting aircraft following last passenger, using nearest exit
  
- IF EXIT NOT USABLE: blocking exit to prevent passenger egress while commanding passengers that exit is blocked
- Assessing usability of other doors in vicinity
- Visually determining that passenger flow has been established through a usable exit before re-directing passenger flow
- Directing passengers to nearest usable exit by issuing appropriate commands and using arms and hands to point passengers in direction of exit
- When in flight attendant's best judgment, passenger flow has been established away from a non usable exit and toward a usable exit, proceeding to appropriate location to best direct passengers to active exits
- Maintaining awareness of evacuation progress at other usable exits and directing (or redirecting) passengers as necessary to maintain equal flow to each exit
  
- FLIGHT ATTENDANTS NOT ASSIGNED TO AN EXIT: flight attendant readiness including assuming protective position
- Maintaining brace position until aircraft comes to a complete stop
- Releasing seatbelt and getting out of seat
- Assessing conditions and directing passengers to usable exits

#### 4. Door Training

- INSTRUCTOR DEMONSTRATION: normal opening/closing, including use of gust lock
- Arming and disarming of emergency evacuation system including visual indicators
- Assessing conditions
- Emergency door operation including pulling of manual inflation handle
- Assuming protective position
  
- ALL FLIGHT ATTENDANTS PERFORM: one time arming and disarming of emergency evacuation system
- Verbal review of evacuation protocol

- Evacuation protocol including one successful opening of the door in the armed mode and one successful opening of the door in the emergency mode (average five minutes per trainee)

## **APPENDIX 8**

### **FLIGHTCREW SLEEPING QUARTERS AND REST FACILITIES**

In accordance with the guidance provided by AC 121-31 – Flightcrew Sleeping Quarters and Rest Facilities, the B-777 Flight Standardization Board (FSB) has conducted a comprehensive review of the B-777 Door 1 Overhead Flightcrew Rest facilities, as documented in the Certification Plan D925W071, and finds the facilities in complete compliance with 14 CFR 121.485 (a). Further, the FSB reviewed B-777 Door 3 and Door 5 Overhead Flight Attendant Rest facilities and found the safety-related features of the design to be equivalent to the Door 1 Overhead Flight Crew Rest facilities.

Additionally the B-777-200F Flightcrew Sleeping Quarters and Rest Facilities have been evaluated and found compliant with 14 CFR 121.485(a) by the B777 FSB.

Future changes to the approved configuration that affect crewmember emergency and/or related training shall require subsequent evaluation and approval by the FSB. The Principal Operating Inspector (POI) in lieu of an on-site operational evaluation may use this statement of compliance.

## APPENDIX 9

### EXAMPLE HUD TRAINING REQUIREMENTS

#### HEAD UP DISPLAY TRAINING REQUIREMENTS

The HUD pilot training is integrated in all B-777 ground and flight training. It should be noted that the program focuses principally upon training events flown in the left seat by the pilot-in-command (PIC) in FAR 121 operations. Nevertheless, first officer indoctrination and training is also essential. Additional training is required for operators to receive credit for low visibility operations

1. INITIAL GROUND TRAINING: For airline operators, initial training should be conducted in accordance with the applicable provisions of CFR PART 121.415, 121.419, 121.424, 121.427 and the airline operation specifications. For all operators, the initial ground training program should include the following elements:
  - A. Classroom instruction (or CBT) covering HUD operational concepts, crew duties and responsibilities and operational procedures including preflight, normal and non-normal pilot activities.
  - B. Classroom instruction (or CBT) on the HUD symbology set and it's inter-relationship with airplane aerodynamics, inertial factors and environmental conditions.
  - C. A HUD pilot training manual or equivalent material in the Operations Manual which explains all modes of operation, the use of various HUD controls, clear descriptions of HUD symbology including limit conditions and failures, and incorporating use of the HUD into existing crew procedures
2. Initial Flight Training: For all operators, initial flight training should be conducted in accordance with the applicable provisions of CFR Part 121 or CFR Part 142. HUD familiarization and proficiency is integrated into the flight training program. For flight simulator training, approach training should be conducted with a sufficient final approach segment to identify and train the appropriate symbology and HUD usage.

The following flight training program is generic in nature and should not be construed to dictate what is included in the course of instruction. This training can be integrated in the basic training course. Each operator has his own unique requirements, route structure, fleet composition and operations policies to consider in developing their training program. Therefore, what follows might be considered as a guide to an operator who is tailoring a HUD training program to fit his own needs.

- A. Airwork - Airwork integrated into the training program. Emphasis should be placed on HUD unique symbology, i.e., flight path, flight path acceleration, airspeed error tape, and the commonality with the heads down display (the PFD). When this training is complete, the trainee should have a thorough understanding of the relationship between aircraft flight path parameters and the HUD symbology.
- B. Visual Approaches Sufficient approach work to show HUD symbology and use in relation to glide path, centerline control, and crosswind conditions
- C. Instrument Approaches Sufficient ILS/GLS and non-ILS approaches, missed approaches, and landings with appropriate weather minimums to show HUD symbology and gain proficiency in these maneuvers.

## **HUD TAKEOFF DURING LOW VISIBILITY OPERATIONS**

### **TRAINING REQUIREMENTS**

For operators authorized for low visibility takeoff operations predicated on use of the HUD TAKEOFF function, training should be conducted in accordance with AC 120-29A and AC 120-28D.

### **RECURRENT REQUIREMENTS**

For operators authorized for low visibility operations predicated on use of the HUD TAKEOFF function, recurrent training should be conducted in accordance with AC 120-29A and AC 120-28D.

Selected ground training subjects should be reviewed annually.

## **APPENDIX 10**

### **EVALUATION REQUIREMENTS FOR THE 777 DIFFERENCES COURSE PARTIAL PROFICIENCY CHECK**

#### **EVALUATION SUMMARY**

The simulator evaluation flight profile includes those procedures and representative maneuvers that will be evaluated in a motion visual simulator with emphasis on the differences between the 777 and the 787. The specific maneuvers, sequence of events and the non-normal procedures used may be modified at the discretion of the check pilot.

#### **PREFLIGHT**

Preflight  
Engine start  
Start malfunction  
Taxi out  
Takeoff checks

#### **TAKEOFF**

Normal takeoff  
Instrument takeoff  
Rejected takeoff  
Departure procedures

#### **APPROACH PROCEDURES**

STAR/FMS procedures  
Manually flown ILS approach  
Non-ILS approaches  
Visual approach  
Missed approach

#### **LANDING**

Full stop  
Rejected landing

#### **NON-NORMAL PROCEDURES**

Select at least one of the following:  
EFIS/DSP PANEL  
FIRE CARGO

#### **TAXI IN**

After landing procedure  
Parking, shutdown, and secure

## **13. B-777 FLIGHT STANDARDIZATION BOARD REPORT - PART II**

### **SUPPLEMENTAL BOARD REPORT**

Part II of the FSB report contains historical development information used to develop the final FSB report. This information is kept on file at the Seattle Aircraft Evaluation Office, 1601 Lind Avenue S.W., Renton, WA. 98055-4056