



Operations Manual

Part D Appendix I

B747

0 Preface

0.1 Record of Amendments

Change	Subject	Moved To	Date	Amended By

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1 Introduction

- The Boeing 747 is a highly redundant, long-range, wide-body jet airliner manufactured by Boeing Commercial Airplanes. The B747 was the world's first double-deck aircraft and the -400 variant, within British Airways, carries up to 337 passengers and has a range of up to 8,357 nautical miles. The aircraft is deployed, almost exclusively, on BAVirtual's longhaul network.
- The operation of the aircraft is in line with the manufacturer's procedures and SOPs wherever possible.
- The route structure is predominantly longhaul with worldwide destinations.
- The nature of longhaul operations on the B747-400 means that line pilots will be exposed to less handling than they may be used to on other fleets. In particular First Officers will be operating frequently as Heavy Crew with resultant reduction in recency. This means that pilots on the fleet will need to be very disciplined in order to retain the required skill and knowledge to operate the aircraft following completion of their conversion course.

1.1 B747 Training Manual and Operations Manual

This Appendix of the OM Part D manual forms part of the B747 Training Manual as required by AMC1 ORA.ATO.230(b). In addition trainees will need access to the suite of ATO Manuals set out below. Access to these manuals will be made available electronically.

The BAVirtual ATO Operations Manual consists of the following sections:

OM Part A: What we do (the rules) and is not fleet specific (BAVirtual SOP Manual)

OM Part B: B747 FCOM, B747 QRH, B747 Checklists

OM Part C: Route Information Manual, Aerodrome charts.

OM Part D: Training Manual and Appendix I B747 Specific Training courses (this manual)

2 B747 Type Rating Course (Full)

TBC

3 Line Training

3.1 Introduction

Line Training within BAVirtual is a voluntary scheme for pilots to receive feedback and advice to enable them to operate the aircraft in a realistic manner in accordance with BAVirtual SOPs. It is also an opportunity to highlight some of the resources that BAVirtual has available for pilots and the use of BAVirtual's software and technology.

As a trainee-led scheme, there is no minimum number of Line Training sectors specified. However, trainees are encouraged to continue training until they are able to achieve a Competency Standard of 3. A recommended programme to cover all Line Training elements is outlined below, but there is no obligation for trainees to commit to this full programme.

A list of topics which may be discussed during Line Training is provided below. However, this list should not be considered exhaustive and trainees are encouraged to bring their own questions and areas for discussion.

3.2 Objectives

The objectives of Line Training are:

- To consolidate handling skills and confirm that the trainee is using the correct skill and technique for Take-off and Landing.
- Provide training and development within the Line environment of B747 operation, with a particular focus on non-technical skills. The B747 is a longhaul aircraft and particular emphasis should be placed on the discussion items, contingency planning and situation awareness.
- Line Training provides the opportunity for a pilot to put in to practice the BAVirtual B747 Standard Operating Procedures and to learn and practice new techniques.

At the end of Line Training the respective crew member should be able to perform a safe and efficient flight conducted in line with the BAVirtual B747 SOPs.

3.3 Conduct

The instructor will normally observe the session via Discord screen sharing. Line training will always be carried out in one of the private Discord rooms designated for training and no other observers should be permitted except as operationally necessary (e.g. a TSC observing a Line Trainer or a new LTC observing a line training detail).

Should an add-on aircraft with Connected Flight Deck capability be available (e.g. PSX) this may be used by mutual agreement although not all Line Trainers will have this capability. In this case the instructor may occupy an operating seat and act as either PF or PM as appropriate for the detail.

3.4 Standard Required on Completion

Continuous assessment will occur throughout the Line Training process and a report entered in Moodle at the end of each trip summarising the progress of the trainee and highlighting any development points for the next trip.

Because Line Training is a trainee-led programme there is no absolute requirement to commit to further sectors or a full 'programme' of Line Training. However, to 'complete' Line Training and earn a Line Check award the trainee must request and complete a Line Check and demonstrate that they have achieved a Competency Standard of 3 in all areas.

3.5 Recommended Course Footprint

The recommendations below are designed to permit sufficient time for the Route Training and Discussion items to be completed in a relevant level of detail for the trainee's experience with both the B747 and within BAV. However, these recommendations should neither be considered targets nor restrictions.

Trainee Type	Recommended Sectors
B747 Trainee	4
Experienced BAV B747 pilot	2

3.6 Training Considerations

3.6.1 General

Normal SOPs will be employed at all times, including handover of control during descent and approach (Monitored Approach) if Connected Flight Deck is used. This helps reduce fatigue and allows the trainee to observe and the trainer to demonstrate. However, SOPs may be varied at the discretion of the trainer if useful training value will be gained. Both trainer and trainee must be clear as to how and why this variance will take place.

Trainers must not interfere with normal operation of the aircraft systems.

In Connected Flight Deck, do not make deliberate errors to 'test' the trainee. Minor omissions (e.g. during flight deck preparation) are permitted in order to assess a trainee's monitoring.

Whenever possible allow trainees time to correct minor errors as valuable learning can occur from this process. Significant errors should be corrected immediately, however.

Do not allow a situation to occur where either crew member becomes overloaded. For example, trainers should not permit a scenario to develop where a go-around is required because trainer intervention was delayed.

Remain aware of commercial considerations and the importance of maintaining schedule.

3.6.2 De-briefs

All de-briefs must identify areas for ongoing development. These should be discussed with the trainee and included in the Moodle report.

3.7 Guidance for Training Captains

The trainer's role will vary significantly depending on the level of the trainee and Training Captains must demonstrate flexibility. SOPs may be varied to ensure that trainees obtain maximum training value, however Training Captains must highlight whenever SOPs are varied such that the trainee is fully aware of what the correct SOP is.

At an early stage trainees are likely to benefit from seeing 'what right looks like'. As a result Training Captains should consider varying SOPs and demonstrating a CRC (pre-flight) brief, a departure brief (including emergencies) and a descent brief on the first sector, even though the trainee will naturally be acting as P1.

3.8 Grading

A common BAV grading system is used for all conversion and recurrent training and checks.

Trainees should not progress to the next phase of training unless they achieve a Competency Standard of 3 at the completion of the current phase.

3.8.1 Ready For Line Check

When the trainer is confident that the trainee will achieve a Competency Standard of 3 or greater in the Line Check, he/she should make a note to this effect in the report and advise the trainee to request a line check.

The trainee should be reassured that there is no such thing as a perfect sector. A good sound performance is all that is required.

3.9 Route Training Items

The following flying exercises should be considered for inclusion where practical. Instructors should consider completing these at the earliest opportunity as future weather may preclude their completion on a subsequent line training detail.

1. Flap 30 landing
2. Non-precision/RNAV approach

3.10 Discussion Items

The list of items below is provided as a list of possible areas where trainee and Training Captain may find fruitful discussion and trainees are encouraged to use this list as a starting point for their own research. However, it should not be considered exhaustive and trainees are encouraged to bring their own questions and areas for discussion to the sector. Likewise during the course of training the instructor may find it appropriate to explore other areas of the trainee's knowledge (e.g. route/destination etc).

Discussion items covered should be noted in the Moodle Line Training Report. In-flight discussion must not continue to the extent that the trainee has insufficient time to project ahead and plan for the descent and approach. Discussion items may be completed 'downroute' (e.g. in Discord outside of a flight) where necessary or desired.

The discussion items are:

Flight Planning/Fuel		
1	Flight Planning/Fuel	Met/minima Alternate requirements Fuel policy: Planning – inc SCF Pre-flight – fuel LMC Minimum contingency In-flight

		Low fuel state – (PAN/MAYDAY/minimum fuel advisory)
Emergencies/Failures/Abnormal Procedures		
2	Medical Emergency	Pilot/crew/passenger Handling in-flight/on ground
3	Engine failure in cruise	Drift-down (inc terrain/traffic considerations) Fuel management Range/endurance Flight Continuation Policy
4	Rapid decompression/Emergency descent	Initial actions Decompression level-off (MSA awareness) Diversion handling (wx, airfields, fuel, medical) Escape routes
5	Radio/comms failure	Transponder 7600 ICAO basic procedures plus national variations
6	Emergencies on OTS	Mayday/Pan Turnoff/descent/turn back procedure
7	Standby Nav/FMC u/s	Alternate navigation procedures Use of autopilot pitch/roll modes Use of LNAV/VNAV Nav aid selection/tuning Performance/speed information MNPS?
8	Low fuel temp	FMC pre-flight Crew awareness and actions
9	Fire/smoke/fumes	Mayday – land at nearest suitable airport Fuel jettison/overweight landing Possible evacuation
10	Autothrottle u/s	Thrust lever handling Crew awareness and monitoring
Descent/Approach Considerations		
11	Holding	FMC and A/P usage EAT/EFCs Fuel capability Holding speeds/timing – ICAO/USA
12	Descent below MSA	Rate of descent approaching MSA Reliance on single NAV aid/system Positive radar control IMC/VMC requirements
13	Approach Handling	Continuous Descent Approach Approach gates/SAC Avoiding rushed approaches Late runway change Missed approach – varying altitudes
14	Non-precision approaches	VOR/NDB/ILS backbeam/LDA PAR/SRA/circling/curved approaches Overlay approaches Use of LNAV/VNAV Use of A/P – roll/pitch modes Minimum A/P disconnect altitude
15	RNAV approaches	Navigation accuracy

		Use of A/P – roll/pitch modes Position/energy awareness
16	PRM approaches	ATC monitoring Breakout procedure
General In-flight Procedures		
17	Operating altitudes	Optimum, max and recommended altitudes MOA MSA corrections
18	Non-standard altimetry	QFE ops – QNH procedure Metric ops – flight level conversion
19	Weather	Windshear Severe turbulence Weather radar usage
20	Diversions	In-flight – navigation/comms Merlin Alternates – opening hours, minima, fire category, fuel, customs On ground: Passenger handling
BAVirtual General		
21	Resources	DocStore BAV SOP manual (OM A) Manuals, charts, checklists, B747 SOP OM C – Charts, RIM, AV briefs
22	Software	Merlin BAVMS

4 Line Check

4.1 General

The Line Check is a voluntary check which any BAVirtual pilot may request. In the first instance it will normally follow one or more sectors of line training, but pilots who have already completed line training and an initial line check may request a recurrent line check immediately without the requirement for training sectors if they so desire. However, this does not preclude a pilot from requesting additional line training at any time.

Line Checks are a test of a pilot's ability to perform a complete line operation, including pre-flight and post-flight procedures and use of resources provided, and as an opportunity for an overall assessment of his/her ability to perform the duties of a BAVirtual pilot. The line check must be completed on a standard BAVirtual mainline flight, whilst connected to the VATSIM network if that is the pilot's normal means of flying. The pilot will be assessed on their non-technical skills as well as their flying ability.

The route chosen should be such as to give adequate representation of the scope of a pilot's normal operations. When weather conditions preclude a manual landing, an automatic landing is acceptable. The line check is not intended to determine competence on any particular route.

The Examiner will always be an observer only and must not be involved in the operation of the aircraft.

5 TRI Training

Refer to OM-D Appendix G.

5.1 Introduction

The objective of the TRI course is to train to the level of proficiency necessary for the issue of a BAVirtual B747 TRI (V) rating. The course is designed to give training to the applicant in: both theoretical knowledge instruction and in-flight instruction in order to instruct on BAV B747 training courses.

5.1.1 Pre-Entry Requirements

General

An applicant for an instructor certificate shall:

- Have a minimum of 50 BAV hours

Additional pre-requisites for the initial issue of a TRI (V) B747 Rating

- Have successfully completed the BAV Initial Instructor Training course
- Have completed within the 12 months preceding the application at least 10 route sectors on the B747 for BAVirtual

Waivers to the above may be granted by the Director of Training in accordance with OM-D (General).

5.2 Initial Instructor Training Course

See OM-D Appendix G Section G.5

6 Line Training Captain (LTC) Course

6.1 Introduction

This course is designed to introduce Captains to line training. It is designed to be undertaken by both non-TRI and TRI qualified pilots. Prior to commencement of the course, the trainee must at some point have completed the online e-learning modules of the Initial Instructor Training course (refer to OM-D Appendix G.5 for more details).

The LTC role is internal to BAV and there is no accompanying VATSIM paperwork required.

Candidates should have above average skills in the following areas:

- Aircraft technical knowledge
- Aircraft handling
- Standard Operating Procedures
- Pilot Competencies

6.1.1 Objectives

The aim is for candidates to:

- Develop the instructional skills acquired during the Initial Instructor Training course
- Conduct simulated Line Training with a TSC role-playing a trainee
- Conduct Line Training with actual trainees whilst under TSC supervision
- Learn to recognise normal progress in trainees
- Learn to assess when a trainee has achieved Line Check Standard.

6.1.2 Method

During the course the Student Instructor will:

- Develop his/her instructional technique
- Demonstrate a sound understanding of the Discussion Items
- Demonstrate aircraft handling and instructional pattern
- Identify and correct errors
- Give and receive feedback and tutoring
- Reach a satisfactory standard for a final test

The course may be completed by a single SI working with a TP or by two SIs together. In this instance the SIs will take it in turns to observe and debrief the various exercises during the 'simulator' phase.

6.1.3 Terminology

- SI: The LTC candidate
- Tutor Pupil (TP): the LTC Trainer who will act as the student instructor's pupil
- SI One/Two: A term used when there is a need to differentiate between candidates undertaking training simultaneously

6.1.4 Administration

The LTC course is assigned in Moodle by the course tutor. All records for this course are maintained within Moodle and there is no external paperwork required for completion. The course consists of three main stages:

- Initial Instructor Course online modules
- Offline simulator training
- Live training and final check

Upon successful completion of the course, the observing TSC will inform the FTM. The observing TSC will complete the Final Check detail of the SI's Moodle course.

6.1.5 Standard Required on Completion

The LTC course is a continual assessment course and the trainee's progress throughout the various elements is closely monitored. The course tutor will provide comprehensive feedback after each detail and Moodle reports will be completed.

6.1.6 Course Overview

6.1.6.1 Simulator (Offline) Phase

Detail	Briefing	Session	Debriefing	Exercise
1	1:00	1:00	0:30	Practice observation & common faults
2	0:30	1:30	0:30	Practice line training

6.1.6.2 Aircraft Phase

Sectors	Event
1-2	Line Training of actual trainees. Supervised by a fleet TSC observing.
3	Final Check observed by a fleet TSC.

6.1.7 Pre-Course Preparation

Prior to commencement of the course, SIs should:

- Review and revise the following manuals:
 - OM-D – Training Manual
 - OM-D – Appendix I B747
 - FCOM
- Ensure they have Trainer access to Moodle and the Trainers' library in DocStore
- Review the Line Training Discussion Items
- Familiarise themselves with Pilot Competencies so that they can discuss the concepts using the appropriate terminology

6.2 Offline Simulator Training

The TP will facilitate discussion on a wide range of associated topics. SIs will give a short training brief before detail 2.

The TP will go 'Bloggs ON' when the lesson begins and will remain in role as a trainee, allowing the SI freedom to conduct the lesson. He will go 'Bloggs OFF' if it is necessary to communicate as a tutor.

The TP will 'role-play' trainees from different backgrounds with varying abilities, but endeavour to moderate the role-play to that which is required for effective instruction.

Particular attention should be given to instructional skills learned from the Initial Instructor Training course modules, for example dealing with errors (identify, prioritise, symptoms, causes, remedies etc).

6.2.1 Detail LT1

This detail is focussed on handling techniques, particularly for take-off and landing. The TP will introduce a variety of common handling errors during the circuits for the SI to observe and analyse.

6.2.1.1 Briefing LT1

Tutor Briefing and Discussion:

- Course introduction
- Training Captain's Role and Responsibilities
- Initial Instructor Training Course refresher:
 - What trainers do
 - Creating a learning environment
 - Trainee's needs
 - How people learn
 - Instructional techniques
 - Training Cycle
 - Knowledge/Skill/Attitude
 - Errors
- The objectives of Line Training
- Training the visual approach and landing
- The rushed approach – avoiding/trapping/mitigating
- Common errors during:
 - Taxiing
 - Take-off/climb
 - Initial approach
 - Landing (especially late/early flare, unstable at 1000R)

SI to give 15 minute (max) mini-brief on one of the following topics followed by tutor feedback. These briefings should be designed to simulate the style of mini-brief required to be given during line training as short refreshers prior to the trainee undertaking the flight/procedure. There should be an assumption that the trainee has completed any available training and is broadly familiar with the subject.

Briefing topics:

- Take-off and landing with a crosswind
- Visual join to a circuit and visual approach

6.2.1.2 Simulator LT1 – Practice Line Training

TPs should have their simulator loaded with the following parameters:

Setup				
Initial State	LHR Stand 535 Day, Engines Running			
ATIS	Rwy 27L Dry Fair Weather CAVOK 15/10 Q1013			
FMS	EGLL/EGLL Rwy 27L			
Clearance	LH visual circuits Sq 3427			
Perf Init	ZFW 227	Fuel 40	TOW 267	
Speeds	V1 137	VR 137	V2 147	61C

The TP should demonstrate common errors during:

- Taxi
- Take-off
- Approach (including unstable/rushed)
- Landing (include go-arounds/rejected landings, crosswind landings)

SI practices corrective briefs.

6.2.1.3 Debrief LT1

SI take 10 minutes to review notes and prepare debrief.

- SI debriefs TP
- TP provides feedback on debrief
- TP debriefs simulator detail
- Briefing for LT2
- SI to write short training report on TP to hand in for next detail

6.2.2 Simulator LT2 – Practice Line Training

This takes the form of an 'offline' flight from LHR to MAN, flown by the TP. The SI will act as an LTC and practice observing, taking notes and providing feedback.

6.2.2.1 Briefing LT2

Tutor Briefing and Discussion:

- What does right look like?
- Identifying good as well as weak areas of progress
- Using the training cycle
 - Agree the facts
 - Agree the progress
 - Agree the changes required and give pointers
 - Handover notes/report writing
- Briefings/patter
 - What are the objectives of a pre-flight briefing?
 - Takeoff/descent briefings – what makes a sensible and practical briefing
 - Pre-emptive briefings (mini briefs)

SI to give maximum 15 minute briefing on one of the following subjects:

- Operation on the Organised Track System
- Flying an NPA e.g. brief for VOR 22L at JFK or CRI approach JFK.

Feedback from tutor.

6.2.2.2 Simulator LT2 – Practice Line Training

- LHR-MAN
- SI observing as Line Trainer
- TP role-plays trainee
- SI practice note-taking and debriefing
- SI debriefs TP
- Tutor debrief

6.2.2.3 Debriefing LT2

- Tutor debrief
- Report writing and Moodle
- Briefing for Aircraft Phase

6.3 Aircraft Training

6.3.1 Introduction

The aircraft phase of the LTC course will consist of a minimum of two sectors of line training with a real trainee or trainees, observed by a TSC. The final stage of the course consists of a one sector check with a real trainee, with the check conducted by a TSC observing.

Additional training sectors with the TP flying and SI acting as Line Trainer may be arranged prior to the observed sectors with real trainees if desirable or necessary to ensure the SI feels prepared and comfortable to conduct training with a real trainee.

6.3.2 Route Training Discussion Items

The following should be covered/discussed during the LTC course:

- Communication
- Analysis and correction of faults
- Technical knowledge
- SOPs
- Manuals (FCOM/OM-D/OM-D Appendix I)
- Grading system
- Moodle
- Liaison with FTM

6.3.3 Observed Line Training Sectors

The next sectors (minimum of 2) will consist of the SI being observed conducting line training with a real trainee. The observing TSC will watch via screen share. The trainee could be from any background and it is acceptable for the SI to conduct the training via screen share or Connected Flight Deck if mutually agreed with the trainee. These details will need careful management by the TSC as there may be appropriate training input for both the SI and their trainee.

6.3.4 LTC Line Check

The final assessment for the LTC course will consist of one sector of line training. This sector will be conducted with a real trainee. A TSC will conduct the assessment via Discord screen share and the TSC will notify FTM and record the outcome in Moodle.