

The JOEB B - 737 NG would like to present this report as a summary of the task they were required to perform by the JAA.

The JOEB members not only used experts in their authorities but also asked a variety of airlines (e.g Lufthansa , Hapag Lloyd , Germania , KLM , Air France , Maersk Air , Braathens , British Airways) for their competent opinion on a lot of subjects . In conjunction with this consultation our recommendations and conclusions are based , to the best of our knowledge and ability , on the following documents .

Documentation :

- Pilot Qualification Plan (PQP)
- Boeing 737 - 6/7/800 General Familiarization Manual
- Proposed Master Minimum Equipment List
- Preliminary Qualification Standards for B 737 6/7/800 Flight Crew Training
- Operations Manual Differences B 737 3/4/500 to B 737 6/7/800
- B 737 - 37K (EFIS) to B 737 -700 (EFIS / MAP) comparison Document
- B 737 - 700 Operations Manual Vol . 1 and 2 (Preliminary)
- B 737 - 700 Quick Reference Handbook (QRH)
- JAR - OPS 1
- JAR - FCL (adopted version)
- JAR - 25 Section 2
- JAR - STD 1A
- FAA - AC 120 - 53
- FAA - Doc 8400.10 CHG 1

RVSM and ETOPS were not considered at this point as there are no requests from airlines to Boeing at this time and therefore data are not yet available .

Type rating comments can be given earliest at the end of 1997 after the designated JOEB member has completed his transition course .

After we had started our work , we had regular meetings and constant correspondence via phone and fax within the JOEB team and with members of the CQOTV WG as well as the FAA , Boeing and different airline training departments . After all our findings and concerns had been cleared and the required changes had been performed by Boeing and the JOEB team members concerned were satisfied , we formed our conclusions and recommendations , which are :

Conclusion # 1 : CBT Training ✓

The interactive CBT training as offered by Boeing appears to be adequate on the basis of a trial which was limited in its participants (by industrial considerations) and verification (by equipment available at that stage of development programme) for the difference training from B 737 - 3/4/500 to 6/7/800 variants . It is accepted by the JOEB .

Recommendations :

The JOEB recommends an additional open book test of at least 50 questions after the completion of the ground course A or B and at least two handling and two non handling supervised sectors of flights before a pilot is released for regular flight duty.

The proficiency checks should be planned alternately in a B -737 3/4/500 and B - 737 6/7/800 simulator to check the currency on both variant types flown. The time between the difference training and the first actual flight should not be more than 30 days . The „ recent experience „ expires after 90 days , so that a new „ Refresher „ has to be performed . The content of this refresher has to be approved for that company and this must be specified in the Operational Manual . Any reduction in recurrent training may only be done after being approved by the POI . If an alternate means of compliance for the recurrent training is desired , other than shown in the MDR , it has to have at least an equivalent or higher level of training effect , but must be first tested , evaluated and approved.

Conclusion # 2 : New Overwing Exits ✓

The new overwing escape hatch needs no initial or recurrent hands on training . It is sufficient to see the special video that Boeing is offering as training aid for crew members who are already familiar with the existing overwing exit operation .

If crews undergo initial training on B - 737 NG variants , hands on training is still required.

Recommendations :

The JAA is asked to apply for an NPA to JAR - OPS Subpart N 1.950 , 1.965 d , the Appendix 1 to 1.965 3 E , 3 iii , and Subpart O Appendix 1 to 1.001 , 1.1010 , 1.1015 , 1.1020 with following sample as context .:

„ Operators , who are conducting training using overwing escape hatch training equipment may address the differences in new overwing escape hatch operations by the use of an appropriate , approved training video , if crews are already familiar with the existing overwing exit operations „

Remarks :

(Three JOEB members who had seen the video before and one JOEB „ Testperson „ who had not seen this video , all of which were familiar with the existing overwing operations , had no problems at all to handle the new type of overwing exit . In addition different local Authority Specialists in different European countries had checked the video too with the same results . Just follow the instruction : „ Pull „ handle , that's all ! The FAA has no concerns either).

Same

FSB

Conclusion # 3 : Common Type Rating

FSB

After intensive E - Cab , Simulator and Aircraft flying the JOEB and the FAA came to the same conclusion , that the B 737- 700 handling characteristics are very similar to the B 737- 300 and it is therefore justified to fly mixed B -737 3/4/5/700 with one Type Rating . As the aircraft systems don't change on the 600 and 800 variants , only further familiarization flights will be necessary to be able to also comment the handling and flying characteristics of those variants.

Remarks :

Six members of the FOEB (FAA) and three members of the JOEB (JAA) performed a recurrent training in the B - 737 -3/4/500 Simulator followed by a proficiency check . Thereafter all nine pilots had to fly the B - 737 -700 aircraft according to our required flight profile which consisted of the following :

- Engine start and taxi to T/O position
- T/O two engines flaps 1° or 5° or 15°
- Climb 10000 ft via SID or RV
- Airwork : Steep turn
Approach to stall (Stick shaker) in clean , approach or landing configuration with Max 30° flaps
Manual reversion (with only manual trim or electric trim) in clean , approach or landing configuration
- Descent to pattern altitude
- Flaps 30° Approach
- Touch and Go with RV
- Approach 30° flaps with full stop
- Taxi to T/O position
- T/O with flaps 1° or 5° or 15° (different from first T/O)
- Engine failure at V1 +
- Engine out approach with GA at MIN
- Visual pattern one engine out for full stop and taxi to a holding position for crew change

All comments of each pilot were noted after his turn of flight . Also four other FOEB pilots and one JOEB pilot , who had not seen either the cockpit or the aircraft NG before (so called T 1 pilots) had to perform the same flight test profile . Their performances were observed and noted by the FOEB and the JOEB to see whether the ground courses are sufficient to train pilots for the B 737 NG . These tests have proved that the given ground courses are needed and adequate to train the differences between B - 737 3/4/500 and B - 737 NG. (See MDR - Table attached)

Conclusion # 4 : MMEL Acceptance

As the legal act of approving an MMEL lies with the different national authorities , the JOEB will only recommend to the JAA to accept and sign the MMEL if the team is satisfied . At this point , the MMEL has still some open items where FAA / Boeing and the JAA don't agree (e.g. „Electrical power supply for the pitots if no Gen. power is available is not given „).

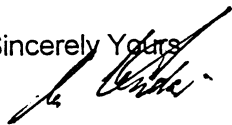
Remarks :

The PCM is in contact with the chairman JOEB , the certification people and the flight test team members as well as Boeing to find solutions for an agreement .

Conclusion # 5 : MDR Table

The Revised Final Draft of the Master Difference Requirement Table (MDR) from August 14 th , 1997 is active . All previous MDR 's are superseded .

Sincerely Yours



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Revised Final Draft

JOEB / 737 , August 14, 1997

Master Difference Requirement Table (MDR)

Ref.: JAR - OPS 1.980 ,Appendix 1 JAR - OPS 1.980 , AMC OPS 1.980 , IEM OPS 1.980

Definitions (in short) :

Level A	Self Instruction
Level B	Aided Instruction
Level C	System Device
Level D	Flight Training Device (FTD)
Level E	Full Flight Simulator (minimum Level „ C „)

		From					
		-300 / -400 / -500			-600 / -700 / 800		
		Training	Checking	Currency			
To	B 737						
	-300	* 4 A	A	A	* 4 B	A	B
	-400	* 1 Initial EFIS D	B	C	* 2 New Format C	B	C
	-500	X-Models A	A	A	* 3 To electromechanical instrumentation D	B	C
		Training	Checking	Currency	Training	Checking	Currency
	-600	* 5 B	A	B	A	A	A
	-700	* 1 Initial EFIS D	B	C	* 2 New Format C	B	C
	-800	* 2 New Format C	B	C	X Models A	A	A

Boeing 737-100/200 are excluded , as those airplanes are not within the same single license endorsement as 737-300/400/500/700 (and 600/800 subject to the predicted data on airplane handling qualities being positively verified during actual flight) according to JAR - FCL.

- Notes :**
- * 1 - As FTD , a Fixed Base Simulator is required for initial EFIS training (MAP or PFD/ND)
 - * 2 - System Device required between EFIS formats MAP and PFD / ND and v.v.
 - * 3 - As FTD , a Fixed Base Simulator is required for training from aircraft equipped with EFIS to aircraft equipped with electromechanical instruments.
 - * 4 - Special emphasis shall be given to EIS familiarization .
 - * 5 - B = Minimum acceptable Level B training is interactive CBT.