



EUROPEAN AVIATION SAFETY AGENCY



Operational Evaluation Board Report

Eclipse Aerospace Inc.

EA500

Revision No. 2 dated: 7. September 2010.

**European Aviation Safety Agency
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Eclipse EA500



Revision Record

Revision No.	Section	Pages No.	Date
0 (Draft)	all	all	15. June 2010
1	all	all	1. August 2010
2	Appendix 4 added	3,6,9,10 and 11	7. September 2010

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• Appendix 4 : EA500 EASA Aeroplane Type Rating Course Revision No. 2.0, dated 1 August, 2010.	

Note: Appendices are available from Eclipse Aerospace Inc.

Operational Evaluation Board

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Manufacturer Experts involved in the process

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Executive Summary

Manufacturer Application

Eclipse Aviation Co. made a request to EASA, Certification Directorate - Flight Standards for an OEB for the Eclipse EA500 aeroplane. Following the application, an Operational Evaluation was performed starting in spring 2008, however as the company encountered economical problems, the OEB process was stopped, and the OEB report was not published.

Eclipse Aerospace Inc. has made an application to EASA, Certification Directorate - Flight Standards for a renewed Operational Evaluation, this application was received by EASA on 21 October 2009. This report is based on the original evaluation.

OEB recommendations

The former EASA OEB Chairman took part in the evaluation of the EA500 and prepared the report in cooperation with EASA OEB Section Manager Business Jets.

The OEB recommends

- Type rating assigned to Aircraft models Eclipse 500 under the endorsement EA500
- The initial minimum single pilot training syllabus in the aeroplane only. (Appendix 4)

Procedures, requirements and associated references

EASA has conducted this OEB in accordance with EU-OPS, JAR-OPS 1, and JAR-FCL 1 requirements. This evaluation was based on JOEB Handbook and Common procedures Document (CPD) and the processes detailed in the JAA Administrative and Guidance Material, Section One, Part Two, Chapter 5 and JAR-FCL 2 including associated appendices, AMC and IEM.

Note on references and reference texts:

Where references are made to requirements and where extracts of reference texts are provided, these are at the amendment state at the date of publication of the report. Readers should take note that it is impractical to update these references to take account of subsequent amendments to the source documents.



Evan Nielsen

EASA, Certification Directorate
Flight Standards Manager

Acronyms

ACAS 1	Airborne Collision Avoidance System 1
AMC	Acceptable Means of Compliance
AOC	Air Operator Certificate
ASU	Ancillary System Unit
ATPL	Airline Transport Pilot Licence
ATO	Approved Training Organisation
ATR	Additional Type Rating
CPL	Commercial Pilot Licence
CWP	Caution and Warning Panel
DC	Direct Current (electrical)
DME	Distance Measuring Equipment
EASA	European Aviation Safety Agency
EU-OPS 1	Appendix to Commission Regulation (EC) No 859/2008
FADEC	Full Authority digital Engine Control
FTD	Flight Training Device
FNPT	Flight Navigation Procedure Trainer
FSTD	Flight Simulation Training Device
FTO	Flight Training Organisation
GPU	Ground Power Unit
IEM	Interpretative and Explanatory Material
IFR	Instrument Flight Rules
IR	Instrument Rating
ITR	Initial Type Rating
JAA	Joint Aviation Authorities
JAR-FCL	Joint Aviation Requirements Flight Crew Licensing
JAR-OPS	Joint Aviation Requirements Operations
JOEB	Joint Operational Evaluation Board
LST	License Skill Test
MDR	Master Difference Requirements
MEL	Minimum Equipment List
MMEL	Master Minimum Equipment List
NCAA	National Civil Aviation Authority
N/A	Not Applicable
ODR	Operator Differences Requirements
OEI	One Engine Inoperative
OEB	Operational Evaluation Board
TAS	Traffic Advisory System
TAWS	Terrain Awareness Warning System
TRI	Type Rating Instructor
TRTC	Type Rating Training Course
TRTO	Type Rating Training Organisation

I. Purpose and applicability

This report is the result of an OEB process which was conducted In Albuquerque New Mexico US. The configuration of the aircraft was subject to changes during the OEB process. The simulator was not updated to represent the final aircraft configuration and the qualification of the simulator was not completed. This report is a document specifying single pilot training in the aeroplane only.

This document:

- Defines the Type Rating assigned to the Eclipse EA500.
- Makes recommendations for initial Training,
- Makes recommendations for checking,
- Recent experience

Note:

The Eclipse EA500 aeroplane is listed in the EASA Type Certificate Data Sheet no. TCDS EASA.IM.A.171, dated 21 November 2008.

2. General Description of Eclipse EA500

2.1 General

The Eclipse EA500 is a new type of aircraft. It has been certified as a single pilot multi engine turbojet aeroplane, it has a maximum ramp weight of 2737kg.

The EASA configured aeroplane is certified for VFR/IFR by day and night operation and flight into known icing.

Minimum crew is 1 Pilot.

2.2 Seating

Maximum seating capacity is 6 (Including pilot and crew)

2.3 Flight controls

The flight control system consists of mechanical primary flight controls (ailerons, rudder and elevator) and secondary flight controls (wing flaps).

The primary flight controls are operated with a sidestick and rudder pedals at each pilot station.

2.4 Engines

Pratt & Whitney Canada, PW610F-A

2.5 Electrical system

The electrical system is designed to operate automatically to reduce pilot workload. Electrical faults in any part of the system are automatically detected, and the Electrical Power Distribution System (EPDS) automatically isolates defective bus/busses to minimize fault impact. Electrical faults trigger a message to the Crew Alerting System.

The power distribution system uses Electronic Circuit Breakers (ECBs)

2.6 Avionics

The main displays are PFDs and MFD with AVIO NG1.5 avionics integrated with Garmin 400 GPS and an autopilot

3. Operator Difference Requirement (ODR) Tables

Not applicable

4. Optional specific equipment:

The following equipment is offered as optional equipment for the EA500

ADF, DME, TAWS, TAS (ACAS 1), Stormscope.

5. Master Difference Requirement (ODR) Tables:

Not Applicable

6. Type Rating List and Licence Endorsement List

The Type Rating has been published

Table 7

Type Ratings List (Aeroplane) - Single pilot - Multi-engine turbo-jet (land)

1 Manufacturer	2 Aeroplanes		3	4 Licence endorsement
	Model	Name		
Eclipse Aerospace		Eclipse 500	(HPA)	EA500

7. Specification for Training

7.1 Training Courses

The assessment is based on the Initial Type Rating Training syllabus

- Single Pilot - In-Aircraft flight training.

OEB recommends Initial pilot training syllabus divided into the following phases for approval in Approved Training Organisations, like FTO and TRTO and also for operator specific training, provided the operator specific documentation is used throughout the course:

- Theoretical knowledge instruction syllabus
- Flight training program
- Skill test(s)

7.2 Licensing requirements

The ECLIPSE EA500 is a Multi-Engine – Turbo Jet – High Performance aeroplane, certified for Single Pilot operations.

In accordance with JAR-FCL 1.220 (b)(2) a valid **EA500** Type Rating is required to act as Pilot in Command.

EASA has published recommendations for pre requisites and Initial Type rating training on Turbo Jet pressurised Turbo prop and multi engine Turbo prop(HPA) –Single Pilot Aeroplanes, the recommendation is available on the EASA web site under the following link:

http://www.easa.eu.int/ws_prod/c/doc/jaa/OEB_Recommendation_for_Pre-requisites_and_Training.pdf

7.3 Theoretical knowledge syllabus and test summary

The EA 500 theoretical knowledge syllabus consist of 46 hours instruction and a 2 hours theoretical knowledge test

7.4 Aircraft flight training course summary

The assessed Training syllabus (Appendix 1) requires 16 hours in the aircraft with additional hours required for pilots with lower experience.

7.4.1 Revised Aircraft flight training course summary

Eclipse Aerospace has issued revision No. 2 to the Aircraft Flight Training Course; EASA OEB has assessed the revised course.

7.4.1.1 EASA Recommendation.

EASA recommends the revised Eclipse Aerospace course denoted:

EA500 EASA Aeroplane Type Rating Course Revision No. 2.0 Dated 1. August 2010.

The course should form basis for pilots to obtain the Licence Endorsement EA500 in their Flight Crew Licence.

7.5 Skill test

A JAR FCL Licence Skill Test is required at the completion of the flying training

7.6 Special Training Considerations

The AVIO NG 1.5 avionics suite contains unusual system architecture which should receive special emphasis.

The use of the Garmin400 and its integration with Autopilot/Flight Director.

The use of the standby Artificial Horizon and Garmin 400 with failure of the Primary Flight Display/Multi Function Display.

8. Specification for Checking

Whereas this type of airplane is in the category for Single Pilot airplanes and, initially, a License Skill Test schedule as specified in JAR-FCL 1.240, Appendix 3 could be considered, the Board recommends using a License Skill Test schedule, which better matches the complexity and operational capabilities of this type of airplane to assess the knowledge and skill of the candidate pilots.

The LST schedule for multi pilot airplane, as specified in JAR-FCL 1.240, Appendix 2 types is considered to be more appropriate.

9. Specification for Flight Simulation Training Devices

Not Applicable

10. Compliance check list

Eclipse EA500 OPS1 Compliance Check list was verified as compliant with the requirements in EU-OPS, subparts K and L. Appendix 2

11. Master Minimum Equipment List

The Eclipse MMEL was accepted by the OEB and published as EA500 EASA MMEL Supplement in addition to the MMEL approved by FAA.

12. Application of OEB report

This OEB report applies to commercial operations. However, the OEB also recommends private or corporate operations to follow the findings of this report.

13. Appendices

- Appendix 1 : EA500 EASA Aeroplane Type Rating Course
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