26 February 2012

Operational Evaluation Board (OEB)

Global Express XRS/Global 5000 to Global 6000GVFD/Global 5000GVFD

Preliminary OEB Results – OPS/FCL Evaluation

1. On 26 January 2011, Bombardier applied for a tripartite operational evaluation for the BD-700-1A10 Global Vision Flight Deck also known as the "Global 6000GVFD" and BD-700-1A11 Global Vision Flight Deck also known as the "Global 5000GVFD", with Transport Canada Civil Aviation (TCCA) as the lead authority with participation from the European Aviation Safety Agency (EASA). The Federal Aviation Administration (FAA) was unable to participate. This document supersedes preliminary OEB results dated 9 December 2011.

2. The scope of the EASA OEB evaluation comprises
   - Pilot type rating designation & license endorsement;
   - Flight crew training, checking and currency;
   - Operational suitability;
   - Master Minimum Equipment List (MMEL);
   - Simulator qualification;
   - Aircraft compliance with EU OPS subparts K & L;
   - The OEB did not evaluate;
     - cabin crew training;
     - maintenance training,
     - Enhanced Vision Systems (EVS);
     - Electronic Check List (ECL);
     - Vertical Situational Display (VSD);
     - FMS performance module;
     - Vertical Navigation (VNAV);
     - Windshear Escape Guidance (WEG);
     - CPDLC/ADS-C;
     - Electronic Flight Bag (EFB);
     - Global Express XRS/Global 5000 Batch 2+ to Batch 3.

3. TCCA has published the MMEL incorporating the Global 5000GVFD and Global 6000GVFD at revision 6 dated 13 January 2012. EASA has published the MMEL incorporating the Global 5000GVFD and Global 6000GVFD at revision 0 dated 24 February 2012.

4. This document refers to the preliminary results related to the OPS/FCL operational evaluation of the:
   - differences training between the existing BD-700-1A10 “Global Express XRS” aircraft and the new BD-700-1A10 Global Vision Flight Deck known as the “Global 6000GVFD” (see paragraph 14 below); and
   - differences training between the existing BD-700-1A11 “Global 5000” aircraft and the new BD-700-1A11 Global Vision Flight Deck also known as the “Global 5000GVFD” (see paragraph 14 below); and
   - the full initial pilot type rating training for the Global 5000GVFD and Global 6000GVFD (see paragraph 15 below);

   A BD-700-1A10 Global 6000GVFD FFS with EASA interim Level C, a BD-700-1A10 “Global Express XRS” EASA Level D approved simulator and a BD-700-1A10 “Global Express XRS” FAA FTD Level 5 was used during training.

5. Subsequent operational evaluations will include:
   - Evaluation of the BD-700-1A10 “Global Express XRS” FAA FTD Level 5 as an EASA training device;
   - Enhanced Vision Systems (EVS);
   - Electronic Check List (ECL);
   - Vertical Situational Display (VSD);
   - FMS performance module;
   - Vertical Navigation (VNAV);
   - Windshear Escape Guidance (WEG);
   - CPDLC/ADS-C;
   - Electronic Flight Bag (EFB);
   - Global Express XRS/Global 5000 Batch 2+ to Batch 3

6. This and the remaining evaluation report for the differences training between the Global 6000GVFD/Global 5000GVFD to Global Express XRS/Global 5000 operational evaluation will be included in a revision to this EASA OEB report for the Bombardier BD-700-1A10 & BD-700-1A11 and will be published on the EASA website (http://easa.europa.eu/certification/flight-standards/fs-overview.php) in due course.

7. Based on the existing Bombardier BD-700-1A10 & BD-700-1A11 OEB report and with respect to the evaluation described in paragraph 4 above, the OEB has reached the following conclusions:

7.1 Master Differences Requirement (MDR) Table:

License Endorsement BD700		FROM AIRPLANE			
		1A10[1] (XRS)	1A11[1] (5000)	1A10 (6000GVFD)	1A11 (5000GVFD)
TO AIRPLANE	1A10[1] (XRS)	-----	A/A/A	C/C/C	C/C/C
	1A11[1] (5000)	A/A/A	-----	C/C/C	C/C/C
	1A10 (6000GVFD)	C/C/C	C/C/C	----	A/A/A
	1A11 (5000GVFD)	C/C/C	C/C/C	A/A/A	-----

[1] *Up to batch 2+ aeroplanes only. Batch 3 will be included once an evaluation has been completed.*

8. Training Areas of Special Emphasis (TASE).

With regard to the flight crew differences training and checking referred to in paragraph 4, the OEB recommends that the following training areas of special emphasis should be addressed:

- Flight deck display layout (AFD/DU) and functionality;
- Control panels – CTP, ACP, RTSA, CNS, MKP and CCP;
- Emergency Descent Button (EDM) and functionality;
- Under speed protection;
- Nav to Nav transfer, GPS/WAAS/LPV/RNP/PBN, and instrument approach procedures;
- DC power failure modes with emphasis on loss of all DC electrical power;
- AFCS modes, A/P AEO and OEI in all phases of flight including OEI go-around, PFD, FDA and FMA indications;
- A/P behaviour during windshear escape guidance;
- TAWS and EGPWS;
- Use of EVS & SVS for situational awareness only;
- Caution and warning messages on the EICAS and HSI, and associated human factors issues;
- Use of Flight Management System (FMS) including FMS take-off preparation and take-off and Electrical Management System (EMS);
- Aircraft differences due to the EASA Certification Standard;
- Crew Resource Management (CRM) with regard to the new functionalities;

9. Line Flying Under Supervision (LIFUS). Following differences training referred to in paragraph 4, the OEB recommends line flying under supervision of a line training captain qualified in accordance with EU-OPS 1. The number of sectors required should consider previous Global and/or glass cockpit experience and should be a minimum of 4 sectors, 2 flown as PF and 2 flown as PNF/PM.

10. Flight Crew Recency/Currency. With regard to flight crew currency, when operating the Global Express XRS/Global 5000 and Global 6000GVFD/5000GVFD, the OEB recommends that flight crew:

- comply with the recency requirements of EU-OPS 1.970 for pilots operating in accordance with EU-OPS 1 and JAR-FCL 1.026 for pilots not operating in accordance with EU-OPS 1 as appropriate and perform at least one sector (as PF or PM/PNF) in the "Global Express XRS or Global 5000" variant and at least one sector in the Global 6000GVFD or Global 5000GVFD" within the previous 90 days.
- The recent experience requirements for take-off and landing are met by performing these in any of the Global variants.

11. Recurrent Training & Checking. When operating more than one variant, the recurrent training, operator and license proficiency checking should be alternated between the Global Express XRS/Global 5000 and Global 6000GVFD/Global 5000GVFD addressing the differences on each occasion.

12. EU-OPS Subparts K and L Compliance In the review of the Global aeroplanes series it shows that a majority of items are left for the operator to show compliance since the manufacturer's choice is to market "green aeroplanes" leaving the options and interior completion to the purchaser. The OEB note this position and agree that it is an acceptable procedure. The wide range of options which are available and which affect both flight decks and cabin standards mean that following completion, each aircraft standard will have to be assessed for compliance by the operator's NAA. Bombardier has submitted their compliance checklist for "green aircraft" and is held on record with EASA.

13. Type Rating License Endorsement. With respect to type rating designation, EASA recommends that the same type rating (single license endorsement) "**BD-700**" is applied between the existing Global Express XRS/Global 5000 and Global 6000GVFD/Global 5000GVFD variants, as follows:

1. Manufacturer	2. Aeroplanes		3.	4. Licence Endorsement
	Model	Name		
Bombardier	BD700-1A10[1] BD700-1A11[1]	Global Express XRS Global 5000	(D)	BD-700
	BD700-1A10 GVFD BD700-1A11 GVFD	Global 6000GVFD Global 5000GVFD		

[1] The MDR tables reflect differences training required between Global Express XRS/Global 5000 batch 2+ to Global 6000GVFD/5000GVFD. Amendments to the OEB report will occur when an evaluation on batch 3 has been completed. (see para 5 above).

14. Differences Training Footprint

Global Express XRS/Global 5000 to Global 6000GVFD/5000GVFD ONLY

Day	1	2	3	4
AM All students	***Theory (4 hours)*** Aircraft Gen Displays: -EFIS -EICAS -MFW -IFIS -SVS Controls: -CCP -CTP -MKP	***Theory (4 hours)*** FMS IFIS GNSS RNP/PBN WAAS/LPV	***Theory (4 hours)*** AFCS ATS EDM Windshear Comm Wx Radar ATC/TCAS	***Theory (3 hours)*** HUD EVS FANS/CPDLC TAWS IRS VHF Nav Review
PM	***EASA FTD1 (min) Practical (2 hours)*** Remain on ground, work on display management, practice loading and storing the MEM8/9 configurations	***EASA FTD1 (min) Practical (3 hours)*** - FMS programming and pre-flight, - Intro to IFIS. In flight: - FMS approach, - indications of WAAS/RNP - failure indications for GPS/WAAS/ RNP	***EASA FTD1 (min) Practical (3 hours)*** -Pre-flight FMS programming, -Flight use of AFCS, VNAV, LPV, FPV flight demo, - 2 engines approaches and missed approaches - SE ILS and LPV approaches / missed approaches	***EASA FTD1 (min) Practical (2 hours)*** -Pre-flight FMS programming, - FANS/CPDLC, -HUD Ops, Windshear EDM Ops ***EASA FTD1 LOFT (2 hours)*** <u>Sector 1</u>: i.e. KHPN to KJFK <u>Sector 2</u>: i.e. KJFK to KHPN

15. Initial Pilot Type Rating Training Footprint
Global 6000GVFD/5000GVFD ONLY

Days	Theoretical and Practical Training	Hours	**Simulator Trg**	Hours
12	General Operating Subjects Aircraft Systems System Integration (inc 2.0 free-play)	16.0 42.0 16.0		
7	FFS sessions		FFS	28.0
1	LOFT		FFS	4.0
1	Skill Test (LST)		FFS	As Req
Total 21		**74.0 + Exam**		**32.0 + LST**

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