Operational Suitability Data (OSD)
Flight Crew

Hawker Beechcraft Corporation
Hawker Beechcraft 4000 (HBC 4000)

09 March 2015
Hawker Beechcraft 4000 (HBC 4000 / HBC 4000 BPU)
Operational Suitability Data (OSD) – Flight Crew

Revision Record

<table>
<thead>
<tr>
<th>Rev. No.</th>
<th>Content</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>OEB Report Rev 1</td>
<td>HBC 4000, including Block Point Upgrade (BPU)</td>
<td>27 Feb 2012</td>
</tr>
<tr>
<td>OSD FC, Initial Issue</td>
<td>Replaces and incorporates the OEB Report (Rev. 1) for the HBC 4000</td>
<td>09 Mar 2015</td>
</tr>
</tbody>
</table>
Contents

Revision Record ........................................................................................................................................ 2
Contents .................................................................................................................................................. 3
Acronyms ............................................................................................................................................. 4
Preamble .................................................................................................................................................. 6
  1. Introduction ....................................................................................................................................... 6
  2. HBC 4000 operational evaluations .................................................................................................. 6
  3. Operational Evaluations – Group Composition ............................................................................. 7
Operational Suitability Data (OSD) – Flight Crew ................................................................................. 8
  1. Aircraft Type Designation and Pilot License Endorsement ............................................................ 8
  2. Aircraft Specifics .............................................................................................................................. 8
    2.1 Aircraft Approach Category ........................................................................................................ 8
    2.2 Part-CAT, Subpart D – Instruments, Data, Equipment ............................................................... 8
    2.3 Electronic Flight Bag (EFB) ...................................................................................................... 9
  3. Operator Differences Requirements (ODR) ................................................................................... 9
  4. Master Differences Requirements (MDR) ..................................................................................... 9
    4.1 MDR Tables .............................................................................................................................. 9
  5. Specifications for Pilot Training ...................................................................................................... 10
    5.1 HBC 4000 Initial Type Rating Training ..................................................................................... 10
    5.2 HBC 4000 to HBC 4000 BPU Differences Training ................................................................ 11
    5.3 HBC 4000 BPU to HBC 4000 Differences Training ................................................................. 13
  6. Recurrent Training ........................................................................................................................... 13
  7. Specification for Checking – LPC/OPC ............................................................................................ 13
    7.1 Recurrent checking ..................................................................................................................... 13
    7.2 Line checks ................................................................................................................................ 14
  8. Specifications for Recent Experience and Currency ....................................................................... 14
    8.1 Recent Experience ...................................................................................................................... 14
    8.2 Currency .................................................................................................................................... 14
  9. Line Flying Under Supervision (LIFUS) / Supervised Operating Experience (SOE) .............. 14
    9.1 LIFUS / SOE following HBC 4000 Initial Type Rating Training ................................................ 14
Acronyms

AFM .................... Airplane Flight Manual
APU ...................... Auxiliary Power Unit
AT ........................ Auto throttle
BPU ....................... Block Point Upgrade
CAS ........................ Crew Alerting System
CCD ........................ Cursor Control Device
CPD ........................ Common Procedures Document for conducting Operational Evaluation Boards, dated 10 June 2004
CPT ........................ Cockpit Procedures Trainer
CS-FCD ..................... Certification Specifications for Operational Suitability Data (OSD) Flight Crew Data CS-FCD, Initial issue, 31 January 2014
CS-FSTD(A) ................ Certification Specifications for Aeroplane Flight Simulation Training Devices of 4 July 2012
CVR ........................ Cockpit Voice Recorder
Difference Level ....... a designated level of difference as defined in CS-FCD
EFIS ........................ Electronic Flight Instrument System
EGPWS .................... Enhanced Ground Proximity Warning System
EPU ........................ Estimated Position Uncertainty
EU-OPS ................... Commission Regulation (EC) No 859/2008 of 20 August 2008 amending Council Regulation (EEC) No 3922/91 as regards common technical requirements and administrative procedures applicable to commercial transportation by aeroplane
FADEC .................... Full Authority Digital Engine Control
FDR ........................ Flight Data Recorder
FFS ........................ Full Flight Simulator (Level C or D)
FMS ........................ Flight Management System
GA .......................... Go-around
GPS ........................ Global Positioning System
GPWS ........................ Ground Proximity Warning System
IPT .......................... Integrated Procedure Trainer
Lab Session .............. Ground training with use of IPT
LNAV ........................ Lateral Navigation
LOF .......................... Line-Oriented Flying
LPV .......................... Localizer Precision with Vertical guidance
LST .......................... License Skill Test
MAU ........................ Modular Avionics Units
MFD .......................... Multi-Function Display
ND .......................... Navigation Display
ODR ........................ Operational Differences Requirements
OPC ........................ Operator Proficiency Check
OSD ........................ Operational Suitability Data
ORI ........................ Operational Review Item
RAAS ...................... Runway Awareness and Advisory System
RNP ....................... Required Navigation Performance
Route Sector ............. as defined in Part-FCL ["Route sector" means a flight comprising take-off, departure, cruise of not less than 15 minutes, arrival, approach and landing phases]
SBAS ..................... Satellite Based Augmentation System
TCAS ...................... Traffic Alert and Collision Avoidance System
VGP ...................... Vertical Glide Path
VPTH ..................... Vertical Path
TOLD .................... Take-off and Landing Data
VNAV ...................... Vertical Navigation
Preamble

1. Introduction

Where references are made to requirements and where extracts of reference texts are provided, these are at the amendment state at the date of evaluation or publication of this document. Users should take account of subsequent amendments to any references, in particular concerning requirement for civil aviation aircrew and air operations.

Determinations made in this document are based on the evaluations of specific configurations of aircraft models, equipped in a given configuration and in accordance with current regulations and guidance.

Modifications and upgrades to the aircraft evaluated require additional OSD assessment for type designation, training / checking / currency, operational credits, and other elements within the scope of the OSD evaluations.

In accordance with Commission Regulation (EU) No 69/2014 of 27 Jan 2014, the Operational Suitability Data contained in this document are identified as follows:

[M] ............... mandatory Operational Suitability Data, bearing the status of rule (see GM No 3 to 21A.15(d))

[AMC] .......... non-mandatory Operational Suitability Data, bearing the status of Acceptable Means of Compliance (see GM No 3 to 21A.15(d))

2. HBC 4000 operational evaluations

An initial operational evaluation for the Hawker Beechcraft HBC 4000 aeroplane was performed during the period 11 - 28 August 2008 by a team of two OEB experts at Flight Safety International (FSI) Training Centre in Wichita, KS (USA). The OEB team members participated in the HBC 4000 initial pilot training course. One pilot performed the skill test in the simulator and the other pilot performed the skill test in the aeroplane. Subsequently the OEB team flew the aeroplane to complete 4 take-offs and landings. Operational Suitability flights were performed on 29 August 2008.

A further evaluation addressing the HBC 4000 Block Point Upgrade (BPU) which introduces a new avionics suite, was conducted between 23 March and 16 October 2011. A T-2 test was conducted by analysis. Aircraft wings, fuselage, and engines are the same between the HBC 4000 and the HBC 4000 BPU, so that handling qualities are unchanged with the BPU installation applied. A T-3 test was conducted on a HBC 4000 BPU full flight simulator. EASA OEB pilots received the proposed HBC difference training course from the HBC 4000 to the HBC 4000 BPU. Appropriate portions of the proficiency check and LOF was administered.
All evaluations were performed in accordance with the Common Procedures Document (CPD), EU-OPS and JAR- FCL1 and are compliant with the provisions of CS-FCD.

The use of optional equipment or functions such as Head-up Displays, Enhanced / Synthetic Vision Systems (E/SVS), etc. was not evaluated.

3. Operational Evaluations – Group Composition

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adalberto da Silva</td>
<td>EASA (INAC)</td>
<td>OEB Chairman</td>
</tr>
<tr>
<td>Pascal Augst</td>
<td>EASA (DGAC)</td>
<td>Team Member</td>
</tr>
<tr>
<td>Poul Rasmussen</td>
<td>EASA</td>
<td>OEB Section Manager Business Jets</td>
</tr>
<tr>
<td>Herbert Meyer</td>
<td>EASA</td>
<td>EASA Section Manager</td>
</tr>
<tr>
<td>Evan Nielsen</td>
<td>EASA</td>
<td>Flight Standards Manager</td>
</tr>
</tbody>
</table>

1) initial evaluation Aug 2008  
2) BPU evaluation Mar 2011  
3) OSD transition Oct 2014
Operational Suitability Data (OSD) – Flight Crew

1. Aircraft Type Designation and Pilot License Endorsement [M]

With reference to Part-FCL, FCL.010 (‘type of aircraft’) and GM1 FCL.700, the HBC 4000 series aircraft have been evaluated for aircraft categorisation and license endorsement.

The license endorsement is established as "HA4T".

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Aircraft Model / Name</th>
<th>License Endorsement</th>
<th>Variants</th>
<th>Complex</th>
<th>SP / SP HPA / MP</th>
<th>OEB FC REPORT / OSD FC available</th>
<th>Remarks</th>
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<tr>
<td>Hawker Beechcraft Corporation</td>
<td>4000 (Hawker 4000)</td>
<td>HA4T</td>
<td>X</td>
<td>X</td>
<td>MP</td>
<td>X</td>
<td>OSD FC HBC 4000, dated 09 Mar 2015</td>
</tr>
<tr>
<td></td>
<td>4000 BPU (Hawker 4000 BPU)</td>
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2. Aircraft Specifics

The HBC 4000 is a low wing aircraft, built in a league of metal and carbon fibre, two rear turbofan Pratt & Whitney engines, maximum take-off weight 39500 Pounds, maximum speed 0.84M, maximum range of 3100 miles, and certificated maximum operation pressure altitude 45000 feet. In this new type, the rudder system with “Fly by Wire” is introduced for the first time by the Hawker Beechcraft Corporation.

The HBC 4000 Block Point Upgrade (BPU) provides new functions and changed functionality with installation of Honeywell EPIC software load 20.0 and Sundstrand software load 18.0

2.1 Aircraft Approach Category [M]

With reference to Part-CAT, CAT.OP.MPA.320(b) the minimum straight-in approach category for the HBC 4000 is as follows:

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBC 4000</td>
<td>C</td>
</tr>
<tr>
<td>HBC 4000 BPU</td>
<td></td>
</tr>
</tbody>
</table>

Normal flap setting is 35 flown from FAF to landing.

2.2 Part-CAT, Subpart D – Instruments, Data, Equipment [AMC]

EU operators must show compliance with applicable elements of Annex IV to EU Regulation 956/2012 (Part-CAT, Subpart D), prior to beginning commercial transport operations.

Compliance with EU-OPS Subpart K and L was evaluated and confirmed. Operator specific items have not been evaluated.
2.3 Electronic Flight Bag (EFB)

The following EFB applications were evaluated on the HBC 4000 BPU:

- Electronic Approach Charts (IAPs, SIDs, STARs, Airport Diagrams)
  Electronic charts (approach charts only) are added with Honeywell Load 20. Chart use is menu driven on the MFD using the respective CCD. Cursor control of electronic charts is workload intensive due to cursor positioning for selections, panning and formatting display for the charts. Crew coordination is necessary to organize MFD information to simultaneously display electronic charts, the Electronic Checklist and navigation display information.

- Electronic Checklist (Normal, Abnormal and Emergency)
  An Electronic Checklist is added with Honeywell Load 20. Checklist use is menu driven on the MFD using respective CCD. The Electronic Checklist does not alleviate the need for the printed Pilot Checklist due to lack of MFD availability at all times during flight operations and some Abnormal Procedures not code-able in electronic format. Electronic Checklist is suitable for use when available. Some Electronic Checklist procedures direct user to use the printed Pilot Checklist. Printed Pilot Checklist is required to be available for use at the pilot station in all phases of flight.

3. Operator Differences Requirements (ODR)

[M] The relevant ODR tables between the HBC 4000 and the HBC 4000 BPU were evaluated and approved. These are retained by Hawker Beechcraft Corporation as part of the operational suitability data.

ODR tables are HBC generic and therefore may not include items that are applicable to particular operators.

[AMC] Operators using more than one variant must have approved ODR tables pertinent to their fleet.

4. Master Differences Requirements (MDR) [M]

4.1 MDR Tables

MDR tables for the HBC 4000 / HBC 4000 BPU variants are shown below. Definitions of the various levels for Training / Checking / Currency are those used in CS-FCD.
Master Differences Requirements (MDR) Table

<table>
<thead>
<tr>
<th>TO AIRPLANE</th>
<th>FROM AIRPLANE</th>
<th>HBC 4000</th>
<th>HBC 4000 BPU</th>
</tr>
</thead>
<tbody>
<tr>
<td>HBC 4000</td>
<td></td>
<td>- -</td>
<td>- - 2)</td>
</tr>
<tr>
<td>HBC 4000 BPU</td>
<td></td>
<td>C / C / C</td>
<td>- -</td>
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</tbody>
</table>

1) The Level C training device must incorporate a Cursor Control Device (CCD) with form, fit and function equivalent to the CCDs used in the aircraft. Proficient pilot use of the CCD is critical to operation of the Honeywell EPIC avionics system.

2) HBC 4000 BPU to HBC differences training was not evaluated.

5. Specifications for Pilot Training

5.1 HBC 4000 Initial Type Rating Training

5.1.1 Prerequisites

These provisions apply for pilots who meet the minimum prerequisites in accordance with Part-FCL.

[AMC] Prior experience in operating EFIS/FMS and multi-engine turbo-jet aeroplanes is recommended for initial training on the HBC 4000.

[AMC] 5.1.2 Training syllabus

Ground training was carried out as classroom instruction and as computer based training. Additionally, supplemental “Lab sessions” on a Graphical Flight simulator (GFS) were performed. These Lab sessions are designed to reinforce classroom instruction, as well as to introduce crews to the use of the FMS and to actual operation of the aircraft.

5.1.3 Training Areas of Special Emphasis (TASE)

[M] The following items must receive special emphasis during initial type rating training:

- RVSM, TCAS, Windshear functions and procedures
- Long Range Navigation / Extended Overwater flights, as applicable
- in-flight and on-ground icing awareness
- CRM and CFIT procedures
- the rudder fly-by-wire system, procedures and failures, including:
  - piloting techniques specific to the HBC 4000 rudder fly-by-wire system
  - awareness of the sensitivity of the rudder pedal input
• Modular Avionics Units (MAU) and associated failures
• the characteristics of the Honeywell Primus Epic system and flight management system concept, including:
  ➢ use and interpretation of colour code of avionic System
  ➢ use of flight path symbol
  ➢ use of acceleration symbol
  ➢ interpretation and use of the Crew Alerting System (CAS)
  ➢ use of Cursor Control Device (CCD)
• aircraft performance during light-weight take-off and go-around

[M] A supervised pre-flight inspection shall be performed before a pilot can perform unsupervised pre-flight inspections.

[AMC] Operators may add additional elements as required by their operation, and these will vary. Training organisations should review their training courses when applicable aircraft modifications occur. Training organisations may add additional elements as required by the operator.

5.2  **HBC 4000 to HBC 4000 BPU Differences Training**

[M] 5.2.1  Prerequisites

HBC 4000 to HBC 4000 BPU differences training requires the trainee to either be current and qualified on the HBC 4000 or to perform a HBC 4000 initial type rating course, up to but excluding the license proficiency check flight.

[AMC] 5.2.2  Training syllabus

The differences training consists of the following footprint:

- 4 hours ground course; and
- 3 hours Cockpit Procedure Trainer (or by default a fixed base simulator without visual facilities, or a HBC 4000 BPU aircraft operating on ground power), or 2 hours full flight simulator for each crew member.

The selection of the training device should take into account the ability to train and check proficiency for all elements of difference.

5.2.2.1  Ground Training

A pre-study course should be available containing the HBC 4000 Block Point A differences client guide.
Ground training is carried out as classroom instruction and as computer based training. Additionally, supplemental “Lab sessions” on a Graphical Flight simulator (GFS) are performed as requested by the pilot or as recommended by the training instructor. These supplemental Lab sessions should be designed to reinforce classroom instruction, as well as to introduce crews to the use of the FMS and to actual operation of the aircraft.

The ground course syllabus should include:

- PDF Imagery (Trend vectors, VNAV altitude, RNP/EPU, LPV Annunciator)
- MFP Imagery (Charts, Graphical Weather, Electronic Checklist, Vertical Profile)
- FMS (GA Auto LNAV, Told Data, Temperature Compensation, GPS Navigator, VGP vs. VPTH descent, LNAV/VNAV approaches, SBAS approaches, RNP approaches, FDR/CVR updates, EGPWS Windshear, RAAS)
- Systems (Aircraft General, Master Warning, Electrical, Lighting, Fuel APU Powerplant, Fire and Overheat, Protection Ice and Rain, Pressurization, Hydraulics, Landing Gear, Flight Controls, Oxygen, Performance)
- Documents (AFM Vol. 1,2,3 and Checklist Vol. 1,2,3)

The ground course should be completed by a written test (20 questions).

### 5.2.2.2 Flight Training

The flight training syllabus should include:

- Electronic Charts
- Electronic Check List
- Display selection for new features
- FMS selections
- Selection and Set-up for new approach capabilities and annunciations (WASS/LPV, LNAV/VNAV, Baro-VNAV and Temperature Compensation, RNP, Go-Around LNAV)
- TOLD data
- FADEC
- CAS messages and TLD

The flight training should be performed in a CPT (3 hours) or in an FFS (2 hours) and be completed by a demonstration of proficiency covering the new functions.

The Cockpit Procedure Trainer (CPT) is a training device which represents the cockpit environment including the cockpit controls, displays and computer programmes necessary to represent the aircraft in ground and flight operations to the extent that the systems appear to function as in an aeroplane. The purpose of the CPT is to allow learning the functioning of the controls and displays as well as practicing CRM principles and application of procedures. A CPT is...
based on software issued from FFS simulation, with the exception of avionics, which is re-hosted from the aircraft software; it is validated for its intended use.

5.2.2.3 Training Areas of Special Emphasis (TASE)

[M] The following items must receive special emphasis during the HBC 4000 to HBC 4000 BPU differences training:

- use of the CCD of the Honeywell EPIC avionics system
- use of the electronic approach charts (IAPs, SIDs, STARs, Airport Diagrams)
- during DATA LOADING privilege, use of the GPU instead of the APU to prevent power cut and loss of DATA
- consider the AFM as the reference in the preamble when no electrical power is in use if no paper check list available (practice in simulator recommended)
- use of the Electronic Check List
- use of electronic chart display and CCD
- proficiency in QFE operation. QNH must be used for FMS settings; this has to be confirmed (check LM 24 note 3 volume 1). Practice during ground school or in simulator for one take-off and landing phase.
- selection of manual take-off V-speeds; when using Flaps 20 for take-off use HEADING-PITCH 8° instead of TOGA. Perform one take-off for training in simulator.

5.3 HBC 4000 BPU to HBC 4000 Differences Training

Differences training from the HBC 4000 BPU to the HBC 4000 has not been evaluated.

6. Recurrent Training

Recurrent training must be compliant with EU regulations for civil aviation aircrew and air operations, as applicable, and include the identified Training Areas of Special Emphasis.

[AMC] Recurrent training should be alternated between the HBC 4000 / HBC 4000 BPU variants being operated and difference addressed on a rotational basis.

[M] If recurrent training is not alternated, Difference Levels for training as shown in the MDR tables apply.
7. **Specification for Checking – LPC/OPC**

7.1 Recurrent checking is addressed in Part-FCL and Part-ORO, specifically in ORO.FC.130, ORO.FC.220, ORO.FC.230, AMC1 ORFC.230, GM1 ORFC.230, ORO.FC.240, and AMC1 ORFC.240

7.2 **Line checks**

[M] A line check on either the HBC 4000 or the HBC 4000 BPU is valid for both variants.

8. **Specifications for Recent Experience and Currency**

8.1 **Recent Experience**

Recent experience requirements are contained in Part-FCL, FCL.060.

[M] 8.2 **Currency**

For pilots operating both the HBC 4000 and the HBC 4000 BPU the following applies:

a. If a pilot has not flown on one variant for more than 6 months, he must perform a self-review on that variant prior to flying on that variant;

b. If a pilot has not flown on one variant for more than one year, he must perform a minimum two hours Cockpit Procedure Training (CPT) session on that variant, covering the differences between the HBC 4000 and the HBC 4000 BPU;

c. If the HBC 4000 BPU has not been flown within a period of 2 years following the differences training, further differences training or a proficiency check on that variant is required;

d. If the HBC 4000 has not been flown within a period of 2 years, refresher training and a proficiency check is required on that variant.

9. **Line Flying Under Supervision (LIFUS) / Supervised Operating Experience (SOE)**

LIFUS should be performed in accordance with ORO.FC.220 and AMC1 ORO.FC.220(e). Furthermore, GM1 ORO.FC.220(d) provides guidelines for operators to use when establishing their individual requirements. Supervised Operating Experience (SOE) may be established in accordance with Part-FCL, FCL.720.A (g) through the operational suitability evaluation.

9.1 **LIFUS / SOE following HBC 4000 Initial Type Rating Training**

[AMC] Pilots completing initial type rating training for the HBC 4000 should perform a minimum of 10 route sectors LIFUS, followed by a 2 route sector line check or an equivalent amount of SOE.

[AMC] Where there is a change of operating conditions or route structure this should be taken into account and may need additional route sectors to cover these elements.