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# Flight Standardization Board (FSB) Report

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Revision: 4  
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## **Bombardier** **DHC-8-100, 200, 300, 400 Series, All Models**

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**RECORD OF REVISIONS**

REVISION NUMBER	SECTIONS	PAGE	DATE
2	ALL	ALL	12/21/2000
3	ALL	ALL	10/4/2012
3	APPENDIX 3 APPENDIX 5	ALL	10/4/2012
3	TCCA OE REPORT	REMOVED	10/4/2012
4	ALL	ALL	11/23/2016

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## HIGHLIGHTS OF CHANGE

### Revision 4:

- Change bars have been added to reflect document changes from Revision 3.
- In general, references to the Code of Federal Regulations (CFR) changed throughout the document to meet proper annotation requirements are not marked with change bars.
- Acronyms defined.
- Updated HUD guidance to reflect software upgrade.
- Revised Appendix 3 for Head-Up Guidance System (HGS) to current operational requirements.
- Added Appendix 5 for RNP, RNP-AR AND WAAS/LPV Approaches.
- Removed TCCA OE Report that was attached to Revision 2.
- Addresses any non-applicability of existing training requirements.
- Removed references to AQP.
- Changed “variant” to “variation”.
- Changed Order 8400.1 to Order 8900.1.
- Changed “ Check Airman” to “Check Pilot”.
- Changed term to Full Flight Simulator when referring to level A or higher simulator.
- Replaced IOE with OE.
- Replaced term “Pilot Not Flying” with “Pilot Monitoring”.
- Removed term “ Automated Standard Operations Specifications”.
- Updated OpSpec C53 to OpSpec C075.
- Clarified no flap approach and landing criteria.
- Deleted reference to SFAR 58.
- Changed Appendix E to Appendix F for recurrent training.
- Removed MLS approaches.

- Changed PTS reference from “5c” to “5f”.
- Deleted sentence in paragraph 7.4.1 “ and authorize completion of PIC IOE”.
- Deleted sentence in paragraph 7.5 “ at introduction into service”.
- Changed term “jumpseat” to “ forward observer’s seat”.
- Fixed typo on TCDS from I to 1.
- Removed reference to AC 120-40A and AC 120-45.
- Fixed typo in paragraph 12.1 from number 0 to letter O.
- Removed paragraph 3.1.1.
- Replaced “shall” with “must”.
- Fixed typo “cures” to “ cues”.
- Replaced “approach to stall” with “ stall”.
- Replaced term” Captains” with “ PICs”.
- Replaced “approved” to “qualified” and “National Simulator Evaluation Team” to “National Simulator Program”.
- Removed paragraph 1.3.
- Replaced paragraph 4.1.4 and 6.1.2 (which were duplicates) with paragraph 1.4 under Purpose and Applicability.
- Removed paragraph 7.1.4f in Appendix 3 reference “applicant completing 5 AIII approaches.
- Updated Maximum Weight to 65,200 to account for the enhanced high gross weight option.
- Removed paragraph in appendix 3 reference, “The applicant must complete 5 AIII approaches to Cat III minimums under the supervision of an authorized check airman...”.
- Added emphasis item 7.1.2i for taxi training and checking.

**Revision 3:** Not on record.

**Revision 2:** Not on record.

**Revision 1:** Not on record.

## 1. PURPOSE AND APPLICABILITY

1.1 This FSB report specifies FAA master training, checking, and currency requirements applicable to crews operating DHC-8 aircraft under FAR 121. The report also addresses certain issues regarding DHC-8 aircraft operating other than under Part 121 (e.g., Type Rating Designation). Provisions of the report address DHC-8 variations to:

- a) Assign the same pilot “type rating” to all DHC-8s,
- b) Describe “Master Common Requirements” (MCRs) applicable to all DHC-8 aircraft,
- c) Describe “Master Difference Requirements” (MDRs) for crews requiring differences qualification for mixed-fleet-flying or transition,
- d) Provide examples of acceptable “Operator Difference Requirement (ODR) tables,
- e) Describe acceptable training program and device characteristics when necessary to establish compliance with pertinent MDRs,
- f) Set checking and currency standards, including specifications of those checks that must be administered by the FAA or operators, and
- g) List regulatory compliance status (compliance checklist) for the DHC-8 for 14 CFR parts 121, 61, and 91, Advisory Circulars (ACs), or other operational criteria reviewed by the Aircraft Evaluation Group (AEG) or FSB.

1.2 This report includes:

- a) Minimum requirements which must be applied by FAA field offices (e.g., MCRs, MDRs, Type Rating designations),
- b) Information which is advisory in general but may be mandatory for particular operators if the designated configurations apply and if approved for that operator (e.g., MDR footnotes, acceptable ODR tables), and
- c) Information which is used to facilitate FAA review of an aircraft type or variation proposed for use by an operator (e.g., compliance checklist for FAA Field Office use).

Various sections within the report are qualified as to whether compliance is recommended, advisory, or required considering the provisions in the current revision of AC 120-53, Guidance for Conducting and Use of Flight Standardization Board Evaluations, as amended.

1.3 This report addresses DHC-8 variations including: DHC-8-100/200/300 and 400. Variation groups are identified as Series -100-200-300 in one group and the Series -400 as another group. All previous DHC-8 reports are superseded. Provisions of this report

are effective until amended, superseded, or withdrawn by subsequent FSB determinations.

- 1.4 Terminology. The term “must” is used in this report and certain MDR footnotes even though it is recognized that this FSB report and AC 120-53, as amended, on which it is based, provides one acceptable means, but not necessarily the only means, of compliance with 14 CFR part 121 Subparts N and O requirements. This terminology acknowledges the need for operators to fully comply with provisions in this FSB report, if this AC method is to be applied as that operator’s means of compliance with 14 CFR part 121. Operators who choose this method must comply with each applicable MDR provision, including footnotes. Partial or selective application of the process or its provisions does not constitute an acceptable means of compliance with 14 CFR part 121 under AC 120-53, as amended.

**Acronyms are defined as follows:**

AC	Advisory Circular
ACO	Aircraft Certification Office
AEG	Aircraft Evaluation Group
AFCS	Automatic Flight Control System
AFM	Airplane Flight Manual
AP	Autopilot
APU	Auxiliary Power Unit
ARCDU	Automatic Radio Control Display Unit
ATP	Airline Transport Pilot
ATPC	Airline Transport Pilot Check
CFIT	Controlled Flight Into Terrain
CFR	Code of Federal Regulations
CHDO	Certificate-Holding District Office
DC	Display Controller
EFIS	Electronic Flight Instrument System
EFVS	Enhanced Flight Vision System
EGPWS	Enhanced Ground Proximity Warning System
FAA	Federal Aviation Administration
FADEC	Full Authority Digital Engine Control
FBS	Fixed-Base Simulator
FFS	Full Flight Simulator
FMS	Flight Management System
FSB	Flight Standardization Board
FSTD	Flight Simulation Training Device
FTD	Flight Training Device
EHSI	Electronic Horizontal Situation Indicator
HUD	Head-Up Guidance Display
IAW	In Accordance With
IMC	Instrument Meteorological Conditions
LCD	Liquid Crystal Display
LOE	Line Operational Evaluation

LOFT	Line Oriented Flight Training
LPV	Localizer Performance with Vertical Guidance
MFD	Multi-Function Display
MMEL	Master Minimum Equipment List
MCR	Master Common Requirements
MDR	Master Differences Requirements
NSET	National Simulator Evaluation Team
ODR	Operator Differences Requirements
OE	Operating Experience
PFD	Primary Flight Display
PM	Pilot Monitoring
POI	Principal Operations Inspector
PTS	Practical Test Standards
RNP SAAR	Required Navigation Performance Special Aircraft and Aircrew Authorization Required
TCAS	Traffic Alert and Collision Avoidance System
T.O.	Takeoff
TSO	Technical Standard Order
VMC	Visual Meteorological Conditions
VNAV	Vertical Navigation

## 2. PILOT “TYPE RATING” REQUIREMENTS

Type Rating. In accordance with (IAW) the provisions of 14 CFR parts 1, 61, and 121, and AC 120-53, the same pilot “Type Rating” is assigned to all DHC-8 variations and is designated “DHC-8”.

## 3. MASTER COMMON REQUIREMENTS (MCR)

### 3.1 Common requirements for all DHC-8s.

3.1.1 Landing Minima Categories, 14 CFR § 97.3. All DHC-8 -100/200/300s are considered Category B aircraft for the purposes of determining “straight-in landing weather minima”. DHC-8 Series 400 is considered Category C for the purposes of determining “straight in landing minima”. For circling, the minima to be used are as specified in operations specifications (OpSpecs) for each operator as follows:

- a) For operators with OpSpecs (Paragraph C075), circling minima are as specified for the actual approach speed to be used for a circling maneuver, or
- b) If OpSpecs have not been issued, circling minima are as designated by 14 CFR § 97.3.

3.1.2 Normal “Final Landing Flap Setting”, 14 CFR § 91.126(c). The normal “final landing flap setting” is considered to be “Flaps 15” for Series 100/200/300 DHC-8s. “Flaps 35”, however, may be used at crew’s discretion considering winds, runway length, runway braking, or other relevant factors. “Flaps 35” is considered to be the normal “final landing flap setting” for the Series 400 DHC-8.

3.1.3 “No Flap Approach and Landing”. Training and checking applicable to DHC-8 aircraft requires demonstration of “no flap” approaches and “no flap landing”. Completion of a demonstration in any Series 100/200/300 DHC-8 variation suffices for any of those variations. The Series 400 DHC-8 requires a separate demonstration of a “no flap” approach and “no flap” landing.

No Flap Landings. Demonstration of a No Flap approach and landing during a 14 CFR part 61 or 14 CFR part 121 Appendix F check is appropriate. IAW FAA Order 8900.1, when the flight test is conducted in the airplane in actual flight, a touchdown from a no flap is not required. The approach must be flown to the point where the inspector or examiner can determine whether the landing would or would not occur in the touchdown zone.

3.2 No other special or unique requirements common to all DHC-8s are identified beyond those provided by 14 CFR parts 61, 91, and 121.

#### **4. “MASTER DIFFERENCE REQUIREMENTS” (MDR)**

4.1 General Provisions.

4.1.1 Master Difference Requirements (MDRS). MDRS for the DHC-8 are shown in Appendix 1. These provisions apply to mixed-fleet flying of DHC-8 aircraft when differences between variations exists which affect crew knowledge, skills, or abilities related to flight safety (Level A or greater differences).

4.1.2 Difference Level Definitions (A/B/A, etc.). Difference level definitions are specified IAW criteria outlined in AC 120-53.

4.1.3 MDR Footnotes. Footnotes to MDR requirements (where they are used) define acceptable “required means” or “alternate means” of compliance. A footnote can indicate requirements that are less or more restrictive than the basic designation depending on the significance of the differences between particular variations.

4.1.4 Paragraph moved to 1.4 under “Purpose and Applicability”.

#### **5. OPERATOR DIFFERENCE REQUIREMENTS (ODR) TABLES**

5.1 ODR Tables. ODR tables are used to show an operator’s compliance method. Acceptable ODR tables for operators conducting mixed fleet operations, using the particular combination of DHC-8 variations evaluated, are shown in Appendix 2. The ODR tables

represent an acceptable means to comply with MDR provisions for the aircraft evaluated based on those differences and compliance methods shown. The tables do not necessarily represent the only acceptable means of compliance for operators with aircraft having other differences where compliance methods (e.g., devices, simulators) are different or for combinations of aircraft not evaluated. For operators flying variations which are the same as the aircraft used for the ODR table development, and using the same compliance methods, the ODR tables in Appendix 2 have been found acceptable by the FAA. Equivalent tables, therefore, may be approved by a Principal Operations Inspector (POI) for a particular operator.

- 5.2 Operator Preparation of ODR Tables. Operators flying “mixed fleet” variations with differences not shown on, or addressed by, the acceptable ODR tables attached in Appendix 2, or operators seeking different means of compliance, must prepare and seek FAA approval of specific ODR tables pertinent to their fleet.
- 5.3 ODR Table Coordination. New ODR tables proposed by operators should be coordinated with the FSB prior to FAA approval and implementation. Through this coordination, the FSB can ensure consistent treatment of variations between various operators’ ODR tables and compatibility of the ODR table with MDR provisions.
- 5.4 ODR Table Distribution. Originally approved ODR tables are retained by the operator. Copies of approved DHC-8 ODR tables are retained by the Certificate-Holding District Office (CHDO). Copies of all approved ODR tables should be forwarded to the FSB Chairman, Long Beach Aircraft Evaluation Group (LGB-AEG).
- 5.5 DHC-8 Mixed-Fleet Flying. The definition of “mixed-fleet flying” for DHC-8 variations is as specified in AC 120-53. Typical examples of DHC-8 mixed-fleet flying include situations in which crews alternately fly variations of the DHC-8 within a bid period or between PC/PT events as follows:
  - a) DHC-8-100, 200, 300, and 400.
  - b) DHC-8 with and without EFIS and/or FMS.

## 6. FSB SPECIFICATIONS FOR TRAINING

- 6.1 Assumptions Regarding Previous Experience of Airmen. The provisions of Section 6 of this report apply to programs for airmen who are experienced in both 14 CFR part 121 or 135 air carrier operations and multi-engine transport category turboprop aircraft. For airmen not having this experience, additional requirements may be appropriate as determined by the POI, FSB, and the FAA Flight Standards Air Transportation Division (AFS-200).
  - 6.1.1 Pilots: Initial, Transition, and Upgrade Ground and Flight Training.
  - 6.1.2 Paragraph moved to 1.4 under “Purpose and Applicability”.

- 6.1.3 Minimum Acceptable Training Requirements for Integrated DHC-8 Programs. An acceptable ground-training curriculum for a DHC-8 program is specified in paragraph 6.1.8.1. A differences training program assumes a trainee has completed DHC-8 initial or transition training, and that he or she will receive differences training on the other aircraft. Coverage of differences may be completed coincident with each phase of that training or following completion of training on the first variation. For DHC-8 programs already approved, reductions through provisions of 14 CFR §§ 121.401(d) or 121.405(d) should not be made without coordination with the FSB. Less comprehensive programs will only be approved if equivalence can clearly be established or other special factors apply. Examples of special factors that may be considered by the FSB include such factors as allowing credit for previous applicable experience (i.e., operators implementing fleets who have crews previously qualified) or increases in the quality or effectiveness of the training process (i.e., new types of training devices).
- 6.1.4 DHC-8 Individual Programs. Numerous training programs for any one DHC-8-100/200/300 variation alone are already FAA approved. Principal Inspectors of operators initially introducing a DHC-8 may approve programs consistent with programs previously approved for any one variation (e.g., an operator introducing a fleet of DHC-8-300s with no differences between any of the individual aircraft). However, when such programs are approved, operators should be aware that if variations are to be added or differences are to be introduced, ODR table development and FAA approval is necessary prior to operation of those aircraft with differences. For information regarding previously approved programs, FAA Principal Inspectors of other existing DHC-8 operators may be consulted. In the event of uncertainty regarding evaluation of a proposed program, the FSB should be consulted.
- 6.1.5 DHC-8 Programs Having More Than One Variation. Programs with more than one variation of DHC-8 require differences training programs meeting criteria specified by MDR tables or must have alternate approval as prescribed by Section 12. Operators must show that specific programs meet MDR requirements through preparation of, FAA approval of, and compliance with ODR tables. An example of an acceptable differences training program for a DHC-8-100/300 integrated fleet is provided in the ODR tables in Appendix 2.
- 6.1.6 Differences Training Program for a DHC-8 Integrated Fleet. Any DHC-8 integrated fleet program that is less comprehensive than the programs shown in Appendix 2 should not be approved without coordination with the FSB. The differences programs for a DHC-8 integrated fleet assumes a trainee has completed DHC-8 training for the other variation group. However, coverage of differences may be completed coincident with each phase of transition training, as well as following completion of transition to the first variation.
- 6.1.7 Existing DHC-8 Integrated Training Programs. Programs that are less comprehensive than Appendix 2 should be reevaluated and will continue to be approved only if equivalence can clearly be established or other special factors apply.

Examples of special factors that may be considered by the FSB include such factors as allowing shortened courses for previous applicable experience (e.g., operators

implementing combined DHC-8 fleets who have crews previously qualified on one of the variations) or increases in the quality or effectiveness of the training process (e.g., new types of training devices).

#### 6.1.8 Ground Training (Academics) for the DHC-8.

##### 6.1.8.1 Ground training in the following subjects for the DHC-8 is required:

- a) Aircraft General Description (Interior/Exterior).
- b) Powerplant.
- c) Aircraft Systems (e.g., Hydraulics, Electrical).
- d) Limitations.
- e) Performance.
- f) Warnings and Cautions.
- g) Normal/Abnormal Procedures.
- h) HGS (if applicable).
- i) FMS.
- j) ARCDUs, EFIS control panels (Series 400).
- k) Stall Warning Including Shaker and Pusher Systems (DHC-8-400).

#### 6.1.9 Flight Training for the DHC-8.

##### 6.1.9.1 Flight Training should focus on the following events or maneuvers between DHC-8 variations:

- a) Exterior Differences.
- b) Cockpit/Cabin Familiarization.
- c) Systems Tests and Checks.
- d) Flight Control Malfunctions.
- e) Electronic Engine Control System (ECU/EEC or FADEC).
- f) Power Management Procedures.
- g) No Flap Landing Procedure.
- h) Normal Procedures.
- i) CAT II/III HGS (if applicable).
- j) FMS Procedures.
- k) Stall Warning, Including Shaker/Pusher Training (Pusher only in FFS) (DHC-8-400).

##### 6.1.9.2 Minimum Acceptable Flight Training. The underlying objective in both flight and ground training is to train to proficiency.

#### 6.1.10 Engine Differences.

6.1.10.1 Operation of the DHC-8 with the Pratt & Whitney 120A, 123, or 150A and the Hamilton Standard 14 SF-7 or -15 and the Dowty R408 propeller has been evaluated by the FSB, and the training, checking, and currency requirements, as outlined by this FSB report, will provide sufficient parameters for successful operation of these engine and propeller combinations.

## 6.2 Initial, Upgrade, or Transition Training.

6.2.1 Pilots: Initial, Transition, and Upgrade Ground Training, 14 CFR § 121.419. Initial, transition, or upgrade ground training for the DHC-8 is accomplished IAW 14 CFR § 121.419 and 14 CFR part 121 Subparts N and O. When more than one variation is flown, or differences training from one variation to another are accomplished, appropriate instruction in aircraft systems will be required for each variation, consistent with MDR provisions. Training program hours may be reduced as specified in 14 CFR § 121.405, but not in a manner or in areas that invalidate compliance with provisions of the MDR.

6.2.2 Pilots: Initial, Transition, and Upgrade Flight Training, 14 CFR § 121.424. When initial, transition, or upgrade flight training and practice specified in 14 CFR § 121.424 and different variations are to be flown, training is considered to suitably address each variation, since flight characteristics of different variations are the same or equivalent. Training program hours may be reduced as specified in 14 CFR § 121.405, but not in a manner or in areas that invalidate compliance with provisions of the MDR or ODR tables.

6.2.2.1 Unique Training Provisions. All existing training requirements of 14 CFR part 121 Appendix E are applicable to the DHC-8 except as follows:

- Tuck and Mach buffet.
- Operations of systems and controls at the flight engineer station.
- Fuel Jettisoning.

6.2.3 Crewmember Emergency Training, 14 CFR § 121.417. Crewmember emergency training in the DHC-8 should be conducted IAW 14 CFR § 121.417 and the provisions of FAA Order 8900.1, Volume 3, Chapter 10. Emergency training conducted in any 100/200/300 variation applies to those variations. Emergency training conducted in a DHC-8 Series 400 applies only to that variation.

## 6.3 Differences Training.

6.3.1 Differences Training, 14 CFR § 121.418. Unless an initial or transition program is completed for each variation, differences training is necessary for qualification in each DHC-8 variation as shown in the MDR. A training program addressing pertinent differences described by individual operator ODRs, including normal and abnormal operations, is required for each aircraft flown.

6.3.2 FMS Training as it Relates to Differences Programs. (TBD).

## 6.4 Recurrent Training.

6.4.1 Recurrent Training, 14 CFR § 121.427. The FSB has established requirements for recurrent ground and flight training for each crewmember. Recurrent training must include appropriate training IAW 14 CFR § 121.427 for each variation flown (-100/200/300/400). Recurrent training must be IAW the items and levels specified by

MDR and ODR tables for initial differences training unless otherwise approved by the FSB.

- 6.4.2 Recurrent Flight Training. Recurrent flight training requires appropriate maneuvers and procedures identified in 14 CFR part 121 Appendix F for each variation. As permitted by 14 CFR § 121.427(d)(1)(ii), satisfactory completion of a proficiency check, IAW 14 CFR part 121 Appendix F, may be substituted for training. When ODR table provisions identify differences in maneuvers or procedures between variations, such differences must be addressed in the operator's recurrent program.
- 6.4.3 Recurrent Training Level Adjustments. The FSB will consider proposals to establish recurrent differences training at levels other than those specified in the MDRs on a case-by-case basis. Any changes to FSB requirements will be identified through footnotes, which modify basic MDR provisions. Requests for such changes should be made to the FSB through the POI. If the FSB, subject to approval by AFS-200, accepts different levels for recurrent training or checking, provisions will be identified in amended MDR footnotes and revised provisions issued.
  - 6.4.3.1 Recurrent Ground Training Time Reductions. If recurrent ground training for crewmembers is reduced below programmed hours required in 14 CFR § 121.427(c) IAW 14 CFR § 121.405, such reductions must be consistent with MDR provisions.
- 6.5 Other Training.
  - 6.5.1 LOFT Programs, 14 CFR § 121.409(b)(3). When operators have LOFT programs, POIs should review those programs to assure their suitability for the variations flown. If simulators used for LOFT have differences from variations actually flown, LOFT credits may be reduced or eliminated if such differences are determined to have a significant adverse effect on the effectiveness of LOFT.
  - 6.5.2 Flight Attendants: Initial and Transition Ground Training, 14 CFR § 121.421. Due to similarities in cabin configuration, flight attendants may be jointly qualified in DHC-8 - 100/200/300 variations. Such qualification, however, must address any differences in exits, communications, or emergency equipment when common qualification applies. DHC-8 Series 400 qualification applies only to that variation due to differences from the 100/200/300 variations.
  - 6.5.3 Aircraft Dispatchers: Initial and Transition, 14 CFR § 121.422. POIs assure that operators have complied with 14 CFR § 121.422 for the DHC-8 as follows. Dispatchers may be simultaneously qualified for all DHC-8 variations. However, because variations have different performance, procedures, and limitations, dispatchers must be trained to suitably address those differences. Records should reflect the variation(s) on which dispatchers are qualified.

## **7. FSB SPECIFICATIONS FOR CHECKING**

- 7.1 General.

- 7.1.1 Checking Items. Knowledge, procedures, and maneuvers specified by 14 CFR part 61, 14 CFR part 121 Appendix F, FAA Order 8900.1, and FAA Practical Test Standards (PTS) evaluations pertinent to multi-engine turboprop transport aircraft apply to all DHC-8 variations.

For 14 CFR part 121, checking items are accomplished for a DHC-8 as specified by MDRs and ODRs to qualify in pertinent DHC-8 variations. Because of significant differences for operations under 14 CFR part 91 or 125, as compared to those operations under 14 CFR part 121, additional factors may be appropriate as specified in paragraph 7.2.4.

- 7.1.2 Areas of Emphasis. The following areas of emphasis should be addressed during checks as necessary:

- a) Proficiency with manual and automatic flight in normal and non-normal situations must be demonstrated. For crews not experienced with AFCS, emphasis is related to proper mode selection and use, crew coordination when performing mode or data changes, and interpretation of annunciations. For crews familiar with AFCS but not having recent experience with older generation flight instruments, navigation, manual capture of altitudes, raw data approaches, tracking of VOR radials/NDB bearings using an RMI, and other such systems or procedures may require additional practice or review in one or more of the above areas.
- b) Proper outside visual scan without prolonged fixation on cockpit displays or controls should be consistently demonstrated. This is particularly true for FMS-equipped aircraft, during failure of systems, and for variations which use manual or lengthy procedures for company communications rather than automated ACARS reporting.
- c) For EFIS aircraft (EADI/EHSI/PFD/MFD displays), proper setup, selection, and use of those displays should be demonstrated, particularly during instrument approaches. Proper use of the ARCDUs should be demonstrated on Series 400 aircraft.
- d) Proper speed management and control application during rotation and flare to preclude tail strikes on some variations (particularly the Series 400).
- e) When noise abatement procedures other than as specified by AC 91-53 are used, proper performance of the alternate procedures should be addressed.
- f) For HGS-equipped aircraft, proper setup, selection, and use of the HGS must be demonstrated, particularly during instrument approaches. Checking standards for HGS are equivalent to non-HGS except for Category III. For Category III, performance equivalent to that demonstrated for manual CAT III HGS operations in the original STC must be shown by each PIC. HGS may be used during PC maneuvers. However, periodic assessment of non-HGS skills should be demonstrated.
- g) MMEL Use. Dispatch relief under the provisions of the operator's MEL should receive emphasis as part of the checking process to address issues related to crew workload and safety. In particular, if an operator elects to use the relief provided for

the Electronic Control Unit (ECU) on the 100 Series aircraft, use of proper procedures and adherence to AFM and MEL limitations must be demonstrated. Also, the handling qualities of all DHC-8 Series aircraft have been evaluated and it has been found that autopilot MMEL relief is appropriate.

h) Emphasis on the interaction of the various modes and the proper use of operating modes must be demonstrated.

i) An FFS is required to train and check the differences for taxi, takeoffs, and landings from the DHC-8-100/200/300 to the DHC-8-400 or from the DHC-8-400 to the DHC-8-100/200/300.

7.1.3 “No Flap” Approach and Landing. “No Flap” approaches and landings are required for DHC-8 aircraft (see paragraph 3.1.3). Demonstration of a No Flap approach and landing during a 14 CFR part 61 or 14 CFR part 121 Appendix F check is appropriate. IAW FAA Order 8900.1, when the flight test is conducted in the airplane in actual flight, a touchdown from a no flap is not required. The approach must be flown to the point where the inspector or examiner can determine whether the landing would or would not occur in the touchdown zone.

## 7.2 Type Ratings.

7.2.1 Oral and Written Tests. Unless otherwise specified by MDR tables, an oral or written portion of a type rating practical test need only address the DHC-8 variation to be flown or to be used for conduct of the test. If information related to other variations is a factor in conducting an oral or written test, the applicant should be advised, not later than the time of application for the test, which other variation(s) may be addressed by the test.

7.2.2 Practical Test. Airmen may complete the necessary type rating practical test to the standards of FAA-S-8081-5F, Practical Test Standards, (as amended) in any DHC-8 variation for issuance of a DHC-8 pilot type rating. However, before airmen serve as PIC under 14 CFR part 121 in a variation group other than that in which a type rating practical test was completed, checking for differences IAW MDR provisions must be completed.

7.2.3 Application For and Issuance of Type Ratings. Airmen completing pertinent 14 CFR part 61 requirements or 14 CFR part 61 Subpart G and FAA-S-8081-5F (as amended) requirements in a DHC-8 IAW FSB requirements described in this report may apply to the FAA for the appropriate DHC-8 type rating endorsement. Upon completion of required tests, and submission of an application (FAA Form 8710-1), authorized FAA inspectors or designees may issue the necessary pilot certificate with type rating.

7.2.4 Additional Factors for Practical Tests for Applicants Not Employed Under 14 CFR part 121.

a) When possible, a practical test for an applicant not employed under 14 CFR part 121 (e.g., issuance of a type rating under 14 CFR part 61 for an airman not employed by a 14 CFR part 121 operator or 14 CFR part 121 related training center) should be

- conducted in a variation of the same group as the variation intended to be flown (e.g., Test conducted using a DHC-8-100 for an applicant intending to fly a DHC-8-100). In the event this is not possible or practical, or where a DHC-8 Type Rating is sought and no specific DHC-8 operation is planned or intended, the test may be conducted using any DHC-8 variation.
- b) In this instance, and following a successful test, the applicant should be advised of the desirability of completing subsequent differences training if other DHC-8 variations are to be flown. The inspector should recommend that at least one of the following provisions be met prior to serving as crewmember of a DHC-8 within a different variation group than that for which the type rating practical test was conducted.
  - c) Completion of differences qualification IAW or equivalent to that specified for 14 CFR part 121 for the specific DHC-8 to be flown,
  - d) Completion of a check IAW 14 CFR § 61.58 for the DHC-8 within the variation group to be flown, or
  - e) Completion of a proficiency check IAW or equivalent to that specified by 14 CFR part 121 or other equivalent check for the DHC-8 within the DHC-8 variation group to be flown.

### 7.3 Proficiency Checks.

7.3.1 General. Proficiency checks are administered as designated in 14 CFR §§ 61.58 and 121.441, and 14 CFR part 121 Appendix F for the DHC-8 except as may be specified or permitted by MDR and ODR tables.

- a) DHC-8 100, 200, 300. A proficiency check in any DHC-8 100, 200, 300 suffices for those variations if initial and recurrent qualification is conducted IAW MDRs and approved ODR tables for that operator. Such checks should assess knowledge and acceptable levels of skill, considering crew position. When several DHC-8 variations are used by an operator, one aircraft is typically selected as the basic model, and a sufficient number of questions on the other model are covered to ensure effectiveness of differences preparation. The preflight and equipment examination portion of initial and recurrent proficiency checks must address each variation of the DHC-8 being operated by the flightcrew member. These checks must be administered by an authorized check pilot or operationally qualified FAA Safety Inspector. Satisfactory completion of a proficiency check may be substituted for recurrent flight training IAW 14 CFR § 121.433(c).
- b) DHC-8 400. When mixed-fleet flying, proficiency checks must be completed in both the DHC-8 400 and in one of the following: DHC-8 100, 200, or 300. One proficiency check must be a full check, and the secondary check must meet the requirements of the MDR and approved ODR tables for that operator.

7.3.2 Alternating DHC-8 Variation Proficiency Checks. For mixed-fleet flying of DHC-8 aircraft (i.e., -100/200/300), proficiency checks may be administered in the following manner:

- a) Proficiency Checks may be alternated every 6 months for PICs and annually for other flightcrew members.
- b) Proficiency Checks may be given in either variation with differences training on the other variation.

Alternating checks may not necessarily eliminate the requirement to address differences between variations as required by the MDR tables. It is possible that discussion or instruction outlining the unique differences from one variation to another will be necessary when alternating checks in order to ensure a complete understanding of those differences. A differences training program may be utilized during each checking period in lieu of alternate checking of these variations.

7.4.0 Authorized FAA Inspector Pilots. For the purposes of airmen certification, authorized FAA Inspector Pilots (or Aircrew Program Designees/APDs) are those having completed appropriate qualification in any DHC-8. Completion of the appropriate approved differences training course for other models of the DHC-8 aircraft is required for those individuals who will be expected to perform certification duties in other variations.

7.4.1 Recurrent Proficiency Checks. Only those FAA Inspector Pilots having completed appropriate qualification on the applicable DHC-8 variation which is defined as either Initial, Transition, or Differences Training may conduct ATPC type rating checks in the DHC-8. FAA Inspector Pilots qualified in the applicable DHC-8 variation must conduct PIC proficiency checks until such time as properly qualified check airmen have been approved for this purpose.

7.5 Operating Experience (AC 120-53 or 14 CFR § 121.434). OE required by 14 CFR § 121.434 applies to the DHC-8. Considering the requirements specified by the ODR tables and the MDR table in Appendix 1 of this report, OE completed in one of the -100/-200/-300 models does not have to be repeated in another model of that group or series. Flightcrew members qualified and current in the -100/-200/-300 group or series and having completed Differences Training in the DHC-8-400 are eligible for full OE credit for the DHC-8 Aircraft Type except:

- a) Flightcrew members must complete 4 hours of Supervised Line Flying (SLF) with a Check pilot, which must include a minimum of two flight segments in the DHC-8-400.
- b) A credit of up to 50% reduction of SLF hours may be given for any additional landings over two.

Provisions of this paragraph do not preclude additional and separate requirements which otherwise may be necessary, such as for compliance with 14 CFR § 121.445 regarding operations in special areas or into special airports. Operating experience and OE/SLF

pertinent to each flightcrew member must be obtained while serving in a primary flightcrew position. OE must address pertinent differences between the DHC-8 variation aircraft.

## **8. FSB SPECIFICATIONS FOR CURRENCY**

### **8.1 Currency (Recency of Experience) - 14 CFR § 121.439.**

8.1.1 General. For operations not involving mixed-fleet flying, 14 CFR § 121.439 applies directly. In programs involving mixed-fleet flying, compliance with 14 CFR § 121.439 may require consideration of additional factors as described below. For such programs approved through ODR tables, currency is IAW AC 120-53, MDRs, and approved ODRs.

8.1.2 Level B Currency. A variety of means for establishing compliance with Level B currency for differences have been found acceptable for DHC-8 programs. Examples include the following:

- a) Issuance of a bulletin which directs crews to review particular operating manual differences information if a particular variation has not been flown within a specified time interval (e.g., review of limitations and procedures differences).
- b) Crew certification on a dispatch release that they have reviewed pertinent information for the particular variation to be flown on that trip within an operator specified time interval.
- c) Explicit tracking of currency requirements based on logbook entries, ACARS data, or other reliable administrative records.
- d) Recurrent Training/Checking which addresses the features of each pertinent variation group during each training or checking event.

8.1.3 Level C Currency. A variety of means for establishing compliance with Level C currency for differences have been found acceptable for DHC-8 programs. Examples include the following:

- a) Scheduling of aircraft or construction of bid lines so that a crewmember does not have a period of time greater than 90 days elapse between trips in that variation.
- b) Crewmember certification on a dispatch release that it has not been more than 90 days since flying that variation.
- c) For mixed-fleet flying of DHC-8 100/200/300/400 variations, where each variation is flown frequently, (Note: For this provision, the term “frequently” is considered to be several times in each calendar month or bid period, as determined to be acceptable to the POI) Level C currency periods may be set at 6 months for PICs and 12 months for SICs to be coincident with PC/PT events. Standard “grace month” provisions apply,

or Administrative tracking of specific requirements based on logbook entries, ACARS data, or other such means.

#### 8.1.4 Level D Currency.

a) Requirement to Complete Three Flight Segments Within 90 Days in Both DHC-8 100/200/300 and Series 400 variation groups. For mixed-fleet flying of variations of both DHC-8 100/200/300 and Series 400 variation groups, MDRs specify Level D currency. ODR tables identify the specific items to which this currency provision applies. To satisfy MDR and ODR requirements, each flightcrew member must complete at least three flight segments, including use of the FMS if installed, in the preceding 90 days in both the DHC-8 100/200/300 and the DHC-8 400 variation groups. This provision may be met by completing segments in an aircraft within the respective variation group(s) in an FFS. This additional provision does not alter the general 14 CFR § 121.439 requirement to complete three takeoffs and landings within 90 days in any DHC-8 variation.

b) Establishing Currency Following Differences Qualification. Level D currency requirements specify at least three flight segments within 90 days. However, OE requirements (listed in paragraph 7.5) specify completion of only two flight segments following qualification for certain variation groups. This distinction exists because OE usually is conducted immediately following a differences qualification program in which other experience is also obtained (e.g., completion of multiple flight segments using an FSTD prior to initiating the OE). The implication of this distinction (e.g., two segments are needed for OE, but three are needed for currency) is that differences training programs should contain at least one flight segment at Level D or higher if recency of experience requirements for “three flight segments within 90 days” are to be met following completion of the two OE segments after differences qualification.

8.1.5 Use of the Term “Segment” as Applied to Currency. For the purposes of this FSB report, a segment consists of the following flight phases or maneuvers: Preflight, Start, Takeoff, Climb, Cruise, Descent, Approach, Landing, and Shutdown. Credit for a segment requires that a crewmember serve in an appropriate cockpit crew position during the necessary flight phases or maneuvers, but does not require the crewmember to physically control the aircraft or autopilot during those maneuvers. For example, both pilots may take credit for a segment even though only one actually controls the aircraft during the takeoff and landing. Pilots may not take credit for a segment by observation from a forward observer’s seat.

#### 8.2 Reestablishing Currency Related to Differences.

8.2.1 General. Flightcrew members not meeting currency requirements related to differences may reestablish currency as specified by AC 120-53 and as approved in ODR tables, or as provided in 14 CFR § 121.439(b). If currency is reestablished by conducting takeoffs and landings IAW 14 CFR § 121.439(b), pertinent ODR items must be addressed.

8.2.2 Reestablishing Level B Currency. A variety of means for reestablishing compliance with Level B currency have been found acceptable for DHC-8 programs. An example would be a crewmember review of pertinent differences training materials or bulletins per the operator's guidelines. However, when using this method, if a period of greater than 6 months has elapsed for PICs or 12 months for SICs without flying Level B variations, then differences requalification is appropriate. Differences requalification is accomplished for the respective PIC or SIC by:

- a) Satisfying the same MDRs and ODRs as for initial differences qualification, or
- b) Completing an approved recurrent training course or proficiency check which meets the provisions of paragraph 6.4 or 7.3 of this report.

8.2.3 Reestablishing Level C or D Currency. For Level C or D, currency is reestablished as specified by AC 120-53. Examples of methods found acceptable for DHC-8 programs include flight with a qualified check pilot, demonstrating proficiency in an FFS, completing a PC or PT event which addresses relevant items, or by meeting initial differences qualification requirements.

## **9. AIRCRAFT REGULATORY COMPLIANCE CHECKLIST**

9.1 Compliance Checklist. Compliance checklists are provided as an aid to FAA CHDOs to identify those specific rules or policies for which compliance has already been demonstrated to the FAA for a particular type, variation, or variation group. The checklist also notes rules or policies which remain to be demonstrated to CHDOs by operators. Not all rules, policies, or variations are necessarily listed or addressed. When differences exist between the variation(s), which were evaluated with the compliance checklist and the variation(s) used by an operator, the CHDO evaluates those differences and approves use of the variation if the variation provides equivalent compliance with 14 CFRs or FAA policies. It remains the responsibility of a CHDO to review compliance with pertinent rules or policies not already satisfactorily addressed in the compliance checklist prior to 14 CFR part 121 approval of an operator for use of the DHC-8.

9.2 Discussion of Specific Compliance Checklist Items.

9.2.1 DHC-8 Forward Observer Seat. The forward observer seat on all variations of the DHC-8 as evaluated satisfies the requirement of 14 CFR § 121.581.

9.2.2 Emergency Evacuation. DHC-8s have successfully demonstrated simulated emergency evacuations credited under 14 CFR § 121.291 for configurations and passenger capacities specified on the Type Certificate Data Sheet #A13NM. Accordingly, a 14 CFR § 121.291 full scale evacuation is not necessary for aircraft configurations consistent with previously approved tests. Passenger capacity less than or equal to the previously demonstrated capacity may be authorized. A mini-evacuation is required unless the particular certificate holder has previously operated a DHC-8 variation with the same or similar interior and exit configuration.

### 9.2.3 Proving Tests.

Initial proving tests IAW provisions of 14 CFR § 121.163(a) for all variations of the DHC-8 are considered to be completed (e.g., DHC-8-100/200/300/400). Further demonstrations are not required by virtue of the fact that the DHC-8 Series 400 is a DHC-8 variation.

For DHC-8-100/200/300/400 variations new to an operator, proving tests IAW 14 CFR § 121.163(b) and FAA Order 8900.1 is appropriate. For new DHC-8 Series 400 operators currently operating DHC-8-100/200/300 Series variations, credit in the form of proving tests time reductions may be given for previous DHC-8 experience for that operator when such previous experience is directly applicable. Proving test requirements and reductions are as designated by FAA Order 8900.1 and the CHDO unless otherwise specified by the FSB or AFS-200.

The FSB has determined that Proving Test reduction credit may be given to an operator previously operating a DHC-8-100/200/300 variation. Credit given to operators of DHC-8-100/200/300 Series aircraft toward DHC-8 Series 400 aircraft may not exceed an amount of proving time which would leave enough creditable time remaining for completion of the following events in the Series 400 aircraft, as a minimum:

- Completion of three separate flight segments,
- Operation of the airplane into three different destinations, if appropriate for that carrier's route structure, and
- Operating the airplane a minimum of 3 flight-hours.

## 10. FSB SPECIFICATIONS FOR DEVICES AND SIMULATORS

- 10.1 Standard Devices and Simulators. Device and simulator characteristics pertinent to DHC-8 variations are as designated in 14 CFR part 60.

## 11. APPLICATION OF FSB REPORT

- 11.1 Operators of DHC-8 Aircraft. Relevant parts of this report (e.g., Type Rating Designation, training, and checking) are effective when this report is approved by the FAA. Sections or paragraphs of this report related to differences (i.e., MDRs, ODRs) must be voluntarily applied unless otherwise approved by AFS-200. These provisos may be applied to Transition Programs at the discretion of the operator.

## 12. ALTERNATE MEANS OF COMPLIANCE

- 12.1 Approval Level and Approval Criteria. Alternate means of compliance to differences requirements of 14 CFR part 121 Subparts N and O for the DHC-8, other than specified in the provisions of this report, must be approved by AFS-200. If alternate compliance is sought, operators will be required to establish that the proposed alternate means provides

an equivalent level of safety as compared to the provisions of AC 120-53 and this FSB report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

- 12.2 Equivalent Safety Requirements. In the event alternate compliance is sought, training program hour reductions, simulator approvals, and device approvals may be significantly limited and reporting requirements may be increased to assure equivalent safety. The FAA will generally not consider relief through alternate compliance means unless sufficient lead time has been planned by an operator to allow for any necessary testing and evaluation.
- 12.3 Unforeseen Circumstances. In the event of clearly unforeseen circumstances in which it is not possible for an operator to comply with MDR provisions, the operator may seek an interim equivalent program rather than a permanent alternate compliance method. Financial arrangements, schedule adjustment, and other reasons are not considered “unforeseen circumstances” for the purposes of this provision.

### **13. MISCELLANEOUS**

**14. TRAINING LEVELS**

Difference Level	Type	Examples	Conditions
A	Self-instruction	<ul style="list-style-type: none"> <li>• Operating manual page revision (<b>HO</b>).</li> <li>• Flightcrew operating bulletin (<b>HO</b>).</li> </ul>	<ul style="list-style-type: none"> <li>• Crew has already demonstrated understanding on base aircraft (i.e., updated version of engine).</li> <li>• Minor or no procedural changes required.</li> <li>• No safety impact if information is not reviewed or is forgotten (i.e., Different engine vibration damping mount).</li> <li>• Once called to attention of crew, the difference is self-evident.</li> </ul>
B	Aided instruction	<ul style="list-style-type: none"> <li>• Slide/tape presentations (<b>ST</b>).</li> <li>• Tutorial computer based instruction (<b>TCBI</b>).</li> <li>• Stand-up Instructors (<b>SU</b>).</li> <li>• Video tapes (<b>VT</b>).</li> </ul>	<ul style="list-style-type: none"> <li>• Systems are functionally similar.</li> <li>• Crew understanding required.</li> <li>• Issues need emphasis.</li> <li>• Standard methods of presentation required.</li> </ul>
C	Systems devices	<ul style="list-style-type: none"> <li>• <u>Interactive</u> (full-task) computer-based instruction (<b>ICBI</b>).</li> <li>• Cockpit system simulators (<b>CSS</b>).</li> <li>• Cockpit procedures trainers (<b>CPT</b>).</li> <li>• Part task trainers (<b>PTT</b>).</li> <li>• Flight training devices (level 2-5) (<b>FTD 2-5</b>).</li> </ul>	<ul style="list-style-type: none"> <li>• Training can only be established through systems training devices.</li> <li>• Training objectives focus on mastering individual systems, procedures, or tasks VS. highly integrated flight operations or “real-time” operations.</li> <li>• Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.</li> </ul>
D	Maneuver devices	<ul style="list-style-type: none"> <li>• Flight training devices (level 6-7) (<b>FTD 6-7</b>).</li> <li>• Level A or B FFS.</li> </ul>	<ul style="list-style-type: none"> <li>• Training can only be established in “flight maneuver” devices in a “real-time” environment.</li> <li>• Training requires mastery of interrelated skills vs. individual skills.</li> <li>• Motion or visual cues are NOT required.</li> </ul>
E (NEW TYPE RATING)	Level C/D simulator or aircraft	<ul style="list-style-type: none"> <li>• Level C or D FFS.</li> <li>• Aircraft (<b>ACFT</b>).</li> </ul>	<ul style="list-style-type: none"> <li>• Motion, visual, and audio cues required.</li> <li>• Major system differences could lead to this.</li> <li>• Usually correlates with significant differences in handling qualities.</li> </ul>

**15. CHECKING LEVELS**

<b>Difference Level</b>	<b>Type</b>	<b>Examples</b>	<b>Conditions</b>
A	Not applicable	<ul style="list-style-type: none"> <li>None.</li> </ul>	<ul style="list-style-type: none"> <li>Crewmember is responsible for knowledge of differences.</li> <li>Differences should be included in subsequent recurring proficiency checks</li> </ul>
B	Task or system check	<ul style="list-style-type: none"> <li>INS, FMS, TCAS.</li> </ul>	<ul style="list-style-type: none"> <li>Individual systems or related groups of systems.</li> </ul>
C	Partial check using device	<ul style="list-style-type: none"> <li>Maneuvers demonstrating flight guidance or FMS system.</li> </ul>	<ul style="list-style-type: none"> <li>Requires a check performed using a “dynamic” flight environment.</li> <li>Uses devices required by level C differences training.</li> </ul>
D	Full proficiency check using device	<ul style="list-style-type: none"> <li>Maneuvers, systems, or devices specified by the FSB.</li> </ul>	<ul style="list-style-type: none"> <li>Requires full proficiency check for each variation following both initial and recurrent training, but maneuvers common to each variation need not be repeated.</li> <li>Uses devices required by level D differences training.</li> <li>Requires a check performed using a “real-time” flight environment.</li> </ul>
E	Full proficiency check using level C/D simulator or aircraft	<ul style="list-style-type: none"> <li>Maneuvers, systems, or devices specified by the FSB.</li> </ul>	<ul style="list-style-type: none"> <li>Requires full proficiency check for each variation following both initial and recurrent training.</li> <li>Uses devices required by level E differences training.</li> <li>Either training or checking in each variation is required each 6 months.</li> </ul>

**16. CURRENCY LEVELS**

<b>Difference Level</b>	<b>Type</b>	<b>Examples</b>	<b>Conditions</b>
A	Not applicable	<ul style="list-style-type: none"> <li>None.</li> </ul>	<ul style="list-style-type: none"> <li>Currency is considered common to each variation.</li> <li>Currency in any variation suffices for currency in any other variation.</li> </ul>
B	Self-review	<ul style="list-style-type: none"> <li>Manual information.</li> <li>Bulletins.</li> <li>Aircraft placards.</li> <li>Memos.</li> <li>Class handouts (not class notes).</li> <li>Video tapes.</li> <li>Crew certification on a dispatch release.</li> </ul>	<ul style="list-style-type: none"> <li>Currency is “knowledge related”.</li> <li>Operator must identify the material and frequency it must be reviewed.</li> </ul>
C	Specified system	<ul style="list-style-type: none"> <li>INS currency.</li> <li>FMS currency.</li> <li>Flight guidance control system currency.</li> </ul>	<ul style="list-style-type: none"> <li>Currency is “skill related” and “knowledge related”.</li> <li>Currency is necessary for safe operation of a variation.</li> <li>Typically 90 days, but may be shorter or longer.</li> </ul>
D	Specified maneuver	<ul style="list-style-type: none"> <li>Maneuvers specified by the FSB.</li> <li>Non-normal, alternate, or recall procedures for a particular variation.</li> <li>Takeoff, departure, arrival, approach, or landing using a particular flight guidance system.</li> </ul>	<ul style="list-style-type: none"> <li>Currency is required for performing aircraft control tasks in “real-time” with integrated use of associated systems and procedures.</li> </ul>
E	Per 14 CFRs (takeoffs and landings in FFS or the aircraft)	<ul style="list-style-type: none"> <li>System, maneuver, or procedure currency, specified by the FSB, necessary for safe operations.</li> <li>Use of EFIS, FMS, and FCGS during a traffic pattern.</li> </ul>	<ul style="list-style-type: none"> <li>Currency requires separate experience in a variation for 14 CFR § 121.439 90-day landing currency.</li> <li>Generally requires takeoffs, landings, procedures, or maneuvers to be accomplished in an FFS or the aircraft.</li> </ul>

**APPENDIX 1**

**MASTER DIFFERENCES REQUIREMENTS (MDR) TABLE  
DHC-8 MDR TABLE**

AIRPLANE TYPE RATING: DHC-8		FROM AIRPLANE			
		DHC-8-100	DHC-8-200	DHC-8-300	DHC-8-400
T O  A I R P L A N E	DHC-8-100	A/A/A (2)	A/A/A (2)	B/B/B (2)	D/D/D
	DHC-8-200	A/A/A (2)	A/A/A (2)	B/B/B (2)	D/D/D
	DHC-8-300	B/B/B (1) (2)	B/B/B (1) (2)	A/A/A (2)	D/D/D
	DHC-8-400	D/D/D	D/D/D	D/D/D	A/A/A

Notes:

1. Because of differences in pitch attitude and landing technique, proficiency in the landing maneuver must be demonstrated in an FFS or in the aircraft during training or OE.
2. Various FMS configurations have not been evaluated, but need to be considered in ODR training, checking, and currency requirement.

**APPENDIX 2**

**DHC-8 OPERATOR DIFFERENCES REQUIREMENTS TABLES**

<b>DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200					COMPLIANCE METHOD				
APPROVED BY (POI):					TRAINING			CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
<b>GENERAL:</b>									
FUSELAGE:	107 ft., 9 in.								
LENGTH	93 ft., 3 in.								
WINGSPAN	30 ft., 6 in.	Y	Y	X				A	A
TAILSPAN	27 ft., 4 in								
HEIGHT									
AIRCRAFT PERFORMANCE:	350 KNOTS @ ISA/20,000 ft. (95% MTOW)	N	N	A				A	A
MAX. RANGE	1,260 NM	N	N	Y				A	A
MAX CLIMB RATE	3500 FPM SL-5000 MTOW	Y	Y	X				A	A
MAX DESCENT RATE	2000 FPM @ 300 FPM CABIN PRESSURE	Y	Y	X				A	A
MAX ALTITUDE	25,000 ft. (OPTION FOR 27,000 ft.)	Y	N	X				A	A
MAXIMUM T.O. WGT.	65,200 LBS	Y	N	X				A	A
MAX LANDING WGT.	61,250 LBS	Y	N	X				A	A
FUEL CAPACITY	NO AUXILIARY TANKS 1,740 GALS. (US) 11,724 LBS	N	N	X				A	A

<b>DESIGN OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
WHEELBASE	-MAIN WHEELS TRACK-28 ft., 10 in.	N	N	X				A	A
	-NOSE TO MAIN WHEELS BASE-45 ft., 3 in.	N	Y	X				A	A
	-INCREASED TURNING RADIUS	N	Y		X			A	A
POWERPLANT	-PWC PW150A 5190 S.H.P. @ ISA	Y	Y		X			A	A
PROPELLORS	-DOWTY R408: 6 BLADES-13 ft., 6 in. DIAMETER	N	N		X			A	A
	-PROPELLOR SPEEDS: 850, 900, 1020 RPM	N	Y		X				

<b>SYSTEMS OPERATOR DIFFERENCES REQUIREMENTS TABLE</b>									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
AFT SAFETY VALVE	-ADDITIONAL OUTFLOW VALVE (2)	N	N		X			A	A
AIR CYCLE MACHINE	-ONE ACM ADDED FOR GREATER CAPACITY	N	N		X			A	A
AUTOPILOT	-SINGLE AUTOPILOT ONLY, DUAL FDs	N	Y			X		C	C
	-MESSAGES DISPLAYED ON PFDs	N	Y			X		C	C
INTEGRATED RADIO / AUDIO SYSTEM	-CENTRALIZED LCD RADIO TUNING	N	Y		X			C	B
	-STANDBY VHF CONTROLLER	N	Y		X			B	B
	-8.33 KhZ CHANNEL SPACING OF VHF COMs	N	N		X			A	A
FLIGHT ATTENDANT CABIN REPEATER LAMPS	-GND MTCE. JACK IN AFT EQUIPMENT BAY	N	N	X				A	A
	-ADDITIONAL LAMPS AT MID-CABIN AND AFT GALLEY	N	N	X				A	A
PASS / BRIEFING	-DIGITIZED ANNOUNCEMENT	N	N	X				A	A

SYSTEMS OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
ELECTRICAL POWER	-ELECTRICS SYNOPTIC PAGE	N	Y		X			B	B
	DC:								
	-DC GENs UPRATED TO 400 AMPS -	N	Y		X			B	B
	THIRD BATTERY SYSTEM ADDED: 17AMP/HOUR	N	Y		X			B	B
	AC:								
	-AC GENs UPRATED TO 45Kva	N	Y		X			B	B
-FIXED FREQ. AC POWER REMOVED	N	Y			X		B	B	
-AUTOMATIC AC BUS SHEDDING	N	Y			X		B	B	
FLIGHT ATTENDANTS	-TWO ATTENDANTS STANDARD	N	Y	X				A	A
	-THIRD FLIGHT ATTENDANT JUMP SEAT	N	N	X				A	A
PAX SEATING	-70 PASSENGERS CONFIGURATION	N	N	X				A	A
DITCHING DAMS	-LOCATED ON R. & L. FWD DOORS	N	Y			X		B	B
GALLEY	-AFT GALLEY CONFIGURATION	N	N	X				A	A

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
CLASS C BAGGAGE COMPARTMENTS	-FWD. & AFT BAGG. COMPARTMENT FIRE EXTINGUISHING	N	Y		X			C	B
BLOW-OUT DISCS FOR FIRE BOTTLES	-BLOW-OUT DISCS REMOVED FROM WING ROOT, BOTTLE LOW INDICATORS ADDED TO O/H PANEL	N	Y		X			A	A
MAIN GEAR WHEEL-WELL FIRE DETECTION	-LOOP B DEDICATED TO WHEEL WELL FIRE DETECTION	N	Y		X			B	B

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
FLIGHT CONTROLS	-NEW ELECTRONIC CONTROLLER -AUTO PITCH TRIM WITH A/P -ELEVATOR ASSYMETRY DETECTION & ANNUNCIATION -AUTO PITCH TRIM WITH FLAPS -MANUAL-ELECRTRIC PITCH TRIM -ELECTRONIC PITCH FEEL CONTROL -RUDDER PRESSURE PROPORTIONAL TO AIRSPEED -ELEVATOR TRIM PUSH-OFF INDICATIONS -NEW CAUTION LIGHTS	N	Y				X	C	C
GUST LOCK	-FOR AILERONS ONLY	N	N		X			A	A
STALL WARNING	-AOA VANES -ELECTRICAL STICK PUSHER SERVO -NO SPEED INDICATION ON EFIS -PUSHER CAUTION / ADVISORY LIGHTS	Y	Y		X			C	C
AILERON CENTERING MECHANISM	-RETURNS CONTROL WHEEL TO NEUTRAL	Y	N		X			A	A
FLAPS	-ELECTRICAL CONTROL, HYDRAULIC ACTIVATION -NEW: FLAP POWER & FLAP DRIVE CAUTION LIGHTS	Y	N		X			B	B
ROLL SPOILERS	-GROUND MODE OPERATION	Y	Y		X			C	B

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
FUEL CONTROL & INDICATORS	-FUEL TRANSFER SWITCH LOCATION -FUEL SYNOPTIC PAGE	N	Y		X			B	B
STANDBY POWER UNIT (AC HYDRAULIC PUMP)	-SINGLE SPU INSTALLED IN LEFT NACELLE TO SUPPORT #1 SYSTEM	N	Y		X			B	B
POWER TRANSFER PUMP	-CAPABLE OF CONTINUOUS OPERATION	N	Y		X			B	B
STATUS INDICATION FOR #1 & #2 HYD. SOVs	-OPEN / CLOSE INDICATIONS ADDED TO O/H FIRE PANEL	N	Y		X			C	B
HYDRAULIC ISO VALVE	-ISOLATION VALVES FOR HYDRAULIC SYSTEMS #1 & #2	N	Y		X			C	B
HYDRAULIC SYSTEMS	-THIRD SYSTEM INSTALLED ON Q400. DC MOTOR PUMP LOGIC DEDICATED TO ELEVATOR CONTROL	N	Y		X			C	B

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400				COMPLIANCE METHOD					
BASE AIRCRAFT: DHC-8-200				TRAINING				CHKG/CURR	
APPROVED BY (POI):				LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
SUPPLEMENTAL ICE DETECTION	-TWO ICE DETECTION PROBES ADDED PROVIDING COCKPIT ANNUNCIATION	N	Y		X			C	B
	-NEW CAUTION & ADVISORY LIGHTS	N	Y		X			C	B
AOA VANES	-CONTINUOUS HEAT WITH AC POWER	N	Y		X			A	A
COCKPIT PANELS	-LIQUID CRYSTAL DISPLAYS FOR COCKPIT INSTRUMENTS AND FLIGHT PANELS	N	Y			X		C	C
	-ELECTRONIC SYSTEMS SYNOPTIC PAGES	N	Y			X		C	C
ALT DOWNLOCK INDICATION LANDING GEAR	-ALTERNATE INDICATION NOW SWITCHED	N	Y	X				A	A
	-RETRACTION TIME REDUCED FROM 8 sec. TO 5 sec.	Y	N	X				A	A
	-GROUND LOCKING PINS RELOCATED	N	N	X	X			A	A
	-TOUCHED RUNWAY WARNING LIGHT	N	N					A	A
NOSEWHEEL STEERING	-NOSE GEAR LOCK INDICATOR	N	Y	X	X				
	-RANGE INCREASED TO 70 DEGREES	Y	N					A	A

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200					COMPLIANCE METHOD				
APPROVED BY (POI):					TRAINING			CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
CAUTION / WARNING PANEL	-CAUTION / WARNING PANEL COMBINED	N	Y		X			B	B
	-SOME NEW LEGENDS INSTALLED	N	N	X				A	A
EXTERNAL LIGHTS	-STROBES MOVED TO HORIZONTAL STAB & BELLY	N	N	X				A	A
EMERGENCY LIGHTS	-COCKPIT PORTABLE EMERGENCY LIGHT REMOVED	N	N	X				A	A
	-NON-ELECTRIC FLOURESCENT STRIP	N	N	X				A	A
ESCAPE PATH LIGHTING									

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
GROUND PROXIMITY WARNING SYSTEM	-ENHANCED GPWS	N	N		X			B	B
PITOT / STATIC PORTS	-STATIC PORTS COMBINED WITH PITOT PROBES; THREE SEPARATE PROBES-NO ALTERNATE SELECTOR	N	Y		X			B	B
RADIO MAGNETIC INDICATORS	-NO COCKPIT RMIs	N	Y		X			B	A
TCAS DISPLAY	-NO DEDICATED TCAS INDICATORS DISPLAYED ON EHSI	N	N		X			B	A
FMS / GPS	-VNAV OPERATIONAL	N	N			X		C	C
ACARS	-UNILINK (UL- 601)	N	Y		X			B	A
CREW OXYGEN	-CREW PBE STANDARD	N	N	X				A	A
CABIN PORTABLE	-3 CYLINDER (11 cu. Ft. ea.) ABLE TO SUPPORT 3 MASKS EACH	N	N	X				A	A

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200					COMPLIANCE METHOD				
APPROVED BY (POI):					TRAINING			CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
APU	-MOUNTED IN TAIL CONE -UP-RATED DC GENERATOR – 400 AMPS -INLET / EXHAUST LOCATIONS	N	Y				X	B	C
AFT SERVICE DOORS	-ADDED RH & LH SERVICE DOORS	N	Y	X				A	A
BAGGAGE DOOR	-NEW FWD. BAGGAGE COMPARTMENT	N	Y		X			A	A
EMERGENCY EXITS	-NUMBER AND TYPE OF EXITS	N	N		X			B	A
DOOR INDICATIONS	-DOOR WARNING LIGHT LOGIC -DOORS SYNOPTIC PAGE	N	Y		X			B	A

SYSTEM OPERATOR DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200					COMPLIANCE METHOD				
APPROVED BY (POI):					TRAINING			CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
DUAL ELECTRONIC PROP CONTROL	-PROP SPEED CONTROL IN REVERSE -ELECTRONIC LOCKOUT OF GROUND BETA -AUTOMATIC TESTING OF AUTOFEATHER -REDUCED Np LANDING -SEMI-AUTOMATIC OVERSPEED TESTING -NEW CAUTION / WARNING LIGHTS	N	Y				X	C	C
GROUND BETA HORN	-GROUND BETA SELECTION HORN	N	N		X			C	B
PROP BALANCE	-OPTIONAL PROPELLOR BALANCE MON. SYS. (MAINT. ONLY)	N	N	X				A	A

MANUEVERS OPERATORS DIFFERENCES REQUIREMENTS TABLE									
DIFFERENCE AIRCRAFT: DHC-8-400 BASE AIRCRAFT: DHC-8-200				COMPLIANCE METHOD					
APPROVED BY (POI):				TRAINING				CHKG/CURR	
DESIGN FEATURE	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	FLT CHK	CURR
DUAL CHANNEL FADECs	-CLOSED LOOP ON ENGINE POWER  -ENGINE RATING SELECTED VIA CLA DETENTS -ENGINE TIME LIMITED DISPATCH -NO DISPATCH MESSAGE -ENGINE CONDITION PANEL REMOVED FROM NACELLE	N	Y		X		X	D	C
AUTO-IGNITION	-AUTO-IGNITION FOR ENGINE START & FLAMEOUT VIA FADEC	N	Y		X			C	B
GROUND MANUEVER INCLUDING TAXI	-ADDITIONAL FUSELAGE LENGTH, ESPECIALLY AFT OF THE WING COCKPIT TO MAIN GEAR RELATIONSHIP	Y	N				X	D	B
NORMAL TAKE-OFF	-TAKE-OFF ROTATION / RATED ANGLE	Y	N				X	D	D
CLIMB, CRUISE, DESCENT	-POWERED ELEVATOR WITH ELECTRIC PITCH TRIM	Y	Y				X	D	D
APPROACH AND LANDING	-LANDING FLARE	Y	N				X	D	D
ABNORMAL AND EMERGENCY PROCEDURES	-ENGINE OUT LATERAL DIRECTIONAL CONTROL -FLAPLESS LANDING	Y Y	N Y				X X	D D	D D

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## APPENDIX 3

### HEAD-UP GUIDANCE SYSTEM (HGS)

The HGS pilot training requirements consists of those related to initial and recurrent ground and flight training. Unless covered concurrently during an initial or transition type rating course, a prerequisite to beginning this course of training is prior training, qualification, and currency in the DHC-8 airplane. It should be noted that the program focuses principally upon training events flown in the left seat by the pilot-in-command (PIC) in 14 CFR part 121 operations. Nevertheless, first officer indoctrination and training is also essential.

1. **INITIAL GROUND TRAINING:** For airline operators, initial training should be conducted IAW the applicable provisions of 14 CFR §§ 121.415, 121.419, 121.424, and 121.427, AC 120-28 (as amended), and the airline operation specifications. For all operators, the initial ground training program should include the following elements:
  - a) Classroom instruction covering HGS operational concepts, crew duties and responsibilities, and operational procedures including preflight, normal, and non-normal pilot activities. For operators wishing credit for low visibility operations predicated on use of the HGS, information should be provided on the operational characteristics, capabilities, and limitations of the ground facilities (surface movement guidance control system) and airborne CAT III system. Airline policies and procedures concerning low visibility operations should include a reporting process, MEL issues, operation following a missed approach, OE, and currency requirements.
  - b) Classroom instruction (or Computer-Based Training (CBT)) on the HGS symbology set and its interrelationship with airplane aerodynamics, inertial factors, and environmental conditions.
  - c) An HGS pilot training manual or equivalent material in the Operations Manual which explains all modes of operation, the use of various HGS controls, clear descriptions of HGS symbology including limit conditions and failures, and incorporating a crew procedures guide clearly delineating pilot-flying (PF) and pilot monitoring (PM) duties, responsibilities, and procedural call-outs and responses during all phases of flight during which HGS operations are anticipated. Emphasis on the availability and limitations of visual cues encountered on approach both before and after DH. This would include:
    - Procedures for unexpected deterioration of conditions to less than minimum RVR encountered during approach, flare, and rollout.
    - Demonstration of expected visual references with weather at minimum conditions.
    - Expected sequence of visual cues during an approach in which visibility is at or above landing minima.

- d) A video tape or other multimedia capable of a dynamic real-time demonstration of all modes of operation complete with sound. For operators wishing credit for low visibility operations predicated on use of the HGS, this should include narrative descriptions and several low weather approach demonstrations with procedural call-outs and responses. All critical procedural call-out possibilities should be covered.
  - e) If the HGS is used as a CAT II/CAT III landing system, emphasis on the need for rigorous crew discipline, coordination, and adherence to procedural guidelines as is required for other CAT II/CAT III landing systems.
2. INITIAL FLIGHT TRAINING: Unless integrated with initial or transition type rating training, flight training dedicated to HGS familiarization and proficiency is in addition to other required elements. For 14 CFR part 121 operators, initial flight training should be conducted IAW the applicable provisions of 14 CFR § 121.424. Flight training dedicated to HGS familiarization and proficiency is in addition to other required elements. When a simulator is used, only FAA-approved DHC-8 simulators with both a visual and the Heads-Up Guidance System installed may be used. For flight simulator training, all required approaches should be flown from no closer than the final approach fix (FAF) for instrument approaches and from no closer than approximately 1,000 feet AGL (3–4 NM) to the runway threshold for visual approaches.

The following flight training program is generic in nature and should not be construed to dictate what the flight course of instruction must consist of. Each operator has his own unique requirements, route structure, fleet composition, and operations policies to consider in developing their training program. Therefore, what follows might be considered as a guide to an operator who is tailoring a HGS training program to fit his or her own needs.

A. Airwork - Airwork should include:

- Straight and level flight, accelerations, and decelerations.
- Normal and steep turns, climbs, and descents.
- Stall prevention and recovery and unusual attitudes.
- Vectors to intercept and track selected VOR courses.
- For aircraft with 4000 Series HGS include TCAS and Ground Prox events.

Note: Emphasis should be placed on HGS unique symbology (i.e., flight path, flight path acceleration, airspeed error tape, AOA limit bracket, and excessive pitch chevrons). When this training is complete, the trainee should have a thorough understanding of the relationship between aircraft flight path parameters and the HGS symbology.

B. Visual Approaches (VMC mode):

- Perform night visual approaches to a runway without vertical guidance. Multiple approaches with different slope angles set in the HCP should be flown.
- Straight-in landings, no wind, repeat with 15 kt cross wind and at night.

- Circling approaches and landing with 10 kt crosswind if authorized by OpSpec or at 1000 and 3.

Note: It is desirable to fly half of these approaches at different airports that have dissimilar approach and runway lighting systems. Special emphasis should be placed on optimizing circling approach techniques and procedures. Approaches with the aircraft in a non-normal flap configuration should be included.

C. Instrument Approaches:

a) For all operators:

- Perform a CAT I approach to operator's approved CAT I approach minimums with wind set at maximum authorized crosswind.
- Demonstrate failures and incorrect settings on approach (i.e., error in setting runway elevation, airspeed, selected course).
- Illustrate unique characteristics of symbology in wind shear conditions (i.e., erratic wind speed and direction, flight path, flight path acceleration, and speed error).
- Multiple non-precision approaches authorized for the operator to the lowest minimums authorized for each approach.

b) For operators wishing credit for low visibility operations predicated on use of the HGS:

- Operators authorized CAT II or CAT III approaches, whichever is lowest authorized, to the operator's lowest minima authorized with maximum cross wind authorized.
- CAT III ILS with lowest RVR and DH authorized with maximum authorized crosswind.
- CAT III ILS with 0/0 weather. After touchdown, raise weather to demonstrate position on runway.
- CAT III ILS with various reasons for a missed approach (system downgrade, "APCH WARN", etc.).
- CAT III ILS with various RVRs and crosswinds, include light turbulence.
- Approach to CAT III minimums with a go around at minimums and subsequent failure of HGS symbology.

Note: Several of the instrument approaches should include a variety of ground and airborne system failures requiring pilot recognition and appropriate procedural actions. Demonstrate system/component failures could include flap asymmetry problems, engine out operations, HGS sensor failures, etc. Demonstrate how HGS failure modes can reduce precision and increase pilot workload unless PF/PM duties and responsibilities are clearly delineated and understood.

D. Takeoff: For operators wishing credit for low visibility takeoff operations predicated on use of the HGS:

- Normal takeoff, clear and calm, repeated with gusty winds.
- Takeoff, 600 foot RVR, maximum authorized crosswind.
- Takeoff, 300 foot RVR, maximum authorized crosswind, engine failure prior to  $V_1$ .
- Takeoff, 300 foot RVR, maximum authorized crosswind, engine failure after  $V_1$ .
- Takeoff at 300 foot RVR with HGS failure after  $V_1$ .

The OE training record for all initial, upgrade, and transition PICs should contain documentation the completion of the required observed approaches.

Upon completion of the requirements described below, the HGS-qualified pilot would then be certified to conduct HGS approaches and takeoffs to operator-authorized minima as set forth in their OpSpecs.

- For all operators; prior to utilizing the HGS for approach operations in IMC conditions below 1800 RVR, each PIC must accomplish at least three approaches to CAT II/III minima in weather conditions which are not less than published straight-in CAT I minima. Each approach must terminate in a manually controlled HGS assisted landing or HGS assisted go-around. Of these three approaches, a minimum of one must be accomplished under the observation of a check airman.
- Prior to utilizing the HGS for takeoff conditions in IMC conditions below 500 RVR, each PIC must accomplish at least three HGS assisted takeoffs in weather conditions which are not less than 500 RVR. Of these three takeoffs, a minimum of one must be accomplished under the observation of a check pilot.

3 CHECKING: All checking should include at least the following:

- One approach conducted to CAT III minimums with a landing at the lowest authorized minima with a crosswind of 15 kts.
- One approach to CAT III minimums with a missed approach at 50 feet DH and loss of HGS on the go around.
- If using a 4000 Series HGS and operator's OpSpec authorizes single engine CAT III approach operations one approach must be conducted with one engine inoperative to Cat III minimums.
- One takeoff at the lowest authorized HGS minimums with an abort prior to  $V_1$  without nose wheel steering if the operator is authorized takeoffs with nose wheel steering inoperative.
- One takeoff at lowest authorized HGS minimums with an engine failure after  $V_1$ .

4 CURRENCY:

For operators wishing credit for low visibility operations on use of the HGS, during the 6-month recurrent training and proficiency checks, the following low visibility operations should be performed in addition to regular requirements:

- One approach conducted to CAT III minimums with a landing at the lowest

- authorized minima with a crosswind of 15 kts.
- One approach to CAT III minimums with a missed approach at 50 feet DH and loss of HGS on the go around.
  - If using a 4000 Series HGS and operator's OpSpec authorizes single engine CAT III approach operations, one approach must be conducted with one engine inoperative to Cat III minimums.
  - One takeoff at the lowest authorized HGS minimums with an abort prior to  $V_1$  without nose wheel steering if the operator is authorized takeoffs with nose wheel steering inoperative.
  - One takeoff at lowest authorized HGS minimums with an engine failure after  $V_1$ .

Selected ground training subjects should be reviewed annually.

**APPENDIX 4**

**DHC-8 COMPLIANCE CHECKLIST**

This checklist applies to the DHC-8 aircraft. Compliance with the following Federal Aviation Regulations and FAA policies has been established where possible as indicated, based on an examination of a DHC-8. Items that are identified as “CHDO” need to be evaluated by Principal Inspectors at the Certificate-Holding District Office prior to the DHC-8 being used in 14 CFR part 121 revenue service. Items marked “complies” have either been found to directly comply with the applicable rule, or the necessary data or procedures are available to permit assessment of compliance of a DHC-8 for a particular operation (e.g., as for takeoff obstacle clearance assessment pertinent to 14 CFR § 121.189). Items marked NA are not applicable to the DHC-8 aircraft.

14 CFR part 91

91.9	Civil aircraft flight manual, marking, and placard requirements.	Type design complies.
91.21	Portable electronic devices.	CHDO
91.117	Aircraft speed.	Type design complies.
91.191	Category II Manual.	CHDO if operated under FAR Part 91.
91.203	Civil aircraft: Certifications Required.	Type design complies, except (a)(2) and (b) CHDO
91.205	Powered civil aircraft with standard category U.S. airworthiness certificates; instruments and equipment requirements.	Type design complies, except (b)(11) CHDO
91.207	Emergency locator transmitters.	Type design complies.
91.209	Aircraft lights.	Type design complies.
91.211	Supplemental Oxygen.	Type design complies.
91.213	Inoperative instruments and equipment.	Type design complies, MMEL available.
91.215	ATC Transponder and altitude reporting equipment and use.	Type design complies.
91.217	Data correspondence between automatically reported pressure altitude data and the pilot’s altitude reference.	Type design complies.
91.219	Altitude alerting system or device; turbojet powered civil airplanes.	Type design complies.
91.221	TCAS	CHDO
91.409	Inspections.	CHDO
91.411	Altimeter system and altitude reporting equipment tests and inspections.	CHDO
91.413	ATC transponder tests and inspections.	CHDO
91.415	Changes to aircraft inspection programs.	CHDO
91.503	Flying equipment and operating information.	Type design checklists and procedures comply. CHDO
91.511	Radio equipment for overwater operations.	Type design complies, CHDO
91.513	Emergency equipment.	CHDO
91.517	Smoking and safety belt signs.	Type design complies.

91.519	Passenger briefing.	CHDO
91.521	Shoulder harness.	Type design complies.
91.525	Carriage of cargo.	Type design complies.
91.527	operating in icing conditions.	Type design met requirements for (b) and (c).
91.603	Aural speed warning device.	Type design complies.
91.605	Transport category civil airplane weight limitations.	Weight, balance, and performance information is available for compliance. CHDO
91.607	Emergency exits for airplane carrying passengers for hire.	Type design complies.
91.609	Flight recorders and cockpit voice recorders.	Type design complies.
91.805	Final compliance: Subsonic airplanes.	Type design complies. (Stage 3)

14 CFR part 121

121.141	Airplane or rotorcraft flight manual.	Type design AFM complies. CHDO
121.153	Aircraft requirements: general.	CHDO
121.157	Aircraft certification and equipment requirements.	Type design complies with (b).
121.173	General.	Type design complies with (b) and (d).
121.189	Transport category airplanes: turbine engine powered; takeoff limitations.	Type design complies. CHDO
121.191	Transport category airplanes: turbine engine powered: enroute limitations: one engine inoperative.	Type design complies. CHDO
121.195	Transport category airplanes: turbine engine powered: landing limitations: destination airports.	Type design complies. CHDO
121.197	Transport category airplanes: turbine engine powered: landing limitations: alternate airports.	Type design complies. CHDO
121.215	Cabin interiors.	Type design complies.
121.217	Internal doors.	Type design complies.
121.219	Ventilation.	Type design complies.
121.221	Fire precautions.	Type design complies.
121.223	Proof of compliance with 121.221.	Type design complies.
121.231	Fuel system lines and fittings.	Type design complies.
121.233	Fuel lines and fittings in designated fire zones.	Type design complies.
121.235	Fuel valves.	Type design complies.
121.237	Oil lines and fittings in designated fire zones.	Type design complies.
121.241	Oil system drains.	Type design complies.
121.243	Engine breather lines.	Type design complies.
121.245	Fire walls.	Type design complies.
121.247	Fire wall construction.	Type design complies.
121.249	Cowling.	Type design complies.

121.251	Engine accessory section diaphragm.	Type design complies.
121.253	Powerplant fire protection.	Type design complies.
121.255	Flammable fluids.	Type design complies.
121.257	Shutoff means.	Type design complies.
121.259	Lines and fittings.	Type design complies.
121.261	Vent and drain lines.	Type design complies.
121.263	Fire-extinguishing systems.	Type design complies.
121.265	Fire-extinguishing agents.	Type design complies.
121.267	Extinguishing agent container pressure relief.	Type design complies.
121.269	Extinguishing agent container compartment temperature.	Type design complies.
121.273	Fire-detector systems.	Type design complies.
121.275	Fire detectors.	Type design complies.
121.277	Protection of other airplane components against fire.	Type design complies.
121.279	Control of engine rotation.	Type design complies.
121.281	Fuel system independence.	Type design complies.
121.283	Induction system ice prevention.	Type design complies.
121.285	Carriage of cargo in passenger compartments.	CHDO
121.287	Carriage of cargo in cargo compartments.	CHDO
121.289	Landing gear: aural warning device.	Type design complies.
121.291	Demonstration of emergency evacuation procedures.	Complies, except (b) through (e). CHDO
121.303	Airplane instruments and equipment.	Type design complies.
121.305	Flight and navigational equipment.	Type design complies.
121.307	Engine instruments.	Type design complies.
121.308	Lavatory fire protection.	Type design complies.
121.309	Emergency equipment.	Type design complies, except (b)(1). CHDO
121.310	Additional emergency equipment.	Type design complies. CHDO responsible for (b), (c), (d), (f) (g), (h) and (1). NA for (j) and (k).
121.311	Seats, safety belts, and shoulder harnesses.	Type design complies. CHDO
121.312	Materials for compartment interiors.	Type design complies. CHDO
121.313	Miscellaneous equipment.	Type design complies with (a) through (f), CHDO responsible for (g) through (i).
121.315	Cockpit check procedure.	Type design complies. CHDO
121.316	Fuel tanks.	Type design complies.
121.317	Passenger information.	Type design complies, f), (g), and (h). CHDO
121.318	Public address system.	Type design complies.

121.319	Crewmember interphone system.	Type design complies.
121.323	Instruments and equipment for operations at night.	Type design complies.
121.325	Instruments and equipment for operations under IFR or over-the-top.	Type design complies.
121.329	Supplemental oxygen for sustenance: turbine engine powered airplanes.	Type design complies, except (b)(3), (c)(2) and (3). CHDO
121.333	Supplemental oxygen for emergency descent and for first aid: turbine engine powered airplanes with pressurized cabins.	Type design complies, except (c)(2), (3), (4), (d), and (f). CHDO
121.335	Equipment standards.	Type design complies.
121.337	Protective breathing equipment.	Equipment is in compliance; procedures for use in (b) and (c) to be reviewed by CHDO.
121.339	Emergency equipment for extended overwater operations.	CHDO
121.340	Emergency flotation means.	CHDO
121.341	Equipment for operations in icing conditions.	Type design complies.
121.342	Pitot heat indication systems.	Type design complies.
121.343	Flight recorders.	Type design complies.
121.345	Radio equipment.	Type design complies.
121.347	Radio equipment for operations under VFR over routes navigated by pilotage.	Type design complies.
121.349	Radio equipment for operations under VFR over routes not navigated by pilotage or for operations under IFR or over-the-top.	Type design complies, except procedures for (d) are responsibility of CHDO.
121.351	Radio equipment for extended overwater operations and for certain other operations.	Type design complies, except (b). CHDO
121.353	Emergency equipment for operations over uninhabited terrain areas: flag and supplemental air carriers and commercial operators.	CHDO
121.355	Equipment for operations on which specialized means of navigation are used.	CHDO
121.357	Airborne weather radar equipment requirements.	Type design complies, (c) responsibility of CHDO.
121,359	Cockpit voice recorders.	Type design complies.
121.360	Ground proximity warning-glide slope deviation alerting system.	Type design complies, except (d) and (e). CHDO
121.369	Manual requirements.	Type design related data and manuals comply, otherwise CHDO.
121.397	Emergency and emergency evacuation duties.	Type design complies. Operator specific functions, CHDO.
121.576	Retention of items of mass in passenger and crew compartments.	Type design complies, otherwise CHDO.

121.579	Minimum altitudes for use of autopilot.	Compliance based on AFM procedures and limitations. CHDO
121.581	Forward observer's seat; enroute inspections.	Type design complies.
121.587	Closing and locking of flight crew compartment door.	Type design complies; operator procedures, CHDO.
121.589	Carry-on baggage.	Type design complies; operator procedures, CHDO.
121.629	Operation in icing conditions.	Operator procedures, CHDO.
121.652	Landing weather minimums: IFR: All certificate holders.	CHDO

## APPENDIX 5

### **REQUIRED NAVIGATIONAL PERFORMANCE (RNP) APPROACHES/REQUIRED NAVIGATIONAL PERFORMANCE – AUTHORIZATION REQUIRED (RNP-AR) APPROACHES/WIDE AREA AUGMENTATION SYSTEM/LOCALIZER PERFORMANCE WITH VERTICAL GUIDANCE (WAAS/LPV)**

Required Navigation Performance (RNP) is a performance-based navigation system that allows an aircraft to fly a specific path between 3-dimensionally defined points in space. Area Navigation (RNAV) and RNP systems are fundamentally similar. The key difference between them is the requirement for an RNP system to have on-board performance monitoring and alerting capability.

RNP-Authorization Required (RNP-AR) approach procedures further leverage the advanced capabilities inherent in modern aircraft avionics and navigation systems such as the ability to fly published Radius-to-Fix (RF) leg types and require a special authorization for the aircraft and additional training for the aircrew prior to use of these procedures. RNP-AR approaches have reduced lateral obstacle evaluation areas and vertical obstacle clearance surfaces predicated on advanced aircraft and aircrew performance requirements.

Note: Authorization for these procedures is done by issuance of special OpSpecs paragraphs.

There are two primary levels of RNP performance for approach operations that in turn may require two separate levels of training for an operator to qualify for their use. They are:

- RNP-AR 0.30: typically associated with RNP-AR approach operations to a line of minima no lower than RNP 0.30.

Note: Depending on aircraft qualification and aircrew training, operators may also seek authorization for RNP levels to as low as RNP 0.30 for the missed approach segment.

- RNP-AR less than 0.30: typically associated with RNP-AR approach operations to a line of minima less than RNP 0.30 but not lower than RNP 0.10.

Note: Depending on aircraft qualification and aircrew training, operators may also seek authorization for RNP levels to as low as RNP 0.10 for the missed approach segment.

An operator may choose to qualify for a single level of RNP approach authorization, all levels of RNP approach authorizations, or a combination of RNP approach operations. Generally, when an operator qualifies for a certain level of RNP operation, they will also qualify for any RNP operation that utilizes a higher RNP level. For example, an operator that qualifies for RNP-AR 0.10 approach operations would also qualify for RNP-AR 0.30 operations. However, applicable guidance materials should be referenced.

The RNP pilot training requirements consist of those related to initial and recurrent ground and flight training. Unless covered concurrently during an initial or transition type rating course, a prerequisite to beginning this course of training is prior training, qualification, and currency in the DHC-8 airplane.

1. INITIAL GROUND TRAINING: For airline operators, initial training should be conducted IAW the applicable provisions of 14 CFR §§ 121.415, 121.419, 121.424, and 121.427 and the airline OpSpecs. Additionally, the training requirements found in the current version of AC 90-101 and AC 90-105 should be referenced as applicable for each operator's authorization. For all operators, the initial ground training program should include the following elements:

Note: Coordination with the regional NextGen branch (220) and AFS-470 is required for approval of the training associated with RNP-AR procedures.

Classroom instruction should incorporate RNAV and RNP operational concepts, equipment requirements, MEL, crew duties and responsibilities, operational procedures including preflight and normal pilot activities, operating experience (OE), and currency requirements.

- a. For operators wishing credit for RNP-AR approach operations using RNP levels of 0.30 nm or less, instruction should include the following operational characteristics:
  - CDI needle sensitivity at RNP values less than 0.30.
  - CDI scale step function at waypoint crossing, including possible momentary full scale deflection at waypoint sequence caused by a reduction of RNP level.
  - CDI action at waypoint crossing, including possible momentary full scale deflection associated with Track to Fix (TF/TF) leg sequence.
  - Use of digital XTK display on FMS CDU and/or MFD.
  - Relationship of rudder coordination with course tracking.
  - Operation following a missed approach or early termination of an approach, including the requirements to continue to follow RF turns and adherence to applicable speed limits.
- b. Classroom instruction (or Computer-Based Training (CBT)) on FMS use and MFD map display symbology.
- c. An FMS pilot training manual or equivalent material in the appropriate Operations Manual which provides an explanation of the operation and use of FMS controls, a clear description of FMS CDU symbology, and MFD map display symbology including crew procedures that clearly delineate pilot-flying (PF) and pilot monitoring (PM) duties, responsibilities, and procedural call-outs and responses during all phases of flight. Specific information from the flight manual supplement related to RNP-AR STC.
- d. A video tape or other multimedia capable of a dynamic real-time demonstration of RNP-AR approach operations complete with sound. For operators wishing credit for RNP values of 0.30 nm or less, this should include narrative descriptions and approach operations demonstrating CDI step function associated with a reduction in RNP and CDI action associated with TF/TF leg sequencing with procedural callouts and responses.
- e. For operators wishing credit for RNP-AR approach operations, there should be an emphasis on the need for rigorous crew discipline, coordination, and adherence to procedural guidelines.

2. INITIAL FLIGHT TRAINING: Unless integrated with initial or transition type rating training, flight training dedicated to RNP familiarization and proficiency is in addition to other required elements. For 14 CFR part 121 operators, initial flight training should be conducted IAW the applicable provisions of 14 CFR § 121.424. Flight training dedicated to RNP approach familiarization and proficiency is in addition to other required elements. When a simulator is used, only simulators qualified by the FAA National Simulator Program for RNP may be used.

The following flight training program is generic in nature and should not be construed to dictate what the flight course of instruction must consist of. Each operator will have their own unique requirements, route structure, fleet composition, and operations policies to consider in developing their training program. Therefore, what follows might be considered as a guide to an operator who is developing a new RNP training program to fit their own needs. Initial flight training should include:

- Use of VNAV during approach.
- For operators wishing credit for RNP-AR, use of RF legs for approach and missed approach including the requirement to comply with applicable speed restrictions for curved path.
- Approach and landings to the lowest line of minima utilizing the lowest RNP level authorized.
- Approach operations utilizing full procedure and radar vectors to intercept course.
- Use of EGPWS.
- Use of autopilot or flight director as appropriate to RNP level being flown.
- For operators wishing credit for RNP values less than 0.30 nm, use of transitions to approach having a reduction in RNP value from 1.0 nm to the lowest RNP value authorized.

Notes:

1. Several of the instrument approaches should include a variety of airborne system failures requiring pilot recognition and appropriate procedural actions. Failures could include loss of GPS, autopilot, FD, EGPWS, etc.
2. For operators wishing credit for RNP values less than 0.30, added emphasis should be placed on flight path control through use of the stabilized approach concept and proper coordination of the rudder, CDI action at waypoint crossing, momentary full scale deflection at (TF/TF) leg sequencing, and use of digital XTK and map displays. When this training is complete, the trainee should have a thorough understanding of the relationship between aircraft flight path and desired track through use of the tools available on the flight deck.

For Operators wishing credit for RNP-AR approach operations, the applicant must complete three RNP-AR approaches to minimums under the supervision of an authorized check pilot. All pilots previously qualified in the DHC-8 aircraft should be certified upon satisfactory completion of the RNP-AR ground and flight training programs.

The OE training record for pilots completing initial, upgrade, and transition training should contain documentation for completion of the required observed approaches. Upon completion of the requirements described below, the RNP-AR qualified pilot would then be certified to conduct RNP-AR approaches to operator authorized minima as set forth in their OpSpecs.

For operators wishing credit for RNP-AR approaches to RNP levels less than 0.30 nm, prior to utilizing the FMS for approach operations in IMC below RNP 0.30, each PIC must accomplish at least three approaches to a line of minima requiring an RNP level less than 0.30 nm in weather conditions which are not less than published RNP 0.30 nm minima.

3. CHECKING: All checking should include at least the following:

- One approach and landing conducted to RNP minimums at the lowest authorized RNP level.
- One RNP approach requiring a missed approach.

4. CURRENCY: For operators wishing credit for RNP operations, during each recurrent, training or proficiency event, the following should be performed in addition to regular requirements:

- One approach and landing conducted to RNP minimums at the lowest authorized RNP level.
- One RNP approach requiring a missed approach.

Wide Area Augmentation System – Localizer Performance with Vertical Guidance (WAAS/LPV) is a navigation system developed as a primary means of navigation for civil aviation. It is composed of Geo-stationary satellites and ground stations that improve the integrity and certainty of position of the Global Positioning System (GPS). WAAS/LPV is intended to enable aircraft to rely on GPS for all phases of flight including en route navigation, departures, arrivals, and precision approach operations to as low as Category I minimums at any airport within the GPS's coverage area.

The Flight Standards Board (FSB) has evaluated the requirements for RNP, RNP-AR, and WAAS/LPV approaches for levels of training, checking, and currency applicable to operators applying for the ability to use these types of approaches. The FSB has determined C/C/C is required for training, checking and currency. See table below for examples of level "C".

TRAINING

Difference Level	Type	Examples	
C	System Devices	<ul style="list-style-type: none"> <li>• Interactive (full task) computer-based instruction (ICBI).</li> <li>• Cockpit system simulators (CSS).</li> <li>• Cockpit procedures trainer (CPT).</li> <li>• Part task trainer (PTT).</li> <li>• Flight training device (FTD).</li> </ul>	<ul style="list-style-type: none"> <li>• Training can only be established through systems training devices.</li> <li>• Training objectives focus on mastering individual systems, procedures, or tasks VS highly integrated flight operations or “real-time” operations.</li> <li>• Training devices are required to assure attainment or retention of crew skills to accomplish more complex tasks usually related to aircraft systems.</li> </ul>

CHECKING

Difference Level	Type	Examples	
C	Partial check using device	<ul style="list-style-type: none"> <li>• Maneuvers, systems, or devices specified by the FSB.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires a check performed using a “dynamic” flight environment.</li> </ul>

CURRENCY

Difference Level	Type	Examples	
C	Specific system	<ul style="list-style-type: none"> <li>• IRU currency.</li> <li>• FMS currency.</li> <li>• Flight guidance control system currency.</li> </ul>	<ul style="list-style-type: none"> <li>• Currency is “skill related” and knowledge related.</li> <li>• Currency is necessary for safe operation of variation.</li> </ul>

## **APPENDIX 6**

### **PLANEVIEW II AVIONICS SOFTWARE VERSION “BLOCK POINT I” (ASC 901)**

#### **HGSTM Model 4100: Bombardier DHC 8-400 Series**

No significant changes to pilot training or qualifications are required since this project is for a minor software update to pilot supplementary symbology information.

## **APPENDIX 7**

### **Rockwell Collins UNS-1E SCN 803 HUD Software Upgrade**

#### Installation Under ST01100SE

The LGB-AEG was authorized to conduct an FSB evaluation flight for the purposes to evaluate the installation of the Rockwell Collins UNS-1E SCN 803 using STC ST01100SE for operational approval. Horizon Air, Portland, OR, and the STC holder applied to the LGB-AEG to conduct an FSB of the installation for operational approval. The FSB was conducted in Moses Lake, WA, on March 17, 2015.

The validation flight of the differences training was conducted on March 17, 2015, using an Horizon Air DHC-8-Q-400, S/N 4358, registration N445QX on a dedicated flight from Portland, OR, (KPDX) to Moses Lake, WA (KMWH) and return. The pilot test subject was FAA pilot Heather Ogburn (LGB-AEG). The Safety pilot (PIC) was Steve Bush and is typed DHC-8.

The validation flight was conducted in Visual Flight conditions. All of the requirements of the LOA were met. The FSB found that the differences training required will be level "A" for Training, Checking, and Currency requirements (A/A/A).

## **APPENDIX 8**

### **Universal EFI-890R EFIS Cockpit Upgrade**

#### **Installation Under ST03325NY**

This appendix is applicable to DHC-8-100, 200, and 300 models that have had the Universal EFI-890R EFIS cockpit upgrade installed under ST03325NY.

The LGB-AEG was authorized to conduct an FSB evaluation flight for the purposes to evaluate the installation of the UNS EFI-890R using ST03325NY-T for operational approval. Field Aviation of Toronto, ON, Canada, and the STC holder applied to the LGB-AEG to conduct an FSB of the installation for operational approval. The FSB was conducted in Toronto, ON, Canada, from March 20, 2014, until March 26, 2014.

The validation flight of the differences training was conducted on March 26, 2014, using an Air Greenland DHC-8-202, S/N 434, registration C-FRIQ on a dedicated flight from Toronto, ON, (CYYZ) to North bay, ON, (CYYB) and return. The pilot test subjects were FAA pilot James Warniers (PHX CMU) and FAA pilot Gene Hartman (LGB-AEG). The Safety pilot (PIC) was Berry Hubbard, Canadian license ATPL AA090078, and typed DHC-8.

The validation flight was conducted in Visual Flight conditions. All of the requirements of the LOA were met. The validation flight was successful in validating the differences training required by the installation of UNS-EFI-890R on DHC-8, 100, 200, and 300 series aircraft. The FSB found that the differences training required by a pilot transitioning from a legacy DHC-8, 100, 200, or 300 into a DHC-8 equipped with the UNS-EFI-890R will be level "C" for Training, Checking, and Currency requirements (C/C/C). Master Differences Requirements are C/C/C. It was found by the FSB that a different Type Rating would not be required.