



OPERATIONAL EVALUATION REPORT

VIKING AIR LIMITED

DHC-6-400 SERIES TWIN OTTER

GRUPO DE AVALIAÇÃO DE AERONAVES – GAA

BRAZILIAN AIRCRAFT EVALUATION GROUP

AGÊNCIA NACIONAL DE AVIAÇÃO CIVIL

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Revision Control

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Original	March 2 nd , 2017	Original report
Revision 1	March 6 th , 2017	Exclusion of DHC Series 100, 200 and 300 in the Pilot Type Rating Table

Approval

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1 General

1.1 Evaluation Team

1.1.1. First issue team members

Name	Task	Organization
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1.2 Acronyms

- ❑ AFM – Aircraft Flight Manual
- ❑ AOM – Aircraft Operation Manual
- ❑ ANAC – Agência Nacional de Aviação Civil
- ❑ CAS – Crew Alerting System
- ❑ CPL – Commercial Pilot License
- ❑ CPT – Cockpit Training
- ❑ CRM – Cockpit Resource Management
- ❑ EASA – European Aviation Safety Agency
- ❑ ECL – Electronic Checklist
- ❑ EFIS – Electronic Flight Instrument System
- ❑ EICAS – Engine Indication and Crew Alert System
- ❑ FFS – Full Flight Simulator
- ❑ FMS – Flight Management System
- ❑ FSTD – Flight Simulator Training Device
- ❑ FTD – Flight Training Device
- ❑ IFRA – Instrument Rating - Airplane
- ❑ ISA – International Standard Atmosphere
- ❑ LED – Light Emitting Diode
- ❑ LIFUS – Line Flying Under Supervision
- ❑ MDR – Master Differences Requirements
- ❑ MFD – Multi Function Display
- ❑ MLTE - Multi-Engine Airplane Class Rating
- ❑ MMEL – Master Minimum Equipment List
- ❑ MTOW – Maximum Take Off Weight
- ❑ ODR – Operator Differences Requirements
- ❑ OSD – Operational Suitability Data
- ❑ PF – Pilot Flying
- ❑ PFD – Primary Flight Display
- ❑ PIC – Pilot in Command
- ❑ PM – Pilot Monitoring
- ❑ RBAC – Regulamento Brasileiro de Aviação Civil
- ❑ RBHA – Regulamento Brasileiro de Homologação Aeronáutica
- ❑ RVSM – Reduced Vertical Separation Minimum
- ❑ SIC – Second in Command
- ❑ SOE – Supervised Operating Experience
- ❑ TASE – Training Area of Special Emphasis
- ❑ TAWS – Terrain Awareness and Warning System
- ❑ TCAS – Traffic Alert and Collision Avoidance System

- TCDS – Type Certificate Data Sheet

2 Introduction

2.1 Background

The Series 400 is an updated version of the Series 100, 200, and 300 Twin Otters. As with previous series updates, changes made have been only to take advantage of newer technologies that permit more reliable and more economical operations. Aircraft dimensions, construction techniques, and primary structures have not changed. The aircraft is manufactured at Viking Air Limited facilities in Calgary, Alberta, Canada.

The Viking DHC-6 Series 400 Twin Otter aircraft is an all-metal, high wing monoplane, powered by two wing-mounted turboprop engines, each driving a three-bladed, reversible pitch, fully feathering propeller. The aircraft is certified for single pilot operation and has seating for a pilot, a co-pilot, and up to 19 passengers, depending upon the seating configuration.

Engines have been upgraded from the PT6A-27 to the PT6A-34. The engine continues to be flat rated to 620 horsepower, and all take-off and landing distances remain unchanged. Full flat rated take-off power from the PT6A-34 will be available to ISA +27°C. Because of the significant flat rating limitation, reduced power take-offs (e.g. taking off with 45 PSI torque at ISA conditions) are prohibited. Full calculated power must be used for every take-off.

The most significant change made to the Series 400 has been the introduction of a Honeywell Primus Apex® integrated avionics suite. In addition to providing flat panel display of all flight instrumentation, the Apex suite also provides flat panel display of all engine parameters, all aircraft system parameters, all radio frequencies, the active flight plan, terrain and topography around the aircraft, weather radar, TCAS, and TAWS status. Display of video input (from a low-vision camera system) and display of satellite weather data is available by optional order.

The flight compartment layout has been modernized, and all switches have been moved from the flight compartment roof to the sub-panels below each primary flight display.

A lightweight commuter interior is fitted as standard. Almost all interior and exterior lighting has been upgraded to LED or high intensity discharge (xenon). Cabin ventilation, heating, and optional air conditioning systems have been modernized.

Viking offers the Series 400 aircraft factory equipped with conventional landing gear or intermediate flotation gear, Wipline seaplane floats, or Wipline amphibious floats which will be available via STC.

The evaluation was conducted by documentation analysis using the information provided by the manufacturer and the determinations of the Operational Suitability Data (OSD) Report Revision Original, issued by the European Aviation Safety Agency (EASA) on December 16th, 2015.

In case more detailed information is required, refer to the OSD Report mentioned above.

2.2 Objective

This report presents ANAC collection of results obtained from the operational evaluations of Viking aircraft model DHC-6 series aircraft commercially known as Twin Otter.

2.3 Purpose

The purpose of this report is to:

- a. Define the Pilot Type Rating assigned for the DHC-6 Series 400;
- b. Recommend the requirements for training, checking and currency applicable to flight crew for the DHC-6 Series 400, and functionalities;
- c. Provide the Master Differences Requirements (MDR) for crews requiring differences qualification for mixed-fleet-flying;
- d. Provide an acceptable Operator Differences Requirements (ODR);
- e. Mention the required Flight Simulation Training Devices (FSTD) for crew training.

2.4 Applicability

This report is applicable to:

- a. Brazilian operators of DHC-6 Series 400 – identified as Model DHC-6 Series 400 in the ANAC Type Certificate Data Sheet (TCDS) EA-2016T07 – who operate under RBHA 91 and RBAC 135 rules;
- b. Approved Training Organizations certified under RBAC 142 (Type Rating Training Organizations - TRTO);

- c. Civil Aviation Inspectors (INSPAC) related to safety oversight of DHC-6 aircraft;
- d. ANAC Principal Operations Inspectors (POIs) of DHC-6 operators.

2.5 Cancellation

Not Applicable.

3 Pilot Type Rating

DHC-6 Series 100 and 200 have not been evaluated. They are established as variants to the Series 300 and Series 400 aircraft without further identification of differences levels.

Differences from the DHC-6 Series 300 to the Series 400 have been validated, requiring Level D differences training.

The specific pilot type rating assigned to the DHC-6 Series 400 aircraft, when it is certified with MTOW above 12500 lb (5670 kg), is designated **"DHC6"**.

Airmen who wish to pursue any specific type rating must comply with the requirements established on subparagraph 61.213(a)(1) of RBAC 61.

The GAA recommends the update of ANAC type rating list (Instrução Suplementar – IS 61-004) with the following information:

Table 1 - Pilot Type Rating

VII – Type Rating (Airplane) – Land – Single pilot Operation, Multi Engine (Conventional and Turbine Engines)				
Manufacturer	Aircraft		RMK	Type Rating
	Model	Name		ANAC
Viking Air Limited	DHC-6 Series 400 – only certified models with MTOW above 5670 kg (12500 lb)	Twin Otter Série 400	-	DHC6

4 Master Difference Requirements (MDR)

The Master Difference Requirements matrix for the DHC-6 series variants is shown in Table 2. These provisions are applied when there are differences between models which affect crew knowledge, skills, or abilities related to flight safety (e.g., Level A or greater differences) for training, checking and currency, respectively, according to IAC 121-1009.

Table 2 - Master Difference Requirements

		From Airplane			
		DHC-6 Series 100	DHC-6 Series 200	DHC-6 Series 300	DHC-6 Series 400
To Airplane	DHC-6 Series 100	---	(1)	(1)	(1)
	DHC-6 Series 200	(1)	---	(1)	(1)
	DHC-6 Series 300	(1)	(1)	---	(1)
	DHC-6 Series 400	(1)	(1)	D / D / C	---

Notes:

(1) Not evaluated.

5 Operator Difference Requirements (ODR)

Each operator of a mixed fleet of DHC-6 Series 300 and Series 400 shall produce its own ODR, as required by IAC 121-1009.

For operators flying the DHC-6 Series 300 and Series 400 aircraft, the ODR tables in Appendix 2 have been found acceptable by the ANAC GAA and may be used by the POI for approval of an operator with the specific aircraft equipage.

6 Specifications for Training

Specifications for Initial Type Rating Training for DHC-6 Series 400 and Differences Training from DHC-6 Series 300 to Series 400 are detailed on OSD report mentioned before.

6.1 DHC-6 Series 300 to Series 400 Differences Training

Differences training from the legacy Series 300 to the Viking Series 400 equipped with the Honeywell Primus Apex Avionics Suite has been validated as Level D training requiring training in either an FFS (Level C or D) or in the aircraft.

Differences training must include the following elements:

- General DHC-6 Systems Overview, to include commonalities and differences;
- Honeywell Primus Apex System, architecture and components, to include:
 - Abnormal and emergency displays vs Crew Alerting System (CAS) presentation
 - General Electronic Flight Information System (EFIS) presentation and interpretation
 - Apex avionics system integration for specific indications of fuel pump operation, cross feed, flaps, trim and electrical indications
 - Flight Management System (FMS) operation, flight plans, flight plan modification, active route and active route modifications
 - Thorough review of the FMS Quick Reference Guide
 - General Failure Scenarios and methodology such as, screen reversion and composite display modes

Theoretical training should consist of a minimum of 12 hours.

Practical (flight) training should include a minimum of 4 hours flight time.

6.1.1 Airmen Minimum Qualification for Differences Training

The candidate pilot for a differences training between the airplanes must hold a valid “DHC6” type rating and be qualified on the base aircraft.

6.2 DHC-6 Series 400 Initial Type Rating Training

6.2.1 Prerequisites

Pilots entering into the DHC-6 Type rating training course should hold a CPL, multi-engine airplane class rating (MLTE) and instrument rating (IFRA).

Pre-entry training should be considered for pilots with less than 250 hours of total time, depending on previous experience in aircraft of similar equipment and/or performance.

6.2.2 Training

The safe operation of the airplane is predicated upon the awareness, at all times and of the pilot's awareness of the airplane's Flight Modes and flight parameters.

Appendix 1 shows the footprint of the training that should be followed.

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

DHC-6 Series 400 Initial Type Rating Training should include the following elements:

- Systems Integration Training
 - Primary Flight Display (PFD) - Mode Annunciators
 - Multi Function Display (MFD) – Controls
 - Flight Management System (FMS)
 - Cursor Control Device (CCD)
 - Electronic Instrument Standby System (ESIS)
- Flight Training (FFS or aircraft)
 - Dual Generator Failure procedure
 - Instrument flying on standby instruments
 - Fuel leaks
 - Smoke procedures, including smoke removal

- Approach & Landing from left seat with forward windscreen obscured (using left side window for forward view)
- Electronic Checklist use
- Related and un-related multiple EICAS messages

6.2.3 Training Area of Special Emphasis (TASE)

The following items should receive special emphasis as specified:

- Honeywell Primus Apex® integrated avionics suite (if installed);
- Proper use of tiller steering and taxiing the aircraft;
- Cockpit Resource Management (CRM) associated with single pilot operations.
- Integrated use of the autopilot (if equipped), including knowledge of selectable functions, capabilities and airspeed limitations.
- Global Positioning System (GPS) (if equipped) and ground-based navigation information must be understood to safely and reliably operate the aircraft during instrument approaches, including the use of vertical navigation functions;
- Crosswind landing techniques at the maximum demonstrated crosswind;
- Weight and Balance (W&B) and Center of Gravity (CG) computations;
- Supplemental operating limitations and procedures (as applicable);
- Procedures and limitations for Flight Into Known Icing and ice protection system (for eligible aircraft);
- Operations with intermediate flotation gear, Wipline seaplane floats, or Wipline amphibious floats, including docking and with various sea states (if applicable)

6.2.4 Recurrent Training

Recurrent training should include the identified Training Areas of Special Emphasis on a rotational basis.

Operators should establish an approved recurrent training and checking programme which is relevant to the aircraft variant flown and its intended operation.

Difference levels between DHC-6 variants for recurrent training are the same as for initial training.

Recurrent training should be alternated between DHC-6 variants flown.

Recurrent training should address the differences between the DHC-6 variants flown at the level identified in the MDR/ODR tables, either by alternating training or addressing the differences of the variants flown separately.

7 Specification for Checking

Checking must be performed in accordance with applicable ANAC regulations.

According to the MDR of the DHC-6 and IAC 121-1009, level D differences checking indicates that a partial proficiency check is required in case of mixed fleet flying, addressing the specified particular maneuvers, systems, or devices.

Difference levels between DHC-6 variants for recurrent checking are the same as for initial checking.

Recurrent checking should be alternated between DHC-6 variants flown.

If recurrent checking is not alternated between DHC-6 variants flown, the differences as identified in the relevant MDR/ODR tables between the variants flown must be addressed separately.

All checking should include the elements of the relevant TASE on a rotational basis, as well as the following items, as applicable:

- Takeoff Safety, Performance planning & decisions and aircraft handling to achieve performance, contaminated runways;
- High altitude conditions and aerodynamics;
- TCAS and TAWS functions and procedures;
- Inflight and Ground Icing Awareness;
- CRM and CFIT procedures;
- Demonstration of FMS navigation proficiency (departures, arrivals, approaches); and
- Selection and use of EFIS displays, raw data, flight director, and Reversion / Composite modes, including DPU failure.

7.1 Line Check

A line check performed on any DHC-6 variant should be valid for all variants.

8 Line Flying Under Supervision (LIFUS) / Supervised Operating Experience (SOE)

There is a variety of reasons why the GAA may recommend LIFUS / SOE. One or more of the reasons described below may apply:

- a. Introduction of new aircraft types or variants;
- b. Introduction of new systems (e.g., FMS, ECL, TCAS, HUD);
- c. Introduction of new operation (e.g. oceanic, polar or ETOPS operations);
- d. Experience for a particular crew position (e.g. PIC, SIC);
- e. Post qualification skill refinement (e.g. refining alternate or multiple ways to use particular equipment to increase operating efficiency, operating flexibility, or convenience); or
- f. Special characteristics (e.g. mountainous areas, unusual or adverse weather, special air traffic control procedures, non-standard runway surfaces and dimensions, etc.).

NOTE: Although similar to the item 121.434 from RBAC 121, nowadays LIFUS is not provided in Brazilian regulations. However, the GAA found technically relevant that these items should be accomplished by the pilot after the regular training, as defined by EASA.

8.1 LIFUS / SOE following DHC-6 Series 400 Initial Type Rating Training

Pilots completing initial type rating training for the DHC-6 Series 400 should perform a minimum of **10 route sectors** of **LIFUS**, followed by a **2 route sector line check** or an equivalent amount of SOE.

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

9 Specifications for Recent Experience and Currency

9.1 Recent Experience

Full credit can be granted for recent experience requirements between DHC-6 variants.

9.2 Currency

Operating both the DHC-6 Series 300 and Series 400 variants requires level C currency.

Level C currency is maintained by operating the variant aircraft through a complete route sector including an instrument approach procedure within the previous 90 days. Currency may be re-established by operating the variant with a qualified PIC for at least one route sector, completing a Line Check, completing a Proficiency Check in the variant aircraft or compliance with ANAC regulation regarding recent flight experience requirements in the variant.

10 Technical Publications

10.1 Master Minimum Equipment List - MMEL

The DHC-6 MMEL approved by EASA shall be used by Brazilian operators as a basis for developing their MEL. This document is available at EASA website, through the link <https://easa.europa.eu/document-library/master-minimum-equipment-lists>

10.2 Airplane Flight Manual - AFM

DHC-6 AFM approved by GGCP/SAR shall be used by Brazilian operators as a basis for developing their Operator Airplane Operation Manual (AOM).

APPENDIX 1

TWIN OTTER DHC-6 Series 400 Initial Type Rating Training

Initial type rating training must be compliant with Brazilian requirements and should include the following:

Ground School (5 days, 30 hrs.), consisting of:

- Classroom presentations of aircraft systems, including normal, abnormal and emergency procedures
- Classroom presentations on instrument procedures
- Classroom presentations on aircraft and system limitations
- Classroom presentations on visual maneuvers
- Classroom presentations on multi crew concept/integration (if applicable)
- Classroom presentations on ground handling of aircraft
- Classroom presentations on Mass & Balance and Performance
- Written Test (scheduled on last day)

Practical Training

➤ **FTD Training** consisting of:

- Four FTD (Level 5 or 6) sessions (4 x 4 hours per crew, 8 hours per pilot as PF and 8 hours per pilot as PM)

➤ **CPT Training** (16 hours), consisting of:

- In aircraft demonstrations of aircraft system overview, cockpit layout and panel functions
- In aircraft demonstrations of aircraft the FMS including startup, data entry and flight planning
- In aircraft demonstrations of APEX system malfunctions
- Cockpit training completion exam (scheduled on last day)

➤ **Flight Training** (18 hours)

APPENDIX 2

ODR Tables

(From DHC-6 Series 300 to Series 400)

Definitions used in the ODR Tables:

X	Flight Manual / Pilot's Operating Handbook and/or FM Supplement
AI	Aided Instruction
CBT	Computer Based Training
CSS	Cockpit System Simulator (or aircraft on ground with GPU connected)
ICBT	Interactive Computer Based Training
FFS	Full Flight Simulator (Level C or D)
ACFT	Aircraft

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
				TRAINING				CHKG/CURR	
DESIGN	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	CHK	CURR
Limitations	All Series 300 Limitations – unchanged, except where limitations applicable to deleted systems have been deleted.	No	No	X				A	A
Capacities	All except passenger capacity unchanged. Passenger capacity reduced to 19 passengers from (potentially) 21.	No	No	X				A	A
Passenger Cabin	All seats, PSUs, doors, safety equipment unchanged. One cabin seat deleted.	No	No	X				A	A
Doors, Exits, Safety Equipment	All unchanged. Doors are constructed of composite material rather than aluminum, but operation, functionality, location is unchanged.	No	No	X				A	A
Structures	Instrument panel tilted 17° forward to reduce parallax error.	No	No	X				A	A
Flight Deck		No	Yes			CSS		C	B
Instrument Panel Layout		No	Yes			CSS		C	B

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
				TRAINING				CHKG/CURR	
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	CHK	CURR
06 Dimensions and Areas	Fractional (6%) reduction in nose baggage compartment cubic capacity.	No	No	X				A	A
11 Placards and Markings	Placards updated to meet contemporary standards, information conveyed remains the same.	No	No	X				A	A
12 Servicing	Ladder to roof (for access to engine, to check oil) introduced. Training and checking requirement is intended to prevent injury from slips and falls.	No	Minor			ACFT		B	B
16 Ground Support	Annunciation provided when external power is available and/or in use.	No	No	X				A	A
21 Air Conditioning	Two mechanical ventilation controls relocated to within reach of pilot when shoulder harness is worn – functionality and nomenclature unchanged.	No	None	X				A	A
21 Air Conditioning	Automatic Cabin Heating system deleted, Manual Heating system functionality unchanged.	No	Deletion of procedures	X				A	A
21 Air Conditioning	Optional vapour cycle air conditioner relocated to fwd baggage compartment (from rear baggage compartment).	No	No	X				A	A
22 Auto Flight	Altitude Select, Heading Select, Minima Select controls now located on Flight Controller (FC) panel.	No	None	X				B	B
23 Communications	VHF communication radios integral with Honeywell Apex system	No	Minor		AI, CBT	CSS		C	B
23 Communications	Crew Intercom system operates continuously on a 'hot microphone' basis, with automatic squelch.	No	Minor	X				B	B
23 Communications	CVR installed, no crew controls for CVR provided.	No	Minor	X				A	A

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
				TRAINING				CHKG/CURR	
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	CHK	CURR
23 Communications	Several 'configuration' (abnormal use only) switches installed, e.g. aural warning mute, emergency com tuning.	No	Minor	X				B	B
23 Communications	406 MHz ELT with control on instrument panel introduced.	No	Minor	X				A	A
23 Communications	Dual Mode S EHS transponders with 1090 MHz extended squitter introduced.	No	Minor	X				A	B
24 Electrical Power	Entire AC electrical system deleted.	No	Deletion of applicable procedures	X				A	A
24 Electrical Power	Substantially enhanced display and annunciation of DC electrical system status. Information now presented on Systems MFD.	No	Minor		AI, CBT	CSS		C	B
24 Electrical Power	Overhead (roof) CB panel deleted, CBs merged into left sidewall panel	No	Minor	X				A	A
24 Electrical Power	Generator control switches relocated, function and operation unchanged.	No	None	X				A	A
24 Electrical Power	Minor changes to switch and CB nomenclature to conform to contemporary standards, intent unchanged.	No	None	X				A	A
24 Electrical Power	Numerous CBs deleted (circuit protection no longer required)	No	Minor	X				A	A
25 Equipment & Furnishings	Two 12 volt convenience outlets now provided in flight compartment.	No	None	X				A	A
26 Fire Protection	Vivisun switchlights replace legacy fire T-handles. Functionality and procedures unchanged.	No	Minor	X				A	A
27 Flight Controls	Mechanical trim indicators for pitch trim and rudder trim are augmented by the MFD trim position indicators. Aileron trim position is solely displayed on MFD.	No	Minor		AI, CBT	CSS		C	B

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
				TRAINING				CHKG/CURR	
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	CHK	CURR
27 Flight Controls	Systems MFD replaces mechanical Flaps indicator	No	Minor		AI, CBT	CSS		C	B
28 Fuel	Systems MFD replaces analog fuel gauges.	No	Minor		AI, CBT	CSS		C	B
28 Fuel	Fuel control panel moved 8 inches to right of longitudinal centerline (equidistant between pre and post Mod 6/1475 panel on legacy aircraft)	No	None	X				A	A
28 Fuel	Indication and annunciation for fuel boost pump failures.	No	None		AI, CBT	CSS		C	B
28 Fuel	Controls for optional extended range wing tanks located directly below fuselage fuel tank controls.	No	None	X				C	A
29 Hydraulic Power	Systems MFD replaces Bourdon-type pressure indicators.	No	Minor		AI, CBT			C	B
30 Ice and Rain Protection	Controls for surface de-ice boots simplified.	No	Minor	X				C	B
30 Ice and Rain Protection	Additional defrost air supply outlet on right windshield replaces fans on flight compartment roof. No control changes.	No	Minor	X				A	A
31 Indicating and Recording	256 word per second, 256 parameter Flight Data Recorder provided.	No	Minor	X				A	A
31 Indicating and Recording	Apex Systems MFD replaces and consolidates together many analog indications.	No	Minor		AI, CBT	CSS		C	C
31 Indicating and Recording	Crew Alerting System (CAS) replaces and enhances upon functionality provided by analog annunciator lights.	No	Minor		AI, CBT	CSS		C	C
31 Indicating and Recording	Master Caution and Master Warning annunciators provided as part of CAS.	No	Minor		AI, CBT			B	B
31 Indicating and Recording	Functionality of alternate static source control changed.	No	Minor	X				C	B

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
				TRAINING				CHKG/CURR	
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	CHK	CURR
31 Indicating and Recording	Various horns and bells replaced by centralized aural warning system.	No	Minor	X				C	B
31 Indicating and Recording	Dimming and reversion control panel for flat panel displays introduced.	No	Minor		AI, CBT			A	A
31 Indicating and Recording	DC powered quartz clock (with conventional clock face) replaces mainspring powered clock.	No	Deletion of applicable procedures	X				A	A
31 Indicating and Recording	'Caution Light Dimming Bypass' switch introduced (abnormal use only)	No	Minor	X				A	A
31 Indicating and Recording	Takeoff Configuration Warning system introduced.	No	None	X				C	B
31 Indicating and Recording	Overspeed Warning system introduced.	No	None	X				C	B
31 Indicating and Recording	Altimeter subscale setting control relocated to PFD controller	No	None (location of control is changed)	X				B	B
33 Lights	Instrument Panel lighting modernized, post lights deleted, LEDs and integral lighting used throughout. Controls centralized and simplified.	No	Minor		AI, CBT	CSS		A	A
33 Lights	Cabin and flight compartment lighting modernized, LEDs used throughout.	No	No	X				A	A
33 Lights	Pulse lighting system provided, will pulse automatically when TCAS alert is active. Single switch controls both landing lights.	No	Minor		AI, CBT	CSS		C	C
33 Lights	Different fixtures for cabin emergency lights, control and operation unchanged.	No	Minor	X				A	A
34 Navigation	Honeywell Primus Apex Integrated System replaces federated navigation systems for VOR-ILS, ADF, DME, GPS, marker beacon.	No	Major				FFS, ACFT	D	C

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	TRAINING				CHKG/CURR	
				LVL A	LVL B	LVL C	LVL D	CHK	CURR
34 Navigation	L3 GH-3100 Electronic Standby Instrument System (ESIS) with integral independent magnetometer introduced	No	Major				FFS, ACFT	D	C
34 Navigation	Multifunction Controller (MF) for control of navigation system introduced	No	Major				FFS, ACFT	D	C
34 Navigation	Flight Controller (FC) for input of altitude select, heading select, minima introduced	No	Major				FFS, ACFT	D	C
34 Navigation	PFD (Primary Flight Display) Controller for control of certain navigation input displays introduced	No	Major				FFS, ACFT	D	C
34 Navigation	Situational Awareness display permits 'point and click' selection of flight plan legs.	No	Major				FFS, ACFT	D	C
34 Navigation	Air Data – Attitude & Heading reference system replaces pressure instruments and iron gyros	No	Minor	X				A	A
34 Navigation	Track Source selection switch (ADAHRS or GPS track) introduced.	No	Minor		AI, CBT	CSS		C	B
34 Navigation	Optional systems including display of Jeppesen charts, XM weather, TAWS A, TCAS I or II introduced (integrated within Situational Awareness Display).	No	Minor		AI, CBT	CSS		C	C
35 Oxygen	Capacity of optional oxygen system now displayed on Systems MFD in addition to legacy display on O2 controller	No	None	X				B	B
36 Pneumatic	Low Pneumatic Pressure annunciation now governed by logic that suppresses annunciation when surface de-ice system not in use.	No	None	X				A	A
45 Central Maintenance System	CMS introduced, advises flight crew when maintenance attention is required.	No	Minor	X				A	A

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
				TRAINING				CHKG/CURR	
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	LVL A	LVL B	LVL C	LVL D	CHK	CURR
49 Airborne Auxiliary Power	ESIS has own dedicated power supply. Cabin Emergency Lighting has own dedicated power supply. Clock has standby power supply.	No	Minor		AI, CBT			A	A
56 Windows	Fractional (1 inch) reduction in width of flight compartment door windows	No	None	X				A	A
61 Propellers	Beta Backup system deleted.	No	Deletion of applicable procedures		AI, CBT			C	B
61 Propellers	Autofeather switch relocated, duplicate switch provided on co-pilot side.	No	None		AI, CBT			C	B
72 Engine	Different engine model (PT6A-34) introduced, physical size, location, control, operation, limitations (except T5, OP) and power output unchanged.	No	Minor		AI, CBT			C	B
72 Engine	Annunciation via CAS of any engine parameter exceedance (appropriate to phase of flight) introduced.	No	Minor		AI, CBT			B	B
73 Engine Fuel	Single line fuel system replaces dual line fuel system	No	Minor		AI, CBT			A	A
74 Ignition	Spark Ignitors replace glow plugs	No	Minor	X				A	A
76 Engine Controls	Automatic calculation and presentation of engine limitations according to phase of flight and environmental conditions.	No	None		AI, CBT			A	A
77 Engine Indicating	PFD Engine Display replaces electromechanical engine indicators (Torque, T5, Ng, Np, OP, OT and FF)	No	None			CSS		C	B
80 Starting	Minor change to starting procedure (simplification) as a result of introduction of spark ignitors	No	Minor		AI, CBT			C	B

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
SYSTEM	REMARKS	FLT CHAR	PROC CHNG	TRAINING				CHKG/CURR	
				LVL A	LVL B	LVL C	LVL D	CHK	CURR
Aircraft Flight Manual	AFM performance information added to meet operational rules. This does not impact the performance of the aircraft, but introduces alternative methods of calculating performance.	No	Minor	X				C	B

DIFFERENCE AIRCRAFT: DHC-6 Series 400 BASE AIRCRAFT: DHC-6 Series 300				COMPLIANCE METHOD					
MANEUVER	REMARKS	FLT CHAR	PROC CHNG	TRAINING				CHKG/CURR	
				LVL A	LVL B	LVL C	LVL D	CHK	CURR
Preflight	Minor changes for Series 400 (composites, etc.)	No	No		AI, CBT			B	B
Engine Start		No	Yes			CSS		D	B
RTO or V1 Fail	Vmc applicable	No	No				FFS, ACFT		
Instrument Approaches		No	Yes				FFS, ACFT	D	C
Shutdown		No	No			CSS		D	B
Normal Procedures		No	Yes			CSS		D	C
Abnormal Procedures		No	Yes			CSS		D	C
Emergency Procedures		No	Yes			CSS		D	C