TYPE-CERTIFICATE

DATA SHEET

No. EASA.IM.A.575

for
DHC-6 - Series

Type Certificate Holder:

Viking Air Limited
1959 de Havilland Way
Sidney
British Columbia V8L 5V5
Canada

For models: DHC-6 Series 400

CONTENT

Section A: DHC-6 Series 400

A.I. General

1.	a) Type: b) Model: c) Variant:	DHC-6 DHC-6 Series 400 ---
2.	Airworthiness Category:	Normal Category
3.	Type Certificate Holder:	Viking Air Limited 1959 de Havilland Way Sidney, British Columbia V8L 5V5 Canada
4.	Manufacturer:	Viking Air Limited 1959 de Havilland Way Sidney, British Columbia V8L 5V5 Canada
5.	EASA Certification Application Date:	November 12, 2008
6.	National Certifying Authority:	Transport Canada Civil Aviation (TCCA)
7.	National Authority Type Certificate Date:	June 24, 2010 Transport Canada Type Certificate A-82, Section 9 (DHC-6 Series 400).

A.II. Certification Basis

1.	Reference Date for determining the applicable requirements:	Date of Application for original DHC-6 TCCA Type Approval, April 2, 1964. Date of application for DHC-6 Series 400 TCCA TC for DHC-6 Series 400 September 27, 2007.
2.	Certification Basis:	As defined in CRI A-01, latest Issue and below
3.	Airworthiness Requirements:	FAR 23 for the basic DHC-6 Series 400 aeroplane
4.	EASA Special Conditions	CRI F-52 Protection from the Effects of HIRF CRI F-53 Direct Effects of Lightning CRI F-54 Indirect Effects of Lightning

5.	EASA Exemption:	None
6.	EASA Equivalent Safety Findings:	None
7.	Reserved	
8.	Environmental Standards:	a) ICAO Annex 16, Volume I, Amendment 8 (2007) Noise (Ref.: EASA Doc 2003/04/RM and EASA TCDSN IM.A.575 issue 1 , 23 September, 2010) b) ICAO Annex 16, Volume II, Amendment 5 (2007) Emissions (Ref.: EASA Doc 2003/04/RM) CRI N-01 Approval of Noise Test Plan and Test Witnessing
9.	Additional national requirements:	None

A.III. Technical Characteristics and Operational Limitations

1.	Type Design Definition:	Viking Air Limited Top Drawing C61000-9.
2.	Description:	Twin engine turboprop, all-metal, 19 passenger, unpressurized, high wing, fixed gear aeroplane.
3.	Equipment:	The list of approved equipment, including the basic required equipment which must be installed in the aircraft for certification, (see Basis of Certification), is given in Viking Report AEROC 6.6.G.1.
4.	Dimensions:	
	Span	19.81 m (65 ft. 0 in)
	Length	15.77 m (51 ft. 9 in)
	Height	6.02 m (19 ft. 6 in.)
	Wing Area	39.02 m^2 (420 $ft.^2$)
	MAC	1.98 m (6.5 ft.)
5.	Engines:	
	Model	2 Pratt and Whitney Canada (PWC) PT6A-34 turboprop engines, flat rated at 620 shp.
	Type Certificate	TCCA TC No. E-6
	Engine Limits	RATING ESHP SHP

Take-off (5 min)	652*	620*
Max. Continuous	652*	620*

*Available to 42°C (108°F) Ambient Temperature. (S.L.)

Temperature Limits (Inter-Turbine)

Take-off	790°C
Max. Continuous	790°C
Starting (2 sec.)	1090°C

Torque Limits

Take-off	50 psi (1,536 lb-ft)
Max. Continuos	50 psi (1,536 lb-ft)

Gas Generator

Take-off	38,100 rpm (101.6%)
Max. Continuous	38,100 rpm (101.6%)

Oil Temperature

Starting	-40°C Minimum
Take-off	10°C to 99°C
Max. Continuous	10°C to 99°C

Oil Pressure
Normal (27,000 rpm & above) 85 to 105 psig
Minimum (below 27,000 rpm) 40 psig

6. Propeller:

Model	2 Hartzell	
	Hub	HC-B3TN-3D (Y) note A
	Blades	T10282N(B) (*1) note B
		Note A: (Y) designates Zero Thrust Latches Note B: (B) designates De-icing Boots
Type Certificate	FAA TC no.	P15EA
Number of blades	3 (Aluminum)	

6.1. Sense of Rotation: Propellers rotate Clockwise in view of flight direction

6.2. Diameter: 2.591 m (8 ft. 6 in.) nominal

2.540 m (8 ft. 4 in.) after repairs

6.3. Pitch — Pitch Settings at 76.2 cm (30") Station

Feather	+87°
Take-off Low Pitch	+ 17°
Idle Blade Angle	+ 11°
Reverse Blade Angle	- 15°

6.4. Propeller Limits (N_p)

Take-off	2110 rpm (96%)
Max. Continuos	2110 rpm (96%)

7. Fluids:

7.1 Fuel — Jet fuel – Refer to Pratt & Whitney Canada Inc. Service Bulletin 1244, latest issue.

7.2 Oil — Synthetic – Refer to Pratt & Whitney Canada Inc. Service Bulletin 1001, latest issue.

7.3 Coolant — n/a

8. Fluid capacities:

	Litres	Imp. Gal.	U.S. Gal.
8.1 Fuel* (usable)			
Forward Tank (+162.5in.)	686	151	181
Rear Tank (+240.0 in)			
Unusable	746	164	197
Total	13.6	3.0	3.5
	1445.6	318	381.5

*See NOTE 2.b. for Weight and Balance.

8.2 Oil* (usable)			
Left (+177.0 in.)	6.8	1.2	1.5
Right (+177.0 in.)	6.8	1.2	1.5
Total	13.6	2.4	3.0

*See NOTE 2.c. for Weight and Balance.

8.3 Coolant system capacity: n/a

9. Air Speeds:

	KCAS	KIAS
V_{MO} Max. Operating S.L. to		
6,700 ft	170	166
10,000 ft	160	156
15,000 ft	145	141
20,000 ft	130	126
25,000 ft	115	112

V_A Design Maneuvering	136*	132*
V_{MC} Minimum Control Flaps 10º	66	64
V_{FE} Flaps Extended 0º to 10º	105	103
V_{FE} Flaps Extended 11º to 37º	95	93

* Reduce V_A=V_{MO} above 18,000 ft

10. Maximum Operating Altitude: 25,000 ft.

11. All weather Operational Capability: VFR Day and Night, IFR

12. Maximum Weights:

Ramp	5,670 Kg (12,500 lb)
Take-Off	5,670 Kg (12,500 lb)
Landing	5,579 Kg (12,300** lb)
	** Main Wheel Tire Pressure 38 psi
	Below -29ºC (-20ºF) 34 psi

13. Centre of Gravity Range:
Linear variation between given points

Weight Kg (lbs)	Fwd. Limit %MAC (in) aft of datum	Aft Limit %MAC (in) aft of datum
Take-Off		
5,670 (12,500)	25 (207.74)	36 (216.32)
5,262 (11,600)	20 (203.84)	36 (216.32)
2,722 (6,000)	20 (203.84)	36 (216.32)
Landing		
5,579 (12,300)	25 (207.74)	36 (216.32)
4,990 (11,000)	20 (203.84)	36 (216.32)
2,722 (6,000)	20 (203.84)	36 (216.32)

14. Datum: Station 0 is 277.67 cm (109.32 inches) forward of a jig point which is marked by a plate attached to the bulkhead between the cockpit and the cabin.

15. Control surface deflections: See DHC-6 Twin Otter Series 400 Maintenance Manual, PSM 1-64-2 for rigging procedure and measurements.

16. Leveling Means: The cabin floor rails provide a surface for leveling the airplane both laterally and longitudinally. The cabin floor level is 15 inches below water line zero.

17. Minimum Flight Crew: 1 (Pilot)

18. Maximum Passenger Seating Capacity: 19, for passenger seating locations see POH

19. Baggage / Cargo Compartments:

	Kg	Lb	Arm
Forward	130	285	(+25.0 in.)
Rear	227	500	(+354.0 in.)
Rear Extension Shelf	68	150	(+391.0 in.)

*Total Rear + Rear Extension Shelf not to exceed 227 Kg (500 lb) maximum

20. Wheels and Tyres:
21.1 Nose Wheel Tyre Size: 8.90 x 12.5 Type III 6 ply
21.2 Main Wheel Tyre Size: 11.00 x 12 Type III 10 ply

Main Wheel Tyre Pressure 38 psi
Below -29°C (-20°F) 34 psi

See also NOTE 7.

21. Mean Aerodynamic Chord: 198.1 cm (78 inches). (The wing leading edge is at Station 188.24).

A.IV. Technical Characteristics and Operational Limitations

1. Aircraft Flight Manual (AFM) PSM 1-64-1A: Approved June 18, 2010 or later TCCA approved revision.
   Airplanes must be operated commercially according to EASA approved AFM Supplement 37, Issued June 18, 2010 or later TCCA approved revision

2. Pilot's Operating Handbook (POH) PSM 1-64-POH: Issued June 24, 2010 or later OEM approved revision.

3. Aircraft Maintenance Manual (AMM) PSM 1-64-2: Issued June 24, 2010 or later OEM approved revision.

4. Ground Support Manual (GSM) (also includes the table of Dimensions, Limits and Clearances) PSM 1-6-2T: Issued June 24, 2010 or later OEM revision.

5. Structural Repair Manual (SRM) PSM 1-6-3: Issued June 24, 2010 or later OEM revision.

6. Service Bulletins (SBs) PSM 1-6-SB/TAB: Issued December 20, 2006 or later OEM approved revision.

7. Corrosion Prevention and Control Manual (CPCP) PSM 1-6-5: Approved June 24, 2010 or later TCCA approved revision.

8. Inspection Requirements Manual (IRM) PSM 1-6-7: Approved June 24, 2010 or later TCCA approved revision.

9. Weight and Balance Manual (W&B) PSM 1-64-8: Issued June 24, 2010 or later OEM approved revision.

10. Structural Components Service Life Limits Manual PSM 1-6-11: Approved June 18, 2010 or later TCCA approved revision.

11. Airworthiness Limitations – Avionics PSM 1-6-13: Approved June 18, 2010 or later TCCA approved revision.

V. Operational Suitability Data

Master Minimum Equipment List (MMEL)	EASA-OSD-VAL-DHC6-400-MMEL, IR, EASA approved January 21, 2016 or any later EASA approved Revision.
Flight Crew Data (FCD)	EASA-OSD-VAL-DHC6-400-FC, IR, EASA approved December 16, 2015, or any later EASA approved Revision.

Maintenance Certifying Staff Data (MCSD)	EASA-OSD-VAL-DHC6-400-MCS, Rev. 1, EASA approved February 14, 2017, or any later EASA approved Revision.

VI. Notes

1. Serial numbers eligible: S/N 845 and subsequent.

2.a. The current Weight and Balance Handbook, Part Number PSM 1-64-8, giving the list of equipment included in the empty weight and loading instructions, must be in each aircraft except in the case of operators having an approved weight control system.

b. The following amount of unusable fuel is included in the empty weight:
13,6 Liters (3.0 Imp. Gal., 3.5 US. Gal.)

c. For weight and balance purposes the total oil (including system and tank) is included in the empty weight and equals 24,5 kg (54 lbs) at +177 in.

3. The following placards must be displayed in clear view of the pilot at all times:

a. "This airplane must be operated as a Normal Category Airplane in compliance with the operating limitations stated in the form of placards, markings and manuals".

b. "No aerobatic manoeuvers (including spins) are approved".

c. "Day, Night, VFR".

d. "IFR" when the aircraft is equipped in accordance with the requirements for the operation intended.

e. "This airplane is equipped for operation in icing conditions" when the aircraft is fitted with the modifications specified in NOTE 8.

4. The TCCA Approved Airplane Flight Manual PSM 1-64-1A must be in the aircraft at all times.

5. The DHC-6 Series 400 must have a long nose (Viking Mod 6/2020).

6. The appropriate TCCA approved DHC-6 Flight Manual Supplements are to be inserted in the Airplane Flight Manual. Compliance with the service life limits specified in DHC-6 Twin Otter Structural Components Service Life Limits Manual, PSM 1-6-11 is required.

7. Viking Intermediate Floatation Gear is approved when installed in accordance with Viking Drawing C6U1000.
Aircraft to be operated in accordance with approved Viking Flight Manual Supplement.

8. Aircraft is approved for operation in icing conditions when equipped with the following Viking Modifications:
Mods 6/1043, 6/1066, 6/1089, 6/2028, 6/2042 and 6/2045; plus S.O.O. 6004, S.O.O. 6187 and S.O.O. 6202 or S.O.O. 6237.
Aircraft to be operated in accordance with appropriate TCCA approved Flight Manual Supplement.

9. Commuter interior installed to Viking Mod 6/2013.

10.a. The electrical system upgrade consists of removing the AC system; replacing the starter-generator and the DC system wiring, connectors, lights (strobe, navigation, nose-wheel position indicator, and interior) and door proximity switches, and installing an increased capacity battery, 12V DC outlets in the cockpit and an optional pulsing landing light system.

b. The cockpit and avionics upgrades consist of replacing the conventional primary flight instruments, engine instruments and crew alerting system with an integrated Honeywell Primus Apex® EFIS avionics suite; the installation of / provisions for comm/nav equipment, radar altimeter (second radar altimeter optional), flight director, autopilot (optional), flight management system (second flight management system optional), SBAS GPS upgrade

(optional), SVS (optional), TCAS I, TCAS II (optional), ADS-B out (optional), Class A TAWS, CVR, FDR, weather radar and cabin public address system; and related changes to the electrical system, circuit breakers and switches.

c. Aircraft equipped with Mod. 6/2303 to be operated in accordance with DOT Approved Viking Series 400 Flight Supplement 50, Issue 4 (VAL Document Number: PSM 1-64-1A) or any later DOT (TCCA) approved revision.

11. In support of compliance with FAR 23.1309 at Amendment 23-57 for all avionics, the DHC-6 Series 400 is a Class IV aircraft in the meaning of FAA Advisory Circular (AC) 23.1309-1E.

ADMINISTRATIVE SECTION

I. Acronyms

DOT	Department of Transport (Canada)
FAR	Federal Aviation Regulations
TCCA	Transport Canada Civil Aviation
SBAS	Satellite Based Augmentation System
SVS	Synthetic Vision System
TCAS I, II	Traffic Alert and Collision Avoidance System
ADS-B out	Automatic Dependent Surveillance - Broadcast
TAWS	Terrain Awareness and Warning System
CVR	Cockpit Voice Recorder
FDR	Flight Data Recorder
GPS	Global Positioning System

II. Type Certificate Holder Record

The following is the Type Certificate History for the DHC-6 (Twin Otter):

1966 - The de Havilland Aircraft Company of Canada, Limited
1986 - The de Havilland Aircraft Company of Canada (a Division of Boeing of Canada Ltd.)
1988 - Boeing of Canada Ltd. (de Havilland Division)
1992 - de Havilland Inc.
1998 - Bombardier Inc.
2006 - Viking Air Limited

III. Change Record

Issue	Date	Changes
1	12-Nov-2010	Initial issue of EASA DHC-6 Series 400 in the course of validation of the major change for the glass cockpit
2	25-Jan-2016	OSD added (Section A.V.). Original Section A.V. renumbered in A.VI.
3	14-Febr-2017	OSD MCSD added (Section A.V)
4	29-Sept-2017	DHC-6 Series 400 Phase 2A/2A+ upgrade