
Type Acceptance Report

TAR 1/21B/14

Pilatus PC-6/B1-H2

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Introduction

This report details the basis on which Type Acceptance Certificate No.1/21B/14 was granted in the standard category in accordance with NZCAR Part 21 Subpart B.

Specifically the report aims to:

- (a) Record the airworthiness certification standard used for type acceptance of the applicable model in New Zealand;
- (b) Summarise any outstanding requirements that must be complied with for the issue of a NZ Airworthiness Certificate to any models covered by the Type Acceptance Certificate.

Foreign Type Certificate Details

Type Certificate:	Certificat de Type No. F 56-10
Issued by:	Swiss Confederation – Federal Office for Civil Aviation
Manufacturer:	Pilatus Aircraft Limited
Model:	PC-6/B1-H2
Engines:	Pratt & Whitney Canada PT6A-20/A/B
Propellers:	Hartzell HC-B3 TN3C/D
MCTOW	2200 kg (4850 lb.)
Noise Category:	Flight Manual states ICAO Annex 16 (3 rd Edition July 1978) certificated noise level: 77.2 dB(A)

The certification basis of the PC-6/B1-H2 is CAR 10 and CAR 3 dated May 15, 1956 including amendments 3-1 through 3-5. In addition the PC-6/B and C variants showed compliance with the Special Conditions notified in the FAA letter of 4.1.1967. This is an acceptable certification basis in accordance with Advisory Circular 21-1A, as CAR 3 is the predecessor to FAR 23, which is the basic standard for Normal Category Airplanes called up under Part 21 Appendix C. There are no non-compliances and no special conditions have been prescribed by the Director under §21.23.

Type Acceptance Application

The application for New Zealand type acceptance was from the aircraft importer, the Lyver Partnership, dated 3 March 2001. The first-of-type example was serial number 693 registered as ZK-JMP. There have been previous examples of the aircraft on the NZ Register, but none were current as at 1.7.95 and the type was not covered by the transitional arrangements of Part 21 Appendix A paragraph (c). (ZK-PTP s/n 656 was operated by Air Safaris from 19.12.78 until exported to France on 10.3.87, while Mount Cook Airlines used ZK-FZB s/n 634 from 30.10.81 until 22.06.89. S/n 628 was also here briefly as a demonstrator in 1971 as ZK-DFJ.)

Type Acceptance Certificate No.1/21B/14 was granted on 14 March 2001.

The PC-6 11-seat STOL utility aircraft was originally flown with a 340 hp Lycoming GSO-480 piston engine, later updated to a 350 hp IGO-540. The first turbine version was the PC-6/A with a 523 shp Turbomeca Astazou II, while the definitive version has been the PC-6/B Series with Pratt & Whitney Canada PT-6A engine. Originally developed by Fairchild in the US, the most common sub-variants are the PC-6/B1 with the 550 shp TO rating PT6A-20 and the PC-6/B2 with the PT6A-27 with a continuous rating of 550 shp. The PC-6/C has the 575 shp Airesearch TPE331 turboprop. Further sub-variants depend on the maximum gross weight "index". No index means 1960 kg MCTOW, while H1 indicates 2016 kg and H2 signifies 2200 kg MCTOW. (See SB 32A) The later (1985) H4 index, applicable only to the PC-6/B2 means a MCTOW increased to 2800 kg, and can be accomplished per SB 149A. (The retrofit conversion requires an enlarged dorsal fin, door and under fuselage strengthening, landing gear shock-absorber change, revised torque and RPM limits and extended composite wingtips.)

Type Data

The type data requirements of NZCAR Part 21B Para §21.43 have been satisfied by the following documents, copies of which were already held by the CAA:

- (1) Airworthiness design requirements: Already held by the CAA
 FAA Letter Jan 4, 1967 – Attachment "A" – Special Conditions for
 the Type Certification of the Pilatus Models PC-6/B/B1/B2-H2
- (2) Certification compliance listing:
 Porter H2 – Statics and Stress Analysis Calculations
 Porter H2 – Data of Aircraft and Aerodynamics Calculations
 Turbo Porter PC-6/B1-H2 Flight Report – Rpt. No. 3184
 PC-6B Power Plant Control System Failure Analysis – Fairchild

 Stratos
 Stress Analysis PT6A-6 Installation – Fairchild Stratos Corp.
 Part II Type Inspection Report PC-6/B (Ref. STC SA273BA)
- (3) Illustrated Parts Catalogue: IPC PC-6/B1-H2, PC6/B2-H2 Edition 1975 – Rev.2
- (4) Maintenance manual and service data for aircraft: (engine and propeller also held)
 PC-6/B1-H2 Service Manual – Initial Issue Jan 68, at Rev.4
 (Note - includes Maintenance Schedule for all models - Report 1739)
 PC-6 Service Bulletins (Doc. 01959) and Service Letters (Doc. 01960)

The following documents have been supplied to satisfy NZCAR Part 21B Para §21.43: *

- (1) Type certificate: Swiss Federal Office for Civil Aviation Certificat de Type No F 56-10
 FOCA Data Sheet F 56-10, Issue 6 dated 25 June 2000
 FAA Type Certificate Import Number 7A15
 FAA TCDS 7A15 at Revision 11 dated August 9, 1999
- (2) Flight manual: Swiss Federal Air Office Approved Airplane Flight Manual

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(3) Agreement from manufacturer to supply updates of data in (2):

CAA 2171 form signed by Manager Airworthiness, and VP, Head of R & D, from Pilatus Aircraft Limited dated 14 March 2001.

(4) Pilatus Engineering Report No. 6142 – Australian Porter Aircraft Life Extension

Additional New Zealand Certification requirements

Compliance with the following additional NZ requirements has been reviewed and were found to be covered by either the original certification requirements or the basic build standard of the aircraft, except as noted:

Civil Aviation Rules Part 26**Subpart B - Additional Airworthiness Requirements**

Appendix B - All Aircraft

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
B.1	Marking of Doors and Emergency Exits	<i>To be determined on an individual aircraft basis</i>
B.2	Crew Protection Requirements - CAM 8 Appdx. B # .35	Agricultural Aircraft – Not Applicable

Appendix C - Air Transport Aircraft - More than 9 Pax

(Standard configuration is 7 passenger seats, but the aircraft is type certificated to carry a maximum of 11 people.)

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
C.1	Doors and Exits	CAR 3.387(a)
C.2.1	Additional Emergency Exits - per FAR 23.807(b) @ 10.5.93	PC-6 has exits on both sides of the cabin, plus a pilot's door on each side – See PC-6/B1-H2 Specification dated March 1971
C.2.2	Emergency Exit Evacuation Equipment – Descent means	N/A – Exits less than 2m from the ground
C.2.3	Emergency Exit Interior Marking - Size/self-illuminating	<i>To be determined on an individual aircraft basis if used on Air Transport operations</i>
C.3.1	Landing Gear Aural Warning - Automatic Flap Linking	N/A – Fixed landing gear

Civil Aviation Rules Part 91**Subpart F - Instrument and Equipment Requirements**

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Shoulder Harness if Aerobatic; >10 pax; Flight Training	<i>Shoulder Harness is Optional Special Equipment (Required)</i>
91.507	Pax Information Signs - Smoking, safety belts fastened	N/A – Passenger Compartment not separated from crew
91.509 Min. VFR	(1) ASI CAR 3 paragraph §3.655(a)(1) - See MM §1.2.11 Item #22 N/A (2) Machmeter CAR 3 paragraph §3.655(a)(2) - See MM §1.2.11 Item #24 (3) Altimeter CAR 3 paragraph §3.655(a)(3) - See MM §1.2.11 Items #30 (4) Magnetic Compass CAR 3 paragraph §3.655(a)(3) - See MM §1.2.11 Items #30 (5) Fuel Contents CAR 3 paragraph §3.655(b)(1)(i) - See MM §1.2.11 Items #17 (6) Engine RPM CAR 3 paragraph §3.655(b)(1)(iv) - See MM §1.2.11 Items #11/12	(7) Oil Pressure CAR 3 paragraph §3.655(b)(1)(ii) - See MM §1.2.11 Item #16 (8) Coolant Temp N/A – Turbine powered (9) Oil Temperature CAR 3 paragraph §3.655(b)(1)(iii) - See MM §1.2.11 Item #15 (10) Manifold Pressure N/A – Turbine powered (11) Cylinder Head Temp. N/A – Turbine powered (12) Flap Position CAR 3 paragraph §3.338-1 - See MM §1.2.5.5 (13) U/C Position N/A – Fixed undercarriage (14) Ammeter/Voltmeter CAR 3 paragraph §3.687
91.511 Night	(1) Turn and Slip Fitted as Standard - See MM §1.2.11 Item #25 CAR 3 paragraph §3.700 (2) Position Lights	(3) Anti-collision Lights CAR 3 paragraph §3.705 (4) Instrument Lighting CAR 3 paragraph §3.696 - See MM §1.2.10.8
91.517 IFR	(1) Gyroscopic AH <i>Operational Requirements – To be complied with as appropriate</i> (2) Gyroscopic DI (3) Gyro Power Supply	(5) OAT <i>Operational Requirements – To be complied with as appropriate</i> (6) Time in hr/min/sec (7) ASI/Heated Pitot

	(4) Sensitive Altimeter		(8) Rate of Climb/Descent
91.519	IFR Communication and Navigation Equipment		<i>Operational Requirement – Compliance as appropriate</i>
91.523	(a) More Than 10 pax - First Aid Kits per Table 7 - Fire Extinguishers per Table 8		<i>To be determined if configured for ten passenger seats</i>
Emergency Eqpmt.	(b) More than 20 pax - Axe readily acceptable to crew		<i>To be determined if configured for ten passenger seats</i>
	(c) More than 61 pax - Portable Megaphones per Table 9		N/A – Less than 20 passenger seats.
91.529	ELT - TSO C91a after 1/4/97 (or replacement)		N/A – Less than 61 passenger seats.
91.531	Oxygen Indicators - Volume/Pressure/Delivery		<i>To be determined on an individual aircraft basis</i>
91.533	>30 min above FL100 - Supplemental for crew, 10% Pax - Therapeutic for 3% of Pax		Not fitted as standard
Unpress. A/c	Above FL100 - Supplemental for all Crew, Pax - Therapeutic for 1% of Pax - 120l PBE for each crew member		<i>Operational Requirement – To be complied with as appropriate</i>
91.541	SSR Transponder and Altitude Reporting Equipment		<i>Operational Requirement – Compliance as appropriate</i>
91.543	Altitude Alerting Device - Turbojet or Turbofan		N/A – Not turbojet or turbofan powered
91.545	Assigned Altitude Indicator		<i>Operational Requirement – Compliance as appropriate</i>
A.15	ELT Installation Requirements		<i>To be determined on an individual aircraft basis</i>

Civil Aviation Rules Part 135

Subpart F - Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
135.355	Seating and Restraints – Shoulder harness for flight-crew seats	<i>Required fit under NZCAR §91.505(4)(i)</i>
135.357	Additional Instruments (Powerplant and Propeller)	PC-6/B1-H2 has the instruments required by FAR 23.1305 Reversible prop blade angle is indicated by control lever position
135.359	Night Flight	Landing light, Pax compartment
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses
135.363	Emergency Equipment (Part 91.523 (a) and (b))	<i>To be determined if used for Air Transport operations</i>
135.367	Cockpit Voice Recorder	<i>To be determined on an individual aircraft basis</i>
135.369	Flight Data Recorder	Only applicable to 2-crew helicopters with more than 10 pax
135.371	Additional Attitude Indicator	N/A – Less than 10 passenger seats
		N/A – Not turbo jet or turbofan powered

Summary

Type Acceptance Certificate No. 1/21B/14 has been granted to the Pilatus PC-6/B1-H2 and all serial numbers are now eligible for the issue of a New Zealand Airworthiness Certificate in the Standard Category in accordance with CAR §21.191, subject to any outstanding operational requirements noted above being met.

Attachments

The following documents form attachments to this report:

- Photographs first-of-type example serial number 693 ZK-JMP
- Three-view drawing Pilatus Model PC-6/B1-H2 Turbo-Porter
- Copy of FOCA Type Certificate/ Type Certificate Data Sheet F 56-10

Sign off

David Gill
Team Leader Airworthiness

Date: 14 March 2001

