
Type Acceptance Report

TAR 13/21B/28 – Revision 2

PILATUS PC-12 Series

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Executive Summary

New Zealand Type Acceptance has been granted to the Pilatus PC-12 Series based on validation of EASA Type Certificate number A.089. Special requirements for import are detailed in Section 5.

Applicability is currently limited to the Models and/or serial numbers detailed in Section 2, which are now eligible for the issue of an Airworthiness Certificate in the Standard Category in accordance with NZCAR §21.191, subject to any outstanding New Zealand operational requirements being met. (See Section 5 of this report for a review of compliance of the basic type design with the operating Rules.) Additional variants or serial numbers approved under the foreign type certificate can become type accepted after supply of the applicable documentation, in accordance with the provisions of NZCAR §21.43(c).

NOTE: The information in this report was correct as at the date of issue. The report is generally only updated when an application is received to revise the Type Acceptance Certificate. For details on the current type certificate holder and any specific technical data, refer to the latest revision of the State-of-Design Type Certificate Data Sheet referenced herein.

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 13/21B/28 was granted in the Standard Category in accordance with NZCAR Part 21 Subpart B.

Specifically, the report aims to:

- (a) Specify the foreign type certificate and associated airworthiness design standard used for type acceptance of the model(s) in New Zealand; and
- (b) Identify any special conditions for import applicable to any model(s) covered by the Type Acceptance Certificate; and
- (c) Identify any additional requirements which must be complied with prior to the issue of a NZ Airworthiness Certificate or for any subsequent operations.

The report notes the status of all models included under the State-of-Design type certificate which have been granted type acceptance in New Zealand, which are listed in Section 2. The history of the Pilatus PC-12 Series type acceptance in New Zealand under type certificate EASA.A.089 is listed in Appendix 1.

2. Aircraft Certification Details

(a) State-of-Design Type and Production Certificates:

Manufacturer: Pilatus Aircraft Limited
Type Certificate: A.089
Issued by: European Union Aviation Safety Agency
Production Approval: CH.21G.0002

(b) Models Covered by the Part 21B Type Acceptance Certificate:

(i) **Model:** PC-12, PC-12/45, PC-12/47, PC-12/47E
MCTOW: 4100 kg (9039 lb.) – PC-12
4500 kg (9921 lb.) – PC-12/45
4740 kg (10450 lb.) – PC-12/47, PC-12/47E
Max. No. of Seats: 9 passenger seats plus pilots' seat(s)
Noise Standard: FAR Part 36 and ICAO Annex 16
Engine: PWC PT6A-67B – PC-12, PC-12/45, PC-12/47
PWC PT6A-67P – PC-12-47E
PWC PT6E-67XP – PC-12-47E MSN 1720 and 2001 and up
Type Certificate: E21
Issued by: Transport Canada
Propeller: HC-E4A-3D/E10477K/SK – PC-12, PC-12/45, PC-12/47
HC-E4A-3D/E10477SK – PC-12/47E
Type Certificate: P10NE
Issued by: Federal Aviation Administration
HC-E5A-3A/NC10245B – PC-12/47E MSN 1576-1944
HC-E5A-31A/NC10245B – PC-12/47E MSN 1720, 2001 up
Type Certificate: P20NE
Issued by: Federal Aviation Administration

3. Application Details and Background Information

The application for New Zealand type acceptance of the Pilatus PC-12 was from the manufacturer via the Australian agent dated 6 June 2013. The first-of-type was serial number 837 registered ZK-TIL. The Pilatus PC-12 is a single-engine pressurised turboprop-powered low-wing monoplane with retractable undercarriage. Maximum operating altitude is 30,000 ft and it is approved for Day and Night VFR and IFR operations, and flight into known icing conditions.

Type Acceptance Certificate Number 13/21B/28 was granted on 20 September 2013 to the PC-12 series based on validation of EASA Type Certificate A.089. As part of the type acceptance process a certification team from CAANZ carried out a validation visit to Pilatus Aircraft at Stans, Switzerland. Specific applicability is limited to the coverage provided by the operating documentation supplied. Special requirements for import into New Zealand are detailed in Section 5 and primarily consist of equipment required to meet the New Zealand operating Rules.

This report was raised to Revision 1 to clarify the oxygen equipment requirements under CAR paragraph §91.535.

Revision 2 of this report was issued to add the latest PC-12/47E serial number range 1720 and 2001 and up, which has an extensive range of modifications fitted as standard. This configuration is marketed as the PC-12 "NGX". The application was from the manufacturer and type acceptance was granted on 9 May 2023.

Type and Model History:

Pilatus initiated development of the all-new PC-12 in the late 1980's. Development was protracted and although certification was applied for in 1986 the prototype did not fly until 1991. Certification of the initial PC-12 model was completed in 1994. The next model was the PC-12/45 which featured a slight increase in maximum take-off weight, made possible without major change to the aircraft because the certification rules now allowed a higher stalling speed. The PC-12/45 was approved in 1996. The PC-12 can be converted to PC-12/45 by Service Bulletin 04-001, and most have been.

The next variant was the PC-12/47, featuring a further increase in maximum take-off weight. This was certificated in 2005 and was introduced into production from serial number 684. Changes were made to the roll control system, plus some aerodynamic improvements including modified wingtips, fairings, dorsal and ventral fins, and modifications to the crew and passenger seats. There is no retrofit available to convert earlier aircraft to this version. These three earlier models are collectively known as the PC-12 Legacy models.

The next production model, certificated in 2008, is the PC-12/47E which has the serial number range 545 and 1001 and up, and is marketed as the PC-12NG "Next Generation". Main differences are a new glass cockpit based on the Honeywell Primus APEX EFIS previously used in business jets, and a new PT6A-67 engine version which is uprated thermodynamically for increased allowable ITT temperature to increase climb and cruise performance. The 1200 shp flat rating is now continuous rather than for 5 minutes. Significant changes were also made to the power generation system, and the pressurisation and environmental control systems.

A number of improvements have been introduced during the course of production of the PC-12/47E. Electromechanical Landing Gear (eLDG) was introduced on MSN 1300, and MSN 1451 and up. The Hartzell five-bladed propeller with composite blades is fitted as standard on MSN 1576 and later.

The latest variant is the PC-12/47E serial number range 1720 and 2001 and up, which has the commercial name PC-12NGX. The principal changes are the installation of a Pratt and Whitney Canada PT6E-67XP engine with Electronic Engine Control (EEC), which also uses the Hartzell 5-Blade propeller; revised fuel system enabling the use of fuel without anti-icing additives; Primus APEX Build 12 or later software versions, which have additional functionality; new executive seats and larger cabin windows; and eLDG is fitted.

Applicability of STC's:

The certification basis under FAA Type Certificate A78EU and EASA Type Certificate A.089 are identical. Pilatus has confirmed the type design for each model is identical under both type certificates. Therefore in accordance with the provisions of CAR 21.503(a), FAA STC's and EASA STC's approved for the PC-12 series, are accepted as Acceptable Technical Data for New Zealand registered PC-12 series aircraft.

4. NZCAR §21.43 Data Requirements

The type data requirements of CAR Part 21B paragraph §21.43 have been satisfied by supply of the following:

(1) State-of-Design Type certificate:

EASA Type Certificate Number A.089

EASA Type Certificate Data Sheet number A.089 at Issue 09 dated 26 Nov 2019

- Model PC-12 approved March 30, 1994 (FOCA)
- Model PC-12/45 approved June 4, 1996 (FOCA)
- Model PC-12/47 approved December 14, 2005 (FOCA)
- Model PC-12/47E approved March 28, 2008

Note: Replaces Swiss FOCA Type Certificate Data Sheet F-56-30.

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the Pilatus Model PC-12 is FAR 23, Normal Category, including amendments 23-1 through 23-42, effective 4th February 1991. Pilatus elected to comply with three FAR Part 23 requirements at a later amendment level, as listed on the TCDS. There are ten special conditions and two Equivalent Safety Findings.

For the PC-12/45 and the PC-12/47 variants Pilatus added three additional FAR 23 requirements at a later amendment level, as listed on the TCDS. For the PC-12/47E variant Pilatus elected to comply with thirty-two additional FAR 23 requirements at a later amendment level, as listed on the TCDS. There are five additional Special Conditions, and three additional Equivalent Safety Findings.

For the major changes on PC-12/47E MSN 1720 and 2001 and up, which were classified as major significant, Pilatus upgraded the certification basis to FAR 23 at Amendment 62. EASA required the use of CS 23 at Amendment 4, except for two FAR 23 paragraphs for which there were no corresponding CS 23 provisions. Two Special Conditions were imposed related to the new engine installation and one Equivalent Safety Finding granted. Three previous special conditions were incorporated into the certification basis.

These are an acceptable certification basis in accordance with NZCAR Part 21B paragraph §21.41, because FAR 23 is the basic design standard for Normal Category Aircraft called up under CAR Part 21 Appendix C. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23. The CAA has reviewed and accepted all the Special Conditions and Equivalent Safety Findings.

(ii) *Special Conditions:*

All Models:

Issue Paper B-1 – FAR 23.49, 23.201 through 23.207 – Stall Identification and Recovery Characteristics – As the aircraft does not meet FAR 23 requirements for the natural stall, a stick shaker/pusher is installed. The justification for the difference between the aerodynamic stall and the stick pusher activation are presented.

Issue Paper C-1 – FAR 23.421 through 23.427 – Horizontal Tail Loads – Details the method to be used to calculate the horizontal tail loads for the T-tail design with a movable stabiliser.

Issue Paper C-2 – FAR 23.391 and 23.251 – Horizontal Tail Loads (Rocking Motions) – The T-tail can be subject to additional loads from wing or propeller wake during stalls.

Issue Paper C-3 – Dynamic Behaviour of the Landing Gear – Details additional consideration regarding the dynamic behaviour of the landing gear under certain operating conditions.

Issue Paper C-4 – FAR 23.561 – Seat Head Rest / Supporting Structure Aft facing Seats – Details the loads for seat headrests and supporting structure.

Issue Paper D-1 – FAR 23.657(c) – Hinges (Strength and Rigidity) – Applies the 23.393 limit loads parallel to the hinge line, to the strength and rigidity of hinges under 23.657(c).

Issue paper D-2 – FAR 23.783 and 23.807 – Doors and Exits – Details the method of verifying the positive locking of external doors which open outward.

Issue Paper D-3 – FAR 23 various – Composite Materials for Secondary Structure – Details the requirements for substantiating the material properties, static strength, lightning protection and quality control of composite materials used for the engine cowling.

Issue Paper E-2 – FAR 23.1193(c) – Composite Cowling (Toxics) – A fire or smoke detection device will be installed in the engine compartment so the pilot can isolate the cabin from the engine compartment in the event of an engine fire to prevent the ingestion of any toxic gases.

FAR 23.1309(e) – HIRF (FOCA CQF 98-02) – Details the proposed method of showing compliance for operation of electrical and electronic equipment in a specified HIRF environment.

PC-12/47E (MSN 545, 1001-1944 except 1720):

CRI F-03 – Human Factors Aspects of Flight Deck Design – The new Primus Apex digital electronic cockpit introduces additional human factors issues not adequately addressed by existing FAR 23 guidance material. Pilatus proposed a Human Factors Compliance Program which included a Human Factors Master Certification Plan based on FAA PS-ACE100-2001-004, Flight Deck philosophy, Systems Safety Assessment, Evaluation Teams, and a Flight Test Plan.

CRI B-03 – Steep Approaches – This CRI defines the airworthiness requirements and the Means of Compliance (MOC) for the approval of airworthiness aspects of steep approach capability up to a maximum 8°; (Any operational approval will be the responsibility of the aircraft operator). Pilatus was required to demonstrate compliance with technical requirements in the following areas: a. Structures; b. Flight handling characteristics; c. Performances; d. Icing; e. Systems (Autopilot, FD, Flaps, Brakes, Retardation, etc.) The CRI is intended to harmonise common steep approach requirements and includes guidance taken from: 1) EU OPS 1; 2) FAA AC 25-7A; 3) FOCA Technical Memo 270.00 SAL capability 27.01.2004.

CRI F-01 – FAR 23.1309, 23.1431 Protection from the Effects of HIRF – With the new Primus Apex digital electronic cockpit, the installation of electrical and electronic equipment whose failure would prevent continued safe flight must be assessed against the effects of exposure to a HIRF environment. Pilatus proposed a HIRF certification program based on the guidance of JAA INT/POL/23/1, Draft FAA Advisory Circular 20-1317 and EUROCAE ED-14D/RTCA DO-160D Change 3.

CRI F-02 – FAR 23.1309 Protection from the Indirect Effects of Lightning – The new Primus Apex digital electronic cockpit will include state-of-the-art electrical and electronic systems, which can be responsive to lightning induced transients. Existing guidance material such as AC 20-136 and AC 20-53A are not considered sufficient. Pilatus proposed using lightning protection developed to conform to the guidance of SAE ARP5413, SAE ARP5412. SAE ARP5414 and RTCA DO-160D change 3.

CRI F-09 – FAR 23.1301, 1309, 1357 – Integrated Modular Avionics – The new Primus Apex digital electronic cockpit introduces Integrated Modular Avionics. The CRI clarifies that the TSO C153 certification process can be applied based on FAA AC 20-145 and EUROCAE/RTCA Working Paper WP400 Revision K and addresses additional FOCA requirements to ensure compliance can be shown at the aircraft level.

PC-12/47E (MSN 1720 and 2001 and up):

CRI E-01 Turbine Engine Installation – Rain Ingestion – Due to a discrepancy between the aircraft and engine requirements this replaces §23.901(d)(2) for CS-23 Amdt 4 with (d) Each turbine engine installation must be constructed and arranged to – (2) Ensure the capability of the installed engine to withstand the ingestion of rain, hail, ice, and birds into the engine inlet is not less than the capability established for the engine itself under §23.903(a)(1).

CRI F-23 Auto Throttle (AT) – Due to a lack of requirements under Part 23 for an auto throttle this special condition imposed safety provisions based on CS §25.1329.

(iii) Equivalent Level of Safety Findings:

All Models:

FAR 23.841(b)(6) Pressure Cabin Warning Altitude (FOCA CQF 21-03) – At the maximum operating altitude of 30,000 ft, the cabin pressure altitude is controlled to 10,000 + 385 ft. Pilatus proposed to adjust the warning to 10,700 ft to account for the higher cabin altitude and switch tolerances, to prevent nuisance warnings. This was accepted by FOCA as the FAA commented in the preamble to FAR 23 Amdt 17 that 10,000 ft was more traditional than technical and the 10,700 ft warning would still give sufficient time for the crew to identify the problem and take any necessary action.

PC-12:

FAR 23.221(a)(2) Spin Resistance (FOCA CQF 91-03) – The PC-12 does not meet basic FAR 23 stall requirements and a stick pusher is fitted for satisfactory behaviour. A stick shaker and audio warning advise the pilot when the stall (stick push) is approached. As the aircraft is incapable of stalling, it is incapable of spinning. Pilatus proposed amending the 23.221 spinning requirements to: Demonstrate roll control at the stick pusher activation speed (while disconnected); apply spin promoting control deflections simultaneously with the stick pusher, and; discontinue the testing if the structural limitations were likely to be exceeded. FOCA accepted the proposal as the aircraft was demonstrated spin resistant with the stick pusher operative, and the reliability of the system exceeded the required value (see Issue Paper B-1).

PC-12/45, PC-12/47, PC-12/47E:

FAR 23.221(a)(2) Spin Resistance (FOCA CQF 91-04) – Pilatus proposed not demonstrating the pro-spin requirements of §23.221(a)(2)(ii) at the higher MTOW of 4500 kgs on the basis that tests at the increased weight under §23.221(a)(2)(i) and (iii) had shown no change in the stall characteristics or spin resistance. This was accepted by FOCA who required demonstration that the margin between aerodynamic stall and stick pusher was not reduced in production due to tolerances etc.

PC-12/47E

CRI F-10 – FAR 23.1357 Individual Circuit Protection with IMA System – With an integrated modular avionics system it is not possible to prevent one circuit protective device protecting more than one essential circuit. The PC-12 has one Modular Avionics Unit (MAU) with two channels, each channel being supplied power independently through two circuit breakers. An equivalent level of safety was agreed, by a basic system architecture of having an independent protected power supply to each MAU plus an automatic reversion to a secondary power supply, supported by a detailed systems failure analysis to show no single point of failure or common causes would lead to loss of essential functions.

CRI F-11 – FAR 23.1545 ASI Flaps Markings – The ASI readings in the Primus Apex is shown on the Primary Flight Display as a vertical tape with rolling digital indicator. The presentation and additional visual clues (including changing the color of the digital readout if an allowable speed is exceeded), provides an equivalent level of safety to the traditional markings of a conventional round indicator. FOCA accepted this, provided human factors evaluations showed no clutter of primary visual clues.

CRI F-12 FAR 23.1326 Probes OFF Caution – The Primus Apex digital cockpit uses the “dark and quiet cockpit” philosophy. Rather than using the FAA advisory material of having a placard or flight manual instruction on when to operate the pitot heat system, Pilatus proposed a system whereby the pitot heat warning is activated if the OAT is below 10°C and the pitot heat is switched off. This was accepted by FOCA provided the caution system was shown to be sufficiently reliable.

PC-12/47E (MSN 1720 and 2001 and up):

CRI E-03 Interconnected Fuel Tanks without Interconnected Tank Airspaces – It is acceptable to have no physical interconnection line, if compensating factors are met by design: Fuel flow from one tank to another one, due to a difference in pressure between the tanks potentially resulting in an imbalance, shall be prevented; A second vent source for each tank shall be installed; Introduction of air into the fuel feed line due to a single vent failure shall be prevented, if multiple tanks are interconnected.

(iv) Airworthiness Limitations:

Refer to Chapter 4 of the respective Aircraft Maintenance Manual. The basic airframe has a Structural Limitation of 20,000 hours or 27,000 landings (25,000 hours or 30,000 landings after SB 04-009), at which point Supplemental Structural Inspections (SSID) come into effect. The SSID have a Limit of Validity of 50,000 hours or 60,000 landings, except for the basic wing structure which has a Limit of Validity of 35,000 hours or 43,000 landings. Other individual component lives or limitations are detailed in Chapter 4.

(3) Aircraft Noise and Engine Emission Standards:*(i) Environmental Standard:*

The PC-12 and PC-12/45 have been certificated under FAR Part 34, (Fuel Venting/Emissions), effective September 10th, 1990, and FAR Part 36, including Amendments 36-1 through 36-20, effective September 11, 1992. (ICAO Annex 16, 2nd Edition, Amdt 3, effective Nov 17th, 1988. Volume 1, Part II, Chapter 10.)

The Pilatus PC-12/47 has been certificated under FAR Part 34, (Fuel Venting /Emissions), effective September 10th, 1990, and FAR Part 36 Appendix G including Amendments 36-1 through 36-27, effective June 9th, 2005. (ICAO Annex 16, 3rd Edition, Amdt 7, effective March 21st, 2002. Volume 1, Part II, Chapter 6 and 10.)

The PC-12/47E has been certificated under FAR Part 34, (Fuel Venting /Emissions), effective September 10th, 1990, and FAR Part 36 Appendix G including Amendments 36-1 through 36-28, effective January 4th, 2006. (ICAO Annex 16, 3rd Edition, Amdt 7, effective March 21st, 2002. Volume 1, Part II, Chapter 6 and 10.)

(ii) Compliance Listing:

EASA Type Certificate Data Sheet for Noise A.089, Issue 8, 21 October 2019.

Model:	EASA Record No:	Engine:	Propeller:	Take-off Noise:
PC-12	C3469	PT6A-67B	HC-E4A-3D	77.4 dB(A)
PC-12/45	C642	PT6A-67B	HC-E4A-3D	77.8 dB(A)
PC-12/47	C641	PT6A-67B	HC-E4A-3D	77.7 dB(A)
PC-12/47E	C5538	PT6A-67P	HC-E4A-3D	76.9 dB(A)
PC-12/47E	C12535	PT6A-67P	HC-E5A-3A	77.0 dB(A)
PC-12/47E	C14130	PT6E-67XP	HC-E5A-31A	77.0 dB(A)

(4) Certification Compliance Listing:

CRI A-01 Issue 06 – EASA Certification Basis for a Significant Major Change Approval – New Engine/Fuel System/APEX Build 12 – PC-12/47E

PC-12	Certification Compliance Summary	Doc No 12-01-10-001
PC-12/45	Certification Compliance Summary	Doc No 12-01-10-002
PC-12/47	Major Change Approval	PIL12/00/152
PC-12/47E	Certification Summary Report	ER-12-00-00-028
PC-12 (NGX)	Model 19 CS-23 Compliance Report	ER-12-001187

PC-12 (NGX) Certification Summary Model 19	ER-12-000657
Master Certification Program – EPECS Powerplant	ER-12-000749
Master Certification Program – Fuel System	ER-12-000453
Master Certification Program – APEX Build 12	ER-12-000738
Master Cert. Program – Cabin Window Modification	ER-12-000806
Master Cert. Program – Executive Passenger Seat	ER-12-000823
Certification Program – Model 19 HIRF & Lightning	ER-12-000767
Certification Program – Model 19 Human Factors	ER-12-000766

(5) Flight Manual: Pilot's Operating Handbook and FOCA Approved Airplane Flight Manual for the PC-12 and PC12/45, S/N 101 – 400 (except 321) Report PC-12 No 01973-001. (PC-12/45 data in AFMS No 8). CAA Accepted as AIR 3251

Pilot's Operating Handbook and EASA Approved Airplane Flight Manual for the PC-12 and PC-12/45, S/N 321, 401-683 (except 545), PC-12/47 S/N 684–888, Report PC-12/45 No. 02211. (PC-12 data in AFMS No 25. PC-12/47 data in AFMS No 33). CAA Accepted as AIR 3252

Pilot's Operating Handbook and EASA Approved Airplane Flight for the PC-12/47E S/N 545, 1001-1944, except 1720 – Report PC-12/47E No. 02277 Revision 6 or Higher. CAA Accepted as AIR 3253

Pilot's Operating Handbook and EASA Approved Airplane Flight for the PC-12/47E S/N 1720, 2001 and up – Report PC-12/47E No. 02406 Issue 2 Revision 00 or Higher. CAA Accepted as AIR 3511

(6) Operating Data for Aircraft:

(i) *Maintenance Manual:*

PC-12, PC-12/45, PC-12/47 Aircraft Maintenance Manual, Document No. 02049
PC-12/47E (MSN 545, 1001-1944) Maintenance Manual, Document No. 02300
PC-12/47E (MSN 1720, 2001 up) Maintenance Manual, Document No. 02436

(ii) *Current Service Information:*

PC-12, PC-12/45, PC-12/47 Wiring Diagram Manual, Document No. 02209
PC-12, PC-12/45, PC-12/47 Structural Repair Manual, Document No. 02050
PC-12, PC-12/45, PC-12/47 Tool and Equipment Manual, Document No. 02080
PC-12/47E Wiring Diagram Manual, Document No. 02328
PC-12/47E Structural Repair Manual (MSN 1001 and up), Document No. 02305
PC-12/47E Tool and Equipment Manual, Document No. 02306
PC-12/47E Fault Isolation Guide
PC-12 Service Bulletins (listed in Document No. 02086)
PC-12 Service Letters (listed in Document No. 02087)

(iii) Illustrated Parts Catalogue:

PC-12, PC-12/45, PC-12/47 Illustrated Parts Catalog, Document No. 02051
PC-12/47E Illustrated Parts Catalog, Document No. 02308

(7) Agreement from manufacturer to supply updates of data in (5), and (6):

Access provided to technical publications through the Pilatus website
www.pilatus-aircraft.com

(8) Other information:

PC-12/45 Quick Reference Handbook
PC-12/47 Quick Reference Handbook
PC-12/47E Quick Reference Handbook

Report ER 12-24-00-003 PC-12 FAR 23 Electrical Load Analysis
Report ER 12-24-00-004 PC-12 Legacy Electrical Load Analysis
Report ER 12-24-50-003 PC-12 NG Electrical Load Analysis
Report ER 12-000551 Appendix H PC-12 NGX Electrical Load Analysis

EASA Master MEL PC-12 Series – Document No. 02395

5. New Zealand Operational Rule Compliance

Compliance with the retrospective airworthiness requirements of NZCAR Part 26 has been assessed as they are a prerequisite for the grant of an airworthiness certificate.

CAR 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	Not Applicable – Agricultural Aircraft only

Compliance with the following additional NZ operating 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:

CAR Part 91 – Subpart F – Instrument and Equipment Requirements

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
91.505	Seating and Restraints – Safety belt/Shoulder Harness	FAR §23.785
91.507	Pax Information Signs – Smoking, safety belts fastened	Not Applicable – Less than 10 passenger seats
91.509 Min. VFR	(1) ASI (2) Machmeter (3) Altimeter (4) Magnetic Compass (5) Fuel Contents (6) Engine RPM (7) Oil Pressure	FAR §23.1303(a) Fitted as standard. See POH. FAR §23.1303(b) FAR §23.1303(c) FAR §23.1305(a) FAR §23.1305(d) FAR §23.1305(b)
91.511 Night	(1) Turn and Slip (2) Position Lights	Fitted as standard. See POH. Fitted as standard. See POH.
91.513	VFR Communication Equipment	VFR capable Equipment fitted as standard.
91.517 IFR	(1) Gyroscopic AH (2) Gyroscopic DI (3) Gyro Power Supply (4) Sensitive Altimeter	Fitted as standard. See POH. Fitted as standard. See POH. Fitted as standard. See POH. Fitted as standard. See POH.
91.519	IFR Communication and Navigation Equipment (c) RVSM Approval	Fitted as standard. See POH. All PC-12/47E with APEX EFIS are RVSM compliant. For NG see AFMS No 4; For NGX see AFM 02406. (FAA STC SA02233LA makes PC-12 Legacy models RVSM capable.)
91.523	Emergency Equipment: (a) More Than 9 pax – First Aid Kits per Table 7 – Fire Extinguishers per Table 8 (b) More than 20 pax – Axe readily accessible to crew (c) More than 61 pax – Portable Megaphones per Table 9	Not Applicable – Less than 10 passengers. Fire extinguisher fitted in cockpit as standard. See POH. Not Applicable – Less than 20 passengers. Not Applicable – Less than 61 passengers.
91.529	ELT - TSO C126 406 MHz after 22/11/2007	<i>To be determined on an individual aircraft basis</i>
91.531	Oxygen Indicators – Volume/Pressure/Delivery	Oxygen cylinder pressure indicator provided. Flow indicators on masks. Cabin altitude warning set at 10,500 +/- 200 ft. (Also re-sets to 14,200 +/- 200 ft in high-altitude mode.) Exemption 14/EXE/24 applies.
91.533	Oxygen requirements for unpressurised aircraft.	N/A – PC-12 is pressurised.
91.535	Oxygen for Pressurised Aircraft: (a) (1) Flight Crew Member On-Demand Mask; (2) Flight Attendant requirements. (3) Spare Oxygen Masks or Portable Oxygen for crew use. (4) Minimal Supplemental Oxygen Quantity (5) Specified Supplemental/Therapeutic oxygen quantity Above FL250 (1) Quick-Donning Crew On-Demand Mask (2) Supplemental O ₂ Masks for all Pax/Crew and Toilets (3) 15 Minutes Therapeutic Supply (c) Above FL300	Quick-don oxygen mask provided for both front seats. No flight attendant seat provided. <i>To be determined on an individual aircraft basis</i> – (Not fitted as standard. Mask in toilet would comply.) Minimum oxygen capacity of 896 litres required. Minimum oxygen capacity of 896 litres required. Quick-don oxygen mask provided for both front seats. Oxygen masks provided for all passenger seats. Mask is only optional in toilet for s/n up to 400. (DOES NOT COMPLY if not installed.) Main oxygen supply has sufficient capacity to include this. N/A – Maximum operating altitude is 30,000 ft.
91.541	SSR Transponder and Altitude Reporting Equipment	Mode C / Mode S transponder fitted as standard – See POH.
91.543	Altitude Alerting Device – Turbojet or Turbofan	N/A but fitted as standard to all models.
91.545	Assigned Altitude Indicator	N/A – Altitude Alert fitted as standard to all models.
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 crew seats	FAR §23.785
135.357	Additional Instruments (Powerplant and Propeller)	FAR §23.1305
135.359	Night Flight	Landing light and passenger compartment light standard.
135.361	IFR Operations	Speed, Alt, spare bulbs/fuses
		PC-12/47 and PC-12/47E comply. Earlier models require a second independent pitot-static system to be installed. No fuses. All instruments internally illuminated.
135.363	Emergency Equipment (Part 91.523 (a) and (b))	To be determined on an individual aircraft basis
135.367	Cockpit Voice Recorder	N/A – Only for 2-crew helicopters with more than 10 pax
135.369	Flight Data Recorder	Not Applicable – Less than 10 passenger seats
135.371	Additional Attitude Indicator	Not Applicable – Not turbo jet or turbofan powered

Civil Aviation Rules Part 125

Subpart F – Instrument and Equipment Requirements (SEIFR Operations)

PARA:	REQUIREMENT:	MEANS OF COMPLIANCE:
125.355	Seating and Restraints	FAR Part 25 §23.785. Certification basis includes 23.562.
125.357	Additional Instruments (Powerplant and Propeller)	FAR Part 25 §23.1305. CAWS indication of PROP LOW P.
125.359	Night Flight	Landing light and passenger compartment light standard.
125.361	IFR Operations	Speed, Alt, spare bulbs/fuses
		PC-12/47 and PC-12/47E comply. Earlier models require a second independent pitot-static system to be installed. No fuses. All instruments internally illuminated.
125.361	SEIFR Requirements (c) Emergency electrical system with 1 hour capacity (d)(1) Second electrical generating system (2) Additional attitude Indicator (3) IFR certificated Area Navigation System (4) Radar Altimeter (5) Landing light (6) Sufficient oxygen for cabin leak (7)(i) Automatic powerplant ignition system (ii) Magnetic particle detector with indication (iii) Emergency engine power control (iv) Engine fire warning system (e) Particle detection log	All models comply. Earlier models must have optional second battery installed. (1 hour battery capacity to be confirmed) Second Generator standard for all models (different ratings) Standard for all models. Standard fit for PC-12/47E. Optional for earlier models. Standard fit for PC-12/47 and PC-12/47E. SB 34-005 available to retrofit earlier aircraft without this option. Landing light standard fit for all models. Oxygen system sized to account for cabin leak situation. PT6A-67 has pilot-controlled ignition with indication. PT6A-67B has magnetic particle detection to reduction gearbox with indication. (In-flight caution s/n 231 and up. SB 31-005 activates in-flight for earlier aircraft.) PT6A-67P has additional detector on accessory gearbox. SB 79-005 adds to PT6A-67B. Engine manual override lever is standard on all models up to NGX. Fire warning system fitted as standard to all models. N/A – Detector must be removed for particle clearance.
125.363	Emergency Equipment (Part 91.523 (a) and (b))	To be determined on an individual aircraft basis
125.364	Protective Breathing Equipment	N/A – less than 20 passenger seats.
125.365	Public Address and Crew Member Intercom System	N/A – less than 10 passenger seats.
125.367	Cockpit Voice Recorder	N/A – certificated for single pilot operation.
125.369	Flight Data Recorder	N/A – applies to multi-engine aircraft.
125.371	Additional Attitude Indicator	N/A – applies to turbojet or turbofan aircraft.
125.373	Weather Radar	N/A – less than 5700 kg MTOW.
125.375	Ground Proximity Warning System	N/A – less than 5700 kg MTOW.
125.377	AEDRS (required for SEIFR)	Standard for PC-12 and PC-12/45, aircraft from s/n 401 on and all PC-12/47 and PC-12/47E. SB 77-001 can retrofit earlier MSN.
125.379	Terrain Awareness and Warning System (TAWS) (e)	TAWS Class B required.
125.381	Airborne Collision Avoidance System (ACAS II)	N/A – less than 5700 kg MTOW and less than 20 passengers.

NOTES: 1. A Design Rule reference in the Means of Compliance column indicates the Design Rule was directly equivalent to the CAR requirement, and compliance is achieved for the basic aircraft type design by certification against the original Design Rule.

2. The CAR Compliance Tables above were correct at the time of issue of the Type Acceptance Report. The Rules may have changed since that date and should be checked individually.

3. Some means of compliance above are specific to a particular model/configuration. Compliance with Part 91/119 operating requirements should be checked in each case, particularly oxygen system capacity and emergency equipment.

Summary of additional requirements for PC-12 series to operate in New Zealand (current as at September 2013):

For all aircraft:

1. The standard oxygen bottle of 581 litre capacity does not meet CAR Part 91.535 requirements. Pilatus calculations show a minimum of 896 litres is required. Additional oxygen capacity must be installed in accordance with acceptable technical data. (A 1965 litre bottle is available as a production option, but very few aircraft have been delivered in this configuration. Because of the change in location it is a very extensive retrofit and there is currently no factory modification available.)
2. For aircraft up to s/n 400, if the optional toilet is installed, the optional toilet oxygen mask must be installed (SB 35-003).
3. The number of oxygen masks installed must be one more than the number of seats.
4. An ELT meeting Part 91 specification and installation standards must be installed (eg SB 25-002 installs Kannad 406).

In addition, the following is required for Commercial or Air Transport operations:

For Air Transport Operations:

1. For IFR operations, PC-12 and PC-12/45 up to s/n 400 must have a second independent pitot-static system installed.
2. Emergency equipment meeting Part 135 requirements must be installed.

For SEIFR Operations:

1. PC-12 and PC-12/45 up to s/n 400 must have a second independent pitot-static system installed.
2. TAWS Class B must be installed.
3. Aircraft up to s/n 400 must have optional ECTM module fitted (SB 77-001).
4. Emergency equipment meeting Part 125 requirements must be installed.
5. PC-12 and PC-12/45 without the factory radar altimeter installation must have one installed in accordance with acceptable technical data. e.g. SB 34-005.
6. PC-12 and PC-12/45 up to s/n 230 must have SB 31-005 installed which activates the chip detector caution in flight.
7. PC-12, PC-12/45 and PC-12/47 must have SB 79-005 installed which adds a chip detector to the engine accessories gearbox.
8. PC-12, PC-12/45 and PC-12/47 must have the factory optional second battery installed.
9. PC-12, PC-12/45 and PC-12/47 must have an IFR certified area navigation system installed.
10. PC-12, PC-12/45 and PC-12/47 must have SB 24-020 installed which moves the RHS Landing Light CB from the non-essential bus to the battery bus.

Attachments

The following documents form attachments to this report:

Copy of EASA Type Certificate Data Sheet Number A.089

Sign off



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David Gill
Team Leader Aircraft Inspection



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Checked – Owen Olls
Airworthiness Inspector

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
PC-12, PC-12/45			
PC-12/47, PC-12/47E	Pilatus Aircraft Ltd	13/21B/28	20 September 2013
PC-12 “NGX”	Pilatus Aircraft Ltd	23/21B/6	9 May 2023

Appendix 2

Three-view drawing Pilatus PC-12:

