
Type Acceptance Report

TAR 23/21B/11 – Revision 0

Pratt & Whitney Canada PT6E-67XP

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Executive Summary

New Zealand Type Acceptance has been granted to the Pratt & Whitney Canada [PWC] PT6E-67XP turboprop engine based on validation of Canadian Department of Transport Type Certificate number E-21. There are no special requirements for import.

Applicability is limited to the Models and/or serial numbers detailed in Section 2, which are now eligible for installation on a NZ-registered aircraft. 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(b).

NOTE: The information in this report is correct as at the date of issue. The report is 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 State-of-Design Type Certificate Data Sheet.

1. Introduction

This report details the basis on which Type Acceptance Certificate No. 23/21B/11 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.

2. Product Certification Details

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

Manufacturer: Pratt & Whitney Canada Corporation

Type Certificate: E-21

Issued by: Transport Canada

Production Approval: 4-58

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

(i) Model: PT6E-67XP

3. Application Details and Background Information

The application for New Zealand type acceptance of the PT6E-67XP was from the manufacturer, PWC, dated 31 October 2022. The PT6E-67XP is a turboprop engine with dual-channel integrated electronic propeller and engine control system, developed for use on the Pilatus PC-12 NGX aircraft. The Validation request by PWC as stated in their request is in support of Validation of the Pilatus PC-12 NGX validation.

Type Acceptance Certificate No. 23/21B/11 was granted on 17 May 2023 to the Pratt & Whitney Canada PT6E-67XP based on validation of Transport Canada Type Certificate No. E-21. Specific applicability is limited to the coverage provided by the operating documentation supplied. There are no special requirements for import into New Zealand.

The PT6E-67XP is an evolutionary derivative of the PWC PT6A-67P and PT6A-67F with additional input from the PT6C-67A. It has been developed for use on the Pilatus PC-12 NGX aircraft and offers a 5000hr time between overhaul,

Specifically, the PT6E-67XP is a derivative of the PT6A-67P engine with the following:

- New Controls: Engine and Propeller Electronic Control System (EPECS)
- Auxiliary Gear Box modifications
- Turbines from other PT6 models

Additionally, the PT6E-67XP is a free turbine turbo-propeller propulsion engine incorporating a multi-stage compressor driven by a single-stage turbine and a two-stage free turbine driving the propeller shaft through planetary reduction gearing. The engine provides a certificated take-off and maximum continuous power rating of 1200 shaft horse power. The PT6E-67XP has an Engine and Propeller Electronic Control System and associated hardware which consists of the following:

- Dual Channel Engine Electronic Control (EEC) unit installed in a non-fire zone.
- Fuel Control Unit (FCU).
- Propeller Control Unit (PCU).
- Engine sensors and electrical hardware (refer to the IPC for the detailed list).
- Data Collection and Transmission Unit (DCTU).

4. NZCAR §21.43 Data Requirements

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

(1) State-of-Design Type certificate:

Transport Canada Type Certificate Number E-21

Transport Canada Type Certificate Data Sheet number E-21 at Revision 22 dated 31 January 2022

– Model PT6E-67XP approved 06 September 2019

(2) Airworthiness design requirements:

(i) *Airworthiness Design Standards:*

The certification basis of the PT6E-67XP is Canadian Aviation Regulations – Airworthiness Manual (AWM) Chapter 533, Aircraft Engines, Change 533-13. This is an acceptable certification basis in accordance with NZCAR Part 21B Para §21.41 and Advisory Circular 21-1A, as AWM Chapter 533, Change 533-13 is equivalent to United States Code of Federal Regulations Title 14 Chapter 1 Part 33 (14 CFR part 33) up to and including Amendment 33-33, 14 CFR part 33 is the basic standard for engines called up under Part 21 Appendix C and Advisory Circular 21-1. There are no non-compliances and no additional special conditions have been prescribed by the Director under §21.23.

(ii) *Special Conditions:*

Nil

(iii) *Equivalent Level of Safety Findings:*

Nil

(iv) *Airworthiness Limitations:*

Airworthiness Limitations are contained in the Airworthiness Limitations Section of the Maintenance Manual (P/N 3076392)

(3) Aircraft Noise and Engine Emission Standards:

(i) *Environmental Standard:*

The Model PT6E-67XP has been certificated in accordance with Subpart B of AWM Chapter 516 Aircraft Engine Emissions, Change 516-11, which refers to ICAO Annex 16 Amendment 7 to Volume II

(ii) *Compliance Listing:*

PWC Engineering Report ER 9484 – PT6E-67XP Smoke and Gaseous Emissions Test Report

(4) Certification Compliance Listing:

PWC Engineering Report No. 9332 PT6E-67XP Engine Civil Certification Compliance Plan and Record.

The Following referenced reports were submitted to CAA by request:

- PWC Engineering Report ER 9484 - PT6E-67XP Smoke and Gaseous Emissions Test Report
- PWC Engineering Report ER 9486 - PT6E-67XP System Safety Analysis Report
- PWC Engineering Report ER 9487 - PT6E-67XP Fire Protection Report
- PWC Engineering Report ER 9488 - PT6E-67XP Certification Endurance Report
- PWC Engineering Report ER 9489 - PT6E-67XP Containment Report
- PWC Engineering Report ER 9490 - PT6E-67XP Structural Analysis Report
- PWC Engineering Report ER 9494 - PT6E-67XP Low Cycle Fatigue Report
- PWC Engineering Report ER 9495 - PT6E-67XP Vibration Report
- PWC Engineering Report ER 9497 - PT6E-67XP Operation Test Report
- PWC Engineering Report ER 9498 - PT6E-67XP Fuel System Report
- PWC Engineering Report ER 9499+ - PT6E-67XP Induction System Icing Report
- PWC Engineering Report ER 9506 - PT6E-67XP Rain and Hail Ingestion Report
- PWC Engineering Report ER 9510 - PT6E-67XP Software Accomplishment Summary (SAS)
- PWC Engineering Report ER 9684 - PT6E-67XP Foreign Object Ingestion Report

(5) Flight Manual: Not Applicable

(6) Operating Data for Engine / Propeller:

(i) *Maintenance Manual:*

- Engine Maintenance Manual P/N 3076392
- Line Maintenance Manual P/N 3076102
- Overhaul Manual P/N 3076393

(ii) *Current service Information:*

Pratt and Whitney Customer Portal (: <https://customer.pwc.ca>)

(iii) *Illustrated Parts Catalogue:*

- Illustrated Part Catalogue P/N 3076394

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

CAA 2171 submitted 28 October 2022, updates will be provided via the Pratt and Whitney Customer portal.

Attachments

The following documents form attachments to this report:

Copy Transport Canada Type Certificate Number E-21

Copy of Transport Canada Type Certificate Data Sheet Number E-21 Rev 22

Sign off


17 May 2023

Rens Molenaar
Certification Engineer


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Checked – Glen Somerville
Certification Engineer

Appendix 1

List of Type Accepted Variants:

<i>Model:</i>	<i>Applicant:</i>	<i>CAA Work Request:</i>	<i>Date Granted:</i>
PT6E-67XP	Pratt &Whitney Canada	23/21B/11	Date of Sign Off