



AIRWORTHINESS DIRECTIVE

This Airworthiness Directive (AD) is issued pursuant to Canadian Aviation Regulation (CAR) 521.427. No person shall conduct a take-off or permit a take-off to be conducted in an aircraft that is in their legal custody and control, unless the requirements of CAR 605.84 pertaining to ADs are met. Standard 625 - Aircraft Equipment and Maintenance Standards Appendix H provides information concerning alternative means of compliance (AMOC) to ADs.

Number:

CF-2019-30R1

Effective Date:

31 December 2019

ATA:

72

Type Certificate:

E-6, E-15

Subject:

Compressor Turbine (CT) Blade Fracture due to Non-conforming CT Vane Installation

Revision:

Supersedes AD CF-2019-30, issued 19 August 2019.

Applicability:

Pratt & Whitney Canada (P&WC) model PT6A-34, -34B, -34AG, -114, and -114A engines.

Compliance:

As indicated below, unless already accomplished.

Background:

There have been several reported events of low time CT blade fractures resulting in power loss / In-flight shutdown (IFSD) on post P&WC Service Bulletin (SB) 1669 configured PT6A-114 engines, featuring new CMSX-6 CT blades. In addition, relatively low time failures of Non-P&WC CT blades have also been reported on PT6A-34 and -114 series engines.

In service data shows that these low time failures were reported on engines that had CT vanes installed that were repaired in accordance with repair specification number STI 72-50-254 held by Southwest Turbine Inc. (STI). Most of the affected engines are installed on single-engine powered aeroplanes and some events have resulted in the loss of the aeroplane and fatalities.

Dimensional checks and operational testing of the subject STI repaired CT vane removed from an incident engine, revealed that it did not conform to the engine manufacturer's CT vane type design criteria. The noted variations and features in the STI repaired CT vane can cause airflow distortion and subsequent aerofoil excitation of the CT blades resulting in High Cycle Fatigue (HCF) failure of the CT blades. Test data indicates that the stress levels induced in CT blades by the adverse effect of subject airflow distortion exceeds the design requirements for CMSX-6 CT blades.

An IFSD or loss of power on a single-engine powered aeroplane under certain conditions can lead to an unsafe condition as seen in some past events. AD CF-2019-30 was issued on 19 August 2019 to address the potential hazard of power loss / IFSD as a result of CT blade failures on engines with CT vanes installed that were repaired in accordance with repair specification number STI 72-50-254.

This AD revision, CF-2019-30R1, is issued to update the background information and to clarify the affected P&WC CT blade Part Numbers (P/Ns).

Corrective Actions:

1. Within 9 months or 250 hours air time, whichever occurs first, from 2 September 2019, the effective date of AD CF-2019-30, determine if a CT vane, repaired in accordance with repair specification number STI 72-50-254, is installed on the affected engine and replace it with a serviceable non-STI 72-50-254 repaired CT vane.

2. Within 9 months or 250 hours air time, whichever occurs first, from 2 September 2019, the effective date of AD CF-2019-30, replace and discard CMSX-6 CT blades that have been operated on any in-service engine that has the above-mentioned STI 72-50-254 repaired CT vane installed on it.

Note: CMSX-6 blade P/Ns include 3072791-01, 3072791-02 or 3079351-01.

3. As of 2 September 2019, the effective date of AD CF-2019-30, it is prohibited to install on affected engines any CT vane that is repaired in accordance with STI 72-50-254 repair specifications.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Rémy Knoerr
Chief, Continuing Airworthiness
Issued on 17 December 2019

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