



# AIRWORTHINESS DIRECTIVE

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*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-2019-30

**Effective Date:**

2 September 2019

**ATA:**

72

**Type Certificate:**

E-6, E-15

**Subject:**

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

**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 8 reported events of low time CT blade fractures resulting in power loss / In-flight shutdown (IFSD) on post P&WC Service Bulletin (SB) 1669 and SB 1767R3 and similarly configured engines, featuring new CMSX-6 CT blade installations. As most of the affected engines were installed on single-engine powered aeroplanes, these past events have resulted in the loss of the aeroplane and some fatalities.

In service data shows that all low time CMSX-6 CT blade failures occurred below 620 hours air time, and 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). 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 caused airflow distortion and subsequent aerofoil excitation of the CT blades that resulted in High Cycle Fatigue (HCF) failure of the 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. This AD is issued to address the potential hazard of power loss / IFSD as a result of CMSX-6 CT blade fracture failures on engines with non-type design conforming STI repaired CT vane installations.

**Corrective Actions:**

1. Within 9 months or 250 hours air time, whichever occurs first, from the effective date of this AD, 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 repaired CT vane.
2. Within 9 months or 250 hours air time, whichever occurs first, from the effective date of this AD, replace and discard any CMSX-6 CT blade that has been operating in service on an engine with an above-mentioned STI repaired CT vane installation.
3. As of the effective date of this AD, it is prohibited for anyone to allow the installation of an above-mentioned STI repaired CT vane on affected engines.

**Authorization:**

For the Minister of Transport,

*ORIGINAL SIGNED BY*

Matthew Weeks

Acting Chief, Continuing Airworthiness

Issued on 19 August 2019

**Contact:**

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