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) with ADs.

Number:

CF-2023-30

Effective Date:

22 May 2023

ATA:

72

Type Certificate:

E-33

Subject:

Engine – High Pressure Turbine (HPT) – 1st and 2nd -Stage Disks Suspected Material Defect

Applicability:

Pratt & Whitney Canada (P&WC) model PW307A and PW307D engines that have the HPT disks listed in Table 1, 2, 3 or 4 of this AD.

Compliance:

As indicated below, unless already accomplished.

Background:

On 18 March 2020, an Airbus model A321-231 aeroplane, powered by International Aero Engines AG (IAE) model V2533-A5 turbofan engines, experienced an uncontained HPT 1st-stage disk failure that resulted in an aborted takeoff. The uncontained failure of the HPT 1st-stage disk resulted in high-energy debris penetrating the engine cowling. Following this event, the Federal Aviation Administration (FAA) issued AD 2020-07-51 and other follow-on ADs to address the risk of uncontained failure on V2500 series engines. Pratt & Whitney (P&W) determined that failure of the IAE model V2533-A5 turbofan engine was due to an undetected subsurface material defect in an HPT disk that may affect the life of the part.

In collaboration with P&W, P&WC conducted an analysis and records review of PW307A and PW307D engines that contain parts made of similar material. The suspected HPT disk populations for PW307A and PW307D engines are identified with different levels of predicted risk from the suspected material defect. The suspected material defect could reduce the life of the part. This condition, if not corrected, could result in uncontained HPT disk failure, release of high-energy debris, and damage to the engine and aeroplane.

To address this unsafe condition, this AD requires the removal and replacement of affected HPT disks.

Corrective Actions:

For the purpose of this AD, the following definition applies:

SB 47256: P&WC Service Bulletin PW300-72-47256, Initial Release, dated 13 February 2023, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.

A. Before 31 January 2027, remove any affected HPT disk listed in Table 1 or Table 3 below and replace the affected HPT disk with a serviceable part, in accordance with the Accomplishment Instructions of SB 47256.

SUPERSEDED

Table 1 – PW307A Engine HPT Disks

HPT Disk Part Number	HPT Disk Serial Number
30P1881-01	A004D64Y
30P3211-01	A004D3DM
30P3211-01	A004D495
30P3211-01	A004DFP0
30P3182-01	A004DX10
30P3182-01	A004DAYL
30P3182-01	A004FMH8

Table 3 – PW307D Engine HPT Disks

HPT Disk Part Number	HPT Disk Serial Number
30P3182-01	A004CF1D
30P3211-01	A004CT74
30P3211-01	A004CHNK
30P3211-01	A004CHNR
30P3182-01	A004C9XM
30P3182-01	A004CF1T
30P3182-01	A004D8X2
30P3211-01	A004DFP2
30P3211-01	A004E216
30P3182-01	A004DBHX
30P3182-01	A004DNWK
30P3211-01	A004CHNM
30P3182-01	A004FMH6
30P3182-01	A004FFP3
30P3182-01	A004HM3A

B. At the next opportunity, when the affected engine is disassembled and access is available to the HPT disk, remove any affected HPT disk listed in Table 2 or Table 4 below and replace the affected HPT disk with a serviceable part, in accordance with the Accomplishment Instructions of SB 47256.

SUPERSEDED

Table 2 – PW307A Engine HPT Disks

HPT Disk Part Number	HPT Disk Serial Number
30P1881-01	A004MBNX
30P1881-01	A004CCH5
30P1881-01	A004MBNY
30P1881-01	A004CCFC
30P1881-01	A004D650
30P1881-01	A004FM52
30P1881-01	A004D653
30P1881-01	A004D652
30P3211-01	A004D3DN
30P3182-01	A004DBHT
30P3211-01	A004DB8E
30P3182-01	A004DAYN
30P3182-01	A004DAYP
30P3182-01	A004DN0L
30P3211-01	A004DN9A
30P3182-01	A004EFLH
30P3211-01	A004E214
30P3182-01	A004E9K4

Table 4 – PW307D Engine HPT Disks

HPT Disk Part Number	HPT Disk Serial Number
30P3182-01	A004DAYM
30P3211-01	A004D492
30P3182-01	A004DN0M
30P3211-01	A004CT78
30P3182-01	A004DBHW
30P3211-01	A004D493
30P3182-01	A004D298
30P3182-01	A004D049
30P3211-01	A004E215
30P3182-01	A004DN0K
30P3182-01	A004DX0W
30P3211-01	A004DB8C
30P3182-01	A004E9K7
30P3211-01	A004DN9D
30P3182-01	A004CF1E
30P3211-01	A004E55M
30P3182-01	A004DN0N
30P3182-01	A004DNWF
30P3211-01	A004FTM3
30P3182-01	A004DNWH
30P3182-01	A004HM39
30P3182-01	A004K22F
30P3182-01	A004FFP5

SUPERSEDED

C. As of the effective date of this AD, the affected HPT disks with both part number and serial number listed in Table 1, 2, 3 or 4 are not eligible for reinstallation on engines.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Jenny Young
Chief, Continuing Airworthiness
Issued on 8 May 2023

Contact:

Zhiwei Wang, Continuing Airworthiness, Ottawa, telephone 888-663-3639, facsimile 613-996-9178 or e-mail TC.AirworthinessDirectives-Consignesdenavigabilite.TC@tc.gc.ca or any Transport Canada Centre.

SUPERSEDED