



No.	CF-2002-47	1/2
Issue Date	18 November 2002	

AIRWORTHINESS DIRECTIVE

The following airworthiness directive (AD) may be applicable to an aircraft which our records indicate is registered in your name. ADs are issued pursuant to **Canadian Aviation Regulation (CAR) 593**. Pursuant to **CAR 605.84** and the further details of **CAR Standard 625, Appendix H**, the continuing airworthiness of a Canadian registered aircraft is contingent upon compliance with all applicable ADs. Failure to comply with the requirements of an AD may invalidate the flight authorization of the aircraft. Alternative means of compliance shall be applied for in accordance with **CAR 605.84** and the above-referenced **Standard**.

This AD has been issued by the Continuing Airworthiness Division (AARDG), Aircraft Certification Branch, Transport Canada, Ottawa, telephone (613) 952-4357.

Number: CF-2002-47

Subject: PT6A Engine Series – Inspection of Turbine Exhaust Duct

Effective: 30 December 2002

Supersedes: This directive supersedes Airworthiness Directive CF-98-41 dated 26 November 1998.

Applicability: All Pratt & Whitney Canada (P&WC) PT6A-6, PT6A-6A, PT6A-6B, PT6A-11, PT6A-11AG, PT6A-15AG, PT6A-20, PT6A-20A, PT6A-20B, PT6A-21, PT6A-25, PT6A-25A, PT6A-25C, PT6A-27, PT6A-28, PT6A-34, PT6A-34AG, PT6A-34B, PT6A-36, PT6A-110, PT6A-112, PT6A-135, PT6A-135A engines

Compliance: As detailed below, unless already accomplished in accordance with Airworthiness Directive CF-98-41.

Engines that are in full compliance with P&WC Service Bulletins (SBs) 1610, 1610R1 or 12173 are deemed to be in compliance with this directive.

Background: On 26 November 1998, Transport Canada issued Airworthiness Directive (AD) CF-98-41 to inspect PT6A series engine turbine exhaust ducts to determine if the inner duct had been repaired by Standard Aero Limited (SAL), Winnipeg, Canada using a sub-standard gas tungsten arc welding (GTAW) process instead of the resistance (seam or stitch) weld process specified by P&WC. Improper weld repairs of the turbine exhaust duct can result in cracks, and could lead to an engine Reduction Gear Box (RGB) separation, and/or de-coupling of the Power Turbine shaft which could in turn result in the release of turbine blades.

It has been subsequently confirmed that unacceptable quality weld repairs were performed by additional organizations; therefore, this AD has been revised to include additional PT6A engines that could have been subject to weld repairs, which are not in accordance with approved P&WC procedures.

P&WC has issued SB 1610 and 12173 to provide the instructions to perform an inspection of the exhaust duct to determine the quality of the welds and the presence of cracks.

Corrective Actions: Within 150 flight hours, or at the next engine shop visit, whichever occurs first after the effective date of this directive:

- A. Review the engine log book. If the engine has not yet been overhauled, and if the turbine exhaust ducts have not yet been subject to a shop visit for repair, no further action is required by this directive.

- B. Inspect the turbine exhaust ducts to look for inferior welds in accordance with P&WC SB 1610 R2 dated 1 October 2002 for PT6A-6, PT6A-6A, PT6A-6B, PT6A-20, PT6A-20A, PT6A-20B, PT6A-21, PT6A-25, PT6A-25A, PT6A-25C, PT6A-27, PT6A-28, PT6A-34, PT6A-34AG, PT6A-34B, PT6A-36, PT6A-135, PT6A-135A engines, or SB 12173 R1 dated 19 July 2002 for PT6A-11, PT6A-11AG, PT6A-15AG, PT6A-110, and PT6A-112 engines, or later revisions approved by the Chief, Continuing Airworthiness, Transport Canada.
1. If the welds are found acceptable as specified in the applicable SB referenced in paragraph B above, perform an internal examination of the weld at the next overhaul. For instructions on how to carry out the internal examination of the weld, refer to the applicable engine overhaul manual. Once this internal examination is satisfactorily completed, no further action is required by this directive.
 2. If the welds are not found to be acceptable as specified in the applicable SB referenced in paragraph B above, inspect the exhaust ducts in accordance with the following instructions:
 - (a) Using 5X magnification, visually inspect the forward area of the exhaust duct from the propeller reduction gearbox mounting flange to a location 2 inches aft, for any cracks around the entire circumference of the duct. If no cracks are found, the exhaust duct may remain in service, with a repeat of this inspection at intervals not to exceed 150 hours air time.
 - (b) If any cracks are found, the following limitations shall be applied to assess the suitability for continued service, and repeat the inspection outlined in paragraph 2 (a) above at intervals not to exceed 25 hours air time:
 - (i) There are no more than 3 cracks;
 - (ii) The total length of all cracks does not exceed 2 inches;
 - (iii) No one crack exceeds a length of 1 inch;
 - (iv) When there are 2 or 3 cracks, they must be separated by a minimum of 6X the length of the longest crack or 3 inches, whichever is greater; and,
 - (v) The growth rate of any crack does not exceed 0.015 inch/hour of operation.
 3. Exhaust ducts that exhibit cracks exceeding any one of the limitations stated in paragraph 2 (b) above must be replaced with a serviceable exhaust duct before further flight.
 4. Removal of an exhaust duct that has unacceptable quality welds, and replacing it with an exhaust duct that has acceptable welds as per paragraph 1 above, constitutes terminating action to this directive.

Authorization: For Minister of Transport



B. Goyaniuk
Chief, Continuing Airworthiness

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