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CIVIL AVIATION DEPARTMENT
MINISTRY OF TRANSPORT AND CIVIL AVIATION
Male'
Republic of Maldives

AIRWORTHINESS DIRECTIVE

No. CAD/PT6A/1
Dec. 17, 2002

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, PTA-112, PT6A-135, PT6A-135A engines

SUBJECT

PT6A Engine Series – Inspection of Turbine Exhaust Duct

REFERENCE

Transport Canada – Airworthiness Directive No. CF-2002-47 issued on November 18, 2002

REASONS

Transport Canada issued an Airworthiness Directive CF-98-41 on November 26, 2002 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 repair 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 1273 to provide the instructions to perform an inspection of the exhaust duct to determine the quality of the welds and the presence of cracks.



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ACTION

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 logbook. 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 ducts to look for the inferior welds in accordance with P&WC SB 1610 R2 dated October 1, 2002 or later revisions approved by Transport Canada for PT6A-20, PT6A-27 and PT6A-34 engines.
 - 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 instruction 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, this directive requires no further action.
 - 2. If the welds are found to be acceptable as specified in the applicable SB reference 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 found 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 interval 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 the 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;



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- (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, which ever 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 paragraph 1 above, constitutes terminating action to this directive.

COMPLIANCE

As detailed above, unless accomplished in accordance with Airworthiness Directive (AD) CF-98-41.

EFFECTIVITY

This Directive becomes effective from December 30, 2002.

Mahmood Razee
DIRECTOR GENERAL OF CIVIL AVIATION