Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

PT6A Series Engines - Modular Maintenance Concept

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1. Effectivity

All owners, registered operators, maintenance organisations and Licenced Aircraft Maintenance Engineers involved in the repair and overhaul of Pratt and Whitney Canada (P&WC) PT6A engines.

2. Purpose

This Airworthiness Bulletin (AWB) addresses this Authority's policy for the control of PT6A engines maintained in-service by replacement of modules.

3. Background

Certain PT6A model engines e.g. PT6A-45 were certificated by Transport Canada as modular concept and for maintenance purposes may be controlled as modules, with each module having its own log book. However, other PT6A models e.g. PT6A-41 were not certificated as modular concept and for maintenance purposes, are to be controlled in service as engines. P&WC service documents for engines such as the PT6A-41 do not include procedures for controlling in-service maintenance by replacement of modules.

Advice received from P&WC indicates that whilst some PT6A model engines are not certificated as modular concept, the principles and procedures for modular concept in-service maintenance can apply, subject to approval of the operators local Airworthiness Authority.

The modular concept is based on the fact that certain portions of the engine need inspection/repair more often than others. Separating the engine into modules allows each module to be repaired or overhauled when necessary.

4. Definitions

The design of the PT6A engine allows it to be split into major assemblies or modules. Each module is treated as a separate entity with documentation maintained in an identical manner to that of a complete engine. An engine consists of two modules which for the purpose of this AWB are defined as;

Power Section Module (PSM) - The PSM includes; the power turbine disk and blade assemblies, power turbine stator assembly (except for the power turbine vane ring), exhaust duct, reduction gear box assembly and the external hardware attached to this portion of the engine.

Gas Generator Module (GGM) - The GGM includes; the accessory gearbox assembly, oil tank assembly, compressor inlet case assembly, gas generator case assembly, compressor rotor assembly, combustion chamber liner assembly, compressor turbine vane ring / shroud housing / inner and outer exit ducts assembly, compressor turbine disk and blade assembly, power turbine vane ring and the external hardware attached to this portion of the engine.

NOTE:

1. The power turbine vane ring is removed from the PSM and must remain as a matched component of the GGM. This is to maintain vane throat area match between compressor turbine and power turbine vanes, which can affect operating parameters of the engine if altered.
2. The power turbine vane ring and GGM forms the basis of a complete engine for future assembly to a PSM.

5. Recommendations

A. PT6A models, certificated as modular concept and having reference to procedures for establishing module operating time between overhaul and hot section inspection frequency detailed in an applicable P&WC Service Bulletin, shall be subject to the procedures and maintenance periods listed in those Service Bulletins, or as agreed by this Authority.

B. PT6A models, not certificated as modular concept and not having any reference to modular maintenance in an applicable P&WC Service Bulletin, are subject to fixed TBO periods and HSI requirements as detailed in the applicable P&WC Service Bulletin, or as agreed by this Authority.

These engines however, may be maintained in-service by replacement of the PSM, subject to:

1. The GGM shall be considered to be the engine. Replacement of the GGM shall be considered to be replacement of the engine.
2. The engine shall assume the serial number of the GGM.
3. The PSM shall be identified with the serial number of the original engine GGM, with a ‘PS’ prefix, or a -100 suffix.
4. To maintain engine class and trim, the power turbine vane ring must remain as a matched component of the GGM. Record power turbine stator assembly removal in PSM and GGM documents.
5. Control of each module shall be by a separate log book, or by a Major Assembly History Card following the issue of the new Aircraft Log Book.

6. Each log book, or Major Assembly History Card, shall contain the service history of life limited components fitted to that module, and all maintenance carried out on that module.
7. Each module shall be overhauled at periods listed in the applicable P&WC Service Bulletin, or as agreed by this Authority.
8. Following overhaul or repair, the gas generator module shall be tested as a complete engine in accordance with procedures detailed in the applicable Pratt and Whitney Canada Overhaul Manual.
9. Following overhaul, pre-SB 1404 PSM's shall be tested as a complete engine in accordance with procedures detailed in the applicable Pratt and Whitney Canada Overhaul Manual. Post-SB 1404 PSM's shall be tested as a complete engine on-wing IAW PWC Maintenance Manual Procedures.
10. Repair or replacement of a PSM in-service, shall require an on-wing performance check to be carried out in accordance with procedures detailed in the applicable PWC Maintenance Manual.

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletin should be made via the direct link e-mail address:

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or in writing, to:

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