AIRWORTHINESS DIRECTIVE

On the effective date specified below, and for the reasons set out in the background section, the CASA delegate whose signature appears below revokes Airworthiness Directive (AD) AD/ENG/5 Amdt 8 and issues the following AD under subregulation 39.1 (1) of CASR 1998. The AD requires that the action set out in the requirement section (being action that the delegate considers necessary to correct the unsafe condition) be taken in relation to the aircraft or aeronautical product mentioned in the applicability section: (a) in the circumstances mentioned in the requirement section; and (b) in accordance with the instructions set out in the requirement section; and (c) at the time mentioned in the compliance section.

Engines - General

AD/ENG/5 Amdt 9 — Turbine Engine Continuing Airworthiness Requirements — 10/2004

Applicability: All turbine engines; other than engines installed in:

1. Aircraft administered by an approved sports aviation body; and
2. Aircraft issued with a limited category certificate of airworthiness under regulation 21.189 of the CASR; and
3. Aircraft issued with an experimental certificate under regulation 21.195A of the CASR.

Requirement: 1. **OVERHAUL/INSPECTION PERIODS FOR TURBINE ENGINES**

1.1 Turbine engines shall be overhauled or inspected at periods not exceeding:

(a) As specifically detailed in Requirements 1.2, 1.3 and 1.4 of this Directive; or

(b) At the recommended hours in service published by the engine manufacturer; or

(c) As detailed in an approved system of maintenance.

1.2 Honeywell TPE331 series engines:

(a) Honeywell TPE331 series engines shall be overhauled at periods as listed in, and subject to the requirements of, the appropriate Honeywell Service Bulletins detailing TPE331 series engine time between overhaul (TBO) intervals and requirements. For the purpose of this Directive, annual utilisation, or type of operation, are not requisites to establish a TBO period for Honeywell TPE331-1, -2, -3, -5, -6, -8, -10, -11, -12 series engines; or

(b) Inspected in accordance with, and subject to the requirements of, a Honeywell published Continuous Airworthiness Maintenance Operation (CAM) program applicable to the engine model. For the purpose of this Directive, annual utilisation, or type of operation, are not requisites to establish a TBO period for Honeywell TPE331-1, -2, -3, -5, -6, -8, -10, -11, -12 series engines; or

(c) As detailed in an approved system of maintenance.

Engines - General

AD/ENG/5 Amdt 9 (continued)

1.3 Pratt and Whitney Canada PT6A series engines other than PT6A engines installed in aircraft conducting aerial agricultural operations or fire fighting operations:

(a) PT6A series engines shall be overhauled at periods as listed in, and subject to the requirements of, the appropriate Pratt and Whitney Canada Service Bulletin detailing Pratt and Whitney Canada PT6A operating time between overhaul and hot section inspection frequency; or

(b) At periods not to exceed 5,000 hours time in service, subject to compliance with the maintenance requirements detailed in Appendix A of this Directive; or

(c) As detailed in an approved system of maintenance.

1.4 Pratt and Whitney Canada PT6A series engines installed in aircraft conducting aerial agricultural operations or fire fighting operations:

(a) PT6A series engines shall be overhauled at periods as listed in, and subject to the requirements of, the appropriate Pratt and Whitney Canada Service Bulletin detailing Pratt and Whitney Canada PT6A operating time between overhaul and hot section inspection frequency; or

(b) In accordance with an engine on-condition program having regard to that detailed in Appendix B of this Directive; or

(c) As detailed in an approved system of maintenance.

Compliance: Not later than 1 January 2005.

This Amendment becomes effective on 30 September 2004.

Background: This Directive is issued to require turbine engines to be overhauled or inspected at specified intervals. The Directive addresses the engine certification requirement to publish instructions for the continued airworthiness of a type-certificated engine. In addition to listing the manufacturer's published TBO or inspection periods, the Directive also provides unique CASA initiated options for certain turbine engines.

Engines - General

AD/ENG/5 Amdt 9 (continued)

This amendment deletes the previous requirement for repair and overhaul of turbine engines because these requirements are already reflected in the regulations. This amendment also provides an option to use PWC's WebECTM option to conduct engine condition trend monitoring.

Gary J Carr
Delegate of the Civil Aviation Safety Authority

19 August 2004

The above AD is notified in the *Commonwealth of Australia Gazette* on 8 September 2004.

AD/ENG/5 Amdt 9 PT6A Enhanced Maintenance Program Appendix A

REQUIREMENTS

The PT6A engine maintenance program shall be carried out in accordance with approved maintenance data and detailed in a system of maintenance approved under Civil Aviation Regulation (CAR 1988) 42M. The system of maintenance shall include, but need not be limited to, the following requirements.

1. PT6A engines not previously maintained in accordance with a maintenance program reflecting the intent of the maintenance requirements detailed in this Appendix and with engine hours in service greater than 75% of the Pratt and Whitney Canada published Time Between Overhaul (TBO) period at the time of introduction, shall be subject to a pro-rata TBO period based on the Pratt and Whitney Canada published TBO period; and

2. The engine shall be on an Engine Condition Trend Monitoring (ECTM) program, including data collection, analysis and follow up actions. This program shall be in accordance with the Pratt and Whitney Canada ECTM Users Guide and Reference Manual (PWC P/N 3031900) or WebECTM per PWC SIL PT6A-122 and include requirements for qualification and training for personnel conducting ECTM; and

3. Hot section inspections shall be carried out at intervals not to exceed:

   (a) 1250 hours time in service; or

   (b) 1760 hours time in service subject to a boroscope inspection of the engine hot section for evidence of cracks, distortion, burning and coating loss at intervals not to exceed 610 hours time in service; and

4. All fuel nozzles shall be cleaned and flow checked at intervals not to exceed 460 hours time in service; and

5. The engine oil filter element shall be inspected for contamination at intervals not to exceed 220 hours time in service; and

6. The reduction gearbox chip detector shall be inspected for contamination, or continuity, at intervals not to exceed 220 hours time in service; and

7. Engines with an annual utilisation of less than 500 hours per annum, an engine oil change shall be carried out at intervals not to exceed 12 calendar months time in service; and

8. An inspection of the 1st stage compressor for evidence of Foreign Object damage (FOD), corrosion and contamination shall be carried out at intervals not to exceed 220 hours time in service; and

Engines - General

AD/ENG/5 Amdt 9 (continued)

9. A compressor power recovery wash shall be carried out in response to trend monitoring parameter deviations, or at intervals not to exceed 220 hours time in service, or 3 calendar months, whichever occurs first; and

10. All life limited components shall be replaced at engine manufacturer's published life limits per AD/ENG/7; and

11. Critical components shall be inspected at intervals specified by the engine manufacturer; and

12. TBO of accessories shall be per the recommendations of Pratt and Whitney Canada.

13. The maintenance program shall be reviewed and revised as required at periods not to exceed 2 years taking into consideration all major defects and defects that affect engine durability. Outcome of the review shall be reported to CASA after each review under Major Defect Report (MDR) / Service Difficulty Report (SDR) system referring to AD/ENG/5.

AD/ENG/5 Amdt 9 — PT6A Agricultural Operations On-Condition Maintenance Program — Appendix B

REQUIREMENTS

The PT6A engine on-condition maintenance program shall be carried out in accordance with approved maintenance data and detailed in a system of maintenance approved under Civil Aviation Regulation (1988) 42M. The system of maintenance shall include, but need not be limited to, the following requirements:

1. The engine shall be on an Engine Condition Trend Monitoring (ECTM) program, including, data collection, analysis and follow up actions, qualification and training of personnel. This program shall be in accordance with the Pratt and Whitney Canada ECTM Users Guide and Reference Manual (PWC P/N 3031900) or WebECTM per PWC SIL PT6A-122 and include requirements for qualification and training for personnel conducting ECTM; and

2. Hot section inspections shall be carried out at intervals not to exceed 1510 hours time in service; and

3. All fuel nozzles shall be cleaned and flow checked at intervals not to exceed 460 hours time in service; and

4. The engine oil filter element shall be inspected for contamination at intervals not to exceed 220 hours time in service; and

5. The reduction gearbox chip detector shall be inspected for contamination, or continuity, at intervals not to exceed 220 hours time in service; and

6. Engines with an annual utilisation of less than 500 hours per annum, an engine oil change shall be carried out at intervals not to exceed 12 calendar months time in service; and

7. Engines not incorporating an engine air intake positive barrier air filter, an inspection of the 1st stage compressor for evidence of Foreign Object Damage (FOD), corrosion and contamination shall be carried out at intervals not to exceed 220 hours time in service; and

8. All life limited components shall be replaced at the engine manufacturer’s published life limits per AD/ENG/7; and

9. Critical components shall be inspected at intervals specified by Pratt and Whitney Canada; and

10. Engine work-scope during engine shop visits shall have regard to the recommendations of Pratt and Whitney Canada, including minimum modification standards for engine durability; and

11. TBO of accessories shall have regard to the recommendations of Pratt and Whitney Canada.

Engines - General

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12. The on-condition program shall be reviewed and revised as required at periods not to exceed 2 years taking into consideration all major defects and defects that affect engine durability. Outcome of the review shall be reported to CASA after each review under Major Defect Report (MDR) / Service difficulty Report (SDR) system referring to AD/ENG/5.