PRATT & WHITNEY CANADA

SERVICE BULLETIN

P&WC S.B. No. 13303R20

BULLETIN INDEX LOCATOR

TURBOPROP ENGINE
OPERATING TIME BETWEEN OVERHAULS AND HOT SECTION INSPECTION FREQUENCY

MODEL APPLICATION

PT6A-52, PT6A-60A, PT6A-61, PT6A-62

Compliance: Refer to Para. 1.E. in the Service Bulletin

Summary: This Service Bulletin (SB) provides a recommended basic operating Time Between Overhauls (TBO) and specifies a recommended initial Hot Section Inspection (HSI) frequency. P&WC turbine engines are required to undergo periodic inspection in accordance with a pre-established schedule in order to ensure serviceability. The TBO and HSI intervals represent the two major scheduled inspections, and are defined in this SB. This SB also provides TBO extension procedures for operators with an average utilization higher than 300 hours/year. The technical content of this SB has been reviewed by and is acceptable to Transport Canada.

Mar 30/1983
Revision No. 20: Feb 28/2024

PT6A-72-13303
Cover Sheet

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Pratt & Whitney Canada Corp.
1000, Marie-Victorin
Longueuil, Québec, Canada J4G 1A1
Tél. 450-677-9411

Pratt & Whitney Canada
A United Technologies Company

28 February 2024

P&WC S.B. No. 13303R20

REVISION TRANSMITTAL SHEET
TURBOPROP ENGINE MODEL PT6A

SUBJECT: Pratt & Whitney Canada Service Bulletin No. PT6A-72-13303, Rev. No. 20, dated Feb 28/2024 (P&WC S.B. No. 13303R20) OPERATING TIME BETWEEN OVERHAULS AND HOT SECTION INSPECTION FREQUENCY

Replace your existing copy of this service bulletin with the attached revised bulletin. Destroy the superseded copy.

Please retain this Revision Transmittal Sheet with the revised bulletin.

SUMMARY: This revision is issued to:

- have SPARK TBO extensions project, and
- add 4,500 hours limit for the Prop Shaft.

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EFFECT OF REVISION ON PRIOR ACCOMPLISHMENT:

None.

NOTE: A black bar in the left margin indicates a change in that line of text or figure.

REVISION HISTORY:

Original Issue: Mar 30/1983
Revision No. 1: Feb 15/1984
Revision No. 2: Aug 07/1985
Revision No. 3: Aug 10/1990
Revision No. 4: Nov 06/1995
Revision No. 5: Nov 29/1995
Revision No. 6: Jul 08/1997
Revision No. 7: Jul 30/1998
Revision No. 8: Feb 04/1999
Revision No. 9: May 07/2002
Revision No. 10: Jul 11/2007
Revision No. 11: Nov 14/2007
Revision No. 12: Oct 12/2012
Revision No. 13: Dec 21/2012
Revision No. 14: May 10/2013
Revision No. 15: Sep 09/2014
Revision No. 16: Nov 10/2014
Revision No. 17: Dec 14/2015
Revision No. 18: Feb 18/2020
Revision No. 19: Mar 16/2020
Revision No. 20: Feb 28/2024

PRATT & WHITNEY CANADA

SERVICE BULLETIN

P&WC S.B. No. 13303R20

TURBOPROP ENGINE
OPERATING TIME BETWEEN OVERHAULS AND HOT SECTION INSPECTION FREQUENCY

1. Planning Information

A. Effectivity

PT6A-52 Engines.
PT6A-60A Engines.
PT6A-61 Engines.
PT6A-62 Engines.

B. Concurrent Requirements

None.

C. Reason

This service bulletin:

- Provides a recommended basic operating TBO;
- Specifies a recommended initial HSI frequency; and
- Describes the TBO extension/evaluation process.

D. Description

(1) Definitions:

- The Basic Industry TBO is the Pratt & Whitney Canada Corp. recommended TBO per this service bulletin which is applicable to all operators.
- The Fleet TBO is the TBO level which individual operators have attained for engines of the same model in their possession only.
- The Fleet TBO Read-Across Harmonization is the extension of the Fleet TBO of engines operated under different SBs in a mixed engine fleet. A fleet TBO read-across harmonization is applicable only for engines in the operator's possession.
- The Engine TBO is the TBO applicable to a specific engine per the Industry TBO or Fleet TBO or a recommended TBO by P&WC for a particular set of conditions.
- The term "hours" in this document is the Engine Flight Hours (EFH).
- My P&WC Power is the Online customer service portal and is the tool used to submit TBO application requests and Annual Reports to P&WC.

(2) TBO recommendations take into consideration the average effect of the many variables affecting overhaul life, such as:

- Average flight duration;
- Percentage of time at any given power level;

P&WC No. DCR4515, DCR20299, DCR21012, DCR22157, DCR27978, DCR29117, DCR31534, EC-00013414, EC-0013739, EC-0079940, ETI-0082942

1. Planning Information (Cont'd)

- Climatic conditions and environment;
- Maintenance practices;
- Utilization; and
- Engine modification standards.

(3) Under extreme conditions of very low utilization coupled with continuous operation in agricultural spraying, Skydiving, fire fighting, salt water atmosphere or heavy sand and dust environments, periodic inspections in accordance with the applicable maintenance instructions may indicate maintenance action prior to the recommended overhaul life.

(4) The TBO interval may be extended with the approval of the operator's Airworthiness Authority. The minimum requirements for engine TBO extension or for fleet TBO extension are described in the Appendix Para. 4.

E. Compliance

The inspection intervals and overhaul periods provided in this bulletin are the manufacturer's recommendations. These periods are based on operation that is per the Airframer's POH (Pilot Operating Handbook). Extended operation at power settings above normal Takeoff/Climb/Cruise may require a reduction in the intervals stated. The use of Maximum Continuous is unrestricted for the duration required by the crew to address an emergency situation. Repetitive use of Maximum Continuous, and/or extended operation at high speeds and/or ITT (Inter-Turbine Temperature) will necessitate a significant reduction in HSI (Hot Section Inspection) interval. Airworthiness authorities normally require operators to follow these recommendations unless alternative arrangements have been made between the operator and the manufacturer, and approved by the operator's airworthiness authority.

F. Approval

Transport Canada has reviewed and approved the technical contents of this Service Bulletin.

NOTE: The service life values quoted herein are determined by the limiting values, stated on the Pratt & Whitney Canada drawings, which form part of the Department of Transport Aircraft Engine Type Approval for the applicable engine model. These limiting values are based on the use of P&WC approved components installed on/in the engine. Use of other than P&WC approved components may reduce the life limits.

G. Manpower

Not applicable.

1. Planning Information (Cont'd)

H. Weight and Balance

None.

I. Electrical Load Data

Not changed.

J. Software Accomplishment Summary

Not applicable.

K. References

Applicable PT6A Instructions for Continued Airworthiness (ICA)
Service Information Letter No. GEN-055
Service Information Letter No. PT6A-107 and PT6A-041
P&WC S.B. No. 13002, 13066, 13076, 13113, 13177, 13181, 13216, 13249
P&WC S.B. No. 13323, 13330, 13351, 13354, 13360, 13417, 13450, 13469
P&WC S.B. No. 3003

L. Publications Affected

None.

M. Interchangeability and Intermixability of Parts

Not applicable.

2. Material Information

A. Industry Support Information

Not applicable.

B. Material - Cost and Availability

Not applicable.

C. Material Necessary for Each Engine

Not applicable.

D. Reidentified Parts

None.

2. Material Information (Cont'd)

E. Tooling - Price and Availability

Not applicable.

3. Accomplishment Instructions

A. Modular Concept:

(1) An engine is comprised of two modules. The modules, when assembled, operate as a complete engine.

(2) The modules are defined in the Department of Transport Engine Type Approval E21 Note 3 and in the applicable Illustrated Parts Catalogs. In general they are identified as:

TABLE 1, Modular Concept

Model	Gas Generator Module	Power Section Module
PT6A-52	P/N 3072558	P/N 3072555
PT6A-60A	P/N 3102600	P/N 3102000
PT6A-61	P/N 3102600	P/N 3103300
PT6A-62	P/N 3035000	P/N 3035200

NOTE: To separate the gas generator and the power section modules, remove the bolts from flange C per the maintenance or overhaul manuals.

(3) Each module may be maintained at its own hard time schedule.

B. Basic Time Between Overhaul (TBO) Recommendations

(1) The basic industry TBO's are as follows:

(a) All PT6A-52, PT6A-60A, and PT6A-61 engines/modules may be operated to a basic TBO of 3,600 hours.

(b) All PT6A-62 engines/modules may be operated to a basic TBO of 3,000 hours.

(2) For maintenance scheduling purposes, one engine per aircraft may be operated an additional 70 calendar days or 200 flight hours, whichever comes first, conditional on the following:

(a) The engine has been maintained and operated in accordance with P&WC's Instructions for Continued Airworthiness and operated to an engine TBO interval that is recommended by P&WC;

3. Accomplishment Instructions (Cont'd)

(b) Boroscope inspection of the hot section components per the Engine Maintenance Manual must be carried out and engine found to be in serviceable condition;

(c) Only one maintenance scheduling extension per TBO interval is available;

(d) The maintenance scheduling hours do not modify the operator's base TBO interval;

(e) The operator must notify their local airworthiness authority or equivalent upon use of this extension.

(3) Rotor component life limitations outlined in the latest revision of P&WC S.B. No. 13002 override TBO considerations.

(4) Engines that are within the basic recommended TBO and that have been maintained or stored per maintenance manual requirements have no related calendar time limits. However, time limit may apply to specific components, refer to the periodic inspection table in the Maintenance Manual

(5) Engines that are operated to the basic industry TBO and are transferring to a fleet extended TBO interval, may use the pro-rating formula in Appendix paragraph D.18.

(6) The Hamilton Sundstrand fuel pump may be operated to the engine TBO (basic or extended, as applicable).

NOTE: Refer to periodic inspection of Hamilton Sundstrand fuel pump, per the EMM as applicable.

(7) The engine accessories that follow may be operated to the engine TBO (basic or extended, as applicable) plus 500 hours. All other accessories may be operated to the engine TBO:

- Fuel Control Unit (for the PT6A-52, PT6A-60A and PT6A-61 engines only)
- Fuel Heater
- Propeller Governor
- Ignition Exciter
- Compressor Bleed Valve
- Flow Divider
- Fuel Pump (Argo-Tech only)

At overhaul, for PT6A-62 engines, do a test of the accessories that follow per the applicable Component Maintenance Manual (CMM):

3. Accomplishment Instructions (Cont'd)

- Electronic Limiter (ELU)
- Trim Plug
- Solenoid Valve
- Tq Transducer

NOTE: Where accessories are removed (for repair or other reason) and subsequently reinstalled, operating time since new or overhaul must be recorded on the repair tag.

(8) For Pre-SB13076 engines, the first-stage reduction planet gear bearings must be replaced at each and every overhaul or 8000 hours, whichever occurs first.

(9) For Post-SB13076 engines, the first-stage reduction planet gear bearings must be inspected at each and every overhaul. Replace only if damage exceeds the Overhaul Manual limits.

(10) For the PT6A-62 FCU Pre-SB13330 configuration, the TBO is the engine TBO plus 500 hours, or 4000 hours, or 6 years whichever comes first.
For the PT6A-62 FCU Post-SB13330 configuration, the TBO is the engine TBO plus 500 hours, or 5000 hours, or 6 years whichever comes first.

NOTE: This limit is calculated from the time the unit enters in service or from the last overhaul of the FCU and is applicable whether the FCU was in use or storage during this period. Refer to Maintenance Manual, Maintenance Practices, section 73-20-00.

(11) For the PT6A-62 engines installed on Pilatus PC-9 aircraft only, replace the propeller shaft at every overhaul or 4,500 hours, whichever comes first.

C. TBO Extension Recommendations:

(1) For operators with an average utilization higher than 300 hours/year, P&WC can provide recommendations for TBO extensions as follow:

(a) **Option A - Fleet TBO Extension:**
An operators' full fleet of similarly operated and maintained engines, covered by this SB, can have its TBO escalated in 500-hour increments based on a review of the condition of the hardware one or two engines inducted for overhaul. The recommendation is based on one or two satisfactory overhaul samples. Refer to the Appendix Para. 4.A., 4.B., 4.C. and 4.D.

3. Accomplishment Instructions (Cont'd)

(b) **Option A - Fleet TBO Read-Across Harmonization:**
An operator's full fleet of similarly operated and maintained engines, covered by this SB or P&WC S.B. No. 3003, can have its Fleet TBO harmonized in increments. Engine sample requirements are defined in Table 3. Refer to Appendix Para. 4.A, 4.B, 4.C and 4.E. Refer to SIL PT6A-233.

NOTE: Once the fleet TBO is harmonized, the fleet TBO extension by 1000hrs increment may be applied to the entire operator's fleet of PT6A-41, PT6A-42, PT6A-52, PT6A-60A, PT6A-61 covered by the TBO P&WC S.B. No. 3003 and P&WC S.B. No. 13303.

(c) **Option B - Engine-Specific TBO Extension (For PT6A-52, PT6A-60A, PT6A-61 Engines):**
The TBO of an individual engine can be increased, subject to the evaluation of the configuration, condition and method of operation of this engine. Refer to the Appendix Para. 4.A, 4.B, 4.C and 4.E.

(2) TBO Extension recommendations that were approved prior to issue of this SB, through all prior revisions of P&WC S.B. No. 13303, are not affected and remain valid, except that:

- P&WC No longer endorses on-condition TBO programs on the PT6A engine models
- Aircraft Gas Turbine Operating Information Letters (AGTOIL) are no longer valid.

(3) TBO extension recommendations from P&WC are subject to approval of the operator's local airworthiness authority.

(4) The TBO established by individual operators and/or for individual engines is independent of the TBO published for the industry.

D. Hot Section Inspection (HSI) Frequency Recommendations:

(1) The HSI interval does not increase, as the TBO is escalated.

(2) All PT6A engines may be operated to a scheduled HSI interval as follows:

(a) PT6A-52, PT6A-60A and PT6A-61 engines = 1,800 hours.

(b) PT6A-62 engines = 1,500 hours.

(3) An additional 50 flight hours or 30 days is available for maintenance scheduling purposes, conditional on the following:

3. Accomplishment Instructions (Cont'd)

(a) The engine has been maintained and operated in accordance with P&WC's Instructions for Continued Airworthiness;

(b) Only one maintenance scheduling extension per HSI interval is available;

(c) The maintenance scheduling hours do not modify the engine's base HSI interval;

(4) Alternatively, the HSI frequency may be based on Engine Condition Trend Monitoring in accordance with the Service Information Letter (SIL) Gen-055 Guidelines and Standards for Utilizing the Engine Condition Trend Monitoring (ECTM®) software subject to local Airworthiness Authority approval .

(5) If trend monitoring is introduced part way through engine life, a Performance recovery wash and HSI must be accomplished to establish a performance base line.

4. Appendix

NOTE: This Appendix provides the procedures and requirements to obtain TBO extension recommendations from P&WC.

A. General Considerations for TBO Extension Recommendations

(1) A TBO extension recommendation from P&WC is based on both the operator's procedures and experience and on P&WC experience. P&WC experience is based on:

(a) Engines that incorporate only P&WC parts originally supplied by P&WC or its authorized distributors or components repaired in accordance with P&WC approved repair process.

(b) Factory built engines or engines overhauled/repaired at a P&WC service center or a P&WC Designated Overhaul Facility (DOF).

(c) As P&WC experience grows, the TBO extension requirements and limitations may be adjusted accordingly.

(2) An engine maintains its TBO extension recommendation on either program as long as it is operated within the limitations of the relevant aircraft operating manuals and is maintained in accordance with the appropriate P&WC Maintenance Manual and the terms of this S.B.

NOTE: P&WC recommendation is null and void in instances where engine abuse or non-compliance with this recommendation is reported.

4. Appendix (Cont'd)

(3) If the engine was put in storage or was unused since its last overhaul (or since new if not previously overhauled), there must be documented evidence that the engine has been preserved per the engine Maintenance Manual.

(4) Extension recommendations are only transferable between operators under circumstances described for Option A (Ref. Appendix Para. D (13 & 14)) and Option B (Ref. Appendix Para. D (13) and E (10)).

(5) Recommendations for extension are subject to limitations including the maximum numbers of years between overhauls. Ref. Appendix Para. D (2) and E (4).

(6) TBO extension recommendations from P&WC are subject to fees per S.I.L. No. PT6A-107.

(7) TBO extensions, recommended by P&WC, do not affect the applicable Warranty and Service Policy originally supplied with the engine. P&WC will continue to use the basic industry TBO (Ref. Para. 3.B.(1)) to calculate the pro-rata credit and the benefits per the Primary Parts Service Policy and/or the Extended Engine Service policy.

(8) Rotor component life limitations outlined in the latest revision of SB 13002 override any TBO considerations.

B. Assembly and Component Records
TBO extensions incorporate limitations on the life of certain components. The operator and/or the Maintenance Organization (M.O.) selected by the operator must have a system to log the total accumulated time, i.e. Time Since New (TSN), and the Time Since Overhaul (TSO) of the following assemblies and components:

(1) Gas Generator and Power Section Modules time and cycles since new and since last overhaul;

(2) Accessories time since new or since last overhaul;

(3) Total cycles of life limited rotors (Ref. P&WC SB No. 13002)

(4) Total hours since new for the components that follow:

- The mainline ball bearings (bearings No. 1 and No. 4);
- The compressor turbine blades,
- The power turbine blades (first and second stage);
- The first stage sun gears; and

4. Appendix (Cont'd)

- The first stage planet gears.

NOTE: For non-serialized turbine blades, the total hours since new must be based on the oldest installed blade. For example, if a complete new set of blades is installed at overhaul and 18 blades are replaced at TSO = 1800 hrs, the total time on the entire blade set will still be considered 1800 hrs, even though the 18 newly installed blades have zero time.

C. Configuration Records
P&WC makes available product improvements through the issuance of Service Bulletins (S.B.). The operator and/or the maintenance organization selected by the operator must have a system to log S.B.s that are incorporated in each engine. In particular, the following are considered especially valuable for operators on extended TBO:

TABLE 2, Configuration Records

Service Bulletin	Applicability	Description
P&WC S.B. No. 13066	PT6A-60A, PT6A-61, PT6A-61A, PT6A-62	Oil Filter Element
P&WC S.B. No. 13177	PT6A-60A, PT6A-61, PT6A-62	Outer CC Liner Assembly
P&WC S.B. No. 13181	PT6A-60A, PT6A-61, PT6A-62	CT Stator Assembly
P&WC S.B. No. 13216	PT6A-60A, PT6A-61	Fuel Control Unit
P&WC S.B. No. 13228	PT6A-60A, PT6A-61	Fuel Pressure Tube
P&WC S.B. No. 13249	PT6A-60A, PT6A-61, PT6A-62	Thermocouple Wiring Harness
P&WC S.B. No. 13323	PT6A-60A, PT6A-61,	Compressor Delivery Air Pressure Insulated Tube
P&WC S.B. No. 13351	PT6A-62	P3 Air Filter Housing and Cover

4. Appendix (Cont'd)

TABLE 2, Configuration Records (Cont'd)

Service Bulletin	Applicability	Description
P&WC S.B. No. 13354	PT6A-60A	Propeller Governor
P&WC S.B. No. 13360	PT6A-60A, PT6A-61, PT6A-62	Oil-To-Fuel Heater Transfer Tube
P&WC S.B. No. 13417	PT6A-52, PT6A-60A, PT6A-61	Oil Filler Valve
P&WC S.B. No. 13426	PT6A-52, PT6A-60A, PT6A-61	FCU Connector Rod Bolt
P&WC S.B. No. 13450	PT6A-52, PT6A-60A, PT6A-61, PT6A-62	Py and P3 Insulated Air Pressure Tube
P&WC S.B. No. 13469	PT6A-52, PT6A-61, PT6A-62	1st Stage Planetary Gear

D. Option A - Fleet TBO Extension by Overhaul Sample Evaluation

(1) P&WC can provide extension recommendations for the TBO of an operator's fleet of similarly operated and maintained engines. The condition of the engines examined at overhaul is one element of validating that the specific operator is operating and maintaining the engines in a manner that warrants extending the TBO interval for the specific fleet. Other elements include but are not limited to:

(a) Accuracy of maintenance records.

(b) Reported condition of hardware at previous maintenance intervals.

(c) Local regulatory endorsement of operator adherence to OEM recommended operation and maintenance practices. This endorsement should be obtained on a yearly basis.

(2) The time limits applicable under this program are as follows:

TBO Limit: 8,000 hrs

4. Appendix (Cont'd)

Calendar Limit: Engines may operate at the extended TBO for a maximum period of 12 years since new or since overhaul as applicable, or as otherwise agreed in writing by P&WC.

(3) To make sure that engine durability is maintained as the engines are operated into their subsequent extended overhaul intervals, the components listed in the Appendix, Para. 4.B.(4) that will reach 12,000 hours since new prior to the next scheduled overhaul must be removed from service. Also, all applicable category 1, 2 and 3 service bulletins must be incorporated in the rebuild of the sample engine and at the next overhaul of other engines in the fleet for which the TBO extension is applicable.

(4) For the PT6A-52, PT6A-60A and PT6A-61 engines:
Normal TBO extension recommendations are 500 hours. For TBO extension up to 5,100 hours one representative sample engine per 500 hrs increment is required. For TBO extensions above 5,100 hours two representative sample engines per 500 hrs increment are required.

(5) For the PT6A-52 and PT6A-61 engines operated in a mixed fleet with PT6A-42 and PT6A-41 (Twin application only):
Operators that own a fleet of PT6A-41 or PT6A-42 engines operated to a P&WC approved extended TBO in accordance with P&WC S.B. No. 3003 may harmonize their TBO up to 5,100 hours with the engine models PT6A-52 or PT6A-61 listed in this SB. For fleet TBO READ across harmonization above 5,100 hours, one (1) additional successful representative engine overhaul sample per 1,000 hours is required (Ref Table 3).

(6) For PT6A-60A engines operated in mixed fleet with PT6A-52, PT6A-61 PT6A-41 and PT6A-42 (Twin application only):
Operators that own a fleet of PT6A-41 or PT6A-42 engines operated to a P&WC approved extended TBO in accordance with P&WC S.B. No. 3003 or fleet of PT6A-52 or PT6A-61 operated to a P&WC approved extended TBO in accordance with this SB may harmonize their TBO with the PT6A-60A listed in this SB. Fleet TBO harmonization up to 5,100 hours requires one (1) successful engine sample of PT6A-60A engine at 3,600 hours TSO/TSN. For fleet TBO READ across harmonization above 5,100 hours, one (1) additional successful representative engine overhaul sample per 1,000 hours is required (Ref Table 3).

(7) For the PT6A-62:
Normal TBO extension recommendations are 500 hours. For TBO extension up to 4,500 hours one representative sample engine per 500 hrs increment is required. For TBO extensions above 4,500 hours two representative sample engines per 500 hrs increment are required.

(8) Requirements applicable to the sample(s):

4. Appendix (Cont'd)

(a) The sample must have a Time Since Overhaul (TSO) that is within 250 hours of the current TBO period. Engines that have more hours than the current P&WC recommended TBO are also acceptable but the extension will be based on the currently recommended P&WC TBO.

(b) The sample must have been operated by the current operator for the majority of the TBO period (i.e. for more than 50% of the current TBO interval).

(c) The sample engine must not have had a shop visit for major repairs (overhaul manual level) during the current TBO interval (i.e. only Maintenance Manual level tasks and repairs have been carried out).

(d) The operator must complete the Option A TBO Evaluation Sample Request form and the Fleet Data List within My P&WC Power portal (Refer SIL PT6A-041) or submit forms to their P&WC Service Centre or Designated Overhaul Facility (DOF).

(e) The sample engine must be sent to a P&WC service centre or P&WC DOF for the TBO evaluation. The evaluation consist of 2 stages, the first portion consists of a visual examination of the engines prior to cleaning to assess whether the hardware appears capable of 500 hours or 1000 hours, as applicable, of further operation. Following satisfactory completion of this phase the second portion consist of detailed examination of the components to the requirements of the P&WC OHM.The P&WC Service Centre or P&WC DOF will provide the two (2) TBO Evaluation Reports to P&WC (Refer SIL PT6A-041) or submit the TBO Evaluation Package to P&WC by email. After one or two successful samples, depending on the TBO escalation threshold (Ref D,(4, 5 and 6)) P&WC will issue a letter to the operator stating that a TBO extension is recommended, subject to the approval of the operator's Airworthiness Authority.

NOTE: 1. When shipping an engine to a P&WC service centre or P&WC DOF as a sample, operators should state that it is a sample and request a TBO extension evaluation report.

NOTE: 2. For additional information, queries or to send supporting information to P&WC, please email to pt6atboevaluation@pwc.ca

NOTE: 3. Refer to P&WC SIL PT6A-041 for further information regarding the TBO evaluation process, My P&WC Power portal or to access the respective forms.

(9) Should a sample be rejected P&WC will not consider a TBO escalation unless the operator defines the actions taken to correct the observed conditions.

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TBO Evaluation Sample Request Form
Figure 1

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Time Between Overhaul Harmonization Request Form
Figure 2

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Fleet Information Form
Figure 3

4. Appendix (Cont'd)

(10) The extended TBO may apply to other eligible engines in the operator's fleet (Ref. Table 3).

(11) The Fleet TBO Read-Across Harmonization may apply to other eligible engines (Ref. Table 3).

TABLE 3, Eligible Engines (Fleet)

Sample Submitted	Recommendation applies to TBO option A:	Recommendation applies to TBO option A Read-Across Harmonization operated in a mixed engine fleet with PT6A-41 or PT6A-42:
PT6A-60A	PT6A-60A, Post-SB13469 PT6A-52, Post-SB13469 PT6A-61	PT6A-60A, Post-SB13469 PT6A-52, Post-SB13469 PT6A-61
Pre-SB13469 PT6A-52, Pre-SB13469 PT6A-61	PT6A-52, PT6A-61, PT6A-60A	PT6A-52, PT6A-61, PT6A-60A
Post-SB13469 PT6A-52, Post-SB13469 PT6A-61	PT6A-60A, Post-SB13469 PT6A-52, Post-SB13469 PT6A-61	PT6A-60A, Post-SB13469 PT6A-52, Post-SB13469 PT6A-61
PT6A-62	PT6A-62	Not Applicable

(12) Extended TBO intervals for engines which were added to the fleet from another operator are subject to the pro-rating formula in Para. (17). This formula must be used again when a fleet TBO extension is granted (Ref. Para. (17), Example 2).

(13) The TBO extension process may be repeated when the next engine reaches the new escalated TBO interval.

(14) Certain circumstances may warrant a higher TBO extension increment. These will be reviewed on a case by case basis upon written request.

(15) P&WC reserves the right to request additional information on the sample condition, or further TBO extension samples, and this request does not herein imply that P&WC will automatically recommend the extension.

(16) The TBO escalation recommendation is subject to the approval of the operators local Airworthiness Authority.

4. Appendix (Cont'd)

(17) Transfer of Fleet TBO Extension Recommendations
Fleet TBO extensions are valid only as long as the operator, the Maintenance Organisation (M.O.) and the typical mission remain unchanged. In order to transfer the P&WC Option A Fleet TBO interval recommendation between operators, a request is to be submitted through My P&WC Power portal (refer SIL PT6A-041).

(18) The following conditions apply for P&WC to transfer the engine to a new M.O., a new operator, or a new application (typical mission):

NOTE: If an operator chooses a new M.O. that already supports operators who have approval for engines covered by this SB and to the same or higher TBO, no action is required.

(a) For the transfer of an engine to a different fleet extended TBO, the operator can use a pro-rating formula. This formula is generally recognized by regulatory authorities. The TBO applicable to an engine in these circumstances is the fleet TBO formerly applicable and the fleet TBO established for the new operator, Maintenance Organization and mission for the same engine models. It is then weighted on the basis of the time remaining to overhaul under the original operation. The formula for this purpose is:

$$X = Y * a/b$$

where X = time remaining to overhaul on new program (buyer's TBO)
Y = time remaining to overhaul on previous program (seller's TBO)
a =TBO interval on new program (buyer's TBO)
b = TBO interval on previous program (seller's TBO)

Example 1: An aircraft is transferred (by sale or lease) between two operators. The previous operator's engine TBO is 8,000 hours and the new operator's engine TBO is 5,000 hours and the engine has a time since overhaul (TSO) of 6,000 hours

Time remaining to overhaul on the previous program:

$Y = 8,000 - 6,000 = 2,000$ hours.

Time remaining to overhaul on the new program:

$X = Y * a/b$

$X = 2,000 * 5,000/8,000 = 1,250$ hours

4. Appendix (Cont'd)

Therefore this engine may be operated to a one time TBO interval of 7,250 hours. After overhaul, the engine TBO will revert to the new owners TBO, which is 5,000 hrs. in this example.

Example 2: An operator obtains a recommendation from P&WC for a TBO extension from 5,000 to 5,500 hours, but one of the engines was purchased from an operator with a TBO of 8,000 hours and the engine is currently running to a one time TBO of 7,250 hours (Ref. Example 1). The new TBO interval will be calculated using the pro-rating formula and the TSO of the engine at entry to the new operator's fleet (6,000 hours).

Time remaining to overhaul on the previous program:

Y = 8,000 - 6,000 = 2,000 hours.

Time remaining to overhaul on the new program:

X = Y * a/b

X = 2,000 * 5,500/8,000 = 1,375 hours

Therefore this engine may be operated to a one time TBO interval of 7,375 hours. After overhaul, the engine TBO will revert to the new owners TBO, which is 5,500 hrs. in this example.

E. Option B - Engine Specific Extension by Evaluation of Configuration, Condition and Operation . This option excludes PT6A-62 Engines.

(1) General
TBO extensions can be recommended under this option for specific engines based on a full evaluation of their configuration, condition, and operation. Operators and engines must meet minimum eligibility criteria and the engines must be individually registered into the P&WC engine-specific TBO extension program, and maintained per specific procedures set forth hereunder. Registration is recommended as early as possible when new or after overhaul, but is not subject to a time limit other than the maximum limits of this program. Refer to the Appendix, Para. 4.E.(4).

4. Appendix (Cont'd)

(2) Application Procedure - To apply for a TBO recommendation for an engine per this program, the operator must complete the Option B Operator Qualification Application & Checklist and the Option B Engine Qualification Application & Checklist, within My P&WC Power portal (Ref SIL PT6A-041), or submit forms to their P&WC Field Support Manager. There are two (2) approaches to signing off the requirements within these forms:

(a) The list may be completed by a qualified Part 145, Part 135, or Part 121 Inspector or equivalent, who must sign off each item.

(b) The list may be completed by other operator personnel and submitted to the local P&WC FSM for review and approval.

(c) Following completion of these sign-off requirements, the checklists may be uploaded via My P&WC Power portal.

(3) Missions that are not Eligible:
The following missions are not considered applicable to this program

- Agricultural;
- Skydiving operations;
- Fire fighting; or
- Other missions which involve an unusually high ratio of cycles to flight hours or unusually protracted use of high power.

NOTE: For confirmation of eligibility, please refer the proposed mission to your local P&WC FSM.

(4) Time Limits

Overhaul:	5,000 hrs or 12 years, whichever comes first, since new or since overhaul as applicable. 2,000 hrs or 6 years, which ever comes first, since mid-life inspection (Ref. Appendix Para. 4.E. (7)).
HSI:	May be part of the mid-life inspection (Ref. Appendix Para. 4.E.(7)), or per ECTM or disk/blade life expiry requirement. If per ECTM®, perform at least once in a 5,000 hour period.

(5) Eligibility - Operator and Maintenance Organization
To be eligible to request an engine TBO extension recommendation, an operator must provide evidence that the operator's Maintenance Organization (M.O.) has addressed the following maintenance procedures:

4. Appendix (Cont'd)

(a) The M.O. must be capable of performing all line maintenance activities, including all activities listed in the Maintenance Manual, periodic inspection table, borescopic inspection, compressor and turbine washing, etc. It must also be capable of, or have access to, other aircraft maintenance that can have an effect on the durability of the engine, such as instrumentation calibration and propeller balancing. To demonstrate capability, the M.O. must have available all the applicable tooling and must have personnel specifically trained to perform these tasks and/or must have service contracts with facilities that have such applicable tooling and trained personnel.

(b) The operator/M.O. must have a quality system that records all snags and maintenance activities related to the operation of the engine. This also applies to engine-mounted aircraft accessories such as the propeller, the overspeed governor, and the starter-generator. Records must be available for review by P&WC on request.

(c) The operator/M.O must also complete the Option B Operator Qualification Checklist (Ref. Fig. 4).

(6) Eligibility - Engines:

(a) Engines must incorporate all service bulletins in the Appendix, Para. 4.C. at the first opportunity and no later than the mid-life inspection. Also, components listed in the Appendix, Para. 4.B.(4) must have no more than 12,000 hours total time since new, at induction and through the applicability of the program.

(b) Records for engine events that required unscheduled inspections must be available for review by P&WC. This is to ensure compliance with all Maintenance Manual requirements.

(c) P&WC recommends that the aircraft is equipped with an approved exceedance and engine monitor (Ref. Appendix 4.G). Engine Condition Trend Monitoring (ECTM) requirements can be found in SIL's GEN-055.

(d) The operator/M.O. must also complete the Option B Operator Qualification Application & Checklist within My P&WC Power portal (ref. SIL PT6A-041), or submit forms to their P&WC Field Support Manager.

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Option B Operator Qualification Checklist
Figure 4 (Sheet 1 of 2)

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Option B Operator Qualification Checklist
Figure 4 (Sheet 2)

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Option B TBO Application and Engine Qualification Checklist
Figure 5 (Sheet 1 of 3)

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Option B TBO Application and Engine Qualification Checklist
Figure 5 (Sheet 2)

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Option B TBO Application and Engine Qualification Checklist
Figure 5 (Sheet 3)

4. Appendix (Cont'd)

(7) Mid-Life Inspection
Engines registered in the engine specific TBO extension program are subject to a mid-life inspection. Schedule between 2,500 hours and current TBO interval (Ref. Note 3). Requirements need not be carried out concurrently, and the HSI portion may be scheduled per the Appendix, Para. 4.E.(4). When scheduling this inspection, operators must also consider other limitations such as the time limits per the Appendix, Para. 4.B.(4), and cyclic limits per P&WC S.B. No. 13002. Do the inspection as follows:

NOTE: 1. For P&WC to provide a TBO extension recommendation, the various inspection procedures must be performed by a P&WC service centre or DOF facility/representative/M.O. recommended by P&WC for the procedures carried out.

NOTE: 2. Unless otherwise specified, Maintenance Manual procedures and limits apply.

NOTE: 3. Operator's TBO refers to the engine basic TBO or extended TBO per Option A as applicable, prior to enrollment in Option B.

(a) Verify compliance with all applicable inspection SBs.

(b) Do a full hot section inspection, including all applicable requirements described in the Maintenance Manual (72-00-00). The exposed gas generator surfaces must be free of corrosion and all missing diffuser ducts must be replaced. Compressor turbine and power turbine blades must show no or minimal sulphidation (stage 1 maximum). Engine performance after this inspection must meet the aircraft power assurance requirements with a minimum of 20°C (36°F) ITT margin and 0.5% rpm (200 rpm) Ng margin.

(c) Make sure the compressor is free of corrosion.

(d) Repair compressor foreign object damage (FOD).

(e) Inspect the AGB starter generator drive pad splines for wear.

(f) Make sure the external surfaces meet all corrosion and damage requirements. Repair gas generator and cast housing surfaces with touch-up paint. Clean and inspect the gas generator drain valves.

(g) Remove and inspect the external pneumatic hoses and tubes (Px and Py tubes) for cracks or other damage. Tubes must show no signs of deformation (compared to a new tube).

(h) Perform all oil system checks, for example

4. Appendix (Cont'd)

- MOP setting
- Torque meter functional check.

(i) Accessories require inspection per Appendix Table 4.

NOTE: If the complete engine is inducted to a P&WC Service Centre or DOF for mid-life inspection, an engine test cell run will satisfy the Shop Functionality Check requirements. Other concurrent requirements must be performed per Appendix, Table 1.

TABLE 4, Accessories Option B

System Accessory	Recommended Configuration	Mid-Life Requirement (Option B only)	Other Requirements
Propeller Governor		On-wing Functionality Check	
Fuel Heater		Inspect per MM	
Fuel Pump		Remove and inspect per EMM	
Fuel Control		-----	Inspect per MM
Flow Divider		Inspect per MM	
Fuel Nozzles		Overhaul (except for fuel nozzles on an exchange program).	
Bleed Off Valve		On-wing Functionality Check	
Chip Detector		Inspect per MM	
Torque Limiter (A52, A61 only)		On-wing Functionality Check	

(j) Inspect all controls, linkages, leads and connectors for chafing, corrosion, cracks. Do all controls adjustments and checks specified in the Maintenance Manual (Ref. 71-00-00, Power Plant - Adjustment/Test).

(k) Check the temperature indicating system, including the T1 probe trim resistance.

4. Appendix (Cont'd)

(l) Check the operation and/or calibration of all engine related instrumentation (ITT, Tq, Ng, Np). Refer to the applicable Aircraft Maintenance Manual (AMM).

(8) Operation and maintenance requirements after registration in the program. Maintain the engine per the Engine and/or Aircraft Maintenance Manual (AMM). In addition, an approved maintenance plan will include the items that follow:

(a) Monitor the engine performance per the ECTM® program (Ref. Service Information Letter (SIL) Gen-055).

(b) Wash the engine compressor and turbine at intervals that are consistent with the environment in which the engine operates (Ref. Maintenance Manual 71-00-00, Power Plant - Cleaning).

NOTE: Contact the local P&WC FSM for information on the best interval.

(c) At the periodic fuel nozzle inspection, record the nozzle positions per the applicable Maintenance Manual. The concurrent borescope inspection of the hot section must cover the area in line with any nozzle found unserviceable.

NOTE: For nozzle assemblies on an exchange program, do the inspection within 400 hours of removal of nozzles reported as unserviceable.

(d) Inspect the compressor first stage blades for FOD at an interval not more than 1,000 hours or one year whichever occurs first and blend per the Maintenance Manual.

(e) Do all control adjustments and checks annually per the Maintenance Manual (Ref. 71-00-00, Power Plant - Adjustment/Test).

(f) Balance the propeller per the Aircraft Maintenance Manual (AMM) or the propeller Component Maintenance Manual (CMM) at an interval not more than 1,000 hrs or one year.

(g) Check the operation and/or calibration of all engine related instrumentation at intervals not more than 1,000 hrs or one year per the Aircraft Maintenance Manual (AMM). (ITT, Tq, Ng, Np).

NOTE: This check is not required if the engine has an exceedance monitor.

(h) The operator will supply an Option B Annual Report to P&WC through My P&WC Power portal (refer SIL PT6A-041). A copy of this report is to be supplied to their Local Airworthiness Authority.

4. Appendix (Cont'd)

(i) At the next scheduled overhaul event, perform a review of continued applicability. Operator/M.O. is to review and ensure compliance with the latest version of this SB. Contact P&WC FSM if assistance is required or to request a new recommendation letter for the subsequent TBO interval.

(9) Mission Consistency
The mission that the engine is used for and the area of operation must remain as specified at the time of induction. (Ref. Appendix, Para. 4.E.(3)).

(10) Transfer of Engine Specific TBO Recommendations
For changes for an engine registered under the P&WC engine-specific TBO extension program, the operator/owner can apply to P&WC for a transfer. If the operator, its mission, and its M.O. are already established as eligible for the engine models per this SB, no further action will be required. Otherwise, it is necessary to establish the eligibility of the new operator, application, and/or M.O. before the recommendation can be extended to these new conditions.

(a) In order to transfer the P&WC Option B Engine Specific TBO recommendation, a request is to be submitted through My P&WC Power portal (refer SIL PT6A-041).

F. Transfer from one TBO Extension Option to the Other

(1) Operators that have extended their fleet TBO per Option A, through all prior revisions of this SB, may apply for an individual engine TBO extension per Option B. Refer to the Appendix, Para. 4.E.

(2) Operators that have extended the TBO of individual engines per Option B may consider submitting these engines as samples per Option A. Refer to the Appendix, Para. 4.D.

(a) Each acceptable sample provides a fleet extension of 500 hours relative to the current P&WC recommended fleet TBO for the operator.

(b) The recommendation will apply to engines in the fleet that meet requirements per Option B. Refer to the Appendix, Para. 4.E.

(c) Recommendations in cases where some of the samples submitted were not in satisfactory condition may be lower and/or take into consideration corrective actions put in place.

G. Minimum Engine Parameters Monitoring System Requirements:

NOTE: For more information or clarification, contact your local P&WC Field Support Representative (FSM).

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Option B - Yearly Operator Report
Figure 6

4. Appendix (Cont'd)

(1) ENGINE AND AIRCRAFT PARAMETERS:
The system must record and store data from all the parameters that follow:

- Inter Turbine Temperature (ITT);
- Torque (Tq);
- Gas generator speed (Ng);
- Propeller speed (Np);
- Fuel flow (Wf);
- Indicated Outside Air Temperature (IOAT);
- Altitude; and
- Indicated Airspeed (IAS).

(2) SAMPLING AND RECORDING FREQUENCY:
The system must monitor, in real time, all of the parameters with a minimum sampling frequency of 5 Hz and record the data at least twice per second during an exceedance event. System software level "C" is recommended. The aircraft Original Equipment Manufacturer (OEM) and P&WC can negotiate acceptable alternative software levels.

(3) SIGNAL ACCURACY:
The accuracy of the signal processing, which includes the sensor where applicable, should be within the tolerances that follow:

TABLE 5, Signal Accuracy

Parameter	Tolerance
Inter-Turbine Temperature (ITT)	±5°C
Engine Torque (TQ)	±1%
Compressor (Ng) and Propeller (Np) speed	±0.2%
Fuel Flow (Wf)	±2.5%
Indicated Outside Air Temperature (IOAT)	±2°C
Altitude	±250 ft
Indicated Air Speed (IAS)	±10 knots

(4) DATE AND TIME:
For each engine parameter exceedance event and for ECTM® readings, the system must record all the parameters with Date and Time. The device that records the data must keep it during system power-off intervals.

4. Appendix (Cont'd)

(5) EVENT DEFINITION:
The system program must record exceedances for the specific PT6A engine model per the applicable P&WC Maintenance Manual limitations.

(6) VISUAL INDICATION:
The system must have a visual indication to the pilot or maintenance personnel to tell them that an engine event occurred and that there may be a maintenance action prior to the next flight.

(7) SIMULTANEOUS EVENTS:
The system must have the capability to record simultaneous or multiple events for each parameter monitored, with the minimum requirements that follow:

(a) Identify the affected parameter.

(b) Record the Date and Time that each event starts and ends.

(c) System shall be capable of recording all parameters identified above for a period of time prior to and after an engine exceedance event in a manner that allows for a complete reconstruction of the event.

(8) The examples that follow show methods on how to reconstruct and record simultaneous or multiple events:

(a) Method 1: The system buffers data and then writes it to the permanent memory when necessary.

(b) Method 2: System flags are defined at specific set points, which occur before the event definition. If the actual value of a parameter crosses the value defined by the flag, the system starts or stops storing data as required.

(9) ALLOWABLE DOWNTIME (System or specific elements of system in-operative):
Anytime the system or elements of the system are in-operative, the maximum allowable downtime for specific parameters are as follows:

TABLE 6, Maximum Allowable Downtime

Parameter	Downtime (hours)
Entire System	20
Inter-Turbine Temperature (ITT)	20
Engine Torque (TQ)	40
Compressor (Ng) and Propeller (Np) speed	40

4. Appendix (Cont'd)

TABLE 6, Maximum Allowable Downtime (Cont'd)

Parameter	Downtime (hours)
Any other elements not specified	150

(a) Manually record the parameters listed in 4.G.(1) at a stabilized cruise condition, daily or every 6 hours, in compliance with ECTM® requirements. Refer to S.I.L. No. GEN-055.

(10) FIELD REPROGRAMMING:
The software must make it possible for field maintenance personnel to apply software modifications authorized by the manufacturer for the current installation.

(11) INSUFFICIENT MEMORY:
The system must generate a notification to the pilot or maintenance personnel when there is a possibility of insufficient remaining memory to store event or trend data during the next flight.