PILATUS AIRCRAFT LTD. CH-6371 STANS, SWITZERLAND

SERVICE LETTER

SUBJECT: PRATT & WHITNEY CANADA (P&WC) SERVICE INFORMATION LETTER (SIL) NO. PT6A-144 R1

To all Customers, Operators and Service Centers: Date: Apr 22/08

This Service Letter is issued to draw attention to the following vendor information:

REVISION 1 TO P&WC SIL NO. PT6A-144.

P&WC SIL PT6A-144 advises operators that compressor and turbine washes are an effective means of preventative maintenance.

Revision 1 to the SIL gives more information about how environmental conditions cause corrosion and includes additional maintenance recommendations for corrosion control. Revision 1 also advises operators that the Engine Maintenance Manual will be revised to include a procedure for the application of corrosion inhibitors.

Pilatus fully supports the content of P&WC SIL PT6A-144 R1 as corrosion control is essential for the continued serviceability of the engine.

Operators requiring further information on this subject, please contact one of the addresses given below:

PILATUS AIRCRAFT LTD.,
CUSTOMER SUPPORT MANAGER,
CH-6371 STANS,
SWITZERLAND.

General Aviation
Tel : + 41 41 619 6208
Fax: + 41 41 619 7311
eMail: SupportPC12@pilatus-aircraft.com

PILATUS BUSINESS AIRCRAFT LTD.,
PRODUCT SUPPORT DEPARTMENT,
11755 AIRPORT WAY,
BROOMFIELD, CO 80021.
USA

Tel : 303 465 9099
Fax: 303 465 6040
eMail: Productsupport@PilBal.com

PILATUS AUSTRALIA (Pty.) LTD.,
17 James Schofield Drive,
Adelaide Airport SA 5950,
AUSTRALIA

Tel : +61 (08) 8234 4433
Fax: +61 (08) 8234 4499
Free Call: 1800 445 007
eMail: info@pilatus.com.au

Attachments: P&WC SIL PT6A-144 R1

INTENTIONALLY BLANK

SERVICE INFORMATION LETTER

Subject Compressor and Turbine washes as an effective means of preventative maintenance

Applicability All PT6A

Reasons for Revision: Discuss the Severity of your particular environment
Additional maintenance tips

Reference
Engine Maintenance Manual Chapter 71-00-00 Power Plant – Cleaning
Service Information Letter (SIL) GEN-034
FAA Advisory Circular AC 43-4A "Corrosion Control for Aircraft"

Introduction
Pratt & Whitney Canada (P&WC) would like to reinforce the importance and effectiveness of compressor and turbine washes. These washes enhance the durability of the engine by reducing the onset of sulphidation attacks on the turbine blades and prevent salt deposits from damaging the compressor section. All pilots, owners and maintenance personnel involved with the operations and maintenance of PT6A engines should carefully review these recommendations which can be found in the Engine Maintenance Manual (EMM) section 71-00-00. Please note that corrosion and sulphidation damage are not covered by the P&WC Warranty Policy.

Background
Sulphidation occurs at engine operating temperatures with sodium and sulphur present. Most aviation turbine fuels contain sulphur in sufficient amounts for sulphidation. Common sources of sodium are seawater, atmospheric pollutants and volcanic discharges. Initially sulphidation attacks the oxide protective coating of the turbine blades and as the oxidation accelerates blister scale begins to form. Should the sulphidation be allowed to progress to "stage 3" (see page 2), the turbine blades will have to be replaced, at the expense of the owner. The important point to remember is that sulphidation is a hot-corrosion phenomenon, and therefore turbine blades are most susceptible to it.

Compressor blades are also affected by salt deposits; however the corrosion mode does not require high temperatures. Extended exposure to wet deposits of salt can lead to rust and pitting which affect aerodynamic efficiency and fatigue life. If not addressed, corrosion will progress to the point where compressor components will need to be replaced.

Magnesium components such as the compressor inlet case (aluminum on some models) and the reduction gearbox housing are also susceptible to corrosion should the protective epoxy paint become chipped, scratched or eroded. P&WC has been developing a number of corrosion inhibitors that may be applied periodically. A procedure will be added to the EMM in the next revision for application of these corrosion inhibitors.

PRATT & WHITNEY CANADA CORP.
MARIE-VICTORIN, LONGUEUIL
QUEBEC, CANADA J4G 1A1
PRINTED IN CANADA

PWC: PT6A-144 R1

There are four progressive stages of CT blade sulphidation.

Stage 1 - Mild Sulphidation (coating deterioration)
Slight roughness of surface due to some growth and breakdown of the oxide scale layer. Depletion of chromium has not started. Mechanical integrity is not affected. Acceptable for continued operation.

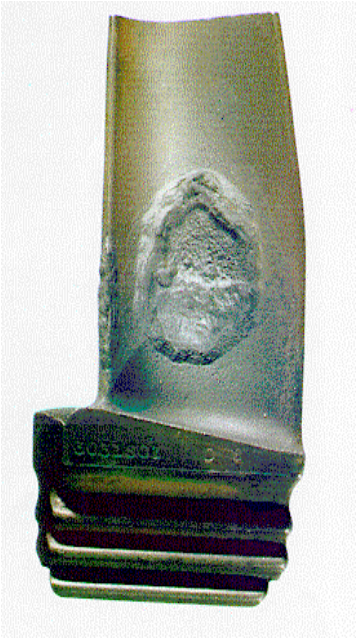
Stage 2 - Oxide Failure
Roughness of surface is more evident as breakdown of the oxide scale layer continues. Depletion of chromium from underlying alloy has started. Serviceable subject to repetitive inspections per the EMM.

Stage 3 - Severe Sulphidation
Oxidation of the base material has penetrated to significant depth. Build-up of blister scale noticeable. Mechanical integrity affected. Removal of the blades as recommended in the EMM.

Stage 4 - Perforation
Deep penetration of attack with large blisters of scale. Loss of structural material will lead to eventual component fracture.

Examples of each stage on typical PT6 compressor turbine (C.T.) blades are given in the following figures.

STAGE 1



STAGE 2

STAGE 3

STAGE 4

PRATT & WHITNEY CANADA CORP.
MARIE-VICTORIN, LONGUEUIL
QUEBEC, CANADA J4G 1A1
PRINTED IN CANADA

PWC: PT6A-144 R1

Preventative Action

P&WC recommends that Compressor and Compressor Turbine washes be performed in accordance with EMM section 71-00-00 (Power Plant – Cleaning). To assist you in determining the severity of the environment in which you are operating, you may find it helpful to consult FAA Advisory Circular AC 43-4A "Corrosion Control for Aircraft" Figures 4-15 through 4-20. Regular boroscope inspections of the compressor inlet case and turbine blades will help to establish whether the wash schedule you have in place is sufficient to prevent corrosion. Operator experience may necessitate a more aggressive wash schedule for optimal performance and reduced maintenance costs.

It is important to remember that the compressor wash provides the best results if performed after the last flight of the day before salt deposits have had a chance to do any lasting damage. Leaving the engine to sit overnight will reduce the effectiveness of a wash performed at a later time. Since sulphidation is dependant on temperature, there is no advantage to performing the turbine wash at any particular time of day; however, since the compressor wash will transfer salt deposits into the turbine, it is recommended to perform a compressor turbine wash immediately following the compressor wash.

Ensure that you are familiar with the types of washes outlined in the EMM (Ref. EMM Chap. 71-00-00 Power Plant – Cleaning). The above recommendations only require Compressor and Compressor Turbine "Desalination" washes, which use drinkable quality water as the wash fluid.

Conclusion

Sulphidation and other types of corrosion in the gas path are a result of atmospheric contaminants entering the engine. This is beyond the control of P&WC and therefore is not covered by the engine warranties and service policies. However, implementing maintenance practices per the EMM tailored to the operating environment can substantially improve component durability and reduce operating costs. As discussed in this SIL, regular compressor washes are very effective at removing salt deposits before they can cause permanent damage. Similarly, turbine washes will help to reduce the onset of sulphidation. Regular inspection is also essential to monitor the effectiveness of the maintenance practices and provide for improved reliability and timely cost effective refurbishment.

PRATT & WHITNEY CANADA CORP

Giovanni Mulas
Manager, PT6A Service Engineering

This Service Information Letter is valid until superseded or cancelled by revision

PRATT & WHITNEY CANADA CORP.
MARIE-VICTORIN, LONGUEUIL
QUEBEC, CANADA J4G 1A1
PRINTED IN CANADA