PILATUS AIRCRAFT LTD. CH-6371 STANS, SWITZERLAND

SERVICE LETTER

SUBJECT: FAA SPECIAL AIRWORTHINESS INFORMATION BULLETINS NE-08-20 AND NE-08-22

To all Customers, Operators and Service Centers: Date: Dec 04/08

This Service Letter is issued to draw attention to the following two FAA Special Airworthiness Information Bulletins (SAIBs):

1. FAA SAIB NE-08-20 - PROPELLER MAINTENANCE

2. FAA SAIB NE-08-22 - PROPELLER SEARCH INSPECTION (GENERAL VISUAL INSPECTION)

The FAA has issued SAIB NE-08-20 to alert 14 CFR part 91 operators that inadequate maintenance can cause failures of variable pitch propellers. The FAA recommend that all 14 CFR part 91 operators comply with the propeller manufacturer's overhaul requirements.

The FAA has issued SAIB NE-08-22 to alert owners, operators, mechanics and certificated repair stations that a general visual inspection should be done in addition to the servicing and/or repair of the propeller. The SAIB gives a recommended inspection procedure.

Pilatus fully supports the content of SAIB NE-08-20 and SAIB NE-08-22 as propeller defects can have a serious effect on the airworthiness of the aircraft.

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

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Attachments: FAA SAIB NE-08-20 & FAA SAIB NE-08-22.

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FAA
Aircraft Certification Service

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SAIB: NE-08-20
Date: May 14, 2008

SUBJ: Propeller Maintenance

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts owners, operators, pilots, mechanics, and certificated repair facilities of concerns for **possible failures of variable pitch propellers due to inadequate propeller maintenance.**

The FAA is concerned about the continued airworthiness of propellers with regard to maintenance performed on Part 91 of the Code of Federal Regulations (14 CFR part 91) General Aviation aircraft.

Propellers are generally very safe and reliable. Because of this, propeller maintenance may be perceived as not requiring as much scrutiny as engine maintenance. Propeller failures are relatively rare, but when a propeller fails, the consequences are typically more severe than when an engine fails and could result in damage to the engine and mount, and loss of aircraft control.

Background

14 CFR Part 91 Requirements

It is established that *14 CFR* part 135 and *14 CFR* part 121 operators are held to a higher standard of maintenance than *14 CFR* part 91 operators. With regard to propellers, this generally means that for *14 CFR* part 91 operators, compliance with manufacturer's overhaul recommendations is not mandatory. Indeed, it is reported by propeller repair stations that they occasionally see propellers coming in for service that have no evidence of maintenance or overhaul history for as long as twenty years or more.

To Overhaul or Not To Overhaul

The FAA does not mandate compliance with the manufacturer's recommended overhaul intervals for *14 CFR* part 91 operators. However, compliance is recommended.

Service experience has shown that by neglecting propeller maintenance and not performing timely overhauls or repairs can result in a propeller failure. A failure that originates from corrosion is preventable. Seemingly small areas of corrosion can generate stress concentrations which can initiate fatigue cracks.

Evident Versus Hidden Conditions

Propeller blades can and often do sustain considerable wear and damage in service. Propeller blades are often observed to have evidence of nicks, gouges, corrosion, or other surface flaws that should not be ignored and left uncorrected. Operators, mechanics, and aircraft inspectors need to recognize that conditions such as this demand action regardless of the flight time since last overhaul. The propeller manufacturer's Instructions for Continued Airworthiness and FAA Advisory Circular AC 20-37E Aircraft Propeller Maintenance (revised 9/9/05) provide additional information on this subject.

Another concern is reports of painting propeller blades in the field where nicks, gouges, corrosion, or other surface flaws are covered over. A cosmetically attractive paint job can hide a serious structural flaw and cause an airworthiness issue later on.

Controllable pitch propellers have internal components that cannot be inspected without disassembly. Unlike oil/ grease leaks, degradation of grease or seals, etc. that may be evident, internal corrosion problems are often hidden and cannot be evaluated without disassembly and inspection. Hidden defects in highly stressed areas of the hub or other blade retention components can lead to fatigue cracks, blade separation, and loss of airplane control. This is the primary reason why propeller maintenance requirements contain calendar limits.

Manufacturer's Overhaul Calendar Limits

A common complaint from the field is that manufacturer's flight hour limits for overhaul may be reasonable but calendar limits seem too onerous for low utilization, general aviation aircraft.

The extent of exposure and types of corrosive elements can vary greatly. An appropriate time limit for development of corrosion is hard to predict. However, it can be shown that propeller failure events attributed to corrosion typically occur in propellers that are either NOT in compliance with the manufacturer's overhaul calendar limits, have NOT been properly maintained, or have NOT been properly overhauled.

Recommendations

- Follow the propeller manufacturer's maintenance recommendations for calendar time limits as well as specified flight time limits for inspections and overhauls.
- Persons performing annual inspections on 14 CFR part 91 aircraft should be hesitant to sign off annual inspections year after year, if the propeller is beyond the calendar time limit for internal inspection or overhaul, without determining the airworthiness of that propeller in accordance with FAA accepted or approved data.
- Address significant evident damage or corrosion immediately. Do NOT ignore significant evident damage or corrosion until the specified flight hour or calendar time limits are reached. If such conditions are found to exist, timely maintenance is necessary prior to returning the aircraft to service.
- Do NOT perform cosmetic painting of propeller that could hide an underlying surface flaw. Proper rework (including corrosion protection) and inspection must be performed before painting.
- A careful review of the propeller logbook and maintenance records is worthwhile to verify the date and flight hours since the time of last inspection and overhaul. (Purchasers of aircraft have sometimes believed that a propeller was recently overhauled because the propeller has been to a propeller shop in its recent history. However, upon checking, it was determined that the propeller only had a minor repair performed.)
- Owners should become informed and knowledgeable about the companies and personnel that they allow to work on their aircraft propellers.

- To maintain the airworthiness of propellers, it is important that:
  — Maintenance and overhauls are properly performed by trained personnel
  — Maintenance and overhauls are performed in accordance with current approved technical data, (i.e., manufacturers' service documents)
  — Propellers are inspected and serviced at the specified intervals
  — When in service, propellers are operated within design specifications and all limitations for that propeller model installation are observed.

Performing these actions will reduce the opportunities for the propeller to be a causal factor in an accident.

For Further Information Contact

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FAA
Aircraft Certification Service

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SAIB: NE-08-22
Date: May 14, 2008

SUBJ: Propeller Search Inspection (General Visual Inspection)

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts you, owners, operators, mechanics, and certificated repair stations of **recommended procedures for a "propeller search inspection" or "general visual inspection" and performance of "cosmetic repairs".**

Propeller repair stations can service propellers without performing a complete overhaul. Such work is typically performed because of a minor service problem with the propeller or perhaps to comply with a service bulletin or airworthiness directive. When repair work is performed (whether the propeller is disassembled or not), repair stations are expected to perform a "propeller search inspection" or "general visual inspection" in addition to the original task. Such an inspection has value in that serious problems or airworthiness issues might easily be found and corrected. The scope of a propeller "search inspection" or "general visual inspection" has been debated and could be better defined.

Service issues, such as oil leaks or minor blade damage, typically involve repair of the specific problem without repair or rework of the entire propeller. During repair of a specific problem, propellers are sometimes given additional cosmetic repairs, for example, repainting of blades and/ or replacement of decals. If the blade is not given a thorough rework and inspection prior to repainting, there is concern that the paint may hide flaws such as nicks, corrosion, or other material surface flaws. Airplane owners, operators, and propeller repair stations should have FAA accepted guidelines for performing "cosmetic repairs".

Recommendations

For a "Propeller Search Inspection"

- Perform a visual inspection of all observable component parts for evidence of wear, damage, corrosion, grease leaks, or oil leaks. Any defects found will require further evaluation to determine whether the component remains serviceable until the next scheduled maintenance or overhaul. If vibration, oil, or grease leakage was reported, this may be a sign of a failed seal(s) or a more serious flaw such as a fractured hub or blade (especially if both an oil or grease leak and vibration initiate simultaneously), and a more thorough investigation is appropriate.
- If the work being performed does not require complete disassembly, additional disassembly is not required to satisfy Propeller Search Inspection requirements unless evidence of observed defects suggests the need for further investigation.
- Perform a logbook review that includes:
  - — Determination of the date and flight time-since-last-overhaul.
  - — Confirmation that the basic propeller model, blade model, and diameter are approved for the aircraft application involved (use FAA data, e.g., TCDS, or propeller manufacturers' application guide).

— Verification of the basic propeller model, blade model, and diameter for the application involved (if there is no propeller logbook or if time-in-service is unknown, a further Propeller Search Inspection might be warranted to determine airworthiness).
— A properly maintained logbook is important and is required by FAA regulation.

- Review and discuss the following items with the aircraft owner/ operator:

  — Determination of the date and flight time-since-last-overhaul (from propeller logbook).
  — Determination of compliance with all applicable FAA airworthiness directives.

- Make a logbook entry of all repairs. If the customer either does not authorize, or postpones, correction of conditions found during a search inspection; the repairman should record the issues through entries in both the propeller logbook and customer work order. The aircraft owner/ operator should be notified that this documentation was created.

- Examples of defects that might be returnable to service:

  — Minor deterioration of paint or corrosion protection (however, consider that if repair or overhaul may be some years in the future, immediate repair of damaged paint or corrosion may be appropriate).
  — Light wear or scoring typical of normal operation. Refer to the propeller manufacturer's instructions for continued airworthiness (ICAW) for the appropriate acceptance criteria.

- Examples of defects that require maintenance action or further evaluation prior to return to service:

  — Unusual wear of either unexpected severity or in an unexpected location that might be beyond the manufacturer's service limits.
  — Damage or corrosion of aluminum blades, hubs, or other highly stressed propeller parts.
  — Deteriorated seals or O-rings.
  — Incomplete adhesion or sealing of de-ice boots, erosion shields, or decals.
  — Any suspected crack indication requires confirmation with the appropriate nondestructive test (NDT) inspection.
  — Deteriorated or broken electric de-ice lead wires.
  — If only one blade is removed for repair and found to have either external or internal corrosion, also remove and inspect other blades as they are likely to have similar defects.

- Reference Documents - For additional guidance, refer to the appropriate manufacturers' Propeller Maintenance Manuals and Owner's Manuals; FAA Advisory Circular 20-37E, Aircraft Propeller Maintenance; and FAA Advisory Circular 43.13-1B, Acceptable Methods, Techniques, and Practices – Aircraft Inspection and Repair.

For "Cosmetic Repairs"

- For aluminum propeller blades, prior to painting, rework all damage using the manufacturer's published field rework procedures in the manufacturers' manuals or the FAA Advisory Circulars mentioned above. Before painting, inspection and application of a chemical conversion coating and primer paint are required following the manufacturer's ICAW.

- For exposed aluminum surfaces, an exposed defect can be inspected while a hidden defect cannot be inspected. A cosmetic repair that creates a hidden defect in an exposed surface is an unacceptable practice. Complete rework and proper repair should be accomplished prior to painting.

- Composite propeller blades have different inspection/ acceptance criteria than aluminum propeller blades. Composite propeller blades generally require strict adherence to the manufacturer's maintenance instructions. Any alternate procedures or materials require FAA approval.

- When resealing the edges of de-ice boots or applying decals to aluminum propeller blades, manufacturers commonly require that sealants and decals NOT be applied to bare aluminum. For long term corrosion protection, it is important that the aluminum be properly prepared and painted prior to resealing de-ice boots or applying decals. Likewise, sealants and adhesives should not be applied to bare aluminum unless specified by the propeller manufacturer's maintenance instructions.

- Polished propeller blades are rarely an acceptable configuration. Corrosion protection such as paint and anodize should not be removed from the surface of a propeller blade. If the original design had corrosion protection and the propeller manufacturer's ICAW call for corrosion protection, then the corrosion protection should be maintained to those instructions. Therefore, do not return polished propeller blades to service without verification of acceptability.

For Further Information Contact

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