Australian Government
Civil Aviation Safety Authority

AIRWORTHINESS BULLETIN

Metroliners – Mechanical Systems – Ageing Issues

AWB 02-017 **Issue** : 1
Date : 20 September 2006

1. Applicability

Fairchild / Swearingen Metroliner Aircraft Models SA226 and SA227 – All variants.

2. Purpose

This Airworthiness Bulletin (AWB) highlights the increasing trend of leaking fluid lines (oil, fuel, hydraulic, anti-ice, bleed or exhaust) on Metroliner SA226 / SA227 aircraft and recommends appropriate actions to mitigate the associated risk.

3. Background

CASA carries out periodic reviews of Service Difficulty Reports (SDR) to establish if a category of defects is on the rise and if that category relates to a specific aircraft make and model. During a similar review, it was noted that the reports related to the leakage of fluid carrying lines and pipes are on the increase on Metroliners. A leaking fluid line poses a potential hazard to the aircraft safety, such as:

i) Leaking fuel may eventuate in an aircraft / engine fire.

ii) A leaking oil line may result in low oil quantity and / or low oil pressure leading to loss of lubrication and failure of engine / aircraft components.

iii) An anti-ice / air-bleed line leaking hot air may result in loss of engine power, high EGT and activation of fire detection warning system.

iv) A leaking hydraulic fluid line may result in loss of control surfaces and / or landing gear.

Failures cited above have obvious safety of flight implications. A review of your system of maintenance will ensure that valid and appropriate inspection procedures are in place and any defects noted as a result of those inspections are addressed within appropriate timeframe.

4. Recommendation

A. High frequency vibrations emanating from engines and propellers are known to reduce effective service life of fluid carrying tubes and pipes. If the aircraft you maintain suffers from pipe cracking frequently, address the underlying cause of unacceptable vibration levels.

   There have also been reports of bolts securing engine mount brackets in the nacelle area becoming loose and exacerbating the stresses caused by otherwise normal vibration levels. If problem persists, checking the mount brackets may also help.

B. Flexible hydraulic lines are usually the weakest link in the hydraulic circuit and their failure may render the whole hydraulic system inoperative. To avoid leaking hydraulic fluid lines, ensure that your system of maintenance reflects OEM inspection and replacement requirements.

CASA All operator Letter (AOL) dated 05 May 2005 elaborates on SA 226 / SA 227 aircraft hydraulic system reliability

C. To avoid leaking fluid (oil, fuel, anti-ice, bleed or exhaust) lines and pipes, ensure that your system of maintenance reflects hose / pipe manufacturer's inspection and replacement requirements.

   In the absence of manufacturer's instructions, AWB 02-6 on "Flexible Hose Assemblies - Maintenance Practices" provides a suitable reference.

   All critical pipes / lines are recommended to be renewed over a suitable period of time.

D. Ensure sourcing of aviation products from reliable vendors only. AWB 02-016 'Vendor Evaluation Program' addresses the subject in detail.

E. CASA also recommends evaluating all service documents issued by the manufacturer and taking informed decision(s).

   If the parts installed on your aircraft are from any source other than the OEM (such as PMA / APMA / STC parts) ensure that adequate instructions for continued airworthiness do exist. Contact manufacturer of PMA / STC parts, if required.

   AWB 02-013 'Evaluation of Service Documents - PMA and STC parts' discusses the subject.

5. Service Difficulty Reporting Program

All defects on noted on your aircraft should be reported to CASA through SDR program available on the CASA website
http://www.casa.gov.au/airworth/sdr/index.htm

6. Enquiries

Enquiries with regard to the content of this Airworthiness Bulletins should be made via the direct link e-mail address: AirworthinessBulletin@casa.gov.au

Or in writing, to:

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