FAA
Aviation Safety

SPECIAL AIRWORTHINESS INFORMATION BULLETIN

SUBJ: POWERPLANT - ENGINE MOUNT – Cracking at nose landing gear attachment and trunnion attachment

SAIB: CE-09-13R1
Date: July 14, 2014

This is information only. Recommendations aren't mandatory.

Introduction

This Special Airworthiness Information Bulletin (SAIB) alerts you, an owner or operator, of certain **Piper Models PA-46-310P, PA-46-350P, PA-46R-350T, and PA-46-500TP** airplanes, of an airworthiness concern, specifically possible cracks in the engine mount where both the nose landing gear (NLG) trunnion and the NLG actuator attach. This condition is addressed in Piper Service Bulletins (SB) 1103 and 1154 and Piper Service Letter (SL) 1001. This SAIB emphasizes the importance of compliance with Piper service information.

Note: The information provided below is for reference only. See the latest version of the Piper service information for current information. Also, this SAIB does not address PA-46-310P and PA-46-350P aircraft modified by STC ST00541SE, conversion from piston to turboprop propulsion.

At this time, the airworthiness concern is not an unsafe condition that would warrant airworthiness directive (AD) action under Title 14 of the Code of Federal Regulations (14 CFR) part 39.

This revision to this SAIB provides:

- updated service information;
- a revised recommendation to incorporate a new engine mount that relieves the repetitive inspections;
- a change to the point of contact information; and
- other changes that address format and editorial content.

Background

This SAIB is a result of reported cracks being found in the engine mount, both where the actuator for the nose landing gear attaches and at the pivot where the NLG trunnion attaches. Figures 1a and 1b below show the general area.

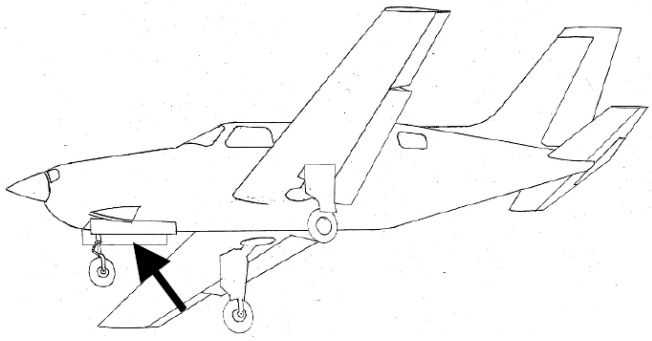

Figure 1a. General location of engine mount

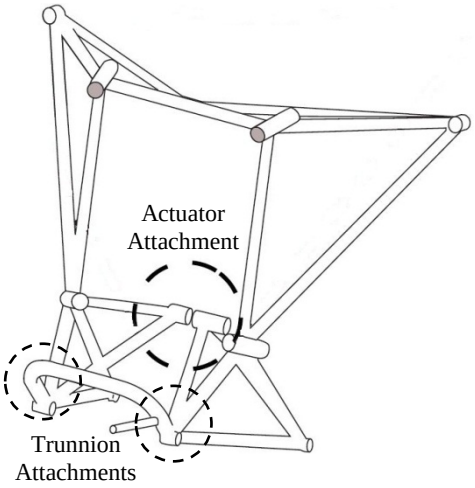

Figure 1b. Typical engine mount crack locations

Below are descriptions of the areas where problems occur, what service information is available, and a summary of reported problems.

NLG actuator attachment

There are two types of cracking to be aware of at the NLG actuator attachment.

Attachment foot

The first type, and the subject of SB 1103, is cracking around the circumference of the "foot" (the metal tube where the actuator bolt attaches). The "foot" cracks occur on some early engine mounts where the "foot" is made up of two parts; a metal disk welded to a metal tube. The cracks have been found in the welded area between the disk and tube. Some aircraft have a one-piece machined foot and have not experienced this problem. See Figures 2a and 2b below (from SB 1103C) showing pictures of both welded and machined configurations.

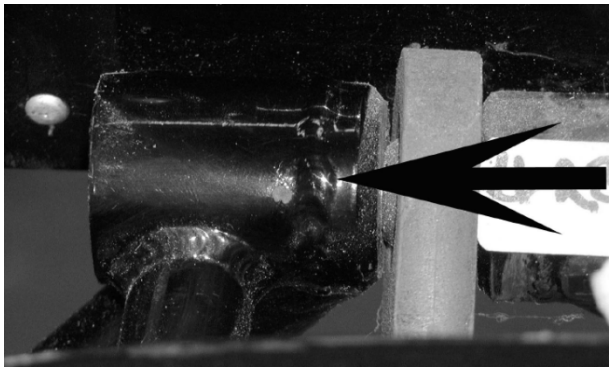

Figure 2a. Original Engine Mount Weld Indicates Two (2) Piece Foot

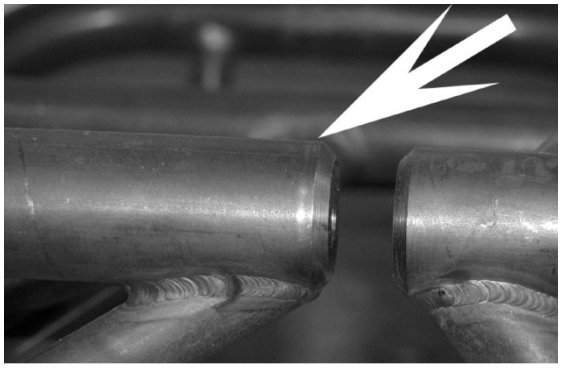

Figure 2b. Interim redesign Engine Mount One (1) Piece Machined Foot

Attachment Cluster
The second type of cracking is in the actuator cluster weld, which attaches the "foot" to the engine mount tubing, and is the subject of service bulletins 1103 and 1154. This second type of cracking occurs in the welded joints where the foot attaches to the engine mount tubes (cluster weld). See Figure 3 below. This type of cracking is independent of whether the foot is welded or machined.

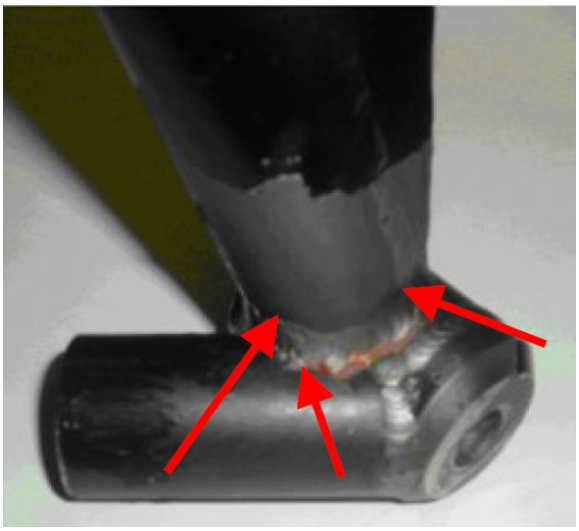

Figure 3. Cracks around Tube Cluster
(Note: crack extends into tube)

NLG trunnion attachment (pivot)
Piper Service Bulletin 1154 and Service Letter 1001 both address cracking in the engine mount where the NLG trunnion attaches. See the appropriate bulletin for your aircraft.

Piper Service Information
Below is a list of current Piper Service information and applicability to specific model and serial numbers.

Service Information	Date	Model(s)/Serial Numbers	Description
Service Letter 1001	12/09/1987	PA-46-310P: 46-8408001 - 46-8608067 4608001-4608094	
Service Bulletin 1103E	06/05/2014	PA-46-310P: 46-8408001 through 46-8408087; 46-8508001 through 46-8508109; 46-8608001 through 46-8608067; 4608001 through 4608140 PA-46-350P: 4622001 through 4622200; 4636001 through 4636620 PA-46R-350T: 4692001 through 4692207	SB 1103 addresses engine mount cracks at NLG actuator attachment feet. SB 1103A supersedes SB 1103 in its entirety. Initial Inspection time and criteria added. Additionally, total time to accomplish engine mount replacement revised, aircraft warranty coverage expanded and revised aircraft effectivity. SB 1103B adds the requirement of inspecting the nose gear actuator mounting bolt to ensure sufficient thread engagement with the lock nut after the engine mount has been replaced. This inspection and bolt replacement is only required if the engine mount was found cracked and is being replaced or has been replaced with the engine mounts listed in Table 1 for your aircraft. SB 1103C removes the PA-46-500TP from the models affected (now covered under SB 1154C) and eliminates factory participation. SB 1103 D adds aircraft models and serial

			numbers. In addition, it mandates a recurring inspection for all affected aircraft, regardless of engine mount part number. Also, inspection intervals are changed, an inspection is added prior to further flight for improper operations, and a new replacement mount P/N is added. SB 1103E supersedes SB 1103D in its entirety. A new replacement mount P/N is added that relieves the repetitive inspection on PA-46-350P and PA-46R-350T models. Also, S/N ranges and inspection intervals are changed.
Service Bulletin 1154C	01/03/2008	PA-46-500TP: 4697001-4697240, 4697242-4697244	SB 1154 addresses engine mount cracks at NLG actuator attachment feet (where feet are welded to tubes) and at NLG pivot (trunnion attachment). Replace with existing type engine mount (P/N 102460-002). SB 1154A provides a new engine mount, when installed will relieve the repetitive inspection of the engine mount. SB 1154B shortens the repetitive inspection requirement for the engine mount from 100 hours to 50 hours and deleted previous references to "New" Piper. SB 1154C Add timeline for engine mount replacement and warranty information.

Service Difficulty and Accident Incident Data

Forty -nine reports of damaged engine mounts and/or collapsed nose landing gear were identified as of late 2007. These reports came from the National Transportation Safety Board's accident database and the Federal Aviation Administration's Service Difficulty and Accident-Incident databases.

Of these, twelve (12) appeared to be associated with damage in the area of the NLG actuator attachment and nine (9) in the area of the trunnion pivot. Twenty-four contained insufficient information to determine any relationship to this SAIB, and the remainder did not apply.

Engine Mount Part Numbers

	Engine Mount P/N		
Model	**Original**	**New**	**Comments**
PA-46-310P	84010-002	84010-002 (modified)	See Note 1)
PA-46-350P	89137-02, 89137-041, or 89137-042	89137-043	See Note 2)
PA-46R-350T	89137-041, 89137-042	89137-043	See Note 2)
PA-46-500TP	102460-002	102460-036	See Note 3)

1) 84010-002 engine mounts may have either machined or welded feet. Visual verification is required. SL 1001 modifies the mount.
2) 89137-041 engine mounts may have either machined or welded feet. Visual verification is required. 89137-042 has machined feet and is otherwise visually identical to the -041. 89137-043 may be identified by a one-piece machined NLG actuator attachment fitting (reference SB 1103E) and relieves the repetitive inspection requirements.
3) 102460-036 may be identified by a one-piece machined NLG actuator attachment fitting. The 102460-002 has separate tubular feet.

Recommendation

After reviewing the above data, we recommend that you inspect the engine mount where the nose landing gear trunnion and actuator attach. We also recommend that you replace the mount with a new mount that relieves the repetitive inspection, where applicable. You should perform the inspection and replacement following the appropriate Piper service information SL 1001, SB 1103, and/or SB 1154 for the model and serial number of your aircraft and the configuration of your engine mount.

Note: As part of its ongoing analysis, the FAA routinely uses information that the public voluntarily enters into the Service Difficulty Report (SDR)/Malfunction/Defect Report (MDR) database. Refer to website http://av-info.faa.gov/sdrx/ for how to submit or search/review Service Difficulty and Malfunction/Defect reports electronically.

References

Piper Service Bulletins
http://www.piper.com/technical-publications/

FAA MDR/SDR Reporting Site
http://av-info.faa.gov/sdrx/

For Further Information Contact

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