

March 9, 2024

National Transportation Safety Board

Attention: Josh Lindberg, Senior Aviation Accident Investigator

Flight Standards Service Indianapolis District Office

Attention: Joshua Wade, Aviation Safety Inspector

RE: Summary of maintenance activity performed to aircraft BK117C2 N191LL SN 9319 from February 29, 2024 until March 6, 2024, written by Mark Breton, Part 135 Director of Maintenance, for Metro Aviation.

The aircraft was inducted into maintenance on February 29, 2024 for the performance of:

1. 3 year weight and balance reweigh.
2. Area 1 AAIP Inspection First Aid Kit & Fire Extinguisher 30 Day Inspection.
3. Area 2 AAIP Inspection MAI Personal Flotation Device 60 Day Inspection.
4. Troubleshoot a pilot reported squawk of feedback in the yaw pedals during takeoff.

All of the maintenance activity was documented in the Aircraft Logbook and on a company work order, AC9319290224, in accordance with the Metro Aviation General Operations Manual.

The reweigh of the aircraft was performed and documented with no anomalies noted. During troubleshooting of the yaw system, the yaw brake was found to be out of tolerance and was adjusted to manufacturer's specifications. An operational check flight was performed to determine if the yaw feedback was corrected and the feedback was still present.

The troubleshooting continued with a check of the yaw SEMA angle verification and the yaw flex ball cable friction. The yaw SEMA angle was checked and adjusted to manufacturer's specifications. The flex ball cable friction was checked and found to be on the high side but within manufacturer's limitations. An operational check flight was performed and found to be unsatisfactory.

The flex ball cable was then suspected to be the cause of the feedback in the yaw system and was placed on order. The suspected unserviceable tail rotor flex ball cable was removed and the new serviceable tail rotor flex ball cable was installed. A tail rotor rig verification was performed and the system found to be within manufacturer's specification. An operational check flight was performed and was found to be unsatisfactory.

The yaw SEMA was suspected to be a potential contributor to the feedback issue and it was removed and replaced with a known serviceable yaw SEMA. An operational check flight was performed and found to be unsatisfactory.

Airbus Technical (Representative) was contacted for assistance and they recommended checking the tail rotor breakout forces in a hover. This check was performed and the breakout forces were found to be within allowable ranges.

The tail rotor blade mount forks were then checked for friction and the sliding sleeve T-bolt was removed to check for any friction in the sliding sleeve. No binding was evident in these components.

The last component in the tail rotor yaw system that was not troubleshot was the yaw trim actuator. The yaw trim actuator was removed and a serviceable yaw trim actuator was installed. An operational check flight was performed and found satisfactory and the aircraft was released for service on March 6, 2024.

All of the maintenance activity that was performed was documented in the company work order and Aircraft Logbook and subject to a Secondary Maintenance Check (SMC) in accordance with the Metro Aviation General Operations Manual section 8.7.

Upon examination of the tail rotor assembly at the accident site, the T-bolt and the two each T-bolt retention bolts were not found installed in the sliding sleeve. One of the retention bolts was found approximately 50 yards away from the aircraft on the taxiway. This bolt was found undamaged and without any remnants of safety wire still attached. The T-bolt and the second T-bolt retention bolt were not found at the accident site.

I must conclude that the T-bolt was installed and assume the T-bolt retention bolts were installed but not torqued and safety wired otherwise there would be no pitch change control on the final operational check flight that was found satisfactory post maintenance.

The T-bolt removal mentioned in a paragraph above was not documented as removed in the company work order and therefore not documented as installed. The failure to document the removal of the T-bolt allowed for the T-bolt removal/installation to not receive benefit of a Secondary Maintenance Check.

While a Secondary Maintenance Check was performed to the tail rotor assembly components for proper assembly and safeties, the check did not identify the T-bolt installation was improper.

Below is the Secondary Maintenance Check (SMC) procedure from section 8.7 of the Metro Aviation General Operations Manual Revision 13 dated 12.08.2022.

8.7. Secondary Maintenance Check (SMC)

- A. A Secondary Maintenance Check (SMC) is a quality control check performed by another technician or pilot other than the technician who originally performed maintenance to the aircraft on any of the systems described below. This check should be carried out with attention to detail and the intent to assure the aircraft is in a safe condition for flight:
- 1) A Secondary Maintenance Check (SMC) is required when maintenance is performed to the following systems:
 - a. Rotating Components
 - b. Flight Controls - to include dual control installation and removal
 - c. Dual Controls
 - d. Drivetrain
 - e. Engine or Engine Controls
 - f. Propellers
 - g. Fuel Systems
 - h. Retractable Landing Gear
 - i. Hydraulic System
 - j. Starter/Generator Systems
 - k. Removal/Installation of Cowlings and Panels
 - 2) A Secondary Maintenance Check may be requested for any maintenance performed other than the systems listed above.
 - 3) If in doubt as to whether or not a SMC is required, perform a SMC.
 - 4) Additionally, a Secondary Maintenance Check is required for the following:
 - a. During the maintenance event (in process), if the item requiring an SMC is to be covered/closed, preventing the SMC evaluation
 - b. Prior to electrical power being applied to perform an operational check, prior to ground runs, operational check flights and the aircraft being returned to service
 - 5) The SMC must be performed by:
 - a. A technician other than who performed the work.
 - b. A Pilot, if no other technician is available.

NOTE: If maintenance performed to aircraft systems does not specifically require a SMC to be performed, every effort should be made to have a technician/pilot visually check the maintenance performed prior to aircraft return to service.

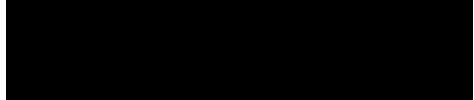
A link to copies of the maintenance records for the last 3 years is in the body of the email I am sending this document and other files in.

Also accompanying this communication via email is a scanned copy of:

1. Metro Work Order AC9319290224
2. Aircraft Logbook pages dated February 29, 2024 (2 of 2)
3. Aircraft Logbook page dated March 6, 2024
4. Maintenance Technician statements

If you have any questions, or require further information please don't hesitate to contact me.

Respectfully,

A black rectangular redaction box covering the signature of Mark Breton.

Mark Breton | Director of Maintenance
Metro Aviation, Inc.

A large black rectangular redaction box covering the contact information, including a phone number and email address.

| www.metroaviation.com