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Date: May 21, 2024

Subject: CEN24LA366, Record of Aircraft Examination

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Accident site photos showed the aircraft, N73154, was resting upside down and the elevator was fully deflected downward (upward if the aircraft was upright). During aircraft recovery by AMF Aviation, Springfield, Tennessee, there was no control interference when the elevator was moved, full travel, to the upper and lower control stops. Recovery personnel moved the elevator in both directions and a corresponding movement of the left control yoke was present while the airplane was inverted. When the airplane was placed into an upright position, the elevator was again moved and there was about 6 inches of free play before the left control yoke would move. For recovery purposes, the aileron control cables were disconnected at their turnbuckles, the rudder control cables were disconnected at the aft rudder bell crank, the elevator control cables were disconnected at the aft bell crank, and the elevator trim actuator was removed from the horizontal stabilizer. All the avionics were removed from the instrument panel prior to aircraft recovery.

The aircraft was examined under the supervision of Ian Mullins with Ernest Hall, Textron Aviation, at AMF Aviation on May 21, 2024.

The fuselage had longitudinal deformation from accident impact forces, which reduced the supportive length of the elevator control cable.

Examination of the elevator control cable did not display separation, distortion, fraying, localized wear, or asymmetric wear. Rust was present on the cables in the aft bell crank area. The elevator flight control cable pulleys did not display abnormal wear features and rotated freely.

The elevator trim control cable, shown in Figure 1, was found separated in the area underneath the cockpit seats. The cable separation exhibited rust, a flat spot, and witness marks, which were shiny in appearance.



Figure 1 - Elevator Trim Control Cable

The elevator trim actuator extension was in the approximate neutral position. The cockpit elevator trim indicator needle was 1-2 needle widths below the neutral marked position.

The aircraft was equipped with an STEC System 30 Autopilot System. The autopilot pitch servo clutch was not engaged during the examination.

The wing flap motor actuator was in the fully retracted wing flap position.

The instrument panel wiring, shown in Figure 2, near the control column had excess length and wiring that was within ½ inch of the flight control cables and pulleys. One of the wires, near a pulley, exhibited chaffing.



Figure 2 - Instrument Panel Wiring with Wire Chaffing (Shown in the Black Circle)

The alternator, shown in Figure 3, had power and ground wires that were frayed and covered with electrical tape. One terminal fell off the alternator when it was disconnected from the alternator during the examination. Figure 4 further shows the condition of the wiring leading to the alternator. According to an aircraft logbook entry dated May 22, 2024, states the alternator was removed for overhaul and then reinstalled onto the aircraft.



Figure 3 - Aircraft Alternator and Terminal Connection



Figure 4 - Alternator Wires

The cockpit seat rails were intact and secure. The rivets used to secure the seat rails, shown in Figure 5, were blind rivets and not solid rivets, which would have afforded greater strength. An aircraft logbook entry dated on April 9, 2024, states that the cockpit seat rails had been replaced with McFarlane seat rail part numbers: MC0511243-4, -5, and -6, and installed with CherryMAX blind rivets.



Figure 5 - Seat Tracks with Blind Rivets

The NTSB Form 6120 submitted by the pilot reported an aircraft total time at the time of the accident as 10,360 hours. The tachometer, shown in Figure 6, was partially covered and indicated 366.5 with a label below the tachometer that stated to "ADD 10000".



Figure 6 - Aircraft Tachometer