



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

April 4, 2018

AIRFRAME AND ENGINE EXAMINATION

WPR18FA063

This document contains 2 embedded photos.

A. ACCIDENT

Location: Ogden, UT
Date: December 29, 2017
Aircraft: Cessna 172M, N4395R
Serial # 17263145
NTSB IIC: Albert Nixon

B. EXAMINATION PARTICIPANTS:

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C. SUMMARY

Examination of the recovered airplane wreckage was conducted on April 4, 2018, in a hangar at the Ogden-Hinkley Airport, Ogden, Utah. No evidence of preimpact mechanical malfunction was noted during the examination of the recovered airframe and engine.

D. DETAILS OF THE INVESTIGATION

1.0 Airframe Examination

According to the recovery specialist, the wreckage was located in the Great Salt Lake at a depth of about 20 feet at 41°19.4800 N, -112°33.4090 W. A review of sonar imagery provided by law enforcement, showed the main wreckage inverted and oriented on a heading of about 195°. The engine is depicted about 110 ft from the main wreckage on a heading of about 108°. The wreckage was recovered from the lake on March 8, 2018. The main wreckage consisted of both wings, the fuselage, and the empennage. The rudder counterweight and the right fuel cap were separated and not recovered. One of the divers stated that the left seat pilot's restraint harness was secured, but the other pilot did not appear to have his restraint harness on prior to the diver extracting them. All flight control surfaces remained attached in the appropriate locations. Flight control cable continuity was established when the aircraft was removed from the water by the recovery specialist personal. The aileron cables were cut to aid in recovery.



Figure 1: The airplane wreckage as viewed from the right side.

The fuselage remained mostly intact. The wind screen was fragmented, and the firewall and instrument panel were partially attached. Both cabin doors remained attached. The right door window was separated and located with the main wreckage. The baggage door was closed and locked. The elevator push pull tube in the cockpit was observed separated at the forward end of the tube where it attaches to the control “Y” assembly. Flight control continuity was established during the examination.

The pilot’s seat was a full articulating seat and the seat base made from magnesium and had corroded away in the salt-water environment. Both the front seat restraint systems were removed from the aircraft and examined. The pilot’s seat restraint system was removed, and the attachment bolts and nuts were re-installed in the seat belt attachment fitting. The co-pilot seat restraint system the attaching hardware was re-installed in the aircraft structure. Both of the front seat restraint systems were American Safety (Am-Safe Inc.) products. Neither of the front seat restraint system appeared for have stretched webbing and all webbing was intact (no cut belts). All buckles and plates were intact.

The fuel selector handle was observed in the right tank position; however, it was found to have been separated from the valve and free to rotate. The fuel selector valve was removed from the aircraft and found to be in the both position. The valve was functionally tested in all position and functioned properly.

The right wing remained attached to the fuselage at the wing root and was separated during recovery at about Wing Station (WS) 100.00. and displayed extensive damage. The wing was bent upward about midspan, 135°. The leading edge was displaced downward about 45° from the root to about midspan. The fuel tank wing skin was removed, and no damage was noted to the fuel cell. The fuel screen was clear of contaminants. The flap and aileron were attached and remained mostly intact. The flap jack screw was confirmed to be in the up position. The right fuel cap was not recovered.

The left wing remained attached to the fuselage and displayed some damage. The leading edge was displaced downward about 30° from the root to about midspan. According to the recovery specialist the fuel cap was removed during the recovery to drain out the water. The fuel tank wing skin was removed, and no damage was noted to the fuel cell. The fuel screen was clear of contaminants. The flap and aileron were attached and remained mostly intact. The vented fuel cap and filler neck lock ring were undamaged.

The empennage remained mostly attached to the fuselage. The vertical stabilizer remained attached to empennage and was folded to the left and exhibited extensive damage throughout. The rudder remained attached to the vertical stabilizer and displayed extensive impact damage. The rudder balance weight was not located with the wreckage. The horizontal stabilizer remained attached to the empennage and displayed some impact damage on both tips. The elevator remained attached to the horizontal stabilizer and displayed extensive impact damage. Both elevator balance weights remained attached. The left elevator rivets holding the elevator to the torque tube were observed sheared. The trim tab actuator was measured about 1.4 inches which was about 5° tab up. The elevator trim was observed to be about 1.4 inches, which was about the neutral position.

The cabin air knob was observed in the closed position. The cabin vent valve was observed in the open position. The ignition was in the both position. The carburetor heat was in the closed position. The flaps switch was up. All circuit breakers were observed in the closed position. The Master and Alternator switch was on. The throttle and mixture were in the closed position. The airspeed indicator indicated about 160 knots, and the vertical speed indicator about -750 ft per minute. The attitude indicator indicated about a 30° right bank and the turn coordinator indicated that the right wing was low.

2.0 Engine Examination

Prior to the examination, the recovery specialist removed all eight spark plugs and applied lubricant to the engine. All engine accessories were in their respective housings. Manual rotation was attempted by rotating the propeller, about 10° of rotation was achieved. Both magnetos were removed and exhibited extensive corrosion. They were not able to be rotated due to the corrosion. Cylinder Nos. 1 and 3 were removed and about half a turn of rotation was achieved. The drivetrain continuity was visually verified.

The oil filter was removed and cut open to examine for contaminants. No anomalies were noted. The oil pressure screen was removed, and no anomalies were noted.

The carburetor was disassembled, and salt was noted inside. The carburetor floats appeared to be intact and not displaced. Salt was noted inside the carburetor bowl. Besides the salt, no anomalies were noted.

According to the recovery specialist, all eight Tempest (UREM38E) spark plugs were removed during the recovery, in order to lubricate the engine. Seven of the eight spark plugs that were removed were present during the examination. All seven spark plugs displayed salt-water corrosion.

The fixed pitch propeller remained attached to the engine. Both propeller blades were observed displaced towards the flat side of the blade approximately 16 inches out from the propeller hub. The power flow exhaust system was examined and was crushed slightly aft, consistent from impact. The heat muff was removed and found intact. No anomalies were noted.



Figure 2: Engine as viewed from the left side.

The examination of the engine revealed no evidence of pre-impact mechanical malfunctions or failures that would have precluded normal operation.

Submitted by: Albert Nixon