



## RECORD OF EXAMINATION

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**Central Region**

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**NTSB Accident Number: CEN19FA095**

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### **Narrative:**

The main wreckage of the helicopter was in a brackish marsh with an approximate tail to nose heading toward the southwest. The fuselage, engine, and main and tail rotors were located within an approximate distance of 100 feet. Terrain features in day visual meteorological conditions are depicted in Figure 2.



Figure 2: Wreckage Site Viewed Toward Northeast

The fuselage was fragmented due to impact forces. The transmission and attached main rotor hub, and the engine partially attached to the fuselage structure. Both skids were separated from the fuselage through separations consistent with overload. The wreckage exhibited a left-bank, nose-low impact attitude.

The instrument panel was separated from the fuselage and several of the engine instruments were separated from the panel. The panel and missing engine instruments were found underwater near the main wreckage. The attitude gyro face had bank angle graduations of 0°, 10°, 20°, 30°, 60°, and 90°. The attitude indicator was disassembled and found to be free moving. There were no signs of visible anomalies or mechanical damage were found on either the attitude indicator housing or the gyro.

Three recovered instrument panel gauges (torque gauge, Ng (Compressor) RPM percent gauge, and oil temperature gauge) were sent to the National Transportation Safety Board Vehicle Recorder Division for attempted memory download. The torque gauge's internal watch battery's voltage was measured at 0.4 volts, however, visible damage showed that power may not be able to be supplied from the battery to the unit's main board. The manufacturer stated that without battery power, the data was likely corrupted or compromised. The Ng RPM percent gauge's internal battery's voltage revealed the battery was no longer supplying voltage. The oil temperature gauge did not contain a memory chip, however, this particular device does not have a battery and did not record any data.

Post-accident examination of the flight control system confirmed flight control continuity from the cockpit controls to the main and tail rotor systems.

The hydraulic system actuators and hydraulic system pump underwent CT scanning and bench testing; the examinations and tests revealed no mechanical anomalies that would have precluded normal operation.

The main rotor was rotated through by hand during which there was a corresponding rotation of the transmission drive shaft. The transmission chip detectors did not contain debris. The transmission oil filter was opened, and no debris was noted.

The light bulb of the right-side navigation light (green colored) was removed and examined. The examination revealed filament stretching.

The engine compressor exhibited evidence consistent with water ingestion and engine operation at operating speed. Rotation of the compressor by hand resulted in a corresponding rotation of the gas generator turbine and starter/generator. Engine continuity from the compressor through the N1 drive train was confirmed.

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