

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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AIRCRAFT EXAMINATION

February 8, 2023

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A. ACCIDENT

Location: Wheeling, Illinois
Date: August 11, 2021
Time: 0640 cdt
Helicopter: N4043B, Robinson R44 II

B. AIRCRAFT EXAMINATION

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C. SUMMARY

On August 11, 2021, about 0640 central daylight time, a Robinson R44 helicopter, N4043B, was substantially damaged when it was involved in an accident near the Chicago Executive Airport (PWK), Wheeling, Illinois. The pilot received minor injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

D. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

The helicopter was initially examined in a hangar at the Chicago Executive Airport on 08/16/2021. The helicopter was sitting upright but leaning to the right due to a broken right landing skid. There was significant damage to the main rotors and the tailboom had damage consistent with main rotor blade impact. The battery cable had been cut by first responders which did not allow powering up the helicopter for testing. A surrogate battery cable was installed and the helicopter's engine management unit (EMU) was downloaded of all data it contained. Subsequent to the EMU download an engine test run was performed. Before the test run, the drive belts from the engine to the rotor system were cut to prevent the rotor system from turning. The engine was started normally and run at low rpm. The test run was limited due to the excessive smoke coming from the exhaust due to the non-level attitude of the helicopter which allowed the oil to pool in the cylinders that were lower. (cylinders on the right side of the helicopter.) The engine induction SCAT tube was removed and examined for evidence of collapse. No evidence of collapse was discovered.

A second examination of the helicopter was performed on February 1, 2022. For this test, the helicopter was placed on blocking to support it in a level attitude for another engine test run, and testing of the helicopter's governing system. The engine was started normally and allowed to warm up to operating temperature. There was no excessive smoke as with the previous test. Once sufficiently warmed up the throttle was increased to 70% and a magneto check was performed with no anomalies noted. The engine power was then increased to 104% without governor activation and no anomalies were noted. The governor was then engaged and the engine rpm fluctuated from about 100 to 108%. Power was then reduced to 82% by manually actuating the twist throttle control and then released. Once released the engine rpm increased and again stabilized with fluctuation between 100 and 108%. The throttle control was then manually actuated to decrease engine rpm to 75% and then released. When this was done, the engine rpm remained at 75%.

During the testing, the engine gauges all remained in the normal range once the engine had been warmed to normal operating temperature.

According to the helicopter manufacturer, the fluctuation of the engine rpm was expected due to the engine and governor system operating without the drive belts attached.

At this time, the engine governor unit was removed from the helicopter for further testing at the manufacturer's facility.

On June 2, 2022, the engine rpm sensor and associated molex connector were removed from the helicopter for further testing.



Figure 1. Helicopter during examination viewed from front left. (NTSB Photo)



Figure 2. Helicopter during examination viewed from front right. (NTSB Photo)



Figure 3. View of tailboom during examination. (NTSB Photo)



Figure 4. View of engine induction tube. (NTSB Photo.)

Submitted by:

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