



Aviation Investigation Final Report

Location:	Wheeling, Illinois	Accident Number:	CEN21LA369
Date & Time:	August 11, 2021, 06:40 Local	Registration:	N4043B
Aircraft:	ROBINSON HELICOPTER COMPANY R44 II	Aircraft Damage:	Substantial
Defining Event:	Unknown or undetermined	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported a decrease in engine and rotor rpm during cruise flight. The pilot reported that he heard sounds from the engine “like detonations,” and he placed the helicopter into autorotation and landed on a road. The helicopter rotor blades struck a pole and the helicopter rolled onto its right side. Downloaded data from the engine monitoring unit confirmed the decrease in engine and rotor rpm.

Functional testing of the engine and electronic governor control revealed no anomalies. Bench testing of the engine rpm sensor and the electronic governor control unit also revealed no anomalies. During functional testing, it was confirmed that the manual throttle control could be used to override the governor control.

Based on the available information, the reason for the decrease in engine rpm reported by the pilot could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

A partial loss of engine power for reasons that could not be determined based on available information.

Findings

Not determined

(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (partial)
Initial climb	Unknown or undetermined (Defining event)

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.

According to the pilot, the day before the accident flight, he had flown the helicopter from his private helipad in Morton Grove, Illinois, to several airports in central Wisconsin, returning that same day. Upon returning, the winds were strong and gusting, and the pilot did not feel comfortable landing at his private helipad, so instead landed at PWK. He left the helicopter there overnight, instructing ramp personnel to fill the fuel tanks prior to his return the following day.

On the day of the accident, the pilot arrived at PWK and planned to fly the helicopter from PWK to his private helipad. He reported that after takeoff, when the helicopter was about 200 ft above ground level, at 40 knots airspeed, he noticed the rpm decreasing and then heard the low rpm warning. He then saw the rpm increase “above the governor” followed by a decrease and once again the low rpm warning activated. He said that he heard sounds from the engine “like detonations.” He entered an autorotation and selected a road to land on. During the landing the helicopter’s main rotor blades struck a pole and the helicopter flipped onto its right side.

The helicopter was equipped with an engine monitoring unit (EMU) that recorded engine data that were downloaded during a postaccident examination. The EMU showed that the engine speed and rotor rpm increased to initiate the flight, stabilizing at about 101% and 101% respectively where they remained for about 1.5 minutes. Both the engine and rotor speed then decreased briefly, followed by a brief increase before decreasing to 69% and 87%, respectively, where they remained for the remainder of the flight.

The helicopter’s right landing skid was broken during the landing and as a result the helicopter was leaning toward its right side during a postaccident examination. A test run of the engine was performed and the engine started normally and idled, but due to the positioning of the helicopter a complete run up of the engine was not possible. After the initial test run, another test was completed on a separate date with the helicopter blocked up to a level attitude.

Engine operation and functioning of the electronic governor system was performed. No anomalies regarding engine operation or governor operation were detected. The ability to override the governor using the manual twist throttle was also tested. Although there was resistance to throttle movement with the governor engaged, the manual throttle control could be used to override the governor inputs.

The governor control unit and the engine rpm sensor were removed for further bench testing. Testing at the manufacturer’s facility showed no discrepancies and both the governor controller and the engine rpm sensor passed all test procedures.

Pilot Information

Certificate:	Private	Age:	35, Male
Airplane Rating(s):	None	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	September 23, 2020
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	159 hours (Total, all aircraft), 137 hours (Total, this make and model), 48 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER COMPANY	Registration:	N4043B
Model/Series:	R44 II	Aircraft Category:	Helicopter
Year of Manufacture:	2021	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	14431
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	Annual	Certified Max Gross Wt.:	2600 lbs
Time Since Last Inspection:	70 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	70 Hrs	Engine Manufacturer:	Lycoming
ELT:	Installed	Engine Model/Series:	IO-540
Registered Owner:		Rated Power:	245 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KPWK,646 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	09:23 Local	Direction from Accident Site:	23°
Lowest Cloud Condition:	Scattered / 1800 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 2500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	14 knots / 23 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	210°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.84 inches Hg	Temperature/Dew Point:	28°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Wheeling, IL	Type of Flight Plan Filed:	None
Destination:	Morton Grove, IL	Type of Clearance:	VFR
Departure Time:		Type of Airspace:	Class D

Airport Information

Airport:	CHICAGO EXEC PWK	Runway Surface Type:	
Airport Elevation:	647 ft msl	Runway Surface Condition:	
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	42.114279,-87.901541

Administrative Information

Investigator In Charge (IIC):	Brannen, John		
Additional Participating Persons:	Paul Adams; FAA; Des Plaines, IL Thom Webster; Robinson Helicopters; Torrance, CA		
Original Publish Date:	March 1, 2023	Investigation Class:	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=103682		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).