Aviation Investigation Final Report

Location:	Rowlett, Texas	**Accident Number:**	CEN24LA027
Date & Time:	October 26, 2023, 16:52 Local	**Registration:**	N141CD
Aircraft:	ROBINSON HELICOPTER R44	**Aircraft Damage:**	Substantial
Defining Event:	Powerplant sys/comp malf/fail	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

While in level flight, the flight instructor heard the engine and rotor rpm increase, followed by the high rotor rpm horn. The flight instructor reduced the throttle and subsequently observed another increase in engine and rotor rpm as if the throttle were fully open. The flight instructor again reduced the throttle, then observed rpm fluctuations and suspected they had a governor failure. He attempted overgripping the throttle but said it had limited effect in controlling the rpms. Concerned with the prospect that the engine could fail at any moment, the flight instructor initiated an autorotation as the engine fluctuations could not affect flight if they were unmarried to the rotor. The pilot selected a dirt field off the nose of the helicopter and began their descent. The field had been recently plowed, and recent rain showers made the field muddy. During the touchdown on the field, the skids dug into the dirt and the helicopter nosed forward, which resulted in the main rotor contacting the ground. The helicopter spun violently and then came to rest upright. The helicopter sustained substantial damage to the main rotor, tail rotor, tail boom, and empennage.

The helicopter's Engine Monitoring Unit (EMU)/Governor Controller was retained for further examination. The EMU/Governor Controller was a single unit that maintained the engine rpm in the governing range. Engine and rotor rpm were related as long as the rotor was not in a freewheel/autorotation condition. The EMU side of the unit just recorded data. Operational testing of the unit did not replicate the issue the flight crew experienced. No anomalies were found that would have precluded the unit's normal operation.

Per the helicopter's Pilot Operating Handbook, the emergency procedure for a governor failure was to grip the throttle firmly to override the governor and then switch the governor off before completing the flight using the manual throttle control. The flight instructor reported that, although he thought he attempted to disable the governor, post-flight he was not sure if they had accomplished it or not. Had the pilot followed the emergency checklist and disabled the

governor, they would have likely maintained some throttle control during the emergency landing.

Probable Cause and Findings

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

A malfunction of the helicopter's Engine Monitoring Unit (EMU)/Governor Controller for undetermined reasons. Contributing to the accident was the flight instructor's failure to turn off the EMU/Governor Controller per the emergency checklist when the malfunction first occurred.

Findings

Aircraft	(general) - Malfunction
Not determined	(general) - Unknown/Not determined
Personnel issues	Incorrect action performance - Instructor/check pilot
Environmental issues	Wet/muddy terrain - Contributed to outcome

Factual Information

History of Flight

Enroute-cruise	Powerplant sys/comp malf/fail (Defining event)
Enroute-cruise	Off-field or emergency landing

On October 26, 2023, about 1652 central daylight time, a Robinson Helicopter R44, N141CD, was substantially damaged when it was involved in an accident near Rowlett, Texas. The flight instructor and pilot receiving instruction incurred minor injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

The flight instructor reported that the purpose of the flight was for the commercial rated pilot to receive instruction in basic IFR maneuvers, including holding at an RNAV fix and then performing an RNAV approach.

The pilot was flying the helicopter, and the flight instructor was looking for other aircraft traffic in the area. While in level flight en route to the RNAV fix and maneuvering to avoid traffic, the flight instructor heard the engine and rotor rpm increase, followed by the high rotor rpm horn. The flight instructor took control of the helicopter, reduced the throttle, and subsequently observed another increase in engine and rotor rpm as if the throttle were fully open.

The flight instructor again reduced the throttle, then observed rpm fluctuations. He reported observing fluctuations as high as 109 percent and as low as 95 percent in flight. He suspected they had a governor failure. He attempted overgripping the throttle but said it had limited effect in controlling the rpms.

Concerned with the prospect that the engine could fail at any moment, the flight instructor initiated an autorotation, as the engine fluctuations could not affect flight if they were unmarried with the rotor. He observed a large dirt field off the nose of the helicopter and began their descent. The field had been recently plowed, and recent rain showers made the field muddy. During the touchdown on the field, the skids dug into the dirt and the helicopter nosed forward, which resulted in the main rotor contacting the ground. The helicopter spun violently and then came to rest.

An onboard video and data recorder captured the entire flight. It began at 1636:12 with the flight instructor and student pilot conducting the preflight and helicopter engine start. At 1643:50, the helicopter departed to the south and then made a turn to the east. At 1649:24, the engine manifold pressure began to increase rapidly. The rpms increased from 100 to 110 percent and then began to fluctuate. At 1649:27, the flight instructor grabbed the cyclic and called for the controls. The student pilot’s hand remained on the cyclic. At 1649:31, the flight

instructor let go of the cyclic and checked the warning light by pressing the press to test button. At 1649:38, the flight instructor repeated “My controls.” The student pilot confirmed “Your controls” while keeping a hand on the cyclic. At 1649:39, the flight instructor screamed “Let go” and the student pilot confirmed he was not touching the controls after letting go. The flight instructor was in control of the helicopter for the remainder of the flight. At 1650:02, the flight instructor stated “Oh yeah, actually that was not you. It was the governor.” At 1650:05, the flight instructor made a mayday call including that it was an “emergency engine out.” At 1650:47, the helicopter touched down, pitched forward and the main rotor struck the ground. Violent shaking began that lasted one minute and 25 seconds. At 1652:02, the flight instructor engaged the rotor brake, and the rotor stopped spinning 10 seconds later. The flight instructor and student pilot then exited the helicopter.

The helicopter remained upright, but sustained substantial damage to the main rotor, tail rotor, tail boom, and empennage. The helicopter’s EMU/Governor Controller was retained for further examination.

The EMU/Governor Controller was examined at the manufacturer’s facilities.
The EMU/Governor Controller was a single unit, and it maintained the engine rpm in the governing range. Engine rpm and rotor rpm were related as long as the rotor is not in a freewheel/autorotation condition. The governor was active only above 80 percent engine rpm and could be switched on and off using the toggle switch on the end of the right seat collective. The EMU side of the unit just recorded data.

Operational testing of the unit did not replicate the issue the flight crew experienced. The unit was opened, and the circuit board was examined. No anomalies were found that would have precluded the unit’s normal operation.

No other preaccident malfunctions or failures with the helicopter were reported that would have precluded its normal operation.

Per the helicopter’s Pilot Operating Handbook, the emergency procedure for a governor failure was to grip the throttle firmly to override the governor, then switch the governor off before completing the flight using the manual throttle control. The flight instructor reported that, although he thought that he attempted to disable the governor, post-flight he was not sure if they had accomplished it or not.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	25,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	May 2, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 10, 2023
Flight Time:	714 hours (Total, all aircraft), 462 hours (Total, this make and model), 587 hours (Pilot In Command, all aircraft), 221 hours (Last 90 days, all aircraft), 66 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Airline transport	**Age:**	34,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	December 2, 2022
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	August 15, 2023
Flight Time:	2298 hours (Total, all aircraft), 43 hours (Total, this make and model), 1488 hours (Pilot In Command, all aircraft), 58 hours (Last 90 days, all aircraft), 32 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER	**Registration:**	N141CD
Model/Series:	R44	**Aircraft Category:**	Helicopter
Year of Manufacture:	2023	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	30091
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	October 4, 2023 100 hour	**Certified Max Gross Wt.:**	2200 lbs
Time Since Last Inspection:	19 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	226 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	O-540-F1B5
Registered Owner:	On file	**Rated Power:**	260
Operator:	On file	**Operating Certificate(s) Held:**	On-demand air taxi (135), Pilot school (141)
Operator Does Business As:	On file	**Operator Designator Code:**	S4HA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KDAL,484 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	16:53 Local	**Direction from Accident Site:**	248°
Lowest Cloud Condition:	Few / 2400 ft AGL	**Visibility**	10 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.88 inches Hg	**Temperature/Dew Point:**	27°C / 22°C
Precipitation and Obscuration:			
Departure Point:	Garland, TX (T57)	**Type of Flight Plan Filed:**	None
Destination:	Rockwall, TX (F46)	**Type of Clearance:**	None
Departure Time:	16:40 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	2 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	32.945,-96.557(est)

Administrative Information

Investigator In Charge (IIC):	Folkerts, Michael
Additional Participating Persons:	Baker Nase; FAA; Irving, TX Ken Martin; Robinson Helicopter; Torrence, CA
Original Publish Date:	April 24, 2025
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=193320