Aviation Investigation Final Report

Location:	Spearman, Texas	**Accident Number:**	CEN25LA093
Date & Time:	February 7, 2025, 16:40 Local	**Registration:**	N7191B
Aircraft:	ROBINSON HELICOPTER R22 BETA	**Aircraft Damage:**	Substantial
Defining Event:	Powerplant sys/comp malf/fail	**Injuries:**	1 Minor, 1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, while performing an aerial inspection of a fence, he heard a loud bang come from the engine and the helicopter began to shake and lose altitude. The shaking stopped momentarily but then started again and the engine lost total power. The pilot performed a forced landing, during which the helicopter impacted cedar trees and then rolled several times down a hill. The helicopter sustained substantial damage to the fuselage, tail boom, and main rotor gearbox.

A postaccident inspection of the engine revealed that the No. 3 cylinder intake valve head was burned and chipped specifically on the combustion face, margin, and seat face. Additionally, the bolts that secured the intake manifold system to the engine block were loose.

A review of maintenance records revealed that all four engine cylinders were removed for overhaul and reinstalled about 8 months before the accident due to low compression. According to the pilot, who was also the owner of the helicopter, about one month before the accident (about 360 hours after the cylinders were overhauled), the No. 1 cylinder was replaced due to the intake valve head being burned. According the engine manufacturer, when engine cylinders are removed and/or reinstalled, the bolts that secure the intake manifold system to the engine block need to be removed to manipulate the cylinders. It is likely that when the cylinders were removed 8 months before the accident for overhaul and reinstallation, the bolts that secured the intake manifold system to the engine block were not properly torqued when the cylinders were reinstalled.

The loose intake manifold system likely allowed unmetered air into the engine, resulting in an overly lean fuel/air mixture, which resulted in damage to both the No. 1 and No. 3 cylinder intake valves. The damage to the valves would likely result in poor combustion and a decrease in engine performance.

Probable Cause and Findings

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

Improperly torqued intake manifold bolts that allowed unmetered air to enter the engine, resulting in an overly lean fuel-air mixture, eventual failure of the No. 3 cylinder intake valve, and a total loss of engine power.

Findings

Aircraft	Recip eng cyl section - Failure
Aircraft	Recip eng cyl section - Incorrect service/maintenance
Personnel issues	Repair - Maintenance personnel
Environmental issues	Tree(s) - Contributed to outcome
Environmental issues	Sloped/uneven terrain - Contributed to outcome

Factual Information

History of Flight

Maneuvering-low-alt flying	Powerplant sys/comp malf/fail (Defining event)

On February 7, 2025, about 1640 central standard time, a Robinson R22 helicopter, N7191B, was substantially damaged when it was involved in an accident near Spearman, Texas. The pilot was not injured, and the passenger sustained minor injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that they departed near Pampa, Texas, about 1020 for an all-day wildlife management hunting expedition and to inspect fences. While inspecting a fence, the pilot heard a loud bang coming from the engine and the helicopter began to shake. The shaking stopped and then started again, and the engine lost total power. The pilot was unable to find a suitable forced landing site due to uneven terrain, and the helicopter impacted cedar trees and then rolled several times down a hill. The helicopter sustained substantial damage to the fuselage, tail boom, and main rotor gearbox.

A postaccident inspection of the engine revealed that the No. 3 cylinder intake valve head was burned and chipped specifically on the combustion face, margin, and seat face. Additionally, the bolts that secured the intake manifold system to the engine block were loose.

A review of maintenance records revealed that all four engine cylinders were removed for overhaul and reinstalled in June 2024 due to low compression. According to the pilot, who was the owner of the helicopter, in January 2025, about 360 hours after the engine cylinders were overhauled, the No. 1 cylinder was replaced due to the intake valve head being burned. According to the engine manufacturer, when engine cylinders are removed and/or reinstalled, the bolts that secure the intake manifold system to the engine block need to be removed to manipulate the cylinders.

Pilot Information

Certificate:	Commercial	**Age:**	62,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 18, 2024
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 24, 2024
Flight Time:	17136 hours (Total, all aircraft), 15008 hours (Total, this make and model), 17036 hours (Pilot In Command, all aircraft), 182 hours (Last 90 days, all aircraft), 43 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER	**Registration:**	N7191B
Model/Series:	R22 BETA	**Aircraft Category:**	Helicopter
Year of Manufacture:	2000	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3074
Landing Gear Type:	Skid	**Seats:**	2
Date/Type of Last Inspection:	January 23, 2025 100 hour	**Certified Max Gross Wt.:**	1375 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	3900 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Not installed	**Engine Model/Series:**	O-360
Registered Owner:	On file	**Rated Power:**	124 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	E42,3055 ft msl	**Distance from Accident Site:**	10 Nautical Miles
Observation Time:	16:51 Local	**Direction from Accident Site:**	120°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / None	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	17°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Pampa, TX	**Type of Flight Plan Filed:**	None
Destination:	Pampa, TX	**Type of Clearance:**	None
Departure Time:	10:20 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 1 None	**Latitude, Longitude:**	35.99768,-101.1017(est)

Administrative Information

Investigator In Charge (IIC):	Abraham, Laura
Additional Participating Persons:	Robert "Andy" Smith; FAA FSDO
Original Publish Date:	January 14, 2026
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=199672