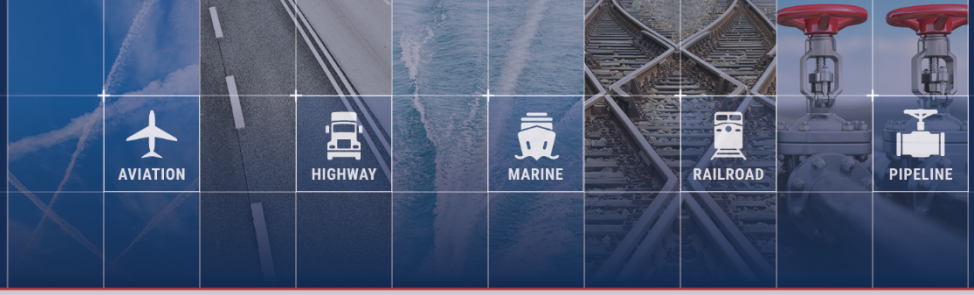

Aviation Investigation Final Report

Location:	Electra, Texas	**Accident Number:**	CEN18FA035
Date & Time:	November 20, 2017, 15:05 Local	**Registration:**	N4179M
Aircraft:	ROBINSON HELICOPTER R22 BETA	**Aircraft Damage:**	Substantial
Defining Event:	Low altitude operation/event	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Other work use		

Analysis

The commercial pilot was flying his company's helicopter during a low-altitude cattle herding flight. A witness saw the helicopter maneuvering over power lines; it subsequently descended in a nose-low attitude to ground contact and was consumed by postcrash fire. Both the power lines above the helicopter wreckage and the helicopter itself exhibited damage consistent with in-flight contact with the lines. An onscene examination of the wreckage did not reveal any preimpact anomalies that would have precluded normal operation of the helicopter.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain clearance from powerlines while maneuvering at low altitude.

Findings

Aircraft	Altitude - Not attained/maintained
Environmental issues	Wire - Contributed to outcome
Personnel issues	Identification/recognition - Pilot
Environmental issues	Wire - Effect on operation
Environmental issues	Wire - Awareness of condition

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On November 20, 2017, about 1505 central standard time, a Robinson Helicopter R22 Beta, N4179M, impacted power lines and terrain near Electra, Texas. The commercial pilot was fatally injured, and the helicopter was destroyed by post crash fire. The helicopter was registered to the pilot and operated by Carmichael Helicopter Service LLC under the provisions of Title 14 *Code of Federal Regulations* Part 91 other work use flight. Day visual meteorological conditions prevailed in the area about the time of the accident, and no flight plan was filed for the local flight, which originated at an unknown time.

A witness in the area saw the helicopter herding cattle and heard a horn sounding during the low-level operation. He watched the helicopter maneuver back and forth over powerlines until it descended in a nose-low attitude. The helicopter impacted terrain and a ground fire ensued.

Pilot Information

Certificate:	Commercial	**Age:**	25,Male
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	December 15, 2016
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 2100 hours (Total, all aircraft)		

The 25-year-old pilot held a Federal Aviation Administration (FAA) commercial pilot certificate with a rotorcraft helicopter rating. He held an FAA second-class medical certificate issued on December 15, 2016, with no limitations. On the application for that medical certificate, he reported accumulating 2,100 hours of total flight time and 400 hours in the previous 6 months.

Aircraft and Owner/Operator Information

Aircraft Make:	ROBINSON HELICOPTER	**Registration:**	N4179M
Model/Series:	R22 BETA	**Aircraft Category:**	Helicopter
Year of Manufacture:	2008	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	4413
Landing Gear Type:	N/A; Skid	**Seats:**	2
Date/Type of Last Inspection:	October 23, 2017 Annual	**Certified Max Gross Wt.:**	1369 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2193 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:		**Engine Model/Series:**	O-360-J2A
Registered Owner:	Pilot	**Rated Power:**	145 Horsepower
Operator:	Carmichael Helicopter Service LLC	**Operating Certificate(s) Held:**	None

N4179M, serial number 4413, was a Robinson Helicopter R22 Beta, two-place, single main rotor, single-engine helicopter, with a spring and yield skid-type landing gear. A 145-horsepower Lycoming O-360-J2A engine, serial number L-40955-36E, powered the helicopter. The primary structure of its fuselage was welded steel tubing and riveted aluminum sheet. The tailcone was a monocoque structure consisting of an aluminum skin. Fiberglass and thermoplastics were used in the secondary structure of the cabin, engine-cooling system, and in other ducts and fairings. The doors were constructed of fiberglass and thermoplastics. A copy of a logbook endorsement showed that the helicopter's most recent annual inspection was completed on October 23, 2017.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSPS,1019 ft msl	**Distance from Accident Site:**	21 Nautical Miles
Observation Time:	14:52 Local	**Direction from Accident Site:**	96°
Lowest Cloud Condition:	Few / 25000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.9 inches Hg	**Temperature/Dew Point:**	19°C / -3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Electra, TX	**Type of Flight Plan Filed:**	None
Destination:	Electra, TX	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

At 1452, the recorded weather at the Sheppard Air Force Base/Wichita Falls Municipal Airport, near Wichita Falls (SPS), Texas, included wind from 190° at 15 kts; visibility 10 statute miles; sky condition few clouds at 25,000 ft; temperature 19° C; dew point -3° C; altimeter 29.91 inches of mercury. Peak wind at 1400 was from 190° at 28 kts.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	34.002498,-98.900833

The main wreckage, to include the fuselage, engine, and mast, came to rest on its right side with a 110° heading about 21 nautical miles and 276° from SPS. The fuselage forward of the firewall was discolored, deformed, and charred consistent with a postcrash fire. Both skids were found separated from the fuselage and one skid tip displayed semicircular witness marks consistent with arcing. The main rotor blades remained attached to its rotor mast. The helicopter's beacon light separated from the tailboom and the tailboom displayed sliding witness marks consistent with powerline contact. The aft portion of the tailboom separated and its tail rotor driveshaft was torn. The twisting separation of the driveshaft was consistent with overload. The aft section of the tail boom was found about 15° and 27 ft from the main wreckage. One tail rotor blade separated and its two liberated sections were found. The

tail rotor blade tip was found about 340° and 120 ft from the main wreckage and the other section of the tail rotor blade was found about 80° and 85 ft from the main wreckage. The liberated blade separation surfaces mated and these sections exhibited semicircular deformation consistent with the shape and size of the powerline. The engine was discolored and deformed consistent with a postcrash fire. Flight and engine control continuity could not be established due to the fire damage. However, all observed discontinuities were consistent with overload or melting separations. A charred shell of a horn driver, consistent with an external speaker, was found in the wreckage.

According to powerline repair personnel, the powerlines above the helicopter wreckage were damaged. One powerline was nicked and another line displayed strands that were separated. A nearby cross arms support was damaged. The powerline height was about 29 ft 3 inches above ground level.

Medical and Pathological Information

The Southwestern Institute of Forensic Sciences at Dallas, Dallas, Texas, performed an autopsy of the pilot and obtained toxicological samples for testing. The autopsy listed blunt force injuries as the cause of death.

The FAA Bioaeronautical Sciences Research Laboratory's Civil Aerospace Medical Institute (CAMI) prepared a Final Forensic Toxicology Accident Report on the samples taken. The CAMI report, in part, indicated the sample sustained putrefaction and naproxen was detected in urine.

The CAMI description of Naproxen stated that it is a nonnarcotic analgesic and anti-inflammatory agent, which is available in prescription and nonprescription forms. It is not considered impairing.

Administrative Information

Investigator In Charge (IIC):	Malinowski, Edward
Additional Participating Persons:	William J Fitzgerald; Federal Aviation Administration; Lubbock, TX Corey Wehmeyer; Federal Aviation Administration; Lubbock, TX Thom Webster; Robinson Helicopter Company; Torrance, CA Troy Helgeson; Lycoming Engines; Williamsport, PA
Original Publish Date:	October 10, 2018
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96350