



Aviation Investigation Final Report

Location:	Whiteside, Tennessee	Accident Number:	ERA22FA383
Date & Time:	August 23, 2022, 14:47 Local	Registration:	N770HP
Aircraft:	Bell 206B	Aircraft Damage:	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	Injuries:	2 Fatal
Flight Conducted Under:	Public aircraft		

Analysis

The pilot and the passenger/observer, who were both law enforcement personnel, were flying in a helicopter on a law enforcement mission when it struck a marked, 1-inch diameter, energized (161K volt) aluminum high-tension powerline cable. The high-tension powerlines were about 430 ft tall and about 3,800 ft long. A witness was driving on a nearby interstate when he observed the helicopter flying low and close to the powerlines. The witness reported that he was concerned the helicopter was going to hit the lines. He described the helicopter as hovering, and it did not appear to be in distress. The witness then saw the helicopter strike the powerlines and observed an “arc.” The helicopter spun a few times as it descended and went out of view.

The helicopter came to rest in heavily wooded and steep mountainous terrain, which resulted in substantial damage to the fuselage, main rotor, and tail rotor. A postaccident examination of the airframe and engine revealed no evidence of any preimpact mechanical malfunctions and failures that would have precluded normal operation.

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 the powerlines.

Findings

Personnel issues	Monitoring environment - Pilot
Aircraft	Altitude - Not attained/maintained
Environmental issues	Wire - Effect on equipment

Factual Information

History of Flight

Maneuvering-low-alt flying

Collision with terr/obj (non-CFIT) (Defining event)

HISTORY OF FLIGHT

On August 23, 2022, about 1447 central standard time, a Bell 206B helicopter, N770HP, was substantially damaged when it was involved in an accident near Whiteside, Tennessee. The pilot and the passenger/observer were fatally injured. The flight was conducted as a Title 14 *Code of Federal Regulations Part 91* public aircraft operation.

The helicopter was operated by the Tennessee Department of Safety. The pilot, who was an officer with the Tennessee Department of Safety, and the passenger/observer, who was a detective with the Marion County (TN) Sheriff's Department, struck a marked, 1-inch diameter, energized (161K volt) aluminum high-tension powerline cable while en route to rejoin a marijuana eradication mission. The high-tension powerlines were about 430 ft tall and about 3,800 ft long.

According to the Tennessee Department of Safety, the pilot and the passenger/observer had been conducting a joint-agency marijuana eradication mission that day and stopped for lunch and fuel at the Marion County Airport (APT) in Jasper, Tennessee, at 1248. The pilot purchased 48 gallons of Jet A at 1251. After lunch, a call came in requesting back up for a pursuit that the Tennessee Department of Safety was engaged in. The pilot felt the pursuit would be over before they arrived to assist. Then a call came in about a missing person case that the passenger/observer was working and was not associated with the eradication mission. The pilot and passenger/observer departed at 1401 and flew to a set of coordinates (a hotel) of where the missing person was believed to be. The missing person was not located, and the helicopter returned to join the eradication efforts. It was on this return flight that the helicopter struck the powerlines.

A witness was driving eastbound on Highway 24 toward Chattanooga, Tennessee, when he observed a "dark colored helicopter" flying westbound just north of the interstate. He was talking on the phone to his wife at the time and he told her how concerned he was that the helicopter was flying so low and very close to a set of powerlines. He described the helicopter as hovering, and it did not appear to be in distress. The witness then saw the helicopter strike the powerlines and observed an "arc." The helicopter spun a few times, and it appeared as if the pilot was trying to regain control of the helicopter. The witness said the helicopter then descended and went out of view. At the same time, a broken section of a powerline cable fell on the interstate in front of his vehicle.

The pilot was not talking to air traffic control at the time of the accident and had not made any distress calls. The helicopter was not equipped with any video recording devices and was operating outside an environment that captured any radar or automatic dependent surveillance – broadcast (ADS-B) data. A handheld Garmin 496 GPS was located in the wreckage and its data was downloaded and plotted. The data revealed the helicopter was in a descending right-hand turn when it collided with the powerlines. The last fully recorded GPS position was at 1447:16, when the helicopter was at an altitude of 1,130 ft msl.

AIRCRAFT INFORMATION

The Bell 206B is a two-bladed, 5-seat helicopter powered by a single Rolls Royce 250-C20J turbine engine. The Tennessee Department of Safety owned and operated the helicopter as a public use aircraft.

The helicopter was maintained by the Tennessee Department of Safety under a continuous inspection program. A review of the engine maintenance logbook revealed the last entry was made on August 15, 2022. At that time, a 150/300 engine inspection was completed as per the Rolls Royce Maintenance Manual. The aircraft total time (ACTT) was 5,668.0 hours and the engine total time (ETT) was also 5,668.0 hours.

Each pilot was required to check into an electronic maintenance database prior to flight to record the ACTT. The last entry made for N770HP was on the day of the accident. The ACTT entered was 5,674.0 hours.

WRECKAGE EXAMINATION

The helicopter came to rest in heavily wooded and steep mountainous terrain on the west side of the powerlines. The nose of the helicopter was embedded in the ground on a ravine wall with the tail section pointed straight up in the air. There was no post-impact fire. The tail boom (minus the tail rotor) separated from the helicopter just aft of the horizontal stabilizer and was located downhill of the helicopter. This section of tail boom exhibited a downward slanting impact mark consistent with contact of the main rotor blade.

The helicopter was equipped with aftermarket composite tail rotor blades. The tail rotor (minus one blade) was located approximately 100 ft east of where the helicopter came to rest and under the powerlines. Damage to the tail rotor and tail rotor gearbox was consistent with impact damage. The other tail rotor blade was not located. The top portion of the vertical stabilizer had also separated from the helicopter and was found under the powerlines and adjacent to a set of train tracks located north of where the helicopter came to rest. The fractured area of the vertical stabilizer exhibited striated gouging marks consistent with contact with powerlines.

The cockpit area and forward fuselage sustained extensive impact damage. Only the right side (pilot seat) was equipped with a cyclic and collective; however, both sets of anti-torque pedals were installed. Both sets of pedals had separated from their respective control tubes from

impact. The cyclic had separated at its base due to impact and was found in the wreckage. The collective was fractured from impact but remained partially attached at its base, and the throttle (twist grip) was loose.

Examination of the flight control system from the cockpit to the main rotor and tail rotor revealed numerous impact fractures to the control tubes/linkages, but each fracture was consistent with overload from impact with terrain. Examination of the helicopter revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

The two main rotor blades were marked with either a red or white dot to differentiate between the two blades. The white blade remained partially attached at the trailing edge and the spar was fractured just outboard of the doubler. This blade was cut at the trailing edge for recovery purposes. The red blade separated just outside the doubler and was found uphill of where the helicopter came to rest.

Examination of the white blade revealed striated impact marks on the bottom of the blade about 2/3 outboard of the blade root. These striated marks were consistent with impact with the powerline. Striation marks were also observed on the top of the blade but were not as pronounced. The red blade exhibited arcing at the trailing edge tip of the blade.

The engine remained secured to the helicopter and none of the engine mounts were damaged. Examination of the engine revealed no evidence of any preimpact mechanical malfunctions or failures that would have precluded normal operation.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	Age:	35, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	4-point
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane single-engine; Instrument airplane; Instrument helicopter	Toxicology Performed:	Yes
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	April 14, 2022
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	June 4, 2021
Flight Time:	7948.7 hours (Total, all aircraft), 6528 hours (Total, this make and model), 1169.7 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Bell	Registration:	N770HP
Model/Series:	206B NO SERIES	Aircraft Category:	Helicopter
Year of Manufacture:	2007	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	4624
Landing Gear Type:	Skid	Seats:	5
Date/Type of Last Inspection:	Continuous airworthiness	Certified Max Gross Wt.:	3200 lbs
Time Since Last Inspection:		Engines:	1 Turbo shaft
Airframe Total Time:	5674 Hrs at time of accident	Engine Manufacturer:	Rolls Royce
ELT:	C126 installed, activated, did not aid in locating accident	Engine Model/Series:	250-C20J
Registered Owner:	TENNESSEE DEPT OF SAFETY	Rated Power:	420 Horsepower
Operator:	TENNESSEE DEPT OF SAFETY	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	CHA,688 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	14:53 Local	Direction from Accident Site:	82°
Lowest Cloud Condition:	Scattered / 4500 ft AGL	Visibility	10 miles
Lowest Ceiling:	Broken / 25000 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	29.97 inches Hg	Temperature/Dew Point:	30°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Jasper, TN (APT)	Type of Flight Plan Filed:	None
Destination:	Jasper, TN (APT)	Type of Clearance:	None
Departure Time:	14:01 Local	Type of Airspace:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	34.99754,-85.50975

Administrative Information

Investigator In Charge (IIC):	Read, Leah
Additional Participating Persons:	Ian Mullins; FAA/FSDO; Nashville Jack Johnson; Rolls Royce; Indianapolis, IN Nora Vallee; TSB; Quebec Mark Stuntzner; Bell Textron; Husrt, TX
Original Publish Date:	January 31, 2024
Investigation Class:	Class 3
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=105787

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