



# Aviation Investigation Final Report

<b>Location:</b>	Sulphur, Louisiana	<b>Accident Number:</b>	CEN18LA026
<b>Date &amp; Time:</b>	November 7, 2017, 09:34 Local	<b>Registration:</b>	N138WH
<b>Aircraft:</b>	Hughes 369D	<b>Aircraft Damage:</b>	None
<b>Defining Event:</b>	Low altitude operation/event	<b>Injuries:</b>	2 Fatal, 1 None
<b>Flight Conducted Under:</b>	Part 133: Rotorcraft ext. load		

## Analysis

The commercial pilot was conducting an external load flight with two linemen hoisted beneath the helicopter on a long line. The pilot reported that, as he maintained a hover over the power lines, the long line contacted the shield wire as one of the linemen held onto a conductor bundle. The long line severed about midspan as the pilot turned the helicopter into the wind and attempted to move the linemen away from the conductor bundle. The two linemen were fatally injured when they fell about 100 ft to the ground. The pilot returned to the landing zone and landed uneventfully.

The pilot did not report any preimpact mechanical malfunctions or failures with the helicopter that would have precluded normal operation. Video footage of the accident confirmed that the helicopter's synthetic long line severed after extended lateral contact with the braided steel shield wire.

## 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 adequate separation between a long line being used to hoist linemen from a shield wire during an external load flight, which resulted in the long line being severed.

## Findings

Personnel issues	Monitoring environment - Pilot
Environmental issues	Wire - Effect on equipment

# Factual Information

## History of Flight

Maneuvering-low-alt flying	External load event (Rotorcraft)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)
Maneuvering-low-alt flying	Low altitude operation/event (Defining event)

On November 7, 2017, at 0934 central standard time, a Hughes 369D helicopter, N138WH, was not damaged when its external cargo long line severed after contacting a shield wire suspended between power transmission towers near Sulphur, Louisiana. The two linemen being hoisted on the long line were fatally injured when they fell about 100 ft to the ground. The helicopter was registered to and operated by Winco, Inc. as a Title 14 *Code of Federal Regulations* (CFR) Part 133 external load flight. Day visual meteorological conditions prevailed and no flight plan was filed for the local flight, which departed at 0932 from a temporary landing zone near the accident site.

According to the power company, the purpose of the flight was to install guard ropes between the deenergized 500-kilovolt power transmission lines before the existing braided steel shield wire from the nearby transmission tower was replaced. The east/west power transmission lines, with three sets of bundled conductors (northern, center, and southern), crossed perpendicular over a road. The pilot reported that, following a preflight safety briefing, he and one of the linemen discussed the expected work tasks. The pilot stated that, following their discussion, he brought the helicopter into a hover to allow the linemen to hook onto the external cargo long line. He then repositioned the helicopter to allow the linemen to work on the center conductor bundle.

The pilot reported that, after the linemen had tied off the guard rope to the center conductor bundle, he repositioned the helicopter to allow work on the northern conductor bundle. The pilot reported that he saw the long line contact the braided steel shield wire as one of the linemen held onto the northern conductor. The long line severed as the pilot turned the helicopter into the wind and attempted to move the linemen away from the northern conductor. The pilot reported that, immediately before the long line severed, he observed one of the linemen tugging at the conductor to reposition the guard rope perpendicular to the conductors. After the long line severed, the pilot returned to the landing zone and made an uneventful landing. The pilot did not report any malfunction or failures with the helicopter that would have precluded normal operation. According to postaccident measurements made by local law enforcement and witness video footage of the flight, the 60-ft long line separated about midspan while it was in contact with the braided steel shield wire suspended between power transmission towers.

## Pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	71, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	3-point
<b>Instrument Rating(s):</b>	Airplane; Helicopter	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Helicopter	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	June 19, 2017
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	August 29, 2016
<b>Flight Time:</b>	(Estimated) 25090 hours (Total, all aircraft), 11286 hours (Total, this make and model), 21063 hours (Pilot In Command, all aircraft), 26 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

According to Federal Aviation Administration (FAA) records, the 71-year-old pilot held a commercial pilot certificate with ratings for airplane single-engine land, rotorcraft-helicopter, and instrument airplane and helicopter. His most recent FAA second-class medical certificate was issued on June 19, 2017, with no limitations.

The pilot had accumulated 25,090 total hours of flight experience, of which 21,063 hours were logged as pilot-in-command and 11,286 hours were flown in Hughes 369 helicopters. The pilot flew 26 hours and 17 hours during the 90 days and 30 days before the accident, respectively. The pilot had flown less than 1 hour on the day of the accident. His most recent flight review, as required by Title 14 CFR 61.56, was completed on August 29, 2016, in a Hughes 369D helicopter.

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Hughes	<b>Registration:</b>	N138WH
<b>Model/Series:</b>	369D D	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	1981	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	911027D
<b>Landing Gear Type:</b>	Skid	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	October 29, 2017 100 hour	<b>Certified Max Gross Wt.:</b>	3000 lbs
<b>Time Since Last Inspection:</b>	42 Hrs	<b>Engines:</b>	1 Turbo shaft
<b>Airframe Total Time:</b>	9595.1 Hrs at time of accident	<b>Engine Manufacturer:</b>	Rolls Royce
<b>ELT:</b>	C126 installed, not activated	<b>Engine Model/Series:</b>	250-C20R/2
<b>Registered Owner:</b>	Winco, Inc.	<b>Rated Power:</b>	450 Horsepower
<b>Operator:</b>	Winco, Inc.	<b>Operating Certificate(s) Held:</b>	Rotorcraft external load (133)

The helicopter, serial number 911027D, was manufactured in 1981 and was powered by a 450-horsepower Rolls-Royce 250-C20R/2 turboshaft engine, serial number CAE-295387. The helicopter had a maximum gross weight of 3,000 pounds and was equipped for external load operations. The FAA issued the helicopter a standard airworthiness certificate on December 29, 1981. The helicopter had accumulated 9,595.1 hours at the time of the accident. The last recorded maintenance was a 100-hour inspection completed on October 29, 2017, at 9,552.7 total airframe hours.

### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	UXL, 10 ft msl	<b>Distance from Accident Site:</b>	9 Nautical Miles
<b>Observation Time:</b>	09:35 Local	<b>Direction from Accident Site:</b>	177°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 1400 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	8 knots /	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>	210°	<b>Turbulence Severity Forecast/Actual:</b>	/ N/A
<b>Altimeter Setting:</b>	30.11 inches Hg	<b>Temperature/Dew Point:</b>	27°C / 23°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Sulphur, LA	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	Sulphur, LA	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	09:32 Local	<b>Type of Airspace:</b>	Class G

A postaccident review of available meteorological data established that day visual meteorological conditions prevailed at the accident site. The nearest aviation weather reporting station was located at Southland Field Airport (UXL), Sulphur, Louisiana, about 9 miles south of the accident site. At 0935, about 1 minute after the accident, the UXL automated surface observing system reported wind from 210°; at 8 knots, 10 miles surface visibility, broken ceilings at 1,400 ft above ground level (agl), 2,400 ft agl, and 3,000 ft agl, temperature 27°C, dew point 23°C, and an altimeter setting of 30.11 inches of mercury.

## Wreckage and Impact Information

<b>Crew Injuries:</b>	2 Fatal, 1 None	<b>Aircraft Damage:</b>	None
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Fatal, 1 None	<b>Latitude, Longitude:</b>	30.281944,-93.384445

## Additional Information

Local law enforcement reported that the 60 ft long synthetic long line severed about midspan. The long line was not equipped with an abrasion-resistant cover. A 100-ft synthetic long line equipped with an abrasion-resistant cover was found on the ground at the temporary landing zone near the operator's support vehicle.

The operator reported that the helicopter was operating under Part 133 Class B during the flight, and that linemen were considered crewmembers (not passengers) during powerline construction operations. The FAA had approved the helicopter's hook installation; however, because the flight was conducted under Part 133 Class B, the FAA did not regulate, specify, or approve the long line or the harnesses that was used to hoist the two linemen.

The operator reported that the long line was a 7/16 inch Amsteel Blue synthetic rope made of Dyneema SK-75 synthetic fiber that had a break strength of 21,500 lbs. The operator reported that the use of Amsteel Blue synthetic rope had been an industry standard for at least 15-20 years, and that the use of synthetic rope is advantageous for powerline work because it is non-conductive and has a higher break strength than a similarly sized braided steel cable. The operator stated that the use of an abrasion-resistant cover was typically used to protect a long line from incidental contact with sharp edges on tower structures. Additionally, the operator stated that the use of an abrasion-resistant cover would not offer much protection if the long line had prolonged lateral contact with a braided steel cable. The operator noted that the use of a braided steel long line is not practical when working on powerlines due to the potential for electrocution. The operator reported that the pilot selects the length of the long line for a specific mission after he/she considers the required length to position the lineman at the specified workstation and to keep the helicopter above any wires, structures, or obstacles. The pilot chooses the shortest long line available that ensures obstacle clearance, which increases positive control of the cargo/linemen during the flight.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Fox, Andrew
<b>Additional Participating Persons:</b>	Cory T Morara; Federal Aviation Administration; Baton Rouge, LA
<b>Original Publish Date:</b>	November 6, 2019
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=96294">https://data.nts.gov/Docket?ProjectID=96294</a>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).