Aviation Investigation Final Report

Location:	McDougal, Arkansas	**Accident Number:**	CEN19FA020
Date & Time:	November 2, 2018, 13:15 Local	**Registration:**	N5187S
Aircraft:	Hughes 369	**Aircraft Damage:**	Destroyed
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	1 Fatal, 2 Minor
Flight Conducted Under:	Part 133: Rotorcraft ext. load		

Analysis

The commercial pilot and two crewmembers of the helicopter were performing external load operations to decommission power line structures. The crew reported that, during the first flight after their lunch break, the pilot was hovering the helicopter next to the power line structure when they heard a "loud boom" and "metallic crunch" and the crews' short haul lines were released from the helicopter. The helicopter descended and impacted the ground beneath the structure, fatally injuring the pilot, while the two crewmembers sustained minor injuries.

A postaccident examination of the helicopter revealed no mechanical anomalies that would have precluded normal operation. The power line structure displayed an indentation consistent with impact with the top of the new steel utility pole. There was also a gouge mark to the side of the upper cap plate of the structure, consistent in shape with the indentation mark to the pole. Therefore, it is likely that the pilot failed to maintain clearance from the power line structure while hovering, resulting in contact with the structure.

One lineman stated that before the impact, the pilot did not seem calm and hesitated in responding to the lineman's communications. He said that the helicopter was moving around a lot when he was attaching to the pole, and he could see the helicopter shadow and saw the tail "darting around." Weather data at the time of the accident indicated the winds were 12 knots gusting to 19-25 knots from the southwest with likely unstable air from the surface up to an altitude of 400-500 ft. It is likely the pilot had difficulty maintaining the helicopter's clearance from the utility pole due to the gusty wind conditions.

Toxicology testing performed on the pilot revealed diphenhydramine and tramadol in the pilot's blood and urine. Because both drugs undergo postmortem redistribution, the investigation could not determine whether the pilot was impaired by either drug.

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 the helicopter's clearance from the powerline structure while hovering in gusty wind conditions, which resulted in an inadvertent collision with the structure and an uncontrolled descent into terrain.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Heading/course - Not attained/maintained
Environmental issues	Gusts - Effect on operation
Environmental issues	Wire - Effect on equipment

Factual Information

History of Flight

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

On October 2, 2018 about 1315 central daylight time, a Hughes 369D helicopter, N5187S, was destroyed when it was involved in an accident near McDougal, Arkansas. The pilot was fatally injured, and the two linemen sustained minor injuries. The helicopter was operated as a Title 14 *Code of Federal Regulations* Part 133 external load operation.

The helicopter had departed from a grass landing zone after a lunch break with two linemen tethered to the helicopter for short haul operations in connection with utility line work to decommission power line structures.

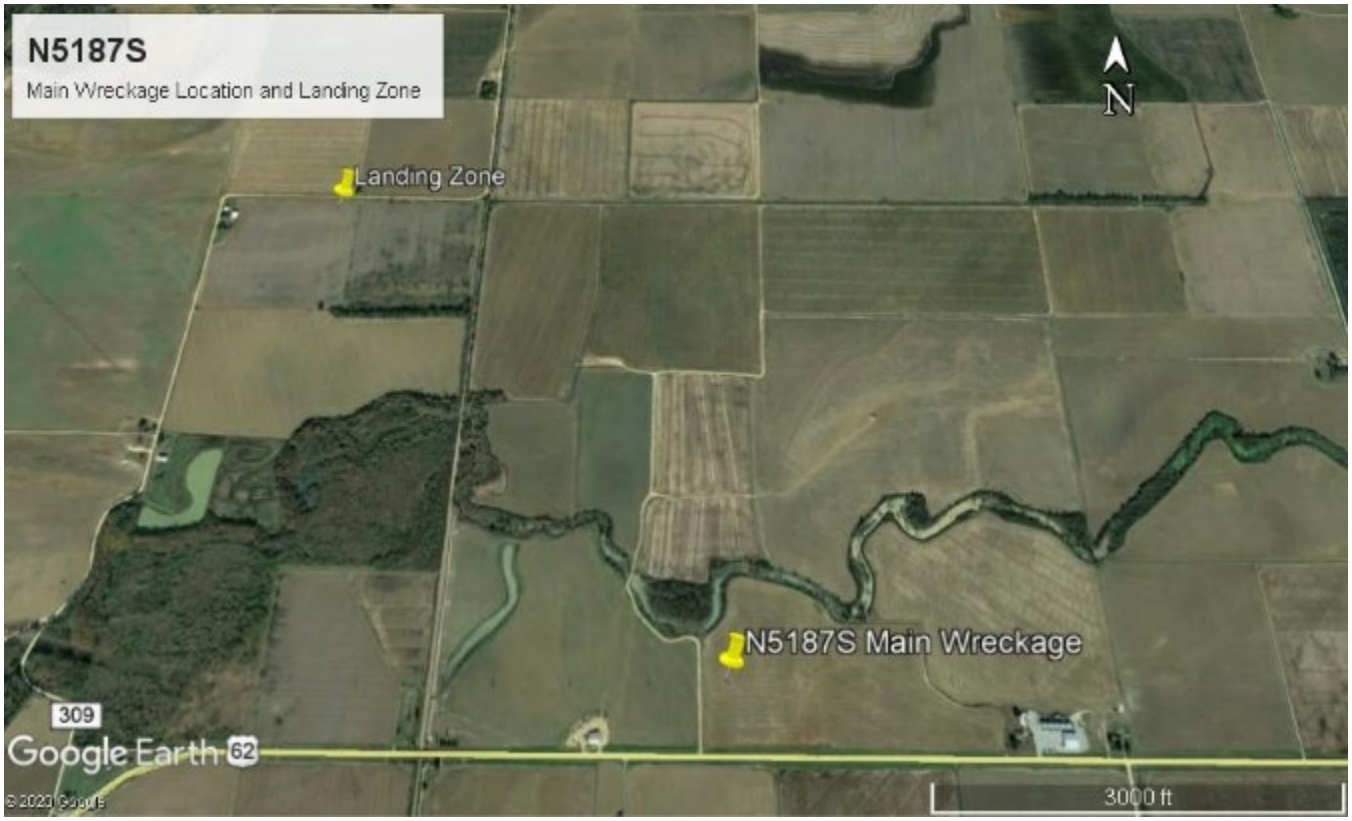


Figure 1: Main Wreckage and Landing Zone Locations

One of the linemen stated he was in communication with the pilot via a Bluetooth communication system to coordinate his placement on the utility pole. The pilot was hovering the helicopter next to the power line structure when they heard a "loud boom" and "metallic crunch" and the crews' short haul lines were released from the helicopter. The helicopter descended and impacted the ground beneath the structure.

The lineman stated that the pilot typically had a calm demeanor during operations; however, before the pole strike, the pilot was not calm and hesitated in responding to the lineman's communications. The lineman said the helicopter was "getting choppy and moving around a lot" when he was attaching to the utility pole, but he did not look up at the helicopter. He could see the helicopter shadow on the ground and saw the tail "darting around."

Pilot Information

Certificate:	Commercial	**Age:**	45,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 14, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	June 3, 2018
Flight Time:	9999 hours (Total, all aircraft), 9999 hours (Total, this make and model), 3272 hours (Pilot In Command, all aircraft), 103 hours (Last 90 days, all aircraft), 38 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Other flight crew Information

Certificate:	None	**Age:**	Male
Airplane Rating(s):	None	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Other flight crew Information

Certificate:		**Age:**	Male
Airplane Rating(s):		**Seat Occupied:**	Unknown
Other Aircraft Rating(s):		**Restraint Used:**	3-point
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Narrative personal information place holder

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N5187S
Model/Series:	369 D	**Aircraft Category:**	Helicopter
Year of Manufacture:	1982	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	610968D
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	August 7, 2018 Annual	**Certified Max Gross Wt.:**	3000 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	14109.3 Hrs as of last inspection	**Engine Manufacturer:**	Rolls Royce
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	M250-C20B
Registered Owner:	Air2 LLC	**Rated Power:**	420 Horsepower
Operator:	Air2 LLC	**Operating Certificate(s) Held:**	Rotorcraft external load (133), Commuter air carrier (135)

Note: Re-registration of the helicopter from N5187 to N454AR was pending with the Federal Aviation Administration (FAA), however, the tail number had already been repainted to reflect the new

registration.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	K4M9,327 ft msl	**Distance from Accident Site:**	21 Nautical Miles
Observation Time:	18:15 Local	**Direction from Accident Site:**	17°
Lowest Cloud Condition:	Few / 2200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.2 inches Hg	**Temperature/Dew Point:**	10°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	McDougal, AR	**Type of Flight Plan Filed:**	None
Destination:	McDougal, AR	**Type of Clearance:**	VFR
Departure Time:	13:00 Local	**Type of Airspace:**	Class G

The area surrounding the accident site was documented using official Meteorological Aerodrome Reports (METARs) and Specials (SPECIs).

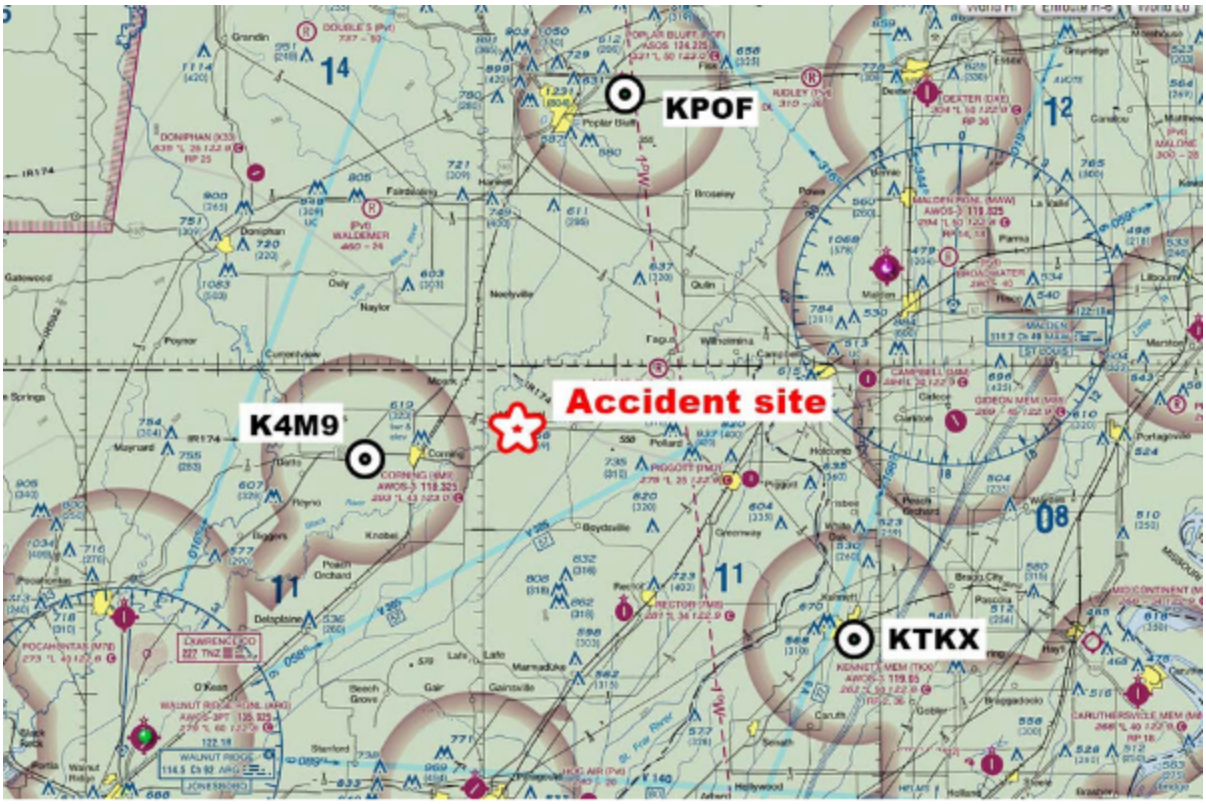


Figure 5: Sectional chart of accident area with the location of the accident site and the closest surface observation site.

Observations from the two closest airports to the accident site, around the accident time, indicated visual flight rules conditions; however, the winds increased in magnitude with gusts to 19 knots out of the southwest.

At K4M9, weather at 1315 CDT, automated, wind from 250° at 12 knots. At 1335 CDT, automated weather at K4M9 was wind from 240° at 10 knots with gusts to 17 knots. At KPOF weather at 1253 CDT, automated, wind from 220° at 11 knots. At 1353 CDT, automated weather at KPOF was wind from 220° at 14 knots with gusts to 19 knots.

The closest weather surveillance radar located in Memphis, Tennessee, indicated reflectivity values between 20 and 34 dBZ moved from west to east above the accident site at the accident time. These reflectivity values corresponded to light to moderate precipitation and occurred at the same time as the wind gusts increased to 17 knots at Corning Municipal Airport at 1335, which was located 10 miles west-southwest of the accident site. There were no lightning flashes around the accident site at the accident time.

Based on information from one of the linemen, the accident pilot checked the weather conditions before

the flight, but it is unknown which weather products the pilot checked. A search of archived ForeFlight information indicated that the accident pilot did not review or request any weather information from ForeFlight. It is unknown if the accident pilot checked or received additional weather information during the accident flight.

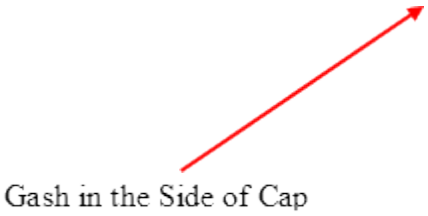
Wreckage and Impact Information

Crew Injuries:	1 Fatal, 2 Minor	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 2 Minor	**Latitude, Longitude:**	36.436668,-90.452499

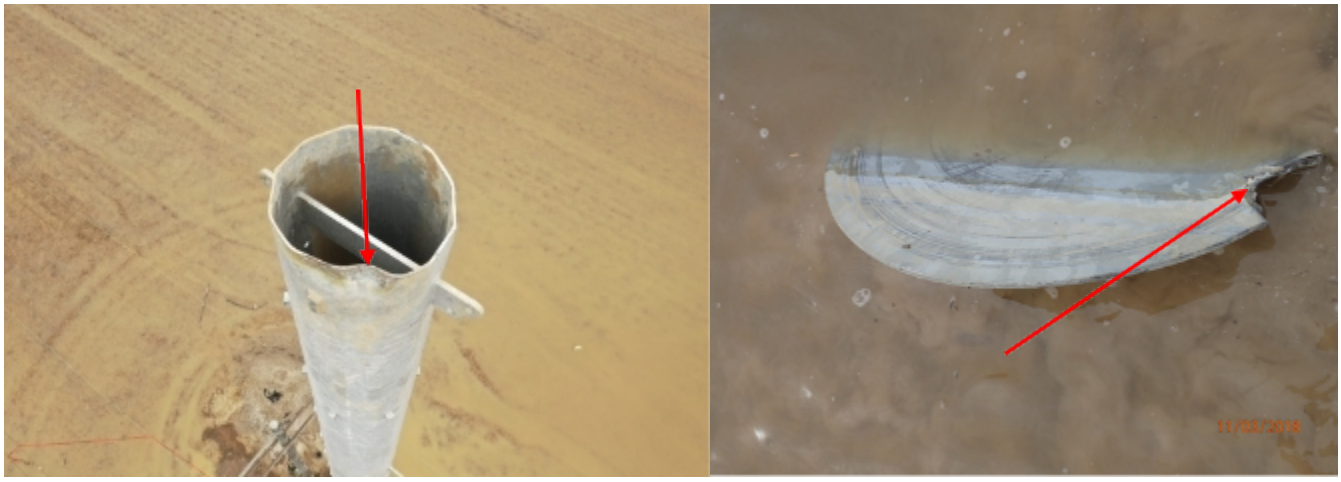
The main wreckage came to rest on the north side of wooden and steel utility pole structures in a muddy soybean field. This area of the field was flooded with about 2 ft of water at the time of the accident due to heavy rains prior to the accident. The helicopter impacted the ground on the right side; the damage was consistent with nearly vertical forces. The main wreckage included the fuselage, left skid and rear strut, right rear strut, main rotor drive shaft, and engine. All five main rotor blades, the tail rotor section, tail boom, and right skid were found in the area surrounding the main wreckage.

Figure 2: Main Wreckage

Before impacting the ground, the helicopter's main rotor blades impacted the top of the steel utility pole. A drone was used to observe the impact damage and showed an inward indentation in the top of the pole, as shown in Figure 3. The tower cap plate was separated and about 3/4 of the plate was submerged in water. There was a gash in the side of the plate, as shown in Figure 4.



Injuries to Persons



Figures 3 and 4: Photograph of Impact of Top of Steel Utility Pole and Cap Plate with Impact Mark

A postaccident examination of the helicopter revealed no mechanical anomalies that would have precluded normal operation.

Damage to Aircraft

Narrative additional information place holder

Other Damage

Narrative injuries to persons place holder

Communications

Narrative damage to aircraft place holder

Flight recorders

Narrative other damage place holder

Medical and Pathological Information

Narrative communications place holder

Fire

Narrative flight recorders place holder

Survival Aspects

The State Crime Laboratory, Little Rock, Arkansas, performed an autopsy of the pilot. The cause of death was multiple traumatic injuries and drowning, and the manner of death was accident.

Toxicology testing performed by the FAA Forensic Sciences Laboratory detected the sedating antihistamine diphenhydramine at 0.037 micrograms per milliliter (µg/mL) in the pilot's blood; diphenhydramine was also detected in urine. Diphenhydramine (commonly marketed as Benadryl) is available over the counter in products used to treat colds, allergies, and insomnia. The therapeutic range is 0.025 to 0.100 µg/mL. Diphenhydramine undergoes postmortem distribution and central levels may be two to three times higher than peripheral levels.

Tramadol (commonly marketed as Ultram) was detected in cavity blood at 0.058 µg/mL; tramadol and its active metabolite O-desmethyltramadol were detected in the pilot's urine. Tramadol is an opioid analgesic used to relieve moderate to severe pain. Tramadol carries the warning that it may impair mental or physical ability required for the performance of hazardous tasks. The therapeutic range for tramadol is 0.05 to 0.50 µg/mL in blood. Tramadol undergoes postmortem redistribution and there is a high degree of inter-individual variation in its distribution in the body.

Tests and Research

Narrative fire place holder

Organizational and Management Information

Narrative survival aspects place holder

Useful or Effective Investigation Techniques

Narrative tests and research place holder

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney
Additional Participating Persons:	Shane Benedetto; FAA; Little Rock, AR Joan Gregoire; MD Helicopters; Mesa, AZ John Hobby; Boeing; Mesa, AZ Russell Shannon; Air2; Blountville, TN Nicholas Shepler; Rolls-Royce Engines; Indianapolis, IN
Original Publish Date:	November 19, 2020
Last Revision Date:	
Investigation Class:	Class 2
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=98586