Aviation Investigation Final Report

Location:	LULING, Louisiana	**Accident Number:**	CEN18FA182
Date & Time:	May 20, 2018, 10:49 Local	**Registration:**	N362JS
Aircraft:	MD HELICOPTER INC 369D	**Aircraft Damage:**	Destroyed
Defining Event:	Low altitude operation/event	**Injuries:**	1 Fatal, 1 Serious, 1 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 repair high-tension power line structures. The pilot reported that, during the fourth repair of the flight, he was hovering the helicopter next to the power line structure when he noticed a "rumbling" and the helicopter descending. The helicopter impacted the ground beneath the structure, seriously injuring one of the two crewmembers, while the second crewmember sustained fatal injuries.

Examination of the helicopter revealed no mechanical anomalies that would have precluded normal operation. The power line structure displayed paint transfer consistent in color with that of the helicopter. There was also a puncture hole about 6 inches in length under the upper horizontal plate of the structure, consistent with the dimensions of a main rotor blade. Therefore, it is likely that the pilot failed to maintain clearance from the power line structure while hovering, resulting in contact with the structure.

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 powerline structure while hovering, which resulted in an inadvertent collision with the structure and an uncontrolled descent into terrain.

Findings

Personnel issues	Monitoring environment - Pilot
Personnel issues	Aircraft control - Pilot
Personnel issues	Incorrect action performance - Pilot
Environmental issues	Pole - Awareness of condition
Environmental issues	Pole - Effect on equipment

Factual Information

History of Flight

Maneuvering-hover	Low altitude operation/event (Defining event)
Maneuvering-hover	Controlled flight into terr/obj (CFIT)
Maneuvering-hover	Attempted remediation/recovery
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On May 20, 2018, at 1049 central daylight time, an MD Helicopters, Inc. 369D helicopter, N362JS, was destroyed when it collided with a power line structure and impacted terrain while performing an aerial repair near Luling, Louisiana. The commercial pilot sustained minor injuries, one crewmember sustained serious injuries, and a second crewmember sustained fatal injuries. The helicopter was registered to and operated by Air2 LLC as a Title 14 *Code of Federal Regulations* Part 133 external load operation. Day visual meteorological conditions prevailed at the time of the accident, and a company flight plan was filed for the flight, which originated from Port of South Louisiana Executive Regional Airport (APS), Reserve, Louisiana, at 0936.

The operator stated that the accident occurred while the pilot and crewmembers were attempting to position a shield wire to a bracket that had separated from the end of the "goat head" arm, which extended from the power line support structure. The goat head arm was approximately 13 ft in length, and the goat head end that the bracket was secured to was positioned 8 ft vertically above the horizontal support structure arm. The goat head held a shield wire in position above high-tension power lines.

The pilot stated that he arrived at APS about 0700, conducted a preflight inspection of the helicopter, and found no discrepancies. He discussed the job hazard analysis and repair plan with his crewmembers, and they decided that the flight would be a good opportunity to train the second crewmember on skid work and allow him to observe the work being performed. After departing, the original crewmember performed the first repair and the second crewmember performed two more. They then proceeded to the next structure.

The structure shield wire had already fallen from the shield wire arm and was laying on top of the conductor arm on a steel frame. They planned to hang a chain hoist below the helicopter to hook the shield wire and attach the other end of the hoist to the static arm in order to raise the shield wire pack into position. The pilot was hovering the helicopter over the conductor arm when he noticed a rumbling and the helicopter descending. The helicopter impacted the marsh area below on its left side. The pilot egressed and found the first crewmember conscious and lying next to the helicopter. The pilot was unable to locate the second crewmember and suspended his search because the engine was idling and a fire had ignited around the helicopter. The pilot used a fire extinguisher to put out the fire but quickly depleted the extinguisher.

A witness heard a boom/crack and responded to the accident location. He stated that a fire was surrounding the helicopter and that the pilot was waving for assistance. The witness, along with first

responders, transported the pilot from the accident site. During the transport, the pilot stated that he "hooked a skid and could not get it out."

The second crewmember, who sustained fatal injuries, was restrained to the helicopter by a harness that was connected to the outside of the helicopter via a D-ring and a lanyard that was connected in the aft cargo area. Once the helicopter was rolled over by rescue personnel to remove the passenger, the harness was cut, and the lanyard was disconnected.

Pilot Information

Certificate:	Commercial	**Age:**	38,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	No
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	April 24, 2018
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 15, 2018
Flight Time:	4500 hours (Total, all aircraft), 2500 hours (Total, this make and model), 4000 hours (Pilot In Command, all aircraft), 102 hours (Last 90 days, all aircraft), 39 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	MD HELICOPTER INC	**Registration:**	N362JS
Model/Series:	369D	**Aircraft Category:**	Helicopter
Year of Manufacture:	1980	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	300676D
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	May 4, 2018 100 hour	**Certified Max Gross Wt.:**	3000 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	17963.2 Hrs at time of accident	**Engine Manufacturer:**	Rolls Royce
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	250-C20B
Registered Owner:	AIR2, LLC	**Rated Power:**	420 Horsepower
Operator:	AIR2, LLC	**Operating Certificate(s) Held:**	Rotorcraft external load (133)
Operator Does Business As:		**Operator Designator Code:**	X2RL

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	APS,7 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	10:35 Local	**Direction from Accident Site:**	320°
Lowest Cloud Condition:	Scattered / 4000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.06 inches Hg	**Temperature/Dew Point:**	34°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Reserve, LA (APS)	**Type of Flight Plan Filed:**	Company VFR
Destination:	LULING, LA	**Type of Clearance:**	None
Departure Time:	09:36 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Serious, 1 Minor	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious, 1 Minor	**Latitude, Longitude:**	29.879167,-90.40361

The helicopter came to rest on its left side beneath the power line structure in marshy terrain and was submerged in about 3 ft of water. The main wreckage comprised the fuselage, skids, main rotor head with two blades attached, and a portion of the tail boom. A 5-ft section of the tail boom and the tail rotor driveshaft were located in trees adjacent to the main wreckage. The aft section of the tail boom, including the tail rotor assembly, was about 25 ft south of the main wreckage. Two main rotor blades were located about 100 ft south of the main wreckage, and one main rotor blade was located about 50 ft south of the main wreckage. The canopy structure was fragmented and the left cockpit/cabin door and right cockpit door frames were crushed and deformed. The lower fuselage sustained damage in the area where all four landing gear struts passed through the fuselage. The left forward strut was fractured, and the left aft strut was undamaged. The left and right skids were intact.

The tail boom displayed partial separations near its forward fuselage attachment and near the horizontal stabilizer. Damage near the forward fuselage attachment exhibited features of a main rotor blade strike. The tail rotor transmission and the horizontal and vertical stabilizers were attached and secured to the tail boom. The tail rotor blades were separated outboard of the blade root fittings and were not recovered. The main rotor blade spars and skins were wrinkled, bent, and torn. Three of the main rotor blades were separated from the main rotor hub at the pitch housing assemblies, which remained attached to the root end of the blades, and two main rotor blades remained attached to the hub.

Flight control continuity was confirmed from the cyclic and collective cockpit controls through overload fractures of the control system to the main rotor swashplate. Flight control continuity was confirmed from the antitorque pedals through overload fractures of the tail boom control rod to the tail rotor pitch control assembly and tail rotor blades.

The lateral and longitudinal flight control trim actuators were tested using battery power with the actuation of trim control switch. The trim actuators extended and retracted normally. The tail rotor swashplate bearing and pitch control assembly operated normally when moved by hand. The tail rotor gearbox rotated freely when moved by hand; no binding was felt.

Main rotor and tail rotor drive continuity from the engine driveshaft through the main transmission was confirmed. There was no ferrous debris on the main transmission and tail rotor gearbox chip detectors.

The engine to main transmission driveshaft was separated at the overrunning clutch flex coupling. The flex coupling bolts and nuts were in place, and the flex coupling plates fractured. The main transmission was rotated by hand through the input drive shaft and the gear train moved smoothly, freely, and without binding. The main rotor head moved with movement of the input drive shaft. A liquid consistent with oil was present in the main transmission oil level sight glass.

The engine remained attached to its mounts and was displaced toward the left due to impact damage, which also damaged the left side compressor discharge tubes and burner can. Engine control continuity from the cockpit controls to the engine power turbine governor (PTG) and fuel control unit (FCU) was confirmed. The FCU indicator was at the ground idle position. Liquid consistent with Jet A fuel was found in the fuel line leading to the fuel nozzle. The airframe oil filter did not contain metallic debris. There was no ferrous debris on either of the two engine chip detectors. The first stage compressor blades were undamaged, and the compressor (N1 rotor) turned freely using hand pressure. The gas producer turbine blades were present, intact, and undamaged. The gas producer turbine rotor was continuous to the compressor, which rotated freely using hand pressure. Continuity from the fourth-stage power turbine wheel to the power output shaft was also established.

The top of the goat head comprised a 1-inch thick horizontal plate on which a bracket was mounted that held the shield cable shoe hardware. The shield cable mounting bracket had been sheared off and was not recovered. All four of the attaching 1/2-inch diameter bolts were sheared flush with the face of the plate. One bolt face displayed red paint transfer. The upper plate exhibited red paint transfer on the face and one side/edge. The paint transfers were consistent in color with that of the helicopter, which was painted red. There was a puncture hole under the upper horizontal plate about 6 inches in length that was consistent with the dimensions of a main rotor blade.

Medical and Pathological Information

Toxicology testing of the pilot performed at the Federal Aviation Administration (FAA) Forensic Sciences Laboratory was negative for ethanol and tested-for drugs.

Toxicology testing of the deceased crewmember performed at the FAA Forensic Sciences Laboratory revealed carboxyhemoglobin in blood, no ethanol in vitreous, and yohimbine in blood and urine.

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	Randolph Otillio; Federal Aviation Adminstration; Baton Rouge FSDO; Baton Rouge, LA David Brown; Air2, LLC; Timonium, MD John Hobby; Boeing; Mesa, AZ Joan Gregoire; MD Helicopters; Mesa, AZ Nicholas Shepler; Rolls Royce Corporation; Indianapolis, IN
Original Publish Date:	April 20, 2020
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=97282