



# Aviation Investigation Final Report

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<b>Location:</b>	Montgomery, Texas	<b>Accident Number:</b>	CEN19FA109
<b>Date &amp; Time:</b>	March 27, 2019, 14:10 Local	<b>Registration:</b>	N818MC
<b>Aircraft:</b>	Aerospatiale AS350	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Aircraft maintenance event	<b>Injuries:</b>	1 Fatal, 2 Serious
<b>Flight Conducted Under:</b>	Public aircraft		

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## Analysis

While conducting controlled fire operations, the helicopter was maneuvering over trees, when the engine lost power. The pilot performed an autorotation and the helicopter impacted trees and then terrain, and came to rest on its side. The fuselage and empennage sustained substantial damage. One crewmember was fatally injured.

Examination revealed that a fuel line between the engine firewall and hydro-mechanical unit (HMU) was loose and not secured with safety wire as required. About 25 flight hours before the accident, that fuel line was disconnected to defuel of the helicopter in order to perform a weight and balance check. No other maintenance was performed in that area. The mechanic who returned the helicopter to service stated that he was confident that he torqued and secured the line. No other anomalies were detected with the helicopter which would have precluded normal flight.

The circumstances of the accident are consistent with a loss of engine power due to the loose fuel line.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

Maintenance personnel's failure to properly re-install and secure a fuel line, which resulted in a total loss of engine power.

## Findings

<b>Personnel issues</b>	(general) - Maintenance personnel
<b>Aircraft</b>	Fuel distribution - Incorrect service/maintenance

## Factual Information

### History of Flight

<b>Prior to flight</b>	Aircraft maintenance event (Defining event)
<b>Maneuvering-low-alt flying</b>	Loss of engine power (total)
<b>Autorotation</b>	Collision with terr/obj (non-CFIT)

On March 27, 2019, about 1410 central daylight time, an Airbus AS350B3 helicopter, N818MC, was substantially damaged when it was involved in an accident near Montgomery, Texas. The pilot was seriously injured, one crew member was fatally injured, and another crew member sustained minor injuries. The helicopter was operated as a public flight.

The helicopter and United States Forest Service (USFS) crew were conducting plastic sphere dispenser (PSD) applications in support of a controlled fire operation in an area of the Sam Houston National Forest. The pilot and surviving crew member reported that, after completing the application, they began flying back to the staging area when the engine lost total power. The helicopter descended into trees and subsequently impacted terrain, coming to rest on its right side. The surviving crew member and pilot were able to exit the helicopter; however, the second crew member was partially ejected from the helicopter and sustained fatal injuries.

### Pilot Information

<b>Certificate:</b>	Commercial; Flight instructor	<b>Age:</b>	50, Male
<b>Airplane Rating(s):</b>	None	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	4-point
<b>Instrument Rating(s):</b>	Helicopter	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Helicopter	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	May 9, 2018
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	March 29, 2018
<b>Flight Time:</b>	(Estimated) 8760 hours (Total, all aircraft), 3886 hours (Total, this make and model)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Aerospatiale	<b>Registration:</b>	N818MC
<b>Model/Series:</b>	AS350 B3	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	2009	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	4755
<b>Landing Gear Type:</b>	High skid	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>	February 4, 2019 100 hour	<b>Certified Max Gross Wt.:</b>	
<b>Time Since Last Inspection:</b>	72.4 Hrs	<b>Engines:</b>	Turbo shaft
<b>Airframe Total Time:</b>	5027.3 Hrs at time of accident	<b>Engine Manufacturer:</b>	Safran
<b>ELT:</b>	Installed	<b>Engine Model/Series:</b>	Arriel 2B1
<b>Registered Owner:</b>	Mountain Air Helicopters Inc	<b>Rated Power:</b>	871 Horsepower
<b>Operator:</b>	Mountain Air Helicopters Inc	<b>Operating Certificate(s) Held:</b>	Rotorcraft external load (133), On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	MHHA

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KCXO,245 ft msl	<b>Distance from Accident Site:</b>	21 Nautical Miles
<b>Observation Time:</b>	14:53 Local	<b>Direction from Accident Site:</b>	116°
<b>Lowest Cloud Condition:</b>	Clear	<b>Visibility</b>	
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	7 knots /	<b>Turbulence Type Forecast/Actual:</b>	None /
<b>Wind Direction:</b>	120°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.25 inches Hg	<b>Temperature/Dew Point:</b>	23°C / 7°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Montgomery, TX	<b>Type of Flight Plan Filed:</b>	Company VFR
<b>Destination:</b>	Montgomery, TX	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>		<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal, 2 Serious	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>		<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal, 2 Serious	<b>Latitude, Longitude:</b>	30.510278,-95.770835(est)

The helicopter came to rest in a wooded area of the Sam Houston National Forest, at an elevation of 328 ft mean sea level on a 108° magnetic heading. All major components of the helicopter were located at the accident scene. Trees surrounding the accident site were about 70 ft tall and displayed damage consistent with a helicopter descent vector of about 40-50°. There was no post impact fire.

The fuel line between the firewall and hydro-mechanical unit (HMU) was loose and the required safety wire was not installed. All other connections were found to be secure.

Examination of the airframe and engine did not reveal any additional discrepancies.

Federal Aviation Administration inspectors from the Houston Flight Standards District Office interviewed Mountain Air's Director of Maintenance, who stated that on February 14, 2019, the USFS requested to validate the helicopter's weight and balance. The helicopter was defueled, which involved disconnecting the main fuel line. After the weight and balance were verified, the main fuel line was reconnected. The director of maintenance asked another mechanic to verify that the fuel lines were reconnected, which was reportedly accomplished. The mechanic that accomplished the work informed the operator that he "was confident" that he torqued and secured the line. There was no other maintenance work which involved opening the fuel line after that day. On February 23, 2019, the helicopter's engine would not light, and the engine's igniters and/or igniter box was replaced. A maintenance records review found that the helicopter flew about 24.9 hours after the weight and balance was conducted on February 14, 2019.

On March 25, 2019, the pilot reported to management that the fuel pressure light had "flickered" during a flight "a few days before;" the pilot turned on the fuel boost pump, turned it off, and the light never reappeared. The pilot was informed to monitor the situation and report if it occurred again.

Following the accident, the digital engine control unit (DECU) was removed and sent to the manufacturer for data download. On April 11, 2019, the DECU was downloaded under the auspices of the FAA. The last recorded fault was a “P3 drift or engine flame out.”

## **Additional Information**

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### Review of Mountain Air Fleet

Following the accident, Mountain Air inspected their other helicopters, and all helicopters had the fuel lines properly secured.

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Aguilera, Jason
<b>Additional Participating Persons:</b>	Robert McGee; FAA FSDO; Houston, TX Michael Hemann; FAA Rotorcraft Directorate; Fort Worth, TX Seth Buttner; Airbus Helicopters; Grand Prairie, TX Bryan Larimore; SafranHE; Grand Prairie, TX Dwight Jones; Mountain Air Helicopters; Los Lunas, NM
<b>Original Publish Date:</b>	February 9, 2022
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=99185">https://data.nts.gov/Docket?ProjectID=99185</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](#).