Aviation Investigation Final Report

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

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

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

Factual Information

History of Flight

Prior to flight	Aircraft maintenance event (Defining event)
Maneuvering-low-alt flying	Loss of engine power (total)
Autorotation	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

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

Aircraft and Owner/Operator Information

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

Meteorological Information and Flight Plan

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

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 2 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 2 Serious	**Latitude, Longitude:**	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

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

Investigator In Charge (IIC):	Aguilera, Jason
Additional Participating Persons:	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
Original Publish Date:	February 9, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99185