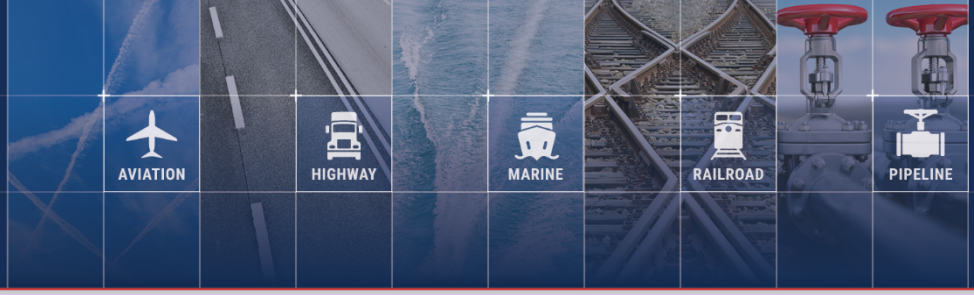

Aviation Investigation Final Report

Location:	Pioche, Nevada	**Accident Number:**	WPR20LA244
Date & Time:	July 29, 2020, 10:00 Local	**Registration:**	N755AE
Aircraft:	AMERICAN EUROCOPTER AS350	**Aircraft Damage:**	Destroyed
Defining Event:	External load event (Rotorcraft)	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

The pilot landed the helicopter on a mountain ridge to survey a job site. The purpose of the accident flight was to reposition the helicopter from the ridgetop downhill to a fuel truck to refuel before beginning external load operations. A witness reported that he dropped the pilot and passenger at the helicopter before the accident flight and saw a cable that was laid out on the ground in front of the helicopter. The pilot stated to him that the cable was 70 feet long. The witness left the pilot and passenger at the helicopter and drove away; shortly thereafter, he received a phone call about smoke in the vicinity and learned that the helicopter had crashed.

Examination of the helicopter revealed that the long line was entangled with the tail rotor, which had separated from the helicopter. The tail cone/vertical fin assembly was found about 365 ft from the main wreckage and exhibited evidence of cable abrasion. Examination of the flight controls and engine, as well as review of recorded engine data, revealed no evidence of mechanical anomalies that would have precluded normal operation.

Based on the available information, it is likely that the pilot failed to achieve adequate clearance between the long line and terrain before descending downhill toward the fuel truck, which resulted in the helicopter's long line, becoming entangled with the tail rotor, and a subsequent loss of helicopter control.

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 altitude from terrain and subsequent loss of helicopter control due to entanglement of the external load cable with the tail rotor.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Related operating info

Factual Information

History of Flight

Enroute	External load event (Rotorcraft) (Defining event)

On July 29, 2020, about 1000 Pacific daylight time, an American Eurocopter Corp. AS350B3 helicopter, N755AE, was destroyed when it was involved in an accident near Pioche, Nevada. The pilot and passenger were fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 positioning flight.

The pilot landed the helicopter in mountainous terrain in order to survey a job site. The purpose of the accident flight was to reposition the helicopter to the nearby fuel truck to refuel before beginning external load operations. A witness reported that he dropped the pilot and passenger at the helicopter before the accident flight and saw a cable that was laid out on the ground in front of the helicopter. The pilot stated to him that the cable was 70 feet long. The witness left the pilot and passenger at the helicopter and drove away; shortly thereafter, he received a phone call about smoke in the vicinity and learned that the helicopter had crashed.

The helicopter came to rest in heavily treed terrain on its right side. There was no evidence of a postimpact fire. The helicopter was equipped with a long line cargo hook system. About 21 ft of steel long line cable impacted the main rotor blades and was found entangled in the separated tail rotor. (see Figure 1.) The separated cable end exhibited a broomstrawed appearance and evidence of red paint transfer.

Figure 1. Photo of tail rotor wrapped with cable

One tail rotor blade remained attached to the tail rotor; the other blade was not located. The tail boom was broken off and partially attached at the lower aft bulkhead by control cables. The tail rotor drive shaft was separated and found near the main wreckage. Both horizontal stabilizers remained attached to the tail boom.

The main rotor blades remained attached to the rotor head but were broken midspan and exhibited multiple impact signatures. Main rotor blade skin material was found near the main wreckage.

Flight control continuity was established from the cockpit to the main rotor head and tail rotor system through separations consistent with impact damage.

The aft tail cone was separated just forward of the vertical fin; the vertical fin remained attached. The assembly was found about 365 ft from the main wreckage. The tail cone and vertical fin trailing edge exhibited abrasions consistent with cable contact. (see Figure 2.)

Figure 2. Tail cone and vertical fin displaying cable abrasions

The engine remained attached to the helicopter by the front and rear supports and displayed little impact damage. All fuel, oil, air, and electrical connections remained intact. The gas generator and free turbine turned freely when rotated by hand. The axial compressor displayed minor foreign object debris (FOD) damage. Oil was present inside the exhaust pipe. Proper freewheel operation was confirmed. The rear tail rotor drive short shaft separated from the

drive flange on the freewheel shaft. The flector group connecting the two was torsionally splayed.

The Module 5 reduction gearbox displayed signatures consistent with engine operation at the time of main rotor impact. The reduction gearbox and accessory gearbox chip detectors were found clean.

The engine data recorder was removed from the helicopter and downloaded at the manufacturer. Data from the accident flight indicated that the engine was placed in flight, then reduced to idle near the end of the recording. During this sequence, the main rotor speed decayed below that necessary to maintain lift. The data displayed no anomalies that would have precluded normal flight.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	61,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Helicopter; Instrument airplane; Instrument helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	February 3, 2020
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	September 9, 2019
Flight Time:	(Estimated) 17500 hours (Total, all aircraft), 0 hours (Total, this make and model), 114 hours (Last 90 days, all aircraft), 40 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Passenger Information

Certificate:		**Age:**	Female
Airplane Rating(s):		**Seat Occupied:**	Left
Other Aircraft Rating(s):		**Restraint Used:**	4-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:			

Aircraft and Owner/Operator Information

Aircraft Make:	AMERICAN EUROCOPTER	**Registration:**	N755AE
Model/Series:	AS350 B3	**Aircraft Category:**	Airplane
Year of Manufacture:	2013	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	7763
Landing Gear Type:	Skid	**Seats:**	6
Date/Type of Last Inspection:	June 3, 2020 Unknown	**Certified Max Gross Wt.:**	4961 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	3109.7 Hrs as of last inspection	**Engine Manufacturer:**	Safran
ELT:	C126 installed, activated	**Engine Model/Series:**	Arriel 2D
Registered Owner:	On file	**Rated Power:**	856 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	Rotorcraft external load (133)

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KSGU,2936 ft msl	**Distance from Accident Site:**	67 Nautical Miles
Observation Time:	16:56 Local	**Direction from Accident Site:**	137°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	31°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Cedar City, UT (CDC)	**Type of Flight Plan Filed:**	Unknown
Destination:	Pioche, NV	**Type of Clearance:**	None
Departure Time:	06:55 Local	**Type of Airspace:**	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	37.919998,-114.54(est)

Administrative Information

Investigator In Charge (IIC):	Cornejo, Tealeye
Additional Participating Persons:	John Waugh; Federal Aviation Administration; Las Vegas, NV Jenny Laios; St. Louis Helicopter LLC; Sellersburg, IN
Original Publish Date:	March 16, 2023
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101701