



# Aviation Investigation Final Report

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<b>Location:</b>	West Liberty, Ohio	<b>Accident Number:</b>	CEN14LA398
<b>Date &amp; Time:</b>	July 29, 2014, 16:51 Local	<b>Registration:</b>	N89ZC
<b>Aircraft:</b>	Hughes 369D	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Loss of engine power (total)	<b>Injuries:</b>	1 Serious
<b>Flight Conducted Under:</b>	Part 133: Rotorcraft ext. load		

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## Analysis

The commercial pilot was using an aerial saw to trim trees when the accident occurred. As the helicopter was going through a tree line, the engine lost power, and it then descended into trees and terrain.

A postaccident examination of the helicopter revealed that no fuel was present in either the fuel tank or in the engine fuel line. When electrical power was applied to the helicopter after the accident, the fuel quantity indicator showed that the fuel tank was empty. The helicopter was topped off with fuel before the accident flight, and it had been flown 1 hour 50 minutes before the accident. The operator stated that the fuel tank holds 62.4 gallons, and the pilot reported that the helicopter consumes about 30 gallons per hour. It is likely that the pilot did not adequately monitor the fuel quantity during the flight, which resulted in a total loss of engine power due to fuel exhaustion.

## Probable Cause and Findings

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

A total loss of engine power, which resulted from fuel exhaustion due to the pilot's failure to adequately monitor the fuel quantity during the flight.

## Findings

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<b>Aircraft</b>	Fuel - Fluid level
<b>Personnel issues</b>	Use of equip/system - Pilot
<b>Aircraft</b>	Fuel - Fluid management

## Factual Information

### History of Flight

<b>Maneuvering-low-alt flying</b>	Loss of engine power (total) (Defining event)
<b>Maneuvering-low-alt flying</b>	Loss of control in flight
<b>Uncontrolled descent</b>	Collision with terr/obj (non-CFIT)

On July 29, 2014, at 1651 eastern daylight time, a Hughes 369D helicopter, N89ZC, collided with the terrain following a loss of engine power while trimming trees in West Liberty, Ohio. The commercial pilot was seriously injured. The helicopter sustained substantial damage. The helicopter was registered to DAH Aircraft LLC and operated by Rotor Blade LLC as a 14 Code of Federal Regulations Part 133 external load flight. Visual meteorological conditions prevailed for the flight, which did not operate on a flight plan. The local flight originated from a nearby field at 1501.

The pilot was using a 10-bladed aerial saw to trim trees along a railroad track when the accident occurred. A witness reported the engine sounded like it lost power and the tail of the helicopter oscillated to the left as the helicopter began losing altitude. The helicopter then rolled to the left and descended to impact with the trees and terrain.

A postaccident examination of the helicopter was conducted by a Federal Aviation Administration inspector. The inspector reported the tail boom separated from the helicopter during the impact. The tail rotor drive shaft did not show evidence of torsional twisting. The main and tail rotor blades contained little damage. He reported there was no evidence of fuel spill at the accident site. The helicopter's fuel system was intact and there was no fuel present in the fuel tank or in the fuel line at the engine. The inspector applied electrical power to the helicopter and the fuel quantity indicator showed the tank was empty.

The helicopter was topped off with fuel prior to the flight. According to the helicopter operator, the helicopter holds 62.4 gallons of fuel. The pilot reported the helicopter consumes about 30 gallons per hour. The operator stated the spot tracker information showed the helicopter flew 1 hour and 50 minutes from the last fueling to the time of the accident and they drained about one quart of fuel from the helicopter after the accident.

The operator stated the pilots and ground crew time the flights for fuel consumption. The ground crew gave the pilot a one hour time check followed by additional 15 minute time checks prior to the accident.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	50, Male
<b>Airplane Rating(s):</b>	Single-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	Helicopter	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 With waivers/limitations	<b>Last FAA Medical Exam:</b>	November 26, 2013
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	September 15, 2013
<b>Flight Time:</b>	11490 hours (Total, all aircraft), 2500 hours (Total, this make and model), 11000 hours (Pilot In Command, all aircraft), 240 hours (Last 90 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Hughes	<b>Registration:</b>	N89ZC
<b>Model/Series:</b>	369D	<b>Aircraft Category:</b>	Helicopter
<b>Year of Manufacture:</b>	1981	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	1098D
<b>Landing Gear Type:</b>	Unknown	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>		<b>Certified Max Gross Wt.:</b>	3000 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	
<b>ELT:</b>		<b>Engine Model/Series:</b>	
<b>Registered Owner:</b>	DAH AIRCRAFT LLC	<b>Rated Power:</b>	
<b>Operator:</b>	Rotor Blade LLC	<b>Operating Certificate(s) Held:</b>	Rotorcraft external load (133)

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	EDJ,1122 ft msl	<b>Distance from Accident Site:</b>	5 Nautical Miles
<b>Observation Time:</b>	16:30 Local	<b>Direction from Accident Site:</b>	230°
<b>Lowest Cloud Condition:</b>		<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Broken / 3700 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	7 knots /	<b>Turbulence Type Forecast/Actual:</b>	/ None
<b>Wind Direction:</b>	250°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	30.03 inches Hg	<b>Temperature/Dew Point:</b>	19°C / 12°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	West Liberty, OH	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	West Liberty, OH	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	15:01 Local	<b>Type of Airspace:</b>	Class G

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Serious	<b>Latitude, Longitude:</b>	40.301944,-83.76889(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Sullivan, Pamela
<b>Additional Participating Persons:</b>	Charles Heck; FAA; Columbus, OH
<b>Original Publish Date:</b>	September 14, 2016
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=89775">https://data.ntsb.gov/Docket?ProjectID=89775</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](#).