



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Santa Clarita, CA	<b>Accident Number:</b>	WPR09LA226
<b>Date &amp; Time:</b>	05/01/2009, 1515 PDT	<b>Registration:</b>	N67FF
<b>Aircraft:</b>	MD HELICOPTER 369FF	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Collision with terr/obj (non-CFIT)	<b>Injuries:</b>	1 None
<b>Flight Conducted Under:</b>	Part 133: Rotorcraft Ext. Load		

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## Analysis

The pilot reported that he was maneuvering the helicopter about 10 feet above a reservoir in an attempt to use its rotor wash to propel an object to the shore. During this maneuver, the helicopter's long-line and attached grappling hook were submerged in the water. With the helicopter moving at low speed about 10 feet from the shoreline, the grappling hook became temporarily ensnared on an underwater obstruction and the helicopter made a rapid and violent turn. The pilot initiated emergency procedures and maneuvered the helicopter toward the shore. It touched down on uneven terrain with the left skid on dry land and the right skid in the water. Examination of the helicopter revealed that there was a torsional fracture and separation of the tail rotor drive shaft as a result of the tail rotor blades contacting the water. No anomalies with the main rotor controls were found.

## 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 water while maneuvering at low altitude as a result of the helicopter's grappling hook temporarily becoming ensnared with an underwater obstruction.

## Findings

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<b>Aircraft</b>	Tail rotor drive shaft - Damaged/degraded Altitude - Not attained/maintained (Cause)
<b>Personnel issues</b>	Incorrect action performance - Pilot (Cause)
<b>Environmental issues</b>	Water - Not specified

## Factual Information

On May 1, 2009, about 1515 Pacific daylight time, a McDonnell Douglas Helicopter (MDHI) 369FF, N67FF, made a hard landing during an emergency landing near Santa Clarita, California. Summit Helicopters was operating the helicopter under the provisions of 14 Code of Federal Regulations (CFR) Part 133. The certificated commercial pilot was not injured; the helicopter sustained substantial damage to the tail boom. The local external load flight departed a helipad at Bouquet Canyon, near Santa Clarita. Visual meteorological conditions prevailed, and no flight plan had been filed.

A Federal Aviation Administration (FAA) inspector interviewed the pilot, who stated that he had been transporting a work crew. After dropping the crew off, it was discovered that one of them had dropped a lunch pail into Bouquet Reservoir. The helicopter had a 40-foot external long-line with a four-pronged grappling hook attached to the cargo hook. The pilot attempted to use the grappling hook to snag the lunch pail, but was unsuccessful.

The pilot went down low, about 10 feet above the reservoir surface, and tried to use the main rotor blade wash to push the floating lunch pail toward the shore. He did not disconnect the long line and grappling hook; the grappling hook was submerged below the reservoir surface. While side slipping toward the shore, the pilot felt a short vibration in the rudder pedals, and a loss of tail rotor authority. The helicopter turned twice before the throttle was reduced, and the rotations stopped. An auto rotation landing was performed on the shore line.

The pilot submitted a written statement. He said that the helicopter was about 10 feet from the shoreline when the helicopter made a rapid and violent turn, which the pilot attributed to a loss of tail rotor thrust. He initiated emergency procedures by twisting the throttle to ground idle. He was facing the shore when the turning stopped. He maneuvered the helicopter toward the shore, and landed in an upright position on uneven terrain with the left skid on dry land and the right skid in the water. He immediately shut the helicopter down. The tail boom was twisted and bent down.

An MD Helicopters, Inc., investigator examined the wreckage under the supervision of the FAA inspector. He noted skin wrinkling on all five main rotor blades, and no evidence of main rotor blade contact with the ground, fuselage, or tail boom. He verified control continuity for all main rotor controls. Both tail rotor blades were bent and damaged. He could not establish continuity from the main rotor transmission to the tail rotor, and discovered a torsional fracture of the tail rotor drive shaft.

Metallurgical examination of the tail rotor drive shaft determined that the fracture mode was torsional overload, and it met hardness and conductivity specifications. Both of the tail rotor blades appeared to have made contact with another surface. However, it could not be determined what made contact with the tail rotor blades or when in the accident sequence the contact occurred.

## History of Flight

Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT) (Defining event)
Emergency descent	Off-field or emergency landing

## Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	64, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	04/08/2008
Flight Time:	14450 hours (Total, all aircraft), 6000 hours (Total, this make and model), 13800 hours (Pilot In Command, all aircraft), 180 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Manufacturer:	MD HELICOPTER	Registration:	N67FF
Model/Series:	369FF	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	0067FF
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	04/28/2009, 100 Hour	Certified Max Gross Wt.:	3100 lbs
Time Since Last Inspection:		Engines:	1 Turbo Shaft
Airframe Total Time:	1645 Hours	Engine Manufacturer:	Allison
ELT:	Installed, not activated	Engine Model/Series:	C30
Registered Owner:	SUMMIT HELICOPTER INC	Rated Power:	650 hp
Operator:	SUMMIT HELICOPTER INC	Air Carrier Operating Certificate:	

## Meteorological Information and Flight Plan

Observation Facility, Elevation:	KBUR	Observation Time:	1553 PDT
Distance from Accident Site:		Condition of Light:	Day
Direction from Accident Site:		Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:		Temperature/Dew Point:	25° C / 9° C
Lowest Ceiling:	Overcast / 4500 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	3 knots, 220°	Visibility (RVR):	
Altimeter Setting:	29.97 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Santa Clarita, CA	Type of Flight Plan Filed:	None
Destination:	Santa Clarita, CA	Type of Clearance:	None
Departure Time:	PDT	Type of Airspace:	

## Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None		

## Administrative Information

Investigator In Charge (IIC):	Howard D Plagens	Adopted Date:	03/16/2011
Additional Participating Persons:	Frank Motter; Federal Aviation Administration; Van Nuys, CA John Hobby; MD Helicopters, Inc.; Mesa, AZ		
Publish Date:	03/16/2011		
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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