



National Transportation Safety Board Aviation Accident Final Report

Location:	Elverta, CA	Accident Number:	WPR11LA122
Date & Time:	02/04/2011, 1422 PST	Registration:	N416WC
Aircraft:	McDonnell Douglas Helicopters 369E (MD500E)	Aircraft Damage:	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	Injuries:	2 Minor
Flight Conducted Under:	Part 133: Rotorcraft Ext. Load		

Analysis

A lineman was on the skid of the helicopter installing high-power electrical lines on a power line structure. The pilot positioned the helicopter about 30 to 50 feet from the structure. The main rotor blades made contact with an installation rope, which then wrapped around the mast as the blades pulled it in. The pilot lost control of the helicopter, and it began an uncontrolled descent to the ground. A postaccident examination of the airframe and engine revealed no mechanical anomalies that would have precluded normal operation. It is likely that the pilot misjudged the distance between the rotor blades and the installation rope.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot did not maintain rotor blade clearance from an installation rope while maneuvering to install power lines.

Findings

Personnel issues	Incorrect action performance - Pilot (Cause) Monitoring environment - Pilot (Cause)
Environmental issues	Wire - Response/compensation (Cause) Wire - Effect on equipment (Cause)

Factual Information

HISTORY OF FLIGHT

On February 4, 2011, about 1422 Pacific standard time, a McDonnell Douglas Helicopters 369E (MD500E), N416WC, became entangled with a sock line rope used to string power lines near Elverta, California. Wilson Construction Company was operating the helicopter under the provisions of 14 Code of Federal Regulations (CFR) Part 133. The commercial pilot and one passenger sustained minor injuries; the helicopter sustained substantial damage to the airframe and main rotor blades. Visual meteorological conditions prevailed, and no flight plan had been filed.

The operator reported that the helicopter was working on a project to construct 30 miles of high power electrical lines, which are oriented north-south. It is not possible to pull the conductor wire through bundled travelers unless the sock line is actually in contact with the roller. Construction crews install a hold down, which is a temporary block that they secure to a ground anchor. They adjust the anchor rope to force the sock line to rest in the bundle block traveler when in tension. The operator noted that it is standard industry practice to use a helicopter to install a hold down.

A lineman was on the skid of the helicopter, which was in position to install a hold down at a power line structure. The pilot positioned the helicopter about 30-50 feet south of the structure; his flagman was facing the west. The pilot believed that he was properly positioned near the sock line so that they could perform the task safely.

The lineman on the skid placed the larger of the two hold down ropes over the sock line, and allowed it to fall onto the west side. The lineman allowed the hold down block to hang by the large rope just below and on the east side of the sock line. The large rope tangled as it fell to the ground. The lineman on the ground grabbed the end of the rope, and tried to clear the tangle. The lineman on the skid had one hand on the hold down, and was preparing to release the second, smaller rope downward on the western side of the sock line with the other hand.

The main rotor blades made contact with the sock line rope, which wrapped around the mast as the blades pulled it in. The pilot lost control of the helicopter, and it began an uncontrolled descent to the ground. The helicopter came to rest upright about 10 feet south of the power line structure. The lineman on the skid was lying on the ground, but still attached to the helicopter by her fall restraint and positioning belt. The pilot extricated himself from the helicopter.

TESTS AND RESEARCH

Investigators from the FAA, Boeing, and Rolls-Royce Allison (RR) examined the wreckage at the operator's facilities at McLellan Airfield, Sacramento, California, on February 9, 2011.

The investigators examined the airframe and engine, with no mechanical anomalies identified that would have precluded normal operation.

History of Flight

Maneuvering-hover

Collision with terr/obj (non-CFIT) (Defining event)

Pilot Information

Certificate:	Commercial	Age:	57, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Helicopter	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	07/28/2010
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	02/11/2010
Flight Time:	22500 hours (Total, all aircraft), 17600 hours (Total, this make and model), 22500 hours (Pilot In Command, all aircraft), 75 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	McDonnell Douglas Helicopters	Registration:	N416WC
Model/Series:	369E (MD500E)	Aircraft Category:	Helicopter
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	0268E
Landing Gear Type:	Skid	Seats:	4
Date/Type of Last Inspection:	01/26/2011, 100 Hour	Certified Max Gross Wt.:	3000 lbs
Time Since Last Inspection:		Engines:	1 Turbo Shaft
Airframe Total Time:	6256 Hours	Engine Manufacturer:	Rolls-Royce Allison
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	250-C20B
Registered Owner:	Wilson Construction Company	Rated Power:	420 hp
Operator:	Wilson Construction Company	Air Carrier Operating Certificate:	

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KSMF, 27 ft msl	Observation Time:	1353 PST
Distance from Accident Site:	6 Nautical Miles	Condition of Light:	Dawn
Direction from Accident Site:	252°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	15° C / 6° C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	Calm	Visibility (RVR):	
Altimeter Setting:	30.31 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Elverta, CA	Type of Flight Plan Filed:	None
Destination:	Elverta, CA	Type of Clearance:	None
Departure Time:	PST	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Minor		

Administrative Information

Investigator In Charge (IIC):	Howard D Plagens	Adopted Date:	03/28/2012
Additional Participating Persons:	Gerry Griswold; FAA FSDO; Sacramento, CA Adrian Booth; Boeing; Mesa, AZ Jon-Adam Michael; Rolls-Royce; Indianapolis, IN Anthony Helbling; Wilson Construction; Canby, OR		
Publish Date:	03/28/2012		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=78282		

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