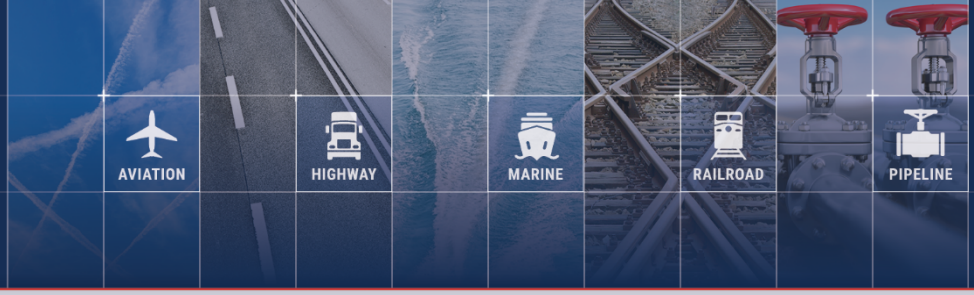


# Aviation Investigation Final Report

| | | | |
|---|---|---|---|
| **Location:** | Elverta, California | **Accident Number:** | WPR11LA122 |
| **Date & Time:** | February 4, 2011, 14:22 Local | **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

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|---|---|
| **Personnel issues** | Incorrect action performance - Pilot |
| **Environmental issues** | Wire - Response/compensation |
| **Personnel issues** | Monitoring environment - Pilot |
| **Environmental issues** | Wire - Effect on equipment |

# Factual Information

## History of Flight

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|---|---|
| **Maneuvering-hover** | Collision with terr/obj (non-CFIT) (Defining event) |

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.

## Pilot Information

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|---|---|---|---|
| **Certificate:** | Commercial | **Age:** | 57,Male |
| **Airplane Rating(s):** | None | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | Helicopter | **Restraint Used:** | |
| **Instrument Rating(s):** | Helicopter | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 2 With waivers/limitations | **Last FAA Medical Exam:** | July 28, 2010 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | February 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 Make:** | McDonnell Douglas Helicopters | **Registration:** | N416WC |
| **Model/Series:** | 369E (MD500E) | **Aircraft Category:** | Helicopter |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 0268E |
| **Landing Gear Type:** | Skid | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | January 26, 2011 100 hour | **Certified Max Gross Wt.:** | 3000 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Turbo shaft |
| **Airframe Total Time:** | 6256 Hrs at time of accident | **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 Horsepower |
| **Operator:** | Wilson Construction Company | **Operating Certificate(s) Held:** | |

## Meteorological Information and Flight Plan

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|---|---|---|---|
| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Dawn |
| **Observation Facility, Elevation:** | KSMF,27 ft msl | **Distance from Accident Site:** | 6 Nautical Miles |
| **Observation Time:** | 13:53 Local | **Direction from Accident Site:** | 252° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.3 inches Hg | **Temperature/Dew Point:** | 15°C / 6°C |
| **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:** | | **Type of Airspace:** | |

## Wreckage and Impact Information

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|---|---|---|---|
| **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 | **Latitude, Longitude:** | 38.718334,-121.478332(est) |

## Administrative Information

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|---|---|
| **Investigator In Charge (IIC):** | Plagens, Howard |
| **Additional Participating Persons:** | Gerry Griswold; FAA FSDO; Sacramento, CA<br>Adrian Booth; Boeing; Mesa, AZ<br>Jon-Adam Michael; Rolls-Royce; Indianapolis, IN<br>Anthony Helbling; Wilson Construction; Canby, OR |
| **Original Publish Date:** | March 28, 2012 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=78282 |