



# Aviation Investigation Final Report

|                                |                              |                         |             |
|--------------------------------|------------------------------|-------------------------|-------------|
| <b>Location:</b>               | Firebaugh, California        | <b>Accident Number:</b> | WPR15LA138  |
| <b>Date &amp; Time:</b>        | March 28, 2015, 18:00 Local  | <b>Registration:</b>    | N130HA      |
| <b>Aircraft:</b>               | Hiller UH 12E                | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         | Loss of engine power (total) | <b>Injuries:</b>        | 1 None      |
| <b>Flight Conducted Under:</b> | Part 137: Agricultural       |                         |             |

## Analysis

The commercial pilot reported that, during the agricultural application flight, the engine started to shake violently. The pilot executed a left turn and positioned the helicopter into the wind, but the helicopter started to descend, and the engine then lost power. The pilot conducted an autorotation, and the helicopter subsequently impacted the ground, which resulted in substantial damage to the tailboom. Postaccident examination of the engine revealed no evidence of preimpact mechanical malfunctions or failures that would have prevented normal operation.

## Probable Cause and Findings

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

A loss of engine power for reasons that could not be determined because postaccident examination of the engine did not reveal any anomalies that would have precluded normal operation.

## Findings

**Not determined** (general) - Unknown/Not determined

## Factual Information

### History of Flight

|                                   |   |
|-----------------------------------|---|
| <b>Maneuvering-low-alt flying</b> | Loss of engine power (total) (Defining event) |
| <b>Autorotation</b>               | Collision with terr/obj (non-CFIT)            |

On March 28, 2015, about 1800 Pacific daylight time, a Hiller UH-12E, N130HA, sustained substantial damage following a loss of engine power and subsequent forced landing approximately 6 miles east of Firebaugh, California. The pilot, the sole occupant, was not injured. The helicopter was registered to Mid-Cal AG Aviation, Inc., and operated as an agricultural aerial application flight under the provisions of Title 14 Code of Federal Aviation Regulations (CFR) Part 137. Day visual meteorological conditions prevailed, and no flight plan was filed. The local flight originated at the loading site approximately 6 miles east of Firebaugh about 1700.

The pilot reported he had conducted a preflight check about 2 hours before takeoff and no anomalies were noted. Prior to departing with the first load of insecticide, the pilot noted 24 gallons of fuel on board as indicated by the fuel gauge. The pilot dispersed 10 loads of insecticide in 45 minutes. He returned to the loading site for the 11<sup>th</sup> load, and attempted a normal landing from a hover with 8 gallons of fuel remaining. During the landing flare, the engine momentarily "sputtered". The pilot assumed that the "sputter" was the result of the fuel moving to the rear of the tank, and air entering the fuel system during the landing flare. The level of fuel in the tank was verified with a graduated fuel stick, which indicated 5 gallons of fuel remaining. The engine ran for about 5-7 minutes at 2,500 rpm while 18 gallons of fuel were added to the fuel tanks, and more insecticide was loaded. Prior to and during takeoff, the pilot visually scanned the engine instrumentation gauge, and did not notice any abnormalities. After a dispersal of the 11<sup>th</sup> load, the engine started to shake violently. The pilot executed a left turn, and positioned the helicopter into the wind, but the helicopter started to descend, and the engine lost power. The pilot performed an autorotation and the helicopter subsequently impacted the terrain, which resulted in substantial damage to the tailboom.

The helicopter was recovered from the accident site for further examination.

The helicopter and engine were inspected on October 21, 2015, at the operator's facility. During the examination, a throttle cable bracket mounted on the intake duct was found separated. Three rivets used to secure the bracket were sheared, and the fourth rivet was not located. A longitudinal snubber, used as one of the engine mounts, was sheared. A subsequent microscope examination with a 5 to 50X stereo-zoom microscope of the rivets revealed that all fracture surface features were consistent with overstress. The complete engine examination report is appended to this accident in the public docket.

No evidence of pre-impact mechanical malfunctions that would have prevented normal operations were noted.

## Pilot Information

|                                  |  |  |                 |
|----------------------------------|--|--|-----------------|
| <b>Certificate:</b>              | Commercial; Flight instructor  | <b>Age:</b>                              | 34, Male        |
| <b>Airplane Rating(s):</b>       | Single-engine land; Multi-engine land  | <b>Seat Occupied:</b>                    | Center          |
| <b>Other Aircraft Rating(s):</b> | Helicopter   | <b>Restraint Used:</b>                   | 4-point         |
| <b>Instrument Rating(s):</b>     | Airplane   | <b>Second Pilot Present:</b>             | No              |
| <b>Instructor Rating(s):</b>     | Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane   | <b>Toxicology Performed:</b>             | No              |
| <b>Medical Certification:</b>    | Class 1 Without waivers/limitations  | <b>Last FAA Medical Exam:</b>            | October 1, 2014 |
| <b>Occupational Pilot:</b>       | Yes  | <b>Last Flight Review or Equivalent:</b> |                 |
| <b>Flight Time:</b>              | (Estimated) 2800 hours (Total, all aircraft), 15 hours (Total, this make and model), 2655 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft) |  |                 |

## Aircraft and Owner/Operator Information

|                                      |                                  |                                       |                             |
|--------------------------------------|----------------------------------|---------------------------------------|-----------------------------|
| <b>Aircraft Make:</b>                | Hiller                           | <b>Registration:</b>                  | N130HA                      |
| <b>Model/Series:</b>                 | UH 12E UNDESIGNAT                | <b>Aircraft Category:</b>             | Helicopter                  |
| <b>Year of Manufacture:</b>          | 1975                             | <b>Amateur Built:</b>                 |                             |
| <b>Airworthiness Certificate:</b>    | Restricted (Special)             | <b>Serial Number:</b>                 | HA3030                      |
| <b>Landing Gear Type:</b>            | Skid                             | <b>Seats:</b>                         | 2                           |
| <b>Date/Type of Last Inspection:</b> | March 1, 2015 100 hour           | <b>Certified Max Gross Wt.:</b>       | 3100 lbs                    |
| <b>Time Since Last Inspection:</b>   |                                  | <b>Engines:</b>                       | 1 Reciprocating             |
| <b>Airframe Total Time:</b>          | 7233.7 Hrs as of last inspection | <b>Engine Manufacturer:</b>           | LYCOMING                    |
| <b>ELT:</b>                          | Not installed                    | <b>Engine Model/Series:</b>           | VO-540-C2A                  |
| <b>Registered Owner:</b>             | MID-CAL AG AVIATION INC          | <b>Rated Power:</b>                   | 305 Horsepower              |
| <b>Operator:</b>                     | MID-CAL AG AVIATION INC          | <b>Operating Certificate(s) Held:</b> | Agricultural aircraft (137) |

## Meteorological Information and Flight Plan

|   |                                  |   |                   |
|---|----------------------------------|---|-------------------|
| <b>Conditions at Accident Site:</b>     | Visual (VMC)                     | <b>Condition of Light:</b>                  | Day               |
| <b>Observation Facility, Elevation:</b> | MCI7                             | <b>Distance from Accident Site:</b>         | 10 Nautical Miles |
| <b>Observation Time:</b>                | 16:00 Local                      | <b>Direction from Accident Site:</b>        | 270°              |
| <b>Lowest Cloud Condition:</b>          | Clear                            | <b>Visibility</b>                           | 10 miles          |
| <b>Lowest Ceiling:</b>                  | None                             | <b>Visibility (RVR):</b>                    |                   |
| <b>Wind Speed/Gusts:</b>                | 6 knots /                        | <b>Turbulence Type Forecast/Actual:</b>     | / None            |
| <b>Wind Direction:</b>                  | 300°                             | <b>Turbulence Severity Forecast/Actual:</b> | /                 |
| <b>Altimeter Setting:</b>               |                                  | <b>Temperature/Dew Point:</b>               | 27°C              |
| <b>Precipitation and Obscuration:</b>   | No Obscuration; No Precipitation |   |                   |
| <b>Departure Point:</b>                 | Firebaugh, CA                    | <b>Type of Flight Plan Filed:</b>           | None              |
| <b>Destination:</b>                     | Firebaugh, CA                    | <b>Type of Clearance:</b>                   | None              |
| <b>Departure Time:</b>                  | 16:45 Local                      | <b>Type of Airspace:</b>                    | Class G           |

## Wreckage and Impact Information

|                            |        |                             |                            |
|----------------------------|--------|-----------------------------|----------------------------|
| <b>Crew Injuries:</b>      | 1 None | <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 None | <b>Latitude, Longitude:</b> | 36.849998,-120.459999(est) |

## Administrative Information

|  |   |
|--|---|
| <b>Investigator In Charge (IIC):</b>     | Smith, Maja   |
| <b>Additional Participating Persons:</b> | Larry Decosta; FAA; Fresno<br>Michael Coberly; FAA; Fresno  |
| <b>Original Publish Date:</b>            | February 17, 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=90958">https://data.ntsb.gov/Docket?ProjectID=90958</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](#).