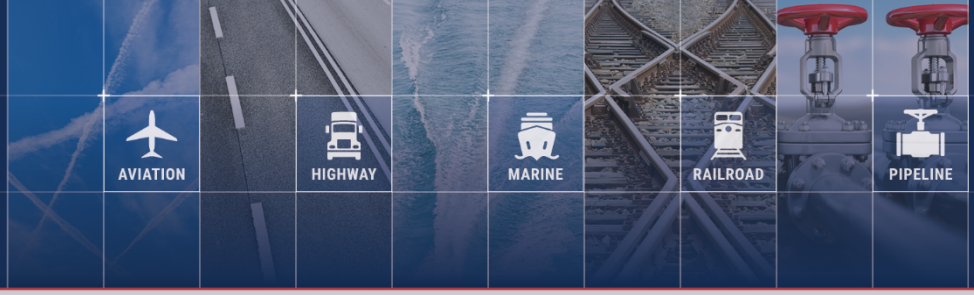

Aviation Investigation Final Report

Location:	Firebaugh, California	**Accident Number:**	WPR15LA138
Date & Time:	March 28, 2015, 18:00 Local	**Registration:**	N130HA
Aircraft:	Hiller UH 12E	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	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

Maneuvering-low-alt flying	Loss of engine power (total) (Defining event)
Autorotation	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 11th 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 11th 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

Certificate:	Commercial; Flight instructor	**Age:**	34,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Center
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Helicopter; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	October 1, 2014
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(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

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

Meteorological Information and Flight Plan

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

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	36.849998,-120.459999(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Maja
Additional Participating Persons:	Larry Decosta; FAA; Fresno Michael Coberly; FAA; Fresno
Original Publish Date:	February 17, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=90958