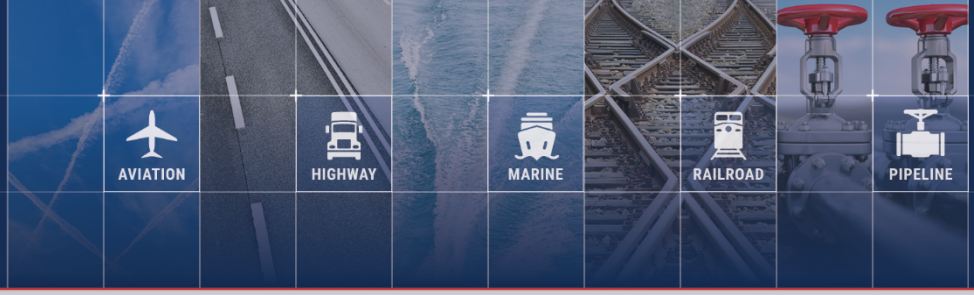

Aviation Investigation Final Report

Location:	Cheraw, South Carolina	**Accident Number:**	ERA16LA139
Date & Time:	March 24, 2016, 07:48 Local	**Registration:**	N729PS
Aircraft:	HALL, WENDALL W HARMON ROCKET II	**Aircraft Damage:**	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airline transport pilot was conducting a local flight in his experimental, amateur-built airplane. Several witnesses observed, and GPS data confirmed, that the accident airplane flew a significant portion of the 38-minute flight at low altitude, at least twice flying as low as 50 ft above ground level. The airplane subsequently collided with power lines that spanned the river.

Examination of the wreckage and review of engine monitor data did not reveal any preimpact mechanical malfunctions that would have precluded normal operation. Toxicology testing of the pilot revealed the presence of a muscle relaxant with potential mental and physical impairing side effects; however, the levels of the drug or its effect on the pilot's decision-making could not be determined based on the available information.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to fly at low altitude, which resulted in a collision with power lines.

Findings

Personnel issues	Decision making/judgment - Pilot
Aircraft	Altitude - Not attained/maintained

Factual Information

History of Flight

Maneuvering	Low altitude operation/event
Maneuvering	Controlled flight into terr/obj (CFIT) (Defining event)

On March 24, 2016, about 0748 eastern daylight time, an experimental, amateur-built Harmon Rocket II, N729PS, was substantially damaged when it impacted terrain near Cheraw, South Carolina. The airline transport pilot was fatally injured. The airplane was owned and operated by the pilot under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the local personal flight, which departed Cheraw Municipal Airport (CQW), Cheraw, South Carolina, about 0710.

Witnesses observed the airplane flying at or near treetop height at several locations in and around the town of Cheraw on the morning of the accident. One witness, who was working alongside the Pee Dee River, stated that, just before the accident, the airplane was flying along the river about treetop level when it struck a power line.

An electronic primary flight display and engine monitor system were recovered from the accident site and forwarded to the NTSB Vehicle Recorder Laboratory for examination. Review of the downloaded GPS data revealed a low-level flightpath consistent with witness statements. During the 7 minutes before the accident, the airplane overflew an airport and the Pee Dee River at altitudes as low as 50 ft above ground level. Review of the engine monitor data did not reveal any preimpact mechanical malfunctions.

According to Federal Aviation Administration (FAA) records, the pilot held an airline transport pilot certificate with ratings for airplane single- and multi-engine land as well as a flight engineer certificate. His most recent FAA first-class medical certificate was issued February 25, 2016, at which time he reported 13,289 total hours of flight experience and 31 hours in the previous 6 months. A witness reported that the pilot had accrued about 35 hours flight experience in the accident airplane make and model.

The tandem, two-seat, low-wing, fixed tailwheel airplane, serial number 414, was assembled from a kit and issued an FAA experimental airworthiness certificate on January 21, 2016, which was when its most recent condition inspection occurred. It was powered by a 250-horsepower Lycoming O-540 engine and equipped with a Hartzell two-blade, fixed-pitch propeller. Review of the airplane's logbook revealed that, at the time of the condition inspection, the airframe had 0 hours of operation and the engine had accrued 590.5 hours since major overhaul. Additional maintenance was performed on March 8, 2016, due to a propeller strike. At the time of that maintenance, the airframe and engine had accumulated 12 hours since the condition inspection.

The 0755 recorded weather at CQW about 3 nautical miles west of the accident site, included wind calm, visibility 5 miles in mist, and a clear sky.

Examination of the accident scene by an FAA inspector revealed that two power line cables were found severed about midspan between two towers, one on each side of the Pee Dee River. The airplane came to rest on a wooded island about 150 yards north of the power line crossing and about 50 yards west of the river bank. Damage to the trees surrounding the wreckage was consistent with a near-vertical descent. The airplane came to rest in a nose-down, inverted attitude.

The upper surface of the engine cowling and canopy were crushed, both wings exhibited leading edge damage consistent with several tree impacts, and the left main landing gear was separated at the fuselage. The empennage was partially separated from the fuselage and bent upward and forward with severe crushing in the aft direction. One section of power line cable was found next to the fuselage, and another was found wrapped around the engine cowling. Flight control continuity was confirmed from the control stick and rudder pedals to the ailerons and rudder, and from the control stick through an overload fracture in the push-pull tube to the elevator. Examination of the wreckage did not reveal any preimpact mechanical malfunctions.

The engine crankshaft was fractured in overload just aft of the flywheel. The flywheel, propeller, spinner, and hub remained attached to one another and were found near the rear of the main wreckage. The propeller exhibited gouge marks in the leading edge consistent with the diameter of the power line, as well as scrape marks on the leading edge and rear of the blade that were consistent with impact with the cable. Both blades exhibited s-bending.

The Chesterfield County Coroner's Office, Chestertown, South Carolina, performed an autopsy on the pilot. The autopsy report noted the cause of death as "multiple blunt force injuries."

The FAA's Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicology testing on specimens of the pilot. Review of the toxicology report revealed cyclobenzaprine, norcyclobenzaprine, and diclofenac in blood and urine, 0.004 µg/ml zolpidem in blood and 0.005 µg/ml in urine.

Cyclobenzaprine (of which norcyclobenzaprine is a metabolite) is a prescription muscle relaxant with potentially impairing mental and physical effects. The laboratory was unable to determine the amount present in the specimen. Diclofenac is a prescription analgesic and is not considered to be impairing. Zolpidem is a potentially impairing prescription sleep aid with a therapeutic range of 0.025 to 0.30 µg/ml.

Pilot Information

Certificate:	Airline transport; Flight engineer	**Age:**	59,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	4-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	February 25, 2016
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	13289 hours (Total, all aircraft), 35 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	HALL, WENDALL W	**Registration:**	N729PS
Model/Series:	HARMON ROCKET II	**Aircraft Category:**	Airplane
Year of Manufacture:	2016	**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	414
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	January 21, 2016 Condition	**Certified Max Gross Wt.:**	2000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	0 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	O-540-A1D5
Registered Owner:	On file	**Rated Power:**	250 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCQW,240 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	07:55 Local	**Direction from Accident Site:**	264°
Lowest Cloud Condition:	Clear	**Visibility**	5 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	9°C / 9°C
Precipitation and Obscuration:	N/A - None - Mist		
Departure Point:	CHERAW, SC (CQW)	**Type of Flight Plan Filed:**	None
Destination:	CHERAW, SC (CQW)	**Type of Clearance:**	None
Departure Time:	07:10 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	34.722778,-79.882774(est)

Administrative Information

Investigator In Charge (IIC):	Brazy, Douglass
Additional Participating Persons:	Steve J Petrossian; FAA/FSDO; West Columbia , SC Mike Childers; Lycoming Engines; Williamsport, PA
Original Publish Date:	July 16, 2018
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=92881