Aviation Investigation Final Report

Location:	Monroe, Louisiana	**Accident Number:**	CEN14LA273
Date & Time:	June 3, 2014, 10:55 Local	**Registration:**	N653T
Aircraft:	Beech H35	**Aircraft Damage:**	Substantial
Defining Event:	Unknown or undetermined	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

The commercial pilot was conducting a maintenance test flight. According to Federal Aviation Administration audio files, the pilot reported to an air traffic controller that the airplane was experiencing an unspecified fuel problem. The engine then experienced a total loss of power, and the pilot conducted a forced landing, during which the airplane collided with a tree and then impacted a parking lot. A postaccident examination of the airframe, engine, and fuel system did not reveal any preimpact anomalies that would have precluded normal operation. A review of data obtained from the airplane's engine data monitoring system did not reveal any unusual engine readings before the loss of engine power.

At the accident site, fuel was drained from each wing tank and a fuel line leading to the engine; the fuel from the fuel line was orange. Testing of the orange fuel sample revealed the presence of silicon. The tank seals and lines were intact, and the source of the silicon could not be determined. No silicon nor any white powdery deposits (the expected combustion byproducts of silicon) were found on any of the engine components. The reason for the loss of engine power could not be determined.

Probable Cause and Findings

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

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

Findings

Not determined	(general) - Unknown/Not determined
Environmental issues	Tree(s) - Contributed to outcome

Factual Information

History of Flight

Approach	Unknown or undetermined (Defining event)
Approach	Loss of engine power (total)
Emergency descent	Collision with terr/obj (non-CFIT)

On June 3, 2014, about 1055 central daylight time, a Beech H35 airplane, N653T, impacted a parking lot following a total loss of engine power near Monroe, Louisiana. The commercial pilot was seriously injured and the airplane was substantially damaged. The airplane was registered to WFO Flying Services, and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as a maintenance test flight. Visual meteorological conditions prevailed for the flight, which operated with a flight plan. The local flight originated from Monroe Regional Airport (KMLU), Monroe, Louisiana, about 1020.

The airplane was co-owned by the accident commercial pilot and another pilot. They acquired the airplane in March 2013. Months prior to the accident, the airplane had been mistakenly fueled with Jet-A by the other pilot. Data obtained from the onboard JPI engine data monitoring (EDM) system found that on November 1, 2013, the engines cylinder head temperatures (CHT) increased about 460° F several times during the flight. The airplane landed at KMLU and it was repaired. An invoice from the repair facility stated that the fuel tanks were drained and mechanics "flushed 5 gallons through fuels to clear them of contamination." The engine was removed, repaired, and reinstalled on the airplane. The engine's fuel hoses were also replaced. Work was completed on the airplane on June 2, 2014.

On the day of the accident, the airplane departed KMLU for a maintenance test flight flown by the accident commercial pilot/co-owner. The pilot reported an unspecified fuel malfunction before the engine experienced a total loss of engine power. During the forced landing, the airplane collided with a tree and impacted a parking lot. The cockpit was distorted and crushed aft. The airplane's right wing sustained more damage when compared to the left wing. The outboard portion of the right wing was torn outboard of the landing light. The fuselage was wrinkled and distorted. At the accident site, fuel was drained from each tank and from a fuel line leading to the engine. The fuel pulled from the fuel line leading to the engine was light orange in color. The fuel samples pulled from the fuel tanks appeared in color and clarity with 100 low lead fuel. The orange colored fuel was sent for fuel testing.

Gas chromatograph mass spectrometer testing was conducted on the orange colored fuel sample. The testing's certificate of analysis noted "if heavier compounds or polymers are present these were not seen on the gas chromatograph mass spectrometer. Testing found the presence of silicon in the quantity of 12.9 mg/kg.

An examination of the airframe and engine was conducted at a salvage facility. No preimpact anomalies were detected with the airframe or the fuel tanks. The fuel lines and fuel screens were all found clear and unobstructed. The engine examination did not detect any preimpact anomalies. No silica or white powdery deposits were noted in the fuel divider, cylinders, or spark plugs.

Data obtained from the JPI EDM, found that on the day of the accident, data for the accident flight began at a JPI EDM time of 1437:44. At 1517:20 EDM time, the engine's CHTs averaged 373° F and the exhaust gas temperatures (EGTs) averaged 1412° F. Within 6 seconds the EGTs averaged 780° F and continued to decay. About 2 minutes later, the EDM recorded "NA" values for several values.

Reliable scientific data does not exist to determine a level of silicon contamination prior to obstruction of an airplane's engine performance.

Pilot Information

Certificate:	Commercial	**Age:**	41
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	March 14, 2014
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N653T
Model/Series:	H35	**Aircraft Category:**	Airplane
Year of Manufacture:	1957	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	D-4998
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 19, 2013 Annual	**Certified Max Gross Wt.:**	2903 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5475.13 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	O-470-G-CI
Registered Owner:	WFO FLYING SERVICE	**Rated Power:**	240 Horsepower
Operator:	Private individual	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KMLU,81 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	194°
Lowest Cloud Condition:	2200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 2200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.06 inches Hg	**Temperature/Dew Point:**	28°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Monroe, LA (MLU)	**Type of Flight Plan Filed:**	None
Destination:	Monroe, LA (MLU)	**Type of Clearance:**	VFR
Departure Time:	10:20 Local	**Type of Airspace:**	

Airport Information

Airport:	MONROE REGIONAL MLU	**Runway Surface Type:**	Asphalt
Airport Elevation:	79 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	18	**IFR Approach:**	None
Runway Length/Width:	5001 ft / 150 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	32.528331,-92.037223(est)

Administrative Information

Investigator In Charge (IIC):	Aguilera, Jason
Additional Participating Persons:	Jason Adame; FAA FSDO; Baton Rouge, LA Paul Yoos; Textron Aviation; Wichita, KS Chris Lang; Continental Motors; Mobile, AL
Original Publish Date:	May 16, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=89337