



# **Aviation Investigation Final Report**

| Location:               | Albrightsville, Pennsylvania         | Accident Number: | ERA17LA016        |
|-------------------------|--------------------------------------|------------------|-------------------|
| Date & Time:            | October 15, 2016, 15:40 Local        | Registration:    | N3701M            |
| Aircraft:               | HATCHER RODERICK R CH701             | Aircraft Damage: | Substantial       |
| Defining Event:         | Loss of engine power (total)         | Injuries:        | 1 Serious, 1 None |
| Flight Conducted Under: | Part 91: General aviation - Personal |                  |                   |

# Analysis

The private pilot of the experimental amateur-built airplane reported that the airplane had been flying uneventfully for about 40 minutes when it lurched and the engine experienced a partial, then total, loss of power. He placed the carburetor heat control to the high setting and established the airplane's best glide airspeed. The pilot then attempted to restart the engine. Although it initially started, the engine would not develop power and shut down after a few seconds. Two additional restart attempts were also unsuccessful, and the pilot subsequently performed a forced landing into trees.

Postaccident examinations of the airframe and engine, which included an engine test run, did not reveal evidence of preimpact mechanical failures or malfunctions, and there was sufficient fuel onboard at the time of the accident. Although the weather conditions at the time of the accident were conducive to serious carburetor icing at glide power, the engine was operating at a cruise power setting at the time of the power loss and the pilot applied carburetor heat at the first indication of a problem, which did not restore engine power. Therefore, the investigation was unable to determine the reason for the total loss of engine power.

# **Probable Cause and Findings**

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

A total loss of engine power during cruise flight for reasons that could not be determined because postaccident examination revealed no 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       |   |
|-------------------------|---|
| Enroute-descent         | Loss of engine power (total) (Defining event) |
| Emergency descent       | Off-field or emergency landing                |
| Landing-flare/touchdown | Collision with terr/obj (non-CFIT)            |

On October 15, 2016, about 1540 eastern daylight time, an experimental amateur-built Zenith CH701, N3701M, was substantially damaged during a forced landing near Albrightsville, Pennsylvania. The private pilot sustained serious injuries and one passenger had minor injuries. The airplane was operated by the pilot under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Day, visual meteorological conditions prevailed at the time, and no flight plan was filed. The flight originated from Benton Airport (PA40), Benton, Pennsylvania about 1455, and was destined for Pegasus Air Park (50PA), Stroudsburg, Pennsylvania.

The pilot reported that he was about 8 minutes from landing and preparing to descend from 3,000 feet mean sea level (msl) to 1,400 feet msl. The airplane made a "slight lurch" and the engine rpm dropped, followed by a complete loss of power. He placed the carburetor heat to the high setting and established best glide airspeed of 50 to 55 mph. The fuel selector valve was checked, and an engine restart was attempted. The engine initially started; however, it would not develop power and shut down after a few seconds. A second restart was attempted with the same results. A third restart was attempted, and the engine would turn over but not start. The pilot slowed the airplane as much as possible and prepared for a forced landing into trees. The airplane settled into the trees and came to a stop on its left side. The pilot and passenger exited the airplane and were met by first responders.

An inspector with the Federal Aviation Administration (FAA) responded to the accident site and examined the wreckage. Structural damage to the wings, fuselage, and empennage was confirmed. An examination of the engine and fuel system did not reveal evidence of a mechanical malfunction, fuel blockage, or fuel contamination.

The pilot reported that the airplane's fuel tanks were topped off earlier that day with about 20 gallons of fuel, and there were about 15 gallons on board the airplane when the accident flight began.

The airplane was equipped with a Dynon FlightDEK D-180 electronic flight information system (EFIS) and a Garmin GPSMap196, both of which captured the accident flight. According to recovered data, the flight began at 1454 and terminated at 1539. A review of the Dynon engine monitor data showed that engine parameters were normal and stabilized until a decrease in rpm, oil pressure, cylinder head temperature, oil temperature, and exhaust gas temperature simultaneously occurred about 1535:30. The EFIS also confirmed there was fuel in both wing tanks when the loss of engine power occurred.

The airplane was a high wing, tricycle landing gear, short takeoff and landing (STOL) design. It was equipped with a Jabiru 3300A engine and a Sensenich fixed pitch propeller. The total aircraft time at the

time of the accident was about 60 hours. The engine was sent to the Jabiru USA facility at Shelbyville, Tennessee for further examination and a test run.

There was some impact damage to the engine. The engine mounts were bent and the propeller flange had a very slight deformation. The carburetor was filled with oil due to the engine being shipped inverted. The carburetor was removed and the oil was cleaned out. There was no water and no contaminants inside the carburetor other than the engine oil. The carburetor was then reinstalled. The No. 3 cylinder rocker cover was dented from impact and was replaced with a spare for the run. Dried blue residue with the appearance of fuel staining was observed on the outside of the carburetor bowl; however, the carburetor did not leak.

The engine started on the first attempt after engaging the starter for about 2 seconds. The engine initially emitted oily smoke (a light blue/gray color) which cleared after about 8 seconds of operation. The engine was run for about 6 minutes and 30 seconds with no anomalies noted. The engine was run to a peak rpm of 2,670 and oil temperature and pressure were within the green bands. The run was subsequently terminated by the investigation team.

Pocono Mountains Municipal Airport (MPO) was located about 12 miles northeast of the accident site. At 1553, about 14 minutes after the accident, the temperature and dew point were 57° and 36° F, respectively. According to the carburetor icing probability chart in FAA Special Airworthiness Information Bulletin CE-09-35, dated June 30, 2009, the temperature/dew point conditions were conducive to serious icing at glide power.

| Certificate:              | Private                                 | Age:                                   | 65,Male        |
|---------------------------|---|--|----------------|
| Airplane Rating(s):       | Single-engine land                      | Seat Occupied:                         | Left           |
| Other Aircraft Rating(s): | None                                    | Restraint Used:                        | 3-point        |
| Instrument Rating(s):     | None                                    | Second Pilot Present:                  | No             |
| Instructor Rating(s):     | None                                    | Toxicology Performed:                  | No             |
| Medical Certification:    | Sport pilot                             | Last FAA Medical Exam:                 | April 25, 2012 |
| Occupational Pilot:       | No                                      | Last Flight Review or Equivalent:      | July 4, 2015   |
| Flight Time:              | 530 hours (Total. all aircraft). 56 hou | rs (Total. this make and model). 403 h | ours (Pilot In |

#### **Pilot Information**

530 hours (Total, all aircraft), 56 hours (Total, this make and model), 403 hours (Pilot In Command, all aircraft), 10 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)

# Aircraft and Owner/Operator Information

| Aircraft Make:                   | HATCHER RODERICK R         | Registration:                     | N3701M          |
|----------------------------------|----------------------------|-----------------------------------|-----------------|
| Model/Series:                    | CH701 NO SERIES            | Aircraft Category:                | Airplane        |
| Year of Manufacture:             | 2010                       | Amateur Built:                    | Yes             |
| Airworthiness Certificate:       | Experimental (Special)     | Serial Number:                    | 7038            |
| Landing Gear Type:               | Tricycle                   | Seats:                            | 2               |
| Date/Type of Last<br>Inspection: | May 18, 2016 Condition     | Certified Max Gross Wt.:          | 1100 lbs        |
| Time Since Last Inspection:      | 65 Hrs                     | Engines:                          | 1 Reciprocating |
| Airframe Total Time:             | 65 Hrs at time of accident | Engine Manufacturer:              | JABIRU          |
| ELT:                             | Installed                  | Engine Model/Series:              | 3300            |
| Registered Owner:                | On file                    | Rated Power:                      | 120 Horsepower  |
| Operator:                        | On file                    | Operating Certificate(s)<br>Held: | None            |

# Meteorological Information and Flight Plan

| Conditions at Accident Site:     | Visual (VMC)                     | Condition of Light:                     | Day               |
|----------------------------------|----------------------------------|---|-------------------|
| Observation Facility, Elevation: | MPO,1915 ft msl                  | Distance from Accident Site:            | 12 Nautical Miles |
| Observation Time:                | 19:53 Local                      | Direction from Accident Site:           | 30°               |
| Lowest Cloud Condition:          | Clear                            | Visibility                              | 10 miles          |
| Lowest Ceiling:                  | None                             | Visibility (RVR):                       |                   |
| Wind Speed/Gusts:                | 8 knots / None                   | Turbulence Type<br>Forecast/Actual:     | / None            |
| Wind Direction:                  | 190°                             | Turbulence Severity<br>Forecast/Actual: | / N/A             |
| Altimeter Setting:               | 30.34 inches Hg                  | Temperature/Dew Point:                  | 14°C / 2°C        |
| Precipitation and Obscuration:   | No Obscuration; No Precipitation |   |                   |
| Departure Point:                 | Benton, PA (PA40)                | Type of Flight Plan Filed:              | None              |
| Destination:                     | Stroudsburg, PA (50PA)           | Type of Clearance:                      | None              |
| Departure Time:                  | 14:54 Local                      | Type of Airspace:                       | Class E           |

# Wreckage and Impact Information

| Crew Injuries:         | 1 Serious         | Aircraft Damage:        | Substantial               |
|------------------------|-------------------|-------------------------|---------------------------|
| Passenger<br>Injuries: | 1 None            | Aircraft Fire:          | None                      |
| Ground Injuries:       | N/A               | Aircraft Explosion:     | None                      |
| Total Injuries:        | 1 Serious, 1 None | Latitude,<br>Longitude: | 40.974998,-75.536666(est) |

#### **Administrative Information**

| Investigator In Charge (IIC):        | Hicks, Ralph   |
|--------------------------------------|--|
| Additional Participating<br>Persons: | Tom Savickas; FAA/FSDO; Allentown, PA<br>Peter R Krotje; Jabiru USA; Shelbyville, TN |
| Original Publish Date:               | September 10, 2018   |
| Last Revision Date:                  |  |
| Investigation Class:                 | <u>Class</u>   |
| Note:                                | The NTSB did not travel to the scene of this accident.                               |
| Investigation Docket:                | https://data.ntsb.gov/Docket?ProjectID=94222   |

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 <u>here</u>.