



# National Transportation Safety Board Aviation Accident Final Report

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|                                |                                      |                         |             |
|--------------------------------|--------------------------------------|-------------------------|-------------|
| <b>Location:</b>               | Canton, GA                           | <b>Accident Number:</b> | ERA14LA089  |
| <b>Date &amp; Time:</b>        | 01/04/2014, 1530 EST                 | <b>Registration:</b>    | N611SP      |
| <b>Aircraft:</b>               | FK LIGHTPLANES FK9 ELA SW            | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         | Landing gear collapse                | <b>Injuries:</b>        | 2 None      |
| <b>Flight Conducted Under:</b> | Part 91: General Aviation - Personal |                         |             |

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## Analysis

The pilot reported that, while in cruise flight, the engine experienced a partial power loss. The airplane was unable to maintain altitude, so the pilot chose to perform an off-airport landing to an open field. During the landing roll, the airplane encountered a berm, became airborne, and then landed hard.

Examination of the engine revealed that the carburetor float chamber vent lines had been incorrectly routed to the air filter. The engine manufacturer's installation manual cautioned that the float chamber vent lines must not be routed into the slipstream or down the firewall because "pressure differences between the intake pressure in the carburetor chambers may lead to engine malfunction due to incorrect fuel supply." Therefore, it is likely that the incorrectly installed vent line resulted in back pressure to the float bowl that exceeded the normal operating range, which would have affected the engine's fuel-air mixture and led to the partial loss of engine power.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A partial loss of engine power during cruise flight due to an overly lean fuel-air mixture, which resulted from an incorrectly installed float chamber vent line and led to a subsequent off-airport landing.

## Findings

|                             |  |
|-----------------------------|--|
| <b>Aircraft</b>             | Engine (reciprocating) - Incorrect service/maintenance (Cause) |
| <b>Personnel issues</b>     | Installation - Maintenance personnel (Cause)                   |
| <b>Environmental issues</b> | Rough terrain - Contributed to outcome                         |

## Factual Information

### HISTORY OF FLIGHT

On January 4, 2014, about 1530 eastern standard time, a FK Lightplanes FK9, light-sport airplane, N611SP, was substantially damaged following a partial loss of engine power while in cruise flight near Canton, Georgia. The pilot subsequently made an off airport forced landing to an open field. The certificated private pilot and passenger were not injured. Visual meteorological conditions prevailed and no flight plan was filed for the flight destined for Cobb County Airport – McCollum Field (RYY), Kennesaw, Georgia. The flight originated from Mustang Field Airport (OGA1), Hartwell, Georgia, about 1500. The airplane was registered to and operated by a private individual under the provisions of Title 14 Code of Federal Regulations Part 91 as a personal flight.

According to the pilot, while in cruise flight the fuel pressure gauge indicated a decrease in fuel pressure from 5.4 gallons per hour (gph) to 0.1 gph and the rpm subsequently decreased. After activating the auxiliary fuel pump, he was able to restart the engine; however, only partial power was restored. Unable to maintain altitude, an off airport emergency landing was performed to a nearby field. Upon landing the airplane encountered a berm, became airborne, and landed hard, which resulted in the left main landing gear and nose landing gear to separating from the airplane.

### PERSONNEL INFORMATION

The pilot, age 30, held a private and sport pilot certificate for airplane single-engine land, and a third-class medical certificated issued December 10, 2012. The pilot reported 83.7 total flight hours with 16.8 of those hours in the accident aircraft make and model.

### AIRCRAFT INFORMATION

The two-seat, high-wing, fixed-gear airplane was built in 2010. It was powered by a Rotax 912ULS 100-hp engine and was driven by a Warpdrive DUC 3-blade fixed-pitch propeller. The most recent condition inspection was completed on March 5, 2013 with a recorded aircraft time in service of 503.0 hours. According to the pilot, at the time of the accident, the aircraft had accumulated 590.9 total hours.

### METEOROLOGICAL INFORMATION

The recorded weather at Cherokee County Airport (CNI), Canton, Georgia, which was located 8 miles to the northwest of the accident location, included overcast clouds at 1500 feet above ground level, wind from 090 degrees at 9 knots, temperature 2 degrees C, and dew point -11 degrees C.

### WRECKAGE AND IMPACT INFORMATION

Examination of the airplane by a Federal Aviation Administration (FAA) inspector revealed that it came to rest with the left wing contacting the ground and the firewall was damaged. The left wing fuel tank had an undetermined amount of fuel and the right wing fuel tank was devoid of fuel. Initial examination of the engine revealed compression on all cylinders and the automotive fuel, that was located throughout the fuel system, was free of debris.

Examination of the engine by a representative from the engine manufacturer, with FAA oversight, revealed that the engine remained attached to the airframe and that the spark plugs

appeared "normal" in appearance. The electric fuel pump was tested and was operational, fuel was present in the fuel bowls, and the airframe fuel vent tube was observed with no blockage noted. The engine was started and operated at normal power settings utilizing the fuel from the aircraft, with no abnormalities noted. Further examination revealed that the float chamber vent lines had been routed from the carburetor into the air filter. The engine did not have, nor was it required to have, carburetor heat and utilized radiant heating from the engine to minimize carburetor icing possibilities.

## ADDITIONAL INFORMATION

### Rotax Installation Manual

A review of the Rotax installation manual for the 912 Series engine, Chapter 15.1 "Requirements on the carburetor" provided a caution message which stated in part, "The float chamber venting lines have to be routed into a ram-air and vacuum free zone or into the airbox...these lines must not be routed into the slipstream or down the firewall. Pressure differences between intake pressure in the carburetor chambers may lead to engine malfunction due to incorrect fuel supply."

According to a representative from the engine manufacturer, the routing of the carburetor venting line to the air filters influenced the fuel-air mixture of the engine and, in certain flight conditions, the engine may experience a lack of fuel due in part to the back pressure in the float bowl exceeding the normal operating range.

### FAA Special Airworthiness Information Bulletin

A review of FAA Special Airworthiness Information Bulletin, CE-09-35, dated June 30, 2009, revealed that the temperature and dew point at CNI was not conducive to carburetor icing.

## History of Flight

|                      |  |
|----------------------|--|
| Enroute-cruise       | Loss of engine power (partial)         |
| Landing              | Off-field or emergency landing         |
| Landing-landing roll | Landing gear collapse (Defining event) |

## Pilot Information

|                                  |   |  |            |
|----------------------------------|---|--|------------|
| <b>Certificate:</b>              | Private   | <b>Age:</b>                              | 30         |
| <b>Airplane Rating(s):</b>       | Single-engine Land  | <b>Seat Occupied:</b>                    | Left       |
| <b>Other Aircraft Rating(s):</b> | None  | <b>Restraint Used:</b>                   |            |
| <b>Instrument Rating(s):</b>     | None  | <b>Second Pilot Present:</b>             | No         |
| <b>Instructor Rating(s):</b>     | None  | <b>Toxicology Performed:</b>             | No         |
| <b>Medical Certification:</b>    | Class 3 With Waivers/Limitations  | <b>Last FAA Medical Exam:</b>            | 12/10/2012 |
| <b>Occupational Pilot:</b>       | No  | <b>Last Flight Review or Equivalent:</b> |            |
| <b>Flight Time:</b>              | 83.7 hours (Total, all aircraft), 16.8 hours (Total, this make and model), 45.6 hours (Pilot In Command, all aircraft), 7.6 hours (Last 90 days, all aircraft), 4.6 hours (Last 30 days, all aircraft), 2.6 hours (Last 24 hours, all aircraft) |  |            |

## Aircraft and Owner/Operator Information

|                               |   |                                |                 |
|-------------------------------|---|--------------------------------|-----------------|
| Aircraft Make:                | FK LIGHTPLANES  | Registration:                  | N611SP          |
| Model/Series:                 | FK9 ELA SW  | Aircraft Category:             | Airplane        |
| Year of Manufacture:          |   | Amateur Built:                 | No              |
| Airworthiness Certificate:    | Special Light-Sport   | Serial Number:                 | 09-419          |
| Landing Gear Type:            | Tricycle  | Seats:                         | 2               |
| Date/Type of Last Inspection: | 03/05/2013, Condition                                       | Certified Max Gross Wt.:       | 1144 lbs        |
| Time Since Last Inspection:   | 61 Hours  | Engines:                       | 1 Reciprocating |
| Airframe Total Time:          | 591 Hours at time of accident                               | Engine Manufacturer:           | Rotax           |
| ELT:                          | C91A installed, activated, did not aid in locating accident | Engine Model/Series:           | 912ULS          |
| Registered Owner:             | BLALOCK WESLEY F  | Rated Power:                   | 100 hp          |
| Operator:                     | On file   | Operating Certificate(s) Held: | None            |

## Meteorological Information and Flight Plan

|                                  |                                  |                                      |                  |
|----------------------------------|----------------------------------|--------------------------------------|------------------|
| Conditions at Accident Site:     | Visual Conditions                | Condition of Light:                  | Day              |
| Observation Facility, Elevation: | KCNI, 1219 ft msl                | Distance from Accident Site:         | 8 Nautical Miles |
| Observation Time:                | 1535 EST                         | Direction from Accident Site:        | 307°             |
| Lowest Cloud Condition:          | Thin Overcast / 1500 ft agl      | Visibility                           | 10 Miles         |
| Lowest Ceiling:                  | Overcast / 1500 ft agl           | Visibility (RVR):                    |                  |
| Wind Speed/Gusts:                | 9 knots /                        | Turbulence Type Forecast/Actual:     | / None           |
| Wind Direction:                  | 90°                              | Turbulence Severity Forecast/Actual: | /                |
| Altimeter Setting:               | 30.27 inches Hg                  | Temperature/Dew Point:               | 2° C / -11° C    |
| Precipitation and Obscuration:   | No Obscuration; No Precipitation |                                      |                  |
| Departure Point:                 | Hartwell, GA (OGA1)              | Type of Flight Plan Filed:           | None             |
| Destination:                     | Atlanta, GA (RYY)                | Type of Clearance:                   | None             |
| Departure Time:                  | 1500 EST                         | Type of Airspace:                    | Class G          |

## Airport Information

|                      |                       |                           |                        |
|----------------------|-----------------------|---------------------------|------------------------|
| Airport:             | CHEROKEE COUNTY (CNI) | Runway Surface Type:      | N/A                    |
| Airport Elevation:   | 1219 ft               | Runway Surface Condition: | Dry; Rough; Vegetation |
| Runway Used:         | N/A                   | IFR Approach:             | None                   |
| Runway Length/Width: |                       | VFR Approach/Landing:     | Precautionary Landing  |

## Wreckage and Impact Information

|                            |        |                             |                             |
|----------------------------|--------|-----------------------------|-----------------------------|
| <b>Crew Injuries:</b>      | 1 None | <b>Aircraft Damage:</b>     | Substantial                 |
| <b>Passenger Injuries:</b> | 1 None | <b>Aircraft Fire:</b>       | None                        |
| <b>Ground Injuries:</b>    | N/A    | <b>Aircraft Explosion:</b>  | None                        |
| <b>Total Injuries:</b>     | 2 None | <b>Latitude, Longitude:</b> | 34.230833, -84.295278 (est) |

## Administrative Information

|  |  |                     |            |
|--|--|---------------------|------------|
| <b>Investigator In Charge (IIC):</b>     | Shawn Etcher   | <b>Report Date:</b> | 04/27/2015 |
| <b>Additional Participating Persons:</b> | John D Kearby; FAA/FSDO; Hapeville, GA<br>Tomasz Makowski; Commission of Aircraft Accident Investigation; Warszawa,<br>Bernhard Kobylak; Austrian Civil Aviation Safety Investigation; Vienna,<br>Jordan Paskevich; Rotax - Technical Advisor to Austria; Vernon, BC |                     |            |
| <b>Publish Date:</b>                     | 04/27/2015   |                     |            |
| <b>Investigation Docket:</b>             | <a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=88646">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=88646</a>  |                     |            |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).