# Aviation Investigation Final Report

| | | | |
|---|---|---|---|
| **Location:** | Ookala, Hawaii | **Accident Number:** | WPR12LA176 |
| **Date & Time:** | April 19, 2012, 10:39 Local | **Registration:** | N5089F |
| **Aircraft:** | SKYKITS USA CORP SAVANNAH ADV | **Aircraft Damage:** | Substantial |
| **Defining Event:** | Loss of engine power (partial) | **Injuries:** | 1 Serious |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

The owner/pilot topped off both fuel tanks in the special light-sport airplane, flew uneventfully to another airport, and departed shortly thereafter. About 75 minutes after the initial departure, while in cruise flight at an altitude that the pilot estimated as between 2,500 and 3,000 feet, the engine lost power. Due in part to the airplane's low altitude, the pilot did not attempt any corrective actions, and focused on finding a suitable landing location. The pilot selected a young cornfield for the landing but stalled the airplane a few feet above the ground, which resulted in a near vertical impact trajectory in a flat attitude. The pilot reported that he believed that the power loss was due to asymmetric fuel feed from the two wing-mounted fuel tanks due to a plugged fuel vent in the left tank. Although the fuel vents were not examined, no mechanical failures or deficiencies that would have precluded continued engine operation were observed during examination of the airplane. Accordingly, the investigation did not determine a specific reason for the power loss, or the specific reason(s) why the pilot stalled the airplane.

## Probable Cause and Findings

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

A loss of engine power during cruise for reasons that could not be determined because postaccident examination did not reveal any anomalies that would have precluded normal operation. Contributing to the accident was the pilot's failure to avoid an aerodynamic stall at low altitude during the forced landing.

## Findings

| | |
|---|---|
| **Not determined** | (general) - Unknown/Not determined |
| **Aircraft** | (general) - Not specified |
| **Personnel issues** | Aircraft control - Pilot |

# Factual Information

## History of Flight

| | |
|---|---|
| **Enroute-cruise** | Loss of engine power (partial) (Defining event) |
| **Landing** | Aerodynamic stall/spin |

HISTORY OF FLIGHT

On April 19, 2012, about 1039 Hawaiian standard time, a special light-sport Skykits Savannah ADV airplane, N5089F, was substantially damaged when it impacted terrain near Ookala, Hawaii, following a partial loss of engine power in cruise flight. The pilot/owner was seriously injured. The personal flight was conducted under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed, and no Federal Aviation Administration (FAA) flight plan was filed for the flight.

Two witnesses working at a dairy farm heard the airplane fly overhead. One noticed that the engine did not sound right, saw the airplane descending, and believed that it was going to crash. The witnesses tracked it visually and then got in a car to follow, but lost sight of it. Shortly thereafter they saw that the airplane had impacted in a field of young corn plants. On reaching the wreckage, they saw that the pilot was seriously injured, and telephoned 911 for assistance.

According to the pilot, he based the airplane at Hilo International Airport (ITO) Hilo, Hawaii. Prior to departing ITO, the pilot topped off both fuel tanks. He departed ITO, flew northwest along the coast, and landed at Upolu Airport (UPP), Hawi, Hawaii. He did not exit the airplane, and departed UPP a few minutes later. About 75 minutes after the departure from ITO, while in cruise flight at an estimated altitude between 2,500 and 3,000 feet, the engine decreased to "about 25 percent" of its normal cruise power. It briefly returned to near-normal, and then lost power again. The pilot immediately began seeking a place to land. After the power loss, he did not attempt any corrective actions, troubleshoot the problem, or attempt to restart the engine.

PERSONNEL INFORMATION

The pilot held a private pilot certificate that was issued on the basis of his Canadian pilot's license. Examination of the pilot's records indicated that he had a total flight experience of about 596 hours, including about 548 hours in the accident airplane make and model. His most recent FAA second-class medical certificate was issued in 2006.

No records of any FAA-required flight review were located. According to the pilot, he was unaware of the FAA flight review requirements. He did not participate in the FAA "Wings" program, and he had never attended any aviation safety seminars or clinics.

AIRCRAFT INFORMATION

The airplane was manufactured in 2006, and was equipped with a Rotax 912 ULS engine, and a Kiev Prop three blade composite propeller. The airplane was equipped with carburetor heat and a fuel boost pump. The airplane had two equal-size fuel tanks, one in each wing. The total fuel quantity was variously listed in the airplane documentation as 19 and 21 gallons. The fuel selector valve had two positions, ON and OFF. A placard in the cockpit indicated that the fuel consumption at 75 percent power was "19 lt/h," which equates to about 5 gallons per hour.

The pilot operated the engine on "mogas" (automotive fuel) which the pilot purchased from a local automobile service station, and which was the manufacturer-recommended fuel for the engine. The engine manufacturer's operating manual stated that the fuel must comply with ASTM D4814, which permits up to 10 percent ethanol. The pilot reported that he filtered the fuel with a "Mr. Funnel" device prior to putting it in the airplane. It was not determined whether the pilot was aware of, or verified, the ethanol content of the fuel.

Although registration information indicated that the pilot had purchased the airplane in November 2010, the airplane journey log and pilot's log information indicated that he was the primary pilot of the airplane since 2006.

## METEOROLOGICAL INFORMATION

The ITO 1053 automated weather observation included winds from 320 degrees at 4 knots, visibility 10 miles, few clouds at 7,500 feet, temperature 24 degrees C, dew point 18 degrees C, altimeter setting of 30.01 inches of mercury, and rain showers in the vicinity.

Temperature and dew point information from a nearby airport indicated that carburetor icing would only be expected when the engine was being operated at "glide" (low) power settings.

## WRECKAGE AND IMPACT INFORMATION

On-scene examination by an FAA inspector revealed that the wreckage was located in a soft, lightly-vegetated field. The field was situated at an elevation of about 1,500 feet, and about 21 miles northwest of ITO. There were no ground or vegetation scars anywhere except immediately under the airplane. The airplane came to rest upright. All three landing gear were deformed upward, so that the fuselage rested on the ground. The aft fuselage was buckled and folded down about 30 degrees. The empennage was mostly intact, and the left wing was deflected slightly down. All three blades of the composite propeller were fractured.

According to the responding FAA inspector, the left fuel tank was about two-thirds full. The right tank was compromised, and contained very little fuel, but the inspector was unable to accurately determine the quantity.

The FAA examination of the airplane did not reveal any obvious reason for the loss of engine power. In his written submission to the NTSB regarding the accident, the pilot stated that the fuel "tanks did not equalize" due to a plugged vent in the left fuel tank, which led to the power loss and his forced landing.

The airplane was equipped with a Dynon Avionics EFIS D100 model electronic flat-panel display, and several mechanical instruments. No mechanical airspeed indicator was present; the airspeed information

was presented on the D100. The validity of either the airspeed or stall speed information was not determined by the investigation. The airplane was not equipped with a stall warning system.

The airplane was equipped with a "Kiev Prop" brand, Model 283 composite propeller. One fractured blade appeared to contain newspaper, with Cyrillic-like text, that was embedded into it during fabrication. The text was not translated, and the propeller blade was not examined further, since the fracture was impact-related, and not a factor in the loss of engine power.

The examination of the airplane did not reveal any mechanical deficiencies or failures that would have precluded normal operation and continued flight.

## Pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Private | **Age:** | 68 |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | 4-point |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 3 With waivers/limitations | **Last FAA Medical Exam:** | October 11, 2006 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | (Estimated) 596 hours (Total, all aircraft), 548 hours (Total, this make and model), 14 hours (Last 90 days, all aircraft) | | |

## Aircraft and Owner/Operator Information

| | | | |
|---|---|---|---|
| **Aircraft Make:** | SKYKITS USA CORP | **Registration:** | N5089F |
| **Model/Series:** | SAVANNAH ADV | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 2006 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Special light-sport (Special) | **Serial Number:** | 05-10-51-427 |
| **Landing Gear Type:** | Tricycle | **Seats:** | 2 |
| **Date/Type of Last Inspection:** | Unknown | **Certified Max Gross Wt.:** | 1200 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 630 Hrs at time of accident | **Engine Manufacturer:** | ROTAX |
| **ELT:** | Installed, activated, did not aid in locating accident | **Engine Model/Series:** | 912ULS |
| **Registered Owner:** | On file | **Rated Power:** | 100 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:** | ITO,5 ft msl | **Distance from Accident Site:** | 21 Nautical Miles |
| **Observation Time:** | 10:53 Local | **Direction from Accident Site:** | 135° |
| **Lowest Cloud Condition:** | Few / 7500 ft AGL | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 4 knots / | **Turbulence Type Forecast/Actual:** | / None |
| **Wind Direction:** | 320° | **Turbulence Severity Forecast/Actual:** | / N/A |
| **Altimeter Setting:** | 30.01 inches Hg | **Temperature/Dew Point:** | 24°C / 18°C |
| **Precipitation and Obscuration:** | In the vicinity - None - Rain | | |
| **Departure Point:** | Hawi, HI (UPP ) | **Type of Flight Plan Filed:** | VFR |
| **Destination:** | Hilo, HI (ITO ) | **Type of Clearance:** | None |
| **Departure Time:** | | **Type of Airspace:** | |

## 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:** | 20.002222,-155.301391(est) |

## Administrative Information

| | |
|---|---|
| **Investigator In Charge (IIC):** | Huhn, Michael |
| **Additional Participating Persons:** | Edwin Lee; FAA FSDO; Honolulu, HI |
| **Original Publish Date:** | October 9, 2014 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=83439 |