



# National Transportation Safety Board Aviation Accident Final Report

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|                                |                                      |                         |             |
|--------------------------------|--------------------------------------|-------------------------|-------------|
| <b>Location:</b>               | Spearfish, SD                        | <b>Accident Number:</b> | CEN13LA220  |
| <b>Date &amp; Time:</b>        | 04/04/2013, 1640 MDT                 | <b>Registration:</b>    | N525PW      |
| <b>Aircraft:</b>               | Walker Phil RV-6A                    | <b>Aircraft Damage:</b> | Substantial |
| <b>Defining Event:</b>         | Loss of engine power (total)         | <b>Injuries:</b>        | 2 Minor     |
| <b>Flight Conducted Under:</b> | Part 91: General Aviation - Personal |                         |             |

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## Analysis

While climbing through 6,000 feet, the engine suddenly lost power. The pilot stated that, although he subsequently switched on the auxiliary fuel pump and ignition system, the engine did not restart; therefore, he executed a forced landing to a nearby pasture. The nose landing gear collapsed during the landing, and the airplane came to rest inverted. Examination of the automotive engine, which had been adapted for aviation use, found that the coil-distributor wire had loosened and was not connected to the coil. It is likely that the wire came loose during flight, which rendered the automotive ignition system inoperative and caused the engine to lose power.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The coil-distributor wire loosening in flight, which rendered the ignition system inoperative and subsequently caused the loss of engine power.

## Findings

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|                 |   |
|-----------------|---|
| <b>Aircraft</b> | Dist (ignition harness) - Not specified (Cause) |
|                 | Power plant - Failure (Cause)                   |

## Factual Information

On April 4, 2013, about 1640 mountain daylight time, an RV-6A airplane, N525PW, experienced a loss of engine power and conducted a forced landing near Spearfish, South Dakota. The private rated pilot and flight instructor received minor injuries and the airplane was substantially damaged. The airplane was registered to and operated by a private individual under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight that operated without a flight plan. The flight originated from the Black Hills Airport – Clyde Ice Field, Spearfish, South Dakota, about 1630.

According to the pilot, he had recently purchased the airplane and was flying the airplane back to his home airfield. After stopping at an en route airport for fuel, they departed, and were climbing through 6,000 feet when the engine suddenly lost power. The pilot added that he switched on the auxiliary fuel pump and ignition system; however, the engine did not restart. He then selected a pasture for the forced landing. During landing, the nose gear collapsed and the airplane came to rest inverted.

The responding Federal Aviation Administration (FAA) inspector examined the airplane on site and noted that the airplane's fuselage and vertical stabilizer sustained substantial damage during the accident. The airplane was equipped with an automotive Chevrolet 4.6L engine adapted for aviation use. Further examination of the engine revealed that the carburetor's air filter was dirty and partly clogged. Additionally, a wire that runs from the coil to the distributor was found disconnected from the coil terminal. The wire and distributor were the automotive type and had the traditional terminal male/female plug arrangement, without an additional locking mechanism.

## History of Flight

|                          |  |
|--------------------------|--|
| <b>Enroute</b>           | Powerplant sys/comp malf/fail<br>Loss of engine power (total) (Defining event) |
| <b>Emergency descent</b> | Off-field or emergency landing   |

## Pilot Information

|                                  |   |  |                            |
|----------------------------------|---|--|----------------------------|
| <b>Certificate:</b>              | Private   | <b>Age:</b>                              | 33, Male                   |
| <b>Airplane Rating(s):</b>       | Single-engine Land  | <b>Seat Occupied:</b>                    | Left                       |
| <b>Other Aircraft Rating(s):</b> | None  | <b>Restraint Used:</b>                   | Seatbelt, Shoulder harness |
| <b>Instrument Rating(s):</b>     | None  | <b>Second Pilot Present:</b>             | Yes                        |
| <b>Instructor Rating(s):</b>     | None  | <b>Toxicology Performed:</b>             | No                         |
| <b>Medical Certification:</b>    | Class 3 Without Waivers/Limitations   | <b>Last Medical Exam:</b>                | 04/08/2009                 |
| <b>Occupational Pilot:</b>       | No  | <b>Last Flight Review or Equivalent:</b> | 05/08/2012                 |
| <b>Flight Time:</b>              | 291 hours (Total, all aircraft), 1 hours (Total, this make and model), 272 hours (Pilot In Command, all aircraft), 39 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft) |  |                            |

## Flight Instructor Information

|                           |                                   |        |
|---------------------------|-----------------------------------|--------|
| Certificate:              | Age:                              | , Male |
| Airplane Rating(s):       | Seat Occupied:                    |        |
| Other Aircraft Rating(s): | Restraint Used:                   |        |
| Instrument Rating(s):     | Second Pilot Present:             | Yes    |
| Instructor Rating(s):     | Toxicology Performed:             |        |
| Medical Certification:    | Last Medical Exam:                |        |
| Occupational Pilot:       | Last Flight Review or Equivalent: |        |
| Flight Time:              |                                   |        |

## Aircraft and Owner/Operator Information

|                               |               |                                    |               |
|-------------------------------|---------------|------------------------------------|---------------|
| Aircraft Manufacturer:        | Walker Phil   | Registration:                      | N525PW        |
| Model/Series:                 | RV-6A         | Aircraft Category:                 | Airplane      |
| Year of Manufacture:          |               | Amateur Built:                     | Yes           |
| Airworthiness Certificate:    | Experimental  | Serial Number:                     | 525           |
| Landing Gear Type:            | Tricycle      | Seats:                             |               |
| Date/Type of Last Inspection: |               | Certified Max Gross Wt.:           |               |
| Time Since Last Inspection:   |               | Engines:                           | Reciprocating |
| Airframe Total Time:          |               | Engine Manufacturer:               | Chevy         |
| ELT:                          | Not installed | Engine Model/Series:               | 4.6L          |
| Registered Owner:             | On file       | Rated Power:                       |               |
| Operator:                     | On file       | Air Carrier Operating Certificate: | None          |

## Meteorological Information and Flight Plan

|                                  |                          |                              |                   |
|----------------------------------|--------------------------|------------------------------|-------------------|
| Observation Facility, Elevation: | KSPF                     | Observation Time:            | 1755 MDT          |
| Distance from Accident Site:     |                          | Condition of Light:          | Day               |
| Direction from Accident Site:    |                          | Conditions at Accident Site: | Visual Conditions |
| Lowest Cloud Condition:          | Clear                    | Temperature/Dew Point:       | 12° C / -4° C     |
| Lowest Ceiling:                  | None                     | Visibility                   | 10 Miles          |
| Wind Speed/Gusts, Direction:     | 17 knots/ 22 knots, 100° | Visibility (RVR):            |                   |
| Altimeter Setting:               | 29.99 inches Hg          | Visibility (RVV):            |                   |
| Precipitation and Obscuration:   | No Precipitation         |                              |                   |
| Departure Point:                 | Spearfish, ND            | Type of Flight Plan Filed:   | None              |
| Destination:                     | Spearfish, ND            | Type of Clearance:           | None              |
| Departure Time:                  | MDT                      | Type of Airspace:            |                   |

## Wreckage and Impact Information

|                            |         |                            |             |
|----------------------------|---------|----------------------------|-------------|
| <b>Crew Injuries:</b>      | 2 Minor | <b>Aircraft Damage:</b>    | Substantial |
| <b>Passenger Injuries:</b> | N/A     | <b>Aircraft Fire:</b>      | None        |
| <b>Ground Injuries:</b>    | N/A     | <b>Aircraft Explosion:</b> | None        |
| <b>Total Injuries:</b>     | 2 Minor |                            |             |

## Administrative Information

|  |   |                      |            |
|--|---|----------------------|------------|
| <b>Investigator In Charge (IIC):</b>     | Craig Hatch   | <b>Adopted Date:</b> | 12/11/2013 |
| <b>Additional Participating Persons:</b> | Dan McKinney; FAA FSDO; Fargo, ND<br>Jim BadHorse; FAA FSDO; Fargo, SD  |                      |            |
| <b>Publish Date:</b>                     | 12/11/2013  |                      |            |
| <b>Investigation Docket:</b>             | <a href="http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=86597">http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=86597</a> |                      |            |

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