



Aviation Investigation Final Report

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|--------------------------------|--------------------------------------|-------------------------|-------------|
| Location: | Lancaster, Ohio | Accident Number: | CEN14LA233 |
| Date & Time: | May 6, 2014, 21:30 Local | Registration: | N5222S |
| Aircraft: | Piper PA 32-300 | Aircraft Damage: | Substantial |
| Defining Event: | Fuel starvation | Injuries: | 2 None |
| Flight Conducted Under: | Part 91: General aviation - Personal | | |

Analysis

The pilot and pilot-rated passenger were conducting night touch-and-go landings and were in the traffic pattern for the second landing when the engine experienced a partial loss of power. The pilot advanced the throttle lever to increase the engine rpm, but the engine did not respond. The pilot moved the throttle lever, mixture control, and fuel selector and turned on the fuel pump in an attempt to troubleshoot the loss of power. Unable to restore engine power, the pilot made an emergency landing in a field. A postaccident examination revealed that the fuel selector valve was in the OFF position. The right tip fuel tank did not contain any fuel. The other three fuel tanks were mostly full of fuel.

Federal Aviation Administration Airworthiness Directive (AD) 77-12-01, applicable to the accident airplane, was issued on June 10, 1977, to prevent a fuel system malfunction and a possible power interruption. AD 77-12-01 requires regular inspection of the fuel selector valve; it was most recently completed during the annual inspection, about 5 months before the accident, and no anomalies were noted. A postaccident engine run revealed that the engine operated with no anomalies. The fuel selector valve was obviously worn and degraded to the point that it would not control the fuel flow. The detents were very worn and fuel continued to flow through the selector valve even when between detents and in the OFF position. Thus, the loss of engine power was likely a result of the deteriorated fuel selector valve, which allowed fuel to feed only from the right tip tank until it was exhausted. It is also likely that the deterioration of the fuel selector valve was overlooked during the last annual inspection.

Probable Cause and Findings

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

Fuel starvation due to the deterioration of the fuel selector valve, which allowed fuel to be fed from only the right tip tank. Contributing to the accident was the inadequate annual inspection, which failed to detect the deteriorated valve.

Findings

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| Aircraft | Fuel - Fluid management |
| Personnel issues | Scheduled/routine inspection - Maintenance personnel |
| Personnel issues | Total experience w/ equipment - Pilot |

Factual Information

History of Flight

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|----------------------------------|----------------------------------|
| Prior to flight | Aircraft inspection event |
| Approach-VFR pattern base | Fuel starvation (Defining event) |
| Approach-VFR pattern base | Off-field or emergency landing |
| Approach-VFR pattern base | Loss of engine power (partial) |

On May 6, 2014 about 2130 eastern daylight time, a Piper PA 32-300 airplane, N5222S, made an emergency landing in a field near Lancaster, Ohio. The private pilot and pilot rated passenger were not injured. The airplane sustained substantial damage. The airplane was registered to and operated by a private individual under the provision of 14 Code of Federal Regulations Part 91 as a personal flight. Night visual meteorological conditions prevailed at the time of the accident and no flight plan was filed. The local flight originated about 2120.

The pilot reported that he was conducting touch-and-go landings and was flying in the traffic pattern for the second landing when the engine experienced a partial loss of power. The pilot attempted to adjust the throttle lever while turning base to final, but the engine did not respond. The pilot and passenger moved the throttle lever, mixture control, fuel selector and turned on the fuel pump in an attempt to restore the power. The engine power was unable to be restored so the pilot made an emergency landing in a field. A postaccident examination revealed that the throttle, fuel mixture, and propeller controls were found in the full forward position. The fuel selector valve was found in the OFF position. The right tip fuel tank did not contain any fuel. The other 3 fuel tanks (right main, left main, left tip) were mostly full of fuel. A postaccident engine run revealed that the engine operated with no anomalies. The fuel selector valve was worn and degraded to the point that it would not control the fuel flow. The detents were worn and fuel would continue to flow through the selector valve even when selected between detents and in the OFF position.

On June 10, 1977, the Federal Aviation Administration issued Airworthiness Directive (AD) 77-12-01 PIPER AIRCRAFT CORPORATION: Amendment 39-2914, applicable to the accident airplane, "to prevent a fuel system malfunction and a possible power interruption." On December 5, 2013, during the most recent annual inspection, AD 77-12-01 was completed and no anomalies were noted.

Pilot Information

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|----------------------------------|--|--|----------------|
| Certificate: | Private | Age: | 42 |
| Airplane Rating(s): | Single-engine land | Seat Occupied: | Left |
| Other Aircraft Rating(s): | None | Restraint Used: | Lap only |
| Instrument Rating(s): | None | Second Pilot Present: | Yes |
| Instructor Rating(s): | None | Toxicology Performed: | No |
| Medical Certification: | Class 3 Without waivers/limitations | Last FAA Medical Exam: | March 13, 2014 |
| Occupational Pilot: | No | Last Flight Review or Equivalent: | March 7, 2014 |
| Flight Time: | 100 hours (Total, all aircraft), 4 hours (Total, this make and model), 50 hours (Pilot In Command, all aircraft), 8 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft) | | |

Pilot Information

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|----------------------------------|----------------------------------|--|------------------|
| Certificate: | Private | Age: | 49 |
| Airplane Rating(s): | Single-engine land | Seat Occupied: | Right |
| Other Aircraft Rating(s): | None | Restraint Used: | |
| Instrument Rating(s): | None | Second Pilot Present: | Yes |
| Instructor Rating(s): | None | Toxicology Performed: | No |
| Medical Certification: | Class 3 With waivers/limitations | Last FAA Medical Exam: | October 15, 2013 |
| Occupational Pilot: | No | Last Flight Review or Equivalent: | October 24, 2013 |
| Flight Time: | | | |

Aircraft and Owner/Operator Information

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|--------------------------------------|--|---------------------------------------|-----------------|
| Aircraft Make: | Piper | Registration: | N5222S |
| Model/Series: | PA 32-300 | Aircraft Category: | Airplane |
| Year of Manufacture: | 1970 | Amateur Built: | |
| Airworthiness Certificate: | Normal | Serial Number: | 32-40917 |
| Landing Gear Type: | Tricycle | Seats: | 6 |
| Date/Type of Last Inspection: | December 5, 2013 Annual | Certified Max Gross Wt.: | 3400 lbs |
| Time Since Last Inspection: | 39 Hrs | Engines: | 1 Reciprocating |
| Airframe Total Time: | 3055 Hrs as of last inspection | Engine Manufacturer: | Lycoming |
| ELT: | Installed, activated, did not aid in locating accident | Engine Model/Series: | IO-540 |
| Registered Owner: | SMITH CHRISTOPHER | Rated Power: | 300 Horsepower |
| Operator: | SMITH CHRISTOPHER | Operating Certificate(s) Held: | None |

Meteorological Information and Flight Plan

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|---|----------------------------------|---|------------------|
| Conditions at Accident Site: | Visual (VMC) | Condition of Light: | Night |
| Observation Facility, Elevation: | KLHQ, 869 ft msl | Distance from Accident Site: | 0 Nautical Miles |
| Observation Time: | 20:53 Local | Direction from Accident Site: | 80° |
| Lowest Cloud Condition: | Clear | Visibility: | 10 miles |
| Lowest Ceiling: | None | Visibility (RVR): | |
| Wind Speed/Gusts: | 6 knots / | Turbulence Type Forecast/Actual: | / |
| Wind Direction: | 60° | Turbulence Severity Forecast/Actual: | / |
| Altimeter Setting: | 29.96 inches Hg | Temperature/Dew Point: | 16°C / 6°C |
| Precipitation and Obscuration: | No Obscuration; No Precipitation | | |
| Departure Point: | Lancaster, OH (LHQ) | Type of Flight Plan Filed: | None |
| Destination: | Lancaster, OH (LHQ) | Type of Clearance: | None |
| Departure Time: | 21:20 Local | Type of Airspace: | Class G |

Airport Information

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|-----------------------------|----------------------|----------------------------------|--------------------------------|
| Airport: | FAIRFIELD COUNTY LHQ | Runway Surface Type: | Asphalt |
| Airport Elevation: | 868 ft msl | Runway Surface Condition: | Dry |
| Runway Used: | 10 | IFR Approach: | None |
| Runway Length/Width: | 5004 ft / 75 ft | VFR Approach/Landing: | Forced landing;Traffic pattern |

Wreckage and Impact Information

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|----------------------------|--------|-----------------------------|---------------------------|
| Crew Injuries: | 2 None | Aircraft Damage: | Substantial |
| Passenger Injuries: | | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 2 None | Latitude, Longitude: | 39.753612,-82.674446(est) |

Administrative Information

Investigator In Charge (IIC): Lindberg, Joshua
Additional Participating Persons: Sam Taylor; FAA; Columbus, OH

Original Publish Date: October 27, 2014

Last Revision Date:

Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.ntsb.gov/Docket?ProjectID=89184>

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 [here](#).