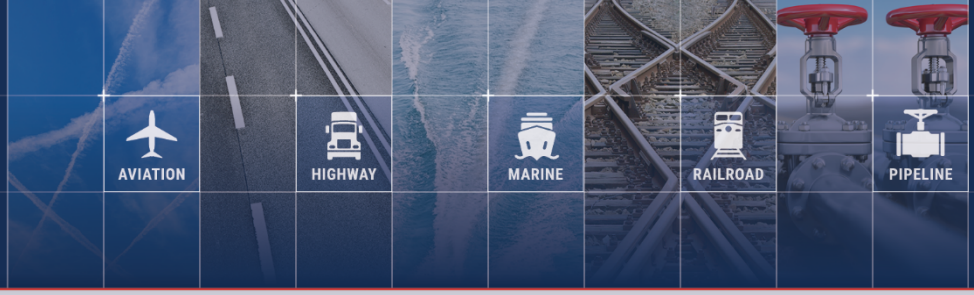

Aviation Investigation Factual Report

Location:	Wapakoneta, Ohio	**Accident Number:**	CEN14LA159
Date & Time:	March 8, 2014, 11:20 Local	**Registration:**	N69980
Aircraft:	Cessna 310Q	**Aircraft Damage:**	Substantial
Defining Event:	Fire/smoke (non-impact)	**Injuries:**	3 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Factual Information

On March 8, 2014, about 1120 eastern standard time (EST), a Cessna 310Q airplane, N69980, experienced fire in the nose compartment while taxiing to the ramp at Auglaize County Neil Armstrong Airport (AXV) in Wapakoneta, Ohio. The airplane was substantially damaged. The pilot and two passengers on-board were not injured. The airplane was registered to and operated by Fluid Process Automation, LLC, under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed for the instrument flight rules (IFR) flight, which originated at Akron-Canton Airport (CAK) in Akron, Ohio.

According to the pilot, the flight was uneventful. As he parked the airplane on the ramp at AXV, a "puff of smoke" came from below the instrument panel. Perceiving the electrical system was the sources of the smoke, the pilot immediately shut it down but the smoke continued to increase. The pilot completed the airplane shutdown checklist and exited the airplane with the passengers. After exiting the airplane, the pilot stated he could hear fire in the nose and noticed discolored paint on the nose compartment. He removed the nose access panel and extinguished the fire with a carbon dioxide fire extinguisher.

Wreckage

The airplane remained intact and the fire damage was limited to the nose compartment and the lower forward portion of the instrument panels and cockpit. Fire damage to the cabin area was limited to some thermal discoloration of the floor on the right side of the cockpit. The exterior damage was located on the upper portion and right side of the nose compartment. The upper section of the nose fuselage skin exhibited large areas of thermal discoloration of the exterior paint as well as bubbling and peeling of the outer layers of the paint. This damage continued down the right side of the nose compartment. The lower right exhaust louvers and the fuselage skin near the heater exhaust exhibited sooting and some thermal discoloration.

The interior of the nose compartment was heavily sooted and exhibited thermal damage particularly in the area of the cabin heater, which was located on the rear right side of the nose compartment. The left side of the compartment was heavily sooted with some generalized melting and sagging of wire insulation. On the right side, nonmetallic components (such as wire insulation, tubing and ducts) adjacent to the heater showed melting and thermal discoloration. Several rubber components of the heater assembly were missing and presumed destroyed by the fire. The exterior of the heater and adjacent metallic assembly components were sooted and had evidence of thermal discoloration. During the removal of the heater assembly, the heater assembly drain line was found blocked with a densely packed brownish-grey substance.

Heater Examination

The heater was a Southwind 8240E. According to maintenance/airplane logbooks and manufacturer information, the heater was installed when the airplane was manufactured and overhauled in 1997. A

pressure decay test was performed on the combustion chamber in 2003. The current owner and pilot stated he had used the heater several times including the day of the accident.

The cabin heater assembly, including the vent and drain lines, the heater fuel pump box, and the light bulb from the heater annunciator light were removed from the airplane and sent to the NTSB Materials Laboratory for further examination.

The exterior case of the heater was removed and a pressure test of the combustion chamber and associated heat exchanger muff was performed. Four separate leaks were found. One leak was found in the igniter plug port weld. One leak was found in the heat muff end weld. Two leaks were found in the welds that attach the combustion chamber to the heat exchanger muff, and one of those leaks had a visible crack.

The blocked drain line was examined. It was determined that the material in the drain line was densely packed from the open (drain) end to the end. Approximately 0.4 grams of material was removed from the drain line using a thin wooden scraper. The material was brownish gray in color and had a powdery consistency. A sample of the material removed from the drain line was examined using a Fourier Transform Infrared (FTIR) spectrometer. The materials were consistent with lead oxide and aluminum oxides often found in aviation fuel combustion byproduct and other materials found within the aircraft engine compartment and fuel system.

There was evidence of fuel leakage in the fuel pump box, with evaporation marks where the fuel accumulated and evaporated off, leaving behind nonvolatile residue. There were several bands of evaporation marks consistent with multiple evaporation cycles. The fuel pump box had visible thermal discoloration, indicating it had been exposed to heat. Pressure testing of the fuel pump was not conducted due to the inability to recreate a pre-accident condition for the fuel pump.

Cessna Aircraft Company issued service letter ME73-3 on February 23, 1973, identifying the need for a special one-time inspection of aircraft heaters that have not undergone the first 100-hour inspection. The service letter also states "Service manuals presently recommend a check of the nose compartment with respect to heater fuel system components at each 100 hours." Cessna issued Service Bulletin MEB95-9 on June 16, 1995. MEB95-5 stated "The cabin heater fuel line should be inspected for fuel leaks and corrosion. Leaking fuel lines should be repaired or replaced based on results of the inspection. Minor corrosion pitting can be repaired but line replacement is required if pitting exceeds the limit allowed by this service bulletin. Non-compliance with this service bulletin could result in failure of the cabin heater fuel line; which could subsequently result in a fire." "Compliance – Mandatory, shall be accomplished within the next 100 hours of operation or 12 months, whichever occurs first." A review of the airplane's maintenance showed the heater was installed in the airplane at the time of manufacture, and overhauled in 1997. A combustion test was performed on February 3, 2003. No record of any additional inspections of the heater and fuel lines was found.

Pilot Information

Certificate:	Private	**Age:**	44,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	January 31, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	September 3, 2013
Flight Time:	1300 hours (Total, all aircraft), 30 hours (Total, this make and model), 1200 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft)		

Passenger Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	Unknown
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Passenger Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Rear
Other Aircraft Rating(s):		**Restraint Used:**	Unknown
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N69980
Model/Series:	310Q Q	**Aircraft Category:**	Airplane
Year of Manufacture:	1974	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310Q1053
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 14, 2013 Annual	**Certified Max Gross Wt.:**	5302 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	I0-520 SERIES
Registered Owner:	On file	**Rated Power:**	300 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:	KAXV	**Distance from Accident Site:**	
Observation Time:	16:13 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 6000 ft AGL	**Visibility**	5 miles
Lowest Ceiling:		**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	340°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	6°C / 0°C
Precipitation and Obscuration:	Moderate - None - Haze		
Departure Point:	NORTH CANTON, OH (KCAK)	**Type of Flight Plan Filed:**	IFR
Destination:	Wapakoneta, OH (KAXV)	**Type of Clearance:**	IFR
Departure Time:	10:18 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	NEIL ARMSTRONG KAXV	**Runway Surface Type:**	Asphalt
Airport Elevation:	913 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	26	**IFR Approach:**	None
Runway Length/Width:	5500 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	2 None	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 None	**Latitude, Longitude:**	40.49361,-84.298057(est)

Administrative Information

Investigator In Charge (IIC):	Liedler, Courtney
Additional Participating Persons:	Brian L Lands; FAA; Columbus, OH Jan Smith; Textron Aviation; Wichita, KS
Report Date:	January 5, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=88912