



Aviation Investigation Final Report

Location:	Georgetown, Delaware	Accident Number:	ERA17LA097
Date & Time:	January 28, 2017, 14:00 Local	Registration:	N3659Z
Aircraft:	Piper PA22	Aircraft Damage:	Destroyed
Defining Event:	Fire/smoke (non-impact)	Injuries:	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to the private pilot, shortly after takeoff, as the airplane reached 1,400 ft, he noticed "thick" smoke coming from behind the instrument panel and then the glareshield, followed by flames near his feet and legs. The pilot was able to return to the departure airport and land successfully. During the subsequent landing roll, the pilot reduced the throttle and mixture to shut down the engine and pulled the brake handle; however, the airplane did not slow, and he egressed the airplane while it was in motion. The airplane came to rest in a grass area right of the runway and was mostly consumed by fire. The pilot's description of the onset and growth of the fire was consistent with a fast-growing fire such as a fire fed by liquid fuel.

Examination of the wreckage revealed that several sections of the fuel system were consumed or damaged by fire. The main fuel line from the fuel strainer to the carburetor was found loose on the carburetor side. The lower left portion of the engine cowling exhibited more thermal damage than the right side, which is consistent with the location of the loose fuel line supplying the carburetor; however, due to the extent of the thermal damage, the origination point of the in-flight fire could not be determined.

Probable Cause and Findings

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

An in-flight fire for reasons that could not be determined due to extensive thermal damage to the airplane.

Findings

Aircraft	(general) - Not specified
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Fire/smoke (non-impact) (Defining event)
Emergency descent	Fire/smoke (non-impact)
Landing	Runway excursion

On January 28, 2017, about 1400 eastern standard time, a Piper PA-22-150, N3659Z, was destroyed after it experienced an in-flight fire following takeoff from Delaware Coastal Airport (GED), Georgetown, Delaware. The private pilot sustained minor injuries. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight that was operated under the provisions of Title 14 *Code of Federal Regulations* Part 91.

According to the pilot, prior to departing GED, he checked the engine oil level, performed a visual inspection of the engine compartment and an engine run-up with no anomalies noted. After departing runway 28, the airplane reached 1,400 feet, and the pilot noticed "thick" smoke coming from behind the instrument panel and then the glareshield. The pilot attempted to return to GED and opened the vent on the left door to evacuate smoke and allow him to search for a runway to land. He then noted flames by his feet and legs, and while "sideslipping" the airplane, burning portions of the roof lining began to fall on him. The airplane continued to descend, and during the subsequent landing roll, the pilot reduced the throttle and mixture to shut down the engine. He pulled on the brake handle; however, the airplane did not slow. The pilot proceeded to egress while the airplane was in motion. The airplane came to rest in a grass area off the right side of runway 4.

Initial examination of the airplane revealed that the fuselage, empennage, and right wing were consumed by fire. The left wing was partially consumed by fire. The engine remained attached to the fuselage and the propeller remained attached to the engine.

According to Federal Aviation Administration records, the airplane was manufactured in 1960 and registered to the pilot on June 13, 1990. It was equipped with a Lycoming O-320-A2B, a 150-horsepower engine. According to the maintenance logbooks, the airplane's most recent annual inspection was performed on January 1, 2017, at a total time of 3,740.5 hours, about 2 operational hours prior to the accident.

According to the Piper PA-22 Owner's Manual, the airplane was equipped with two 18-gallon fuel tanks located in the wings, which drained individually according to the position of the fuel selector valve on the left forward cabin wall. "The main fuel strainer, through which all fuel going to the carburetor flows, is located on the lower left engine side of the firewall... The engine primer pump on the right side of the instrument panel takes fuel from the main gascolator and pumps it directly to all four cylinders of the engine."

According to an NTSB fire protection engineer who examined the wreckage, the pilot's description of the fire in the accident sequence was consistent with a liquid fuel-fed fire. Several sections of the

airplane fuel system were consumed by fire. The fuel selector valve was thermally damaged and its function could not be verified. The output fuel line from the fuel selector to the firewall was consumed by fire. The input fuel line from the right-side wing tank was also consumed by fire. The engine primer pump was not located with the wreckage. The primer pump fuel lines were consumed by fire inside the cockpit. Several small sections of copper primer pump fuel lines were located on the firewall with melted ends. The fuel primer lines in the engine compartment remained intact and did not appear to leak. The main fuel line from the fuel strainer to the carburetor, which was located on the left side of the engine compartment, was found loose on the carburetor side. The lower left portion of the engine cowling exhibited more thermal damage than the right side.

Pilot Information

Certificate:	Private	Age:	59, Male
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:	May 26, 2016
Occupational Pilot:	No	Last Flight Review or Equivalent:	September 6, 2015
Flight Time:	1082 hours (Total, all aircraft), 870 hours (Total, this make and model), 1037 hours (Pilot In Command, all aircraft), 6 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N3659Z
Model/Series:	PA22 150	Aircraft Category:	Airplane
Year of Manufacture:	1960	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	22-7556
Landing Gear Type:	Tailwheel	Seats:	4
Date/Type of Last Inspection:	January 1, 2017 Annual	Certified Max Gross Wt.:	2000 lbs
Time Since Last Inspection:	2 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3742.4 Hrs at time of accident	Engine Manufacturer:	LYCOMING
ELT:	C91 installed, not activated	Engine Model/Series:	O-320-A2B
Registered Owner:	On file	Rated Power:	150 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:	SBY, 52 ft msl	Distance from Accident Site:	22 Nautical Miles
Observation Time:	13:54 Local	Direction from Accident Site:	180°
Lowest Cloud Condition:	Thin Overcast / 5500 ft AGL	Visibility:	10 miles
Lowest Ceiling:	Overcast / 5500 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	14 knots / 21 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	240°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.77 inches Hg	Temperature/Dew Point:	7°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	GEORGETOWN, DE (GED)	Type of Flight Plan Filed:	None
Destination:	LUSBY, MD (MD50)	Type of Clearance:	None
Departure Time:	14:00 Local	Type of Airspace:	

Airport Information

Airport:	DELAWARE COASTAL GED	Runway Surface Type:	Asphalt
Airport Elevation:	53 ft msl	Runway Surface Condition:	Dry
Runway Used:	28	IFR Approach:	None
Runway Length/Width:	3109 ft / 75 ft	VFR Approach/Landing:	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	Both in-flight and on-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	38.6875,-75.359169(est)

Administrative Information

Investigator In Charge (IIC):	Kemner, Heidi
Additional Participating Persons:	Oscar A Guevera; FAA/FSDO; Philadelphia, PA
Original Publish Date:	March 18, 2019
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=94660

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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](#).