Aviation Investigation Final Report

Location:	Allendale, South Carolina	**Accident Number:**	ERA20LA278
Date & Time:	August 7, 2020, 10:36 Local	**Registration:**	N6300W
Aircraft:	Cessna P210	**Aircraft Damage:**	Destroyed
Defining Event:	Fuel related	**Injuries:**	2 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot fueled the airplane prior to departure and sumped the fuel tanks. He noted debris in the right fuel tank sample but continued to sump the tank until the fuel did not contain any debris. The flight was unremarkable, but on final approach to the runway, the engine lost total power, and the pilot was unable to restart it. He performed a forced landing to a field, and the airplane struck trees before it impacted the ground. A postimpact fire ensued and the airplane was destroyed.

Examination of the engine revealed that the throttle body fuel inlet screen was blocked by debris. The pilot reported that he had noted debris in the fuel sumped from the right wing on previous occasions. The mechanic who performed the most recent maintenance on the engine noted that the pilot never mentioned the debris in the right fuel tank until after the accident.

The debris was examined by the NTSB Materials Laboratory and was found to be a strong match for polyethylene terephthalate, which is commonly found in fuel system components. The fueling records from the fixed based operator were examined, no anomalies were noted, and no other fueling issues were noted with other aircraft that fueled from the same equipment/tanks. Therefore, it is likely that the debris came from the fuel system inside the airplane. The component origin of the debris from within the fuel system could not be determined.

The engine and fuel system were last overhauled about 8 flight hours before the accident flight, which included installing an overhauled throttle control/throttle body. It's likely that the debris in the fuel system built up over the 8 hours since overhaul and blocked the fuel inlet screen, which led to a total loss of engine power. The pilot's failure to report debris in the fuel system during previous preflight inspections to maintenance personnel prevented an opportunity to discover the debris in the fuel system prior to the accident flight.

Probable Cause and Findings

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

A total loss of engine power as a result of fuel starvation due to contamination from a thermoplastic polymer used in the fuel system. Contributing to the accident was the pilot's failure to report debris observed in the fuel system during previous preflight inspections to maintenance personnel.

Findings

Aircraft	Fuel filter-strainer - Damaged/degraded
Personnel issues	Lack of action - Pilot

Factual Information

History of Flight

Prior to flight	Preflight or dispatch event
Approach-VFR pattern final	Fuel related (Defining event)
Landing	Off-field or emergency landing
Emergency descent	Collision with terr/obj (non-CFIT)

On August 7, 2020, about 1036 eastern daylight time, a Cessna P210N, N6300W, was destroyed when it was involved in an accident near Allendale, South Carolina. The pilot and passenger were seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, he departed Gainesville Regional Airport (GNV), Gainesville, Florida, around 0830 with an intended destination of Allendale County Airport (AQX), Allendale, South Carolina. Prior to departure, he fueled the airplane with 58 gallons of fuel. During the preflight, he noted "a flake or two of black gunk" when he sumped the right-wing fuel tank but he continued sumping the fuel tank until the fuel was clean. The flight was unremarkable, but, when the airplane was on short final approach to runway 35 at AQX, the engine experienced a total loss of power. The propeller continued to rotate, and the pilot attempted to restart the engine by switching the selected fuel tank but was unsuccessful. The pilot realized that the airplane was not able to reach the runway and he attempted to perform a forced landing to a field.

During the forced landing, the airplane struck trees and impacted the ground. After impact, the pilot and passenger egressed, and a postimpact fire ensued.

The engine was examined by an NTSB investigator who was able to rotate the propeller through 360° of motion and confirmed crankshaft and valvetrain continuity. Compression was obtained on all cylinders, the top spark plugs were removed, and all exhibited normal wear when compared to the Champion-Check-A-Plug Chart. The magnetos were removed, disassembled, and the internal components were melted. Examination of the oil sump and oil sump pick up screen did not reveal any metallic particles. Examination of the turbocharger revealed that it turned freely, and no anomalies were noted. The engine driven fuel pump was removed and exhibited thermal damage. The fuel inlet screen to the throttle body was removed and was occluded with debris. The fuel manifold was removed and disassembled with no anomalies noted. The fuel injectors were removed from the cylinders and Nos. 3 and 5 had blockages noted. The fixed-base operator (FBO) where the airplane refueled noted that there had been 58 separate fueling events, and 1,759.58 gallons of 100LL aviation fuel distributed from the facility without any reported fuel issues in other aircraft.

The engine was installed on the airframe about 8 flight hours prior to the accident. An overhaul was completed on May 14, 2020, after a bird strike that occurred in December 2019. At the time of the engine overhaul, the fuel system was overhauled as well, which included installing an overhauled throttle control/throttle body. After the engine was overhauled, an engine test run was performed at multiple different RPM settings prior to it being installed on the airplane. There were no anomalies noted with the engine test, all components were operating within specified limits, and the engine was approved for return to service.

The pilot was interviewed after the engine exam and stated that the right wing had a "little bit of black junk" in the fuel when it was sumped "from time to time." Furthermore, the mechanic that performed the most recent engine maintenance stated that he did not note any issues with the engine when it was installed on the airplane. In addition, he stated that the pilot did not mention the issue with draining contaminates out of the right fuel tank until after the accident, otherwise "we could have looked into it."

The throttle body fuel inlet screen and the debris were sent to the NTSB Materials Laboratory for further examination. The material was examined using a Fourier Transform Infrared (FTIR) spectrometer with a diamond attenuated total reflectance accessory in accordance with American Society for Testing Materials E1252-98: Standard Practice for General Techniques for Obtaining Infrared Spectra for Qualitative Analysis. The results from the FTIR spectrometer test were used to search the spectral library for similar results. The spectral search found a very strong match for polyethylene terephthalate (PET). PET is a thermoplastic polymer of the polyester family, which is commonly found in fuel system components.

Pilot Information

Certificate:	Private	**Age:**	65,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
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 1, 2020
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1552 hours (Total, all aircraft), 28 hours (Total, this make and model), 1552 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6300W
Model/Series:	P210 N	**Aircraft Category:**	Airplane
Year of Manufacture:	1981	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000744
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 3, 2020 Annual	**Certified Max Gross Wt.:**	4000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5719 Hrs at time of accident	**Engine Manufacturer:**	Contienental Motors Inc.
ELT:	C126 installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-520-P
Registered Owner:	N206DJ, LLC	**Rated Power:**	310 Horsepower
Operator:	N206DJ, LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	AQX,162 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	10:35 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	29°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Gainesville, FL (GNV)	**Type of Flight Plan Filed:**	None
Destination:	Allendale, SC (AQX)	**Type of Clearance:**	VFR flight following
Departure Time:	08:30 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Allendale County AQX	**Runway Surface Type:**	Asphalt
Airport Elevation:	161 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	35	**IFR Approach:**	None
Runway Length/Width:	4990 ft / 75 ft	**VFR Approach/Landing:**	Full stop;Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Serious	**Latitude, Longitude:**	32.986389,-81.26667(est)

Administrative Information

Investigator In Charge (IIC):	Kemner, Heidi
Additional Participating Persons:	William Thompson; FAA/FSDO; Columbia, SC Jennifer Barclay; Textron Aviation; Wichita, KS
Original Publish Date:	April 18, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=101755