Aviation Investigation Final Report

Location:	Orlando, Florida	**Accident Number:**	ERA18LA103
Date & Time:	March 13, 2018, 13:30 Local	**Registration:**	N5382A
Aircraft:	Cessna T210	**Aircraft Damage:**	Substantial
Defining Event:	Fuel related	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

On the morning of the accident, the pilot performed a 2-hour test flight with newly-installed camera equipment, during which the airplane performed normally. While taking off on the second flight of the day, the pilot felt that there was something wrong with the engine. There were no abnormal indications and the engine continued to produce power until the pilot leveled the airplane at cruise altitude; the engine then lost total power and the pilot subsequently conducted a forced landing onto a road, resulting in substantial damage to the wings.

A test run of the engine revealed that the fuel pump was adjusted to an excessively rich fuel flow setting, which resulted in a loss of power when the throttle was increased past about 2,100 rpm. The fuel pump was readjusted and the engine performed nominally. When the fuel pump was reset to the as-received setting, the engine exhibited the same loss of power as during the first run. Bench testing of the throttle body and fuel pump revealed that both units failed to meet production standards.

Review of the airplane's maintenance records indicated that a fuel system adjustment was performed almost 2 years before the accident. It is likely that the improper fuel pump setting resulted in an overly rich fuel/air mixture and the subsequent loss of engine power; however, the reason for the loss of engine power during the accident flight, and not during previous flights since the fuel pump was adjusted, could not be determined.

Probable Cause and Findings

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

The improper adjustment of the fuel pump by maintenance personnel, which resulted in an overly rich fuel/air mixture and a total loss of engine power.

Findings

Personnel issues	Scheduled/routine maintenance - Maintenance personnel
Personnel issues	Incorrect action selection - Maintenance personnel
Aircraft	Fuel - Incorrect service/maintenance

Factual Information

History of Flight

Initial climb	Fuel related (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)

On March 13, 2018, about 1330 eastern daylight time, a Cessna T210N, N5382A, was substantially damaged when it was involved in an accident near Orlando, Florida. The commercial pilot and passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

The pilot reported that he and a coworker were conducting routine test flights with new camera equipment that had just been installed on the airplane. On the morning of the accident, the pilot performed a two-hour test flight with no issues. After starting the engine and waiting about 5 minutes to allow the camera system to boot up, the pilot taxied to the runway and was cleared for takeoff. As the airplane climbed, he felt there was something wrong with the engine, although it continued to produce power. He checked all the instruments and gauges and did not see any abnormalities. When the airplane reached cruise altitude, the pilot reduced power and the engine "quit." The pilot notified air traffic control of the engine failure and performed a forced landing on a road.

Examination of the airplane by a Federal Aviation Administration inspector revealed that the empennage was separated from the fuselage. Both wings were buckled, and both wing assemblies were leaking fuel.

The engine was removed and sent to the manufacturer for further examination and testing. After an examination, the engine was prepared and placed in an engine test cell. The engine ran normally up to about 2,100 rpm, then emitted black smoke from the exhaust and began to lose power when the throttle was increased, consistent with an overly rich fuel/air mixture. The fuel pump was leaned, and further test runs were completed with no anomalies. The unmetered pressure was at or slightly above the maximum pressure for full throttle. Upon completion of the standard run, the fuel pump was set back to the as-received setting and exhibited the same loss of power demonstrated during the first test.

The throttle body and fuel pump were bench tested and both units failed to meet production standards.

A review of the maintenance logbook entries revealed that on July 25, 2016, a fuel system adjustment was performed at a tachometer time of 9,854.4 hours. As of the last annual inspection on February 25, 2018, the engine had accumulated a total of 455.6 hours.

Pilot Information

Certificate:	Commercial	**Age:**	25,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 2 Without waivers/limitations	**Last FAA Medical Exam:**	December 20, 2017
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 330 hours (Total, all aircraft), 15 hours (Total, this make and model), 225 hours (Pilot In Command, all aircraft), 35 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Passenger Information

Certificate:		**Age:**	Male
Airplane Rating(s):		**Seat Occupied:**	Right
Other Aircraft Rating(s):		**Restraint Used:**	3-point
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:**	N5382A
Model/Series:	T210 N	**Aircraft Category:**	Airplane
Year of Manufacture:	1979	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	21063404
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	February 25, 2018 Annual	**Certified Max Gross Wt.:**	4000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	10310 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520-R
Registered Owner:		**Rated Power:**	375 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:	ISM,82 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	13:46 Local	**Direction from Accident Site:**	0°
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:**	17°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ORLANDO, FL (ISM)	**Type of Flight Plan Filed:**	None
Destination:	Orlando, FL (ISM)	**Type of Clearance:**	VFR
Departure Time:	13:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	KISSIMMEE GATEWAY ISM	**Runway Surface Type:**	Asphalt
Airport Elevation:	82 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	06	**IFR Approach:**	None
Runway Length/Width:	5001 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	28.289722,-81.436943(est)

Administrative Information

Investigator In Charge (IIC):	Alleyne, Eric		
Additional Participating Persons:	Rafeal Dorta-Figueroa; FAA; Orlando, FL Mike Council; Continental Motors; Mobile, AL		
Original Publish Date:	June 10, 2021	**Investigation Class:**	3
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=96869		