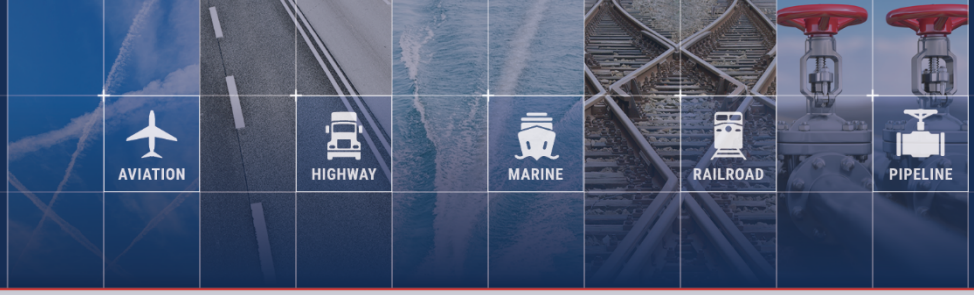

Aviation Investigation Final Report

Location:	Desdemona, Texas	**Accident Number:**	CEN18LA229
Date & Time:	June 17, 2018, 08:30 Local	**Registration:**	N6107R
Aircraft:	Cessna T210F	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious, 2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was conducting a personal cross-country flight. He stated that the engine began running roughly during cruise flight. He leaned the mixture, and the engine roughness subsided; however, a few minutes later, the engine began running roughly again. He switched fuel tanks, but the engine continued running roughly. Shortly thereafter, the engine lost all power. The pilot subsequently conducted a forced landing in a soft, sandy field, and the airplane nosed over.

A postaccident engine test-run revealed that the engine would not maintain power and that the fuel flow was excessive. A subsequent bench test of the fuel pump revealed that the pump was set to a high fuel flow setting, beyond the engine's normal limits. The fuel pump was adjusted and reinstalled on the engine for another test-run. During the second test-run, the engine operated smoothly at a stabilized fuel flow within the operating limits for the engine. Given this evidence, it is likely that the engine lost power due the fuel pump's flow setting being set to high, which resulted in an excessive fuel flow to the engine.

Probable Cause and Findings

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

The total loss of engine power due to the fuel pump's fuel flow setting being set too high, which resulted in an excessive fuel flow to the engine.

Findings

Aircraft	Fuel pumps - Incorrect service/maintenance

Factual Information

History of Flight

Enroute	Loss of engine power (total) (Defining event)
Landing-flare/touchdown	Nose over/nose down

On June 17, 2018, at 0830 central daylight time, a Cessna T210F airplane, N6107R, nosed over during an off airport forced landing in Desdemona, Texas. The private pilot and one passenger received minor injuries, and a second passenger was seriously injured. The airplane was substantially damaged. The airplane was registered to the pilot and operated as a personal flight under the provisions of Title 14 Code of Federal Regulations Part 91. Visual meteorological conditions existed near the accident site at the time of the accident, and a flight plan had not been filed for the flight. The airplane departed the Dublin Municipal Airport (9F0), Dublin, Texas, about 0820, en route to the Gregory M. Simmons Memorial Airport (GZN), Cisco, Texas.

The pilot stated that the engine began running rough during cruise flight at 2,400 ft above mean sea level. He leaned the fuel mixture and the engine roughness subsided. A few minutes later, the engine began running rough once again. He switched fuel tanks and there was no change in the engine operation. Shortly thereafter, the engine lost power. The pilot made a forced landing in a soft, sandy field and the airplane nosed over.

The initial postaccident engine examination revealed the engine remained attached to the airframe. Various wires, cables, and hoses remained attached to the engine. The top spark plugs exhibited normal wear but were dark in color and oily. The cylinders were examined using a boroscope were unremarkable.

The engine was then removed from the airframe and shipped to the manufacturer for a test run.

The engine was placed in the test cell and started without hesitation. The engine ran at 1,200 rpm and 1,600 rpm with the fuel pump mixture control at full. After 2 minutes of run time, the engine power started to oscillate. The engine was shut down and the mixture control was adjusted to about half of where it was originally set. The engine was started again and after 1 minute and 20 seconds the engine power again began to decrease, with the fuel pressure reaching 40 psi, which was 8 psi higher than the maximum unmetered flow limit of 32 psi.

The fuel pump was removed and placed on a test bench. At full power, 2,700 rpm, the fuel flow was about 170 pounds per hour with a fuel pressure of 92 psi. According to the engine manufacturer, the fuel pressure should have been between 29 and 32 psi. The adjustment screw was set to a fuel pressure of 30 psi and the pump was reinstalled on the engine for another test run.

The engine was restarted and run up to 1,600 rpm. The rpm slowly dropped to 1,498 rpm. The engine power was increased to 2,552 rpm and the fuel pressure stabilized at 30.18 psi with smooth engine operation.

During the initial engine run the engine was observed to have excessive manifold pressure. During the second engine run the turbocharger controller was adjusted to maintain normal manifold pressures.

Pilot Information

Certificate:	Private	**Age:**	62,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
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:**	March 6, 2017
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 3, 2017
Flight Time:	332 hours (Total, all aircraft), 276 hours (Pilot In Command, all aircraft), 42 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N6107R
Model/Series:	T210F F	**Aircraft Category:**	Airplane
Year of Manufacture:	1965	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	T210-0007
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 22, 2017 Annual	**Certified Max Gross Wt.:**	2725 lbs
Time Since Last Inspection:	35 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5315 Hrs	**Engine Manufacturer:**	Continental
ELT:	C91A installed, not activated	**Engine Model/Series:**	TSIO-520C
Registered Owner:		**Rated Power:**	285 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:	SEP,1321 ft msl	**Distance from Accident Site:**	22 Nautical Miles
Observation Time:	11:35 Local	**Direction from Accident Site:**	100°
Lowest Cloud Condition:	Scattered / 2000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Broken / 3400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	170°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	26°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Dublin, TX (9F0)	**Type of Flight Plan Filed:**	None
Destination:	Cisco, TX (3F2)	**Type of Clearance:**	None
Departure Time:	08:20 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 2 Minor	**Latitude, Longitude:**	32.219444,-98.510002

Administrative Information

Investigator In Charge (IIC):	Sullivan, Pamela
Additional Participating Persons:	Brent Furlow; FAA; Dallas, TX
Original Publish Date:	April 30, 2019
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=97492