Aviation Investigation Final Report

Location:	Crescent City, California	**Accident Number:**	WPR21LA098
Date & Time:	January 31, 2021, 11:44 Local	**Registration:**	N291FR
Aircraft:	Cessna T182T	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	2 Minor
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor noticed a flashing red turbine inlet temperature (TIT) warning light during the flight. He enrichened the fuel mixture, which returned the TIT to normal. Shortly after, the engine began to run rough. The flight instructor switched to the left magneto and the engine lost power. He then switched to the right magneto and the engine continued to run rough. He switched back to both magnetos and the engine continued to run rough. The flight instructor then adjusted the mixture and turned on the auxiliary fuel pump. Despite his actions, he was unable to get the engine to operate at a power setting sufficient to maintain altitude. The flight instructor located an open field and initiated a forced landing. The airplane landed in marshland and nosed over during the landing.

The postaccident examination of the engine revealed excessive gap on all sparkplugs and two of the sparkplug electrodes were fouled. The magnetos would not produce spark and had corrosion on their internal components. It was also noted that the pressurized magnetos did not have a moisture trap or filter installed.

The magnetos were sent to a facility for further examination, which revealed deformities on both magneto point assembly contact areas and the failure of both magneto capacitors during testing. The failure of the capacitors likely resulted in the deformities on the points surface contact areas resulting in the magnetos not producing sufficient spark for normal operation.

Probable Cause and Findings

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

The partial loss of engine power due to the failure of both magneto capacitors.

Findings

Aircraft	Magneto/distributor - Failure
Aircraft	Magneto/distributor - Fatigue/wear/corrosion

Factual Information

History of Flight

Enroute-descent	Loss of engine power (partial) (Defining event)

On January 31, 2021, about 1144 Pacific standard time, a Cessna T182T airplane, N291FR, was substantially damaged when it was involved in an accident near Crescent City, California. The flight instructor and pilot rated student received minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

During the flight, the flight instructor noticed a flashing red turbine inlet temperature (TIT) warning light. He enrichened the fuel mixture resulting in the TIT indication returning to normal. Shortly after, the engine began to run rough. The flight instructor switched to the left magneto and the engine lost power. He then switched to the right magneto and the engine continued to run rough. He switched back to both magnetos and the engine continued to run rough. The flight instructor then adjusted the mixture and turned on the auxiliary fuel pump. Despite his actions he was unable to get the engine to operate sufficiently to maintain altitude. The flight instructor located an open field and initiated a forced landing. The airplane landed in marshland and during the landing roll the airplane nosed over.

Postaccident examination of the engine revealed that the magnetos would not produce a spark and had corrosion on their internal components. It was also noted that the pressurized magnetos did not have a moisture trap or filter installed. The magnetos were disassembled, and corrosion and rust were noted on the interior surfaces and interior components. The points were removed from the magnetos, and corrosion was noted on the contact surfaces. Sandpaper was used to remove the corrosion from both sets of points. Deformities such as deterioration and buildup of the contact surfaces were visible. The points were reinstalled on the magnetos and the magnetos were installed on the test bench. No spark was produced from either magneto.

The magneto’s capacitors were bench tested and both failed under normal testing. An ohmmeter was used on the each of the (4) point assemblies and revealed inconsistent resistance on the surface areas (high points) of each point. A used set of points and capacitors were installed on the magnetos. The magnetos were installed on a bench and a normal amount of spark was observed. The used set of points had about 500 hours of operation during the test.

The maintenance records revealed that, on February 1, 2019, at an airplane total time of 1,248.8 hours of operation, both magnetos were replaced with newly overhauled units. On November 10, 2020, the last annual was performed with an aircraft total time of 1,704.5 hours

of operation. The accident occurred 82 hours of operation after the last annual inspection. At the time of the accident, the magnetos had 537 hours of operation since they were installed.

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	82,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	**Toxicology Performed:**	
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	September 24, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 25, 2019
Flight Time:	37517 hours (Total, all aircraft), 20000 hours (Total, this make and model), 35419 hours (Pilot In Command, all aircraft), 109 hours (Last 90 days, all aircraft), 17 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Pilot Information

Certificate:	Private	**Age:**	63,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Unknown	**Last FAA Medical Exam:**	
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 30, 2019
Flight Time:	389 hours (Total, all aircraft), 202 hours (Total, this make and model), 11 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N291FR
Model/Series:	T182T	**Aircraft Category:**	Airplane
Year of Manufacture:	2012	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	T18209082
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	November 10, 2020 Annual	**Certified Max Gross Wt.:**	3100 lbs
Time Since Last Inspection:	82 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1787 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	TIO-540-AK1A
Registered Owner:	Morey's West Coast Adventures, Inc	**Rated Power:**	235 Horsepower
Operator:	Morey's West Coast Adventures, Inc	**Operating Certificate(s) Held:**	None
Operator Does Business As:	Morey's West Coast Adventures, Inc	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCEC,55 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	11:56 Local	**Direction from Accident Site:**	219°
Lowest Cloud Condition:	Unknown	**Visibility**	8 miles
Lowest Ceiling:	Unknown	**Visibility (RVR):**	
Wind Speed/Gusts:	19 knots / 32 knots	**Turbulence Type Forecast/Actual:**	None / None
Wind Direction:	175°	**Turbulence Severity Forecast/Actual:**	N/A / N/A
Altimeter Setting:	29.96 inches Hg	**Temperature/Dew Point:**	11°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Medford, OR (KMFR)	**Type of Flight Plan Filed:**	IFR
Destination:	Crescent City, CA (KCEC)	**Type of Clearance:**	IFR
Departure Time:	10:49 Local	**Type of Airspace:**	Class E

Wreckage and Impact Information

Crew Injuries:	2 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Minor	**Latitude, Longitude:**	41.84029,-124.172(est)

Administrative Information

Investigator In Charge (IIC):	Swick, Andrew
Additional Participating Persons:	David T. Jensen; FAA-FSDO; Oakland, CA
Original Publish Date:	April 5, 2023
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=102581