Aviation Investigation Final Report

Location:	Redmond, Oregon	**Accident Number:**	WPR15LA137
Date & Time:	March 1, 2015, 09:40 Local	**Registration:**	N9133G
Aircraft:	Piper PA 46-310P	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot reported that, about 30 minutes into the private, cross-country flight and while the airplane was cruising at 23,000 ft mean sea level, the engine started running roughly. The pilot noticed that the No. 5 cylinder head temperature (CHT) was lower than normal. He cycled the magnetos and noticed that the engine ran rougher than normal when the left magneto was selected. He then enriched the mixture, and the engine smoothed out. He continued to monitor the engine and adjust the mixture. About 30 minutes later, the engine lost power. The pilot diverted to a nearby airport and attempted to line up for a runway but did not have sufficient altitude. He performed a forced landing to the airport infield, which resulted in the nose landing gear collapsing and structural damage to the wing spar.

Postaccident examination of the engine did not reveal any anomalies that would have precluded normal operation. During an engine test run up to full power, the only anomaly noted was that the No. 5 CHT was 50 to 70° lower than all the other cylinders. However, the lower CHT likely would not cause a loss of engine power.

Probable Cause and Findings

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

A loss of engine power during cruise flight for reasons that could not be determined because postaccident examination of the engine did not reveal any anomalies that would have precluded normal operation.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Landing-landing roll	Runway excursion

On March 1, 2015, at 0940 Pacific standard time, a Piper PA-46-310P, N9133G, executed a forced landing into Roberts Field Airport, Redmond, Oregon, after a loss of engine power. The airplane was registered to, and operated by, the private pilot under the provisions of 14 Code of Federal Regulations, Part 91. The pilot was not injured, and the airplane sustained substantial damage to both wings. Visual meteorological conditions prevailed, and an instrument flight plan had been filed. The flight originated from Oak Harbor, Washington, at 0800.

The pilot reported that he was cruising at 23,000 feet mean sea level (msl) when he noticed the engine running a bit rough as he passed Portland, Oregon. He noticed that the number 5 cylinder head temperature (cht) was lower than normal. The pilot cycled the magnetos and noticed that the engine ran rougher than normal when the left magneto was selected. The engine smoothed out when he enriched the mixture. He continued to monitor the engine and adjusting the mixture. About 30 minutes later engine power completely dropped off. The pilot diverted to Roberts Field, Redmond, Oregon, using his GPS for navigation. About 2 miles out he acquired the airport visually, and attempted to line up for a runway but did not have enough altitude. He performed a forced landing into the airport infield. The landing resulted in a collapsed nose landing gear, and wing spar damage at both main landing gear mounts.

On March 3, 2015, an airframe and power plants (A&P) mechanic examined the airplane under the supervision of a Federal Aviation Administration (FAA) inspector. He reported on the airframe structural damage, and that he found no obvious reason for the loss of engine power. The airplane was then relocated to a facility in Greeley, Colorado, for further examination.

The airplane was equipped with a EDM 930 engine data monitoring system. On April 14 the data from the EDM 930 was downloaded and sent to the NTSB Investigator-in-Charge (IIC). The data showed that about 25 minutes before the loss of engine power the number 5 cylinder head temperature (cht) started to trend about 50°F below its previous steady temperature (300°F), and then fluctuate twice between 300°F – 250°F during the last 12 minutes. The exhaust gas temperature (egt) remained steady for cylinder number 5 throughout the record. All the remaining cylinders exhibited steady egt and cht values.

On May 13, 2015, the NTSB IIC, and a technical representative from the engine manufacturer examined the airplane. A fuel sample was taken from the fuel strainer. The fuel sample was light green in color and tested negative for water or kerosene/jet fuel contamination. Results of a chemical analysis confirmed that the sample was chemically consistent with 100LL avgas. The engine was examined externally, the cylinders bore scoped, sparkplugs inspected, internal magneto timing verified, and internal continuity confirmed by rotating the propeller/crankshaft. The number 5 cylinder fuel injection

nozzle was removed, examined, and found to be in good condition with no blockages. An external fuel tank was plumbed into the right-wing fuel outlet and an external priming pump placed inline. The engine started on the first attempt, ran smoothly at idle, magneto checked performed, and the engine was run up to red line producing full power. No anomalies were noted during the engine run other than that the number 5 cylinder head temperature was notably 50°-70°F cooler than all the other cylinders.

Pilot Information

Certificate:	Private	**Age:**	68,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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Waiver time limited special	**Last FAA Medical Exam:**	January 23, 2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 22, 2014
Flight Time:	2572 hours (Total, all aircraft), 1299 hours (Total, this make and model), 90 hours (Last 90 days, all aircraft), 29 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N9133G
Model/Series:	PA 46-310P	**Aircraft Category:**	Airplane
Year of Manufacture:	1988	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	4608111
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 16, 2014 Annual	**Certified Max Gross Wt.:**	4101 lbs
Time Since Last Inspection:	94 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	3208.3 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	C126 installed, not activated	**Engine Model/Series:**	TSIO-520 SER
Registered Owner:	On file	**Rated Power:**	0 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:	KRDM,3080 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	09:56 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	30.19 inches Hg	**Temperature/Dew Point:**	1°C / -9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Friday Harbor, WA (KFHR)	**Type of Flight Plan Filed:**	IFR
Destination:	North Las Vegas, NV (KVGT)	**Type of Clearance:**	IFR
Departure Time:	08:00 Local	**Type of Airspace:**	Class A

Airport Information

Airport:	Roberts Field Airport KRDM	**Runway Surface Type:**	
Airport Elevation:	3080 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 None	**Latitude, Longitude:**	44.253887,-121.150001(est)

Administrative Information

Investigator In Charge (IIC):	McKenny, Van
Additional Participating Persons:	Keith Ruconich; FAA; Hillsboro, OR Chris Lang; Continental Motors Inc; Mobile, AL
Original Publish Date:	September 6, 2017
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=90955