Aviation Investigation Final Report

Location:	Spearfish, South Dakota	**Accident Number:**	CEN21LA082
Date & Time:	December 8, 2020, 11:00 Local	**Registration:**	N2554M
Aircraft:	Piper PA12	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Flight test		

Analysis

Before departing on the first flight after completion of the annual inspection, the pilot selected the right wing fuel tank, which was the fuller tank, performed an engine runup, and then initiated takeoff. The pilot said that the airplane climbed to about 70 ft above the runway, lost engine power for a few seconds, regained power briefly, then lost total power. The airplane landed hard on the runway, resulting in substantial damage to the fuselage.

A postacccident engine run revealed no mechanical anomalies that would have precluded normal airplane operation. Based on the available evidence, the reason for the loss of engine power could not be determined.

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 during initial climb for undetermined reasons.

Findings

Aircraft	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (total) (Defining event)
Landing	Hard landing

On December 8, 2020, about 1030 mountain standard time, a Piper PA-12, N2554M, was involved in an accident near Spearfish, South Dakota. The private pilot and a passenger were uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 maintenance test/check flight.

After completing an annual inspection, maintenance personnel performed post-inspection engine run-ups, then turned the fuel selector to the OFF position.

The pilot arrived at the maintenance facility with a passenger to perform a post-maintenance test/check flight. The pilot stated that the left fuel tank was ½ full and the right fuel tank was ¾ full, and that he positioned the fuel selector to the right fuel tank. Following an engine run-up, he initiated takeoff, and the airplane climbed to about 70 ft above the runway. The airplane lost engine power for a few seconds, regained power for a few more seconds, and then lost total power. The pilot lowered the airplane's nose to increase airspeed, and the airplane continued to descend. He tried to flare the airplane, but the airplane landed hard on the runway, resulting in substantial damage to the fuselage tubular structure.

A postacccident engine run revealed no mechanical anomalies that would have precluded normal operation.

Pilot Information

Certificate:	Private	**Age:**	56,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	April 25, 2016
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 21, 2019
Flight Time:	737 hours (Total, all aircraft), 161 hours (Total, this make and model), 737 hours (Pilot In Command, all aircraft), 14 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Passenger Information

Certificate:		**Age:**	
Airplane Rating(s):		**Seat Occupied:**	Rear
Other Aircraft Rating(s):		**Restraint Used:**	Unknown
Instrument Rating(s):		**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	
Medical Certification:		**Last FAA Medical Exam:**	
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N2554M
Model/Series:	PA12	**Aircraft Category:**	Airplane
Year of Manufacture:	1946	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18267237
Landing Gear Type:	None	**Seats:**	2
Date/Type of Last Inspection:	December 7, 2020 Annual	**Certified Max Gross Wt.:**	1750 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	704.9 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O320-A2A
Registered Owner:	On file	**Rated Power:**	150
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:	SPF,3933 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	10:15 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	11 knots /	**Turbulence Type Forecast/Actual:**	None /
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	16°C / -11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Spearfish, SD	**Type of Flight Plan Filed:**	VFR
Destination:	Lakeville, MN (LVN)	**Type of Clearance:**	IFR
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Black Hills Airport-Clyde Ice Field SPF	**Runway Surface Type:**	Grass/turf
Airport Elevation:	3933 ft msl	**Runway Surface Condition:**	Soft;Vegetation
Runway Used:	26	**IFR Approach:**	None
Runway Length/Width:	4003 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:		**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	44.481056,-103.786(est)

Administrative Information

Investigator In Charge (IIC):	Gallo, Mitchell
Additional Participating Persons:	William Howell; Federal Aviation Administration, Rapid City FSDO; Rapid City, SD
Original Publish Date:	July 7, 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=102397