



National Transportation Safety Board Aviation Accident Final Report

Location:	Revere, MN	Accident Number:	CEN12LA128
Date & Time:	01/05/2012, 1030 CST	Registration:	N330BL
Aircraft:	Sanderson Pitts Special SPS-1	Aircraft Damage:	Substantial
Defining Event:	Loss of engine power (total)	Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane had not been flown for over 6 months prior to the accident flight. Before departure, the pilot added about 3 gallons of fuel to the existing fuel on board the airplane. The pilot did not find contamination when he drained fuel from the main fuel tank sump drain. About 20 minutes after departure, during cruise flight, the airplane experienced a total loss of engine power that led the pilot to conduct a forced landing on a road. The airplane nosed over during the landing. An examination of the airplane revealed that the airplane was not equipped, nor was it required to be equipped, with a fuel sump drain(s) for the wing tank, which drained into the main fuel tank. Water contamination was present in the fuel line leading to the carburetor, but no water contamination was noted when the main fuel tank sump—the only available sump—was drained. Accordingly, water was likely in the wing tanks and fed into the main tank after it was sumped. The water then entered the fuel lines. The lack of sump drains in the wing tanks is an inadequate design because it does not allow a pilot to remove all water from the fuel system.

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 during cruise flight due to fuel contamination and the inadequate design of the fuel system.

Findings

Aircraft	Fuel - Fluid condition (Cause)
	Fuel system - Design (Cause)

Factual Information

On January 5, 2012, about 1030 central standard time, an experimental amateur-built Sanderson Pitts Special SPS-1, N330BL, experienced a total loss of engine power during cruise flight. The pilot subsequently made a forced landing on a road near Revere, Minnesota. The commercial pilot was uninjured. The airplane sustained substantial damage to the right wings and vertical stabilizer when the airplane nosed over and impacted terrain during the landing. The airplane was operated by the pilot under the provisions of 14 Code of Federal Regulations (CFR) Part 91 as a personal flight. Visual meteorological conditions prevailed. A flight plan had not been filed for the flight that originated from Madison Municipal Airport (MDS), South Dakota, at 1000 and was destined for Faribault Municipal Airport (FBL), Faribault, Minnesota.

The pilot purchased the airplane, which had not flown for over six months, and was going to fly to MDS. Prior to departure, he drained the main fuel tank sump but was not able to check for fuel contamination present in the wing tank due to a lack of a fuel sump drain. The wing fuel tank drains into the main fuel tank. To top off the wing fuel tank, he added 3 gallons of fuel from the previous airplane owner's fuel tank. The main fuel tank was already full.

After about 20 minutes of flight, the pilot moved the auxiliary fuel selector to the open position to allow fuel from the wing fuel tank to flow into the main fuel tank. About 5 minutes later, the airplane experienced a total loss of engine power. The pilot changed engine throttle control positions, and the engine surged and quit again. The pilot then performed a forced landing to a field.

Examination of the airplane by the Federal Aviation Administration revealed the presence of water in the fuel line leading to the carburetor. Fuel samples from the available fuel sumps did not show the presence of water.

The experimental amateur-built airplane was not certified nor was it required to be certified under 14 CFR Part 23, Airworthiness Standards for Normal, Utility, Acrobatic, and Commuter Category Airplanes. Part 23.971, Fuel Tank Sump, states in part:

- (a) Each fuel tank must have a drainable sump with an effective capacity, in the normal ground and flight attitudes, of 0.25 percent of the tank capacity, or 1/16 gallon, whichever is greater.
- (b) Each fuel tank must allow drainage of any hazardous quantity of water from any part of the tank to its sump with the airplane in the normal ground attitude.

History of Flight

Enroute-cruise	Fuel contamination Loss of engine power (total) (Defining event)
Emergency descent	Loss of engine power (total)
Landing	Collision during takeoff/land

Pilot Information

Certificate:	Commercial; Flight Engineer	Age:	63, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Single
Other Aircraft Rating(s):		Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):		Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 With Waivers/Limitations	Last Medical Exam:	12/12/2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	01/04/2012
Flight Time:	2652 hours (Total, all aircraft), 2 hours (Total, this make and model), 2418 hours (Pilot In Command, all aircraft), 2 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	Sanderson	Registration:	N330BL
Model/Series:	Pitts Special SPS-1	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	1
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	06/10/2011, Conditional	Certified Max Gross Wt.:	1219 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	1053 Hours	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	O-360
Registered Owner:	Individual	Rated Power:	180 hp
Operator:	Pilot	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KMML, 1183 ft msl	Observation Time:	1015 CDT
Distance from Accident Site:	20 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	315°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	7°C / -4°C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	15 knots, 230°	Visibility (RVR):	
Altimeter Setting:	29.78 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Madison, SD (MDS)	Type of Flight Plan Filed:	None
Destination:	Faribault, MN (FBL)	Type of Clearance:	None
Departure Time:	1000 CST	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None		

Administrative Information

Investigator In Charge (IIC):	Mitchell F Gallo	Adopted Date:	01/15/2013
Additional Participating Persons:	Robert Diercks; Federal Aviation Administration; Minneapolis, MN		
Publish Date:	01/15/2013		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=82660		

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