National Transportation Safety Board
Aviation Accident Final Report

Location:	Boise, ID	**Accident Number:**	WPR15LA265
Date & Time:	09/21/2015, 1620 MDT	**Registration:**	N222JS
Aircraft:	AERO COMMANDER 680 E	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The commercial pilot was conducting a personal flight. He reported that he did not recall what happened the day of the accident. One witness, who was former pilot, reported that he saw the airplane fly over his house and that the engines sounded as if they were "out of sync." A second witness, who lived about 5 miles away from the airport, reported that she saw the airplane flying unusually low. She added that the engines sounded terrible and that they were "popping and banging." A third witness, who was holding short of the runway waiting to take off, reported that he saw the airplane approaching the runway about 75 ft above ground level (agl). He then saw the airplane descend to about 50 ft agl and then climb back to about 75 ft agl, at which point the airplane made a hard, right turn and then impacted terrain.

Although a postaccident examination of both engines revealed no evidence of a mechanical failure or malfunction that would have precluded normal operation, the witnesses' described what appeared to be an engine problem. It is likely that one or both of the engines was experiencing some kind of problem and that the pilot subsequently lost airplane control. The pilot reported in a written statement several months after the accident that, when he moved the left rudder pedal back and forth multiple times after the accident, neither the torque tubes nor the rudder would move, that he found several of the rivets sheared from the left pedal, and that he believed the rudder had failed. However, postaccident examination of the fractured rivets showed that they exhibited deformation patterns consistent with overstress shearing that occurred during the accident sequence. No preimpact anomalies with the rudder were found.

Probable Cause and Findings

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

The pilot's failure to maintain airplane control following an engine problem for reasons that could not be determined because postaccident examination of both engines and the rudder revealed no malfunctions or anomalies that would have precluded normal operation.

Findings

Aircraft	Performance/control parameters - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot
Not determined	Not determined - Unknown/Not determined (Cause)

Factual Information

History of Flight

Landing	Loss of control in flight (Defining event)
	Collision with terr/obj (non-CFIT)

On September 21, 2015 about 1620 mountain daylight time, an Aero Commander 680-E, N222JS, impacted terrain while attempting to land at the Boise Air Terminal/Gowen Field (BOI), Boise, Idaho. The commercial pilot, sole occupant, sustained serious injuries and the airplane sustained substantial damage. The airplane was registered to, and operated by, the pilot as a 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed, and no flight plan was filed. The flight originated from Weiser Municipal Airport (S87), Weiser, Idaho at an unknown time.

The pilot initially reported that he did not recall what happened the day of the accident. However, in a written statement provided several months after the accident, he reported that, after the accident, while disassembling the airplane, he moved the left rudder pedal back and forth multiple times, neither the torque tubes nor the rudder would move and that he believed the rudder had failed. Several of the rivets were sheared from the left pedal. Postaccident examination of the fractured rivets showed that they exhibited deformation patterns consistent with overstress shearing.

One witness reported he observed the airplane fly over his house, he mentioned that the engines sounded as if they were out of sync. A second witness who lives about 5 miles away from the airport reported she observed the airplane flying abnormally low; the engines sounded terrible, they were popping and banging. A third witness, who was holding short of the runway waiting to takeoff, reported that they observed the airplane approaching the runway about 75 feet above the ground. They saw the airplane descend to about 50 feet, then climb back up to about 75 when the airplane suddenly made a hard right turn and impacted terrain.

Pilot Information

Certificate:	Commercial	**Age:**	63, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap Only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With Waivers/Limitations	**Last FAA Medical Exam:**	04/13/2015
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	04/12/2014
Flight Time:	(Estimated) 18000 hours (Total, all aircraft), 2500 hours (Total, this make and model), 18000 hours (Pilot In Command, all aircraft)		

The pilot, age 63, held a commercial pilot certificate for airplane single- and multi-engine land, and single-engine sea, as well as an airframe and powerplant mechanic certificate issued on August 8, 2012. The pilot held a second-class medical certificate issued April 13, 2015, with the limitation that he must wear corrective lenses and possess glasses for near/intermediate vision. The pilot estimated that he had 18,000 total hours, 2,500 of which were in the airplane make and model.

Aircraft and Owner/Operator Information

Aircraft Make:	AERO COMMANDER	**Registration:**	N222JS
Model/Series:	680 E	**Aircraft Category:**	Airplane
Year of Manufacture:	1959	**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	680E-721-28
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	10/10/2014, Annual	**Certified Max Gross Wt.:**	7000 lbs
Time Since Last Inspection:	20 Hours	**Engines:**	2 Reciprocating
Airframe Total Time:	7500 Hours as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	GSO-480-B1A6
Registered Owner:	On file	**Rated Power:**	340 hp
Operator:	On file	**Operating Certificate(s) Held:**	None

The seven seat, high wing, retractable-gear airplane, serial number 680E-721-28, was manufactured in 1959. It was powered by two Lycoming GSO-480-B1A6 engines, and equipped with Hartzell Propeller controllable pitch propellers. Review of copies of maintenance logbook records showed an annual inspection was completed on October 10, 2014 at a recorded tachometer reading of 784 hours, with 487 hours since left engine major overhaul, and 412 hours since right engine major overhaul.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	BOI, 2871 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	1628 MDT	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/ None
Wind Direction:	320°	**Turbulence Severity Forecast/Actual:**	/ N/A
Altimeter Setting:	29.89 inches Hg	**Temperature/Dew Point:**	28°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Weiser, ID (S78)	**Type of Flight Plan Filed:**	None
Destination:	Boise, ID (BOI)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	

Airport Information

Airport:	Boise Air Terminal/Gowen Field (BOI)	**Runway Surface Type:**	Asphalt
Airport Elevation:	2871 ft	**Runway Surface Condition:**	Dry
Runway Used:	28L	**IFR Approach:**	Unknown
Runway Length/Width:	9763 ft / 150 ft	**VFR Approach/Landing:**	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	43.558611, -116.220278 (est)

An onscene examination of the airplane was conducted by a Federal Aviation Administration Inspector.

The first identified point of impact was in the gravel just south of taxiway "A"; gravel and scratch marks were spread across the taxiway, and slice marks were noted in the gravel just north of the taxiway. In addition, there were other disruptions in the gravel along with small fragments of the wing tips and other airframe pieces. The airplane came to rest on top of, and slightly on the other side of, a fence on the north side of the airport and taxiway "A".

The airframe was heavily damaged. The inspector observed no fuel in the left and right wing fuel tanks; and due to the position of the airplane, he was unable to observe the fuel within the main fuel tank. The fuel selector for both engines were selected to the center tank. The right engine propellers were still secured to their hub, and the engine sustained minimal damage. The left engine propeller hub had separated from the engine; all three blades sustained mostly forward bending.

During the recovery process, the recovery crew removed about 11-12 gallons of fuel from the center fuel tank.

****This report was modified on August 24, 2017. Please see the docket for this accident to view the original report.****

Tests And Research

A postaccident examination of the airplane's engines was completed by representatives from the Federal Aviation Administration and Lycoming engines. There were no indications of preimpact anomalies with either engine.

The left engine was still secured to the airframe, however, the propeller gearbox and assembly was found separated. All propeller blades were bent forward, and exhibited leading edge damage. The top spark plus were removed and displayed "worn out-normal" signatures when compared to the Champion Aviation Check a Plug Chart AV-27. The engine was rotated by hand; thumb compression was obtained on all cylinders and engine drive train continuity was established throughout.

The right engine was still secured to the fuselage. The propeller hub and blades remained attached, and the blades were found mostly straight. One blade exhibited chordwise scratches, and a second blade had leading edge scratches, both of which were on the outboard about 10 inches of the blade. The third blade exhibited minor leading edge damage. The top spark plugs were removed and displayed "worn out-normal" signatures when compared to the Champion Aviation Check a Plug Chart AV-27. The engine was rotated by hand; thumb compression was obtained on all cylinders and engine drive train continuity was established.

Administrative Information

Investigator In Charge (IIC):	Samantha A Link	**Report Date:**	09/06/2017
Additional Participating Persons:	Keith Rittenberry; Federal Aviation Administration; Boise, ID Troy Helgeson; Lycoming Engines; Williamsport, PA		
Publish Date:	09/06/2017		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=92033		