



Aviation Investigation Final Report

Location:	Pierre, South Dakota	Accident Number:	CEN12FA579
Date & Time:	August 28, 2012, 09:49 Local	Registration:	N416
Aircraft:	LEE PAUL SQ 2000	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During the airplane’s initial takeoff climb, two ground witnesses observed the left “gull-wing” entrance door to be open. They reported that when the airplane was about 50 feet above the ground, it entered a series of approximately four pitch oscillations. During the last pitch-down oscillation, the airplane impacted the runway at a steep descent angle and then skidded forward about 500 feet, coming to a stop near the right side of the runway. A postimpact fire ensued. Examination of the airframe, engine, propeller and the door did not reveal any anomalies associated with a preimpact failure or malfunction.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The airplane's entry into a pilot-induced oscillation and the pilot’s loss of airplane control during the takeoff initial climb. Contributing to the accident was the left entrance door opening in flight for undetermined reasons.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Pitch control - Incorrect use/operation
Aircraft	Passenger/crew doors - Unintentional use/operation

Factual Information

History of Flight

Initial climb	Miscellaneous/other
Initial climb	Loss of control in flight (Defining event)

HISTORY OF FLIGHT

On August 28, 2012, about 0949 central daylight time, a Lee SQ-2000 experimental airplane, N416, owned and operated by the pilot, was substantially damaged during takeoff from Pierre Regional Airport (KPIR), Pierre, South Dakota. The certificated private pilot was fatally injured. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed during the flight. No flight plan was filed. The local flight was originating at the time of the accident.

On takeoff leg at about 50 feet above the ground, two witnesses observed the left “gull-wing” entrance door to be open and the airplane enter into a series of four up and down pitch oscillations. During the last pitch down oscillation, the airplane impacted the runway at a steep descent angle.

PERSONNEL INFORMATION

The pilot of N416, age 69, held a private pilot certificate with an airplane single-engine land rating. On October 5, 2011, the pilot was issued a limited third-class medical certificate, with the limitation that corrective lenses be worn while flying. At the time of the medical examination, the pilot reported having 330 hours of flight experience, with 2 hours in the last six months.

AIRCRAFT INFORMATION

The accident airplane was a KLS Composites (Kit), SQ-2000, which the pilot purchased on December 25, 2001. The airplane was issued a special airworthiness certificate on March 18, 2004. During April 2012, the pilot completed the installation of a Continental IO-360C engine. The pilot maintained detailed construction records of the accident airplane, to include construction of the “gull-wing” entrance doors. In these records, the pilot wrote that during flight it was very easy to open the doors and had constructed a door lock “clip” to prevent inadvertent opening of the entrance door closing mechanism. In these records, the pilot also described the aircraft being very pitch sensitive.

METEOROLOGICAL INFORMATION

At 0953, the KPIR automated weather observation system reported the following weather conditions: Wind 090 degrees at 8 knots; sky clear; temperature 27 degrees Celsius (C); dew point 17 degrees C; altimeter setting 29.93 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

Following impact with the runway, the airplane slid to a stop on the edge of the runway and a postimpact fire ensued. The distance from initial runway impact to the main wreckage location was about 500 feet.

During examination, the engine crankshaft was rotated and a compression check was confirmed on all cylinders. Propeller impact with the runway resulted in the shredding of over half of the propeller's diameter. Flight control surfaces were accounted for, although flight control continuity could not be confirmed due to impact and fire damage. Examination of the airframe, engine and propeller did not reveal any anomalies associated with a preimpact failure or malfunction.

Both "gull-wing" entrance doors separated from the airplane during the impact sequence and were not fire damaged. Examination of the left entrance "gull-wing" door revealed a witness mark corresponding to the door closing mechanism in a "partially closed" position. Extensive fire damage of the fuselage surrounding the left entrance door prevented further analysis of door failure.

MEDICAL AND PATHOLOGICAL INFORMATION

On August 30, 2012, an autopsy was performed on the pilot at the Rapid City, South Dakota Regional Hospital. The cause of death was attributed to blunt force injuries. The FAA's Civil Aeromedical Institute in Oklahoma City, Oklahoma, performed toxicology tests on the pilot. No carbon monoxide, cyanide, or drugs were detected in the blood, and no ethanol was detected in vitreous.

Pilot Information

Certificate:	Private	Age:	69, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With waivers/limitations	Last FAA Medical Exam:	October 5, 2011
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 346 hours (Total, all aircraft), 4 hours (Last 90 days, all aircraft), 4 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	LEE PAUL	Registration:	N416
Model/Series:	SQ 2000	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	0007
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	2250 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	IO-360
Registered Owner:	On file	Rated Power:	210 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:	KPIR, 1744 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	09:53 Local	Direction from Accident Site:	360°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.93 inches Hg	Temperature/Dew Point:	27°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Pierre, SD (KPIR)	Type of Flight Plan Filed:	None
Destination:	Pierre, SD (KPIR)	Type of Clearance:	None
Departure Time:	09:49 Local	Type of Airspace:	

Airport Information

Airport:	Pierre Regional Airport KPIR	Runway Surface Type:	Asphalt
Airport Elevation:	1744 ft msl	Runway Surface Condition:	Dry
Runway Used:	13	IFR Approach:	None
Runway Length/Width:	6900 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	
Total Injuries:	1 Fatal	Latitude, Longitude:	44.37611,-100.284721

Administrative Information

Investigator In Charge (IIC):	Folkerts, Michael
Additional Participating Persons:	Gary Soldwisch; FAA FSDO; Rapid City, SD
Original Publish Date:	February 27, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=84829

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).