



National Transportation Safety Board Aviation Accident Data Summary

Location:	Venus, FL	Accident Number:	ERA14LA183
Date & Time:	04/02/2014, 1940 EDT	Registration:	N938VP
Aircraft:	ROBERT J REIMBOLD ZENITH CH 750	Injuries:	2 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot, who was also the builder/owner of the kit airplane, reported that he was en route toward his home airport with each wing tank about 3/4 full. About 50 minutes into the flight, the engine experienced a total loss of power, and the pilot was unable to restart the engine. The pilot conducted an off-airport, forced landing, and the airplane impacted vegetation and came to rest inverted, which resulted in substantial damage to the left wing, vertical stabilizer, and nose structure.

After the airplane came to rest, the pilot turned the fuel selector valve to the “off” position. Examination of the airplane revealed that the left wing fuel tank was devoid of fuel and that the right wing fuel tank contained about 6 gallons of fuel. Further examination revealed that, when the fuel line to the carburetor was removed and the fuel selector was selected to the “on” position, fuel drained freely from the fuel tank. Examination of both fuel tank venting caps revealed no abnormalities that would have precluded normal operation.

According to the fuel system drawing provided by the manufacturer, the fuel line from the right fuel tank runs laterally across the top of the airplane cabin to a T-fitting that is connected to the left tank fuel line. The fuel line then runs down the side of the airplane to the gascolator and the “on/off” shutoff valve. The airplane had no interconnecting fuel venting system, and each fuel tank was independently vented through the fuel caps.

An internet forum on this make and model kit airplane noted the occurrence of several other similar in-flight fuel starvation events. The general consensus of the forum discussion was that the fuel system design led to a partial or complete vacuum being developed during fuel consumption, which resulted in the fuel in the left fuel tank being consumed and a subsequent total power loss and in the right fuel tank being at or near maximum capacity. Therefore, it is likely that the fuel system’s venting was not sufficient to provide adequate positive pressure and that this resulted in a vacuum developing between the right fuel tank and the T-fitting and the subsequent loss of engine power due to fuel starvation.

Flight Events

- Enroute-cruise - Fuel starvation
- Enroute-cruise - Loss of engine power (total)
- Emergency descent - Off-field or emergency landing
- Landing-landing roll - Collision with terr/obj (non-CFIT)

Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
The fuel system’s inadequate design, which resulted in negative pressure in the right fuel tank and a

total loss of engine power during cruise flight due to fuel starvation.

Findings

Aircraft-Aircraft systems-Fuel system-(general)-Design - C

Aircraft-Fluids/misc hardware-Fluids-Fuel-Fluid level - C

Environmental issues-Physical environment-Terrain-Rough terrain-Contributed to outcome

Pilot Information

Certificate:	Private	Age:	75
Airplane Rating(s):	Single-engine Land	Instrument Rating(s):	None
Other Aircraft Rating(s):	None	Instructor Rating(s):	None
Flight Time:	(Estimated) 1434 hours (Total, all aircraft), 76 hours (Total, this make and model), 31 hours (Last 90 days, all aircraft), 9 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	ROBERT J REIMBOLD	Registration:	N938VP
Model/Series:	ZENITH CH 750	Engines:	1 Reciprocating
Operator:	REIMBOLD ROBERT J	Engine Manufacturer:	Lycoming
Air Carrier Operating Certificate:	None	Engine Model/Series:	O-320-E2D
Flight Conducted Under:	Part 91: General Aviation - Personal		

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KPGD, 25 ft msl	Weather Information Source:	Weather Observation Facility
Conditions at Accident Site:	Visual Conditions	Lowest Ceiling:	None
Condition of Light:	Night/Dark	Wind Speed/Gusts, Direction:	6 knots, 280°
Temperature:	23° C / 16° C	Visibility	10 Miles
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lakeland, FL (LAL)	Destination:	La Belle, FL (X14)

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC): Shawn Etcher

Adopted Date: 06/22/2015

Investigation Docket: <http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89016>

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