



Aviation Investigation Final Report

Location:	Independence, Oregon	Accident Number:	WPR16LA023
Date & Time:	November 6, 2015, 15:30 Local	Registration:	N1488
Aircraft:	Thorp T 18	Aircraft Damage:	Substantial
Defining Event:	Sys/Comp malf/fail (non-power)	Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot departed on a local flight; during initial climb, the canopy partially disconnected from the airplane and the airplane vibrated violently. The pilot made a precautionary landing in a field, and the right wing impacted a fence post. Postaccident examination revealed that the mechanism that allowed the canopy to move fore and aft and retained the aft portion of the canopy during flight separated at a weld, which resulted in airflow into the cockpit. The components were not made available for metallurgical examination and the failure mode could not be determined; however, it is possible that the separation was due to repeated loading on the canopy over time. According to the pilot and a representative of the airplane type club, the canopy design was unique to the accident airplane, and was likely the only one of its kind.

Probable Cause and Findings

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

A separation of the canopy mechanism during flight, which resulted in the pilot's precautionary landing and the airplane's subsequent collision with a fence post.

Findings

Aircraft	Passenger/crew doors - Failure
Environmental issues	Fence/fence post - Contributed to outcome

Factual Information

History of Flight

Initial climb	Sys/Comp malf/fail (non-power) (Defining event)
Landing-landing roll	Collision with terr/obj (non-CFIT)

On November 6, 2015, at 1530 Pacific standard time, an experimental Thorp T-18, N1488, was substantially damaged during a precautionary landing in a field near Independence State Airport, Independence, Oregon. The pilot was operating the airplane under the provisions of 14 Code of Federal Regulations Part 91. The private pilot, the sole occupant, was not injured. Visual meteorological conditions prevailed and no flight plan was filed.

In a phone interview following the accident, the pilot stated that the airplane was climbing after takeoff when the canopy partially disconnected from the airplane and the airplane violently vibrated. The pilot landed in a cow pasture and the right wing impacted a fence post during the landing roll. He further reported that the airplane was serial number 303 and his father had built the airplane. The airplane had an early canopy design that had been modified in later designs. The canopy ran on a track. On each side of the canopy there are two fiberglass rollers and the back was secured through a track. The rear track separated and allowed airflow underneath to lift up and vibrate the canopy. The pilot believed that the separation occurred due to repeated use over time.

A Federal Aviation Administration (FAA) inspector examined the airplane following the accident. The canopy mechanism allowed the canopy to move fore and aft, as well as retain the aft portion of the canopy during flight. The rear portion of the mechanism separated at a weld.

The Thorp T-18 type club was contacted regarding the canopy mechanism design. The mechanism was reported as a unique design and uncommon to the fleet.

Pilot Information

Certificate:	Private	Age:	68, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	3-point
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	May 15, 2015
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	618 hours (Total, all aircraft), 618 hours (Total, this make and model), 18 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Thorp	Registration:	N1488
Model/Series:	T 18 UNDESIGNAT	Aircraft Category:	Airplane
Year of Manufacture:	1968	Amateur Built:	Yes
Airworthiness Certificate:	Experimental (Special)	Serial Number:	303
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	March 1, 2015 Condition	Certified Max Gross Wt.:	1540 lbs
Time Since Last Inspection:	19 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1358 Hrs at time of accident	Engine Manufacturer:	Textron Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320-B2A
Registered Owner:	On file	Rated Power:	160 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:	KSLE,180 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	11:56 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/ None
Wind Direction:	340°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.31 inches Hg	Temperature/Dew Point:	57°C / 46°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Independence, OR	Type of Flight Plan Filed:	None
Destination:	Independence, OR	Type of Clearance:	None
Departure Time:		Type of Airspace:	

Airport Information

Airport:	Independence State 7S5	Runway Surface Type:	
Airport Elevation:	176 ft msl	Runway Surface Condition:	Dry;Rough
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	44.836666,-123.200836(est)

Administrative Information

Investigator In Charge (IIC):	Dunks, Kristi
Additional Participating Persons:	Joe Mollahan; Federal Aviation Administration; Hillsboro, OR
Original Publish Date:	November 28, 2016
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=92302

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