



National Transportation Safety Board Aviation Accident Factual Report

Location:	Spanaway, WA	Accident Number:	WPR17LA087
Date & Time:	04/13/2017, 0940 PDT	Registration:	N5131H
Aircraft:	TITAN TORNADO I	Aircraft Damage:	Substantial
Defining Event:	Flight control sys malf/fail	Injuries:	1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

On April 13, 2017, about 0940 Pacific daylight time, an experimental Titan Tornado I airplane, N5131H, collided with terrain shortly after takeoff from Spanaway Airport, Spanaway, Washington. The commercial pilot was seriously injured. The airplane sustained substantial damage. The airplane was registered to and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight. Visual meteorological conditions prevailed and no flight plan was filed for the flight which was originating at the time and was destined for Auburn, Washington.

Witnesses stated that they observed the airplane climb out and turn. The ballistic recovery parachute (BRS) was activated while the airplane was at a low altitude. The accident site was located about 450 ft from the runway.

The pilot stated that the purpose of his flight was to commute to his place of employment in Auburn. A normal preflight check was completed and the flight departed from runway 16. As the airplane climbed about 200 ft above ground level (agl), the pilot could not maintain level flight and he had to apply full right aileron and right rudder. The airplane rolled left and he simultaneously reduced the engine power and applied forward elevator in an attempt to arrest the roll. Despite his attempts, the airplane continued to roll left with the nose about 180° from the runway heading. Unable to regain directional control, the pilot decided to deploy the BRS. With an airspeed of about 80 mile per hour (MPH) and a level nose-pitch, the pilot pulled the activation handle.

The pilot reported that after deploying the BRS, the left roll reduced to less than 5° of bank and he realized that he would not be able to return back to the runway. He concentrated his efforts on avoiding the trees and executed a forced landing in a field adjacent to the runway. He attempted to configure the airplane in a landing flare prior to touchdown by applying aft elevator. The airplane did not respond and touched down hard on the main landing gear, followed by the nose gear collapsing. As a result of the impact, the pilot's legs were injured and he was unable to egress under his own power. The engine continued to run and the BRS drifted

into the propeller. The damage to the instrument panel made him unable to shut down the engine and it continued to operate until the BRS suspension lines stopped the propeller.

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	32, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane; Helicopter	Second Pilot Present:	No
Instructor Rating(s):	Airplane Single-engine; Helicopter; Instrument Airplane; Instrument Helicopter	Toxicology Performed:	No
Medical Certification:	Class 2 Without Waivers/Limitations	Last FAA Medical Exam:	03/27/2017
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	04/04/2017
Flight Time:	1409 hours (Total, all aircraft), 24 hours (Total, this make and model), 1224 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	TITAN	Registration:	N5131H
Model/Series:	TORNADO I NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:	2006	Amateur Built:	No
Airworthiness Certificate:	Experimental	Serial Number:	T95XXXCOHK0177
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	12/15/2016, Condition	Certified Max Gross Wt.:	850 lbs
Time Since Last Inspection:	24 Hours	Engines:	1 Reciprocating
Airframe Total Time:	224 Hours at time of accident	Engine Manufacturer:	Rotax 501
ELT:	Not installed	Engine Model/Series:	
Registered Owner:	On file	Rated Power:	52 hp
Operator:	On file	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KTCM, 323 ft msl	Distance from Accident Site:	4 Nautical Miles
Observation Time:	1658 UTC	Direction from Accident Site:	331°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	Overcast / 7000 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	190°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.77 inches Hg	Temperature/Dew Point:	10° C / 8° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Spanaway, WA (S44)	Type of Flight Plan Filed:	None
Destination:	Auburn, WA (S50)	Type of Clearance:	None
Departure Time:	0935 PDT	Type of Airspace:	

Airport Information

Airport:	SPANAWAY (S44)	Runway Surface Type:	N/A
Airport Elevation:	385 ft	Runway Surface Condition:	Vegetation
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced Landing

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:	47.081667, -122.428333 (est)

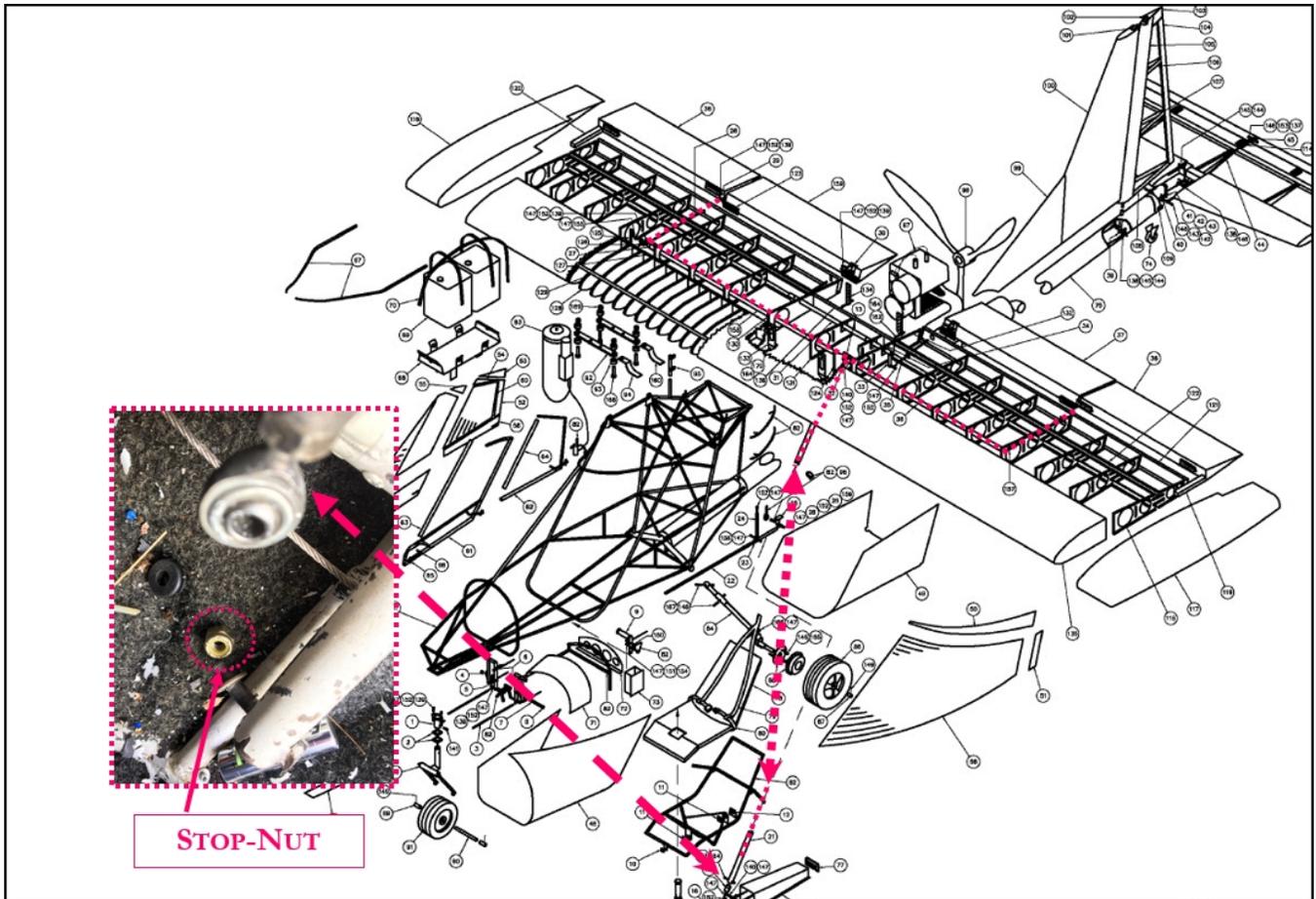
The accident site was located on flat terrain about 435 ft east of the south end of the Spanaway Airport. The major sections of the airplane were all located within the immediate vicinity of the wreckage. The BRS, model number T2 300 (serial number T2B03690), was deployed with the parachute fabric draped on the terrain adjacent to the left wing. The fuel cap remained affixed to the intact fuel cell; the outside reference gauge indicated there was about 7.5-9 gallons of fuel on board.

The airplane was configured in a pusher-type style, with the engine mounted above and aft of the cockpit. The propeller remained attached to the engine with all three blades intact. Approximately 3-4 ft of the BRS suspension lines were tightly wrapped around the propeller prohibiting crankshaft rotation. The activation handle inside the cockpit appeared to be in the "deployed position." There was a placard in the cockpit that read "Aircraft engine must be shut off prior to deploying parachute. Failure to do so may result in death or serious injury." The canopy, suspension lines, and slider remained intact and no damage was noted.

Flight Controls

During the post-accident examination, control continuity for the rudder and elevator systems was established. An examination of the aileron system revealed that there was control continuity from the aileron control surfaces to the control tube in the cockpit. The upper attach point of the control tube (near wings) remained intact and the lower end (in cockpit) was found disconnected from the control mixer weldment. The stop-nut that normally is affixed to the bolt connecting the aileron control tube to the control yoke tube was found on the cabin floor about 5 inches from the ball joint (see picture 1). The bolt end had a hole for a cotter pin, but no cotter pin was located. There were no markings on the nylon insert of the stop nut consistent with it not being adequately tightened during the last maintenance.

The pilot reported that at the last condition inspection on 12/15/2016, the airframe and powerplant mechanic had adjusted the aileron control mixer. The airplane accumulated about 24 flight hours since the inspection.



Picture 1: Aileron System

Administrative Information

Investigator In Charge (IIC):	Zoe Keliher
Additional Participating Persons:	Chris Melchior; Federal Aviation Administration; Renton, WA
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=95012