



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Otto, NM	<b>Accident Number:</b>	DCA15CA117
<b>Date &amp; Time:</b>	05/01/2015, 1107 MDT	<b>Registration:</b>	N950TA
<b>Aircraft:</b>	TITAN AEROSPACE HOLDINGS INC SOLARA 50	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>	Aircraft structural failure	<b>Injuries:</b>	N/A
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Flight Test		

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## Analysis

On May 1, 2015 at 11:07 Mountain Daylight Time (MDT), a Titan Solara 50 solar-powered unmanned experimental aircraft registration N950TA crashed shortly after takeoff, near Otto, New Mexico. The aircraft was operated as a scaled, proof of concept test flight. The aircraft was destroyed, there were no injuries.

According to the operator, at 11:02:43 the aircraft began a controlled winch tow and rolled on the ground until liftoff. After the tow release at approximately 30 ft above ground level (AGL), the pilot transitioned to flying the aircraft via instruments and the aircraft was powered up to full throttle for a straight ahead climb. The pilot immediately recognized that the instruments were exhibiting complicating latency and focused on flying the aircraft to a safe altitude and position where the external pilot (copilot) could take control and visually land the aircraft.

The pilot initiated a left hand turn when the aircraft reached approximately 160 feet AGL, which continued until the aircraft reached approximately 385 feet AGL. During this time the pilot made two power reductions, attempting to stabilize the aircraft at an altitude and heading acceptable for handover to the copilot to conduct an external visual landing. Handover of controls to the copilot was not attempted during the flight.

The operator indicated that the aircraft then encountered significant thermal air mass activity and began to both climb and exceed its design airspeed for an extended period of time. Visible deformation of the wing structure was witnessed by ground personnel during the overspeed condition. It achieved a maximum altitude of approximately 520 feet AGL just prior to structural failure of the left outboard wing. These thermal events were not immediately evident to the pilot due to latency of the aircraft instruments. It is believed the subsequent wing deformation caused the aircraft to begin an uncontrollable right hand turn that the pilot was unable to arrest.

Coincident with the significant wing deformation, the aircraft began an uncontrollable and erratic flight path roughly straight ahead in a rapid descent. The left outboard wing section separated from the aircraft during the first portion of the descent and the right outboard wing

section separated later in the descent. The aircraft impacted the ground at 11:06:59 with the majority of the structure intact and in a nose down attitude. There were no meteorological indicators that clearly showed evidence of significant pre-launch thermal activity in the test flight area.

The aircraft was destroyed when it struck the ground in a rural unpopulated area. Local terrain surrounding the takeoff area, intended landing area (same as takeoff location), and accident site consisted of flat desert grassland.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: structural failure of the left wing due to an overspeed condition.

### Findings

Aircraft	Spar (on wing) - Failure (Cause)
Environmental issues	Turbulence - Ability to respond/compensate (Factor)

## Factual Information

### History of Flight

Initial climb	Aircraft structural failure (Defining event)
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### Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Instructor; Commercial; Flight Engineer	<b>Age:</b>	57
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Right
<b>Other Aircraft Rating(s):</b>	Glider	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 2 Without Waivers/Limitations	<b>Last Medical Exam:</b>	08/30/2014
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	06/12/2014
<b>Flight Time:</b>	6000 hours (Total, all aircraft), 1 hours (Total, this make and model), 2400 hours (Pilot In Command, all aircraft), 13 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

### Co-Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 With Waivers/Limitations	<b>Last Medical Exam:</b>	03/03/2015
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	03/31/2014
<b>Flight Time:</b>	296 hours (Total, all aircraft), 1 hours (Total, this make and model), 250 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft)		

## Aircraft and Owner/Operator Information

Aircraft Manufacturer:	TITAN AEROSPACE HOLDINGS INC	Registration:	N950TA
Model/Series:	SOLARA 50 NO SERIES	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Experimental	Serial Number:	0001
Landing Gear Type:	Other Launch/Recovery System	Seats:	0
Date/Type of Last Inspection:	04/27/2015, Conditional	Certified Max Gross Wt.:	350 lbs
Time Since Last Inspection:	0 Hours	Engines:	1 Electric
Airframe Total Time:	0.1 Hours	Engine Manufacturer:	Ramazani & Assoc.
ELT:	Not installed	Engine Model/Series:	M19
Registered Owner:	TITAN AEROSPACE HOLDINGS INC	Rated Power:	
Operator:	TITAN AEROSPACE HOLDINGS INC	Air Carrier Operating Certificate:	Certificate of Authorization or Waiver (COA)

## Meteorological Information and Flight Plan

Observation Facility, Elevation:	OE0, 6000 ft msl	Observation Time:	1100 MDT
Distance from Accident Site:	1 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	310°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Few	Temperature/Dew Point:	22° C / -3° C
Lowest Ceiling:		Visibility	10 Miles
Wind Speed/Gusts, Direction:	Light and Variable, Variable	Visibility (RVR):	
Altimeter Setting:	30.18 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:			
Departure Point:	Otto, NM (NA)	Type of Flight Plan Filed:	VFR
Destination:	Otto, NM (NA)	Type of Clearance:	None
Departure Time:	1102 MDT	Type of Airspace:	Class G

## Airport Information

Airport:	Private Aerodrome (NA)	Runway Surface Type:	Dirt
Airport Elevation:	6200 ft	Runway Surface Condition:	Dry
Runway Used:	N/A	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	None

## Wreckage and Impact Information

Crew Injuries:	N/A	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	N/A		

## Administrative Information

**Investigator In Charge (IIC):** William R English **Adopted Date:** 11/19/2015

**Additional Participating Persons:**

**Publish Date:** 11/19/2015

**Note:** This accident report documents the factual circumstances of this accident as described to the NTSB.

**Investigation Docket:** <http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=91125>

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