



National Transportation Safety Board Aviation Accident Final Report

Location:	Aguila, AZ	Accident Number:	WPR14FA181
Date & Time:	05/03/2014, 1210 MST	Registration:	N22DA
Aircraft:	AERO TEK INC. ZUNI	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The glider was being towed, and just after takeoff, at 100 ft above ground level, the glider separated prematurely from the tow cable. Shortly thereafter, the glider impacted the ground. Examination of the accident site revealed that the glider struck terrain east of the runway at a high-impact angle consistent with a loss of control. Due to the low altitude at which the separation occurred, the glider pilot had limited time and opportunity to successfully land the glider off airport.

Postaccident examination of the glider's release system revealed that it was missing a spring, which likely resulted in the cable not engaging in the detent and caused the premature release from the tow line. Further examination of the glider did not reveal any additional evidence of a mechanical malfunction that would have precluded normal operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inability to maintain control of the glider after the tow cable separated prematurely due to an incomplete engagement of the cable in the control tow release system due to a missing spring.

Findings

Aircraft	Misc hardware - Not serviced/maintained (Cause)
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Factual Information

On May 3, 2014, about 1210, mountain standard time, an experimental exhibition, racing, Aero Tex Inc., Zuni, N22DA, sustained substantial damage when it impacted terrain during initial climb out, while being towed from the Sampley's Airport (28AZ) Aguila, Arizona. The glider was registered to and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91. The commercial pilot, sole occupant of the glider, was fatally injured. Visual meteorological conditions prevailed and no flight plan was filed for the local personal flight, which was originating at the time of the accident.

The tow pilot reported that the takeoff was normal and shortly after beginning the climb, he noticed a lightening of the control forces. Subsequently, the pilot determined that the glider had separated from the tow line about 100 feet, above ground level. The pilot of the tow plane circled the airport, and located the glider's wreckage about 300 feet to the left of the runway and about 180 degrees off the runway heading. He then proceeded to land the tow plane uneventfully.

The glider was recovered to a secure storage facility for further examination.

PERSONNEL INFORMATION

The pilot, age 61, held a commercial pilot certificate with an airplane multi-engine land, airplane single-engine land, airplane single-engine sea, glider, and instrument airplane ratings. The pilot was issued a third-class airman medical certificate on August 21, 2012, with the limitation stated to must wear corrective lenses for near and distant vision. The pilot reported on his most recent medical certificate application that he had accumulated 867 total flight hours and 43 hours in the last 6 months. A review of the pilot's glider logbook revealed that he had accumulated a total of 83.7 flight hours since January 26, 2009. The total flight time logged in the accident make/model glider was 25.9 hours. The pilot was retired from the Air National Guard.

AIRCRAFT INFORMATION

The single-seat, high wing glider, serial number (S/N) 2, was manufactured in 1976, and was registered by the operator under the experimental classification – exhibition racing category. It was built with composite materials and could carry water ballast.

No historical glider maintenance records were able to be located during the investigation.

METEOROLOGICAL INFORMATION

A review of recorded data from the Buckeye Municipal Airport, Buckeye, Arizona, automated weather observation station, located about 39 miles southeast of the accident site, revealed at 1215 conditions were wind from 130 degrees at 6 knots, visibility 10 statute miles, clear sky, temperature 33 degrees Celsius, dew point -3 degrees Celsius, and an altimeter setting of 29.93 inches of mercury.

AIRPORT INFORMATION

Sampley's Airport (28AZ) is an uncontrolled airport surrounded by class G airspace. The reported field elevation is 2,208 feet. The airport is equipped with a dirt runway, runway 17/35, 3,500 feet in length and 75 feet wide.

The terrain within the immediate vicinity of the airport was composed of flat fields and brush.

WRECKAGE AND IMPACT INFORMATION

Examination of the accident site by the NTSB investigator in charge revealed that the glider impacted terrain about 310 feet east of runway 17 at an elevation of about 2,215 feet. The glider came to rest inverted and all major structure components were located throughout the 30 foot debris path. Wreckage debris of mostly broken canopy pieces and the left wing was located within about 30 feet of the main wreckage. The first identified point of contact (FIPC) was a circular area of disturbed dirt. The disturbed area measured about 2 feet in diameter and about 8 inches deep. Within the disturbed dirt, portions of the canopy bow and windshield fragments were observed. Extending from each side of the FIPC, was an area of disturbed dirt that were 180 degrees offset from each other and extended to about 25 feet in length and about 2-3 inches in width.

The fuselage came to rest on a heading of about 340 degrees magnetic approximately 6 feet from the FIPC. The wings remained attached to the main fuselage. Both wings exhibited leading edge damage for about the outer half portion. The right aileron was detached but located in the debris field. The fuselage that connected the empennage was separated in three sections and remained attached to the main fuselage only by the flight control tubes. No evidence of water ballast was observed.

The empennage was mostly intact. The vertical stabilizer, rudder and horizontal stabilizers remained attached at all their respective attach points.

The postaccident examination of the airframe revealed no evidence of mechanical malfunctions or failures that would have precluded normal operation.

MEDICAL AND PATHOLOGICAL INFORMATION

The Maricopa County, Office of Medical Examiner conducted an autopsy on the pilot on May 5, 2014. The medical examiner determined that the cause of death was "multiple blunt force injuries."

The FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma, performed toxicology tests on the pilot. According to CAMI's report, cyanide, volatiles, and drugs were tested, and had negative findings.

TESTS AND RESEARCH

Examination of the tow airplane's tow line, line connection, and release mechanism by the NTSB investigators revealed no anomalies.

The glider's tow cable release control system was sent to the NTSB Materials Laboratory, Washington, DC, for further examination. Examination of the tow cable release system by a Senior Materials Engineer revealed that no spring was observed in the cable release components that would cause the pawl to automatically engage the cable hook detent. On further examination, a recess was observed that appeared to be a retaining hole for the spring. Deposits were observed to be uniformly in line inside the interior of the spring retaining hole but exhibited no evidence of contact with a spring. Additionally, no evidence of contact with a spring was observed on the housing interior surfaces.

A detailed examination report for the glider release mechanism is contained in the Materials Laboratory factual report located in the public docket.

Further examination of the recovered glider revealed no additional anomalies that would

preclude normal operation.

Several personal electronic devices were located in the wreckage and sent to the NTSB Vehicle Recorder Division for examination and readout. The devices did not contain any specific information relevant to the accident flight.

ADDITIONAL INFORMATION

The FAA Glider Flying Handbook (FAA-H-8083-13) states the following with regard to a launch with a tow failure, without adequate runway to land below and below returning altitude.

"If an inadvertent release, towline break, or a signal to release from the towplane occurs at a point at which the glider has insufficient runway directly ahead and has insufficient altitude (200 feet above ground level AGL) to make a safe turn, the best course of action is to land the glider ahead."

Additionally, the handbook discusses towing failures.

"Premature terminations of the tow have been a leading cause of glider accidents and incidents according to the Soaring Safety Foundation,...Prevention is achieved with the proper use checklists and proper prelaunch discipline. ... While the best course of action depends on many variables, such as runway length, airport environment, density altitude, and wind, all tow failures or emergency release have one thing in common: the need to maintain control of the glider. Two possibilities are stalling the glider or dragging a wingtip on the ground during a low altitude turn."

History of Flight

Initial climb	Glider tow event Loss of control in flight (Defining event) Aerodynamic stall/spin
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Pilot Information

Certificate:	Commercial	Age:	61, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land; Single-engine Sea	Seat Occupied:	Front
Other Aircraft Rating(s):	Glider	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last Medical Exam:	08/21/2012
Occupational Pilot:	No	Last Flight Review or Equivalent:	04/17/2013
Flight Time:	(Estimated) 867 hours (Total, all aircraft), 25.9 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	AERO TEK INC.	Registration:	N22DA
Model/Series:	ZUNI NO SERIES	Aircraft Category:	Glider
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Experimental	Serial Number:	2
Landing Gear Type:	Retractable - Tandem	Seats:	1
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	
Airframe Total Time:		Engine Manufacturer:	NONE
ELT:	Not installed	Engine Model/Series:	NONE
Registered Owner:	On file	Rated Power:	0 hp
Operator:	On file	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KXK, 1033 ft msl	Observation Time:	1215 MST
Distance from Accident Site:	39 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	141°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	33°C / -3°C
Lowest Ceiling:	None	Visibility	10 Miles
Wind Speed/Gusts, Direction:	6 knots, 130°	Visibility (RVR):	
Altimeter Setting:	29.93 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Aguila, AZ (28AZ)	Type of Flight Plan Filed:	None
Destination:	Aguila, AZ (28AZ)	Type of Clearance:	None
Departure Time:	1209 MST	Type of Airspace:	Class G

Airport Information

Airport:	SAMPLEY'S (28AZ)	Runway Surface Type:	Dirt
Airport Elevation:	2208 ft	Runway Surface Condition:	Dry
Runway Used:	17	IFR Approach:	None
Runway Length/Width:	3500 ft / 75 ft	VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	Albert P Nixon	Adopted Date:	07/12/2016
Additional Participating Persons:	Gary Hendrickson; Federal Aviation Administration; Scottsdale, AZ		
Publish Date:	07/12/2016		
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=89157		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.