



National Transportation Safety Board Aviation Accident Final Report

Location:	Chesnee, SC	Accident Number:	ERA15LA219
Date & Time:	03/09/2015, 1807 EDT	Registration:	Unreg
Aircraft:	RAINBOW AIRCRAFT (PTY) LTD AEROTRIKE	Aircraft Damage:	Substantial
Defining Event:	Loss of control in flight	Injuries:	1 Fatal, 1 Minor
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot and passenger were conducting a local demonstration flight in the weight-shift-control trike. The pilot was seated in the rear seat and was controlling the wing by hand from cables attached to the control bar, and the passenger was seated in the front seat and had his hands on the control bar. The passenger reported that, during takeoff and when the trike was about 100 ft above ground level, it veered right, which the pilot corrected. The trike then suddenly banked right toward a tree line about 50 yards away. At that time, the passenger released the control bar. The pilot attempted to correct, but while in a climb attitude with the engine running, the bottom of the trike contacted a treetop. The trike descended but remained suspended in the tree. The pilot told the passenger that he did not believe the tree would support them, and he subsequently attempted to jump to a nearby limb but fell, which resulted in his sustaining fatal injuries. The passenger remained in the trike and was rescued 2 hours later. According to the passenger, he and the pilot had only sustained cuts and scratches as a result of the collision with the tree.

Postaccident examination of the trike revealed no evidence of a flight control or engine malfunction; the engine was started with no discrepancies noted. Further, the passenger did not detect any engine issues during the flight. He reported that he believed that the right veer was consistent with a wing stall. Although the trike was not equipped with a control bar for the rear seat, the passenger indicated that the pilot moved the control bar in the correct direction with the cables; therefore, it is unlikely that the lack of a control bar at the rear-seat position contributed to the failure of the pilot to maintain lateral or bank control.

Probable Cause and Findings

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

The pilot's failure to maintain lateral or bank control during takeoff, which resulted in collision with, and subsequent suspension from, a tree. Contributing to the pilot's fatal injuries was his attempt to jump out of the trike to a nearby tree limb.

Findings

Aircraft	Lateral/bank control - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause) Understanding/comprehension - Pilot

Factual Information

History of Flight

Initial climb	Loss of control in flight (Defining event) Collision with terr/obj (non-CFIT)
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On March 9, 2015, about 1807 eastern daylight time, an unregistered Rainbow Aircraft (Pty) Ltd., Aerotrike weight-shift aircraft, veered right after takeoff from a private airstrip and collided with a tree, near Chesnee, South Carolina. The private pilot was fatally injured and the passenger sustained minor injuries. The weight-shift aircraft, owned and operated by a private individual under the provisions of 14 Code of Federal Regulations (CFR) Part 91 personal, local flight, was substantially damaged. Visual meteorological conditions prevailed at the time and no flight plan was filed. The flight was originating at the time of the occurrence.

The National Transportation Safety Board (NTSB) was initially notified of the accident when it occurred but the aircraft was reported to be an ultralight aircraft; therefore, an investigation was not initiated. The NTSB was subsequently informed on May 21, 2015, that the aircraft did not meet the eligibility requirements of an ultralight aircraft specified in 14 CFR Part 103, and an investigation was initiated.

The passenger stated that he had purchased the weight-shift aircraft from the owner/pilot-in-command (PIC) whom he has known for about 20 years but had not completed paperwork for the transaction. He indicated that the PIC flew the aircraft to the airstrip landing there about the same time as he arrived, which was about 1745. After landing, the engine was secured and the PIC immediately told him to get in. When he got into the aircraft the PIC told him "don't resist what I do"; indicating he was just feeling the motion of the controls. The PIC told him the engine was running good and the aircraft was flying good. He (passenger) sat in the front seat with direct access to the control bar, and the PIC was in the rear seat controlling the wing by hand from the cables attached to the control bar.

The passenger further reported that prior to takeoff, an engine run-up was performed, which included checking the magnetos reporting everything was OK. The flight departed from the airstrip on the first takeoff to the southwest and the flight proceeded over a field north of the airstrip. The flight returned and a full-stop landing was performed to the northeast oriented runway. The PIC taxied to the end of the runway near the buildings, turned around, and again departed to the southwest, but performed a left traffic pattern and landed to the southwest performing a full-stop landing. The PIC taxied to the end of the runway, turned around, and began the third takeoff to the northeast. When the flight was about 100 feet above ground level (agl), or about the height of tree tops, with a small breeze, he reported the aircraft went to the right a little bit which the PIC corrected. The aircraft then suddenly/very quickly went to the right flying towards a tree line about 50 yards away. At that time he opened his palm and the PIC moved the control to the right, in order to correct to the left, but while in a climb attitude with the engine running, the bottom of the aircraft contacted the top of a tree. The aircraft leveled off and then descended 10 feet into the tree before being wedged into the tree, coming

to rest about 50 to 60 feet agl. He (passenger) felt a solid thud when the aircraft stopped and thought the aircraft was secure, but the PIC told him to get out of the aircraft as he did not feel the tree would support the weight of the aircraft and occupants, saying "it will never hold by that." The passenger reported the PIC jumped from the aircraft to a nearby limb above the aircraft, catching it by his left arm, but slipped and fell to the ground. He yelled to him but there was no answer. He also yelled for help, and reported numerous cars drove past the airstrip. Although the leaves were off the trees, the PIC remained on the ground for about 20 minutes before someone saw them and stopped.

The passenger waited in the aircraft for about 2 hours before being rescued. He indicated that there was 1 limb beneath the limb that the PIC jumped for, and that limb was about the diameter of a person's wrist. At the time of the accident it was still daylight, with about 45 minutes to 1 hour before sunset occurred. He indicated that with respect to the right veer, at that time the PIC did not say anything and he did not recall the airspeed. He also indicated he did not perceive of an engine issue at any time during the flight. With respect to the right veer, he believed the wing stalled.

Pilot Information

Certificate:	Private; Sport Pilot	Age:	50, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Rear
Other Aircraft Rating(s):	None	Restraint Used:	Unknown
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without Waivers/Limitations	Last FAA Medical Exam:	03/29/1996
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	150 hours (Total, all aircraft)		

The PIC seated in the rear seat, age 50, held a private pilot certificate with airplane single engine land rating issued November 11, 1990, and an endorsement for sport pilot with weight-shift control land issued November 17, 2006. His last third class medical certificate with no limitations was issued March 29, 1996; it expired on March 31, 1998. On the application for the last medical certificate he listed a total time of 150 hours.

The front seat occupant, age 44, was issued a student pilot certificate on July 3, 2014. On the application for the last medical he listed a total time of 73 hours. Two prior examinations were performed in November 2011 and April 2005. He indicated verbally having flown a Cessna 152, accruing between 50 and 55 hours between 2005, and 2011 or 2012.

Aircraft and Owner/Operator Information

Aircraft Make:	RAINBOW AIRCRAFT (PTY) LTD	Registration:	Unreg
Model/Series:	AEROTRIKE	Aircraft Category:	Weight-Shift
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:		Serial Number:	
Landing Gear Type:	Tricycle	Seats:	2
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	
Time Since Last Inspection:		Engines:	Reciprocating
Airframe Total Time:	271 Hours at time of accident	Engine Manufacturer:	Rotax
ELT:	Not installed	Engine Model/Series:	503
Registered Owner:	EASLER, KELLY LEE	Rated Power:	
Operator:	EASLER, KELLY LEE	Operating Certificate(s) Held:	None

The two-seat weight-shift aircraft manufactured by Rainbow Aircraft (Pty), Ltd., was marked in part with "Aerotrike", and, "To be used for instruction only"; no serial number was evident. It was equipped with a Rotax 503 engine, and a 10 gallon fuel tank. The flight and engine instruments consisted of a tachometer, altimeter, airspeed indicator, exhaust gas temperature, 2 cylinder head temperature gauges, and a digital tachometer and hour meter which indicated 0271. It was not equipped with a GPS receiver or engine monitor. The aircraft was equipped with a single control bar for the front seat, with no provision for a control bar at the rear seat.

According to the passenger who purchased it, no maintenance records were available.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Dusk
Observation Facility, Elevation:	SPA, 801 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	1815 EDT	Direction from Accident Site:	201°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots /	Turbulence Type Forecast/Actual:	/ Unknown
Wind Direction:	190°	Turbulence Severity Forecast/Actual:	/ Unknown
Altimeter Setting:	30.201 inches Hg	Temperature/Dew Point:	19° C / 2° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Chesnee, SC (None)	Type of Flight Plan Filed:	None
Destination:	Chesnee, SC (None)	Type of Clearance:	None
Departure Time:	1807 EDT	Type of Airspace:	

A surface observation weather report taken at Spartanburg Downtown Memorial Airport (SPA), Spartanburg, South Carolina, at 1815, or approximately 8 minutes after the accident indicates the wind was from 190 degrees at 5 knots, the visibility was 10 statute miles, and clear skies existed. The temperature and dewpoint were 19 and 2 degrees Celsius, respectively, and the altimeter setting was 30.20 inches of Mercury. The accident site was located about 021 degrees and 10 nautical miles from SPA.

Airport Information

Airport:	Private (None)	Runway Surface Type:	Dirt; Grass/turf
Airport Elevation:	0 ft	Runway Surface Condition:	Unknown
Runway Used:	25	IFR Approach:	None
Runway Length/Width:	1875 ft / 68 ft	VFR Approach/Landing:	None

The private airstrip consisted of a single grass/dirt runway oriented on a magnetic heading of 066/246 degrees. The runway is about 1,875 feet long.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal, 1 Minor	Latitude, Longitude:	35.062778, -81.891667 (est)

As determined by the passenger using Google Earth, the accident site was located at 35 degrees 03 minutes 50.84 seconds North latitude and 081 degrees 53 minutes 11.29 seconds West longitude. That location when plotted was located about 086 degrees and 817 feet from the approach end of the east-northeast oriented runway.

Before NTSB initiated an investigation, the wreckage was removed from the tree and recovered to the passenger's address where the passenger reported the engine was subsequently run with no issues noted. The wreckage was later examined by several FAA inspectors.

According to the FAA inspectors that examined the wreckage, no identifying markings were noted on it except the engine data plate and, "For flight instruction only" which was installed on the right gear support frame. The wing, which had been removed and was in a zipper bag was removed for examination. The wing/canopy was intact except for tears on both sides and a tear at the right leading edge. Two of those tears are the same on both sides and appear to have come from a support cable that was attached to rear portion of the wing/canopy. After landing in the tree the wing forward support tube failed from the weight of pilots and trike, which allowed the wing/canopy to fall back toward the engine. A small 1/16 inch cable attached to the rear on both sides of the wing/canopy became tangled in the propeller and the rotation of this cable tore the wing/canopy and finally broke the cable. This cable was still attached at the point of these tears. One propeller blade exhibited leading edge damage that is consistent with the cable wrapping around the blade. The other tear was on the right wing/canopy at the leading edge. The main spar tube was broken at this tear consistent with tree contact. All other control cables were intact.

The trike portion of the aircraft had damage to the left gear support tube and the main vertical tube (wing attach), which exhibited rearward bending damage. The fuel level was just below the 5 gallon mark. The Rotax 503 engine was started and ran to produce sufficient power for flight. A copy of the FAA inspector statements are contained in the NTSB public docket.

Medical And Pathological Information

A postmortem examination of the pilot was not performed, only an external examination was performed. According to the Investigative Report, the cause of death was listed as, "Internal injuries secondary to fall from tree."

Forensic toxicology was performed on specimens of the pilot by NMS Labs, located in Willow Grove, PA. The results were negative in the femoral blood specimen for barbiturates, cannabinoids, salicylates, acetone, ethanol, isopropanol, and methanol. A copy of the toxicology report is contained in the NTSB public docket.

Survival Aspects

According to the passenger, as a result of the collision with the tree the pilot sustained only cuts and scratches and was talking after coming to rest. The passenger stated that he felt the aircraft was secure in the tree, but the pilot advised him to get out of the aircraft as he did not feel the tree would support the weight of the aircraft and them. The passenger was subsequently rescued from the aircraft that remained suspended in the tree, and sustained minor injuries (scratches) as a result of the collision.

Administrative Information

Investigator In Charge (IIC):	Timothy W Monville	Report Date:	04/26/2016
Additional Participating Persons:	Marshall Bogan; FAA/FSDO; West Columbia, SC		
Publish Date:	06/27/2017		
Note:	The NTSB did not travel to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=91218		

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. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).