



Aviation Investigation Final Report

Location:	Foley, Alabama	Accident Number:	ERA18FA208
Date & Time:	August 4, 2018, 10:00 Local	Registration:	N424A
Aircraft:	Champion 8GCBC	Aircraft Damage:	Destroyed
Defining Event:	Aerodynamic stall/spin	Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Banner tow		

Analysis

The commercial pilot was conducting a banner-tow flight with a pilot-rated passenger. A witness (a ground crewmember) stated that, after takeoff, the approach and pickup of the banner appeared normal and that the engine sounded strong. According to the ground crewmember, the pilot successfully hooked the banner with the airplane tow cable and initiated a steep climbout with the banner in tow. The trailing edge of the banner had just come off the ground when the airplane reached an altitude of about 300 ft above ground level. At that point, the right wing dropped. The pilot attempted to maintain directional control by releasing the banner and applying left rudder; however, the airplane entered a right descending spin to the ground. Postaccident examination revealed no malfunctions that would have precluded normal operation of the airplane or engine.

It is likely that after the banner pickup and during initial climb, while the airplane had a high power setting, high pitch angle, and low airspeed, the airplane exceeded the critical angle of attack and entered an aerodynamic stall and spin from which recovery was not possible due to the airplane's altitude at the time. Even though the weight and balance were within limits for the accident flight, it is possible the presence of the back seat passenger reduced the airplane's performance, and that the pilot did not account for the effect of the back seat passenger on the performance of the airplane during the pickup maneuver.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's exceedance of the airplane's critical angle of attack, which resulted in a subsequent aerodynamic stall and spin at an altitude that was too low for recovery.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Aircraft	Angle of attack - Capability exceeded

Factual Information

History of Flight

Initial climb	Low altitude operation/event
Initial climb	Abrupt maneuver
Initial climb	Attempted remediation/recovery
Initial climb	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On August 4, 2018, about 1000 central daylight time, an American Champion 8GCBC, N424A, was destroyed when it impacted terrain at a private grass airport near Foley, Alabama. The commercial pilot and pilot-rated passenger were fatally injured. The aerial advertising banner tow flight was conducted as a Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight, which departed the private airport about 0950.

The banner-tow flight was planned to be conducted in a Cessna R-172E, which had side-by-side seating for the pilot and passenger. The pilot flew that airplane during the first banner-tow operation of the day, which began at 0820, but reported that the airplane developed a fuel pressure irregularity during the flight. As a result, after the flight ended at 0930, all subsequent banner-tow operations were switched to the American Champion 8GCBC, which did not have side-by-side seating but instead a front seat for the pilot and an aft seat for the passenger.

A ground crewmember saw the pilot fuel the airplane with 30 gallons of fuel before the accident flight for a total fuel load of about 45 gallons. The pilot completed an uneventful preflight inspection before he and passenger boarded the airplane; the pilot was seated in the front seat, and the passenger was seated in the aft seat. The pilot then performed an engine runup and radioed that everything with the airplane was "green or perfect." Shortly after takeoff, the grapple hook was deployed from the airplane, and a ground crewmember radioed the pilot and stated, "good hook," which indicated the tow line with the hook was in a normal position to pick up the advertising banner, which had been laid out.

The advertising banner, also known as an aerial billboard, measured 20 by 65 ft and had a 30-ft-long segmented letter banner that trailed the main billboard, for a total length of 95 ft. It was attached to a 300-ft rope that was to be connected to a 16-ft tow rope attached to the airplane. The ground crewmember stated that the approach to the banner appeared normal and that the engine sounded "strong" during the banner pickup. After capturing the banner, the pilot rotated the airplane into a steep climb. The trailing edge of the banner had just become airborne when the airplane reached its maximum altitude of about 300 ft above ground level. The witness then saw airplane's right wing "stall out" before the pilot released the banner from the airplane. The airplane's rudder deflected to the left as the airplane entered a right spin that developed into a flat spin as the airplane descended. The airplane rotated clockwise for five full rotations before it impacted terrain. A postcrash fire ensued.

Pilot Information

Certificate:	Commercial	Age:	40, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	May 15, 2018
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	April 6, 2017
Flight Time:	2617 hours (Total, all aircraft)		

Pilot-rated passenger Information

Certificate:	Private	Age:	34, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Rear
Other Aircraft Rating(s):	None	Restraint Used:	4-point
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without waivers/limitations	Last FAA Medical Exam:	October 23, 2014
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	(Estimated) 240 hours (Total, all aircraft)		

According to Federal Aviation Administration (FAA) airmen records, the pilot held a commercial pilot certificate with a rating for airplane single-engine land. His most recent FAA second-class medical certificate was issued on May 15, 2018; at that time, he reported 2,617 hours of total flight experience. His last flight review was conducted on April 6, 2017.

The passenger held a private pilot certificate with a rating for airplane single-engine land. His most recent FAA third-class medical certificate was issued on October 23, 2014; at that time, he reported 240 hours of total flight experience. According to the witness, the passenger was "riding along" to observe the banner-tow operation and was interested in getting his commercial certificate.

At the time of their medical examinations, the pilot weighed 178 pounds, and the passenger weighed 230 pounds.

Aircraft and Owner/Operator Information

Aircraft Make:	Champion	Registration:	N424A
Model/Series:	8GCBC No Series	Aircraft Category:	Airplane
Year of Manufacture:	2012	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	553-2012
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	July 27, 2018 100 hour	Certified Max Gross Wt.:	2150 lbs
Time Since Last Inspection:	100 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	3785 Hrs as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Not installed	Engine Model/Series:	O-360-C1G
Registered Owner:		Rated Power:	180 Horsepower
Operator:		Operating Certificate(s) Held:	None

According to FAA records, the airplane was issued a standard airworthiness certificate in the normal category on August 27, 2012. The airplane was a tandem two-place, externally braced high-wing airplane that was equipped with fixed tricycle landing gear and a Lycoming O-360, 180-horsepower engine driving a two-blade constant-speed propeller manufactured by MT Propellers. The most recent inspection on the airplane occurred on July 27, 2018, at which time the airframe had accumulated 3,785 hours total time and the engine had accumulated 1,738 hours total time since overhaul.

Following the accident, the weight and balance figures provided in the airplane flight manual were used to calculate weight and balance information. The maximum gross weight of the airplane was 2,150 pounds. According to the weight and balance calculations, the airplane weighed 2,064 pounds at takeoff, which was under the maximum gross weight by 86 pounds, and the loading was within the weight and balance envelope. The weight and performance effect of the banner was not computed.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	JKA,17 ft msl	Distance from Accident Site:	6 Nautical Miles
Observation Time:	09:55 Local	Direction from Accident Site:	155°
Lowest Cloud Condition:	Scattered / 2400 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	/	Turbulence Type Forecast/Actual:	None / None
Wind Direction:		Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.14 inches Hg	Temperature/Dew Point:	29°C / 24°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Foley, AL (PVT)	Type of Flight Plan Filed:	None
Destination:	Foley, AL (PVT)	Type of Clearance:	None
Departure Time:	09:50 Local	Type of Airspace:	Class G

At 0955, the weather reported at Jack Edwards National Airport , Gulf Shores, Alabama, located about 6 nautical miles south of the accident site, indicated calm wind, visibility 10 statute miles, scattered clouds at 2,400 ft, temperature 29°C, dew point 24°C, and altimeter setting 30.15 inches of mercury.

Airport Information

Airport:	Irwin Farms PVT	Runway Surface Type:	Grass/turf
Airport Elevation:	58 ft msl	Runway Surface Condition:	Dry
Runway Used:	18	IFR Approach:	None
Runway Length/Width:	1200 ft / 50 ft	VFR Approach/Landing:	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:		Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	30.374166,-87.726387

The airplane impacted a field about 200 ft west of the departure runway, and the wreckage was oriented on a magnetic heading of 243°. The airplane struck the ground in a flat, upright attitude and was consumed by a postcrash fire. The wreckage area was compact, and all airframe, control surfaces, and engine components were located at the scene. The propeller was shattered about 6 inches from the hub, and several pieces of the propeller were found about 50 ft away from the wreckage in two opposing directions perpendicular to the wreckage. The tailwheel was undamaged and was pointed toward the left, and there was a slight ground indentation indicating that the tailwheel had rolled from right to left.

The airframe exhibited significant impact and thermal damage. There was a strong smell of fuel at the site, and a large area of grass surrounding the wreckage was burned. The right and left wings remained attached to the fuselage via control cables. The center spar and struts were deformed and melted near the fuselage attach points. The landing gear was flattened on each side of the fuselage. The cockpit and all instrumentation, switches, and gauges were destroyed by impact forces and thermal damage.

The vertical stabilizer, rudder, horizontal stabilator, and trim tab control surfaces remained attached. Rudder control continuity was confirmed from the rudder to the rudder pedals. Elevator control cable continuity was established through cuts made to facilitate the wreckage recovery from the control stick to the elevator control surface. Aileron control continuity was confirmed from the right aileron to the control stick. Continuity of the left aileron control cables was traced from the left aileron to the fuselage and exhibited breaks consistent with cuts made by emergency rescue personnel.

The left and right wing fuel tanks were ruptured and thermally damaged. The flap actuator was damaged by impact forces, and the flaps were consumed by fire. The flap handle in the cockpit was destroyed, and the flap setting could not be determined.

The engine remained largely intact with significant thermal damage on the aft section of the engine near the firewall. The spark plugs remained secured to their respective cylinders. The spark plugs were removed and examined. They appeared to have minimal wear based on the Champion Check-A-Plug chart and did not display evidence of carbon or lead fouling. Engine thumb compression and suction on all cylinders were confirmed with the top spark plugs removed through 720° of rotation through the propeller hub. All valves, pushrods, and springs operated normally, the rotation was smooth, and no noticeable abnormal noise or friction was noted. The pistons appeared well lubricated, and no interior engine damage was observed. The left and right magnetos were internally damaged by thermal forces. The oil pump remained intact, was well lubricated, and functioned normally. The carburetor and gascolator were damaged by impact forces. The engine and airframe examination revealed no preimpact mechanical anomalies that would have precluded normal operation.

The advertising banner was found on the runway near the banner pickup area, about 700 ft from the wreckage. The airplane tow rope clasp was in the open (disengaged) position.

Medical and Pathological Information

The Alabama Department of Forensic Sciences, Mobile, Alabama, performed an autopsy on the pilot. His cause of death was blunt force injuries. Toxicological testing performed by the FAA Forensic Sciences Laboratory was negative for carbon monoxide, ethanol, and all tested drugs.

Administrative Information

Investigator In Charge (IIC):	Mccarter, Lawrence
Additional Participating Persons:	Nina McBride; FAA FSDO; Birmingham, AL
Original Publish Date:	April 20, 2020
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=97987

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](#).