



Aviation Investigation Final Report

Location:	Jacksonville, Florida	Accident Number:	ERA12FA130
Date & Time:	December 31, 2011, 11:11 Local	Registration:	N7408Z
Aircraft:	Piper PA-25-235	Aircraft Damage:	Substantial
Defining Event:	Aerodynamic stall/spin	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Banner tow		

Analysis

The flight was climbing out after picking up a banner. A security camera video showed the airplane climbing with the banner trailing behind before it disappeared from the camera’s view. Shortly after, witnesses observed the banner free falling to the ground and the airplane in a right spin before it impacted a parking lot in a nose-down attitude. Postaccident examination revealed no malfunctions or abnormalities that would have precluded normal operation of the airplane. The levels of Tetrahydrocannabinol (THC, also known as marijuana) and the Tetrahydrocannabinol Carboxylic Acid (THC metabolite) detected in the pilot’s blood during toxicological testing indicated that he had recently used THC. Although the investigation could not determine precisely when the pilot had last used THC, the levels detected indicated that the pilot was impaired and most likely posed a hazard to flight safety. Autopsy results also identified preexisting moderate-to-severe cardiomyopathy; however, there is no indication that this heart condition contributed to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's in-flight loss of control during climb after a banner pickup. Contributing to the accident was the pilot's impairment due to marijuana.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	(general) - Not attained/maintained
Personnel issues	Illicit drug - Pilot
Personnel issues	(general) - Pilot

Factual Information

History of Flight

Initial climb	Abrupt maneuver
Initial climb	Aerodynamic stall/spin (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On December 31, 2011, about 1111 eastern standard time, a Piper PA-25-235, N7048Z, was substantially damaged when it impacted the parking lot and came to rest against a parked vehicle near Jacksonville, Florida. The airplane was operated by Flying Weaners Inc and had departed from the Craig Municipal Airport (CRG), Jacksonville, Florida for the local banner tow flight. Day visual meteorological conditions prevailed and no flight plan had been filed. The commercial pilot was fatally injured. The banner tow flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to a written statement by a company's ground operation personnel, the pilot attempted to pick up the banner, which was between two pick up poles parallel to runway 23. However, the airplane was "low" and the pilot pitched up about 10 feet prior to the banner poles. On the second attempt the pilot was able to pick up the banner and "the banner lifted off and was flying normal." According to the personnel, the climb out was "normal but started to look a little slow" at which point he observed the rudder reach approximately full deflection to the right, followed by the banner being released. Subsequently, the airplane then "snapped and started to spin to the right," about 300 feet above ground level (agl).

PERSONNEL INFORMATION

According to Federal Aviation Administration (FAA) records, operator records, and pilot records, the pilot held a commercial pilot certificate for airplane single-engine land and instrument airplane. He also had private pilot privileges for airplane multiengine land. His most recent flight time logbook entry was dated November 6, 2011, and at that time he had recorded 2,177.8 total hours of flight experience and 873.9 total hours of flight experience in the accident aircraft. Since November 11, 2011, the pilot had accrued 64.3 hours in the accident airplane. The pilot's most recent recorded flight review was conducted on March 9, 2010, and his tailwheel endorsement was completed on March 19, 2010. The pilot was given an endorsement for high performance airplanes on March 4, 2011, by the owner of the accident airplane.

According to company's Banner Tow Pilot Training Record, the pilot had completed 6.3 hours of flight training that was dated February 28, 2011. Some of the training included 0.3 hours of

"full stall recovery," 0.5 hours of "Emergency Procedures," 1.0 hours of "Solo Practice Pick-ups," 1.0 hours of "Solo practice in Stalls/slowflight/banner ops PA-25," and 1.0 hours of "C172 dual slow flight banner ops."

AIRCRAFT INFORMATION

According to FAA records, the airplane was issued an airworthiness certificate on April 22, 1964, and was registered to the owner on July 12, 2009. At the time of the accident it had accrued 6,386.40 total flight hours. It was equipped with a Lycoming O-540-B2C5 engine and the most recent overhaul was accomplished on March 21, 2003. At the time of the accident the recorded time since major overhaul (SMOH) was 1,849.4 total flight hours.

METEOROLOGICAL INFORMATION

The 1128 recorded weather observation at CRG, included wind from 240 degrees at 11 knots, visibility 10 miles, few clouds at 2,800 feet agl, temperature 22 degrees C, dew point 14 degrees C; barometric altimeter 30.17 inches of mercury.

COMMUNICATION

In a review of the transcripts provided to the NTSB there were no recorded indications of any malfunctions or abnormalities with the airplane. The last recorded transmission was received at 1107:28 and stated "two three second sod banner pick approved seven four zulu"

AIRPORT INFORMATION

The airport was equipped with two runways designated as runway 14/32 and 5/23. The turf runways were reported in good condition. Runway 14/32 was a 4,008-foot-long by 100-foot-wide runway and runway 5/23 was a 4,004-foot-long by 100-foot-wide runway. The airport was 41 feet above mean sea level and had an operating FAA Contract Air Traffic Control Tower.

WRECKAGE AND IMPACT INFORMATION

The airplane came to rest upright in a parking lot on a heading of 172 degrees. It was in a nose down position with the tail was resting on a parked car. The banner the airplane was towing was located on the airport property about 775 feet from the main wreckage. The engine remained attached to the firewall which remained attached to the main wreckage.

Examination of the wreckage indicated that all flight control surfaces remained attached to their respective attach points. The propeller was impact separated and approximately 14 inches of the outboard section of one blade was impact separated.

The fuselage remained intact and exhibited numerous impact marks along the forward underside of the fuselage as well as impact damage on the tail wheel. The sole aircraft seat

was disconnected from the floor track and exhibited signatures similar to a high "G" load force in the vertical direction as well as torsional twisting.

The fuel tank was located forward of the pilot and hopper and aft of the engine firewall. The fuel tank was breeched and devoid of fuel; however, the fuel cap remained secured and in place. Two placards were located on the top of the tank. One was an supplemental type certificate placard allowing the use of unleaded automotive fuel and the other stated "42 GAL. 39 usable" for the capacity of the tank. Inside the hopper was a bladder style fuel tank with non aviation approved hoses that were connected to a non FAA approved fuel pump that pumped fuel from the bladder tank to the airplane's fuel tank. The bladder tank had a hand written placard which indicated 21 gallons of capacity. A review of the maintenance logbooks revealed that the bladder tank was listed as a "ferry fuel tank." The bladder tank appeared to have been installed on top of a one-half inch plywood shelf and was secured in place by nylon straps. The plywood shelf was fractured in a downward motion. A fuel sample was taken from a leak between the fuel shutoff cock and the transfer pump. It was blue in color and free of debris.

The instrument panel did not exhibit impact marks and all switches were switched to the "OFF" position by first responders. The instrument also consisted of a red "STALL" indicator light located on the top center of the instrument panel. First responders observed the light on and photographed it prior to shutting off the master switch and both magneto switches. Cable continuity was confirmed from the base of the control stick to the stabilator, as well as from the bottom of the control stick to the ailerons; however, the right aileron exhibited tensile overload at the fuselage wall. The rudder pedals were impact damaged; however, continuity to the rudder was confirmed from the rudder pedal to the rudder. The left rudder cable exhibited broomstrawing similar to tensile overload. The engine power controls remained attached and were viewable; however, the mixture control was bent to the right, impeding the travel path of the throttle lever and found in the forward or "full rich" position, the throttle appeared to be in the idle position. The trim was located in the slight nose up position.

The empennage remained attached to the airframe and the vertical fin which comprised of the rudder was bent to the left at the top approximate 2 feet, was at an approximate 30 degree angle, and the stabilator remained attached to the respective attach points

The left wing remained attached but exhibited slight forward bending at the wing tip along the trailing edge of the wing. The left main landing gear was observed slightly protruding through the top of the wing surface. The wing flap and aileron remained attached.

The right wing remained attached but exhibited slight forward bending at the wing tip along the trailing edge of the wing. The right main landing gear was crushed in the positive direction. The lift detector located in the right wing was found to have impact damage. Removal of surrounding metal allowed the lift detector to operate and continuity was confirmed. The wing flap and aileron remained attached. The wing strut, which was located on the top of the wing surface, remained attached and exhibited minimal corrosion and slight torsional bending along

the lateral axis. Control continuity was established from the yoke to the aileron. The wing flap appeared to be in the up position; however, the flap handle, located on the left side of the pilot seat was found at the first notch of flaps setting. During the preparation for transport the wings were sawed off outside of the right main gear.

The engine remained attached to the engine mounts. The oil sump was impact damaged and the carburetor was crushed and impact separated. The engine case exhibited crush damage along the entire bottom of the case. The spark plugs were removed from all cylinders and exhibited normal wear and were light gray in color. Thumb compression was confirmed on all cylinders and continuity to the accessory section of the engine was confirmed utilizing the propeller flange. Rotation was smooth and no noticeable abnormal noise or friction was noted.

The 2-bladed propeller was impacted separated and located approximately 10 feet forward of the main wreckage. One blade exhibited minimal S-bending or rotational scoring. The other blade was impact fractured approximately 14 inches from the tip and was located directly beneath the engine.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on January 2, 2012, by the Office of the Medical Examiner, Jacksonville, Florida. The cause of death was reported as "blunt head trauma" and the report listed the specific injuries.

Forensic toxicology was performed on specimens from the pilot by the FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The toxicology report stated no ethanol was detected in Vitreous; however the following Tested-for-Drugs were detected:

0.2756 (ug/ml, ug/g) Tetrahydrocannabinol (Marihuana) was detected in the lung

0.0205 (ug/ml, ug/g) Tetrahydrocannabinol (Marihuana) was detected in the kidney

0.0166 (ug/ml, ug/g) Tetrahydrocannabinol (Marihuana) was detected in the blood (Intracranial Drainage) – Tetrahydrocannabinol (THC) is the psychoactive compound found in marihuana; it is a psychomimetic. Warnings – may impair mental and/or physical ability required for the performance of potentially hazardous tasks (e.g., driving, operating heavy machinery) Therapeutic Low 0.0010 ug/ml – Therapeutic High 0.0250 ug/ml.

0.9879 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in urine

0.2618 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in kidney

0.0326 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in the lung

0.0242 (ug/ml, ug/g) Tetrahydrocannabinol Carboxylic Acid (Marihuana) detected in the blood

(Intracranial Drainage) – Tetrahydrocannabinol Carboxylic Acid (THC-COOH) is a metabolite of THC the psychoactive compound found in marijuana; it is a psychomimetic.

Although autopsy results also indicated moderate-to-severe cardiomyopathy, there was no evidence that this condition was diagnosed before or contributed to this accident.

ADDITIONAL INFORMATION

According to fuel records and the employee of the fixed base operator, the airplane was fueled with 40.1 total gallons. The employee further stated that the pilot wanted the bladder tank, located in the hopper, fueled with 20 gallons of 100 LL and the main fuel tank topped off.

Security Camera Video

Security camera video footage was secured by the local authorities and it captured the airplane during the initial climb out. The airplane and the banner then climbed above the recorded camera frame. A few seconds later, the banner was observed descending to the ground as if it had been released. Approximately 5 seconds after that, the airplane was observed in a right hand spin impacting the ground in a nose down attitude and coming to rest.

Pilot Information

Certificate:	Commercial; Private	Age:	32, Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Single
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 Without waivers/limitations	Last FAA Medical Exam:	March 31, 2011
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	March 19, 2010
Flight Time:	2178 hours (Total, all aircraft), 874 hours (Total, this make and model), 1946 hours (Pilot In Command, all aircraft), 177 hours (Last 90 days, all aircraft), 31 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N7408Z
Model/Series:	PA-25-235	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	25-3374
Landing Gear Type:		Seats:	1
Date/Type of Last Inspection:	December 10, 2011 Annual	Certified Max Gross Wt.:	2900 lbs
Time Since Last Inspection:	43 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	6343 Hrs as of last inspection	Engine Manufacturer:	LYCOMING
ELT:	Not installed	Engine Model/Series:	O-540-B2C5
Registered Owner:	FLYING WEANERS INC	Rated Power:	235 Horsepower
Operator:	FLYING WEANERS INC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	CRG,41 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	11:28 Local	Direction from Accident Site:	23°
Lowest Cloud Condition:	Few / 2800 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	11 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	240°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.17 inches Hg	Temperature/Dew Point:	22°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Jacksonville, FL (CRG)	Type of Flight Plan Filed:	None
Destination:	Jacksonville, FL (CRG)	Type of Clearance:	VFR
Departure Time:	11:05 Local	Type of Airspace:	

Airport Information

Airport:	Craig Municipal Airport CRG	Runway Surface Type:	Asphalt
Airport Elevation:	41 ft msl	Runway Surface Condition:	Dry
Runway Used:	23	IFR Approach:	None
Runway Length/Width:	4004 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	30.324167,-81.521942

Administrative Information

Investigator In Charge (IIC):	Etcher, Shawn
Additional Participating Persons:	Robert Jex; FAA/FSDO; Orlando, FL
Original Publish Date:	July 18, 2013
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=82593

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).