Aviation Investigation Final Report

Location:	Helena, Georgia	**Accident Number:**	ERA10FA471
Date & Time:	September 8, 2010, 09:26 Local	**Registration:**	N804GK
Aircraft:	Cessna 182T	**Aircraft Damage:**	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

The pilot was en route to an airport that did not have a control tower or weather reporting facilities. He checked weather at surrounding airports and informed the air traffic controller that he would need to fly the global positioning system (GPS) approach. Once cleared for the approach, no subsequent communication was received from the pilot. Radar data showed that the airplane intercepted the final approach segment and descended without leveling off at the minimum descent altitude. The airplane impacted trees and terrain about 2.74 miles from the runway, on a heading and course that were aligned with the runway. Although a pilot-rated passenger survived, he had no recollection of the accident flight. Witnesses reported that it was foggy at the time of the accident. Weather at nearby airports indicated that low ceilings and visibilities were prevalent in the area, with the weather gradually improving at the time of the accident. An examination of the wreckage revealed no evidence of preimpact mechanical malfunctions or failures. Postmortem toxicology testing on the fatally injured pilot noted elevated glucose levels in the vitreous fluid and urine, and an elevated hemoglobin A1c level in the blood, indicating that the pilot was likely diabetic with poorly-controlled blood sugar. While the investigation was unable to determine that the pilot was impaired, he had recently eaten and his blood sugar may have been high enough to impair his cognitive performance. Though there were no indications that the pilot was aware of his diabetes, a Federal Aviation Administration medical examination nearly 4 years before the accident had noted elevated urine and blood sugar without any additional follow-up required.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's continuance of the GPS approach below the minimum descent altitude while landing in instrument meteorological conditions.

Findings

Environmental issues	Low ceiling - Effect on operation
Environmental issues	Low visibility - Effect on operation
Personnel issues	Incorrect action performance - Pilot
Aircraft	Descent/approach/glide path - Not attained/maintained

Factual Information

History of Flight

Approach-IFR final approach	Controlled flight into terr/obj (CFIT) (Defining event)

HISTORY OF FLIGHT

On September 8, 2010, about 0926 eastern daylight time, a Cessna 182T, N804GK, was substantially damaged when it impacted trees and terrain at Helena, Georgia. The airplane was registered to and operated by Air Dandy LLC under the provisions of 14 Code of Federal Regulations Part 91 as a business flight. The certificated commercial pilot was killed, and the pilot-rated passenger had serious injuries. Day, instrument meteorological conditions were present in the area. The flight was operating on an instrument flight rules flight plan and departed West Georgia Regional Airport (CTJ), Carrollton, Georgia, at 0818, en route to Telfair-Wheeler Airport (MQW), McRae, Georgia.

At 0907, the pilot reported the following to the Jacksonville Air Route Traffic Control Center (ARTCC) controller, "...just got some weather from the surrounding airports looks like we're gonna need the approach down there can we get the GPS to two one." Jacksonville ARTCC cleared N804GK for the requested approach, with instructions to maintain 3,000 feet until the initial approach fix, FINAN. Once cleared for the approach, no subsequent communications were received from N804GK. MQW does not have a control tower or weather reporting facilities.

Radar data of the approach flown by N804GK was provided by Jacksonville ARTCC. The data revealed that the airplane intercepted the final approach course with a right hand turn at FINAN at 3,000 feet mean sea level (MSL). Once established on the final approach course, the airplane began a descent, crossing the final approach fix, OTUVE, about 1,800 feet MSL. The airplane continued on the final approach and did not appear to level off at the minimum descent altitude (MDA) of 780 feet.

A witness, who was at his residence at the time of the accident, reported that he was on his back porch and heard the airplane overfly his home in a northerly direction. The airplane then began a left turn towards McRae. During the left turn, "The motor killed on it." He then heard a "loud boom" and said to his wife, "That plane fell." His wife immediately called 911 and provided directions to the crash site. The witness stated that it was "foggy" at the time; "not sunny." The location of the witness was about 700 feet from the wreckage path.

Another witness was delivering fertilizer in McRae, located about 3 miles southwest of the accident site. He did not see the accident, but reported that at the time of the accident, it was "foggy" and the visibility was "terrible." He estimated the visibility to be no more than a quarter

mile.

Due to the serious injuries sustained during the accident, the passenger had no recall of the accident flight.

PERSONNEL INFORMATION

The certificated commercial pilot, seated in the right cockpit seat, held airplane single- and multi-engine land ratings and an instrument airplane rating. He was also a certificated flight and ground instructor. He reported 14,600 civilian flight hours on his FAA second-class medical certificate application, dated December 1, 2008. His most recent pilot logbook was not recovered; however, his wife estimated that he had flown about 150 hours in the Cessna 182.

The private pilot-rated passenger, seated in the left cockpit seat, held a single engine land rating. FAA records did not indicate that he held an instrument rating. He reported 200 civilian flight hours on his FAA third-class medical certificate application dated June 30, 2010.

AIRCRAFT INFORMATION

The airplane was a Cessna 182T, serial number 18281324. It was powered by a Lycoming model IO-540-AB1A5 engine, serial number L-29239-48A. The engine was rated at 230 horsepower at 2,400 rpm.

The airplane was equipped with a Garmin G1000 integrated flight instrument system with a primary flight display (PFD) and a multi-function display (MFD). There were identical terrain database cards loaded in the lower slots of the PFD and MFD.

According to airplane records, an annual inspection was performed on the airframe and engine on January 6, 2010, at 604.9 hours total time. The hour meter reading observed at the accident site was 725.3 hours.

METEOROLOGICAL INFORMATION

MQW did not have weather reporting facilities. Weather, recorded at Vidalia Regional Airport (VDI), Vidalia, Georgia, about 27 miles to the east of MQW, at 0920, included winds calm, visibility 7 statute miles (SM), a broken cloud layer at 100 feet, temperature 24 degrees C, dew point 23 degrees C, an altimeter setting of 30.13 inches Hg.

The following ceilings and visibilities were reported at VDI prior to the accident. At 0800 and 0820, 0.25 SM visibility and a 100 foot overcast ceiling was reported. At 0840, 4 SM visibility with mist and a 100 foot broken ceiling were reported. At 0900, 0.75 SM visibility with mist and a 100 foot overcast ceiling were reported.

Weather, recorded at W.H. "Bud" Barron Airport (DBN), Dublin, Georgia, about 29 miles north of MQW, at 0938, included winds calm, visibility 5 statute miles, a broken cloud layer at 300 feet, temperature 23 degrees C, dew point 23 degrees C, an altimeter setting of 30.12 inches Hg.

The following ceilings and visibilities were reported at DBN prior to the time of the accident. At 0901, 0.75 SM visibility and a 100 foot overcast ceiling were reported. At 0916, 1.5 SM visibility and a 100 foot broken ceiling were reported.

The National Weather Service reported AIRMET Sierra, update 1 current for the region for instrument flight rules (IFR) conditions ending between 0800 and 1100 local time. No other advisories were current.

Weather minimums for the RNAV (GPS) runway 21 approach were 600 foot ceiling and 1 mile visibility for the straight-in approach.

WRECKAGE AND IMPACT INFORMATION

The accident site was located about 2.74 nm from the approach end of runway 21 at KMQW. The wreckage path was about 335 feet in length. The wreckage path was oriented on a heading of about 215 degrees magnetic and was located under the extended centerline of runway 21.

The aircraft impacted several trees before coming to rest on a heading of 180 degrees. Several tree limbs with smooth, angular cuts were found along the wreckage path. Red and black paint transfer marks were observed on the some of the tree limbs, consistent with paint colors on the propeller blades.

The outboard leading edge of the right wing exhibited aft crushing damage consistent with multiple contacts with tree branches. The right wing separated from the fuselage, remaining attached only by the flight control cables. The right elevator balance weight separated from the elevator and was located near the main wreckage. The fuselage was impact-damaged along the lower surface, the right door frame, and in two areas where the wreckage came to rest against two trees. The right door was located approximately mid-way along the wreckage path; the left door was found near the main wreckage. There was no evidence of fire.

Aileron control cable continuity was confirmed from the flight control surfaces to the cockpit controls; overload separations were noted to the control cables in areas of impact damage at their respective wing roots and the balance cable at the left wing root. The rudder, elevator, and elevator trim cables were intact and control cable continuity was confirmed from the flight control surfaces to the impact damaged and deformed lower fuselage; as the empennage was removed by the recovery crew, and before the cables were cut, control cable continuity was verified by pulling the cables and verifying movement of the controls. The elevator trim actuator measurement corresponded to approximately 5 degrees tab down. Flap control cable continuity was confirmed between the flaps and to the flap actuator which was in the flaps

retracted position; overload separations were noted in the smaller cable at the left wing root and in the larger cable at the left bell crank. The pitch and yaw autopilot servo clutches were free and allowed the pulleys to rotate freely.

Light blue-colored liquid with an odor consistent with aviation fuel was observed dripping from the right wing vent on site; a sample was collected and no water was observed in the sample. The left wing fuel filler cap remained attached to its filler port. The right wing fuel filler cap was found on the ground near the main wreckage and exhibited impact damage. The fuel cap seals were pliable and were not cracked. Approximately 5 ounces of a light blue-colored liquid with an odor consistent with aviation fuel were drained from the fuel strainer; no water was observed in the sample. The fuel strainer bowl and screen were free of debris.

The pitot tube was blocked by a substance similar to dirt or tree fragments and was located in an area of frontal impact damage. The static port was free of debris, and the tube connected to the port was separated at the port base in an area of impact damage. Light air pressure and vacuum were applied to the separated static port tube and movement was noted to the standby airspeed and standby altimeter needles.

The standby airspeed instrument needle indicated 0 knots. The standby attitude indicator was impact damaged. The standby altimeter needles indicated 450 feet and 30.13 was set in the Kollsman window.

The engine remained attached to the intact, but bent, engine mount, which remained attached to the firewall. The throttle body was separated from the engine by impact forces. The mixture and throttle controls did not remain attached to the throttle body. The throttle control could be partially moved inside the cockpit and movement was noted to the rod end near the throttle body. The mixture control could not be moved.

The propeller, top spark plugs, and vacuum pump were removed from the engine and valve movement and thumb compression were observed at each cylinder. The spark plug electrodes were normal in color and wear when compared to a Champion inspection chart. The vacuum pump produced suction and pressure when operated by hand. Internal engine continuity was confirmed to the accessory drives. The magnetos were removed from the engine and produced spark at all leads when they were rotated by hand.

The propeller remained attached to the engine. The propeller control could be moved and movement was noted at the propeller governor, which remained intact and attached to the engine. The propeller blade snap rings were loose and two blades were loose in the hub. One blade was curved forward about 15 degrees, beginning about 4 inches from the tip. Another blade was curved aft about mid-span and exhibited twisting, leading edge gouges, and chord-wise scoring. A third blade was bent aft about 30 degrees, beginning about 12 inches outboard of the hub and exhibited some chord-wise scratches.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was performed at the Central Regional Medical Examiner's Office, Division of Forensic Sciences, Georgia Bureau of Investigation. The autopsy report listed the case of death as blunt force injuries to the chest and head. The autopsy report noted "The stomach contains a moderate amount of tan-white partially digested food ..."

Forensic toxicology was performed on specimens of the flight instructor by the FAA Bioaeronautical Sciences Research Laboratory (CAMI), Oklahoma City, Oklahoma. The CAMI toxicology report was negative for ethanol, cyanide, carbon monoxide, and drugs. The report noted 102 mg/dl glucose in vitreous, 4,750 mg/dl glucose in urine, and 9.8 percent hemoglobin A1C in blood.

FAA medical records documented "No" to "Diabetes" on all applications for airman medical certificates. An application dated November 30, 2006 noted an abnormal urine test, positive for sugar, and the statement "Airman ate breakfast prior to test ... Glucose 147 (post-meal) Non-diabetic."

The pilot's wife reported that her husband was not complaining of any health issues at the time of the accident and he had not been diagnosed with diabetes. She reported that he ate breakfast on the morning of the accident.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	60,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	December 1, 2008
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 14600 hours (Total, all aircraft), 150 hours (Total, this make and model)		

Information

Certificate:	Private	**Age:**	63,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	June 30, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 200 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N804GK
Model/Series:	182T	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18281324
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	January 6, 2010 Annual	**Certified Max Gross Wt.:**	3100 lbs
Time Since Last Inspection:	120 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	725 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	C91 installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-540 SER
Registered Owner:	AIR DANDY LLC	**Rated Power:**	240 Horsepower
Operator:	AIR DANDY LLC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	VDI,275 ft msl	**Distance from Accident Site:**	27 Nautical Miles
Observation Time:	09:20 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:		**Visibility**	7 miles
Lowest Ceiling:	Overcast / 100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	24°C / 23°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Carrollton, GA (CTJ)	**Type of Flight Plan Filed:**	IFR
Destination:	McRae, GA (MQW)	**Type of Clearance:**	IFR
Departure Time:	08:18 Local	**Type of Airspace:**	

Airport Information

Airport:	Telfair-Wheeler Airport MQW	**Runway Surface Type:**	Asphalt
Airport Elevation:	203 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	21	**IFR Approach:**	Global positioning system;RNAV
Runway Length/Width:	5000 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	32.13972,-82.854164

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Mike Pupek; FAA/FSDO; College Park, GA Mike Koonce; Cessna Aircraft; Wichita, KS Mike Childers; Textron Lycoming; Williamsport, PA
Original Publish Date:	June 27, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=77218