Aviation Investigation Final Report

Location:	Yeehaw Junction, Florida	**Accident Number:**	ERA13FA133
Date & Time:	February 14, 2013, 16:30 Local	**Registration:**	N104DR
Aircraft:	Cessna 310H	**Aircraft Damage:**	Substantial
Defining Event:	VFR encounter with IMC	**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The noninstrument-rated pilot, copilot, and the passenger were attempting to return from the Bahamas to Florida; a weather front was passing over Florida at the time. The copilot had contacted flight service before the initial flight and learned of thunderstorms in the area; the flight had to divert from its planned destination. The copilot contacted flight service before a second flight, and the flight service specialist advised that visual flight rules flight was not recommended due to low cloud ceilings and visibility. The pilot decided to land at an airport closer to his destination. At that airport, the copilot again contacted flight service and remarked that he was trying to figure out how to "scud run" to get home. He also spoke to his wife, who told him that the weather "was bad" at their final destination, and she reported that she thought they would delay their flight until the next day. Even though his calls to the weather briefer and his wife indicated adverse weather along the route of flight and at the destination, the copilot likely advised the pilot to continue the flight. About 20 minutes into the flight, the copilot contacted the Orlando approach controller and reported that they had inadvertently entered instrument meteorological conditions (IMC). The controller instructed him to set the transponder code to 0311 so that she could locate the airplane and then to contact Miami Center; however, no further communications were received from the copilot.

Review of radar data revealed that, shortly after contacting Orlando Approach control, while the controller was attempting to locate the airplane, it descended in three left circuits from 8,900 feet mean sea level (msl) to 1,800 feet msl. It subsequently made a right circuit, descended to 900 feet msl, and continued to proceed toward the destination airport, eventually descending to 200 feet msl. The last 3 minutes of radar data showed the airplane flying at an altitude between 100 and 200 feet msl. The final radar target was recorded while the airplane was in a left circuit at 200 feet, about 1/8 mile southwest of the accident site. The wreckage was located the following day in a heavily wooded, deep water, swamp area, and no debris path was observed. Given the radar data and the existence of marginal visual conditions, moderate rain, and the pilot not being instrument rated, it is likely that the pilot experienced spatial disorientation.

Two toxicological tests revealed measurements of diphenhydramine in the pilot's blood at levels within

or well above the therapeutic range indicating that the pilot likely took the drug about 2 to 3 hours before the accident. Diphenhydramine causes marked sedation and is also classed as a depressant and used as a sleep aid. Altered mood and impaired cognitive and psychomotor performance may also be observed. Therefore, it is very likely that cognitive and psychomotor impairment caused by diphenhydramine contributed to the pilot's poor judgment about flying in marginal weather conditions and may have further impaired his ability to appropriately cope with relatively unfamiliar flying conditions when he flew into IMC.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The noninstrument-rated pilot's improper decision to continue visual flight rules flight into instrument meteorological conditions and his subsequent spatial disorientation. Contributing to the accident was the copilot's improper evaluation of the weather conditions after receiving several weather briefings for the flight. Also contributing to the accident was the pilot-in-command's cognitive and psychomotor impairment due to recent use of an overthecounter sedating antihistamine and the pilots' personal pressure to get home.

Findings

Personnel issues	Decision making/judgment - Pilot
Personnel issues	Decision making/judgment - Copilot
Personnel issues	OTC medication - Pilot
Personnel issues	Spatial disorientation - Pilot
Personnel issues	Motivation/respond to pressure - Flight crew

Factual Information

History of Flight

Enroute-cruise	VFR encounter with IMC (Defining event)
Maneuvering-low-alt flying	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On February 14, 2013, about 1630 eastern standard time, a Cessna 310H, N104DR, operated by a private individual, was substantially damaged during impact with terrain, while maneuvering near Yeehaw Junction, Florida. The private pilot, pilot-rated passenger and a second passenger were fatally injured. Marginal visual meteorological conditions prevailed and no flight plan was filed for the flight that departed Sebastian Municipal Airport (X26), Sebastian, Florida, about 1600; destined for Bartow Municipal Airport (BOW), Bartow, Florida. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91.

According to information from the Federal Aviation Administration (FAA), earlier during the day of the accident, the airplane flew uneventfully from Nassau, Bahamas to Palm Beach International Airport (PBI), West Palm Beach, Florida. The airplane arrived at PBI about 1200, cleared U.S. Customs, and the pilot purchased 20 gallons of aviation gasoline at 1338.

About 1455, the pilot-rated-passenger contacted Vero Beach Municipal Airport (VRB), Vero Beach, Florida air traffic control tower and advised that he was "scud running up the coast" at 500 feet to X26. The controller responded that the transition through the VRB airspace was approved and she provided the current altimeter setting. The pilot-rated-passenger acknowledged the controller's transmission and no further communications from the accident airplane were received by VRB tower.

The airport manager at X26 stated that the accident airplane landed there about 1515 and parked on the ramp for approximately 45 minutes. During that time, the occupants remained in the airplane and did not come in to the fixed based operator. The airplane then departed about 1600 and flew northwest.

The pilot's wife stated that he had telephoned her while at X26. He had intended to clear U.S. Customs at Saint Lucie County International Airport (FPR), Fort Pierce, Florida, but diverted to PBI due to weather. The pilot's wife then told him that the weather was bad in Winter Haven, Florida, as it was rainy and dark. The pilot's wife believed that he was going to stay at X26 overnight.

The pilot-rated-passenger subsequently contacted Orlando Approach at 1620 and reported that the flight had entered inadvertent instrument meteorological conditions and he needed assistance. The approach controller acknowledged the transmission and instructed the pilot-rated-passenger to set the airplane's transponder code to 0311. The pilot-rated-passenger then asked at what height the tops of clouds were and could he climb out of them. The controller replied that she needed the transponder code set to 0311 to find him and asked if he knew their position; however, no further communications were received from the accident airplane. The controller then instructed the pilot-rated-passenger that if he could hear her, to contact Miami Center 135.7. The controller subsequently transmitted that VRB was 8 miles east

of their current position. No communications from the accident airplane were received by Miami Center.

Review of radar data revealed that the first target with a 0311 transponder code was recorded at 16:22:13, indicating 8,900 feet above mean sea level (msl), about 10 miles southwest of X26. The airplane then completed three left circuits and descended to 1,800 feet at 16:24:14. It subsequently made a right circuit, descending to 900 feet and proceeded southwest, eventually descending to 200 feet at 16:27:07. During the last 3 minutes of radar data, the airplane was traveling southwest between 100 and 200 feet msl. The final target was recorded at 16:29:56, while the airplane was in a left circuit at 200 feet, about 1/8 mile southwest of the accident site.

Pilot Information

Certificate:	Private	**Age:**	67,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-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:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 8, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	391 hours (Total, all aircraft), 54 hours (Total, this make and model)		

Co-pilot Information

Certificate:	Commercial	**Age:**	65,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	July 26, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	4515 hours (Total, all aircraft)		

The pilot, age 67, held a private pilot certificate with ratings for airplane single-engine land, airplane single-engine sea, and airplane multiengine land. The pilot did not possess an instrument rating. He also held a third-class medical certificate, which was issued on August 7, 2011. At that time, the pilot reported a total flight experience of 375 hours. The pilot's logbook was not recovered. The pilot received his multiengine rating on September 20, 2011. At that time, he reported a total flight experience of 391 hours; of which, 54 hours were in a Cessna 310H. On the application to add the rating, the pilot noted a total instrument experience of 3.3 hours. The application did not specify if the 3.3 hours were actual or simulated instrument experience.

The pilot-rated-passenger, age 65, held a commercial pilot certificate with ratings for airplane single-engine land, airplane single-engine sea, rotorcraft helicopter, instrument helicopter and instrument airplane. The pilot-rated-passenger did not possess a multiengine rating. His most recent third-class medical certificate was issued on July 26, 2012. At that time, he reported a total flight experience of 4,515 hours. The pilot-rated-passenger's logbook was not recovered. His wife reported that although he held an instrument rating, he was not instrument current.

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N104DR
Model/Series:	310H	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310H0021
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	August 1, 2012 Annual	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	5662 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	IO-470D
Registered Owner:	Cody C. Kit	**Rated Power:**	260 Horsepower
Operator:	Cody C. Kit	**Operating Certificate(s) Held:**	None

The six-seat, low-wing, retractable tricycle-gear airplane, serial number 310H0021, was manufactured in 1962. It was powered by two Continental Motors IO-470D, 260-horsepower engines, each equipped with a Hartzell constant-speed propeller. Review of the airplane's logbooks revealed that its most recent annual inspection was completed on August 1, 2012. At that time, the airplane had accumulated 5,662.1 total hours of operation. The engines had accumulated 912.7 hours since factory remanufacture.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	VRB,24 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	16:27 Local	**Direction from Accident Site:**	80°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 1500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	360°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	18°C / 16°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sebastian, FL (X26)	**Type of Flight Plan Filed:**	None
Destination:	Bartow, FL (BOW)	**Type of Clearance:**	None
Departure Time:	16:00 Local	**Type of Airspace:**	

At 0822, the pilot-rated-passenger telephoned flight service and identified himself as the copilot. He asked if there was a flight plan on file and the flight service specialist (briefer) replied no. He then asked for the forecast weather from FPR to BOW for 1500, as he wanted to know if a weather front was going to move out of the area by that time. The briefer then provided an outlook briefing and stated that a cold front was moving south; however, the back end of the front was still in central and north Florida, and it would remain over central Florida for the next 12 hours. The enroute forecast included scattered light rain showers and a chance of widely scattered thunderstorms. The briefer encouraged the pilot-rated-passenger to call back for an update and the pilot-rated-passenger then filed a visual flight rules (VFR) flight plan from Nassau, Bahamas to FPR.

The pilot-rated-passenger called flight service a second time at 1232, and advised that he was planning to fly VFR from PBI to BOW, but was concerned about the cold front. The briefing included information about adverse weather conditions throughout the entire route of flight. Specifically, rain and isolated embedded thunderstorms with moderate to heaving precipitation were forecast for the route of flight. The briefer also remarked about thunderstorms over the Gulf of Mexico that were moving east at 15 knots and would merge with the current thunderstorms over the current route. The pilot-rated-passenger responded that he was looking at weather radar and could see what the briefer was referring to. The briefer added that moderate to heavy precipitation would create low ceilings and visibility and that VFR flight was not recommended. The briefer also mentioned the forecast called for the weather system to become stationary over central Florida throughout the night.

The pilot-rated-passenger called flight service a third time at 1331 and requested the current ceilings at Okeechobee Country Airport (OBE), Okeechobee, Florida and BOW. The briefer responded that OBE was low instrument flight rules (IFR) with an overcast ceiling at 400 feet and visibility 5 miles. The current weather at BOW was marginal VFR with an overcast ceiling at 4,400 feet and visibility 5 miles in light rain. The briefer also provided an area forecast that included broken ceilings at 3,000 to 4,000 feet with widely scattered thunderstorms and moderate precipitation, with possible severe

thunderstorms. The pilot-rated-passenger remarked that he was looking at the weather radar and trying to figure out how to "scud run" and get home to BOW and added that it looked like the thunderstorms were breaking up a little bit. The briefer acknowledged that the lines of thunderstorms were breaking up a bit; however, more thunderstorms were moving into the area from Fort Myers. The pilot-rated-passenger concluded that he was going to watch the weather radar a little longer and see what happens.

Vero Beach Municipal Airport (VRB), Vero Beach, Florida, was located 16 miles east of the accident site. The recorded weather at VRB at 1627 included wind from 360 degrees at 9 knots; visibility 10 miles; overcast ceiling at 1,500 feet; temperature 18 degrees C; dew point 16 degrees C; altimeter 29.96 inches of mercury. The weather recordings at 1653 and 1659 included rain and heavy rain, respectively.

Review of the airplane's radar track, overlaid on weather radar, revealed that the accident site was in an area of moderate precipitation. Additionally, a pilot report was received from an Airbus A320 at 1557, when the airplane was 20 miles northeast of Naples, Florida at 11,000 feet. The report included light to moderate turbulence with heavy rain, and a remark "would not recommend anyone flying this route." (For additional information, see the Meteorology Study in the NTSB Public Docket.)

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	27.616945,-80.714996

The wreckage was located upright in a densely wooded swamp with water depths up to 5 feet. Airboats were unable to access the wreckage and the victims were recovered by emergency responders utilizing U.S. Coast Guard helicopters. Aerial photographs, provided by the Indian River County Sheriff Department revealed that the airplane remained intact, with the exception of the left wing tip (main) fuel tank and the empennage, which were located in the vicinity of the main wreckage. No debris path through the trees was observed.

About 4 weeks later, an officer from the Florida Fish and Wildlife Conservation Commission was able to cut through vegetation and trees with an airboat to recover personal effects; however, the site was about 1.5 miles from the nearest road and the terrain did not allow for ground equipment to access the wreckage.

The airplane's insurance carrier was contacted about an aerial recovery, but the pilot was not a named insured on the airplane's insurance policy and did not meet the flight experience requirements to be a named insured on the policy. As such, the insurance carrier did not recover the wreckage and at the publication of this report, the wreckage has not been recovered for examination.

Medical and Pathological Information

Autopsies were performed on the pilot and pilot-rated-passenger by the State of Florida District 19 Medical Examiner's Office, Fort Pierce, Florida, on February 18, 2013. The cause of death for both pilots was noted as "Multiple Blunt Trauma Injuries." Toxicological testing performed at the request of the pathologist identified 0.272 mg/L of diphenhydramine (marketed under trade name Benadryl, Unisom, etc.) in the pilot's blood. Toxicological testing was performed on the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicological report revealed:

"Cetirizine detected in Urine
Cetirizine detected in Blood
0.535 (ug/ml, ug/g) Diphenhydramine detected in Blood
Diphenhydramine detected in Urine"

Toxicological testing was performed on the pilot-rated-passenger by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicological report revealed:

"Amlodipine detected in Urine
Amlodipine NOT detected in Blood
Ibuprofen detected in Urine
Naproxen detected in Urine"

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Gabriele Rotunda; FAA/FSDO; Orlando, FL Kurt Gibson; Continental Motors; Mobile, AL Peter Basile; Cessna Aircraft Company; Wichita, KS
Original Publish Date:	December 11, 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=86226