



National Transportation Safety Board Aviation Accident Final Report

Location:	BELVIDERE, NC	Accident Number:	MIA01FA043
Date & Time:	12/14/2000, 1303 EST	Registration:	N120JB
Aircraft:	Piper PA-31-325	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The flight was maneuvering in instrument meteorological conditions and was observed on radar making climbing and descending turns prior to making a final descending turn and being lost from radar. Examination of the crash site showed the airplane had impacted the terrain in a about a 90-degree nose down attitude. The crash site was about .09 miles from the last radar contact, when the airplane was 2,000 feet above ground level. Post crash examination of the airplane structure, flight controls, engines, propellers, and airplane systems showed no evidence of pre-crash failure or malfunction.

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 airplane control due to spatial disorientation while maneuvering in instrument meteorological conditions resulting in the airplane entering a descending turn and crashing into terrain.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING

Findings

1. WEATHER CONDITION - CLOUDS
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings

4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF THE FLIGHT

On December 14, 2000, about 1303 eastern standard time, a Piper PA-31-325, N120JB, registered to an individual, crashed in a field near Belvidere, North Carolina, while on a Title 14 CFR Part 91 personal flight. Visual meteorological conditions prevailed at the time and an instrument flight rules flight plan was filed. The aircraft was destroyed and the private-rated pilot received fatal injuries. The flight originated from Vero Beach, Florida, the same day, about 0952.

A person identifying himself as the pilot of N120JB called the FAA St. Petersburg, Florida, Flight Service Station, on December 13, 2000, about 1550, requesting a weather briefing from Vero Beach, Florida, to Edenton, North Carolina. The pilot stated he would be departing in about 30 minutes. After receiving the weather briefing, the pilot indicated he would make the flight the next day due to the weather conditions.

On December 14, 2000, about 0806, a person identifying himself as the pilot of N120JB called the St. Petersburg Flight Service Station, again requesting a weather briefing from Vero Beach to Edenton. After the weather briefing, the pilot filed an instrument flight rules flight plan from Vero Beach to Edenton, for a 0900 departure time.

At about 1241, the pilot of N120JB contacted the FAA Washington Air Route Traffic Control Center, while at 9,000 feet near New Bern, North Carolina. At 1242:42, the pilot was cleared to descend to 4,000 feet, and the pilot reported he leaving 9,000 feet. At 1250:43, the controller reported to the pilot that radar contact was lost. The pilot responded, "I'm in the soup". The controller then asked the pilot what type of instrument approach he was requesting at Edenton. The pilot responded "GPS runway one". At 1251:32, the pilot reported he was level at 4,000 feet. The controller then informed the pilot that the RNAV runway one was not an authorized approach. The pilot then requested radar vectors and the controller stated he could plan on crossing the NDB. The pilot then stated "I'm gonna try a straight in for runway one I'm three miles out". The controller then asked what type of straight in approach the pilot wanted. The controller stated the only approaches available were the NDB to runway 5 and runway 19. The pilot responded he did not have NDB equipment on board, but that he did have GPS.

At 1254:51, the controller cleared the pilot to descend to 2,000 feet and reported he was over Edenton at that time. The pilot acknowledged the descent. At 1256:26, the controller reported to the pilot that he was 4 miles north of the Edenton Airport, to fly heading 270 degrees, and to state his intentions. The pilot stated he was trying to get down to 2,000 feet and to come around and land on runway one. The controller informed the pilot there was no authorized approach to runway one. The pilot then asked the controller to stand by so that he could "figure something out here." At 1258:59, the pilot stated he was going to make a 180-degree turn and see what he could do. The controller responded, climb now and maintain 3,000 feet, turn left direct to Edenton and let him know what he wants to do when he gets there. The pilot responded, they have 3 miles visibility and a ceiling of 1,000 feet, and that he was going to try to come in on runway 19, and that he was climbing to 3,000 feet. The controller responded that when he got closer, he would be able to descend him to 2,000 feet, which is as low as he can clear him. The pilot acknowledged and the controller told him to turn left to a heading of 240 degrees. The pilot acknowledged. At 1302:12 the controller asked the pilot to say altitude, for he saw the flight was descending. The pilot did not respond. At

1302:26, the controller again asked the pilot to say his altitude. The pilot responded 2,000 feet. The controller told the pilot to climb and maintain 3,000 feet. The pilot did not respond and no further transmissions were received from the pilot. (See Transcripts of Communications)

Recorded radar data from the FAA Washington Air Route Traffic Control Center and the FAA Norfolk, Virginia Approach Control showed the flight descended from 3,000 feet to 2,000 feet, reaching 2,000 feet at about 1257. After maintaining 2,000 feet for 2.5 minutes, the flight climbed for 46 seconds, to an altitude of 3,000 feet. Thirty-two seconds later the flight started a descent from 2,800 feet to 2,100 feet over 32 seconds. The flight maintained 2,100 feet for 14 seconds and subsequently descended to 1,400 in 14 seconds, while making a sharp turn to the left. The flight then started a right turn while climbing to 2,300 feet. The last secondary radar return was recorded 12 seconds later, at 1302:36, when the airplane was at 2,000 feet, still in a right turn, at a position .09 miles from the crash site. During the last portions of the flight, the ground speed varied between 175 and 225 knots. (See NTSB Radar Study)

A witness reported to the Perquimans County Sheriff's Department personnel that he had passed by the accident site about 1300, and that the airplane was not there. He again passed by the accident site at 1400, and observed the wreckage of the airplane, and then called the 911 emergency phone number.

PERSONNEL INFORMATION

The pilot held a FAA commercial pilot certificate, issued on October 23, 2000, with airplane single engine land, airplane multiengine land, and instrument airplane ratings. The pilot held a FAA second-class medical certificate, issued on July 24, 2000, with the limitation that the holder wear correcting lenses.

Logbook records for the pilot were not located after the accident. On the FAA application for his commercial pilot certificate on October 23, 2000, the pilot reported he had 617 total flight hours, 457 flight hours as pilot in command, 306 total flight hours in the Piper PA-31, 262 flight hours as pilot in command in the Piper PA-31, and 129 instrument flight hours. Estimates from the mechanic that maintained the pilot's airplane indicate the pilot had flown the Piper PA-31 another 30 flight hours since October 23, 2000.

AIRCRAFT INFORMATION

The airplane was a 1976 model Piper PA-31-325, serial number 31-7612050, FAA registration number N120JB. The airplane received an annual inspection on September 29, 2000, about 43 flight hours before the accident. At the time of the accident, the airplane had accumulated about 4,903 total flight hours. In May 2000, about 90 flight hours before the accident, two new Lycoming TIO-540-J2B, 350 horsepower engines were installed on the airplane along with two new Hartzell HC-C4YR-2, four bladed propellers.

METEOROLOGICAL INFORMATION

The Elizabeth City Municipal Airport, Elizabeth City, North Carolina, 1254 surface weather observation was winds 260 degrees at 8 knots, visibility 10 statute miles, clouds overcast at 4,600 feet, temperature 54 degrees F, dew point temperature 52 degrees F, altimeter setting 30.26 inches Hg. Elizabeth City is 16 nautical miles southeast of the accident site.

The Northeastern Regional Airport, Edenton, North Carolina, 1255 automated surface weather observation was winds 290 at 10 knots, visibility 4 miles in drizzle, clouds 1,200 feet

broken and 1,900 feet overcast, altimeter 30.16 inches Hg. Edenton, the pilots destination, is about 22 nautical miles south of the accident site.

WRECKAGE AND IMPACT INFORMATION

The airplane crashed in a farm field, located east of county highway 1001, near Belvidere, Perquimans County, North Carolina. The accident site coordinates were North 36 degrees, 21 minutes, 06.3 seconds, and west 76 degrees, 26 minutes, 25.8 seconds.

Examination of the crash site showed the airplane had collided with the ground in a near 90-degree nose down attitude, while on a westerly heading. The main wreckage was contained in an approximate 6-foot deep impact hole. A fire had occurred in the impact hole. Debris from the airplane was scattered over a 150-foot wide by 200-foot long area. Dirt blow back from the left propeller extended behind the airplane wreckage for about 40 feet. Dirt blow back from the right propeller extended behind the airplane wreckage for about 90 feet. All components of the airplane, which are necessary for flight, were located on or around the main wreckage of the airplane. A continuity check of the flight control system showed that all identified separation points within the cable systems was typical of overstress separation. The landing gear and wing flaps were found retracted. The elevator trim was found in a neutral position. The rudder trim was found with the trim tab 1.8 degrees to the left. The aileron trim tab, located on the right aileron, was found in a .35 degree tab down position.

Examination of the left engine and propeller after removal from the impact hole showed the propeller blades were wrapped back around the engine. The alternator drive belt was still in place. The starter ring gear had rotational scarring. The turbo charger blades had rotational damage and the interior was filled with dirt. The turbo charger rotated when turned by hand. The turbo waste gate was in the fully closed position. The cowl flap actuator was in the closed position. The propeller governor was separated from the engine. The governor rotated and pumped oil when turned by hand. The engine-driven fuel pump turned when rotated by hand and the drive shaft had continuity. The left vacuum pump drive shaft had continuity. The pump had received impact damage and the internal block was fractured. The interior walls of the pump had no extensive rotational scars.

Examination of the right engine and propeller after removal from the impact hole showed the propeller blades were wrapped back around the engine. The alternator drive belt was still in place. The turbo charger blades had rotational damage. The turbo charger turned freely when rotated by hand. The turbo waste gate was in the fully closed position. The cowl flap actuator was in the closed position. The propeller governor was still attached to the engine. The governor rotated and pumped oil when turned by hand. The engine-driven fuel pump turned when rotated by hand and the drive shaft had continuity. The right vacuum pump drive shaft had burned away during the post crash fire. The pump had received impact damage and the internal block was fractured. The interior walls of the pump had no extensive rotational scars.

Teardown examination of the left and right engine and accessories was performed at Lycoming Engines, Williamsport, Pennsylvania, under FAA oversight. Examination of the left engine showed no evidence of precrash failure or malfunction. The engine and accessories had received ground impact damage. Spark plugs from the engine had deposits with a color consistent with normal engine operation. Examination of the right engine and accessories showed no evidence of precrash failure or malfunction. The engine and accessories had

received ground impact damage. Spark plugs from the engine had deposits with a color consistent with normal engine operation. (See Lycoming Engines Report)

Teardown examination of the left and right propellers and the left and right propeller governors was performed at Aviation Propeller, Miami, Florida, under NTSB oversight. Examination of the left and right propellers showed no evidence of precrash failure or malfunction. Damage was consistent with each propeller blade being in a low pitch position at the time of ground impact. The "Q" tip on each blade was bent forward and each blade was bent aft between 50 and 90 degrees. The left and right propeller governors had the control arms separated during ground impact. Disassembly examination of the governors showed no evidence of precrash failure or malfunction.

Disassembly of the pilot's vacuum-driven attitude indicator and electric-driven turn and bank indicator showed that the rotors from each of these instruments had rotational scarring. The right instrument panel airspeed indicator was found with the needle indicating 250 knots. The left instrument panel airspeed indicator was found with the needle missing from impact damage.

MEDICAL AND PATHOLOGICAL INFORMATION

Postmortem examination of the pilot was performed by M.G.F. Gilliland, M.D., Forensic Pathologist, Greenville, North Carolina. The cause of death was attributed to multiple extreme injuries. No findings, which could be considered causal to the accident, were reported.

Postmortem toxicology studies on specimens obtained from the pilot were performed by Dennis V. Canfield, Ph.D, Manager FAA Toxicology Laboratory, Oklahoma City, Oklahoma. The studies were negative for ethanol in kidney and muscle, and negative for drugs in kidney. See toxicology report.

ADDITIONAL INFORMATION

The NTSB released the airplane wreckage on December 16, 2000, to Chris Cunningham, Colonial Air, Inc., New Bedford, Massachusetts, at the direction of the pilot's family. Components retained by the NTSB for further testing were released to Colonial Air, Inc.

Pilot Information

Certificate:	Commercial	Age:	76, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
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 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	07/24/2000
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	647 hours (Total, all aircraft), 336 hours (Total, this make and model), 487 hours (Pilot In Command, all aircraft), 30 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N120JB
Model/Series:	PA-31-325 PA-31-325	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	31-7612050
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	09/29/2000, Annual	Certified Max Gross Wt.:	6500 lbs
Time Since Last Inspection:	43 Hours	Engines:	2 Reciprocating
Airframe Total Time:	4903 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	TIO-540-J2B
Registered Owner:	GORDON E. MONTGOMERY	Rated Power:	350 hp
Operator:	GORDON E. MONTGOMERY	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	ECG, 12 ft msl	Distance from Accident Site:	16 Nautical Miles
Observation Time:	1254 EST	Direction from Accident Site:	120°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	Overcast / 4600 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	260°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	54° C / 52° C
Precipitation and Obscuration:			
Departure Point:	VERO BEACH, FL (VRB)	Type of Flight Plan Filed:	IFR
Destination:	EDENTON, NC (EDE)	Type of Clearance:	IFR
Departure Time:	0952 EST	Type of Airspace:	Class E

Wreckage and Impact Information

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

Administrative Information

Investigator In Charge (IIC):	JEFFREY L KENNEDY	Report Date:	09/27/2001
Additional Participating Persons:	JANE TYNER; GREENSBORO, NC KRIS WETHERELL; VERO BEACH, FL DAVID C MOORE; WILLIAMSPORT, PA		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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