



National Transportation Safety Board Aviation Accident Final Report

Location:	Ferguson, KY	Accident Number:	IAD03FA032
Date & Time:	02/16/2003, 2002 EST	Registration:	N421TJ
Aircraft:	Cessna 421	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	3 Fatal, 4 Serious
Flight Conducted Under:	Part 91: General Aviation - Executive/Corporate		

Analysis

The airplane joined the inbound course for the GPS instrument approach between the intermediate approach fix and the final approach fix, and maintained an altitude about 200 feet below the sector minimum. The last radar return revealed the airplane to be about 3/4 nautical miles beyond the final approach fix, approximately 1,000 feet left of course centerline. An initial tree strike was found about 1 nautical mile before the missed approach point, about 700 feet left of course centerline, at an elevation about 480 feet below the minimum decent altitude. Witnesses reported seeing the airplane flying at a "very low altitude" just prior to its impact with hilly terrain, and also described the sound of the airplane's engines as "really loud" and "a constant roar." Night instrument meteorological conditions prevailed at the time of the accident. There was no evidence of mechanical 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 follow the instrument approach procedure, which resulted in an early descent into trees and terrain. Factors included the low ceiling and the night lighting conditions.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings

1. (C) IFR PROCEDURE - NOT FOLLOWED - PILOT IN COMMAND
2. (C) MINIMUM DESCENT ALTITUDE - NOT MAINTAINED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - LOW CEILING
4. TERRAIN CONDITION - MOUNTAINOUS/HILLY
5. (F) LIGHT CONDITION - NIGHT
6. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On February 16, 2003, at 2002 eastern standard time, a Cessna 421, N421TJ was destroyed when it impacted trees and terrain in Ferguson, Kentucky, while on an instrument approach to Somerset-Pulaski County Airport - J.T. Wilson Field (SME), Somerset, Kentucky. The certificated commercial pilot, a pilot-rated passenger, and one other passenger were fatally injured. Four additional passengers were seriously injured. Night instrument meteorological conditions prevailed for the flight, which originated at Griffith-Merrillville Airport (05C), Griffith, Indiana. An instrument flight rules (IFR) flight plan was filed for the corporate flight, conducted under 14 CFR Part 91.

A review of the air traffic control transcript revealed that at 1944, the pilot contacted the London Sector Radar position of Indianapolis Center, while descending out of 12,000 feet, and requested the GPS RWY 22 approach at Somerset. The controller responded that he had the request, and that the altimeter setting at London was 29.86. The controller then asked the pilot if he had the current weather at Somerset, and the pilot responded that he did. The controller then confirmed with the pilot, which fix he was proceeding to, and reconfirmed that the pilot wanted the GPS RWY 22 approach.

At 1945, the controller cleared the airplane down to 5,000 feet, and advised the pilot that he'd have the approach clearance in a couple of minutes.

At 1948, the controller asked the pilot if he had the current NOTAMS (Notices to Airmen). The pilot responded that he did, and that the pilot-controlled runway lighting was out. The pilot then asked the controller for any additional items, and the controller responded that the airport beacon was out, as well as the pilot controlled lighting.

At 1949, the pilot responded, "yes we're aware of all of the (unintelligible) thank you."

The controller then cleared the pilot to maintain 3,600 feet until established on the approach, cleared him for the approach, and requested that the pilot report the field in sight, which the pilot acknowledged. About 30 seconds later, the pilot asked for a clearance outbound from the airport, stating that he would be on the ground for no longer than 10 minutes.

At 1957:06, the controller requested that the pilot report "established on the approach," and 10 seconds later, the pilot stated "actually we're established right now."

At 1957:24, the controller gave the pilot his outbound clearance, which the pilot read back.

At 1958:22, the controller stated, "change to advisory frequency approved," to which the pilot responded, "(unintelligible), thank you."

There were no further communications from the airplane.

The final three fixes for the instrument approach, the GPS RWY 22 approach, from northeast to southwest, were AZLEC, HITFO, and BABME. The inbound course from AZLEC, through HITFO, to BABME, was 241 degrees magnetic. The minimum descent altitude between AZLEC and HITFO was 2,800 feet above mean sea level (msl), and between HITFO and BABME, was 1,700 feet msl. The distance between AZLEC and HITFO was 5.0 nautical miles, and between HITFO and BABME was 5.3 nautical miles. Runway 22 was 0.5 nautical miles beyond BABME.

Along the approach path, traveling northeast to southwest, there was a hill that rose to an elevation of about 1,240 feet, then descended down toward the airport. The top of the hill was about 1.5 nautical miles from the airport, and there were saddlebacks on each side, leading to other hills.

Radar data revealed that the airplane joined the GPS RWY 22 inbound course between AZLEC and HITFO, at 2,600 feet. The last radar return, received at 2002:04, indicated that the airplane was 3/4 of a nautical mile beyond HITFO, about 1,000 feet left of course centerline, at 2,500 feet.

Two witnesses, who lived northeast of the accident site, stated that they saw the airplane through the back window of their house. One witness stated that the lights of the airplane were approximately the same level as the house. The sound of the airplane was "really loud," and the house shook as the airplane approached, then passed low overhead.

The witness then ran out the front door of the house, and watched the airplane pass over the crest of the hill and disappear from view. Immediately thereafter, there was a loud explosion and a fireball. When asked about the sounds of the engines, the witness stated that they were "smooth, continuous, and a constant roar."

The second witness stated that she was sitting on her couch and observed what appeared to be two headlights. She repeated several times that the airplane was "really low" as it passed over the house. The airplane then disappeared from view, and exploded. The witness also noted, that from her vantage point, she could only have seen the airplane if it had been close to the ground.

When asked about the sound of the engines, she stated that they were "really loud. It sounded like a normal plane, just really loud."

A third witness, driving on a nearby road, reported that she saw the airplane traveling "unusually low" and "very fast" in a westerly direction. The airplane crossed the road in front of her, and its lights were "bright and flashing." The witness remarked to her daughter that the airplane "would not make the airport," and after it disappeared from view, "an orange glow appeared in the trees." When asked to describe the airplane's altitude above the ground, the witness stated that she could see it by looking "straight out" of her windshield.

The Pulaski County Sheriff's Department received a 911 emergency call at 2003.

At 2131:16, after the accident had occurred, a Louisville Flight Service Station specialist confirmed, during a recorded review of Somerset NOTAMs, that, "airport beacon out of service," and shortly after that, he stated, "somerset four and two two pilot controlled lighting out of service medium intensity continuous."

According to excerpts from the surviving adult passenger's interrogatory, as provided by her attorney, she was asleep at the time of the accident. She remembered hearing a loud noise, then the sensations of being thrown violently and finding herself outside the airplane, in pain.

The accident occurred during the hours of darkness, in the vicinity of 37 degrees, 04.37 minutes north latitude, 84 degrees, 35.08 minutes west longitude.

PILOT INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single engine land, multi-engine land, and instrument airplane. He also held a flight instructor certificate with ratings

for airplane single engine land, multi-engine land, and instrument airplane. His most recent second class medical certificate on file with the Federal Aviation Administration (FAA) was issued on November 30, 2001. However, on an insurance form provided by the pilot's employer, dated December 18, 2002, the pilot reported that his most recent second class medical certificate was issued on November 17, 2002.

The pilot's logbook was not located. On the insurance form obtained from the pilot's employer, the pilot listed 11,732 total hours of flight experience, 518 hours of which were in the Cessna 421. Within the previous 90 days of that date, the pilot recorded 280 hours of flight experience, 46 hours of which were in the Cessna 421.

The surviving adult passenger stated, in her interrogatory, that the pilot was flying the airplane when the accident occurred.

The pilot-rated passenger's employer reported that he was not acting as a crewmember, and was only "along for the ride." The pilot-rated passenger held a private pilot certificate with ratings for airplane single-engine land, multi-engine land, and instrument airplane. His most recent FAA first-class medical certificate was issued on April 30, 2002. Examination of his logbook revealed that he had accrued 249 total hours of flight experience, 29 hours of which were in multi-engine airplanes. The pilot-rated passenger had no flight experience in the Cessna 421.

AIRCRAFT INFORMATION

The airplane was manufactured in 1968, and its most recent annual inspection was completed on February 1, 2002. The latest pitot static check was completed on September 19, 2000.

AIRPORT INFORMATION

Somerset-Pulaski County Airport runway 22 was 5,600 feet long and 100 feet wide, and the runway touchdown elevation was 927 feet. Runway heading was 228 degrees magnetic. The airport was not tower-controlled. About 1.5 miles northeast of the airport, the terrain rose to about 1,250 feet.

METEROLOGICAL INFORMATION

At 1958, the weather recorded at Somerset included calm winds, an overcast ceiling at 700 feet, and 7 statute miles visibility. The temperature was 35 degrees Fahrenheit, the dew point was 35 degrees Fahrenheit, and the barometric pressure was 29.88 inches of mercury.

AIDS TO NAVIGATION

On February 18, 2003, FAA flight check personnel performed a flight inspection of the GPS RWY 22 approach. All parameters of the instrument approach were found to be satisfactory. Flight check personnel also performed a flight inspection of the precision approach path indicator lights for runway 22, and found them to be satisfactory.

WRECKAGE INFORMATION

An initial tree strike was found approximately 1 nautical mile northeast of BABME, and according to FAA flight check personnel, about 700 feet left of course centerline.

The initial tree strike was located near the crest of a saddleback, at an elevation of about 1,220 feet. A wreckage path, about 500 feet in length, and oriented in a direction of approximately 250 degrees magnetic, proceeded down the back side of the saddleback, toward the airport.

The first ground scar was about 400 feet from the initial tree strike. Cut tree branches, many at 45-degree angles, were located along the wreckage path.

All flight control surfaces were located at the accident scene. The airplane's wings, engines, propeller assemblies, main landing gear, and tail section were separated from the fuselage and scattered along the wreckage path. Both wings were damaged by fire. The nose section of the airplane, along with the nose landing gear, was separated from the rest of the fuselage forward of the instrument panel.

The vertical fin, with rudder attached, was wrapped around a tree and suspended just above the ground, about 300 feet from the beginning of the wreckage path. The horizontal stabilizer, with the inboard sections of the elevators attached, was found at the base of the same tree.

Both propeller assemblies were separated from the engines, and both sets of propeller blades exhibited "S-bending" and chordwise scratching.

The cockpit and cabin area came to rest inverted, about 450 feet from the beginning of the wreckage path. The cockpit was destroyed by impact and exposed, but the cabin area was largely intact. The left side, middle-row, forward-facing seat (seat 5) was ejected from the fuselage. The inboard seat track for the number 5 seat was broken at the forward-most locking pinhole position. The cabin door was closed, but had operated normally when actuated by rescue personnel.

The instrument readings included an altimeter setting of 29.84 inches, and HSI readings of heading: 260 degrees; course: 245 degrees; and heading bug: 255 degrees.

The engines were subsequently examined at the airport. The left engine displayed impact damage to the cylinders, accessories, and exhaust system. The propeller flange was bent. The oil sump was impact damaged and exhibited a large hole.

The alternator, fuel pump, one vacuum pump, and propeller governor were still attached. The number 1 cylinder head was separated by impact. The number 2 cylinder head was damaged and partially separated by impact.

The top spark plugs and valve covers were removed by investigators, and the engine was rotated by hand at the propeller flange. Continuity was established through the power train and valve train to the accessory section. Thumb compression was confirmed for all cylinders except for the number one, due to the separated cylinder head.

The electrodes of the spark plugs displayed moderate wear, and were light tan and gray in color. The fuel manifold was opened, and trace amounts of water and debris were found. The screen was clean and free of obstructions.

The oil pump and scavenge pump were free to rotate, and coated with oil. The left vacuum pump was separated by impact and was not recovered. Inspection of the right vacuum pump revealed that the vacuum drive was fractured and the interior elements and vanes were shattered into small pieces.

The fuel pump was rotated and the drive coupling was intact. Both magnetos were separated from the engine, and only one was initially recovered. The magneto was rotated by hand and produced spark at all terminal leads.

The right engine displayed impact damage to the cylinders, accessories, and exhaust system. The entire engine was damaged by fire. The top spark plugs and the valve covers were removed

by investigators. The engine was rotated by hand through approximately 40 degrees of travel, and continuity was established through the power train and valve train to the accessory section.

The spark plug electrodes showed moderate wear, light deposits, and were light tan and gray in color. The number 1 top spark plug was wet with oil.

The oil pump and the scavenge pump were damaged by fire. The interiors of each were dry, and would not rotate.

The fuel manifold was absent of water and debris, and the screen was clean and free of obstructions. The main fuel screen of the metering unit was clean and free of obstructions.

Both vacuum pumps were rotated by hand, and disassembly revealed that the rotors and vanes in each were intact.

The fuel pump was damaged by fire, and the aneroid was melted. The drive coupling was intact and the pump rotated by hand.

Both magnetos were rotated by hand, and produced spark at all terminal leads.

A first-responder reported that she arrived at the accident scene about 2120. She examined the airplane's tail section for icing and found none. She also spoke with a police officer who had arrived earlier, and he stated that he did not see icing on "any portion of the airframe or airfoil that he had seen." The first responder also noted that the pilot's altimeter setting was 29.91 inches of mercury.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot and the pilot-rated passenger by the Kentucky State Medical Examiners Office, Frankfort, Kentucky.

Toxicological testing was performed by the FAA Toxicology and Accident Research Laboratory, Oklahoma City, Oklahoma. The forensic toxicology report for the pilot stated that 0.064 (ug/ml, ug/g) doxylamine was detected in blood, and doxylamine was also present in urine.

ADDITIONAL INFORMATION

FAA records revealed that the accident airplane was owned by Great Northern Aircraft, Inc., Griffith, Indiana. According to the general manager of that company, the principal stockholder of Great Northern Aircraft was also the principal stockholder of Griffith Aviation, Inc., also located in Griffith, Indiana. Both companies operated from the Griffith-Merrillville Airport, and the pilot normally worked for Griffith Aviation.

A third company, Powersource Transportation, Inc., which operated a fleet of truck tractors, was also located in Griffith, Indiana, and the father/husband of the passengers on board the accident airplane was the Executive Vice President of that company. Airplanes affiliated with Powersource Transportation were a Cessna 421, owned by Phantom Leasing, Inc., of Griffith, Indiana, and a Beech Bonanza, owned by the president of Powersource. Those airplanes were maintained by yet another company, Great Northern Aircraft Sales, Inc.

The general manager of Great Northern Aircraft also reported that, at the time of the accident, the Powersource/Phantom Leasing Cessna 421 was in a paint shop, and Phantom Leasing arranged with Griffith Aviation for the pilot to fly the Bonanza to Somerset. However, the pilot decided to use the Great Northern Cessna 421 instead, and asked the pilot-rated passenger if he

wanted to go along. Phantom Leasing/Powersource had, on several occasions in the past, borrowed the Great Northern Cessna 421 when its own Cessna 421 was out of service.

The corporate counsel for Powersource confirmed that the family had contacted the pilot to fly the Bonanza to Somerset. However, in the event that a Griffith/Great Northern airplane was used, Powersource/Phantom Leasing, not the family, was to pay the pilot fees and the fuel bill directly to Griffith Aviation, as had been the past practice.

The general manager of Griffith Aviation concurred with the corporate counsel's statement, except that it was Phantom Leasing that contacted Griffith Aviation to fly the Bonanza to Somerset.

According to the interrogatory of the surviving adult passenger, the father/husband of the passengers made a request to an employee of Phantom Leasing that a flight depart Griffith at 1830 central standard time (CST), February 16, 2003. On that same date, the pilot called the father/husband and requested that the flight depart about 1 hour earlier. The father/husband took the passengers to the airport about 30 minutes prior to the flight's approximately 1730 departure, and the pilot and pilot-rated passenger were at the airport when they arrived.

On February 21, 2003, the wreckage release was acknowledged by the president of Great Northern Aircraft, Inc.

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	32, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	11/30/2001
Occupational Pilot:		Last Flight Review or Equivalent:	03/29/2002
Flight Time:	11732 hours (Total, all aircraft), 518 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N421TJ
Model/Series:	421	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	421-0051
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	02/01/2002, Annual	Certified Max Gross Wt.:	6800 lbs
Time Since Last Inspection:	210 Hours	Engines:	2 Reciprocating
Airframe Total Time:	4129 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	GTSIO-520-C
Registered Owner:	Great Northern Aircraft, Inc	Rated Power:	375 hp
Operator:	Shalabh N. Agarwal	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night
Observation Facility, Elevation:	SME, 927 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	1958 EST	Direction from Accident Site:	225°
Lowest Cloud Condition:		Visibility	7 Miles
Lowest Ceiling:	Overcast / 700 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:	Variable	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.88 inches Hg	Temperature/Dew Point:	2°C / 1°C
Precipitation and Obscuration:			
Departure Point:	Griffith-Merril, IN (05C)	Type of Flight Plan Filed:	IFR
Destination:	Somerset, KY (SME)	Type of Clearance:	IFR
Departure Time:	1730 CST	Type of Airspace:	Class E

Airport Information

Airport:	Somerset-Pulaski County (SME)	Runway Surface Type:	Asphalt
Airport Elevation:	927 ft	Runway Surface Condition:	Unknown
Runway Used:	22	IFR Approach:	Global Positioning System
Runway Length/Width:	5600 ft / 100 ft	VFR Approach/Landing:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	2 Fatal, 4 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	3 Fatal, 4 Serious	Latitude, Longitude:	37.073056, -84.584167

Administrative Information

Investigator In Charge (IIC):	Brian Rayner	Report Date:	10/28/2004
Additional Participating Persons:	Jeff Jennings; FAA/FSDO; Louisville, KY Robert August; Cessna Aircraft Company; Wichita, KS John Kent; Teledyne Continental Motors; Mobile, AL Craig Anderson; Griffith Aviation, Inc.; Griffith, IN		
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 pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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