Aviation Investigation Final Report

Location:	Concord, North Carolina	**Accident Number:**	MIA01FA107
Date & Time:	March 30, 2001, 06:06 Local	**Registration:**	N42Y
Aircraft:	Piper PA-32RT-300	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled		

Analysis

The pilot obtained a weather briefing from an FAA Automated Flight Service Station for his IFR flight from Lincolnton, North Carolina, to Concord, North Carolina. The pilot was informed that the weather at Lincolnton was one hundred overcast, a quarter of a mile visibility, and winds were calm. He was also informed that no weather was available at Concord, and that the ILS and DME was unmonitored. The pilot was asked if he had the notams and he replied "yeah". The pilot did not list an alternate airport, and an alternate was required due to existing weather conditions. Another company pilot called the office and informed the pilot that he was canceling his flight due to weather. The accident pilot informed him that aware of the glide slope being out of service and that he would probably delay his flight. The pilot departed Lincolnton and established radio contact with approach control. The pilot was informed that the glide slope was out of service and that the ILS/DME was unmonitored. The pilot was provided radar vectors and subsequently cleared for the ILS approach. The pilot was provided a frequency change and to report canceling IFR on the ground or on this frequency. A witness who lives in the vicinity of the airport stated she heard an airplane approaching her location. She heard a pop sound and looked out the window and observed the power line shaking. The fog was half way up the trees. She awakened her son and went to investigate. He returned a short time later and stated he observed a crashed airplane. Examination of the airframe, flight controls, and engine assembly and accessories revealed no evidence of a precrash mechanical failure or malfunction.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

An in-flight collision with terrain for undetermined reasons.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MANEUVERING

Findings
1. (C) TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On March 30, 2001, at about 0606 eastern standard time, a Piper PA-32RT-300, N42Y call sign catbird 124, registered to NES Enterprises of NC LLC, operated by Corporate Air Fleet as a 14 CFR Part 135 air taxi flight, crashed during an ILS runway 20 instrument approach to Concord Regional Airport, Concord, North Carolina. Instrument meteorological conditions prevailed, and an instrument flight plan was filed. The airplane was destroyed and the commercial pilot was fatally injured. The flight originated from Lincolnton, North Carolina (IPJ), about 25 minutes before the accident.

Review of communication between Charlotte approach control and catbird 124 revealed that catbird 124 was cleared for takeoff at 1050:00Z (05:50 EST) with the restriction that his clearance was void if not off the ground by 1055. Catbird 124 reported at 1052:45, that he was runway heading climbing to 3,000 feet. Charlotte departure informed catbird 124 that he was radar contact at 1053:05, and instructed him to climb and maintain 4,000 feet which was acknowledged by catbird 124 at 1053:10. At 1053:45, catbird 124 was asked by approach if he was familiar with the notams at Concord, and was informed that the glide slope was out of service and that the ILS DME was unmonitored. Catbird 124 stated, "yes sir I mean yes maam." He was further instructed by approach that the visibility was unreliable at Concord as well as the AWOS visibility, and was instructed to advise when he had the AWOS information, which was acknowledged. At1054:59 approach stated, "attention all aircraft arrival information Oscar is current altimeter two inner seven niner and the wind is calm." Catbird 124 was instructed to fly heading 090 at 1055:33. At 1058:00, approach stated, "attention all aircraft visibility is now one mile," and instructed catbird 124 to fly heading 150 at1102:30. At 1102:38, approach asked catbird 124 if he knew the glide slope was out of service, and he replied, "aah yessir." Catbird 124 was informed by approach at 1103:27, that he was 4 miles from gliss, instructed him to descend and maintain 3,000 feet until established on the localizer, and informed him that he was cleared for the ILS runway 20 approach at Concord. Catbird 124 acknowledged the clearance at 1103:32. At 1104:04, catbird 124 was informed he was frequency change approved and to report canceling IFR on his frequency on the ground. Catbird 124 acknowledged the transmission at 1104:19. The last recorded radar hit on catbird 124 was at 1105:40. The airplane was at 1,700 feet, heading 179 degrees at 143 knots groundspeed.

A witness who lives about 1.5 miles from the Concord Airport stated she went outside of her home at about 5:30 a.m. to let her dog out. The weather was very foggy, and she could not see the tree line across the street. At about 6:00 a.m., she was inside her house and heard an airplane approaching. A very short time later she heard a pop sound, looked out her window and observed the power line shaking. The fog was now about half way up a tree located in her yard. She awakened her son and he departed for the vacant field located across the street. He

returned a few minutes later and reported he observed a crashed airplane. She immediately called 911, and then departed to the crash site to see if they could assist.

Another pilot employed by Corporate Air Fleet stated he was scheduled to fly a flight from Lincolnton, North Carolina, to Charlotte, and Florence, North Carolina, on March 30, 2001. He called the Raleigh Durham Automated Flight Service at about 5:00 a.m. to obtain a weather briefing. He elected to cancel his flight due to weather. He called the office at 5:30 a.m. and spoke with the accident pilot, and informed him that he was canceling his flight. The accident pilot informed him that he was aware of the glide slope at Concord being of service, he stated that he was going to call the courier at Concord, and probably delay his flight.

Review of the transcript between Raleigh Automated Flight Service Station (RAFSS) and catbird 124 revealed that catbird 124 called RAFSS at 1029:02. Catbird 124 informed the briefer that he would be departing IPJ going to Concord, Fayetteville, Wilmington, Jacksonville, and would be departing in about 30 minutes. The briefer informed catbird 124, " uh that low is sitting right on top of us so everything is down the pipe pretty tight un Lincolnton is reporting a quarter of a mile with one hundred overcast winds calm nothing available for Concord." The briefer provided the weather for Fayetteville, Wilmington and Charlotte. The briefer informed catbird 124 that IPJ 23 ILS and DME was unmonitored and the 20 ILS was unmonitored. The pilot was asked if he had the notams and he replied "yeah". Catbird 124 ended the briefing at 1032:08.

PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the pilot was issued a commercial pilot certificate on June 8, 1996, with ratings for airplane single engine land, airplane multiengine land, instrument airplane. In addition, he was issued a flight instructor certificate on August 22, 2000, with ratings for airplane single engine land, airplane multiengine land, and instrument airplane. The pilot held a second-class medical certificate issued on April 11, 2000, with no limitations. The FAA issued a statement of demonstrated ability on April 5, 1989, for no vision in the right eye. Review of records on file with Corporate Air Fleet revealed the pilot completed his basic indoctrination on December 16, 2000. He completed his Piper PA-32 training on December 16, 2000, and completed his PA-31 Part 135-check ride and was hired by Corporate Air Fleet on December 18, 2000. The pilot indicated on the Corporate Air Fleet Pilot Qualification Record that he had accumulated 4,800 total single engine hours, 200 hours actual instruments, 150 hours hood, 25 hours simulator, and 500 hours of night cross country time. Review of the pilot's logbook revealed he had recorded as logged 5917.3 total hours of which 298.5 hours were in the PA-32RT-300. He had recorded 271.4 hours in the last 90 days of which 272 hours were in the PA-32RT-300. He had flown 124.7 hours in the last 30 days of which 112.1 hours were in the PA-32RT-300, and he had flown 9.3 hours in the last 24 hours.

AIRCRAFT INFORMATION

Review of maintenance records revealed the aircraft engine was factory overhauled by Textron Lycoming on August 12, 1999, at Williamsport Pennsylvania, and was installed on N42Y on October 12, 1999. The last recorded annual inspection was conducted on October 25, 2000, at tach time 2107.0 The last recorded 100-hour inspection was conducted on March 15, 2001, at tach time 2675.8 The tach time at the crash site was 2743.1. The altimeter system, static pressure system, and transponder were inspected on October 20, 1999. The transponder was replaced by a new transponder on November 30, 1999. Review of the logbook revealed no record of autopilot discrepancies. Refueling records on file revealed that N42Y was refueled on March 29, 2000, with 31 gallons of fuel.

METEOROLOGICAL INFORMATION

The nearest weather reporting facility at the time of the accident was Concord, North Carolina The 0601 surface weather observation was: 400 overcast, visibility 1 mile, temperature 45 degrees Fahrenheit, dew point temperature 45 degrees Fahrenheit, wind calm, and altimeter 29.79. Instrument meteorological conditions prevailed at the time of the accident. According to the Raleigh Durham Automated Flight Service Station, the pilot of N42Y called and received a full weather briefing before departing on the flight and a canned flight plan was filed. Review of the flight plan revealed that no alternate airport was listed for the flight. The following NOTAMS for Concord Regional Airport were in effect at the time of the accident:

1. ILS runway 20 localizer is unmonitored.
2. Limited aviation weather reporting station is not available from March 27, 2001 at 1200Z.
3. ILS runway 20 glide slope is out of service.
4. ILS DME for runway 20 is unmonitored.
5. Tower 856 lights (120 feet AGL) located 1.96 nautical miles northeast of the airport are out of service until April 13, 2001.

Review of sun and moon data obtained from the U.S. Naval Observatory Astronomical Application Department for Concord, North Carolina, on March 30, 2001, revealed the sunrise at 6:12 a.m., end of civil twilight was at 7:08 p.m., and its phase was awaiting crescent with only 31 percent illumination.

WRECKAGE AND IMPACT INFORMATION

The wreckage of N42Y was located in an open field about 1.9 statute miles north east of the airport in the vicinity of Cessna Drive, Concord, North Carolina.

Examination of the crash site revealed the airplane collided with a power line at

35:25:01 N, 80:42:19 W in a descending right turn. The crash debris line (CDL) extended to the south-southwest on a heading of 220 degrees magnetic. Fragments of the right wing were located 69' 9" from the initial point of impact. The right wing and landing gear collided with a telephone/electric pole guy wire at 35:25:0 N, 80:42:20 W. Fragments from the upper right wing skin and right wing spar with the wing tie down attached were located 137' 5" down the CDL. Braded cable imprints were present on the right spar cap near the main spar false spar lap joint. Fragments of the right inboard fuel tank were located 202' 6" down the CDL. The right wing separated 80" inboard of the wing tip 282' 6" down the CDL. The airplane rolled to the right and the left wing tip collided with the ground 406'10" down the CDL. The airplane collided with the ground inverted 436' down the CDL leaving a 7' long ground scar 10" deep. Fragments of the left wing tip were located 449' down the CDL. A section of the left wing leading edge with the stall strip was located 479' 5" down the CDL. One propeller blade was located 487' 4" down the CDL. The left outboard wing with the fuel tank was located 513' 10" down the CDL. The airplane rotated to the right and came to rest on its left side on a heading of 169 degrees magnetic 557' 7" down the CDL. The left and right inboard wings separated from the wing root and were resting on the right side of the fuselage attached by the aileron cables. All fuel tanks were ruptured. The landing gear was in the down position and the flaps were extended 10 degrees. The cabin roof was pealed back aft and to the right. The engine assembly was displaced to the right, broken from the engine mounts, and at rest inverted.

Examination of the airframe, and flight controls revealed no evidence of a precrash mechanical failure or malfunction. All components necessary for flight were present at the crash site. Continuity of the flight control system was confirmed for pitch, roll, and yaw. Examination of the auto pilot control panel revealed the autopilot was not engaged. The coupler switch was found in the LOC NORM position. Examination of the stabilator autopilot servo revealed the unit to be intact and in place. The aileron autopilot servo bridle cables were separated in tension a few inches from the cable clamp attachment to the main aileron control cable.

Examination of the engine assembly revealed no evidence of a precrash mechanical failure or malfunction. Valve and drive train continuity was confirmed. All six cylinders produced compression (thumb check) the bottom spark plugs were removed. All spark plugs were dry and tan in color. The dual magneto unit was secure on the engine case. The magneto was removed, rotated by hand, and spark was present on all ignition towers. Fuel was present in all fuel system components and connecting lines. The propeller hub was fractured, one propeller blade had separated from the propeller hub, and the remaining propeller blades were loose in the hub. Torsional twisting, "S" bending, and chordwise scarring was present on all propeller blades. The propeller spinner had evidence of rotation.

Examination of the airborne vacuum pump revealed the shaft would freely turn when rotated by hand. The drive section of the vacuum pump remained attached to the engine assembly, the pump body was undamaged, and the internal rotor and vanes were intact.

The turn coordinator, directional gyro, vertical speed indicator, attitude gyro, altimeter,

and the Collins No.1 and No. 2 Com/Nav were removed for further analysis.

Examination of the turn coordinator revealed no evidence of a precrash mechanical failure or malfunction. The case sustained impact damage, the bezel had separated from the case, and the bezel glass was not broken. The data plate and factory seal is present. Disassembly of the turn coordinator revealed the pivot point had not separated from the rotor assembly, and no scoring was present on the rotor.

Examination of the directional gyro revealed no evidence of a precrash mechanical failure or malfunction. The case sustained impact damage, the heading and push knob were bent, the bezel was cracked, and the bezel glass was broken. The data plate and factory seal is present. Disassembly of the directional gyro revealed the yoke assembly was not broken, and no scoring was present on the rotor.

Examination of the vertical speed indicator revealed no evidence of a precrash mechanical failure or malfunction. The case was cracked and a factory seal is present. The sector pivot was not broken. Tension was present on the hairspring. The hand staff was in place and no damage was on the top plate. The diaphragm was attached to the base and was not damaged.

Examination of the attitude gyro revealed no evidence of a precrash mechanical failure or malfunction. The bezel sustained impact damage, the bezel glass was broken, and the gyro had tumbled. A factory seal and data plate is present. Disassembly of the attitude gyro revealed the yoke assembly was not broken, and no scoring was present on the gyro.

Examination of the altimeter revealed no evidence of a precrash mechanical failure or malfunction. The case sustained impact damage, and the barometric knob was bent. A factory seal and data plate is present. Disassembly of the altimeter revealed the 10,000-foot pointer was loose, the sector pivots were broken, and the balance assembly had not separated from the sector assembly. No tension was present on the hairspring to the sector and sector pointer (impact damage). The sector disengaged from the hairspring wheel, and the pivots were not broken on the hairspring. The diaphragm had separated from the base. The top plate was loose, play was present on the top of the plate bridge, and no scoring was present on top of the top plate. The hand staff and jewels were not damaged.

Examination of the airspeed indicator revealed no evidence of a precrash mechanical failure or malfunction. A functional manometer test could not be performed due to impact damage. The static port was broken and the knob shaft is bent. A factory seal and data plate is present. Disassembly of the airspeed indicator revealed the airspeed pointer was not broken, the sector pivots were not broken, and the diaphragm was not damaged. Tension was present on the hairspring and the hand staff was not damaged.

Examination of the Collins Com 1 and Com 2 was conducted at an authorized repair facility. The LCD display on the Com 1 was destroyed and the selector knob was damaged.

The access panels were removed and the Com 1 was connected to a MEC 190 test panel. Power was applied and frequency 134.7 was displayed on the transmitter frequency counter. The access panels on the Com 2 were removed, and the Com 2 was connected to a MEC 190 test panel. Power was applied and frequency 120.55 was displayed on the LCD display.

Examination of the Collins Nav 1and Nav 2 was conducted at an authorized repair facility. The LCD display on the NAV and access panels sustained extensive damage. The access panels were removed and the synthesizer board was damaged. The Nav 1 was connected to a MEC 160 test panel. Power was applied. The first segment display was blank. The second and third segment display were illuminated with the number 1. The fourth and fifth segment display was blank. A good segment display was removed and installed in each blank segment display. The number 1 illuminated in the first segment display. The number 9 illuminated in the fourth segment display, and the number five illuminated in the fifth segment display. The frequency in use on Nav 1 at the time of the accident was 111.95. The LCD display on the Nav 2 was not damaged. The access panels were removed and the Nav 2 was connected to a MEC 160 test panel. Power was applied and frequency 111.95 was displayed on the LCD display.

MEDICAL AND PATHOLOGICAL INFORMATION

Dr. Christopher D. Ingram, Pathologist, Office of the Chief Medical Examiner, Chapel Hill, North Carolina, conducted postmortem examination of the pilot on March 31, 2001. The cause of death was multiple blunt force injuries. Postmortem toxicology of specimens from the pilot was performed by the Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma. The results were negative for basic, acidic, and neutral drugs. Carbon monoxide, cyanide, and ethanol was not detected.

ADDITIONAL INFORMATION

United States Government Flight Information Publication, U.S. Terminal Procedures Southeast (SE) volume 2 of 4 was located in the cockpit of the airplane wreckage. The approach plate was open and paper clipped on page 116 and 117 (GPS RWY 20 Concord Regional and ILS RWY 20 Concord Regional.) The approach plate expired on March 22, 2001. No Jeppsen flight manuals were located in the airplane wreckage.

A flight check of ILS runway 20 was conducted on March 31, 2001. The check was satisfactory. (See FFA Form 8240-14 an attachment to this report.)

The wreckage of N42Y was released to Mr. David E. Huie, Claims Representative, Phoenix Aviation Managers Inc, Kennesaw, Georgia, on April 2, 2001. The pilot's logbook was released to Mrs. Ronald L. Dolan, Accident, Maryland, on April 24, 2001. Components retained by the NTSB for further analysis were released to Krista Rowland, Shipping Manager, Atlanta

Air Salvage, Griffin, Georgia, on May 15, 2001.

Pilot Information

Certificate:	Flight instructor	**Age:**	50,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
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--w/ waivers/lim	**Last FAA Medical Exam:**	April 11, 2000
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	December 16, 2000
Flight Time:	5917 hours (Total, all aircraft), 298 hours (Total, this make and model), 5723 hours (Pilot In Command, all aircraft), 271 hours (Last 90 days, all aircraft), 125 hours (Last 30 days, all aircraft), 9 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N42Y
Model/Series:	PA-32RT-300	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	32R7885239
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	March 15, 2001 100 hour	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	67 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4904 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-540-K1G5D
Registered Owner:	Corporate Air Fleet	**Rated Power:**	300 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	SX0A

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	JQF,690 ft msl	**Distance from Accident Site:**	
Observation Time:	06:01 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:		**Visibility**	1 miles
Lowest Ceiling:	Overcast / 400 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	7°C / 7°C
Precipitation and Obscuration:			
Departure Point:	Lincolnton, NC (IPJ)	**Type of Flight Plan Filed:**	IFR
Destination:	(JQF)	**Type of Clearance:**	IFR
Departure Time:	05:48 Local	**Type of Airspace:**	Class D

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.416942,-80.705276

Administrative Information

Investigator In Charge (IIC):	Smith, Carrol
Additional Participating Persons:	Leon H McRae; Charlotte FSDO; Charlotte, NC Edward G Rogalski; Textron Lycoming; Belleview, FL Kris Weatherell; Piper Aircraft Company; Vero Beach, FL Gary Parham; NATCA; Atlanta, GA
Original Publish Date:	October 9, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=51981