Aviation Investigation Final Report

Location:	GOLDSBORO, North Carolina	**Accident Number:**	MIA97FA049
Date & Time:	December 28, 1996, 10:27 Local	**Registration:**	N8220Y
Aircraft:	Piper PA-30	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Review of transcripts revealed the pilot departed Baltimore, Maryland VFR at about 0746 to obtain fuel locally for a cross country flight to Florida. No flight plan or weather briefing had been filed or obtained prior to departure. The pilot was unable to land, encountered IFR flight conditions and filed an IFR flight plan to Florida. En route, the pilot diverted to another airport for fuel. He was cleared for an ILS approach and informed prior to beginning the approach that the weather was below minimums. The pilot made a missed approach, and informed the controller a short time later that he had lost one engine. The controller coordinated with the U.S. Air Force to allow the pilot to conduct a PAR approach, and declared the airplane an emergency. The pilot was cleared for a PAR approach. The approach was terminated by the controller, the changed to a surveillance approach which resulted in a missed approach. The pilot was vectored for another PAR approach, and it was subsequently changed to a no gyro approach. The controller informed the pilot he was too far left for a safe approach, and to climb to 1800 and fly a heading of 260 degrees. Radar contact was lost 1 mile southwest of the airport. Examination of the wreckage revealed that the fuel tanks were not ruptured and that no fuel was present. Also, a review of the pilots logbook revealed he did not meet FAA instrument recurrency requirements.

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 instrument approach procedures during numerous instrument approaches and missed approaches which resuled in a total loss of engine power on both engines due to fuel exhaustion. Factors contributing to the accident were: the pilot's failure to obtain a weather briefing prior to his departure and his lack of recent instrument flight experience.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH

Findings
1. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
2. (F) WEATHER FORECAST - NOT OBTAINED - PILOT IN COMMAND
3. (C) IFR PROCEDURE - IMPROPER - PILOT IN COMMAND
4. (F) LACK OF RECENT INSTRUMENT TIME - PILOT IN COMMAND
5. 2 ENGINES
6. FLUID,FUEL - EXHAUSTION

Occurrence #2: FORCED LANDING
Phase of Operation: EMERGENCY DESCENT/LANDING

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: EMERGENCY DESCENT/LANDING

Findings
7. OBJECT - TREE(S)

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: EMERGENCY DESCENT/LANDING

Factual Information

HISTORY OF FLIGHT

On December 28, 1996, about 1027 eastern standard time (EST), a Piper PA-30, N8220Y, registered to a private owner, operating as a 14 CFR Part 91 personal flight, crashed during an instrument approach to Seymour Johnson A.F.B. Goldsboro, North Carolina. Instrument meteorological conditions prevailed and an IFR flight plan was filed. The airplane was destroyed and the commercial pilot was fatally injured. The flight originated from Baltimore, Maryland, about 2 hours 41 minutes before the accident.

Review of communication between N8220Y, Baltimore Tower, and Andrew ATCT (T-1) revealed N8220Y was cleared for a VFR takeoff at 1246 UTC (0746 EST). N8220Y contacted T-1 at 1254, reported he was level at 1200 feet, and informed the controller that he would be landing at Potomac Airpark, Maryland (VKX). The 1241 Andrew's (ADW) weather was: wind 170 at 6 knots, visibility 1 mile, measured ceiling 200 overcast, temperature 04, dewpoint 04, altimeter 30.02, and tower visibility was less than 1/2 mile. N8220Y advised T-1 at 1254:56 that he wanted to over fly the area southbound. N8220Y was issued a special VFR clearance and was asked what his flight conditions were. He informed the controller that he was in the clear, in between cloud layers, and that he could take an IFR clearance. At 1257:00, N8220Y advised the controller that he was trying to go to VKX to get gas, but if he could not get in due to weather conditions, he might have to keep flying south. T-1 advised N8220Y to continue special VFR and asked for the destination airport. N8220Y informed the controller that his destination was Florida, that he had just departed Baltimore where the weather was clear, and that he thought he could get into VKX. Review of records on file with the FAA Leesburg Automated Flight Service Station, revealed no record of a VFR flight plan or a weather briefing for N8220Y. T-1 informed N8220Y at 1258:50, that the Patuxent weather was compatible to Andrew's and Richmond's weather was worse. N8220Y requested an IFR clearance to Myrtle Beach at 1259, and was issued the IFR clearance at 1304:25 UTC (0804:25 EST).

At 1416 UTC (0916 EST), N8220Y contacted Washington Center (R27) and requested the Kinston (ISO) weather. R27 states the ISO 1350 weather was: winds calm, visibility 3/16 of a mile, fog, indefinite ceiling 100. N8220Y asks R27 if the Wilmington (ILM) or the Myrtle Beach (MYR) weather is better. R27 asks N8220Y if he wanted the ILM or Grand Strand (CRE) weather and N8220Y informs him that he wants the CRE weather. The 1350 CRE weather was: wind 060 at 6 knots, visibility 4 miles, 6000 broken, temperature 12, dewpoint 12, altimeter 30.29. N8220Y informs R27 at 1417:54, that he is going to CRE, but he was thinking about stopping early to get some gas. R27 confirmed N8220Y's destination airport as CRE and issued an IFR clearance, however N8220Y states he is thinking about ISO. R27 asks N8220Y if he wants to overly ISO, and N8220Y replies, "ah let me call you back I'm checking to see what (unintelligible) what the approaches are like there." At 1428:03, N8220Y calls Seymour

approach (SR) and asks for the local weather. SR informs N8220Y that ISO is IFR. N8220Y asks for the Goldsboro weather and is informed at 1430:36, that no weather is available. He is informed the Seymour Johnson, 1350 weather observation, located 6 miles south of Goldsboro, is: wind variable at 4 knots, 3/16 mile, runway 26 measured 1000 feet RVR, fog, indefinite ceiling 100 feet, and tower visibility at Seymour is 1/16 mile. N8220Y informs SR at 1436:26, "yeah a I'm , I'm running a little bit low on fuel and I don't know if I want to, want to chance it to um Grandstand, hey what's the Fayetteville look like?" SR replies at 1436:42, "23Y the uh airport that I just gave weather on, is about 30 miles uh north of you. Ah that's about the best weather I've seen for uh areas around here, and that's 1/8 mile with ground fog, and 510WP and 20Y I believe the uh, overcast layer was at two zero thousand." SR also provided the Pope Air Force Base weather. N8220Y informed the controller that he was going to Rocky Mount (RMT) and requested radar vectors. At 1438:25, SR states the weather at ISO is: winds calm, one quarter mile with fog, indefinite ceiling 100 feet, altimeter 30.33. N8220Y requested clearance to ISO and was provided vectors to the downwind and told to expect the ILS runway 5 approach.

At 1441:23, SR advises Kinston Tower that N8220Y is inbound for the ILS, and is looking for gas. Kinston tower states their weather is below minimums for the approach. SR advises N8220Y of the weather conditions, informs him that if he wants to shoot the approach it is at his discretion, and verifies that he has the approach plates for the approach. N8220Y is cleared straight in for the approach at 1444:20, and is instructed to maintain 2,100 feet until on the localizer. At 1446:05, SR states, "8220Y showing you established on the localizer is that correct?" N8220Y replies, "Uh, negative. Uh this is 20Y I was shooting the ILS." SR responds, "affirmative you've been cleared for the ILS," and informs N8200Y that he is over stalls radio beacon. SR contacts Kinston tower at 1448:07 and informs them that N8200Y is 3 miles from the airport still at 1,900 feet, and that he doesn't think that N8200Y will get down on this approach. At 1449:49, SR informs Kinston tower, "he's uh, he going missed, right?" Kinston states, he hasn't said anything yet, but I think I heard him go by. SR replies, "he's passed the airport and still descending." N8220Y contacted SR at 1451:03, and is informed that the weather at Pitt Greenville (PGV), an uncontrolled airport located about 7 miles to the northeast is: wind calm, visibility 4 statue miles, 300 overcast, altimeter 30.32, and is asked if he wants to go there. N8200Y states affirmative and is provided radar vectors, and is informed to contact Washington Center (R25).

At 1458:12, R25 asks N8220Y if he has the current PGV weather. N8220Y states, "ah nah plus I just lost one of my engines." R25 asks N8220Y which airport he wants to go to. N8220Y replies, " ah I got to go to the closest one I'm a little I'm comin we're comin down." R25 provides radar vectors to PGV and asks which engine is out. N8220Y replies the left engine. R25 contacts the Seymour Johnson controller (GSBZ) and asks if they can do a PAR approach, and informs them that N8220Y has lost an engine. GSBZ informs the controller, "yeah put him on a uh 200 heading and he's radar contact." GSBZ asks R25 if N8220Y has declared an emergency. R25 replies, "not as such but he lost an engine and he can't hold altitude so atc's declaring an emergency." GSBZ states, "okay we'll give him par." R25 contacts N8220Y at 1500:11 UTC (1000:11 EST), and states, "ah twin comanche two zero yankee seymour

approach has got precision radar available the seymour airport is twenty three miles can you accept a vector to that airport." N8220Y replies, "okay let me do that." SR informs him that Seymour has declared him an emergency, and he is being vectored for PAR runway 26. N8220Y states at 1503:11, "Uhh, I might not make it." SR informs him to descend to 1,800 feet at pilots discretion. N8220Y replies, "Uh, you'd better let me stay at altitude as long as I can." I'm just about out of fuel. SR informs N8220Y that the descent is at pilots discretion and asks do you have an estimate in fuel sir? N8200Y replies, "I do not, no, I don't know, I'm about out. I lost one engine already."

SR continued vectoring N8220Y for the approach and asked him if he was familiar with no gyro procedures, and if he has ever flown a PAR before? N8220Y replies, "affirmative." At 1506:19, SR states, "Seymour is active runway two six sir, the wind is variable at four knots, right now I'm showing the wind at one three zero at six. One fourth, one quarter mile visibility, runway 26 RVR one thousand feet with fog, indefinite ceiling one hundred feet, altimeter three zero three one, tower visibility showing one sixteenth of a mile." N8220Y is 7 miles from the airport, 5,000 feet at 1510:17 when he informs SR, "20Y I think I can start down." The controller replies "roger, I just don't want you to over fly the airport sir," and is handed off to the final controller at 1510:44. N8220Y begins the PAR approach at 1510:48. The PAR approach was terminated by the final controller (RFC) at 1512:11,and changed to a surveillance approach. At 1512:50 N8220Y is on a half mile final at 2,800 feet. N8220Y states at 1513:40, "I need to make a three sixty then cause I've overshot it." N8220Y is informed to climb to 1,800 feet to expect a small box pattern to a 2 1/2 mile final. N8220Ywas informed at 1517:26, approaching glidepath from above. At 1518:25, N8220Y was well right of course and the controller changed the approach to a no gyro approach. The RFC stated at 1519:11, "to far left for a safe approach if runway or approach lights not in sight climb and maintain one thousand eight hundred fly heading of two six zero." N8220Y was asked if he had Seymour in sight and he replied, "negative." There was no other recorded communication with N8220Y. Radar contact was lost at 1519:51, and reestablished at 1519:58, 1 mile southwest of Seymour. N8220Y was instructed to climb to 1800 and provided radar vectors for another box pattern. N8220Y was advised to remain calm and to state his altitude and fuel remaining. The airplane was last observed on radar at 1524:20 UTC (1024:20 EST), 3 1/2 miles northeast of Seymour Johnson Air Force Base. RFC stated at 1527:41, "N8220Y if you're up this frequency radar contact lost."

A witness stated he observed the airplane come out of the clouds in a descending attitude above the tree top. He thought a wing collided with a tree. The airplane rotated around its vertical axis to the left, pitched nose down in about a 45-degree attitude, and collided with the ground. The left propeller was not turning. He could not see the right propeller.

PERSONNEL INFORMATION

Review of the pilot's logbook revealed the pilot completed an instrument competency checkride on October 8, 1995. The pilot had recorded as logged 9 hours of actual instrument flight within the past 6 calendar months, and one ILS instrument approach on October 7, 1996.

The pilot's last recorded ASR approach was on March 3, 1990, and the last recorded PAR approach was conducted on November 4, 1982. For additional first pilot information see page 3 of this report.

AIRCRAFT INFORMATION

Review of the airframe maintenance records revealed the altimeter system, altitude reporting equipment, and transponder were inspected on August 16, 1995. Review of the engine logbooks revealed the left and right engine were installed on December 16, 1976, with zero time. The left engine had accumulated 1962 hours at the time of the accident. The right engine had accumulated 1945 hours. There is no recorded record that the engines have been overhauled. The recommended manufacture engine time before overhaul is 1800 hours. In addition Textron Lycoming Service Instruction No. 1009AJ states, "the recommended operating hours between overhaul in a twelve (12) year period must be overhauled during the twelfth year." For additional aircraft information see page 2 of this report.

METEOROLOGICAL INFORMATION

Instrument meteorological conditions prevailed at the time of the accident. Witnesses in the vicinity of the crash site estimated the ceiling varied from tree top level to 50 feet above the trees with ground fog. For additional weather information see page 3 of this report.

WRECKAGE AND IMPACT INFORMATION

The wreckage of N8220Y was located in a wooded area about 1 1/2 miles east of Seymour Johnson Air Force Base, adjacent to Lamm Drive and Colonial Drive in the vicinity of Goldsboro, North Carolina.

Examination of the crash site revealed the airplane right wing collided with a tree while descending. The airplane rotated around the vertical axis to the left, and collided with the ground in a nose down attitude on a heading of 311 degrees magnetic. The nose cone was crushed aft to the instrument panel. Accordion crush was present from the top of the instrument panel down to the leading bottom edge of the cabin door at about a 45-degree angle. The right wing was pushed aft and partially separated about 120 inches outboard of the wing root. The left wing was partially accelerated forward with minor leading edge damage. The left and right engine was displaced up and to the right. The left and right main fuel tanks and auxiliary fuel tanks were not ruptured. The fuel tanks were empty. There was no odor of fuel, visible signs of fuel leakage, or browning of vegetation present. The landing gear was in the down position and the flaps were extended to 15-degrees. The cabin roof separated from the main cabin door frame extending aft to the dorsal fin. The tailcone was separated aft of the pressure bulkhead. No damage was present on the right horizontal stabliator. The left horizontal stabliator had evidence of a tree strike about 30 inches outboard of the tail cone.

Examination of the airframe and flight control assembly revealed no evidence of a

precrash mechanical failure or malfunction. Continuity of the flight control system was confirmed for pitch, roll, and yaw.

Examination of the left and right engine assembly and accessories revealed no evidence of a precrash failure or malfunction. One propeller blade was bent aft on the left propeller. No damage was present on the remaining propeller blade, and there was no evidence of torsional twisting, "s" bending, or chordwise scarring. The left propeller was in the feather position. Both right propeller blades were bent aft, and there was no evidence of torsional twisting, "s" bending, or chordwise scarring, however the right propeller was rotating and absorbing some power, but not a significant amount at impact. For additional propeller information see Hartzell Propeller Inc., Propeller Teardown Report.

Examination of the left vacuum pump revealed the drive had separated. The right vacuum pump drive shaft was intact. Both drive shafts would freely turn by hand. The rotor and vanes were not damaged.

Examination of the turn coordinator, gyro horizon, and the directional gyro revealed no evidence of rotational scarring on the gyro, rotor, or gyro housing. The vertical speed indicator and pressure altimeter were destroyed.

MEDICAL AND PATHOLOGICAL INFORMATION

Post-mortem examination of the pilot was conducted by Dr. Robert L. Thompson, Medical Examiner, State Medical Examiners Office, Chapel Hill, North Carolina, on December 29, 1996. The cause of death was multiple traumatic injuries. Post-mortem toxicology studies of specimens from the pilot were performed by the Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma. These studies were negative for alcohol, neutral, acidic, and basic drugs. Twelve percent carboxyhemoglobin was detected in the blood.

TEST AND RESEARCH

A flight check of ILS runway 05 at Kinston, North Carolina, was conducted by FAA Flight Inspection Central Operations on October 16, 1996, with no deficiencies noted. A flight check of PAR runway 08 and runway 26 at Seymour Johnson A.F.B., Goldsboro, North Carolina, was conducted on December 11, 1996, with no deficiencies noted.

ADDITIONAL INFORMATION

Review of the pilot's logbook revealed the airplane was flown from Baltimore, Maryland (BWI) to Potomac Air Park, Maryland (VKX), on November 9, 1996, and 56.5 gallons of fuel was added to the airplane. The pilot departed VKX on November 9, 1996, flew to Tuscaloosa, Alabama (TCL), and added 87.4 gallons of fuel. The pilot flew to San Antonio, Texas (SAT), and an unknown amount of fuel was added to the airplane. The pilot departed SAT on November

17, 1996, flew to Tuskegee, Alabama (06A), and added 75.6 gallons of fuel. The fuel slip at O6A was dated 11/16/96. The pilot departed O6A on November 17, 1996, and flew to BWI. The time enroute was 4 hours 30 minutes. There is no recorded record that any fuel was added to N8220Y prior to departing on the accident flight.

The aircraft wreckage was released to Detective Denise Salo, Wayne County Sheriff's Office, Goldsboro, North Carolina, on December 29, 1996. The left and right engine assembly and accessories were released to Mr. Tommy Bradshaw, B&B Service Company, Goldsboro, North Carolina, on December 30, 1996. The aircraft logbooks were released to Mr. Robert A. Paul, Crittenden Adjustment Company, Virginia Beach, Virginia, on December 30, 1996. The attitude gyro and directional gyro was released to Mr. Paul on January 15, 1997. The pilot's logbook was released to Ms. Tara A. Harrison, daughter of the deceased pilot on February 28, 1997. The left and right propeller assemblies were released to Mr. Roger W. Stallkamp, Hartzell Propeller Inc., Piqua, Ohio, on March 31, 1997.

Pilot Information

Certificate:	Commercial	**Age:**	58,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):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 3, 1995
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2697 hours (Total, all aircraft), 1151 hours (Total, this make and model), 2580 hours (Pilot In Command, all aircraft), 31 hours (Last 90 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8220Y
Model/Series:	PA-30 PA-30	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	30-1348
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 1, 1996 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	32 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3911 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	LIO-320-C1A
Registered Owner:	JOHN T. HARRISON III	**Rated Power:**	160 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ISO ,94 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	10:50 Local	**Direction from Accident Site:**	30°
Lowest Cloud Condition:	Unknown	**Visibility**	1 miles
Lowest Ceiling:	100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	9°C / 9°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	BALTIMORE , MD (BWI)	**Type of Flight Plan Filed:**	IFR
Destination:	(GSB)	**Type of Clearance:**	VFR;IFR
Departure Time:	07:46 Local	**Type of Airspace:**	Class D

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	ASR;ILS;PAR
Runway Length/Width:		**VFR Approach/Landing:**	None

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:**	35.369163,-77.970695(est)

Administrative Information

Investigator In Charge (IIC):	Smith, Carrol
Additional Participating Persons:	FREDERICK W KLEIN; WINSTON-SALEM , NC DAVID BORDEN; MARIETTA , GA GERALD R JAMES; DALLAS , TX ROGER W STALLKAMP; PIQUA , OH
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Last Revision Date:	
Investigation Class:	Class
Note:	
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