National Transportation Safety Board
Aviation Accident Final Report

Location:	WATERFORD, VA	**Accident Number:**	NYC97FA080
Date & Time:	04/27/1997, 2052 EDT	**Registration:**	N885JC
Aircraft:	Piper PA-60-601P	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

During arrival at night, the flight was being controlled by a developmental controller (DC), who was being supervised by an instructor (IC). The pilot (plt) was instructed to descend & cross the STILL Intersection (Int) at 3,000 ft. STILL Int was aligned with the localizer (loc) approach (apch) course, 10.1 mi from the apch end of runway 17 (rwy 17); the final apch fix (FAF) was 3.9 mi from the rwy. About 5 mi before reaching STILL Int, while on course & level at 3,000 ft, the plt was cleared for a Loc Rwy 17 Apch. Radar data showed the aircraft (acft) continued to STILL Int, then it turned onto the loc course toward the FAF. Shortly after departing STILL Int, while inbound on the loc course, the acft began a descent. Before the acft reached the FAF, the DC issued a frequency change to go to UNICOM. During this transmission, the IC noticed a low altitude alert on the radar display, then issued a verbal low altitude alert, saying, 'check altitude, you should be at 1,500 ft (should have said '1,800 ft' as that was the minimum crossing altitude at the FAF), altitude's indicating 1,200, low altitude alert.' There was no response from the plt. This occurred about 2 mi before the FAF. Minimum descent altitude (MDA) for the apch was 720 ft. The acft struck tree tops at 750 ft, about 1/2 mi before the FAF. The IC's remark 'you should be at 1,500 ft' was based on an expired apch plate with a lower FAF minimum crossing altitude; the current minimum crossing altitude at the FAF was 1,800 ft. Apch control management had not made the current plate available to the controllers. Investigation could not determine whether a current apch plate would have prompted an earlier warning by the controllers.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the pilot to follow the published instrument (IFR) approach procedure, by failing to maintain the minimum altitude for that segment of the approach.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - IAF TO FAF/OUTER MARKER (IFR)

Findings
1. LIGHT CONDITION - NIGHT
2. WEATHER CONDITION - FOG
3. (C) IFR PROCEDURE - NOT FOLLOWED - PILOT IN COMMAND
4. (C) PROPER ALTITUDE - NOT MAINTAINED - PILOT IN COMMAND
5. APPROACH CHARTS - OTHER

Factual Information

HISTORY OF FLIGHT

On April 27, 1997, at 2052 eastern daylight time, a Piper PA-60-601P, N885JC, was destroyed when it collided with trees in Waterford, Virginia, during an instrument approach to the Leesburg Municipal Airport, Leesburg, Virginia. The certificated private pilot/owner of the airplane and passenger were fatally injured. Instrument meteorological conditions prevailed for the personal flight that originated at Allentown, Pennsylvania, about 1952. An instrument flight rules (IFR) flight plan had been filed for the flight conducted under 14 CFR Part 91.

According to air traffic control records, the pilot had filed an IFR flight plan from the Lehigh Valley International Airport (ABE), Allentown, to the Leesburg Municipal Airport (JYO). After takeoff, the airplane climbed to 6,000 feet above mean sea level (MSL), and flew an uneventful flight towards JYO. When the pilot contacted Dulles Approach Control, he was cleared direct to the STILL intersection, and then cleared for the Localizer Runway 17 approach to JYO. The STILL intersection was on the localizer final approach course, 10.1 miles from the approach end of runway 17. The final approach fix, WARDE, was also an intersection on the localizer final approach course, 3.9 miles from the approach end of runway 17.

At 2044, the Dulles controller informed the pilot that he was 5 miles from STILL, and to "cross STILL at three thousand, cleared ILS, correction, cleared localizer runway one seven approach at Leesburg." The clearance was acknowledged by the pilot. At 2049:01, the controller issued the pilot a frequency change to the JYO UNICOM, which the pilot acknowledged at 2049:06. At 2049:08, the Dulles controller stated, "November five Juliet Charlie, check altitude, you should be at one thousand five hundred, altitudes indicating one thousand two hundred, low altitude alert." There was no response from the pilot.

Witnesses near the accident site reported hearing an airplane fly over "low and loud." They also reported that the immediate terrain was obscured by fog.

The airplane struck tree tops in the vicinity of the localizer center line, at an approximate elevation of 750 feet MSL, and came to rest about 4.5 miles from the approach end of runway 17.

The accident occurred during the hours of darkness approximately 39 degrees, 9 minutes north latitude, and 77 degrees, 35 minutes west longitude.

PILOT INFORMATION

The pilot held a private pilot certificate with ratings for airplane single and multiengine land, and instrument airplane. His most recent Federal Aviation Administration (FAA) Second Class Medical Certificate was issued on June 30, 1995.

The pilot's log books were located; however, the last entry was dated December 10, 1996. The pilot's total flight experience was estimated to be about 1,600 hours, of which approximately 525 hours were in make and model. Recent night and instrument experience could not be determined.

METEOROLOGICAL INFORMATION

Weather reported at the Leesburg Municipal Airport (JYO), at 2040, included winds from 140 degrees at 6 knots, visibility of 4 miles, and scattered clouds at 600 feet, scattered

clouds at 1,200 feet, and overcast clouds at 3,400 feet.

Weather reported at the Dulles Airport (IAD), at 2051, included winds variable at 5 knots, visibility of 2 1/2 miles with light rain, and few clouds at 1,200 feet, scattered clouds at 1,700 feet, and overcast clouds at 3,100 feet.

WRECKAGE INFORMATION

The wreckage was examined at the accident site on April 28 and 29, 1997. The examination revealed that all major components of the airplane were accounted for at the scene. The airplane came to rest on an approximate magnetic heading of 240 degrees, at a ground elevation of about 600 feet above mean sea level (MSL).

Initial tree impact scars began about 915 feet north of the main wreckage. The tree tops were about 75 feet high, and the ground elevation was 675 feet MSL. Numerous broken tree branches, 1 to 3 inches in diameter, were located on the ground at the base of the trees. Tree impact scars continued along the tops of the trees for about 210 feet, until the tree line ended. At the end of the tree line were several tree limbs on the ground, about 6 to 8 inches in diameter, and several feet long. The swath path through the tree indicated a general magnetic direction of 170 degrees. The right wing tip, and a gear door that contained imbedded wood, were on the ground at the end of the tree line. About 300 feet from the tree line, in the direction of the main wreckage, was a section of the right wing. Scattered between the tree line and the main wreckage were several tree limbs, with ends cut at 45 degree angles. An impact hole was about 555 feet from the tree line, and the main wreckage was about 150 feet beyond the impact hole. The general direction of the scattered debris to the main wreckage continued to be 170 degrees magnetic.

The left engine was separated from the fuselage and wing section, and located about 30 feet northeast of the main wreckage. The engine's spark plugs were clean and light gray in color. The fuel servo contained fuel, and the fuel screen was absent of debris. The fuel pump contained fuel and provided pressure when rotated by hand. The vacuum pump and turbo charger wheels rotated freely. The left and right magnetos were rotated by hand and produced spark at all towers. The oil filter was cut open, and was absent of debris, as was the oil sump screen. The propeller governor had separated from the engine, and rotated freely. The propeller governor oil screen was absent of debris. The engine was rotated by hand, and thumb compression was obtained on all cylinders. Additionally, valve train continuity and accessory gear rotation were confirmed.

The left engine propeller hub was separated from the engine and located about 130 feet north of the main wreckage. Two of the three propeller blades were curved backwards. The leading edges of all three blades contained nicks and chordwise scratches. The tips of two of the blades were nicked and bent.

The right engine was separated from the fuselage and wing, and located about 30 feet north of the main wreckage. The engine was upside down and the six lower spark plugs, that had been on top, were clean and light gray in color. The fuel servo contained fuel, and the fuel screen was absent of debris. The fuel pump contained fuel and provided pressure when rotated by hand. The vacuum pump and turbo charger wheels rotated freely. The left and right magnetos were rotated by hand and produced spark at all towers. The oil filter was cut open and was absent of debris, as was the oil sump screen. The propeller governor remained attached to the engine, and when removed, rotated freely. The propeller governor oil screen

was absent of debris. The engine was rotated by hand, and thumb compression was obtained on all cylinders. Additionally, valve train continuity and accessory gear rotation were confirmed.

The right engine propeller hub remained attached to the engine. All three propeller blades remained attached to the hub, but could be rotated inside of the hub by hand. One propeller blade was bent in an "S" shape with chord wise scratches. A second blade was slightly curved and missing 2 inches of the blade tip. The third blade contained leading edge nicks and chord wise scratches.

The landing gear remained attached to the fuselage and was extended. The flaps were in the vicinity of the approach position. The instrument and radio light rheostats were half way on. Control continuity was established from the elevator and rudder, to the center of the cabin fuselage, where the cabin floor was compressed to the outer fuselage skin. The cabin pressure altitude selector was set to 1,200 feet, and the cabin vertical speed indicator was indicating down, 500 feet per minute.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot, on April 29, 1997, by Dr. James C. Beyer, of the Office of the Chief Medical Examiner, Fairfax, Virginia.

The toxicological testing of the pilot was conducted by the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma.

AIR TRAFFIC CONTROL

During the final segment of the flight, the airplane was at 6,000 feet, and the pilot had been cleared to the STILL intersection, and for the Localizer Runway 17 approach to JYO. A review of the National Oceanic and Atmospheric Administration (NOAA), Localizer Runway 17 approach procedure revealed that the STILL intersection was on the localizer final approach course, and 10.1 miles from the approach end of runway 17. It was identified by a radial from the Frederick VOR, or as the 11.2 mile distance measuring equipment (DME) fix from JYO. The published minimum altitude for crossing STILL was 3,000 feet. The next fix on the approach course was the final approach fix, WARDE, which was 3.9 miles from the approach end of runway 17. It was identified by a radial from the Frederick VOR, or as the 5 mile DME fix from JYO. The minimum altitude to cross WARDE was 1,800 feet.

On the final approach course, after WARDE, was a "step down" fix. This fix was 3 miles DME from the airport, and could only be identified by DME. Without DME, the minimum descent altitude for the approach was 1,100 feet MSL. With DME, the minimum descent altitude was 720 feet MSL.

When the Dulles controller issued the pilot a frequency change to JYO UNICOM, the pilot immediately acknowledged the change. The controller then stated, at 2049:08, "November five Juliet Charlie, check altitude, you should be at 1,500 feet, altitudes indicating 1,200 feet, low altitude alert."

The NOAA Localizer Runway 17 approach procedure that expired on March 27, 1997, had a published minimum crossing altitude of 1,500 feet MSL, at WARDE. The NOAA Localizer Runway 17 approach procedure that went into effect on March 27, 1997, had a published minimum crossing altitude of 1,800 feet MSL for WARDE. The approach procedure plate found in the airplane wreckage was for the procedure that had gone into effect on March

27, 1997.

The recorded radar data revealed that the target had descended below 1,800 feet MSL, at 2048:38, about 2.5 miles north of WARDE. When the pilot was issued the frequency change, at 2049:01, the radar data indicated the airplane's altitude was 1,300 feet MSL, and that it was about 1.9 miles north of WARDE. At that point, the airplane was 500 feet below the minimum altitude for crossing WARDE.

According to the Dulles ATC quality assurance specialist, the change to the Leesburg localizer approach plate had not been posted at the time of the accident. The controllers were using the outdated approach procedures, which contained a lower altitude then the current approach procedure. In response to questions posed by the NTSB Investigator, the Manager of the ATC facility stated the changes were received between 3 days to 1 week prior to their publication date, and that the responsibility to post the changes was the Dulles Plans and Procedures Department.

ADDITIONAL INFORMATION

According to recorded radar data, when the airplane had been assigned 6,000 feet by air traffic control, the radar target's recorded altitude was 6,000 feet. After the airplane had been cleared to the STILL intersection, and cleared for the Localizer runway 17 approach, the radar data revealed that the target descended and maintained 3,000 feet. The target crossed STILL at 3,000 feet MSL, about 2046:38. The radar data displayed the target departing 3,000 feet, about 2047:10, 1 mile south of STILL.

The data then displayed a continuous descent to 900 feet MSL. The last two recorded altitude reports indicated 900 feet, with the last at 2049:33. The radar data recorded between, 2047:05 and 2049:28, covered a distance of about 4.46 miles, and an altitude descent of 2,100 feet. This data computed an average ground speed of 112 knots, and a rate of descent of 880 feet per minute.

According to an Aerostar Model 601 Airplane Flight Manual, under FINAL APPROACH, it stated to reduce power to obtain the desired approach speed. It recommended for full flaps 115 MPH [101 knots], and for zero flaps 130 MPH [113 knots].

WRECKAGE RELEASE

The airplane wreckage was released on May 1, 1997, to a representative of the owner's insurance company.

Pilot Information

Certificate:	Private	**Age:**	44, 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):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2	**Last FAA Medical Exam:**	06/30/1995
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1600 hours (Total, all aircraft), 525 hours (Total, this make and model), 1450 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 10 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N885JC
Model/Series:	PA-60-601P PA-60-601P	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	P08268163434
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	11/13/1996, Annual	**Certified Max Gross Wt.:**	6000 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-540-51A5
Registered Owner:	GARY L. BLACKMAN	**Rated Power:**	300 hp
Operator:	GARY L. BLACKMAN	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Night/Dark
Observation Facility, Elevation:	JYO, 390 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	2040 EDT	**Direction from Accident Site:**	170°
Lowest Cloud Condition:	Scattered / 600 ft agl	**Visibility**	4 Miles
Lowest Ceiling:	Overcast / 3400 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	140°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	9°C / 9°C
Precipitation and Obscuration:	Fog; No Precipitation		
Departure Point:	ALLENTOWN, PA (ABE)	**Type of Flight Plan Filed:**	IFR
Destination:	LEESBURG, VA (JYO)	**Type of Clearance:**	IFR
Departure Time:	2000 EDT	**Type of Airspace:**	Class G

Airport Information

Airport:	LEESBURG MUNICIPAL (JYO)	**Runway Surface Type:**	Asphalt
Airport Elevation:	390 ft	**Runway Surface Condition:**	
Runway Used:	17	**IFR Approach:**	Localizer Only
Runway Length/Width:	5500 ft / 100 ft	**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	ROBERT L PEARCE	**Report Date:**	05/29/1998
Additional Participating Persons:	DONALD S KAGLE; DULLES, DC EDWARD ROGALSKI; WIALLMSPORT, PA		
Publish Date:	04/21/2010		
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.ntsb.gov/pubdms/.		