Aviation Investigation Final Report

Location:	LEHMAN TOWNSHIP, Pennsylvania	**Accident Number:**	NYC97FA013
Date & Time:	November 6, 1996, 18:35 Local	**Registration:**	N5671V
Aircraft:	Piper PA-34-200T	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal, 2 Serious
Flight Conducted Under:	Part 91: General aviation		

Analysis

The airplane was 90 minutes into the flight, level at 10,000 feet mean sea level, on a southwest heading, when air traffic control lost radio and radar contact with the flight. ATC observed primary radar targets only continue in a northerly direction, followed by a northeasterly direction. The cockpit, right wing and engine were found impaled on a tree near the point where radar contact was lost. The left wing and engine were within 200 feet east of the right wing. Debris was scattered northeast of the main wreckage for about 10,500 feet. Examination of the wreckage revealed that the fiberglass nose assembly had failed due to an undetermined reason. Airworthiness directives had been complied with that applied to the forward baggage compartment door.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the forward fuselage nose assembly for an undetermined reason, which resulted in an in-flight breakup of the airplane.

Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: CRUISE - NORMAL

Findings

1. (C) FUSELAGE,CARGO COMPARTMENT - UNDETERMINED
2. AIRFRAME - FAILURE,TOTAL
3. AIRFRAME - SEPARATION

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - UNCONTROLLED

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On November 6, 1996, at 1835 eastern standard time, a Piper PA-34-200T, N5671V, was destroyed during an in-flight break-up over Lehman Township, Pennsylvania. The certificated private pilot and one passenger were seriously injured. Two passengers received fatal injures. Night visual meteorological conditions prevailed for the "mercy flight" that originated at Boston, Massachusetts, about 1701. An Instrument flight rules flight plan had been filed for the flight conducted under 14 CFR Part 91.

The airplane, owned and operated by the pilot, was participating in the AirLifeLine program. The pilot had volunteered his airplane to transport a child for a medical consultation. The flight was conducted at no charge to the family, and the pilot incurred all expenses. The pilot had flown the mother and child, and a friend of their family, from Clarksburg, West Virginia, to Boston, the morning of November 6, 1996. At the conclusion of the medical consultation, the pilot boarded the passengers, and departed Boston for the return trip to Clarksburg.

After takeoff from Boston, the pilot was issued a climb to 10,000 feet, and cleared direct to Clarksburg. The flight then proceeded uneventful with several frequency changes. At 1826, N5671V was issued a frequency change to the Huguenot sector of the New York Air Route Traffic Control Center. The pilot acknowledged the frequency change and contacted the Huguenot controller, about 1827, and stated, "Good evening New York, Lifeguard five six seven one victor with you at one zero thousand." The Huguenot controller acknowledged N5671V and issued the current altimeter setting.

At 1832.32, the Huguenot controller stated, "Lifeguard five six seven one victor, I lost your transponder sir, recycle." The controller repeated the call, at 1833.10, and stated, "Lifeguard seven one victor, I'm still getting no transponder, I don't even have a primary on you sir." There was no response from N5671V.

During a post accident interview, the pilot did not recall the accident sequence or events.

Airplane wreckage was found scatter over an area about 2 miles long and 1/2 mile wide, below the area where radar contact with N5671V was lost.

The accident occurred during the hours of night, approximately 41 degrees, 10 minutes north latitude, and 75 degrees, 59 minutes west longitude.

PERSONNEL INFORMATION

The pilot held a Private Pilot Certificate with ratings for airplane single and multi engine land, and instrument airplane. His most recent Federal Aviation Administration (FAA) Third Class Medical Certificate was issued on October 9, 1995.

According to the pilot, he estimated that he had accumulated about 2,060 hours of total flying experience, of which about 1,300 hours were in this make and model airplane.

WRECKAGE AND IMPACT INFORMATION

The wreckage scatter path was documented on November 7, 8, and 9, 1996. The airplane wreckage was examined at the accident site on November 7, 1996, and at the Lehman Township Municipal Garage on November 7 and 8, 1996, where the wreckage was initially moved.

The examinations revealed that all major components of the airplane were accounted for within the scatter path. The airplane's main cabin floor, cockpit, right wing, right propeller and engine remained attached, and were impaled on a tree about 40 feet above the ground. Directly below the cockpit on the ground were the center fuselage section, and the remaining interior seats. The left wing and engine were about 200 feet east of the impaled wreckage, at ground level. The left propeller hub and blades were separated from the engine, and about 10 feet from the engine.

The remaining wreckage was scattered along a 2,000 foot wide debris path, that extended to the north over wooded, hilly terrain, for approximately 10,500 feet. The vertical stabilizer and the horizontal stabilator were separated into three components, and located between 1,500 feet and 3,500 feet north of the main wreckage. Debris located 10,500 feet north of the main wreckage included the interior panel of the left rear swing up door, a piece of the left rear main entrance door, pieces of cabin interior fiberglass trim, a sick sack, and exterior fiberglass from the nose section of the fuselage.

The forward baggage compartment (FBC) door was located about 2,700 feet from the main wreckage. The FBC door remained attached to its hinge, and the hinge was attached to a section of the forward assembly. The hinge was not damaged, and moved freely. The other major pieces of the FBC were located between 2,000 and 5,000 feet from the main wreckage. The locking handle and bars of the FBC door were not located. A vertical slash was observed in the FBC door fiberglass, in the vicinity of missing door locking handle. Black marks, similar to the black paint on the left propeller blade, was observed in the vertical slash.

Control continuity was established from the left aileron to the fuselage wing root separation point. Continuity was also established from the right aileron and rudder to the forward cockpit area. The stabilator balance weight was separated from the stabilator, and located with the cabin wreckage. The upper stabilator cable was separated about 12 inches

from the balance arm connection point. The lower cable and connector were separated from the balance arm. The lower cable extended forwarded to the cockpit area.

The manual flap handle was level with the cockpit floor, and the flaps were in the retracted position. The gear handle was in the down position. The right main gear was in the down and locked position. The left gear was found in its respective wheel well and the down lock link was broken. The nose gear strut was partially extended. The lower half of the nose strut and wheel were missing. The stabilator trim cable drum was indicating full up trim; however, both cable ends were separated, and displayed the characteristics of tension overload.

The left horizontal stabilator was separated from the fuselage, and the failed ends were bent down and aft. The right horizontal stabilator was also separated from the fuselage, and the failed ends were bent upward. The leading edges of both stabilators were wrinkled. The right stabilator displayed an indentation on the leading edge, about 10 inches outboard from the fuselage, and about 1/2 inch deep. The left wing was separated from the fuselage, and the outer half of the wing was bent downward.

The left engine remained attached to the left wing. The spark plugs were of the fine wire type, and gray in color. The flow divider contained fuel and was absent of debris. There was no evidence of a preimpact failure of the engine. The propeller blades remained attached to the hub, which was separated at the engine crankshaft. Propeller blade angles were in the vicinity of a low pitch position.

The right engine remained attached to the right wing. The engine remained in a tilted position for about 18 hours while impaled on the tree. The spark plugs were of the fine wire type. The spark plugs in the numbers 2, 4, and 6 cylinders were light gray in color. The spark plugs in the numbers 1, 3, and 5 cylinders (the down side of the engine) contained a light coat of oil. There was no evidence of a preimpact failure of the engine. The propeller blades remained attached to the hub, which remained attached to the engine. The propeller blades were in a high pitch position, similar to a feathered positioned. The flow divider contained fuel and was absent of debris.

METEOROLOGICAL

A review of the National Weather data revealed that there were no AIRMETS or SIGMETS issued for moderate or severe turbulence, and there were no weather cells in the Lehman Township area. Additionally, there were no reports from airplanes in the area of wind shear, or moderate to severe turbulence.

TESTS AND RESEARCH

The elevator balance weight and cable sections were sent to the NTSB Materials Laboratory Division for further examination. In the Metallurgist's factual report, he stated:

"...Optical examination of the tab fracture face on the tube revealed features typical of bending overstress separation. In addition, deformation on the separated tab indicated an out of plane twisting component. No indications of preexisting cracking were found on the fracture faces...Almost all filament wires of the cable separation showed fractures that were consistent with tensile overstress..."

On December 9, 1996, a second reconstruction and examination of the wreckage was conducted at the Dawn Aeronautics Facility, Wilmington, Delaware, under the supervision of the Safety Board investigator. The New Piper Aircraft Inc. representatives were also present during the examination

An examination of another Seneca II was conducted by the NTSB investigator. The examination revealed that the rotation of the left propeller blades were several inches out from, and slightly aft of, the open forward baggage compartment door.

ADDITIONAL INFORMATION

Radar Data

Recorded radar data was provided by the New York Air Traffic Control Center. The latitude and longitudes for each radar target was plotted by the NTSB investigator on a geological survey map, with the basic scatter path of the wreckage. The first four latitude/longitude plots were from the airplane's transponder with an altitude return of 10,000 feet. The fifth plot was from the last "beacon only slash" of the target airplane. The remainder of the plots were from primary radar targets only, both weak and strong returns. When plotted on the map, the general magnetic direction of the primary plots extended northeast about 020 degrees.

Radar Dome

The airplane's date of manufacturer was 1977, where it was delivered without a radar dome. The airplane's nose section consisted of fiberglass construction, with fiberglass ribs for structural support. In July 1979, a King KWX-50 radar system was installed, which included a KT-45 receiver-transmitter in the nose baggage compartment and radar antenna. The installation also included a Norton 4011X radome, installed per STC SA-50-GL.

A review of the STC limitations and conditions revealed:

"This STC approves only the installation of the radome and associated bracketry shown and does not include the radar system..."

Service Difficulty Reports

The FAA Service Difficulty Reports (SDR) related to the forward baggage compartment (FBC) door were reviewed. Eleven occurrences of the FBC door separating in flight were reported. Ten of the occurrences were between 1974 and 1980. Six of the separations occurred in cruise flight, and three separations resulted in windshield strikes, of which one also struck the vertical stabilizer. The ten occurrences did not result in in-flight break-ups.

One occurrence on March 3, 1985, listed several components that separated from the fuselage. The separation of parts resulted in an in-flight break-up. A review of the NTSB Brief of Accident revealed, "...There was evidence that the aircraft suffered an in-flight separation of the fiberglass nose assembly..."

Service Bulletins

Three service bulletins (SB) that dealt with the forward baggage compartment door were issued by Piper Aircraft. The FAA also published airworthiness directives (AD) that required compliance with the Piper SB's. A review of the airplane's maintenance records revealed; AD-79-23-01 was complied with on December 20, 1979; AD-81-10-03 was complied with on August 30, 1981; AD-88-04-05 was complied with on March 17, 1988. These AD's required the modification of the forward baggage compartment door.

During a telephone interview with the pilot/owner, he stated that the modification of his airplane's FBC door prevented the locking key from being removed from the lock, when the door was unlocked.

The airplane wreckage was released on June 17, 1997, to John W. Cooley, a representative of the owners insurance company.

Pilot Information

Certificate:	Private	**Age:**	64,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:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	October 9, 1995
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:			

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N5671V
Model/Series:	PA-34-200T PA-34-200T	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	34-7770259
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	June 25, 1996 Annual	**Certified Max Gross Wt.:**	4570 lbs
Time Since Last Inspection:	22 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	2828 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-360-KB1
Registered Owner:	ROLF H. MIELZAREK	**Rated Power:**	220 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:	SHENANDOAH CENTER INC.	**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Dusk
Observation Facility, Elevation:	AVP ,963 ft msl	**Distance from Accident Site:**	40 Nautical Miles
Observation Time:	18:54 Local	**Direction from Accident Site:**	300°
Lowest Cloud Condition:	Scattered / 2600 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 3200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	13°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BOSTON , MA (BOS)	**Type of Flight Plan Filed:**	IFR
Destination:	CLARKSBURG , WV (CKB)	**Type of Clearance:**	IFR
Departure Time:	00:00 Local	**Type of Airspace:**	Class E

Airport Information

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

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal, 1 Serious	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal, 2 Serious	**Latitude, Longitude:**	41.090286,-74.999687(est)

Administrative Information

Investigator In Charge (IIC):	Pearce, Robert
Additional Participating Persons:	MORGAN BROWN; ALLENTOWN , PA DANIEL MCANALLY; VERO BEACH GEORGE M HOLLINGSWORTH; MOBILE , AL
Original Publish Date:	March 31, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=39261