



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	FELTON, PA	<b>Accident Number:</b>	NYC97FA025
<b>Date &amp; Time:</b>	12/02/1996, 2045 EST	<b>Registration:</b>	N5538J
<b>Aircraft:</b>	Piper PA-32-260	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	1 Fatal, 2 Serious
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The pilot departed the round trip cross country flight with a total of 50 gallons of fuel. The first flight was 2 hours and 15 minutes. Prior to the return night flight, the pilot elected not to refuel the airplane. The airplane was one hour into the return flight, 70 nautical miles from the departure point, and 90 miles from the final destination, when the engine lost total power. The pilot then performed a forced landing, during which the airplane impacted trees. Examination of the wreckage revealed no evidence of preimpact failures with the airplane. A few tablespoons of fuel was observed in the carburetor gascolator. Both main fuel tanks had ruptured and were absent of fuel. There was no evidence of a fuel spill in the vicinity of the wreckage. The last refueling facility was tested and found free from contamination. The fuel burn was calculated to be 14 gallons per hour allowing a total flight endurance of 3.5 hours with no reserve. The airplane was operated for 3.3 hours prior to losing total engine power.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate preflight planning and preparation, and his failure to refuel which resulted in fuel exhaustion and the subsequent collision with trees during the forced landing.

## Findings

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

### Findings

1. (C) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
2. (C) REFUELING - NOT PERFORMED - PILOT IN COMMAND
3. (C) FLUID,FUEL - EXHAUSTION

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

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

### Findings

4. OBJECT - TREE(S)

## Factual Information

### HISTORY OF FLIGHT

On December 2, 1996, about 2045 eastern standard time, a Piper PA-32-260, N5538J, operated by Airpark Sales and Service, Inc., was destroyed when it impacted trees during a forced landing near Felton, Pennsylvania. The certificated commercial pilot and one passenger were seriously injured, and a second passenger was fatally injured. Night visual meteorological conditions prevailed for the flight that departed the Wilkes-Barre/Scranton International Airport (AVP), Scranton, Pennsylvania, about 1945, destined for the Saint Marys County Airport (2W6), Leonardtown, Maryland. No flight plan was filed for the personal flight conducted under 14 CFR Part 91.

A passenger on the flight prior to the accident flight stated that the purpose of the round trip flight from 2W6 to AVP was to drop him off at AVP. The flight departed 2W6 about 1715, and arrived at AVP about 1930. After the passenger deplaned at AVP, he asked the pilot if he wanted to refuel, and the pilot responded no. The flight then departed AVP destined for 2W6.

A witness in the area of the accident reported hearing the airplane's engine cutting in and out several times. Another witness who observed the accident, stated that he did not hear any noise from the airplane.

The accident occurred during the hours of darkness, at approximately 39 degrees, 52 minutes north latitude, 76 degrees, 33 minutes west latitude, at an elevation of 790 feet.

### WRECKAGE EXAMINATION

The wreckage was examined at the accident site on December 3 and 4, 1996. The examination revealed that all major components of the airplane were accounted for at the scene, and that the airplane came to rest in an open field on an approximate magnetic heading of 310 degrees. The wreckage came to rest about 70 miles from the departure point, and 90 miles from the final destination. Wreckage was strewn about a magnetic path of 065 degrees. Examination of the wreckage did not disclose evidence of mechanical malfunctions with the airframe or engine.

The engine was examined at the accident site. The engine was rotated by hand through the propeller which remained attached to the engine. Valve train continuity was observed on all cylinders, and thumb compression was obtained on all cylinders through removal of the bottom spark plugs. All bottom spark plugs were removed and the electrodes were gray in color, except the number 6 plug, which had oil deposits. All top spark plugs were removed and the number 1, 3, and 5 electrodes were light gray, while the number 2, 4, and 5 electrodes were light brown. The left magneto was removed and spark was observed on all four towers, when rotated by hand.

The main fuel tanks were ruptured, and no fuel was observed in the tanks. The fuel selector valve was found selected to the right main fuel tank and fuel was observed in the main fuel line from the fuel selector valve to the engine. The carburetor, which was found separated from the engine, contained 4 tablespoons of fuel. A layer of a brownish-red substance was observed in the carburetor bowl with the fuel. The electric fuel pump contained about 3 teaspoons of fuel. Fuel removed from the electric fuel pump and the fuel selector valve both contained a brownish-red substance. When the fuel was tested with water finding paste, it

revealed that water was present in the fuel.

#### PILOT INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single engine land and instrument airplane. The pilot also held a flight instructor certificate with ratings for airplane single engine land. The pilot's most recent Federal Aviation Administration second class medical certificate was issued on March 28, 1996, with no limitations. A review of the pilot's most recent pilot log book revealed that he had accumulated about 490 hours, of which approximately 20 hours were in make and model.

On January 29, 1997, a copy of the Pilot/Operator Aircraft Accident Report form, 6120.1/2, was faxed to a family member. Also, several telephone messages were left with the same family member over the course of the investigation in an attempt to contact the pilot. The NTSB IIC did not receive the 6120.1/2 form or any return telephone calls from the pilot.

#### TESTS AND RESEARCH

On December 19, 1996, the NTSB investigator in charge (IIC) requested the Federal Aviation Administration, Flight Standards District office, with jurisdiction over 2W6, to test the fuel farm. The test results for the fuel farm at 2W6 were negative for contamination.

On January 29, 1997, the engine was disassembled and examined at Textron Lycoming, Williamsport, Pennsylvania, under the supervision of the Federal Aviation Administration (FAA) Inspector. According to the FAA Inspector, there was no evidence of mechanical malfunctions during the examination.

#### ADDITIONAL INFORMATION

The owner/operator reported that the airplane departed 2W6 with the main fuel tanks topped off, and that the tip tanks were empty.

A passenger on the flight prior to the accident flight stated that when the flight originated, both tip tank fuel gages read zero. He stated that the flight duration from 2W6 to AVP was about 2 hours and 15 minutes, and started with the right main fuel tank selected. An hour into the flight, the pilot selected the left main fuel tank for 1/2 hour, and then completed the flight with the right main fuel tank selected. The passenger deplaned at AVP just prior to the accident flight and stated that he was not aware of the fuel tank selection for the accident flight.

The Owner's Handbook for the PA-32-260 stated:

"The total fuel capacity of the Cherokee Six is 84 gallons, all of which is usable except for approximately one pint in each of the four tanks. The two main inboard tanks, which hold 25 gallons each, are attached to the wing structure with screws and nut plates and can be removed easily for service or inspection. The tip tanks are constructed of resin-impregnated fiberglass and hold 17 gallons each."

The Owner's Handbook cruise performance chart depicted a fuel burn of 14 gallons per hour (GPH) with 75 percent power, and the mixture leaned per Lycoming instructions.

According to the operator's records, the pilot rented the airplane at a hobbs meter reading of 16.9, and at the accident site, the hobbs meter reading was 20.2. The total flight time was calculated to be 3.3 hours.

With a fuel burn of 14 GPH and 50 gallons of fuel, a total flight endurance of 3.5 hours was calculated, with no reserve.

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	39, Male
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane Single-engine	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	03/28/1996
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	490 hours (Total, all aircraft), 20 hours (Total, this make and model), 451 hours (Pilot In Command, all aircraft), 37 hours (Last 90 days, all aircraft), 16 hours (Last 30 days, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N5538J
<b>Model/Series:</b>	PA-32-260 PA-32-260	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	32-1002
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	6
<b>Date/Type of Last Inspection:</b>	07/02/1996, Annual	<b>Certified Max Gross Wt.:</b>	3400 lbs
<b>Time Since Last Inspection:</b>	54 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	3077 Hours	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	O-540-E4B5
<b>Registered Owner:</b>	KIRK T WILLIAM	<b>Rated Power:</b>	260 hp
<b>Operator:</b>	AIRPARK SALES AND SERVICE, INC	<b>Operating Certificate(s) Held:</b>	On-demand Air Taxi (135)

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	LNS, 403 ft msl	Distance from Accident Site:	17 Nautical Miles
Observation Time:	2045 EST	Direction from Accident Site:	40°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	15 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	-1° C / -4° C
Precipitation and Obscuration:			
Departure Point:	SCRANTON, PA (AVP)	Type of Flight Plan Filed:	None
Destination:	LEONARDTOWN, MD (2W6)	Type of Clearance:	None
Departure Time:	1940 EST	Type of Airspace:	Class E

## Wreckage and Impact Information

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

## Administrative Information

Investigator In Charge (IIC):	RANDI-JEAN KUKLA	Report Date:	11/06/1998
Additional Participating Persons:	ROBERT R STOLL; NEW CUMBERLAND, PA DANIEL B FLETCHER; WILLIAMSPORT, PA PAUL LEHMAN; PORT ST LUICE, FL		
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).