



# Aviation Investigation Final Report

<b>Location:</b>	MCMECHEN, West Virginia	<b>Accident Number:</b>	IAD98FA042
<b>Date &amp; Time:</b>	April 5, 1998, 16:38 Local	<b>Registration:</b>	N7845Y
<b>Aircraft:</b>	Piper PA-30	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General aviation - Personal		

## Analysis

Three days prior to the accident flight, the pilot/owner landed at his home airport where no fuel was available. The pilot reported to witnesses that during the flight home he had run the auxiliary tanks empty and had nearly exhausted his fuel supply. On the day of the accident, the pilot researched area airports for fuel prices 'cheaper' than the nearest fuel stop, and stated he had '...an hour's worth of fuel on board.' Immediately after takeoff, witnesses described a loss of engine power on one and then both engines. The airplane collided with terrain 3 miles from the departure airport. Examination of the wreckage revealed approximately one gallon of fuel on board with no evidence of spillage at the scene. Both fuel selectors were in the 'crossfeed' position. The fuel system was recently overhauled and all fuel pumps were operational. Examination of the airframe and engines revealed no pre-impact anomalies. Examination of fuel records and aircraft flight times revealed the airplane had flown approximately 5 hours after its last fuel service.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate pre-flight planning and preparation which resulted in fuel exhaustion during takeoff.

## Findings

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

Findings

1. (C) FLUID,FUEL - EXHAUSTION
2. (C) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND

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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - EMERGENCY

## Factual Information

### HISTORY OF FLIGHT

On April 5, 1998, at 1638 eastern daylight time, a Piper PA-30, N7845Y, was destroyed during a forced landing to an athletic field complex in McMechen, West Virginia, shortly after takeoff from the Marshall County Airport (74D), Moundsville, West Virginia. The certificated private pilot/owner was fatally injured. Visual meteorological conditions prevailed and no flight plan was filed for the flight conducted under 14 CFR Part 91. The personal flight originated from 74D, at 1630, and was destined for Wheeling, West Virginia.

A review of voice communication tapes between N7845Y and Wheeling Tower revealed the pilot contacted the tower for landing instructions shortly after takeoff from 74D. During communication with the tower the pilot stated: "...we're having problems." When the tower controller asked for clarification of the problem, the pilot stated:

"We're ah...I think we're having fuel problems. I'm trying to figure it out."

The airplane crashed into the north end of the football field that was on the east side of the field complex. Several witnesses heard and saw the airplane during the accident flight. They each described a loss of engine power on one or both engines, a brief restoration of power, then a total loss of engine power prior to ground contact.

In an interview, one witness who was an experienced pilot and aviation mechanic, stated he was at his home 2 miles north of 74D along the departure flight path. He heard the airplane during the takeoff roll and witnessed nearly all of the accident flight. The witness stated he clearly heard two engines during the takeoff roll. He stated:

"I heard him come off the deck. He couldn't have been more than a couple of seconds off the deck when the right engine quit. When he came over the house, the right engine was feathered, the prop was standing straight up. He was maybe 2,000 to 2,200 feet max. The left engine was sputtering, trying its best, but there was no RPM and he was losing altitude big time."

The witness stated the left engine restarted and ran for 1.5 to 2 minutes before it stopped producing power. He said he followed the airplane in his car and watched it descend over the ridge between 74D and McMechen. The witness estimated the airplane was approximately 800 feet above the ground and travelling approximately 80 knots after it crossed the ridge. He said the wings were "wallowing" as it approached the football field.

A police officer who witnessed the accident was standing in the baseball field adjacent to the

accident site. In a written statement, he described the airplane's approach, loss of engine power, and circling over the athletic fields. He stated:

"...I could hear the engine sputter, and then quit. The plane coasted north and was losing altitude, the engine started again for a couple of seconds. The plane flew on the east side of the ball field and was wobbling from side to side...As the plane flew over the road it was approximately 50 feet in the air, the plane turned to the left and when it got almost to the south fence around the football field the plane flew straight up and to the left as if to execute a loop de loop maneuver. On the way down the plane corkscrewed so that the canopy of the plane was facing north and then struck the ground. The plane came to rest on her belly.

The accident occurred during the hours of daylight approximately 39 degrees, 52 minutes north latitude, and 80 degrees, 44 minutes west longitude.

#### PERSONNEL INFORMATION

The pilot held a private pilot certificate with ratings for airplane single engine land, airplane multi-engine land, and instrument airplane.

His most recent Federal Aviation Administration (FAA) Third Class Medical Certificate was issued on March 5, 1998. The pilot reported 400 hours of total flight experience on that date.

The pilot's original log book was located but it was incomplete. According to the Marshall County Airport manager, the pilot's flight instructor, the pilot misplaced his original logbook and he started a second. The second logbook was subsequently destroyed and the pilot reverted back to his original logbook.

Entries in the logbook recovered were stopped on November 3, 1992, and resumed March 21, 1998. The pilot recorded 667 hours of total flight experience, 481 hours of which were in make and model. The pilot had flown 11 hours in N7845Y in the 30 days prior to the accident and had completed a biennial flight review and instrument competency check on March 29, 1998.

#### AIRCRAFT INFORMATION

The airplane's maintenance records were not recovered. However, the most recent annual inspection was completed at the Marshall County Airport on March 5, 1998. The airport manager, an FAA certificated airframe and powerplant mechanic, forwarded a written statement that included a copy of the logbook entries. Extensive fuel system repair or replacement is detailed in the following:

"PA-30B Ser'#925 Tac Time 2143.62 Total Time 6587.                      March 5th 1998 Annual Inspection. Opened up aircraft for Inspection. Removed total fuel system and replaced both Main and Aux tanks with new ones (from Hartwig) using all new snaps. Had all four fuel senders overhauled by (Airparts of Lockhaven) and calibrated same. Replaced fuel caps with

new (WFC1. PMA Webco). Replaced one fuel boost pump with new (C8100E Weldon) and one with overhauled unit (B81 OOC Weldon). Replaced fuel valve assemblies with new (492-136 & 492-137). Replaced some aluminum fuel lines that were found leaking. Rewired (attached) all electric microswitches on fuel selector valves. Replaced all rubber hose connections. Replaced all associated gaskets and some of the filler door seals and southco fasteners. Replaced 4 fuel vent hoses. Filled and tested fuel system. AD 83-10-01 has been addressed by above actions. AD 79-12-08 also addressed this time. I certify that this aircraft was inspected in accordance with an Annual/100 hour Inspection and was found to be in an airworthy condition."

The airport manager stated that after completion of the inspection he had both test flown the airplane and provided several hours of instruction to the pilot/owner in N7845Y with no deficiencies noted.

The airport manager further stated that the pilot/owner performed maintenance on the airplane two days prior to the accident. He said:

"I saw [the pilot/owner] again on Friday afternoon when I found him in front of the main maintenance hangar at the Marshall County Airport with the access panel from the top of his port wing removed. He had discovered the rubber bladder of the left auxiliary fuel tank was collapsing or imploding as he used fuel from it. I had effected a repair of the situation by clearing the tank vent with a piece of safety wire and a vacuum cleaner. But [the pilot/owner] explained to me that he was concerned that the fuel tank may have unsnapped itself from one or more of the fuel bladder attach points in the wing, so he was in the process of investigating.

"As the person who was on record as maintaining the aircraft, I was unhappy with this situation and I pointed out to him the folly of what he was doing and stood there and supervised him while he replaced all the gaskets and hardware. At that time I asked [the pilot/owner] for the aircraft maintenance log as I need to make an entry and he told me that he would provide them for me although he didn't have them at that time."

#### METEOROLOGICAL INFORMATION

The weather reported at Wheeling, West Virginia, 18 miles northeast of Moundsville was: few clouds at 6,000 feet with 10 miles visibility. The winds were from 280 degrees at 12 knots.

#### WRECKAGE AND IMPACT INFORMATION

The wreckage was examined at the site on April 6, 1998, and all major components were accounted for at the scene.

The airplane impacted almost vertically and came to rest at the point of initial ground contact. The nose area was destroyed and buried in its impact crater. The cockpit, dash, and flight control areas were destroyed. The cockpit floor was crushed aft and deformed to the point of the main spar box. Both fuel selectors in the cockpit were found in the "Crossfeed" position.

The leading edge of both wings was crushed aft in compression approximately 4 inches. The left main and auxiliary fuel tanks ruptured with no evidence of fuel in or around the wing. The right main tank bladder was deformed with a small puncture and contained less than one gallon of fuel. The right auxiliary tank was intact and contained less than one gallon of fuel. All wing fuel vent lines were unrestricted.

The cabin roof was separated at the windshield and cabin window posts and crushed aft over the empennage. The empennage was crushed and twisted clockwise. The tailcone, vertical fin, and rudder were intact. The stabilator was intact except for the outboard 12 inches on the left side which was wrinkled and bent down 90 degrees.

The left engine was separated from its mounts but still attached by cables. The propeller spinner was crushed straight aft. One blade was bent aft. The right engine was separated completely from its mounts and rested inverted on top of the right wing surface. It was still attached by control cables. The right propeller blades were feathered.

Flight control continuity was established to all flight control surfaces.

#### MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on April 6, 1998, by the Office of the Chief Medical Examiner in Morgantown, West Virginia.

Toxicological testing was performed at the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma.

#### TESTS AND RESEARCH

Both engines were examined at the Ohio County Airport, Wheeling, West Virginia, on April 7, 1998.

Examination of the left engine revealed the engine could be rotated by hand. Valvetrain continuity was established and compression was confirmed using the thumb method. Both magnetos produced spark at all terminal leads.

Examination of the right engine revealed the engine could not be rotated by hand. Removal of the #1 and #2 cylinders revealed the crankshaft was impact damaged (bent) and allowed only partial rotation. Rotation was blocked by the #1 and #2 connecting rod bolts which contacted the engine case after approximately one-quarter turn. However, neither the rod bolts nor the engine case was marked at the point of contact. Valvetrain continuity was established. The left magneto produced spark at all terminal leads. The right magneto was destroyed by impact.

Examination of the spark plugs removed from each engine revealed the electrodes were intact and were light tan and gray in color.

All fuel pumps were operational and each fuel screen was clear and absent of debris.

#### ADDITIONAL INFORMATION

In a written statement, the airport manager at 74D stated he had discussed the pilot/owner's flight previous to the accident flight. He said:

"[The pilot/owner] arrived at the Marshall County Airport on Thursday the 2nd of April 1998...He confided in me ... that he had run very low on fuel on his way to West Virginia from Michigan on Thursday. I believe that he would have been coming from Gaylord Michigan, but he may have flown from Charlevoix, a distance of 350 to 360 miles, which should have been an easy flight for the Twin Comanche. However, he did tell my wife [assistant airport manager] and some other people that he took a lot of delays and turns and that his flight had taken considerably longer than he planned.

"He told me that during the flight that he became very concerned about his fuel supply and that he had run the auxiliary tanks completely dry in flight to the point that the engines had cut out through fuel exhaustion. I questioned his judgement for coming to the Marshall County airport where he knew well that there was no fuel available. He stated at that time that there was approximately 1 hours worth of fuel still available in the main tanks, or about 10 gallons per side."

In a telephone interview, the assistant airport manager said:

"[The pilot/owner] landed Thursday night and I spoke to him on Friday. He said it took him over three hours to get back from Michigan. He said ATC was vectoring him all over Canada and they almost ran him out of gas. [The pilot/owner] said he landed here instead of Wheeling because he wasn't sure if they were open for fuel. He knew there was no fuel here.

"I spoke with him again on Sunday. He wanted to know the price of fuel in Waynesburg, (29 miles) east of here. I said, 'There's Wheeling', but he said the price was too high, he thought he could get it cheaper. He mentioned Carol County (43 miles) and asked how far it was to New Philadelphia, Ohio (49 miles). I think he said he had an hour's worth of fuel. [At takeoff], I gave him the winds and he took off from runway 24. I heard the airplane take off and I didn't hear anything unusual."

Examination of fuel records and aircraft flight times revealed N7845Y had flown approximately 5 hours after its last fuel service. According to the Piper Twin Comanche Owner's Handbook, the airplane's fuel capacity was 90 gallons, 6 gallons of which were unusable.

The airplane wreckage was released on April 6, 1998, to a representative of Blazer's Auto, a

salvage company.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	47, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 Valid Medical-w/ waivers/lim	<b>Last FAA Medical Exam:</b>	March 5, 1998
<b>Occupational Pilot:</b>	No	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	667 hours (Total, all aircraft), 481 hours (Total, this make and model), 631 hours (Pilot In Command, all aircraft), 11 hours (Last 90 days, all aircraft), 11 hours (Last 30 days, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Piper	<b>Registration:</b>	N7845Y
<b>Model/Series:</b>	PA-30 PA-30	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	30-925
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	March 5, 1998 Annual	<b>Certified Max Gross Wt.:</b>	3600 lbs
<b>Time Since Last Inspection:</b>	17 Hrs	<b>Engines:</b>	2 Reciprocating
<b>Airframe Total Time:</b>	6604 Hrs	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-320-B1A
<b>Registered Owner:</b>	CLIFFORD MARK WILSON	<b>Rated Power:</b>	160 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	None
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	



## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	HLG ,1195 ft msl	<b>Distance from Accident Site:</b>	18 Nautical Miles
<b>Observation Time:</b>	16:53 Local	<b>Direction from Accident Site:</b>	25°
<b>Lowest Cloud Condition:</b>	Scattered / 6000 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	None	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	12 knots /	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	280°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>	29 inches Hg	<b>Temperature/Dew Point:</b>	12°C / -3°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	MOUNDSVILLE , WV (74D )	<b>Type of Flight Plan Filed:</b>	None
<b>Destination:</b>	WHEELING , WV (HLG )	<b>Type of Clearance:</b>	None
<b>Departure Time:</b>	16:30 Local	<b>Type of Airspace:</b>	Class G

## Airport Information

<b>Airport:</b>	MARSHALL COUNTY AIRPORT 74D	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	1215 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	24	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	3300 ft / 60 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Fatal	<b>Latitude, Longitude:</b>	39.97964,-80.730598(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Rayner, Brian
<b>Additional Participating Persons:</b>	FRED REEB; WEST MIFFLIN , PA PAUL LEHMAN; PORT ST. LUCIE , FL GREG ERIKSON; WILLIAMSPORT , PA
<b>Original Publish Date:</b>	December 1, 1999
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=28248">https://data.nts.gov/Docket?ProjectID=28248</a>

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