



National Transportation Safety Board Aviation Accident Final Report

Location:	Hilton Head Is, SC	Accident Number:	ATL03FA133
Date & Time:	08/31/2003, 1529 EDT	Registration:	N70DL
Aircraft:	Piper PA-46-310P	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane was returning to the airport for landing. A witness reported it was flying erratically streaming a whitish "vapor trail" from the left wing. Another witness reported the airplane banked abruptly into a steep turn to the left, the nose pitched up, and the airplane sank from view behind the trees. The witness then heard a crash and saw smoke. Examination revealed no evidence of flight control, engine, or propeller malfunction. The left inboard fuel cap was absent from the filler port, and a ground search found the left inboard fuel cap in the grass beside the runway. The JetProp LLC, JetProp DLX Supplemental Flight Manual, Section 4, Normal Procedures Checklist, states, "Left Wing 4.9e, ... Inboard Fuel Tank ... CHECK Supply Visually & SECURE CAP ..." Examination of the JetProp LLC, JetProp DLX Supplemental Flight Manual and the Piper Malibu PA-46-310P Information Manual revealed the following instructions on how to secure the fuel caps: "Replace cap securely." There was no evidence of mechanical malfunction with the fuel cap or the filler port.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain control of the airplane during a VFR pattern for a precautionary landing, which resulted in an uncontrolled descent and subsequent collision with terrain. Also causal was the pilot's inadequate preflight inspection of the aircraft, which resulted in his failure to secure the fuel cap.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. FLUID,FUEL - SIPHONING
 2. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
 3. (C) FUEL SYSTEM,CAP - NOT SECURED
-

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - VFR PATTERN - BASE LEG/BASE TO FINAL

Findings

4. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
 5. PRECAUTIONARY LANDING - ATTEMPTED - PILOT IN COMMAND
-

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

Findings

6. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On August 31, 2003, at 1529 eastern daylight time, a Piper PA-46-310P, JetProp DLX P46T, N70DL, registered to Hickory Travel, LLC, and operated by the private pilot, collided with trees and the ground and caught fire during an attempted return for landing at Hilton Head Airport, Hilton Head Island, South Carolina. The personal flight was operated under the provisions of Title 14 CFR Part 91 with an instrument flight plan filed. Visual meteorological conditions prevailed. The private pilot and passenger received fatal injuries, and the airplane was destroyed. The flight departed Hilton Head Airport, Hilton Head Island, South Carolina, about 1525 on August 31, 2003.

Prior to the accident flight, a pilot-rated witness waiting for a mechanic was sitting beneath the wing of his parked airplane, which was parked next to the accident airplane. The witness saw the pilot and passenger arrive at the airport, load the airplane, and board it. The witness stated he did not see the pilot perform a preflight inspection of the airplane, and he stated he "wondered about it" at the time. He watched the airplane start up, taxi, and take off, and he stated the takeoff and climbout appeared and sounded normal.

A certified flight instructor-rated witness at the airport was listening to the communications radio in his airplane and heard the pilot announce his takeoff from runway 21 on the Common Traffic Advisory Frequency (CTAF). Minutes later, the witness heard the pilot declare an emergency and announce intentions for an immediate return. Another witness monitoring the CTAF heard the pilot declare an emergency, and the witness stated the pilot made a reference to what may have been a "cover off."

The flight instructor-rated witness observed the airplane on a left downwind for runway 21 and stated it appeared to be streaming "faint white and brown smoke" from the front. He stated the airplane was descending on downwind "extremely fast," and he estimated its speed to be about 200 knots. He saw the airplane disappear briefly behind the treeline approximately abeam the midfield position, then it reappeared in a climb with its landing gear down. The witness stated the airplane climbed to what he estimated was 400 feet, then it turned left base. The witness stated the airplane then turned left toward final, and he described the left turn as "violent" with a "rapid increase in bank." The witness stated he could see the tops of both wings as it banked left, and the nose of the airplane pitched up to what he estimated to be 20 degrees. The witness also heard over the radio a "female voice" state "emergency aircraft turning final." The witness stated the airplane maintained the left bank and the nose-high position and sank from view behind the trees. He then heard the sound of an impact followed by thick black smoke.

A witness at a stoplight in a vehicle on highway 278 near the airport saw the airplane fly overhead approximately northbound, streaming a "vapor trail or smoke" from the left wing that was "whitish" in color. He stated the airplane's engine was loud, and the airplane was descending approximately 50 to 70 feet above the trees. He stated the airplane was "fishtailing left and right," as if the pilot was "constantly struggling with it."

Emergency response personnel found the airplane on the ground in flames in a wooded area behind a residence less than a mile from the airport.

PERSONNEL INFORMATION

The pilot held a private pilot certificate issued on June 30, 1977, with ratings for airplane single-engine land and instrument airplane. The pilot held a third class medical certificate issued October 30, 2001, with the restriction, "must wear corrective lenses." A review of the pilot's logbook revealed he completed a biennial flight review, along with a "review of systems normal and emergency on the P46T," on May 14, 2003. The pilot logged a total of 2536 hours, which included 2383 hours pilot-in-command time and 186 hours in the accident airplane.

AIRCRAFT INFORMATION

The six-seat airplane was manufactured in 1985 and was certificated as a Piper PA-46-310P. Under the provisions of Supplemental Type Certificate ST00541SE, held by JetProp LLC, the airplane's reciprocating engine was removed, and the airplane was equipped with a Pratt & Whitney PT6A-34 turbine engine. Per FAA Order 7340.1, the "JetProp DLX" conversion enabled the airplane to be identified by the contraction "P46T."

A review of maintenance records revealed the JetProp DLX conversion was completed on February 2, 1999, at an airframe total time of 1848.4 hours. An annual inspection was completed on January 30, 2003, at an airframe total time of 2591.1 hours, engine total time of 742.6 hours, and propeller total time of 742.6 hours.

WRECKAGE AND IMPACT INFORMATION

The airplane was found in a wooded area behind a residence 0.78 nautical miles northeast of the airport center. The wreckage path extended approximately sixty feet on a 230-degree magnetic heading from a tree freshly broken 20 feet above ground level. The engine assembly was found displaced aft and to the left and displayed impact and fire damage, and the forward and upper cabin were consumed by fire. The control yoke assemblies were impact and fire damaged. The throttle quadrant was impact and fire damaged.

The header fuel tank was found separated, and fuel was leaking from the tank at the damaged fuel lines. Approximately fifteen gallons of clean, clear fuel was recovered from the tank. The wing fuel tanks were breached. The fuel selector valve was impact and fire damaged, the valve was found positioned to the right wing tank, and the rod to connect the valve assembly to the selector handle was bent. All valve ports were free of obstruction.

The right wing was found lodged against a group of trees a few feet above the ground and displayed impact and fire damage with portions consumed by fire. The inboard portion of the right aileron was found attached to the airframe; the outboard portion of the right aileron was fire-damaged and partially consumed by fire. The right aileron sector was found in place. The right flap displayed impact and fire damage. The inboard portion of the right flap was found attached to the airframe, and the outboard portion was separated from the airframe at the outboard flap track. The right inboard fuel cap was found secure in the filler port with the handle in the stowed position.

The left wing was found on the ground with impact and fire damage and portions consumed by fire. The left aileron cables were found attached to the aileron sector, which was damaged with the stops in place. Cable continuity for the left aileron was established from the aileron sector to the center of the cabin floor. The left aileron pin was found attached to a portion of aileron and resting adjacent to the aileron sector amid debris and melted aluminum. The left flap displayed impact and fire damage. The inboard left flap was attached to the airframe, the middle portion of the flap was attached to the middle flap track, and the outboard portion of the flap was found separated with the outboard flap track attached. The wing skin area with the

left inboard fuel filler port was found separated and damaged with the left inboard fuel cap absent. A ground search found the left inboard fuel cap in the grass beside runway 21 with the handle in the stowed position.

The horizontal stabilizer and vertical stabilizer were attached to the aft fuselage. The aft fuselage forward of the vertical stabilizer was impact and fire damaged with portions consumed by fire. The rudder was attached to the vertical stabilizer and rudder cable continuity was established from the rudder to the middle of the cabin floor. The elevator was attached to the horizontal stabilizer and was damaged. The right outboard portion of the elevator with the balance weight was separated and found near the empennage. Elevator cable continuity was established from the elevator to the middle of the cabin floor. The elevator trim tab was found attached, and cable continuity was established from the trim tab to the middle of the cabin floor. Examination revealed no evidence of airframe or flight control malfunction.

Examination of the engine revealed crush and fire damage to the external housings. The reduction gearbox housing, propeller governor, and overspeed governor were fire damaged. The accessory gearbox housing was partially consumed by fire, and the fuel heater, high pressure fuel pump, and fuel control unit were fire damaged. The fuel filter housing was partially consumed by fire, and the oil filter and housing were fire damaged. Examination of the oil filter revealed no metallic contamination. Internal examination of the engine revealed the compressor turbine, power turbine, and power turbine guide vane ring and interstage baffle displayed strong circumferential rubbing and scoring. The compressor first stage shroud, compressor turbine shroud, and power turbine shroud displayed strong circumferential rubbing and scoring. Examination revealed no evidence of engine malfunction.

Examination of the propeller revealed all four blades were fire damaged and their counterweights were intact. Two blades displayed bending deformation approximately 10 inches from the base end of the blades, and approximately one inch of the tip of one blade was missing. The two other blades displayed little or no evidence of bending or twisting, and one blade displayed chordwise scoring near the tip. The propeller cylinder and piston were intact, and the pitch change rod was bent on the aft side of the fork attachment point. The feathering spring and guides were intact, and the front spring guide was melted. Examination of marks on the preload plates for each propeller blade revealed the blade angle at the time of impact could not be determined. Examination revealed no evidence of propeller malfunction. Tree branches approximately three inches in diameter found amid the wreckage path displayed linear, diagonal sever marks.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy examination of the pilot was performed by the Medical University of South Carolina, Department of Pathology, Forensic Pathology, Charleston, South Carolina, on September 1, 2003. The report listed the cause of death as "... blunt force trauma"

Forensic toxicology was performed on specimens from the pilot by the Federal Aviation Administration, Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The report stated no carbon monoxide nor cyanide were detected in the blood, and no ethanol nor drugs were detected in the urine.

ADDITIONAL INFORMATION

The airplane was fueled prior to the accident flight. The lineman who fueled the right wing stated he secured the right inboard fuel cap by "turning a 1/4 turn left to right and ... placed the

tab down." The lineman who fueled the left wing stated he secured the left inboard fuel cap and "closed and locked cap back and rechecked to make sure cap was closed and locked back to its original position"

According to Title 14 CFR Part 91.3, "Responsibility and authority of the pilot in command, (a) The pilot in command of an aircraft is directly responsible for, and is the final authority as to, the operation of that aircraft."

The JetProp LLC, JetProp DLX Supplemental Flight Manual, Section 4, Normal Procedures Checklist, states, "Left Wing 4.9e, ... Inboard Fuel Tank ... CHECK Supply Visually & SECURE CAP ..."

The inboard fuel caps for the airplane were the flush-seating type. Each cap was equipped with a flip-type handle, a key lock mechanism, and the word "AFT" stamped into the metal on the aft side of the cap. There are no placards near the filler ports regarding fuel cap alignment.

A field test revealed the cap is secured in the filler port by aligning the lobes on the underside of the cap with the slots in the filler port, then twisting the cap until it seats flush with the word "AFT" in the aft position. The flip-type handle is not part of the mechanism that secures the cap in the filler port. The key lock mechanism is not required to secure the cap in the filler port. It is not possible to seat the cap flush in the filler port unsecured with the word "AFT" in the aft position. It is possible to seat the cap flush in the filler port unsecured with the word "AFT" between the inboard and forward positions.

The left inboard fuel cap from the accident airplane was field tested on an undamaged fuel filler port from another airplane. The fuel cap was secured into the port with no evidence of defect of the securing mechanism. The key lock mechanism was damaged. Examination of the left inboard fuel filler port from the accident airplane revealed no evidence of defect of the securing mechanism.

Examination of the JetProp LLC, JetProp DLX Supplemental Flight Manual and the Piper Malibu PA-46-310P Information Manual revealed the following instructions on how to secure the fuel caps: "Replace cap securely."

The wreckage was released to a liability specialist with CTC Services Aviation (LAD Inc.), Orlando, Florida, on February 20, 2004.

Pilot Information

Certificate:	Private	Age:	61, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last FAA Medical Exam:	10/30/2001
Occupational Pilot:		Last Flight Review or Equivalent:	05/14/2003
Flight Time:	2536 hours (Total, all aircraft), 186 hours (Total, this make and model), 2384 hours (Pilot In Command, all aircraft), 40 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N70DL
Model/Series:	PA-46-310P	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	46-8608001
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	01/30/2003, Annual	Certified Max Gross Wt.:	4300 lbs
Time Since Last Inspection:	85 Hours	Engines:	1 Turbo Prop
Airframe Total Time:	2676 Hours at time of accident	Engine Manufacturer:	Pratt & Whitney Canada
ELT:	Installed, not activated	Engine Model/Series:	PT6A-34
Registered Owner:	Hickory Travel LLC	Rated Power:	560 hp
Operator:	Robert W. Bell Jr.	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KSAV, 50 ft msl	Distance from Accident Site:	26 Nautical Miles
Observation Time:	1453 EDT	Direction from Accident Site:	264°
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.19 inches Hg	Temperature/Dew Point:	33° C / 23° C
Precipitation and Obscuration:			
Departure Point:	Hilton Head Is, SC (KHXD)	Type of Flight Plan Filed:	IFR
Destination:	N Myrtle Beach, SC (KCRE)	Type of Clearance:	VFR
Departure Time:	1525 EDT	Type of Airspace:	Class G

Airport Information

Airport:	Hilton Head Island (KHXD)	Runway Surface Type:	Unknown
Airport Elevation:	19 ft	Runway Surface Condition:	Unknown
Runway Used:	NA	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Precautionary Landing; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	32.235278, -80.687500

Administrative Information

Investigator In Charge (IIC): Catherine E Gagne **Report Date:** 09/29/2004

Additional Participating Persons: Charles T Henderson; Columbia FSDO - 13; Columbia, SC
Robert Martellotti; New Piper Aircraft; Vero Beach, FL
Thomas Berthe; Pratt & Whitney Canada, Engine Services; South Burlington, VT
Tom McCreary; Hartzell Propeller Inc.; Piqua, OH

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 pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at <http://dms.nts.gov/pubdms/>.

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