Aviation Investigation Final Report

Location:	Milton, Florida	**Accident Number:**	ATL02FA175
Date & Time:	September 23, 2002, 18:30 Local	**Registration:**	N8828N
Aircraft:	Piper PA-28-140	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

After returning to the airport following a successful cross country flight the student did a touch and go. Shortly after the touch and go a flight instructor who had departed the airport in another airplane heard the student pilot state on the radio frequency that he was having engine trouble. The flight instructor asked the student pilot's position, then advised the student pilot to maintain glide airspeed and turn toward the airport. The flight instructor heard the student pilot state over the radio that he could not make it to the airport and was going into trees. The wreckage was found approximately 1,700 feet west southwest of the approach end of runway 36 in a wooded residential area. Examination of the airplane found the mixture control separated at or near the mounting bracket, adjacent to the carburetor. The inner cable strands were worn; the outer cable sleeve was corroded. Visual examination of the broken wire ends with the aid of an optical microscope revealed that all of the wires had severe wear, and that most were worn completely through before the final fracture.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A sheared mixture cable which resulted in a loss of engine power.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - MECH FAILURE/MALF
Phase of Operation: APPROACH - VFR PATTERN - DOWNWIND

Findings
1. (C) MIXTURE CONTROL,CABLE - SHEARED

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

Findings
2. (C) EMERGENCY PROCEDURE - ATTEMPTED - PILOT IN COMMAND

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

Findings
3. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On September 23, 2002, at 1830 central daylight time, a Piper PA-28-140, N8828N, registered to and operated by Aircraft Partners of Milton, collided with trees following a loss of engine power in Milton, Florida. The instructional flight was operated under the provisions of Title 14 CFR Part 91 and visual flight rules. visual meteorological conditions prevailed and a visual flight rules (VFR) flight plan was filed. The student pilot received fatal injuries, and the airplane sustained substantial damage. The flight departed Monroe County Airport in Monroeville, Alabama, on September 23, 2002, at about 1755.

The student pilot departed Peter Prince Field in Milton, Florida, for a solo roundtrip flight to Monroeville, Alabama. The student pilot completed the round trip flight and elected to execute a touch-and-go upon returning to Milton, Florida. An airframe and power plant mechanic at the airport saw the airplane execute a touch-and-go on runway 36, then climbed through 500 feet and turned left crosswind then left downwind in the traffic pattern. The mechanic stated the airplane's engine sounded smooth, and the touch-and-go appeared normal. A flight instructor who had departed the airport in another airplane heard the student pilot transmit on the UNICOM radio frequency that he was having "engine trouble." The flight instructor asked the student pilot's position, then advised the student pilot to maintain glide airspeed and turn toward the airport. The flight instructor heard the student pilot state over the radio that he could not make it to the airport and was going into trees.

The wreckage was found approximately 1,700 feet west southwest of the approach end of runway 36 in a wooded residential area. The nose of the airplane was crushed against the base of a large tree adjacent to a mobile home, and the airplane came to rest in a steep, nose-down position between the tree and the home.

PERSONNEL INFORMATION

A review of information on file with the Federal Aviation Administration (FAA) Aero Medical Records Division, Oklahoma City, Oklahoma, revealed that the student pilot held a third class medical certificate issued on August 21, 2002. The student pilots log book indicated that he had accumulated at total time of 25.0 hours all of which were gained in the last 30 days with three hours having been gained in the last 24 hours. The log book also indicated that the student pilot had accumulated four hours as pilot-in-command.

The student pilot was an active duty Marine, and was enrolled in the Navy's new Initial Flight Screening (IFS) program. This program was designed to screen applicants for Navy Flight Training. The Navy requirements for completion of the IFS program, was that every student

must solo before the 15-hour mark and within 36 days of enrollment; All students must complete IFS within 60 days of enrollment; Every student must successfully fly at least three solos (one as a solo cross-country) and 2 solo hours before the 25-hour mark; every student must complete all ground instruction and associated examinations prior to the solo cross-country. This was the student pilot's last flight before successfully completing the IFS program. An interview was conducted with the Flight Schools Lead Flight Instructor who stated that during the students short time with the school, the focus of the flight training was on getting the student to solo and complete their required cross country flights. She stated that they do cover emergency procedures in the beginning of their flight training, but emergency procedures were not the focus of their training.

AIRCRAFT INFORMATION

A review of maintenance records revealed that the last annual inspection was completed on September 19, 2002, 6.21 hours prior to the accident, and a total airframe time of 7,319.0 hours, total engine time of 4,424.9 hours, and 737.6 hours since factory overhaul. The review of the engine maintenance logs showed that the engine was last overhauled on October 3, 2000.

METEOROLOGICAL INFORMATION

Weather data was recovered from the nearest observation facility at Pensacola Regional Airport, in Pensacola, Florida. The surface weather observation at 1753 CDT was: clear sky's, visibility 10 statute miles, temperature 31 degrees Celsius, dew point 20 degrees Celsius, wind calm, and barometric pressure of 29.87 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The examination of the accident site found that the wreckage debris was contained within the impact point between a modular home and a large tree. The tree displayed heavy scrapes and gouging approximately 10 to 15 feet above the ground. Fuel was observed leaking from the wreckage. Approximately five gallons of fuel was recovered from the left tank, and approximately nine gallons of fuel was recovered from the right tank. Property damage to the house was minimal. The accident site was located in a residential area adjacent to the airport that corresponds approximately with the left downwind-to-base position for landing on runway 36. The wreckage was orientated on a 082-degree magnetic heading towards runway 36. The airplane wreckage as observed was in a left wing nose low position, with the empennage nearly resting against the rear corner roof of the house. The right wing had roofing material transferred to it from contacting the roof during the mishap sequence.

Examination of the left wing found it attached to its attachment points. The top outboard wing had impact damage and was bent upward approximately three feet. This portion of the wing was resting on the ground. The gear had no damage. The fuel tank had no damage and the fuel cap was in place and intact. The fuel vent was field tested by blowing air through the vent line

and it was clear. The aileron was buckled at the inboard hinge. The bell crank was attached and had no damage. The bell crank stops were in-place and intact. The aileron balance weight was attached. Aileron control continuity was established from the aileron to the control yoke with no interruptions. The flap was attached and damaged at the middle and inboard hinge. The flap was found in the down position, at approximately 40-degrees, according to the flap handle and visual observation of the flap.

Examination of the right wing found it attached to it attachment points. The leading edge was crushed aft to the forward spar, approximately two feet six inches from the wing root. The leading edge had upward impact damage three feet six inches from the tip. This area displayed chord wise scratches. The landing gear had no damage. The fuel tank had leading edge impact damage. The fuel cap was in-place and intact. The fuel vent was field tested by blowing air through the vent line. The fuel vent appeared to be clear of blockage. The aileron had no damage. The bell crank had no damage and the stops were in-place and intact. Aileron control continuity was established from the aileron to the control yoke with no interruptions. The flap was attached to all three hinges. The damaged flap push pull rod was separated near the inboard flap hinge. The push pull rod had impact damage. The inboard hinge displayed impact damage.

Examination of the vertical stabilizer found no damage. The rudder was attached to its attachment points. The rudder had impact damage and was bent. The rudder horn was attached and was bent. The rudder stops were in-place and intact. Rudder continuity was established from the rudder to the rudder pedals with no interruptions. The stabilator had damage to the right tip. The stabilator stops were in-place and intact. The trim tab had impact damage on the right outboard tip. The trim drum measured one inch and displayed eight threads which translates to a neutral to nose up position. Stabilator continuity was established from the stabilator to the control yoke and trim continuity was established from the trim tab to the trim handle with no interruptions.

Examination of the forward main cabin area found it damage and exposed. The cabin door was attached. Aft of the baggage compartment the fuselage was buckled and ripped open on the top skin. The empennage was buckled forward and upward approximately 5-10 degrees.

The instrument panel had damage and was broken into pieces. The control column was damage. The aileron chain was found around its sprockets. At the throttle quadrant the throttle position was found one inch from cut off. The mixture was found in the full lean position. Continuity was established from the throttle handle to the carburetor. The inner mixture cable was separated forward of the firewall. The separation area of the cable strands, were sharp and pointy. Some of the cable stands were bent and broken. The aircraft was moved to a hanger and rested on its main gears. The fuel system was field tested by moving the selector valve into its different positions. Fuel was observed flowing out of the fuel gascolator. The fuel system appeared to be operational. The fuel gascolator screen was clear of debris. The fuel selector was found between the left tank position and the off position approximately one inch from the off position. This area sustained impact damage.

Initial examination of the engine found it nose down into the ground. The propeller spinner was crushed. The propeller was slightly damaged. The airframe engine mounts were bent, broken, and distorted. Heavy impact damage to the engine was noted to the front and left areas, and the #2 (front left) cylinder exhibited tree bark material. The engine assembly was displaced to the right. Control cables were impact damaged at the support bracket area. The carburetor was found intact, with a residual amount of fuel remained within the unit. The carburetor was removed for inspection. The accelerator pump functioned, the unit was opened and found clean. The main nozzle and internal passages were clear. The engine fuel pump was intact and secure and removed for inspection. The pump functioned when actuated. All spark plugs were removed for inspection and exhibited white color combustion deposits. Electrode wear was moderate, gap settings normal. Bore scope inspection found the tops of the pistons of all four cylinders exhibiting white color combustion deposits. Engine components were found secure and operable. The crankshaft was rotated, which established internal gear and valve train continuity. All four cylinders produced compression.

Examination of the engine cockpit controls found them in the cutoff position. The fuel selector valve handle was found at or near the off position. The airframe to engine controls were found in a deteriorated condition. The mixture control was found separated at or near the mounting bracket, adjacent to the carburetor. The inner cable strands appeared worn; the outer cable sleeve appeared corroded. The mixture control cable assembly was removed and sent to the NTSB Material Laboratory in Washington, DC for further examination. The airframe to engine carburetor heat control cable end was found separated from the control arm at the air box. During the examination of the airframe fuel system, an unapproved part was found. An automotive electric fuel pump was found installed in the system. The electric fuel pump was labeled "automotive electric fuel pump" and "not recommended for use in aircraft applications." The electric pump was removed and field tested by applying the aircraft's battery and fuel to the inlet. The pump pumped fuel out of the outlet. The pump was operational. The FAA took possession of the fuel pump. A review of the maintenance logs found no record of the electric fuel pump's replacement.

MEDICAL AND PATHOLOGICAL INFORMATION

The Office of the Medical Examiner District One, Florida conducted a postmortem examination of the pilot on October 1, 2002. The cause of death was determined to be the result of "blunt force injuries to the chest and abdomen." The Toxicology and Accident Research laboratory, Federal Aviation Administration, Oklahoma City, Oklahoma performed postmortem toxicology of specimens from the student pilot. No carbon monoxide, was detected in the blood, 2.32 (ug/ml) cyanide detected in blood. No ethanol or drugs were detected in the urine.

ADDITIONAL INFORMATION

The airplane wreckage was released to Aircraft Management Services Inc., in Milton, Florida on September 25, 2002.

Student pilot Information

Certificate:	Student	**Age:**	24,Male
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	August 21, 2002
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	25 hours (Total, all aircraft), 25 hours (Total, this make and model), 4 hours (Pilot In Command, all aircraft), 25 hours (Last 90 days, all aircraft), 25 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N8828N
Model/Series:	PA-28-140	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	28-25677
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 19, 2002 100 hour	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	6.21 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	7319 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320
Registered Owner:	On file	**Rated Power:**	150 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	PNS,121 ft msl	**Distance from Accident Site:**	26 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	20°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	0 knots / 0 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	31°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Monroeville, AL (MVC)	**Type of Flight Plan Filed:**	VFR
Destination:	Milton, FL (2R4)	**Type of Clearance:**	None
Departure Time:	17:55 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Milton Peter Prince Field 2R4	**Runway Surface Type:**	Asphalt
Airport Elevation:	82 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	36	**IFR Approach:**	None
Runway Length/Width:	3700 ft / 75 ft	**VFR Approach/Landing:**	Touch and go;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	30.631389,-86.999168

Administrative Information

Investigator In Charge (IIC):	Wilson, Ralph
Additional Participating Persons:	Jack E Clark; FAA Birmingham FSDO - 09; Birmingham, AL Edward G Rogalski; Textron Lycoming; Bellview, FL Robert Martellotti; New Piper Aircraft; Vero Beach, FL
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Investigation Class:	Class
Note:	
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