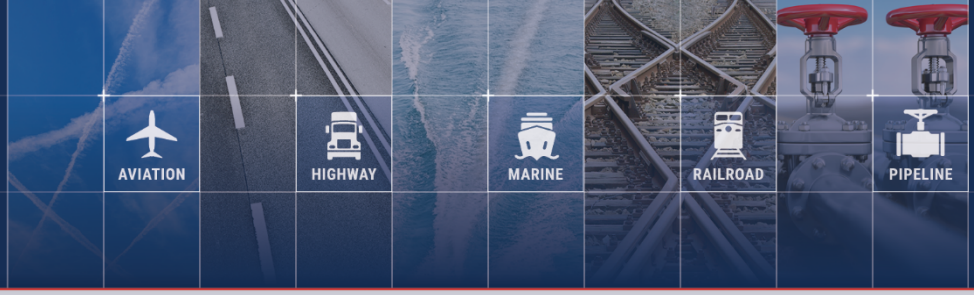

Aviation Investigation Factual Report

Location:	PALM COAST, Florida	**Accident Number:**	MIA01FA102
Date & Time:	March 16, 2001, 15:10 Local	**Registration:**	N44589
Aircraft:	Piper PA-34-200	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Factual Information

HISTORY 0F FLIGHT

On March 16, 2001, about 1510 eastern standard time, a Piper PA-34-200, N44589, operated and registered to PhilAir Inc., operating as a Title 14 CFR Part 91 instructional flight, impacted with trees and caught fire while the airplane was on base-to-final approach to runway 24 at the Bunnell-Flagler County Airport (X47), near Palm Coast, Florida. Visual meteorological conditions prevailed. No flight plan was filed. The airplane was destroyed. The commercial rated-pilot-in-command (PIC)/instructor, the commercial rated-second pilot, and commercial rated-pilot/passenger reported serious injuries. The flight had departed from Daytona Beach International Airport, Florida, at 1330.

The purpose of this flight was to be a company standardization check ride for two newly hired multi-engine instructor pilots. The check ride was to be administered by the PIC, acting as the check pilot, was also the owner of the company and airplane. The PIC was in the left seat at the time of the accident, the second pilot was in the right seat, and taking the check ride. The pilot/passenger was in the right middle seat and was observing.

The airplane was seen by witnesses flying low above the trees, when it pitched nose low, struck trees, and impacted on a four-lane road. A witness, driving westbound on route 100, just east of the accident site, reported seeing the aircraft about 5 feet above the trees and heading south, southwest. According to the witness the airplane struck the trees on the east side of a four-lane road and then the median area between the south and northbound lanes.

The pilot/passenger stated that on the downwind leg to runway 24, he observed the pilot-in-command "...turn the right engine fuel selector to the 'OFF' position." He stated that the engine started to "sputter" as they turned to "long final, very far from the runway." He reported that the right front seat pilot, reduced power on the engines to start a descent. He did not "...believe he [second pilot] realized he had an engine failure. He could see the right engine fuel selector in the "off position," and the airplane started to "lose" airspeed. He noted the stall warning light coming on, and he said, "...watch the speed...watch the speed." He heard the PIC say to the second pilot, "...he's right, watch the speed." After a few seconds they realized that the airplane was descending "faster" than it was supposed to and the PIC started to shout "Speed...Speed." He believed at this point the PIC took control of the airplane in attempt to "recover from the descent." He further said that there was no verbal exchange for change of flight controls; he saw the tops of the trees, and the power line, which he said they did not hit. He remembered impacting the road, then remembered smoke and heat.

The right seat pilot reportedly exited from the right front door of the aircraft. The pilot/passenger, and PIC reportedly exited the aircraft from the left side rear door.

Due to the degree of injury to all three occupants, none were able to talk with investigators; however, the PIC's wife told the NTSB investigator-in-charge (IIC) that her husband told her there were "...no mechanical problems" with the airframe or engines.

PERSONNEL INFORMATION

The pilot-in command/instructor, age 33, held an FAA commercial pilot certificate, with airplane single/multi-engine land, airplane instrument, last issued on May 18, 1997, when the airplane multi-engine instructor rating was added. In addition, the pilot held an FAA certified flight instructor certificate (CFI), with airplane single/multi-engine land. The PIC held an FAA class 1 medical certificate issued on March 7, 2000, with the limitations the "Holder shall wear corrective lenses." He received a biennial flight review, as required by 14 CFR Part 61, on March 20, 2000. As per the entries in his company flight records, he had accumulated a total of 7,000 total flight hours, 2,000 total single engine flight hours, 5,000 total multi-engine flight hours and 5,000 hours in this make and model aircraft. In addition, the records showed that he had a total of 6,000 total CFI flight hours.

The second pilot, age 24, held an FAA commercial pilot certificate, with airplane single/multi-engine land, airplane instrument, last issued on January 29, 2001, when the airplane multi-engine instructor rating was added. In addition, the pilot held an FAA certified flight instructor certificate (CFI), with airplane single/multi-engine land, and instrument airplane. He held an FAA class 1 medical certificate issued on March 1, 2000, with no limitations. The second pilot received a biennial flight review, as required by 14 CFR Part 61, on January 29, 2001. As per the entries in his company flight records, he had accumulated a total of 500 total flight hours, 430 total single engine flight hours, 80 total multi-engine flight hours and 25 hours in this make and model aircraft. In addition, the records showed that he had a total of 230 total CFI flight hours

AIRCRAFT INFORMATION

The airplane was a Piper Aircraft Inc; model PA-34-200, serial number 34-7450213, manufactured in 1974. At the time of the accident the airplane had accumulated 13,220.4 total flight hours. A 100-hour inspection was performed on the airplane February 18, 2001, 74.8 hours before the accident. The airplane was equipped with two Lycoming IO-360-C1E6, 200 horsepower engines.

According to the engine logbooks, on March 17, 2000, the left engine, underwent a major overhaul, and was reinstalled on N44589. At the time of the accident the left engine had a total time of 7,492.7 hours. The date of major overhaul on the right engine was not obtained, but at the last annual inspection 2,306.7 hours had elapsed since the major overhaul. At the time of the accident 785.1 hours had accumulated since the annual inspection, and the total number of hours on the right engine at the time of the accident was about 5,695.8 (See the copies of the engine logbooks, an attachment to this report).

METEOROLOGICAL INFORMATION

The recorded weather at the Daytona Beach International Airport, Florida, located about 18 nautical miles southeast of the accident site, at 1456 was; lowest cloud condition, few at 2,500 feet; visibility 10 statute miles; winds from 260 degrees at 10 knots; temperature 78 degrees F; dew point 70 degrees F; altimeter 29.91 inHg; and the calculated density altitude was 1,358 feet.

WRECKAGE AND IMPACT INFORMATION

The aircraft struck several trees on the east side of Seminole Woods Parkway, a four-lane road, running north and south, causing a flash fire that partially burned some trees at the initial tree strike location. The accident site was located about 0.93 statute mile northeast of runway 24, at Bunnell-Flagler County Airport. The airplane came to rest on the northbound lane of Seminole Woods Parkway. The nose of the wreckage was heading easterly about 056 degrees, which was about 180 degrees opposite the direction of travel. One diagonal slash cut pine tree limb was located on the ground along with other broken limbs. The accident occurred during the hours of daylight about 29 degrees, 28 minutes north, and 081 degrees, 12 minutes west.

The main wreckage and engines were removed from the crash site, and examined at a hangar at the Bunnell-Flagler County Airport. Examination of the wreckage confirmed that the right engine fuel selector was in the "OFF" position in the cockpit and at the wing selector valve. The left fuel selector handle and valve were found in the "ON" position. The right engine and propeller were separated from the airframe by impact forces and post-impact fire. The right propeller remained attached to the crankshaft-mounting flange and was found in the "feathered" position. No visual pre-impact discrepancies were noted on the airframe, flight controls or engines. Postimpact fire destroyed a large portion of both wings, the main cabin, instruments, flight controls, aft fuselage and empennage. The right and left wing fuel tanks were breached during the impact sequence.

The left wing remained attached to the main fuselage and displayed aft bending of the main spar and the forward and aft wing attachments. The entire span of the left wing displayed post-impact fire damage. The left engine mounts were fractured, separating the engine from the nacelle mounting location. The left wing leading edge displayed compression damage directly in front of the aileron/flap juncture. Damage in this location compressed the leading edge aft to the main spar and deformed the main spar in an aft direction. The outboard and inboard left wing fuel tanks were breached; displayed fire damage, and did not contain any fuel. The left flap remained attached to the trailing edge of the wing at the hinges. The left flap and the flap control mechanism were found in the retracted position. The left aileron remained attached to the wing at the outboard mounting hinge. The left aileron balance weight remained attached to the outboard end of the aileron. The aileron displayed some fire damage and buckling along the entire span. The aileron flight control cables remained

attached at the bellcrank. The aileron bellcrank mounting structure was found deformed in an inboard direction. Aileron flight control cable continuity was established from the left bellcrank to the flight control column in the main cabin. The left main landing gear was found with impact damage and was determined to have been in an extended position at the time of the accident.

The right wing remained attached to the main fuselage at the main spar and aft wing attachment. The main spar and aft wing attachment fitting displayed aft bending. Impact forces and postimpact fire destroyed the forward wing attachment fitting. The right wing was found deformed by impact damage and partially burned. The right engine mount was fractured in the accident sequence, separating the engine from the nacelle mounting location. The leading edge of the right wing displayed compression damage and upward bending outboard of the flap aileron juncture. The leading edge of the wing was burned away, aft to the main spar, from outboard of the engine nacelle to the wing root. The right aileron was separated from the wing and partially consumed by fire. The right aileron bellcrank remained attached to the aileron flight control cables and a fragment of the wing structure. Aileron flight control cable continuity was confirmed from the bellcrank to the flight control column in the main cabin. Fragments of the right flap remained attached at the flap hinges. The remaining portions of the right flap were consumed by fire. The right main landing gear was found with impact and fire damage. The main gear was found in the extended position. Both the inboard and outboard fuel tanks were breached and burned during the accident sequence. No fuel was found in the right wing fuel tank.

The aft fuselage remained partially intact and was burned away from the forward fuselage aft of the rear seating positions. Impact damage and fire damage to the tail cone area partially separated the vertical stabilizer and stabilator from the aft fuselage. The aft fuselage and empennage initially remained attached to the main fuselage by the stabilator and rudder flight control cables. Stabilator and rudder flight control cable continuity were established from the empennage to the flight control column and rudder pedal torque tube in the main cabin. The rudder trim actuator was found in a neutral position. The stabilator trim actuator was found in a position mid-way between neutral and full nose up.

The stabilator displayed some buckling across the entire span and burn through fire damage at the attachment hinge locations. The vertical stabilizer and rudder displayed burn through and melting across the lower portions of both components.

All of the cockpit instruments and controls were destroyed. The engine controls in the cockpit were fire damaged; the control levers were destroyed. The engine control cable ends were located, at the cable ends, only the clevis, shaft and sleeves remained. The exposed length of shaft of each available cable was measured (six cables, position unknown). The exposed shaft on the cables routed to the left nacelle all measured 0 inches, 0.8 inches, and 1.1 inches. The exposed shaft on the cables routed to the right nacelle all measured 0 inches.

Three-axis flight control cable continuity was traced and confirmed. The landing gear was

determined to be extended. The wing flaps were found retracted.

An examination of the seats that were occupied revealed, that the left front seat was reduced to frame components by fire. The frame was deformed aft and left and was detached from rails. Lap and shoulder harness belt webbing was burned away. The right front seat was reduced to frame components by fire. The frame was broken, deformed aft and left. The lap and shoulder harness belt webbing was burned away. The right middle seat was reduced to frame components by fire. The frame was deformed aft and left and was still attached to floor. The lap belt webbing was burned away.

The left engine and propeller had separated from the airframe at impact. The propeller remained attached to the crankshaft-mounting flange. Crankshaft and camshaft continuity were established during hand rotation of the crankshaft. Aft accessory gear continuity and valve operation continuity on all cylinders were established during rotation. Compression to all four cylinders was established. All engine accessories displayed post-impact fire damage. Fire damage to the left and right magnetos precluded spark testing of these components. All eight spark plugs appeared gray-brown in color at the electrodes. The fuel servo, fuel screen was removed and found to be clean and free of debris. The engine driven fuel pump was found fractured at the mounting flange and fire damaged. No visual discrepancies were noted during the examination

The left propeller showed signs of rotation, one blade exhibited slight forward and aft bending near the tip and abrasion. The opposite blade was bent aft near the hub and also showed signs of abrasion. Examination of the left engine propeller revealed that the propeller remained attached at the engine crankshaft flange. The crankshaft was bent from impact, and the propeller was removed to facilitate further examination. One propeller blade exhibited slight aft and forward bending near the tip, and abrasion. The opposite blade was bent aft, inboard near the hub, and also showed signs of abrasion. The propeller governor was found intact; the control was in high rpm position. The governor unit was removed and the drive was intact, the unit rotated freely by hand, pumping action was noted.

The left engine had separated from the airframe structure, and the mounts were off at the firewall. The engine core appeared relatively intact, but displayed significant exposure to ground fire. The fuel system lines and hoses were heat damaged and destroyed. Damage to the engine components precluded any viability of engine test run consideration. The engine was placed on a lift hoist and accessed on all sides for inspection. All of the components were removed for examination. The engine was rotated and continuity of the crankshaft, camshaft, valve train, and accessory drives was established. Each cylinder produced compression while the engine was rotated. A lighted bore scope was used to inspect the top end components. No discrepancies were revealed. At the conclusion of the left engine examination no discrepancies were found.

Examination of the right engine revealed that the propeller remained attached at the engine crankshaft flange. Both propeller blades were in the feather position. One propeller blade

exhibited slight aft bending near the tip. The opposite blade was fire damaged; blade material was melted at the tip. The propeller governor was found intact; the control was in feather position. The governor unit was removed and the drive was intact, the unit rotated freely by hand, pumping action was noted.

The right engine had separated with the firewall away from the airframe nacelle structure. The engine core appeared relatively intact, but displayed exposure to ground fire. The fuel system lines and hoses were heat damaged and destroyed. Damage to the engine components precluded any viability of engine test run consideration. The engine was placed on a lift hoist and accessed on all sides for inspection. All of the components were removed for examination. The engine was rotated and continuity of the crankshaft, camshaft, valve train, and accessory drives was established. Each cylinder produced compression while the engine was rotated. A lighted bore scope was used to inspect the top end components. No pre-impact anomalies were revealed. At the conclusion of the right engine examination no discrepancies were found.

MEDICAL AND PATHOLOGICAL INFORMATION

The pilot-in-command/instructor was initially taken from the crash site to Jacksonville Memorial Hospital, Jacksonville, Florida. On March 17, 2001, he was moved to Shands Burn Center, Gainesville, Florida.

The second pilot was taken to Shands Burn Center, Gainesville, Florida, directly from the accident site on March 16, 2001.

The pilot/passenger was initially taken from the crash site to Jacksonville Memorial Hospital, Jacksonville, Florida, on March 16, 2001, where he remained until released.

There was no toxicology testing conducted on any of the occupants due to their medical treatment.

TEST AND RESEARCH

An FAA inspector stated that the FAA has determined that the pilot that was seated in the left front seat at the time of the accident was the pilot-in-command/instructor.

ADDITIONAL INFORMATION

The airplane was released to Mr. Gregory Humil Director of Maintenance, PhilAir Flight Center, on March 19, 2001.

Check pilot Information

Certificate:	Commercial; Flight instructor; Private	**Age:**	33,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:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	March 7, 2000
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 31, 2000
Flight Time:	7000 hours (Total, all aircraft), 5000 hours (Total, this make and model), 6900 hours (Pilot In Command, all aircraft)		

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	23,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 1, 2000
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	January 29, 2001
Flight Time:	500 hours (Total, all aircraft), 25 hours (Total, this make and model), 500 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N44589
Model/Series:	PA-34-200	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	34-7450213
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	February 18, 2001 100 hour	**Certified Max Gross Wt.:**	4200 lbs
Time Since Last Inspection:	74.8 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	13220.4 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	L/IO-360-C1E6
Registered Owner:	PHILAIR FLIGHT CENTER INC.	**Rated Power:**	200 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DAB,35 ft msl	**Distance from Accident Site:**	18 Nautical Miles
Observation Time:	14:56 Local	**Direction from Accident Site:**	160°
Lowest Cloud Condition:	Few / 2500 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.9 inches Hg	**Temperature/Dew Point:**	26°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	DATONA BEACH, FL (DAB)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	Unknown

Airport Information

Airport:	Bunnell-Flagler County X47	**Runway Surface Type:**	Asphalt
Airport Elevation:	32 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	24	**IFR Approach:**	None
Runway Length/Width:	5000 ft / 200 ft	**VFR Approach/Landing:**	Simulated forced landing;Stop and go;Traffic pattern

Wreckage and Impact Information

Crew Injuries:	2 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Serious	**Latitude, Longitude:**	29.466667,-81.20111

Administrative Information

Investigator In Charge (IIC):	Yurman, Alan
Additional Participating Persons:	Alan C Nemcik; FAA; Orlando, FL Kris Wetherell; Piper Aicraft; Vero Beach, FL Edward Rogalski; Lycoming Engines; Belleview, FL
Report Date:	October 30, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=51933