Aviation Investigation Final Report

Location:	Raymond, Mississippi	**Accident Number:**	DFW06FA037
Date & Time:	December 1, 2005, 13:57 Local	**Registration:**	N7315Y
Aircraft:	Piper PA-30	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Ferry		

Analysis

The 4,000-hour commercial pilot lost control of the twin-engine airplane during the initial takeoff climb from runway 30. The airplane was observed impacting the ground in a steep nose down attitude. The airplane came to rest upright on airport property on a heading of 150 degrees. The airplane rebounded approximately 15 feet before coming to rest on a heading of 200 degrees. A post-crash fire consumed the cabin, forward fuselage and center portions of both wings, including both fuel tanks in each wing. Both engines sustained extensive thermal damage. The landing gear was found in the extended position and the wing flaps were found in the fully retracted position. Flight and engine control continuity was established. The right engine propeller and propeller spinner did not show any signatures consistent with rotation at the time of impact. The airplane, which was recently sold to a new owner, was reported to have been parked outside at a couple of ramps at the airport, and had been flown for 15 hours in the preceding 10 years. A special flight permit was issued for the 152-nautical flight to a location where an annual inspection was to be performed. No distress calls were received from the pilot prior to the mishap. The weather conditions at the airport at the time of the accident were reported as winds from 340 degrees at 12 knots gusting 15 knots, visibility 10 statute miles, clear skies, temperature 16 degrees Celsius, dew point 0 degrees Celsius, and a barometric pressure at 30.10 inches of Mercury.

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 Vmc (velocity minimum control) on initial climb resulting in a loss of control. Contributing factors were the loss of engine power to the right engine and the prevailing gusty wind conditions.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) AIRSPEED(VMC) - NOT MAINTAINED - PILOT IN COMMAND
2. (F) 1 ENGINE - FAILURE
3. (F) WEATHER CONDITION - GUSTS

Factual Information

HISTORY OF FLIGHT

On December 1, 2005, at 1357 central standard time, a twin-engine Piper PA-30 airplane, N7513Y, was destroyed upon impact with terrain following a loss of control during takeoff from Runway 30 at the William John Bell Airport (M16), near Raymond Mississippi. The instrument rated commercial pilot and his two passengers were fatally injured. The airplane was owned by a private individual and had a valid special flight permit for a direct flight from M16 to the New Albany-Union County Airport (M72), near New Albany, Mississippi, to have additional maintenance performed. Visual meteorological conditions prevailed and no flight plan was filed for the 14 Code of Federal Regulations Part 91 ferry flight. The 152-nautical mile ferry flight was originating at the time of the accident.

Several eye witnesses reported hearing engine sounds that did not seem normal during the takeoff. At approximately 100 feet above ground level (AGL), witnesses reported hearing a pop or bang followed by an immediate right wing drop to approximately a 60-degree angle of bank, followed by an immediate nose down attitude to the near vertical attitude.

INJURIES TO PERSONS

The pilot and two passengers sustained fatal injuries due to impact forces and post impact fire. There were no reported injuries to anyone on the ground.

DAMAGE TO AIRCRAFT

The aircraft impacted in a steep nose down attitude and came to rest upright. A post-impact fire consumed the cabin, forward fuselage, and the center portions of both wings, including both fuel tanks in each wing. The aft fuselage and tail section sustained minimum impact and fire damage. Both engines sustained extensive thermal damage.

PERSONNEL INFORMATION

The commercial pilot held ratings for airplane single-engine land, airplane multi-engine land and an airplane instrument rating. The pilot was issued a third-class medical certificate on November 10, 2005, with no limitations. At the time of the application, the pilot reported having accumulated a total of 4,000 flight hours. No pilot logbooks were located or made available to determine currency, total flight time or flight experience in the same make and model of airplane. The medical records revealed that the total flight time on the previous examination in 1984 to be the same as the 2005 medical examination. There was no evidence found to verify any flight time for the last 24 years.

AIRCRAFT INFORMATION

The 1964 model airplane, serial number 30-358, was certificated for single pilot operation, with seating for four occupants. All aircraft components were original equipment on the aircraft since new and showed a total time according to the logbooks of 5,123 hours. The aircraft was flown a total of approximately 15 hours in the past 10 years and was parked outside at two different airport ramps during the 10 year period. At the time of the ferry flight the aircraft was out-of-annual and the purpose of the flight was to relocate the airplane after the sale to have maintenance performed.

The left engine was not original with the airframe. It was installed on October 14, 1994 with zero TSOH engine from One-Stop Aviation in Santa Ana, California. The engine was installed at a left tach time of 2,430.50- hours, and had accumulated a total of 1,075-hours TSOH as of the last annual inspection on September 23, 1994.

The right engine was original with the airframe. The engine was overhauled on December 7, 1984, by Mattituck, and overhauled again by a licensed mechanic on July 22, 1993, at a right-hand tach time of 2,418.40 hours. The right engine had accumulated 1,350-hours as of the last annual inspection on September 23, 2004.

METEOROLOGICAL INFORMATION

At 1353 local time, M16 reported weather conditions as winds from 320 degrees at 12 knots gusting to 15 knots, visibility 10 statute miles, clear skies, temperature 16 degrees Celsius, dew point 0 degrees Celsius, and a barometric pressure at 30.10 inches of Mercury.

AERODROME INFORMATION

The William John Bell Airport (M16) is located 3-miles north east of Raymond, Mississippi. The field elevation is 246-feet mean sea level (MSL). The airport features a single runway heading 300 degrees and 120 degrees. The runway is 3,992-feet long and 75-feet wide constructed of asphalt, with a rubberized friction seal coat. The runway was reported to be in good condition. Weight bearing capacities of the runway surface are stated as 60,000-pounds for single wheel aircraft and 75,000-pounds for double wheel aircraft. There were 85-foot trees located 1,470-feet from the departure end of runway 30, approximately 70- feet to the left and right of runway centerline.

COMMUNICATIONS

William John Bell Airport, (M16) is a non-towered airport with only CTAF/UNICOM frequency 122.8 for airport and traffic advisories. The UNICOM is not recorded.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted terrain on airport property on a heading of 150 degrees near wings level in a nose-low attitude. The airplane rebounded approximately 15 feet before coming to rest on a heading of 200 degrees. A post-impact fire consumed the cabin, forward fuselage, and center portions of both wings, including both fuel tanks in each wing. The aft fuselage and tail section sustained minimum impact and fire damage.

The rudder, with attached counterweight, remained attached to the vertical stabilizer. The rudder cables were attached to the rudder horn and traced forward to the rudder pedals. The rudder trim was measured at 7 threads on the jackscrew actuator which corresponds to a neutral rudder setting. The stabilator and anti-servo tab remained attached to the aft fuselage. Only minor compression wrinkles were evident on the right side of the stabilator. The stabilator weight and balance bar was intact. The stabilator cables were traced from the balance bar forward to the cockpit area. The stabilator trim was measured at 4 threads on the jackscrew actuator which corresponds to a neutral trim setting.

The cabin area was consumed by the post-crash fire. The seats were burned to the seat rails and burned away from the aircraft flooring. No valid instrument readings were obtained due to fire damage. The left fuel selector was set to the auxiliary fuel tank; the right fuel selector lever was set to the main tank. The left throttle was measured as full increase and the right throttle back to idle. The left propeller lever was 3/4 forward travel and the right propeller lever was found at the 1/2 travel position. The mixture controls for both engines were found near the full-forward position.

The fuel strainers for both engines were removed from the aircraft centerline and examined. Both units were wet from the efforts to extinguish the fire, but both screens appeared to be moderately dirty, but not blocked. The electric boost pumps were also removed and disassembled. They were both fire damaged. The left fuel boost pump was noted not to have a check-valve ball installed; the right electric boost pump did have the check-valve ball installed. The landing gear jackscrew was measured at 0 threads on the actuator which is consistent with the landing gear extended. The flap jackscrew actuator was measured at 11 threads which indicated the flaps were in the fully retracted position at the time of impact.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on December 3, 2006, at the Mississippi Medical Examiner's Office located in Jackson, Mississippi, by a medical examiner from that office. The underlying cause of death was listed as lacerations of the heart and right and left lungs with hemopericardium and bilateral hemothorax..

Toxicological testing on the pilot was performed by the FAA's Civil Aeromedical Institute (CAMI) Forensic Center, Oklahoma City, Oklahoma, for carbon monoxide, cyanide, volatiles, and tested drugs. Test results were negative.

FIRE

Post crash fire was extinguished by a local volunteer fire department. There was no fire damage to other property beyond the burned grass around the airplane at the impact site.

TESTS AND RESEARCH

Both engines were removed from the airframe on December 6, 2005, and transported to a hangar on the airport for a detailed examination and testing. Both engine examinations included partial disassembly. All fluid hoses were found essentially fire damaged or destroyed. Individual components were removed and documented.

The left engine throttle was impact damaged and displaced, previous position unknown. The left engine mixture control was found at the full rich stop, impact damage was noted. The left engine propeller governor and control was fire damaged, impact damaged and displaced. The governor position was unknown. The left engine alternate air control was destroyed by impact and fire. The induction air filter was destroyed. A boroscope examination of the left engine cylinder assemblies revealed no pre-mishap mechanical anomalies. Severe fire damage caused melting of the aluminum head assemblies of the number 2 and number 4 cylinders. The left engine number 2 and number 4 bottom spark plugs were displaced and not located. The internal drive gears remained intact. Normal oil quantity was burned away or consumed by fire. The crankshaft was rotated by hand, which established internal gear and valve train continuity. The left engine fuel servo had recently been changed. The fuel servo screen was removed and found to be clean. The left propeller blades were badly burned and melted; the left propeller spinner demonstrated strong clockwise crushing indicative of power at impact.

The throttle for the right engine was found in the full open position. The right engine mixture control was found at the full rich stop. The right engine propeller governor and control were fire damaged, impact damaged. The propeller governor position could not be established. The alternate air control was found in the closed position. The induction air filter was destroyed. The induction air box was crushed. A bore scope examination of the right engine cylinder assemblies revealed no pre-mishap mechanical anomalies. Severe fire damage at the location of the number 4 cylinder caused damage (lost of tension) to the number 4 exhaust valve springs. The valve was free to move and the springs were visually examined, which revealed no broken coils. The internal drive gears remained intact. The crankshaft was rotated by hand, which established internal gear and valve train continuity, all four cylinders produced compression. No maintenance had been performed on the right engine fuel injector servo. The fuel injector screen was removed from the fuel injector unit and found to be packed with a black ferrous material. The right propeller spinner was crushed around the dome with little rotation evident. One blade of the right propeller had leading edge sanding.

The fuel injector servo, servo inlet screen with suspect metal particles, fuel distribution manifold, and fuel injectors for the right engine were sent to the materials laboratory at the NTSB for testing and analysis. The results showed partial blockage to one fuel injector and the

black ferrous substance to contain iron and minor peaks of silicon, oxygen, bromine, carbon, and copper. Bench binocular microscope examination of the disassembled injector assemblies revealed that an opening from a radial fuel passage from one of the four fuel injectors was partially obstructed with black and green debris. EDS spectrum of the thread portion of the injector body contained peaks of copper and zinc indicating that the body of the injector was made from a brass alloy. EDS spectrum of the debris contained major elemental peaks of chlorine and lead with minor elemental peaks of silicon, aluminum, and elemental peaks found in the body of the injector.

Accprding to FAR 21.199 (a) (3), the required crew for the issuance of the Special Flight Permit does not include a provision for any passengers. The regulation specifically states "The crew required to operate the aircraft and its equipment, e.g., pilot, co-pilot, navigator, etc." This information is also stated on the special flight permit that is issued to the requestor and specifically states in paragraph 2 "Occupancy of the aircraft is limited to the pilot, essential flight crew required to operate the aircraft and its equipment and personal baggage."

ADDITIONAL INFORMATION

The new owner of the aircraft refused to take possession of the wreckage of the aircraft. The wreckage of the aircraft was turned over to the airport manager for removal from the airport property.

Pilot Information

Certificate:	Commercial	**Age:**	62,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):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	2876 hours (Total, all aircraft), 0 hours (Total, this make and model), 0 hours (Pilot In Command, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7315Y
Model/Series:	PA-30	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	30-358
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 1, 2004 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	5123 Hrs as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IO-320-B1A
Registered Owner:	Philip Fagan	**Rated Power:**	160 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:	HKS	**Distance from Accident Site:**	
Observation Time:	13:53 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	12 knots / 15 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	340°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.1 inches Hg	**Temperature/Dew Point:**	16°C / 0°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Raymond, MS (M16)	**Type of Flight Plan Filed:**	None
Destination:	New Albany, MS (M72)	**Type of Clearance:**	None
Departure Time:	13:57 Local	**Type of Airspace:**	

Airport Information

Airport:	John Bell Williams Airport M16	**Runway Surface Type:**	Asphalt
Airport Elevation:	246 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	30	**IFR Approach:**	None
Runway Length/Width:	3992 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	32.308055,-90.41278

Administrative Information

Investigator In Charge (IIC):	Gamble, William
Additional Participating Persons:	Edward E Aycock; FAA; Jackson, MS
Original Publish Date:	June 27, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=62904