



National Transportation Safety Board Aviation Accident Final Report

Location:	Blacksburg, SC	Accident Number:	ATL06LA083
Date & Time:	05/23/2006, 1830 EDT	Registration:	N3217F
Aircraft:	Mooney M20E	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot stated he was halfway down the runway when he observed the airspeed was 45 knots and he elected to continue the takeoff due to insufficient runway remaining to abort the takeoff. The commercial-rated passenger, the previous owner of the airplane, stated he observed the engine rpm decrease to 2400 rpm or less during the takeoff roll. Upon reaching the end of the runway the pilot stated he applied aft pressure on the control yoke and the airplane became airborne. The pilot retracted the landing gear, the airplane rolled right, and the nose pitched down. The pilot observed trees, power lines, and the airplane collided with the ground and a post crash fire ensued. A witness stated the pilot and two other personnel tried to turn the airplane around by hand before departure with negative results. The pilot entered the airplane, released the parking brake, exited the airplane, and the airplane was attempted to be moved again with negative results. The pilot and passenger entered the airplane and the pilot started the engine, turned the airplane around with power, and taxied to runway 06. The witness observed the airplane on its takeoff roll. The airplane traveled about 400 to 500 feet before reaching his location and the airplane ground speed was estimated at between 15 to 20 knots. The witness observed the airplane make an abrupt pitch up at the end of the runway and the tail down ring contacted the ground. The airplane became airborne rolled to the right, and disappeared from view. The runway was measured to be 1,383 feet long and 80 wide by the FAA. The Aircraft Owner's Manual showed the takeoff roll on a hard surface runway would be 790 feet, and 808 feet on a soft surface. Examination of the runway by the FAA revealed the airplane traveled 819 feet on the takeoff roll before encountering the dirt section of the runway. Two skid marks were present in the dirt on the runway. The left skid mark was measured 417 feet long and the right skid mark was measured 388 feet long. Ten feet past the left skid mark appeared to be a tail strike mark on a stone with a blue color. The bottom of the accident airplane is blue in color. Examination of the airplane revealed a post crash fire had destroyed the parking brake valve. The No.1 engine induction tube was damaged, separated from the No.1 cylinder intake port and both induction tube bolts were missing. One half of the No.1 intake gasket and one bolt with a locking star washer and a plain washer were located in the right side of the lower engine cowling. The bolt with locking star washer and plain washer was encased with molten aluminum, and the locking tabs on the washer were not flattened. A follow up examination by the FAA revealed thread damage was present on the No.1 cylinder induction

tube bolt holes and improper sized threaded bolts had been installed in the No.1 and No. 3 cylinder induction tube bolt holes. Testing of an IO 360 engine at the engine manufacturer revealed with a separated induction tube from a cylinder intake port at 2,650 rpm, the engine rpm remained relatively constant. Engine rpm settings below 2,650 rpm revealed the engine would falter and rpm would decrease.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to abort the takeoff after the airplane failed to achieve adequate airspeed on the takeoff roll for undetermined reasons. This resulted in an abrupt pull up, inadvertent stall, and in flight collision with wires, trees and the ground.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: TAKEOFF - ROLL/RUN

Findings

1. AIRSPEED - INADEQUATE
2. REASON FOR OCCURRENCE UNDETERMINED
3. (C) ABORTED TAKEOFF - NOT PERFORMED - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

4. PULL-UP - PERFORMED - PILOT IN COMMAND
5. STALL - INADVERTENT - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. OBJECT - WIRE,STATIC
7. OBJECT - TREE(S)
8. TERRAIN CONDITION - GROUND

Factual Information

"THIS CASE WAS MODIFIED 11/09/2006!!"

HISTORY OF FLIGHT

On May 23, 2006, at 1830 eastern daylight time, a Mooney M20E, N3217F, registered to Bunk Aviation LLC, and operated by an individual as a 14 CFR Part 91 personal flight, collided with trees and power lines during takeoff and initial climb from a private airstrip in the vicinity of Blacksburg, South Carolina. Visual meteorological conditions prevailed and no flight plan was filed. A post crash fire destroyed the airplane. The private-rated pilot and commercial-rated passenger received serious injuries. The flight was originating at the time of the accident.

The private airport owner stated, the pilot and his passenger arrived at the airport in N3217F around 1700 and landed on runway 24. The pilot and passenger were then driven to a friend's house. The pilot and his passenger returned to the airport and a through-flight inspection was completed with no anomalies found. The pilot wanted to turn the airplane around before starting it. The pilot and three other personnel attempted to move the airplane by hand with negative results. The pilot entered the airplane, released the parking brake, exited the airplane, and attempted to move the airplane with negative results.

The pilot and passenger entered the airplane. The pilot started the engine, turned the airplane around with power, and taxied to runway 06 for a VFR departure to Columbia Downtown Airport, Columbia, South Carolina. The airport owner stated he heard the pilot conduct an engine run up and observed the airplane begin its take off roll at 1830. The witness stated the airplane traveled about 400 to 500 feet down the runway and he estimated the ground speed of the airplane between 15 to 20 knots. The pilot continued the takeoff roll. Upon reaching the end of the runway the airplane was observed to make an abrupt pitch up estimated at between 25 to 30 degrees. The airport owner stated it appeared that the tail tie down ring contacted the ground. The airplane became airborne, cleared the trees, rolled to the right, and disappeared from view. The airport owner heard two impact sounds and he called the emergency 911 operators to report the accident. The airport owner went to the crash scene. The airplane had collided with trees, power lines, was on fire, and came to rest in a creek bed.

The pilot was interviewed 6 days after the accident, and stated he had not landed at the private airfield before. In addition, the pilot stated he did not conduct any performance planning using the Mooney Owner's Manual for his arrival or departure at Blacksburg. The pilot called the airport owner before his arrival, coordinated transportation to his friend's house, and was provided with the airport coordinates, radio frequency, elevation, runway direction, and runway length and width. In addition, the airport owner informed the pilot if he was not comfortable with the runway upon arrival that he would meet him at another airport. The pilot stated he and his passenger departed the Columbia Owens Downtown Airport at 04:00 PM, arrived at the private airfield, and landed on runway 24 with out incident.

The pilot stated he was met by the airport owner after completing the engine shut down procedures and exiting the airplane. The airport owner asked if he had set the parking brake on the airplane. The pilot stated no. The pilot rated passenger entered the airplane and set the parking brake. Chocks were placed under the landing gear and they departed the airport for the pilot's friend's house. Upon return to the airport the pilot completed a through-flight inspection of the airplane and no anomalies were noted. The pilot decided he wanted to turn

the airplane around by hand before starting the airplane and he and the airport owner attempted to move the airplane with negative results. The airport owner asked the pilot if the parking brake was on and the pilot rated passenger went inside the airplane and released the parking brake. The airplane was turned around by hand, the pilot and his passenger entered the airplane and the pilot started the engine. The pilot taxied to runway 06, aligned the airplane with the runway, and completed an engine run up with no anomalies.

The pilot stated he set the airplane up for a short field take off by lowering the flaps to 16-degrees, setting the brakes with the rudder pedals, increasing the engine power to 2,650 rpm and allowing the engine to stabilize. The pilot checked the airplane instruments and gauges and everything was in the green. The pilot released the brakes and started the take off roll. Just before reaching midfield the pilot observed the airport owner watching the take off. The airplane airspeed indicator indicated 45 knots. The pilot gave a "thumbs up" to the airport owner and looked back inside at the airspeed indicator. The indicator still indicated 45 knots and the pilot stated he was expecting it to read 60 knots. The airplane wings were providing a little lift, the nose of the airplane was lowered a little to gain airspeed, and there was no increase in airspeed. The pilot stated the end of the runway was approaching and there was insufficient room for him to abort the take off. As soon as the airplane reached the departure end of the runway the pilot pulled back on the control yoke and the airplane became airborne. The pilot stated he retracted the landing gear over the trees, the airplane rolled right, and he applied left rudder. The nose of the airplane pitched down, he observed trees and power lines and the airplane came to a complete stop. The passenger informed him the airplane was on fire, opened the cabin door and they both exited the airplane.

The commercial pilot rated passenger and previous owner of the airplane was interviewed 4 days after the accident. The passenger verified the airport owner's witness account of events at the airfield except the passenger stated he entered the cockpit, released the brakes, exited the airplane and assisted the others in moving the airplane by hand. The passenger stated the airplane was started, taxied to runway 6, and an engine run up was performed with no anomalies noted. The pilot taxied the airplane into position, held the brakes, and increased the engine power to full power at 2,600 rpm. The pilot released the brakes and started the take off roll at 06:30 PM. The airplane was half way down the runway when the passenger noticed the engine rpm dropping to 2,400 rpm or less. The pilot did not apply any brakes in an attempt to abort the take off since there was insufficient runway remaining. As the airplane reached the end of the runway, the pilot applied aft pressure on the control yoke; the nose of the airplane pitched up, and became airborne. The passenger stated he is not sure what happened after that, he thought the airplane collided with a tree and power lines before coming to a complete stop. He observed the airplane was on fire, opened the cabin door, and he and the pilot exited the airplane.

PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the private pilot was issued a private pilot certificate on May 2, 2005, with ratings for airplane single engine land, and instrument airplane. The pilot was issued an instrument rating by an FAA Designated Examiner on December 23, 2004. The pilot holds a third-class medical certificate issued on June 27, 2003, with no restrictions. The pilot's logbook was not located at the crash site. The last page submitted with the NTSB Pilot/Operator Aircraft Accident Incident Report revealed the pilot has accumulated 495 total flight hours.

The pilot's last flight review and total flight hours in make and model were not determined.

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the commercial-rated passenger was issued a commercial pilot certificate on October 28, 2005, with ratings for airplane single engine land and sea, airplane multiengine land, and instrument airplane. The passenger holds a third-class medical certificate with the restriction, "must wear corrective lenses for near and distant vision. The passenger indicated on his last application for the third-class medical certificate that he had accumulated 5,000 total flight hours with 4,000 hours in the Mooney M-20E. The passenger's last flight review was conducted on May 10, 2005.

AIRCRAFT INFORMATION

Review of information obtained from Aircraft Maintenance Services, Inc., Camden, South Carolina, and the airplane logbooks revealed the pilot brought the airplane to Camden in January 2006, for an annual inspection. The President of Aircraft Maintenance Services, Inc., informed the pilot that the engine was leaking oil through the case and all cylinders and that they would not perform an annual inspection on the airplane unless the engine was overhauled. The engine was removed by Aircraft Maintenance Services, Inc., between February 14 and 15, 2006, and the engine had 1,352 total hours. The engine was shipped to Americas Aircraft Engines, Tulsa, Oklahoma, on February 17, 2006. The engine was overhauled and returned to Aircraft Maintenance Services, Inc., on April 20, 2006. The engine was reinstalled on the airplane and the annual inspection was completed on April 28, 2006. The engine had been operated for 19.91 hours since the engine was installed on the airplane. There was no record of any work having been performed on the induction system since the engine was overhauled.

The President of Aircraft Maintenance Services, Inc who performed the annual inspection stated, "One of the discrepancies was both master cylinders were leaking hydraulic fluid. Floor under the pilot's feet was soaked with MIL5606, hydraulic fluid and the under plane skin was stained with old fluid. We removed master cylinders and installed new O-rings IACW Mooney maintenance manual. We bled brake system and operational checked during run up. During the landing gear inspection we noted that the brake pads were all new, also we noticed the right brake line had a deep chafe spot, so we installed a new line. No maintenance was needed on the parking brake system and operation of that system was tested during the run up. Some times when a person leaves the park brake cable pulled for a long period of time (over thirty minutes) thereby holding pressure on the pads, the actuators can stick and have to be released by hand. We have had this problem on Beech, Piper, Cessna, and Mooney aircraft."

Review of the propeller logbook revealed the Hartzell Propeller, and propeller blades were removed, and overhauled on August 9, 2001, in Gainesville, Georgia. The Hartzell propeller and propeller blades were removed and replaced again on November 11, 2005, by the same repair station.

The airplane was topped off with 19.3 gallons of 100-low lead fuel on May 19, 2006, at the Spartanburg Downtown Memorial Airport, Spartanburg, South Carolina. There is no other record of the airplane being refueled before the accident.

AERODROME INFORMATION

The private airstrip at Blacksburg, South Carolina, is not registered with the Federal Aviation Administration or with the State of South Carolina. The FAA investigator on scene measured

the grass and dirt runway. The runway is 1,383 feet long and 80 wide. The elevation at the airport is 850 feet and the runway direction is 240-degrees and 06-degrees magnetic.

Examination of runway 06 by the FAA after the accident revealed the airplane traveled 819 feet on the take off roll before encountering the dirt section of the runway. Two skid marks were present in the dirt on the runway. The left skid mark was measured 417 feet long and the right skid mark was measured 388 feet long. The width of the Mooney M-20 E landing gear is 9 feet and three quarters of an inch wide. The distance between the left and right main landing gear skid marks are 9 feet and three quarters of an inch. Ten feet past the left skid mark appeared to be a tail strike mark on a stone with a bluish color. The bottom of the accident airplane is blue in color.

Review of the Mooney Super 21 Model M-20E Owners Manual, Part IV Performance Data, Figure 1, page 35, revealed at a take off weight of 2,441 pounds, and a temperature of 73-degrees Fahrenheit, the take off roll on a hard surface would be 790 feet. On a soft surface the take off roll would be 808 feet. The nearest weather reporting facility to the accident was Greenville Spartanburg International Airport, Greer, South Carolina. The temperature at the time of the accident was 73-degrees Fahrenheit. Review of the Super 21 Model M-20E Owners Manual, Part IV Performance Data, Figure 1, page 35, reveals that at a field elevation of 850 feet MSL, a temperature of 73-degrees Fahrenheit, and a take off weight of 2,441 pounds, the take off roll on a hard surface is 790 feet. The distance to clear a 50-foot obstacle on a hard surface is 1,357 feet. The performance data does not include any information regarding soft field take off performance. However, the best practice, as recommended by a former Mooney production test pilot familiar with the M20E, would be to add 15% to the take off distances for a mowed, dry, grassy runway. In that case, the take off roll would be increased to 908 feet. The distance to clear a 50-foot obstacle would then be 1,560 feet. The Owners Manual does not have a chart to compute accelerate stop distance for the Mooney M-20E. The pilot stated he did not compute any performance data for landing or takeoff from the private airstrip at Blacksburg, South Carolina.

METEOROLOGICAL INFORMATION

The Greenville-Spartanburg International Airport, Greer, South Carolina, located 47 miles southwest of Blacksburg, South Carolina, 1953 surface weather observation was wind 140-degrees at 4 knots, visibility 10 miles, broken clouds at 7,500 feet, temperature 73-degrees Fahrenheit, dew point temperature 57-degrees Fahrenheit, and altimeter 30.04.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located in a creek bed adjacent to Whites Farm Road and off the departure end of runway 06 in the vicinity of Blacksburg, South Carolina. The airplane had collided with a tree and power lines on a heading of 052-degrees magnetic and came to rest on a heading of a 148-degrees in a slight nose down attitude straddling the creek bed.

The NTSB and Parties to the NTSB investigation examined the airplane wreckage at Griffin, Georgia, on June 8, 2006, through June 9, 2006.

Examination of the airplane revealed the engine and propeller assembly remained attached to the airframe. The lower engine cowling was fire damaged and the post crash fire consumed the top engine cowling. The nose landing gear was attached and in the retracted position. The firewall section of the tubular frame was burned through aft of the firewall by the post crash fire. The propeller remained attached to the propeller crankshaft flange and received fire

damage. One propeller crankshaft bushing was observed not fully installed in the crankshaft flange. The propeller mounting nuts were secured with .032-inch safety wire. One of the propeller crankshaft flange bushings was pushed aft one eighth of an inch from its normal position on the flange. The propeller governor was destroyed by fire. The spinner was damaged and remained attached to the spinner bulkhead. One propeller blade was bent aft 90-degrees twenty-three inches outboard of the propeller hub. The propeller blade internal pitch links were broken. The propeller blade exhibited "s" bending, and gouging was present on the leading and trailing edge of the propeller blade. Chord wise scarring was present on the face and the camber side of the propeller blade. The remaining propeller blade remained attached to the propeller hub. The propeller blade exhibited twisting thirty-one inches outboard of the propeller hub and the propeller blade tip was separated and not located. The leading and trailing edge of the propeller blade exhibited gouging and chord wise scarring was present on the face and camber side of the propeller blade.

The cabin area was consumed by fire including the instrument panel. The fire extended aft to 41-inches forward of the empennage hinge point. The throttle cable end was burned off but was contacting the gear warning micro switch. The propeller cable end fitting was extended one-inch. The mixture cable end fitting was extended one and one-eighth inch. The magneto switch was destroyed. The power boost was in the on position. The Hobbs meter and engine tachometer were not located. The fuel selector valve was not located. The landing gear Johnson bar was in the extended position. The parking brake knob was not located. The parking brake cable was measured 32 and five eights inches long. The parking brake valve was not located. Continuity of the flight controls was confirmed from the control yoke and rudder pedals aft to their respective flight control surfaces. The flight control tubes were cut forward of the Johnson bar, outboard of the left wing attachment point, midspan of the right wing, and aft of the tail cone attachment point by recovery personnel.

The right wing remained attached to the airframe and was fire damaged. The leading edge of the wing received impact damage 64-inches outboard of the wing root. A circular gouge was present 14-inches in diameter by 17-inches deep inboard of the leading edge of the right wing. The right flap remained attached to the inboard hinge. The outboard 4 feet of the right flap was bent up and separated from the aft spar. The hydraulic lines were fire damaged and the flap was found in the up position. The remaining 7 feet of the wing separated. The right aileron was separated and not recovered. The right aileron outboard hinge remained attached to the aft spar. The right aileron counter weight was missing and not located. The right main fuel tank was consumed by fire and the fuel cap had a tight seal. The right main landing gear was in the retracted position.

The tail cone was separated 41-inches forward of the aft bulkhead and was crushed inward to the right and fire damaged. The tie down ring remained attached to the tail cone. The blue tailskid remained attached to the tail cone and grass was wedged in the forward end between the tailskid and the tail cone. The empennage remained attached to the tail cone.

The vertical stabilizer was fire damaged, torn 26-inches above the horizontal stabilizer, displaced to the right, and an 11-inch gouge was present on the leading edge. The rudder assembly was fire damaged and remained attached to its hinge points.

The outboard 27-inches of the right side horizontal stabilizer was bent downward 110-degrees. The right elevator was bent downward 110-degrees and remained attached to its hinge points. The elevator counter weight remained attached.

The left horizontal stabilizer was fire damaged and intact. The outboard 28-inches of the leading edge had numerous dents. The outboard 12-inches of the horizontal stabilizer was bent upward 45 degrees. The left elevator was fire damaged. The inboard hinge was broken and the outboard 12-inches of the elevator was bent upward 45 degrees. The elevator counter weight was missing and not recovered.

The left wing was fire damaged and remained attached to the airframe by the rear spar. The left wing main spar was burnt through and separated. The left wing was bent downwards 134-inches outboard of the wing root. Diagonal crushing was present on the topside of the wing beginning 60-inches outboard of the wing root extending outboard 131-inches. The leading edge of the wing was crushed inward and upward extending outboard 131-inches of the wing root. The left flap remained attached to its hinge points except for the inboard rod attachment point, which was separated from the flap. The hydraulic lines were fire damaged and the flap was found in the up position. The left aileron remained attached to its hinge points and was bent downward consistent with the left wing. The aileron counter balance weight was intact. The left main fuel tank was consumed by fire and the fuel cap had a tight seal. The left main landing gear was in the retracted position.

The engine assembly was damaged by fire. The upper and lower tubular engine mounts remained attached to the engine. The upper and lower aluminum engine mount legs were not fractured and the rubber isolation mounts were consumed by fire.

Examination of the engine revealed the No.1 engine induction tube was damaged and separated from the No.1 cylinder intake port. Both intake bolts were missing. The bolt ends were not located in the cylinder head bolt holes. The induction tube mounting flange was not damaged. One half of the No.1 intake gasket and one bolt with a locking star washer and a plain washer were located in the right side of the lower engine cowling. The bolt with locking star washer and plain washer was encased with molten aluminum. The locking tabs on the locking star washer were not flattened. The bolt appeared to be about one-inch in length and had threads the full length of the shank. The remaining bolt, locking star washer, and plain washer were not located. The No. 2 induction tube was damaged. The No. 3 and No. 4-induction tubes were not damaged. The exhaust muffler slide was damaged and the muffler was displaced upwards and aft against the oil sump.

All engine accessories remained attached to the engine and were fire damaged. All fuel and oil lines remained attached. The ignition harness was destroyed by fire. The top and bottom spark plugs and rocker covers were removed and exhibited worn normal condition when compared to the Champion Check A Plug chart. The engine was rotated by hand after removing the engine oil sump and accessory case. Oil was found through out the engine. No metallic debris was found in the oil sump. Continuity of the crankshaft to the rear engine gears and valve train was observed. Compression and suction was observed on all four cylinders. The oil suction screen was removed and no contamination was observed. The oil filter was removed and opened. The oil filter element was burned and no metallic flakes were present. The vacuum pump could not be rotated and was removed and disassembled. The carbon rotor and vanes were intact and the drive coupling was destroyed by fire. The fuel injector servo and fuel inlet screen was removed. No contamination was found. The fuel manifold was removed and disassembled. The diaphragm was intact. All fuel nozzles were removed and were unobstructed. The engine driven fuel pump was damaged by fire. The starter and generator remained attached to the engine and were fire damaged. The left and right magnetos were damaged by fire and could not be

rotated. The oil cooler was intact and fire damaged.

All cylinders were fire damaged and removed. No damage was observed on the push rods. The pistons were removed from all cylinders and no damage was noted to the piston domes and rings. All piston domes were dark gray in color. The engine case halves were separated. The camshaft was not damaged. No damage was noted to the valve lifter bodies. All crankshaft main bearings received fire damage. All piston rods rotated freely on the crankshaft. The rear main bearing shells were white and, exhibited no signs wiping. The crankshaft was intact. The main bearing journals were not damaged. No scoring was present on the oil pump gears. Carbonized oil was present in the oil pump cavity. The oil pressure relief valve was removed. The valve was unobstructed and no damage was noted to the ball and seat.

The FAA returned to Griffin, Georgia, on August 2, 2006, to examine all of the hardware that had been removed as the engine was being disassembled. A total of 37 1/4-20 bolts of various lengths were located. Four of the 1/4-20 x 1 1/4 inch bolts were located. The Lycoming O, IO, HIO-360 PARTS CATALOG Standard Cylinder Flange Crankcase Model Engines Oil Sump and Induction System Intake Pipes Figure 26, item 10 requires eight part number STD-1215, 1/4-20 x 1 1/4 long hex head bolts be used to secure the induction tubes. Examination on the No. 1 cylinder induction tube bolt holes revealed some thread damage. Examination of the No. 1 and No. 3 cylinders revealed that 1/4-20 x 1 inch fully threaded bolts had been installed instead of the STD-1215, 1/4-20 x 1 1/4 bolts required by the Lycoming parts catalog.

TEST AND RESEARCH

The NTSB requested Lycoming to conduct further testing on an IO-360 engine in order to determine what effect the separation of an induction tube from an intake port would have on engine performance. An IO-360 engine was installed on an Experimental Department test stand with a club propeller. A manual butterfly valve was installed in the number two-cylinder intake pipe. The testing revealed with the intake pipe butterfly valve open simulating leakage at 2,200 rpm, the engine faltered and rpm decreased to approximately 1700 rpm. At 2,400 rpm with the butterfly valve open, the engine faltered and rpm decreased to approximately 1,800 rpm. At 2,600 rpm with the butterfly valve open, the engine faltered and rpm decreased to approximately 2,000 rpm. At 2,650 rpm with the butterfly valve open, the engine rpm remained relatively constant and no falter was noted

MEDICAL AND PATHOLOGICAL INFORMATION

The private pilot was transported to Greenville Memorial Hospital, Greenville, South Carolina, with serious injuries. The Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma, performed toxicology of specimens from the pilot. The results were negative for carbon monoxide, ethanol, basic acidic and neutral drugs. Cyanide testing was not performed.

The commercial pilot-rated passenger was transported to Spartanburg regional medical Center, Spartanburg, South Carolina, with serious injuries. Toxicology samples were subpoenaed by NTSB from Spartanburg Regional Medical Center after the NTSB had advised the Laboratory Manager not to dispose of the samples taken during the admission of the pilot rated passenger. The attorney for the hospital contacted the NTSB investigator-in-charge on June 16, 2006, and informed him that the samples had been secured as requested; however, they were inadvertently destroyed by hospital personnel prior to the subpoena being issued.

TEST AND RESEARCH

Review of the Mooney SUPER 21 Model M-20E Owners Manual, Page 42, Figure 4, Stall Speed Vs Bank Angle revealed the airplane will stall at a gross weight of 2,575 pounds with the flaps extended 0-degrees, at 0-degrees bank, the airplane will stall at 67 mph. With flaps extended 15-degrees, 0-degrees bank, the airplane will stall at 64 mph.

Federal Air Regulation (FAR) 91.7 Civil Aircraft Airworthiness (A) states. " No person may operate a civil aircraft unless it is in an airworthy condition. (B) The pilot in command of a civil aircraft is responsible for determining whether that aircraft is in condition for safe flight. The pilot in command shall discontinue the flight when unairworthy mechanical, electrical, or structural conditions occur."

ADDITIONAL INFORMATION

The wreckage was released to Atlanta Air Recovery, Griffin, Georgia, on June 9, 2006. The airplane logbooks were released to the FAA Columbia FSDO-13 on June 9, 2006. The No.1 intake gasket, No.1 induction tube, and one bolt with a locking star washer and a plain washer were released to the FAA Columbia FSDO-13 on June 9, 2006. Thirty seven bolts of various lengths were taken into FAA custody on August 2, 2006.

Pilot Information

Certificate:	Private	Age:	37, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Without Waivers/Limitations	Last FAA Medical Exam:	06/01/2003
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	495 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Mooney	Registration:	N3217F
Model/Series:	M20E	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	670010
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	04/01/2006, Annual	Certified Max Gross Wt.:	2575 lbs
Time Since Last Inspection:	20 Hours	Engines:	1 Reciprocating
Airframe Total Time:	3197 Hours at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	IO-360-A1A
Registered Owner:	Bunk Aviation LLC	Rated Power:	200 hp
Operator:	Bunk Aviation LLC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KGSP, 964 ft msl	Distance from Accident Site:	47 Nautical Miles
Observation Time:	1953 EDT	Direction from Accident Site:	230°
Lowest Cloud Condition:		Visibility	10 Miles
Lowest Ceiling:	Broken / 7500 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.04 inches Hg	Temperature/Dew Point:	23°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Blacksburg, SC	Type of Flight Plan Filed:	None
Destination:	Columbia, SC (KCUB)	Type of Clearance:	None
Departure Time:	1830 EDT	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Serious	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Serious	Latitude, Longitude:	35.147222, -81.511667

Administrative Information

Investigator In Charge (IIC):	Carrol A Smith	Adopted Date:	01/31/2007
Additional Participating Persons:	Lanny Cline; Columbia FSDO-13; Columbia, SC Mike Childers; Teledyne Continental; Williamsport, PA Robert Collier Jr.; Mooney Aircraft; Kerrville, TX		
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/ .		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.