National Transportation Safety Board
Aviation Accident Final Report

Location:	Venice, FL	**Accident Number:**	ERA12FA123
Date & Time:	12/26/2011, 1406 EST	**Registration:**	N560WM
Aircraft:	AERO COMMANDER 560-F	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane departed and was climbing to an assigned altitude when the pilot informed an air traffic controller of a loss of engine power on the left engine. The pilot received radar vectors back to the departure airport and reported the airport in sight. There was no further communication with the controller. Review of radar data revealed that the airplane was about 825 feet from and 200 feet above the landing runway threshold. Seventeen seconds later, the airplane was at 100 feet above ground level and left of the intended landing runway. The last radar return was 5 seconds later, and the airplane was at 200 feet above ground level. A witness observed the airplane in the vicinity of landing runway. The airplane pitched straight up, stalled, spun to the left three times before it collided with the ground and caught fire.

Postcrash examination of the airframe and flight controls revealed no anomalies. The left engine was disassembled and all connecting rods were intact except for the No.2 connecting rod. Metallugical examination of the connecting rod revealed that the bearing failed, most likely due to a progressive delamination of the bearing.

Review of the airplane flight manual revealed a minimum of 300 feet of altitude is required to recover from power-off stalls with 7500 pounds at both forward and aft center of gravity. The stall speed with the landing gear and flaps up with 0 degree angle of bank is 83 miles per hour or 72 knots. The stall speed with the landing gear extended and the flaps down is 73 miles per hours or 63 knots.

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 adequate airspeed during a single-engine approach, which resulted in an aerodynamic stall. Contributing to the accident was the total loss of power in the left engine due to a failed No. 2 connecting rod bearing.

Findings

Aircraft	Airspeed - Not attained/maintained (Cause) Recip engine power section - Failure
Personnel issues	Aircraft control - Pilot (Cause)

Factual Information

HISTORY OF FLIGHT

On December 26, 2011, at 1406 eastern standard time, an Aero Commander 560-F, N560WM, collided with the ground while attempting to return to Venice Municipal Airport (VNC), Venice, Florida. The airplane was registered to a private owner, and was operating as a 14 Code of Federal Regulations Part 91 personal flight. The airplane sustained substantial damage and a post crash fire ensued. Visual meteorological conditions prevailed and an instrument flight rules (IFR), flight plan was filed. The certificated private pilot was killed. The flight departed from VNC at 1352 and was en-route to Barwick Lafayette Airport (9A5), Lafayette, Georgia.

Review of audio communication between Tampa Approach and N560WM revealed the pilot received an IFR clearance on the ground at VNC. While climbing to an assigned altitude of 6,000 feet mean sea level, the pilot reported a loss of engine power on the left engine. Tampa Approach provided radar vectors and a descent back to VNC airport. The pilot reported the airport in sight at 12 o'clock and 4 miles. The controller cleared the pilot for a visual approach and there were no further radio communications with the pilot.

A witness stated he observed the airplane in the vicinity of runway 22. The airplane was observed to pitch straight up, stall, and spin to the left three times before it collided with the ground. About 1 minute 30 seconds after the airplane collided with the ground, it was engulfed in flames.

Review of radar data revealed N560WM was about 275 yards from the runway 22 threshold, at 200 feet, at 1405:17. The airplane continued to descend down to 100 feet at 14:05:31, and was left of runway 22. The last recorded radar return on N560WM was at 14:05:36, and the airplane was at 200 feet.

PERSONNEL INFORMATION

The pilot, age 63, held a private pilot certificate with ratings for airplane single-engine land, airplane multi-engine land and instrument airplane, issued on August 3, 2006. The pilot held a third-class medical certificate, issued on December 13, 2011, with the restriction, "Must have eye glasses." The pilot indicated on the application that he had 6,000 total flight hours and had flown 50 hours in the last 6 months. Review of an insurance renewal application dated March 18, 2008, revealed the pilot indicated he had 700 hours in the same make and model as the accident airplane. According to the pilot's wife, the pilot's logbook was in the airplane and not recovered. The pilot's last flight review and instrument proficiency check was conducted on April 12, 2011.

AIRCRAFT INFORMATION

The Aero Commander 560-F is a seven-place, high-wing, all-metal, twin-engine, retractable landing gear airplane and is designed to carry a pilot and six passengers. The airplane, serial number 560F-1305-58, was manufactured in 1964. Two Lycoming geared IGO-540-B1A, 350-horsepower, horizontally-opposed six-cylinder, air cooled, fuel injected engines powered the airplane. Review of logbook records obtained from the pilot's insurance company revealed the last annual inspection was conducted on April 6, 2011 at a recorded HOBBS time of 2104.0 hours. The total airframe time at the annual inspections was 5825.8 hours. The total time on the left engine since major overhaul was 1029.9 hours. The right engine was replaced on

December 6, 2010 at HOBBS time 2104.0 hours. The HOBBS meter was not located at the accident site and the total time could not be determined.

According to the Federal Aviation Administration (FAA) Inspector, who spoke with the pilot's wife, she has not been able to locate the airplane logbooks. The last logbook entry that she found was dated 2005. The airplane was last refueled at Florida Flight Training, Venice, Florida, on December 26, 2011, with 16.90 gallons of 100 low lead fuel.

A representative from Sarasota Avionics Inc stated the pilot had brought N560WM to their facility in September 2011, for the installation of an Aspen EFD 1000 and a Garmin GTX 330. They requested the airplane logbooks and a current weight and balance for the airplane, but the pilot never produced the records, and informed them nothing had been done on the airplane since 2007 when they had installed KNS 80.

The pilot came to the facility again in October 2011, to pick up the airplane. Sarasota Avionics had to connect a power cart to the airplane so the pilot could start the right engine. The airplane started, turned to the left and collided with a parked Mooney. The representative looked up and noticed that the hydraulic pumps were turned off and the pilot stated, " That didn't matter he should still have brakes."

Further review of the insurance records and a statement from the insurance adjuster confirmed the airplane had been involved in a ground accident on October 7, 2011 at the Sarasota Avionics ramp. The radar dome on the Commander was destroyed beyond repair. There was a predominant dent starting under the pilot side window and running to a point 1 inch aft of the cabin entry door. The insurance adjuster met with the pilot of the airplane at his office and informed him that the airplane could not be flown unless a serviceable radar dome was installed and a ferry permit was obtained from the FAA. The adjuster asked to see the airplane logbooks and the pilot handed him copies of the annual inspection. The adjuster asked the pilot to see the logbooks and the pilot presented the logbooks for review.

According to the FAA, the airplane was not properly repaired and the standard airworthiness certicate was invalid, and the pilot would have had to apply for a special flight permit for the purpose of flying the airplane to a base where repairs, alterations, or maintenance are to be preformed, or to a point of storage. There was no record that the pilot applied for a ferry permit before the accident flight.

The insurance adjuster interviewed the mechanic who performed the annual inspection on N560WM. The mechanic stated the pilot informed him that at some time after the taxi accident, he could not start the left engine. The pilot informed him that they (pilot and unidentified person) were going to take the right fuel pump and put it on the left engine, and they were planning on running a hose from the right boost pump to the right engine servo, so the left engine could be operated.

METEOROLOGICAL INFORMATION

The VNC 1915 surface weather observation was winds 230 at 4 knots, visibility 8 miles, light rain, few clouds 3,800 feet, 4,800 broken, 5,500 overcast, temperature 23 degrees Celsius, dew point temperature 20 degrees Celsius, and altimeter 3012.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was located on VNC airport grounds located about .15 miles south south west of the closed runway 27 markings, in an open field. Examination of the crash site revealed

the airplane collided with the ground in a left wing low vertical flat descent. The crash debris line was 12 feet long.

Post accident examination of the wreckage revealed the nose section was displaced to the right. The radar dome was fractured and duct tape was taped around the radar dome. The forward windscreen and left and right forward cabin windows were destroyed. The nose landing gear was extended and displaced rearward. The forward and rear cabin area was consumed by fire from the instrument panel extending rear to the intersection of the vertical stabilizer and the horizontal stabilizers. The instrument panel was fragmented. The left throttle was at the idle position and the right throttle was at mid range. The left propeller lever was in the feathered position the right propeller was in the full forward position. The left mixture lever was destroyed and the position could not be determined. The right mixture lever was full rich. The fuel selector valve was not located. The left cockpit seat remained attached to the cabin floor and the seatbelt was destroyed. The right forward cabin seat separated from the seat track and the seat belt was destroyed. The rear seats remained attached and the seat belts were destroyed. The main cabin door was consumed by the post crash fire. The baggage compartment door separated from the door post and the door lock was in the locked position. The bottom of the fuselage was compressed upward with accordion crushing to the left. Continuity of the flight control system was confirmed from the control yokes aft to all flight control surfaces.

The right wing spar upper cap separated from the wing root, and the right wing was displaced forward and was fire damaged. The leading edge of the inboard wing was crushed inward extending outboard from the wing root to the right engine nacelle. The right engine oil reservoir was consumed by fire. The right engine cowlings were fire damaged. All inner wing bladder fuel tanks were ruptured. The right engine assembly was separated from the engine mounts and fire damaged. The right engine reduction gearbox separated from the engine with the propeller assembly remaining attached. The right propeller piston and pitch change linkage was fractured and disconnected from all propeller blades. The propeller spinner was crushed and fragmented.. All right propeller blades remained attached to their respective propeller hubs. One propeller blade was bent aft 30 degree at one-fourth radius. No twisting or rotation was present on the propeller blade. Another propeller blade was bent forward 90 degrees at one-fourth radius. No twisting or rotation was present on the propeller blade. The remaining propeller blade was bent aft 70 degrees at one-fourth radius. No twisting or rotation was present on the propeller blade. The propeller governor remained attached to its mount. The pilot spool separated from the propeller governor. The outboard fuel bladder tanks were ruptured. The right aileron was fire damaged and remained attached at all hinge points. The right aileron balance weight was intact. The right flap was destroyed and the position was not determined. The right main landing gear was extended and separated from the main landing gear support structure.

The tail cone separated at the intersection of the vertical fin and the horizontal stabilizer. The tail con e was crushed upward along its bottom full span. The vertical fin sustained fire damaged on both sides. The rudder assembly remained attached to all hinge points, and the rudder balance weight was intact. The left and right horizontal stabilizers were fire damaged and remained attached to the empennage. The left and right elevators were fire damaged and remained attached to the horizontal stabilizers. Both elevator balance weights were intact. The position of rudder and elevator trim could not be determined due to damage.

The left wing spar upper cap was destroyed by fire, and the left wing was displaced rearward. The leading edge of the inboard wing was consumed by fire outboard from the wing root to the left engine nacelle. The left engine oil reservoir was consumed by fire. The engine cowlings were fire damaged. The leading edge of the left wing was consumed by fire. All inner wing bladder fuel tanks were ruptured. The left engine assembly was separated from the engine mounts and fire damaged. The left propeller assembly remained attached to the propeller crankshaft flange. The propeller governor remained attached to the engine case block. The propeller spinner remained attached to the spinner flange. The propeller blades remained attached to their respective propeller hubs. One propeller blade was bent aft at the propeller blade root. Another propeller blade was bent at mid span. The remaining propeller blade was not damaged. All propeller blades were in the feathered position. The left outboard fuel bladder tanks were ruptured. The left aileron was fire damaged and remained attached at all hinge points. The left aileron balance weight was intact. The left flap was destroyed and the position was not determined. The left main landing gear was extended and separated from the main landing gear support structure.

The left engine assembly sustained fire damage. All cylinders and push rods remained attached to the engine and were not damaged. The left engine, left and right exhaust pipes were damaged. All induction tubes were damaged and remained attached to their respective cylinders. All baffling was damaged. The oil sump was intact. The oil suction screen was removed and metal contaminants were present. The oil Suction screen was forwarded to the NTSB Material Laboratory for further analysis. The oil filter was removed from the oil pump and the oil filter contained metal contaminants. The oil sump was removed and metal contaminates were present. The front oil cooler was damaged and the upper oil cooler was not damaged.

The left engine generator and starter were fire damaged and attached to the rear gear housing. The starter was removed and the starter housing and starter exhibited corrosion. The left magneto remained attached to its mount. The left magneto was removed and could not be sparked due to fire damage to its internal components. The right magneto remained attached to its mount. The magneto drive was turned by hand and spark was observed at all ignition towers. The top and bottom ignition harnesses were fire damaged. The vacuum pump remained attached to the left engine. The vacuum pump was removed and disassembled. The steel drive unit was intact.

The left engine fuel lines leading to the engine driven fuel pump and the fuel injector servo were burned off. The engine driven fuel pump was removed and no fuel was present. The engine driven fuel pump sustained fire damage and was disassembled. No anomalies were noted with the seal or impeller. The drive could be actuated manually by hand. The flow divider was removed and the No. 2 and No. 4 fuel outlets were plugged. The No. 1, No. 2 and No. 5 fuel injector nozzles were plugged. The No. 3, No. 4 and No. 6 fuel injector nozzles were unobstructed. The throttle body with the throttle control arm, propeller control arm and mixture control arm was not located. The fuel flow divider was removed, disassembled and no anomalies were noted. All spark plugs were removed. The upper spark plugs displayed light gray combustion deposits and worn normal condition. The bottom spark plugs exhibited light brown combustion deposits and worn normal condition.

The left engine was disassembled and all engine cylinders were removed. The cylinder fins were not damaged. All cylinder domes exhibited light combustion deposits. Rocker covers Nos.

1, 3, 2 4, and 6 were not damaged, Rocker cover No. 5 was damaged. The cylinder bores were not scored and all valves were in place. All pistons skirts were scored and exhibited light gray combustion deposits. All connecting rods were intact except for the No. 2 connecting rod. The No. 2 connecting rod and cap, piston, and both bearing halves for the No. 4 bearing and the No. 3 bearing were forwarded to the NTSB Materials Laboratory for further analysis. The No. 2 bearing was destroyed. Metallurgical examination of the components revealed the bearing failure was most likely due to progressive delamination of the bearing. The connecting rods would rotate on the rod journals. The crankshaft was not damaged but the No. 2 journal was worn. The camshaft was intact and not damaged. The main bearings were intact.

The right engine assembly sustained fire damage. Both engine case halves were cracked. All cylinders and push rods remained attached to the engine and were not damaged. The right engine, left and right engine exhaust pipes were damaged. All induction tubes were damaged and remained attached to their respective cylinders. All baffling was damaged. The oil sump was intact. The oil suction screen was removed and no contaminants were present. The oil filter was removed from the oil pump and the filter was unobstructed. The oil sump was removed and no metal contaminates were present. The front oil cooler and the upper oil cooler were damaged.

The generator and starter were fire damaged and attached to the rear gear housing. The left magneto was fire damaged and separated from its mount. The left magneto was removed and could not be sparked due to fire damage to its internal components. The right magneto was fire damaged and remained attached to its mount. The right magneto could not be sparked due to fire damage to the internal components. The top and bottom ignition harnesses were fire damaged. The vacuum pump remained attached to the engine.

The right engine fuel lines leading to engine driven fuel pump and the fuel injector servo were burned off. The engine driven fuel pump was not located. No nuts were attached to the engine driven fuel pump studs on the crank case. The flow divider was removed and was unobstructed. The No. 5 and No. 6 fuel nozzles were fire damaged and obstructed. The remaining fuel nozzles were unobstructed. The throttle body with the throttle control arm, propeller control arm and mixture control arm was not located. The fuel flow divider was removed, disassembled and no anomalies were noted. All spark plugs were removed. The upper spark plugs displayed light gray combustion deposits and worn normal condition. The No. 1 top spark plug tower was separated and the No. 5 top spark plug tower was bent. The No. 3 spark plug tower was not damaged. The top and bottom spark plugs exhibited light brown combustion deposits and worn normal condition.

The engine was disassembled and all engine cylinders were removed. The cylinder fins were not damaged. All cylinder domes exhibited light combustion deposits. All rocker covers were crushed inward. Cylinder Nos. 1 and 2 exhibited dark gray combustion deposits. Cylinder Nos. 3 and 4 exhibited light gray combustion deposits. Cylinder Nos. 5 and 6 exhibited very light gray combustion deposits. The cylinder bores were not scored and all valves were in place. All pistons skirts were not scored . All connecting rods and bearings were intact. The connecting rods would rotate on the rod journals. The crankshaft could not be turned due to the broken crank case halves being broken on the top. The camshaft and main bearings were intact.

MEDICAL AND PATHOLOGICAL INFORMATION

The District 12 Sarasota, Florida Medical Examiner conducted a postmortem examination of the private pilot, on December 27, 2011. The cause of death was multiple blunt impact injuries of head, torso and extremities. The FAA Bioaeronautical Sciences Research Laboratory performed toxicology testing on specimens from the pilot. Testing for carbon monoxide and cyanide was not performed. No ethanol was detected in the brain or muscle. The results were negative for basic, acidic, and neutral drugs.

ADDITIONAL INFORMATION

Review of the FAA Flight Manual for the Aero Commander Model 560 F states in the operating limitations, "The minimum speed at which the airplane is controllable in flight, with a sudden failure of one engine and take off power on the other engine is 90 calibrated miles per hour or 78 knots." It also states "NOTE, A minimum of 300 feet of altitude is required to recover from power off stalls with 7500 pound at both forward and aft center of gravity." The stall speed with the landing gear and flap up with 0 degree angle of bank is 83 miles per hour or 72 knots. The stall speed with the landing gear extended and the flaps down is 73 miles per hours or 63 knots.

History of Flight

Enroute-climb to cruise	Loss of engine power (partial)
Approach-VFR pattern final	Abrupt maneuver Loss of control in flight (Defining event)
Maneuvering	Aerodynamic stall/spin
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	63, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
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:**	12/13/2011
Occupational Pilot:		**Last Flight Review or Equivalent:**	04/12/2011
Flight Time:	6000 hours (Total, all aircraft), 1500 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	AERO COMMANDER	**Registration:**	N560WM
Model/Series:	560-F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	560F-1305-58
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	04/06/2011, Annual	**Certified Max Gross Wt.:**	7500 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	5826 Hours as of last inspection	**Engine Manufacturer:**	Lycoming
ELT:	Installed, not activated	**Engine Model/Series:**	IGO-540-B1A
Registered Owner:	MILLENIUM AIR LLC	**Rated Power:**	350 hp
Operator:	Andres Bustillo	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	VNC, 18 ft msl	**Distance from Accident Site:**	
Observation Time:	1415 EST	**Direction from Accident Site:**	
Lowest Cloud Condition:	Few / 3800 ft agl	**Visibility**	8 Miles
Lowest Ceiling:	Broken / 4800 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.12 inches Hg	**Temperature/Dew Point:**	23°C / 20°C
Precipitation and Obscuration:	No Obscuration; Rain		
Departure Point:	Venice, FL	**Type of Flight Plan Filed:**	IFR
Destination:	Lafayette, GA (9A5)	**Type of Clearance:**	IFR
Departure Time:	1352 EST	**Type of Airspace:**	Class G

Airport Information

Airport:	Venice Municipal Airport (VNC)	**Runway Surface Type:**	Asphalt
Airport Elevation:	18 ft	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	None
Runway Length/Width:	5000 ft / 150 ft	**VFR Approach/Landing:**	Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	N/A	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	27.113889, -82.725833 (est)

Administrative Information

Investigator In Charge (IIC):	Carrol A Smith	**Report Date:**	07/23/2013
Additional Participating Persons:	David Bear; FAA Tampa FSDO; Tampa, FL Tom Mc Creary; Hartzell Propeller Inc.; Piqua, OH		
Publish Date:	07/23/2013		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=82565		