



Aviation Investigation Final Report

Location:	Sumrall, Mississippi	Accident Number:	DFW06LA195
Date & Time:	August 4, 2006, 10:30 Local	Registration:	N86188
Aircraft:	Cessna A188B	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 137: Agricultural		

Analysis

The tail-wheel-equipped agricultural airplane stalled and impacted into a pond during a low altitude turn following a partial loss of engine power. The 1,525-hour commercial pilot had finished spraying a field and was departing the area when a witness observed the engine "pop as it would if the mixture was too lean." The engine then sounded as if it "cleared up" and moments later the airplane turned back towards the witness's location. As the airplane proceeded back towards him, the witness observed the engine running; however, it did not appear to be running at "full throttle." When the airplane was approximately 150-foot AGL, the airplane made a 90-degree turn before it "plunged" nose-first into a pond. All major components of the airplane were accounted for at the site, and control continuity was established to the airplane's flight controls. An examination of the engine revealed that the crankshaft, connecting rods and connecting rod bearings exhibited thermal and mechanical damage consistent with a lack of lubrication. The number four connecting rod bolt was found completely fractured. The oil sump, which had not been compromised during the accident, was found to contain residual oil. Investigators could not determine the reason for the loss of engine oil.

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 airspeed which resulted in an inadvertent stall. Contributing factors were the partial loss of engine power and the low altitude.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF

Phase of Operation: MANEUVERING

Findings

1. (F) ENGINE ASSEMBLY,CONNECTING ROD BOLT - FAILURE
2. (F) FLUID,OIL - LOW LEVEL

Occurrence #2: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: DESCENT - EMERGENCY

Findings

3. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
4. (C) STALL - INADVERTENT - PILOT IN COMMAND
5. (F) ALTITUDE - LOW - PILOT IN COMMAND

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Findings

6. TERRAIN CONDITION - WATER

Factual Information

HISTORY OF FLIGHT

On August 04, 2006, about 1030 central daylight time, a single-engine Cessna A188B agricultural airplane, N86188, was substantially damaged during impact with water following a loss of control while maneuvering near Sumrall, Mississippi. The commercial pilot, sole occupant of the airplane, was fatally injured. The airplane was registered to and operated by S&S Aviation of Collins, Mississippi. Visual meteorological conditions prevailed and a flight plan was not filed for the 14 Code of Federal Regulations Part 137 aerial application flight. The local flight originated from a private airstrip approximately 1005.

There were two witnesses to the accident. According to the witnesses, the pilot finished spraying a field and had given them a thumb's up signal before flying in an easterly direction at an approximately altitude of 300-feet above ground level (AGL).

One witness reported that when the airplane was about three-fourths of a mile from their location, he heard the engine "pop as it would if the mixture was too lean." The engine then sounded as if it "cleared up" and moments later the airplane turned back to the west. The witness added that, as the airplane proceeded back towards him, he observed the engine running; however, it did not appear to be operating at "full throttle." The witness further reported that when the airplane was approximately 150 AGL, the airplane turned to the south before it "plunged" nose-first into a pond.

The other witness reported similar observations and added that as the airplane turned south, the airplane "lost airspeed and nosed-down into the lake."

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single-engine land. His last Federal Aviation Administration (FAA) third-class medical certificate was issued on June 15, 2006, with the limitation of "Holder must possess glasses for near and intermediate vision."

The pilot's logbooks were not recovered during the course of the investigation. The pilot reported on his most recent medical application that he has accumulated a total time of 1,525-flight hours.

AIRCRAFT INFORMATION

The 1975-model Cessna A188B, serial number 18802008T, was a low wing semi-monocoque tail-wheel equipped-airplane, configured for one occupant. The airplane was powered by a

direct drive, horizontally opposed, fuel injected, air-cooled, six-cylinder engine. The engine was a Continental IO-520-D, serial number 293161R, rated at 300 horsepower at 2,850 rpm, and was driving a two-bladed constant speed McCauley propeller.

According to the airplane's owner, the airplane's most recent annual inspection was completed in April 2006, at an airframe total time of 8,030 hours.

METEOROLOGICAL INFORMATION

At 0953, the weather observation facility at Bobby L Chain Municipal Airport (HBG), near Hattiesburg, Mississippi, located 12 nautical miles east from the site of the accident, was reporting the wind from 350 degrees at 6 knots, visibility 8 statute miles, clear of clouds, temperature 88 degrees Fahrenheit, dew point 72 degrees Fahrenheit, and barometric pressure setting of 30.06 inches of Mercury.

WRECKAGE AND IMPACT INFORMATION

The wreckage was found submerged in a farm pond surrounded by rolling terrain. Once recovered, on-site documentation of the wreckage was conducted by investigators from the Federal Aviation Administration, Cessna Aircraft Company, and Teledyne Continental Motors. According to investigators, all major components of the airplane were accounted for at the site, and control continuity was established to the airplane's flight controls. The leading edges of the left and right wing were found crush aft in a manner consistent with a near vertical descent.

An examination of the engine was performed. A liquid consistent with aviation fuel was located in the fuel line between the fuel metering unit and the fuel manifold. The throttle and mixture controls were found connected and free to move. The fuel pump coupler was found intact. The top spark plugs were removed and the engine crankshaft rotated. Thumb compression was established in each cylinder with the exception of number four. An examination of the number four cylinder via a borescope revealed that the number four piston did not move when the crankshaft was rotated. The engine was then recovered to the facilities of Teledyne Continental Motors of Mobile, Alabama, for further examination.

A teardown examination of the engine was performed under the supervision of an NTSB representative. The examination revealed that the crankshaft, connecting rods and connecting rod bearings exhibited thermal and mechanical damage consistent with a lack of lubrication. The number four connecting rod bolt was found completely fractured. The number three piston head exhibited signatures of an exhaust valve impact, and the number three exhaust push rod was found bent. The oil sump, which had not been compromised during the accident, was found to contain residual oil. Investigators could not determine the reason for the loss of engine oil.

MEDICAL AND PATHOLOGICAL INFORMATION

The Chief Medical Examiner of Rankin County, located in Pearl, Mississippi, performed an autopsy on the pilot, on August 4, 2006.

The FAA, Toxicology Accident Research Laboratory, located in Oklahoma City, Oklahoma, conducted toxicological testing on the pilot.

ADDITIONAL INFORMATION

The wreckage was released on April 3, 2007, to a representative of the owner's insurance company.

Pilot Information

Certificate:	Commercial	Age:	60, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Single
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 2 With waivers/limitations	Last FAA Medical Exam:	June 1, 2006
Occupational Pilot:	No	Last Flight Review or Equivalent:	December 1, 2005
Flight Time:	1525 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N86188
Model/Series:	A188B	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Restricted (Special)	Serial Number:	18802008T
Landing Gear Type:	Tailwheel	Seats:	1
Date/Type of Last Inspection:	April 1, 2006 Annual	Certified Max Gross Wt.:	3300 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	8030 Hrs at time of accident	Engine Manufacturer:	Continental
ELT:	Not installed	Engine Model/Series:	IO-520
Registered Owner:	Steven Sanford	Rated Power:	300 Horsepower
Operator:		Operating Certificate(s) Held:	None
Operator Does Business As:	S&S Aviation	Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	HBG,151 ft msl	Distance from Accident Site:	12 Nautical Miles
Observation Time:	09:53 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Clear	Visibility	8 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	350°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.05 inches Hg	Temperature/Dew Point:	31°C / 22°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Collins, MS	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	10:05 Local	Type of Airspace:	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	31.456388,-89.900001

Administrative Information

Investigator In Charge (IIC):	LeBaron, Timothy
Additional Participating Persons:	Frank Mahaffey; Federal Aviation Administration; Jackson, MS John T Kent; Teledyne Continental Motors, Inc.; Mobile, AL Thomas Teplik; Cessna Aircraft Company; Wichita, KS
Original Publish Date:	November 29, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=64278

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).