



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Waterloo, AL	<b>Accident Number:</b>	ATL04LA164
<b>Date &amp; Time:</b>	08/01/2004, 1621 CDT	<b>Registration:</b>	N970SP
<b>Aircraft:</b>	Cessna 172S	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The pilot told an acquaintance he would fly the airplane over the acquaintance's home and over the river. Two witnesses in a boat, both of whom were certificated flight instructors, observed the airplane flying low and circling over the river as if searching for a house or a boat. The witnesses then saw the airplane slowly descend to approximately 50 feet above the water, level off, and continue to fly over the water for about a mile or more. They then saw the airplane nose up steeply and climb to approximately 250 to 300 feet. The witnesses stated, "the aircraft stalled, made a half turn to the right, and plunged nose-first into the water." Examination of the airplane revealed no evidence of mechanical malfunction was observed.

## 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 while maneuvering at low altitude, which resulted in a stall and subsequent uncontrolled descent and collision into water.

## Findings

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Occurrence #1: LOSS OF CONTROL - IN FLIGHT  
Phase of Operation: MANEUVERING

### Findings

1. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
2. STALL - INADVERTENT - PILOT IN COMMAND
3. LOW ALTITUDE FLIGHT/MANEUVER - PERFORMED - PILOT IN COMMAND

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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: DESCENT - UNCONTROLLED

### Findings

4. TERRAIN CONDITION - WATER

## Factual Information

### HISTORY OF FLIGHT

On August 1, 2004, about 1621 central daylight time, a Cessna 172S, N970SP, registered to and operated by Douglas Aviation, Inc., collided into the Tennessee River in the vicinity of Waterloo, Alabama. The personal flight was operated under the provisions of Title 14 CFR Part 91 with no flight plan filed. Visual meteorological conditions prevailed. The private pilot received fatal injuries, and the airplane sustained substantial damage. The flight departed Savannah - Hardin County Airport, Savannah, Tennessee, about 1600 on August 1, 2004.

The pilot flew the airplane from its base in Olive Branch, Mississippi, to Savannah, Tennessee, then utilized the Savannah - Hardin County Airport courtesy car to drive to Pickwick Lake to meet an acquaintance at his house for lunch. The acquaintance stated he talked with the pilot "about going for a ride, and other flying stories," and the pilot told him the airplane "wanted to veer to the left." The acquaintance stated the pilot drove back to the airport sometime after 1500, and the pilot told him he would fly the airplane over his house then fly over the river and take the long way home. The acquaintance stated he was outside later and observed an airplane that "flew over and headed to the river."

Two witnesses in a boat near the Waterloo bridge, both of whom were certificated flight instructors, observed the airplane flying low. The witnesses stated, "the aircraft appeared to be slow and circling as if searching for a house or perhaps a boat." The witnesses stated they then observed the airplane "flying east to west, paralleling the shoreline ... . The [airplane] began a slow descent as if on approach to landing. ... At approximately fifty feet over the water, the [airplane] leveled off and flew level for about a mile or more. As [the airplane] neared the Waterloo bridge, [it] made a level left turn of about twenty degrees and then started a very steep pull-up. ... At approximately 250 to 300 feet, the aircraft stalled, made a half turn to the right, and plunged nose-first into the water." The witnesses reported they sped their boat toward the downed airplane to try to help, and another boater used a cellular telephone to notify the local 911 operator of the accident. The witnesses reported the airplane sank within 15 to 20 seconds.

### PERSONNEL INFORMATION

The pilot held a private pilot certificate for airplane single-engine land and was issued a first-class medical certificate on December 2, 2003, with the restriction, "must wear corrective lenses." The pilot's logbook was not recovered for examination. On his most recent application for airman medical, the pilot reported 650 total civilian flight hours. The chief pilot at Douglas Aviation stated the pilot had scheduled an upcoming multi-engine checkride, and on the rating application form, the pilot reported 683 hours total time, which included 630 hours pilot-in-command, 80 hours night, 56 hours simulated instrument, 11 hours multi-engine, and 16.6 hours within the preceding 90 days.

### AIRCRAFT INFORMATION

The Cessna 172S was manufactured in 1999 and was powered by a Lycoming IO-360-L2A 180-horsepower engine. A review of the maintenance log books revealed an annual inspection of the airplane was completed January 16, 2004, at a tachometer time of 2195.6 hours, and a 100-hour inspection was completed May 26, 2004, at a tachometer time of 2292.0 hours. The tachometer reading observed in the wreckage was 2363.1 hours.

## WRECKAGE AND IMPACT INFORMATION

The wreckage was found submerged in approximately 30 feet of water; it was recovered and transported to a storage facility for examination. The engine was attached to the firewall, the firewall was crushed aft to the cabin, and the nosewheel was displaced aft and to the right. The left control yoke was attached to the control tube, and the control tube was bent and extended in an approximate full-aft position. The right control tube was bent and separated with the control yoke absent. The aileron control cables were observed in place on the control yoke assembly. The empennage was attached to the fuselage, and recovery personnel reported removing both wings from the fuselage in order to transport the wreckage.

Examination of the left wing revealed the leading edge was crushed aft to the spar, the lower end of the strut was attached to the fuselage, and the upper end of the strut was removed from the wing by recovery personnel. The flap was attached and in the retracted position. The aileron was attached, the push-pull rod was attached, and the bellcrank was in place with the direct and crossover cables attached. Cable continuity was established from the bellcrank to the area where the cables were separated by recovery personnel. The stall warning port and horn were free of obstruction.

Examination of the right wing revealed the inboard portion of the leading edge of the right wing was crushed aft to the spar. The strut was removed from the fuselage and wing by recovery personnel. The flap was attached and in the retracted position, and the actuator was in place. The aileron was attached, the push-pull rod was attached, and the bellcrank was in place with the direct and crossover cables attached. Cable continuity was established from the bellcrank to the area where the cables were cut by recovery personnel.

Examination of the empennage revealed the rudder was attached to the vertical fin, and the cables were attached to the rudder horn. The right and left sides of the elevator were attached to the horizontal stabilizer, and the elevator upper and lower cables were attached to the bellcrank. Elevator and rudder cable continuity was established to a crushed area in the forward cabin. The elevator trim tab and actuator were in place, and actuator extension was consistent with zero-degrees tab deflection.

Examination of the engine revealed the propeller was attached with one blade curled, twisted, and bent aft approximately 90 degrees about one-third span from the center. The spinner was crushed, separated, and lodged between the bent propeller blade and the top of the No. 1 cylinder. The leading edge of the curled propeller blade showed cracking and gouges on the leading edge in the area where the blade was in contact with the engine cylinder. The propeller was removed to facilitate rotation of the crankshaft. The crankshaft was rotated at the propeller flange, and continuity to the accessory drive gears and valve train was observed. Compression developed on all cylinders. Borescope examination of the cylinder walls, piston tops, and valves revealed no evidence of abnormality. The magnetos produced ignition spark on all towers when rotated by hand. The spark plugs were contaminated with mud sediment and corrosion, and the No. 2 bottom spark plug was bent. All spark plugs displayed wear consistent with the "normal" condition on the Champion AV-27 comparison chart. The oil filter and oil suction screen were free of debris. The vacuum rotated freely, and the drive was intact. The fuel servo inlet screen was free of debris, the fuel injector nozzles were free of obstruction, and the fuel flow manifold diaphragm was intact. Fuel was recovered from the fuel line between the fuel servo and fuel flow manifold, and from the fuel line between the fuel pump and the fuel servo.

## MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Alabama Department of Forensic Sciences, Huntsville, Alabama, on August 2, 2004. The report stated the cause of death was "multiple blunt force injuries." Forensic toxicology was performed on specimens from the pilot by the Federal Aviation Administration, Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The report stated no cyanide was detected in the blood, no ethanol was detected in the vitreous, and no drugs were detected in the urine.

## ADDITIONAL INFORMATION

The wreckage was released to a senior claims adjuster of Phoenix Aviation Managers, Inc., Dallas, Texas, on March 21, 2005.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	40, Male
<b>Airplane Rating(s):</b>	Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	None	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 With Waivers/Limitations	<b>Last FAA Medical Exam:</b>	12/01/2003
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	07/01/2004
<b>Flight Time:</b>	683 hours (Total, all aircraft), 630 hours (Pilot In Command, all aircraft), 17 hours (Last 90 days, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N970SP
<b>Model/Series:</b>	172S	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal; Utility	<b>Serial Number:</b>	172S8172
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	05/01/2004, 100 Hour	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>	71.1 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	2363.1 Hours at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	IO-360-L2A
<b>Registered Owner:</b>	Douglas Aviation, Inc.	<b>Rated Power:</b>	180 hp
<b>Operator:</b>	Douglas Aviation, Inc.	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KMSL, 550 ft msl	Distance from Accident Site:	24 Nautical Miles
Observation Time:	1553 CDT	Direction from Accident Site:	116°
Lowest Cloud Condition:	Scattered / 8000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	6 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	10°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.01 inches Hg	Temperature/Dew Point:	32° C / 23° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Savannah, TN (KSNH)	Type of Flight Plan Filed:	None
Destination:	Olive Branch, MS (KOLV)	Type of Clearance:	None
Departure Time:	1600 CDT	Type of Airspace:	

## Airport Information

Airport:	Savannah - Hardin County (KSNH)	Runway Surface Type:	
Airport Elevation:	473 ft	Runway Surface Condition:	
Runway Used:		IFR Approach:	
Runway Length/Width:		VFR Approach/Landing:	

## Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal	Latitude, Longitude:	34.910556, -88.060556

## Administrative Information

Investigator In Charge (IIC):	Catherine E Gagne	Report Date:	10/27/2005
Additional Participating Persons:	Charles R Thompson, Jr.; FAA - Birmingham FSDO - 09; Birmingham, AL James M Childers; Textron Lycoming Engines; Williamsport, PA Emile J Lohman; Cessna Aircraft Company; Wichita, KS		
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 <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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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. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).