



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Ringgold, GA	<b>Accident Number:</b>	ATL06LA099
<b>Date &amp; Time:</b>	07/01/2006, 1131 EDT	<b>Registration:</b>	N8084L
<b>Aircraft:</b>	Cessna 172H	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 Serious
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The pilot stated he and the co-owner arrived at the airport to pick up the airplane. The co-owner observed the left wing was lower than the right wing and fuel was draining out of the fuel vent. The pilot moved the fuel selector valve handle from the both position to the right main fuel tank position. The pilot opened the left main fuel cap and stated the left main fuel tank was full. The co-owner opened the right main fuel cap and estimated about six gallons of fuel was present. The pilot started the airplane, taxied to the engine run up area, completed the engine run, and departed. The pilot turned right crosswind at about 50 feet and the engine lost power. The pilot lowered the nose, attempted to move the fuel selector valve from the right tank position to the left main fuel tank position which was unsuccessful. The engine started, stopped, and the pilot made a forced landing straight ahead into the trees. Examination of the airplane revealed the left and right main fuel tank were not ruptured. No fuel was present in the left main fuel tank and 5 gallons of fuel were removed by recovery personnel from the right main fuel tank. No fuel leakage was present on the ground. The airplane was recovered to a storage facility. The left and right main fuel tanks hold 18 gallons of fuel of which 1.5 gallons of fuel are not useable in non-level flight. The left and right main fuel tanks were filled with water and there was no evidence of leakage. Shop air was applied to the fuel system and no anomalies were noted. Plumbing for an external fuel source was connected into the left and right fuel tank supply line with a flexible hose for two engine runs. The fuel selector valve was placed in the left main fuel selector position for the first engine run and then on the right main fuel selector for the second engine run. The engine was started, the throttle was advanced to 1000 rpm and stabilized for 2 minutes. The throttle was advanced to 1500 rpm and a magneto check was conducted. The throttle was advanced to 2200 rpm and stabilized for 5 minutes, the engine was returned to the idle position, and shut down on both engine runs. No anomalies were noted during either engine run.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's improper fuel management resulting in a total loss of engine power due to fuel starvation resulting in a forced landing, and collision with trees and the ground.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. FLUID,FUEL - STARVATION
2. (C) FUEL MANAGEMENT - IMPROPER - PILOT IN COMMAND

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Occurrence #2: FORCED LANDING  
Phase of Operation: DESCENT - EMERGENCY

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

### Findings

3. OBJECT - TREE(S)
4. TERRAIN CONDITION - GROUND

## Factual Information

### HISTORY OF FLIGHT

On July 1, 2006, at 1131 eastern daylight time, a Cessna 172H, N8084L, registered to two co-owners, operating as a 14 CFR Part 91 personal flight, had a total loss of engine power on initial take off climb in the vicinity of Ringgold, Georgia. Visual meteorological conditions prevailed and no flight plan was filed. The airplane received substantial damage. The commercial pilot reported serious injuries. The flight originated from Wilson Airport, Ringgold, Georgia, on July 1, 2006, at 1129.

The pilot stated he and the co-owner arrived at the airport to pick up the airplane, which had just had an annual inspection. The co-owner observed the left wing was lower than the right wing and fuel was draining out of the fuel vent. The pilot entered the airplane and moved the fuel selector valve handle from the both position to the right main fuel tank position. The pilot opened the left main fuel cap and observed that the left main fuel tank was full. The co-owner opened the right main fuel cap and estimated about six gallons of fuel was present. The pilot completed the preflight inspection and no other anomalies were noted.

The pilot entered the airplane, started the airplane, taxied to the engine run up area, completed the engine run, and no anomalies were noted. The pilot taxied into position on runway 21, set the brakes, and increased the power to full operating rpm. The rpm stabilized at 2200 rpm. The pilot released the brakes and began the take off roll. The airplane became airborne 1,000 feet down the turf runway and the pilot initiated a right crosswind turn about 50 feet above the trees. The engine quit, the pilot lowered the nose, and attempted to move the fuel selector valve from the right tank position to the left main fuel tank position. The shoulder harness was locked and he could not reach the fuel selector valve. The engine started again and stopped. The pilot made a forced landing straight ahead into the trees.

### PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the pilot was issued a commercial pilot certificate on December 11, 1968, with ratings for airplane single engine land, and multiengine land. The pilot was issued an instrument airplane rating on February 20, 1996. The pilot was issued a flight instructor certificate on April 11, 2006, with ratings for airplane single engine land and instrument airplane. The pilot's last flight review was conducted on April 6, 2006. The pilot indicated on the NTSB Pilot operator Aircraft Accident/Incident report that he has 2,793 total flight hours of which 960 hours are in the Cessna 172. The pilot holds a third-class medical certificate issued on July 28, 2004, with limitations for corrective lenses.

### AIRCRAFT INFORMATION

Review of logbook records revealed the last annual inspection was conducted on June 20, 2006. The tachometer time at the annual inspection was 1498.5 hours. The engine was overhauled on March 9, 1973 with a total time of 929.1 hours. A "zero time" tachometer was installed at the time of overhaul. A top overhaul was completed on August 9, 1992. On May 9, 2005, a logbook entry revealed the tachometer time was 1472.9 hours. The most recent logbook entry on June 20, 2006, revealed the tachometer time was 1498.5 hours. The tachometer time

at the crash site was 1498.6 hours and the Hobbs meter indicated 1446.4 hours.

#### METEOROLOGICAL INFORMATION

The Lovell Field, Chattanooga, Tennessee, located 10 miles north of Ringgold, Georgia, 1153 surface weather observation was wind calm, visibility 10 miles, few clouds at 3,000 feet, temperature 82-degrees Fahrenheit, dew point temperature 66-degrees Fahrenheit, and altimeter 30.24.

#### WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was located in a heavily wooded area adjacent to a private residence located at 6757 Three Notch Road and one and a half miles southwest of Wilson Airport in the vicinity of Ringgold, Georgia. The airplane collided with trees while descending and came to rest inverted on a heading of 333-degrees magnetic.

Examination of the airplane revealed the engine remained attached to the airframe. The left aft, both forward engine mounts, and the No. 2 intake riser were damaged. The propeller remained attached to the propeller crankshaft flange. The propeller spinner was damaged. One propeller blade was not damaged. The remaining propeller blade was bent aft 10-degrees in the vicinity of the propeller blade tip.

The cabin area remained intact. The throttle was in the full forward position and the mixture was in the full rich position. The carburetor heat was not activated. The fuel selector valve was in the off position. The pilot seat had separated from the seat track and the pilot seatbelt and shoulder harness were in use. Continuity of the flight controls was confirmed from the control yokes rearward to all flight control surfaces. The left and right main landing gear remained attached to the airframe.

The right wing remained attached to the airframe and the leading edge of the wing was damaged. The right aileron remained attached to its hinge points and the flap was extended 10-degrees. The right main fuel tank was not ruptured. The right fuel cap gasket was hard and leaked water when the tank was leak tested. The rubber portion of the fuel cap vent was misshapen and did not seal correctly. Recovery personnel removed five gallons of fuel from the right main fuel tank. Blue staining was present on the top of the right main fuel cap. There was no leakage of fuel present on the ground. The right main wing strut remained attached at the wing and at the fuselage attachment point.

The empennage, vertical fin, left and right horizontal stabilizers, left and right elevators, rudder assembly, and tail cone were damaged.

The left wing remained attached to the airframe and the leading edge of the wing was damaged. The left aileron remained attached to its hinge points and the flap was extended 10-degrees. The left main fuel tank was not ruptured and the left main fuel cap gasket was hard and leaked during a water leak test of the tank. No fuel was present in the left main fuel tank and there was no leakage of fuel present on the ground. The left main wing strut was attached at the wing and at the fuselage attachment point.

The FAA and parties to the NTSB investigation conducted a follow up investigation of the airframe, engine assembly, and accessories on July 6, 2006, in Griffin, Georgia.

Recovery personnel removed the left and right wings from the airframe. Two cups of fuel was removed from the right main fuel tank and four ounces of fuel was removed from the firewall

fuel strainer during the follow up examination. No fuel was present in the left main fuel tank. The left and right wings hold 18 gallons of fuel each of which 1.5 gallons of fuel are not useable in non-level flight. Each wing fuel tank was filled with water and displayed no evidence of leakage; however, both fuel caps leaked when the tanks were tipped up from the level position.

Shop air was introduced to the fuel system at the firewall. When the fuel selector was moved to the right position, air flowed freely from the right fuel supply line at the wing root. When the fuel selector was moved to the left position air flowed freely from the left fuel supply line. No leaks were noted to either the left or right supply lines from the wing roots to the firewall fitting.

Examination of the engine revealed all accessories remained attached and were not damaged. All fuel lines and fittings were tight with no evidence of leaks. The carburetor remained attached to the engine and the throttle and mixture cables remained attached to their levers. The throttle and mixture levers actuated freely in the cockpit and at the carburetor attachment points. The throttle mechanical stop was observed in contact with the throttle linkage rod lever.

The upper spark plugs were removed. The lower spark plugs were not removed, but were examined with a bore scope. All spark plugs exhibited "normal" operational signatures in accordance with the Champion Aviation Check-A-Plug Chart. The left and right magnetos were intact and the ignition leads produced a blue spark when rotated. The propeller was rotated by hand and valve and drive train continuity was visually observed with a bore scope. Compression and suction was obtained on all cylinders. The piston and valve heads exhibited normal operational signatures and combustion deposits.

The upper spark plugs were reinstalled and the forward mounts were replaced. The No.2 intake riser was not replaced. Electrical power was provided by the aircraft electrical system and the engine was operated with the engine attached to the airframe. Plumbing an external fuel tank into the left and right fuel tank supply line with a flexible hose provided the fuel source for the engine runs. The fuel selector valve was placed in the left position for the first engine run and (after fuel was exhausted from the left supply line resulting in an engine stoppage) in the right position was selected for the second engine run.

The aircraft battery remained connected to the airplane, but was jumped to a fully charged 12-volt battery to assist in the starting of the airplane. (An external electrical source was connected to the master solenoid terminals; the aircraft battery would not pass enough juice to start the engine) The engine was started and the throttle was advanced to 1000 RPM and stabilized for 2 minutes. The throttle was advanced to 1500 RPM and a magneto check was performed. The left and right magneto drops were observed at 50 and 75 RPM. The throttle was advanced 2200 RPM and stabilized for 5 minutes. The oil pressure and temperature gauges were indicating in the normal operating range for the duration of the engine run. The throttle was actuated forward and aft several times, and no anomalies were noted. The engine mixture lever was moved to the idle position and stabilized for 2 minutes. A magneto ground check was conducted and pulling the mixture lever to the idle cut-off position shut down the engine.

#### MEDICAL AND PATHOLOGICAL INFORMATION

The private pilot was transported to a local area hospital in Chattanooga, Tennessee, with serious injuries. Local law enforcement personnel did not request toxicology specimens from the pilot.

#### ADDITIONAL INFORMATION

The wreckage and airplane logbooks were released to Phoenix Aviation Managers, Atlanta, Georgia, on July 19, 2006.

### Pilot Information

<b>Certificate:</b>	Flight Instructor; Commercial	<b>Age:</b>	74, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; 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>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane Single-engine; Instrument Airplane	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 3 With Waivers/Limitations	<b>Last FAA Medical Exam:</b>	07/01/2004
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	04/01/2006
<b>Flight Time:</b>	2793 hours (Total, all aircraft), 960 hours (Total, this make and model), 2600 hours (Pilot In Command, all aircraft), 1 hours (Last 90 days, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Cessna	<b>Registration:</b>	N8084L
<b>Model/Series:</b>	172H	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	17256284
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	06/01/2006, Annual	<b>Certified Max Gross Wt.:</b>	2300 lbs
<b>Time Since Last Inspection:</b>	0.1 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	Continental
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	O-300D
<b>Registered Owner:</b>	James C. Sherwood Jr.	<b>Rated Power:</b>	145 hp
<b>Operator:</b>	James C. Sherwood Jr.	<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:	KCHA, 682 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	1153 EDT	Direction from Accident Site:	360°
Lowest Cloud Condition:	Few / 3000 ft agl	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.24 inches Hg	Temperature/Dew Point:	28° C / 19° C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ringgold, GA (GA03)	Type of Flight Plan Filed:	None
Destination:	Dayton, TN (ZAO)	Type of Clearance:	None
Departure Time:	1129 EDT	Type of Airspace:	

## Wreckage and Impact Information

Crew Injuries:	1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Serious	Latitude, Longitude:	34.878889, -85.247222

## Administrative Information

Investigator In Charge (IIC):	Carrol A Smith	Report Date:	10/31/2006
Additional Participating Persons:	Thomas Frishe; College Park FSDO-11; College Park, GA Steve Miller; Cessna Aircraft; Wichita, KS Eric Thomas; Teledyne Continental; Mobile, AL		
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> .		

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