



# Aviation Investigation Final Report

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<b>Location:</b>	Sylacauga, Alabama	<b>Accident Number:</b>	ERA23LA122
<b>Date &amp; Time:</b>	January 28, 2023, 17:51 Local	<b>Registration:</b>	N107DF
<b>Aircraft:</b>	Aero Commander 500	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>	Fuel exhaustion	<b>Injuries:</b>	1 Serious
<b>Flight Conducted Under:</b>	Part 91: General aviation - Positioning		

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## Analysis

The pilot was taking the airplane on a flight to another airport for maintenance. During the preflight inspection, the pilot turned on the electrical power and noticed that the fuel gauge was indicating 80 gallons of fuel. The pilot reported the airplane holds a maximum of 156 gallons of fuel and he calculated that he needed 113 gallons of fuel to legally complete the flight. He informed the fixed base operator (FBO) that he wanted the fuel tanks topped off, but was informed by the ramp technician that the fuel tanks were full and he did not need fuel. The pilot went back to the airplane and removed the fuel cap. He noticed fuel in the filler neck and assumed the fuel tanks were full. He did not push open the anti-siphon fuel valve to see if the tanks were full or if residual fuel was pooled on top of the anti-siphon fuel valve.

When the pilot started the engines, he noticed the fuel gauge was flickering and thought it was malfunctioning. He proceeded to depart for the maintenance base. After about 2 hours of flight time both engines lost power. Unable to reach the closest airport, the pilot executed an off-field landing in a cotton field. After landing, the airplane rolled into the trees and the left wing separated from the fuselage. The airplane sustained substantial damage to the left and right wings.

According to the fueller at the FBO, she drove out to the airplane to fuel it on the morning of the accident and, after removing the single fuel cap, saw fuel on top of the anti-siphon valve. She used her finger to push down the valve and felt fuel, so she believed the airplane was full of fuel and it did not need additional fuel.

Both wing fuel bladders were breached during the accident and a minor amount of fuel was leaked onto the ground. Personnel from the company who recovered the wreckage stated that there was no fuel in the fuel tanks when the airplane was recovered. The fuel quantity

transmitter was sent to the manufacturer for examination. Testing of the transmitter revealed no anomalies with the unit. Based on this information, it is likely that the pilot erred in his assessment of the airplane's fuel quantity prior to departing on the accident flight and that the available quantity of fuel was exhausted, which resulted in the total loss of engine power and the subsequent forced landing.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to assure there was an adequate amount of fuel onboard to complete the flight, which resulted in a loss of engine power due to fuel exhaustion.

### Findings

<b>Personnel issues</b>	Preflight inspection - Pilot
<b>Aircraft</b>	Fuel - Fluid level

## Factual Information

### History of Flight

<b>Prior to flight</b>	Aircraft servicing event
<b>Enroute</b>	Fuel exhaustion (Defining event)

On January 28, 2023, at 1751 central standard time, an Aero Commander 500-B, N107DF, was substantially damaged when it was involved in an accident near Sylacauga, Alabama. The pilot was seriously injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 positioning flight.

According to the pilot, he flew a different airplane to the Tampa Executive Airport (VDF), Tampa, Florida, and intended to reposition the accident airplane, which was due for a 100-hour inspection, to Birmingham-Shuttlesworth International Airport (BHM), Birmingham, Alabama, for maintenance.

During the preflight inspection, the pilot turned on electrical power and noticed that the fuel gauge was reading 80 gallons of fuel. He walked into the FBO at VDF and requested that the airplane's fuel tanks be topped off. A ramp technician reported that the fuel tanks were already full. The pilot subsequently removed the airplane's fuel cap, noticed fuel in the filler neck and assumed the fuel tanks were full. He did not push open the anti-siphon fuel valve to see if the tanks were full. The pilot reported the airplane holds a maximum of 156 gallons of fuel and he calculated that he needed 113 gallons of fuel to legally complete the flight.

According to the fueller at the FBO, she removed the airplane's single fuel cap and saw fuel on top of the anti-siphon valve. She used her finger to push down the valve and felt fuel, so she believed the airplane was full of fuel and it did not need additional fuel.

The pilot completed the preflight inspection checklist and started the engines. He noticed the fuel gauge was flickering and thought it was malfunctioning. He proceeded to depart for BHM. After about 2 hours of flight time, the airplane's right engine lost power and, a few seconds later, the left engine also lost power. He did not look at the fuel gauge during this time. He notified the air traffic controller of the loss of power to both engines and was vectored towards Merkel Field Sylacauga Municipal Airport (SCD), Sylacauga, Alabama. The airplane was unable to reach the runway and the pilot performed a landing in a cotton field. After landing, the airplane rolled into trees and the left wing separated from the fuselage.

Federal Aviation Administration inspectors who examined the airplane at the accident site noted the airplane sustained substantial damage to the left and right wings. They also noted

that both wing fuel bladders were breached and noted minor fuel leakage on the ground adjacent to the wing.

Personnel with the wreckage recovery company stated that there was no fuel in the airplane's fuel tanks at the accident site. When electrical power was applied to the airplane, the fuel gauge read 68 gallons of fuel.

The fuel transmitter was sent to the manufacturer for examination. Testing of the transmitter revealed no anomalies with the unit.

### Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	25, Male
<b>Airplane Rating(s):</b>	Single-engine land; Multi-engine land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Lap only
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	
<b>Medical Certification:</b>	Class 2 Without waivers/limitations	<b>Last FAA Medical Exam:</b>	May 10, 2022
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	December 17, 2022
<b>Flight Time:</b>	1337 hours (Total, all aircraft), 366 hours (Total, this make and model), 1248 hours (Pilot In Command, all aircraft), 260 hours (Last 90 days, all aircraft), 99 hours (Last 30 days, all aircraft), 9 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Aero Commander	<b>Registration:</b>	N107DF
<b>Model/Series:</b>	500 B	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>	1962	<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	500B-1191-97
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	December 14, 2022 AAIP	<b>Certified Max Gross Wt.:</b>	6750 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Reciprocating
<b>Airframe Total Time:</b>	20061 Hrs at time of accident	<b>Engine Manufacturer:</b>	Lycoming
<b>ELT:</b>	C91A installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	io-540
<b>Registered Owner:</b>	CENTRAL AIRLINES INC	<b>Rated Power:</b>	290
<b>Operator:</b>	CENTRAL AIR SOUTHWEST INC	<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	ZJWA

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual (VMC)	<b>Condition of Light:</b>	Dusk
<b>Observation Facility, Elevation:</b>	KSCD,569 ft msl	<b>Distance from Accident Site:</b>	2 Nautical Miles
<b>Observation Time:</b>	23:55 Local	<b>Direction from Accident Site:</b>	124°
<b>Lowest Cloud Condition:</b>	Scattered / 100 ft AGL	<b>Visibility</b>	10 miles
<b>Lowest Ceiling:</b>	Overcast / 10000 ft AGL	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	None / None
<b>Wind Direction:</b>		<b>Turbulence Severity Forecast/Actual:</b>	N/A / N/A
<b>Altimeter Setting:</b>	30.28 inches Hg	<b>Temperature/Dew Point:</b>	12°C / -5°C
<b>Precipitation and Obscuration:</b>	No Obscuration; No Precipitation		
<b>Departure Point:</b>	Tampa, FL (VDF)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Birmingham, AL (BHM)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	16:05 Local	<b>Type of Airspace:</b>	Class D

## Airport Information

<b>Airport:</b>	MERKEL FLD SYLACAUGA MUNI SCD	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	568 ft msl	<b>Runway Surface Condition:</b>	Dry
<b>Runway Used:</b>	09	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	5390 ft / 100 ft	<b>VFR Approach/Landing:</b>	Forced landing

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	N/A	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	1 Serious	<b>Latitude, Longitude:</b>	33.186405,-86.331774(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Boggs, Daniel
<b>Additional Participating Persons:</b>	Robert Bulloch; FAA/FSDO; Birmingham, AL
<b>Original Publish Date:</b>	May 2, 2024
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class 3</a>
<b>Note:</b>	The NTSB did not travel to the scene of this accident.
<b>Investigation Docket:</b>	<a href="https://data.ntsb.gov/Docket?ProjectID=106651">https://data.ntsb.gov/Docket?ProjectID=106651</a>

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](#).