



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	SPRINGFIELD, MO	<b>Accident Number:</b>	CHI95FA007
<b>Date &amp; Time:</b>	10/08/1994, 1031 CDT	<b>Registration:</b>	N27MT
<b>Aircraft:</b>	AERO COMMANDER 690B	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	1 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

AFTER TAKING OFF ON AN IFR FLIGHT, THE AIRPLANE WAS OBSERVED TO CLIMB INTO A LOW OVERCAST. THE PILOT CONTACTED DEPARTURE CONTROL AND REPORTED CLIMBING THROUGH 2200' FOR AN ASSIGNED ALTITUDE OF 5000' MSL. SHORTLY THEREAFTER, RADAR AND RADIO CONTACT WERE LOST, AND THE AIRPLANE CRASHED IN A STEEP DIVE. DURING AN INVESTIGATION, NO PREIMPACT PART FAILURE OR MALFUNCTION WAS FOUND, THOUGH THE AIRPLANE WAS EXTENSIVELY DAMAGED DURING IMPACT. THE PILOT'S LOGBOOK INDICATED THAT HE HAD FLOWN THREE INSTRUMENT APPROACHES ON 3/3/94 AND THAT HE HAD FLOWN 3.1 HOURS IN ACTUAL INSTRUMENT CONDITIONS SINCE THAT DATE.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: FAILURE OF THE PILOT TO MAINTAIN CONTROL OF THE AIRPLANE, DUE TO SPATIAL DISORIENTATION. A FACTOR RELATED TO THE ACCIDENT WAS: THE PILOT'S LACK OF RECENT INSTRUMENT EXPERIENCE.

## Findings

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Occurrence #1: LOSS OF CONTROL - IN FLIGHT  
Phase of Operation: CLIMB - TO CRUISE

### Findings

1. (F) WEATHER CONDITION - LOW CEILING
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) SPATIAL DISORIENTATION - PILOT IN COMMAND
4. (F) LACK OF RECENT INSTRUMENT TIME - PILOT IN COMMAND

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

## Factual Information

### HISTORY OF FLIGHT

On October 8, 1994, about 1031 central daylight time, an Aero Commander 690B airplane, N27MT, was destroyed by ground impact and postcrash fire shortly after takeoff from the Springfield Regional Airport, Springfield, Missouri. The private pilot sustained fatal injuries. The personal flight was conducted under 14 CFR Part 91 in instrument meteorological conditions. An IFR flight plan was filed to Olathe, Kansas.

An employee at the airport fuel office reported the airplane arrived at the airport two days prior to the accident. She said the pilot did not purchase fuel and "usually didn't." Investigation revealed the airplane was "topped off" two days prior to the accident in Rogers, Arkansas.

Controllers at the Springfield Control Tower reported the airplane departed on runway 2. Radar contact was established as the airplane climbed through an altitude of 2,200 feet MSL on a heading of 320 degrees. The airplane was cleared to climb to 10,000 feet and proceed direct Butler when able. The radar controller reported he lost the data block for N27MT about one and one half miles northwest of the airport and saw a weak primary target. He asked N27MT to check the transponder and give an altitude report but received no response.

A mechanic at the airport, who watched the airplane takeoff and climb into the overcast, reported that the airplane sounded abnormal during the takeoff and climb. He said he thought that one propeller was "in the start locks" because of the oscillatory "wavering" noise.

A witness to the accident, who was in a house just south of the accident site, said she heard the airplane prior to the impact and she also described the sound of the airplanes as "wavering." However, she said the wavering stopped as the noise level and pitch increased prior to the airplane impacting the bank of the pond. She said it was pointed straight down and she only caught a glimpse of the airplane and could not make out any details. She reported that there was an immediate fire and black smoke following the impact.

### PERSONNEL INFORMATION

The pilots logbook indicated the pilot had flown three instrument approaches on March 3, 1994 and had flown 3.1 hours in actual instrument conditions since that date. No instrument approaches were logged.

During a telephone interview, a pilot who flew 25 to 30 hours with the accident pilot, in February 1994, reported that the two pilots had practiced steep turns, slow flight and single engine procedures. During one flight they experienced a loss of engine power on one engine. They feathered the propeller on the failed engine and landed uneventfully. He also reported that the accident pilot had previously experienced an inverter failure, resulting in a loss of primary flight instruments and the autopilot. He said the accident pilot "liked to use the autopilot" and would typically engage it while climbing through an altitude of four to five hundred feet.

### WRECKAGE AND IMPACT INFORMATION

The NTSB on-scene investigation began on October 9, 1994 at 1030. The wreckage was located near the south edge of a small farm pond located northeast of the intersection of farm roads 103 and 104. There was a large quantity of mud splashed to the south of the pond and a water

filled crater was located in the south bank. The entire airframe was fractured into multiple fragments. The right main landing gear, empennage, and right aileron were on the bank just south of the crater. The aileron was impaled on a fence post and was embedded in the soil in a vertical attitude with the leading edge down. The left elevator was embedded in the ground in a vertical attitude on the south edge of the crater. The leading edge exhibited compression damage.

The left stabilizer tip was located 10 yards west of the crater and 45 yards to the south a charred section of the left fuselage side was located. Several fractions of wing skin and rubber fuel tank bladder were scattered for 100 yards to the southwest.

A scorched tree stump was on the east edge of the crater and a large tree was protruding into the water in a northerly direction. Wood fragments were scattered near the stump. The right wing tip was just south of the stump.

The ground around the crater was burned and airframe pieces not submerged in the pond were charred and melted. A strong smell of fuel permeated the scene. A large quantity of fuel and hydraulic fluid were visible on the surface of the pond. The pilot's seat was discovered 50 yards north, on the edge of the pond.

A dive team from the Springfield fire department recovered fragments of the upper cabin area and instrument panel from a fan shaped pattern within the pond. The scatter pattern followed a heading of 010 degrees. Fragments of the wing, wing spars, propellers, engines, engine nacelles, and fragments from the nose section were recovered near the southern bank and from within the crater.

The airframe components were reconstructed as they were recovered. All primary airframe components were identified at the site. No evidence of an inflight fire was discovered.

The wing structure was fragmented into multiple pieces. The right wing tip was fractured, outboard from station 160. The tip was generally intact and exhibited severe compression damage to the leading edge. The fracture contained wood fragments and the leading edge matched the radius of the tree stump.

The wing spars were fractured into multiple pieces. Many of the pieces were charred and melted. Examination revealed no evidence of preimpact structural failure.

Examination of flight control continuity revealed no evidence of preimpact malfunction. Both main landing gear actuators were in a partially extended position and both gear unlocks were fractured. The rudder trim tab actuator was extended 11/16 of an inch. The left elevator trim tab actuator was extended 1 5/16 inches and the right was extended 5/8 of an inch. The aileron trim actuator was extended 3/4 of an inch.

Both of the inverters were recovered from the crater. They exhibited severe impact damage and burning. Inspection of the primary and standby attitude indicator gyros revealed rotational scoring on the drums. One airspeed indicator face plate was discovered. An imprint on the face was visible at the 265 knot position. The primary altimeter indicated 1430 feet and the Kohlsman setting was 30.05. The standby altimeter needles, except for the 10,000 feet needle, were missing and the Kohlsman setting was 29.96. The primary attitude indicator tape indicated 55 degrees nose down and 45 degrees of left bank. The number one engine tachometer needles were trapped at 100 percent rpm and the number two needles were at 98 percent rpm.

The engines, engine accessories, and propellers were retained for subsequent laboratory examination.

#### MEDICAL AND PATHOLOGICAL INFORMATION

The autopsy of the pilot was conducted October 10, 1994, by Tri- Lakes Pathology, P. O. Box 1163, Branson, Missouri 65616. The results of FAA toxicological testing were negative for all tests conducted.

#### TESTS AND RESEARCH

The engines were examined at Allied Signal Engines, Phoenix, Arizona. Both engines exhibited massive rotational damage. No evidence of preimpact malfunction was discovered.

The primary attitude indicator, horizontal situation indicator (HSI), autopilot controller, autopilot servos, and the attitude gyroscope platform were examined at Allied Signal, Inc., General Aviation Avionics, Olathe, Kansas. All gyros exhibited rotational scoring and no evidence of preimpact malfunction was discovered.

Propeller governors were examined at the Woodward Governor Company, Rockton, Illinois. The units could not be operationally checked because they were contaminated with mud. Examination revealed no evidence of malfunction.

Propellers were examined at Hartzell Propeller, Inc., Piqua, Ohio. The blades exhibited severe leading edge damage, multiple fractures, and torsional bending consistent with a positive angle of attack. No discrepancies were noted on either propeller which would have precluded normal propeller operation. All damage noted was consistent with ground impact.

#### ADDITIONAL DATA/INFORMATION

Parties to the investigation were the Federal Aviation Administration Flight Standards District Office, Kansas City Missouri, Allied Signal General Aviation Avionics, Olathe, Kansas, Allied Signal Engines, Inc., Phoenix, Arizona, Hartzell Propeller, Inc., Piqua, Ohio, Twin Commander Aircraft Corporation, Arlington, Washington, and Woodward Governor Company, Rockton, Illinois.

Following the on-scene portion of the investigation, the wreckage, with the exception of the engines, propellers, and engine accessories, was released to Mr. Mike Wilhelms of COMAV Managers, Inc. The primary attitude indicator, attitude gyro platform, horizontal situation indicator, autopilot mode controller, and three autopilot servos were recovered on October 26, 1994, by a FAA inspector, at Arkansas Airframe, Inc., Clinton, Arkansas. All retained components were released and returned.

#### ADDITIONAL PERSONS

Duane J. Bourgeois, Edward C. Leach Jr., John P. Emery, One Woodward Way, Rockton, IL 61072.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	59, 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>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	11/09/1993
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	2750 hours (Total, all aircraft), 2737 hours (Pilot In Command, all aircraft), 7 hours (Last 90 days, all aircraft), 2 hours (Last 30 days, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	AERO COMMANDER	<b>Registration:</b>	N27MT
<b>Model/Series:</b>	690B 690B	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	11533
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	11
<b>Date/Type of Last Inspection:</b>	09/12/1994, 100 Hour	<b>Certified Max Gross Wt.:</b>	9000 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo Prop
<b>Airframe Total Time:</b>		<b>Engine Manufacturer:</b>	GARRETT
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	TPE-331
<b>Registered Owner:</b>	BILL B. LIMBAUGH	<b>Rated Power:</b>	717 hp
<b>Operator:</b>	BILL B. LIMBAUGH	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	SGF, 1267 ft msl	Distance from Accident Site:	3 Nautical Miles
Observation Time:	1050 CST	Direction from Accident Site:	110°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 500 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	10°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	12° C / 11° C
Precipitation and Obscuration:			
Departure Point:	(SFG)	Type of Flight Plan Filed:	IFR
Destination:	OLATHE, KS (OJC)	Type of Clearance:	IFR
Departure Time:	1030 CDT	Type of Airspace:	Class D

## Wreckage and Impact Information

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

## Administrative Information

Investigator In Charge (IIC):	WESLEY M ROBBINS	Report Date:	09/24/1995
Additional Participating Persons:	P. BAKER M. CUMMINS; PHOENIX, AZ JERRY L GARRISON; KANSAS CITY, MO TIM HARDEE; OLATHE, KS ROGER W STALLKAMP; PIQUA, OH		
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](#).