National Transportation Safety Board
Aviation Accident Final Report

Location:	Gaylord, MI	**Accident Number:**	CHI06FA032
Date & Time:	11/16/2005, 1803 EST	**Registration:**	N1153C
Aircraft:	Aero Commander 500B	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The airplane was operated as an on-demand cargo flight that impacted trees and terrain about one mile from the destination airport during a non-precision approach. Night instrument meteorological conditions prevailed at the time of the accident. The airplane was equipped with an "icing protection system" and a report by another airplane that flew the approach and landed without incident indicated that light rime icing was encountered during the approach. Radar data shows that the accident airplane flew the localizer course inbound and began a descent past the final approach fix. No mechanical anomalies that would have precluded normal operation were noted with the airplane.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The clearance not maintained with terrain during a nonprecision approach. Contributing factors were the ceiling, visibility, night conditions, and trees.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
1. (F) WEATHER CONDITION - CLOUDS
2. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - OTHER
4. (F) LIGHT CONDITION - NIGHT
5. (F) OBJECT - TREE(S)

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
6. TERRAIN CONDITION - GROUND

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On November 16, 2005, at 1803 eastern standard time, an Aero Commander 500B, N1153C, operated by Central Air Southwest Inc., was destroyed on impact with terrain during a nonprecision approach to Gaylord Regional Airport (GLR), Gaylord, Michigan. Night instrument meteorlogical conditions prevailed at the time of the accident. The 14 CFR Part 135 on-demand cargo flight was operating on an instrument flight rules flight plan. The commercial pilot was fatally injured. The flight originated from Gerald R. Ford International Airport (GRR), Grand Rapids, Michigan, at 1709, and was en route to GLR.

At 1638:18, a caller representing N1153C called Lansing AFSS, obtained a weather briefing, and filed an IFR flight plan from GRR to GLR with a proposed departure time of about 1648 at an altitude of 7,000 feet and Traverse City as an alternate.

The following is a partial transcripts of communications from N1153C, Minneapolis ARTCC sector 02 radar controller (ZMP02), and Lifeguard King Air N700NC (LN700NC).

1722:10, N1153C, good afternoon minneapolis center commander one one five three charlie with you nine thousand direct gaylord

1722:15, ZMP02, november one one five three charlie minneapolis center good afternoon gaylord altimeter- - -is currently let me dig it up for ya- - -two niner seven six

1722:28, N1153C, two niner seven six thank you

1733:51, ZMP02, navajo five three charlie change to my frequency correction commander five three charlie my frequency one three two point niner

1734:02, N1153C, (unintelligible) three charlie made the switch to thirty two nine

1734:04, ZMP02, commander five three charlie roger---advise weather and what type of approach you're planning ah - - -on the traverse city area report breaking out right at minimums on the i l s two eight into traverse city about a half hour ago

1734:17, N1153C, yea i do have the weather at ah gaylord and ah (unintelligible) we go ahead and do the localizer tonight

1734:26, ZMP02, commander five three charlie i have the request and it was the localizer to nine you're requesting

1734:32, N1153C, (unintelligible) localizer to nine ah at gaylord

1734:42, N1153C, (unintelligible) the the i the localizer ah glideslope unmonitored

1735:05, ZMP02, commander five three charlie ah let me do some checking on that it is still unmonitored and the i l s glidepath is still out of service

1741:35, N1153C, minneapolis center commander five three charlie would like lower

1741:38, ZMP02, (unintelligible) five three charlie descend and maintain eight thousand turn fifteen left vectors for the localizer runway nine

1741:43, N1153C, (unintelligible) o k fifteen to the left vectors for the localizer ah nine

1742:42, ZMP02, november one five five three charlie descend and maintain seven thousand

1742:46, N1153C, (unintelligible) seven thousand

1744:21, ZMP02, november one one five three charlie turn left to a heading of three three five be radar vectors to follow lifeguard traffic (unintelligible)

1742:46, N1153C, (unintelligible) seven thousand

1744:21, ZMP02, november one one five three charlie turn left to a heading of three five be radar vectors to follow lifeguard traffic (unintelligible)

1744:29, N1153C, three five five for five three charlie

1746:24, ZMP02, november one one five three charlie descend pilots discretion maintain six thousand

1746:28, N1153C, five three charlie leaving seven thousand for six thousand

1748:53, ZMP02, november one one five three charlie turn left heading three two zero

17:48:57, N1153C, left three two zero

1750:24, ZMP02, november one one five three charlie descend and maintain five thousand

1750:28, N1153C, leaving six thousand for five thousand five three charlie

1752:14, ZMP02, arrow one one five three charlie turn right to a heading three six zero

1752:18, N1153C, three six zero five three charlie

1752:30, ZMP02, lifeguard zero november charlie you can change to advisory frequency approved you can try your cancellation with me if you can't raise me cancel through a commander five three charlie who'll be next

1752:42, LN700NC, (unintelligble) zero november charlie we'll do that

1752:43, ZMP02, commander five three charlie if you would listen up for a cancellation on a king air zero november charlie it's a lifeguard ah heading into graylord

1752:49, N1153C, no problem five three charlie descend and maintain four thousand

1753:42, ZMP02, arrow one one five three charlie descend and maintain four thousand

1753:46, N1153C, down to four thousand five three charlie

1755:27, ZMP02, arrow one one five three charlie turn right to a heading of zero four zero

1755:32, N1153C, zero four zero right turn five three charlie

1756:55, ZMP02, arrow one one five three charlie turn right heading zero six zero join the localizer proceed inbound maintain four thousand

1757:00, N1153C, zero six zero to join the localizer maintaining six ah four thousand right now

1757:05, ZMP02, and november five three charlie affirmative maintain four thousand

1757:09, N1153C, maintaining four thousand five three charlie

1757:53, N1153C, five three charlie on the localizer

1757:55, ZMP02, five three charlie roger maintain four thousand proceed inbound

1757:59, N1153C, i'm maintaining four thousand proceed inbound five three charlie

1759:37, N1153C, minneapolis center ah the lifeguard at ah gaylord they just landed and they'd like to cancel i f r with you

1759:44, ZMP02, commander five three charlie roger ah advise lifeguard king air seven zero zero november charlie a t c has the cancellation

1759:50, N1153C, *(sure) i will let him know

1759:52, ZMP02, o k five three charlie and ah you're one ah make it about eight miles to the west of bangu maintain at or above three thousand two hundred till on a published portion of the approach cleared localizer runway nine approach gaylord airport

1800:06, N1153C, o k we cleared for the localizer at gaylord descending to ah three thousand two hundred five three charlie

1800:11, ZMP02, *(november) one one five three charlie you can change to advisory frequency approved cancellation look like it'd be through flight service and you can change to advisory frequency approved thanks for all your help

1800:20, N1153C, *(five) three charlie have a good day

There were no further recorded transmissions from N1153C.

The pilot of N700NC, a Beech 100, stated that he departed from TVC at 1730 en route to GLR on an instrument rules flight plan at 5,000 feet. The pilot of N700NC stated that during his preflight briefing with Lansing Flight Service, he was informed that the ILS 9 glide slope was out of service. He stated that Minneapolis Center vectored him for the localizer 9 approach and instructed him to cancel on the ground with Commander 53C. He was unsure of the N-number. After landing, he contacted the Commander and asked him to cancel IFR with the Center. He heard the Commander contact Center for his cancellation, and the Commander was cleared for the approach at 1800.

The pilot of N700NC stated that on approach, he encountered light rime icing, ceiling approximately 800 feet above ground level, visibility just under 2 miles in light snow. Runway condition was approximately 2 inches loose snow, braking action fair to poor.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with airplane single-engine land, airplane multiengine land and instrument airplane ratings. He also held a certified flight instructor certificate with airplane single engine, airplane multiengine, and instrument airplane ratings. Company records indicate that on August 23, 2005, the pilot completed his company indoctrination, initial ground training and initial flight training for the Aero Commander 500. At this time, he accumulated a total flight time of 1,580 hours, 227 hours of night flight time, 140 hours of instrument time, and 90 hours of in-flight instrument time. He received 14 CFR Part 135.293, 135.297, and 135.299 checks by the company chief pilot who was also a company check airman.

The pilot was issued a first class airman medical certificate on April 16, 2005, with the following restriction: "must wear corrective lenses."

AIRCRAFT INFORMATION

The 1964 Aero Commander 500B, serial number 1474-169, was configured and operated as a cargo airplane. According to the Aircraft Status Sheet recovered at the accident site, the airplane accumulated a total time of 21,313.6 hours on September 9, 2005. The airplane was powered by two Textron Lycoming IO-540-E1A5 engines, serial numbers L-2107-48 and RL-8536-48. The airplane received its last inspection during a 375 hour and 12 calendar month inspections on March 3, 2005, as part of a Approved Aircraft Inspection Program.

The airplane was equipped with an Aerospace Systems and Technology, Incorporated, TKS icing protection system which was installed under a supplemental type certificate held by the operator. The TKS description indicates that porous, laser drilled titanium panels are installed on the leading edges of the wings, and the horizontal and vertical stabilizers. A glycol based fluid is metered from a tank by an electrically driven pump through a microfilter to proportioning units. The proportioning units contain calibrated capillary tubes which apportion fluid to individual panels.

METEOROLOGICAL INFORMATION

The GLD Automated Surface Observation System recorded at 1753: wind from 240 degrees at 8 knots, visibility 3/4 mile in light snow and mist, ceiling broken at 800 feet, overcast at 1,200 feet, temperature and dew point -1 degree Celsius (C), altimeter 29.78 inches of mercury (Hg).

At 1801, wind from 250 degrees at 9 knots, visibility 1 mile in light snow and mist, ceiling broken at 800 feet, overcast at 1,200 feet, temperature and dew point -1 degree C, altimeter 29.78 inches of Hg.

AIRPORT INFORMATION

GLR was equipped with runway 9-27 (6,578 feet by 150 feet, asphalt) and runway 18-36 (3,000 feet by 75 feet, asphalt). Runway 9 has a threshold crossing height of 25 feet, trees at the approach end and medium intensity approach lighting system with runway alignment indicator lights and a 4-identical light unit precision approach path indicator (PAPI) on the left side of the runway. Runway 27 has a threshold crossing height of 25 feet (GA 3.0 degrees), runway end identifier lights and a 4-identical light unit PAPI on the left side of the runway.

The GLR ILS (insturment landing system) Runway 9 approach has straight-in minimums for all category of aircraft of 1,519 mean sea level (MSL) and 1/2 mile and localizer minimums of 1,700 feet MSL and 1/2 mile for category A, B, C aircraft. Circling minimums for category A aircraft is 1,840 feet MSL and 1 mile, category B aircraft 1,940 MSL and 1 mile, category C aircraft 1,940 feet MSL and 1 3/4 mile, and category D, 2,080 feet MSL and 2 1/2 mile.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was conducted by the Otsego County Medical Examiner on November 17, 2005.

Federal Aviation Administration (FAA) toxicological test result for the pilot were negative for all substances tested.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was resting in a wooded area about one mile west of GLR. The main wreckage which consisted of fuselage, wings, stabilizers, and engines was preceded by a wreckage path that was approximately 190 feet in length along a easterly heading. The wooded area had an estimated tree height of 50 feet. The landing gear was extended and the flaps were extended approximately 20 degrees. The cockpit area displayed evidence of a post crash fire.

The throttle quadrant exhibited fire damage. Both propeller controls were not in the full forward position but in the upper "oper range." Both throttle and mixture controls were approximately in line with the propeller controls.

Flight control continuity from the control surfaces to cockpit controls was confirmed.

Both propellers displayed spanwise bending and twisting. No engine anomalies were noted.

Lines associated with the TKS system contained a clear fluid that was not frozen at the time of examination on-scene examination at an outside air temperature that was below freezing.

TEST AND RESEARCH

A plot of radar data shows a profile along the LOC (localizer) 9 approach course from the commencement of the approach to a point about one mile east of the approach's outer marker at 2,400 feet. There was no additional radar data beyond this point in time. From the outer marker to the last radar point, the airplane descended from approximately 3,100 feet to 2,400 feet.

ADDITIONAL INFORMATION

The FAA and Textron Lycoming were parties to the investigation.

Pilot Information

Certificate:	Commercial	**Age:**	30, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1	**Last FAA Medical Exam:**	04/01/2005
Occupational Pilot:		**Last Flight Review or Equivalent:**	08/01/2005
Flight Time:	1786 hours (Total, all aircraft), 170 hours (Last 90 days, all aircraft), 90 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aero Commander	**Registration:**	N1153C
Model/Series:	500B	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	1474-169
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	03/01/2005, Continuous Airworthiness	**Certified Max Gross Wt.:**	6750 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Textron Lycoming
ELT:	Installed	**Engine Model/Series:**	IO-540-E1A5
Registered Owner:	Central Air Southwest Inc.	**Rated Power:**	
Operator:	Central Air Southwest Inc.	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	ZJWA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	GLR, 1328 ft msl	**Distance from Accident Site:**	
Observation Time:	1800 EST	**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	1 Miles
Lowest Ceiling:	Broken / 800 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	250°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.78 inches Hg	**Temperature/Dew Point:**	-1°C / -1°C
Precipitation and Obscuration:			
Departure Point:	Grand Rapids, MI (GRR)	**Type of Flight Plan Filed:**	IFR
Destination:	Gaylord, MI (GLR)	**Type of Clearance:**	
Departure Time:	1709 EST	**Type of Airspace:**	

Airport Information

Airport:	Gaylord Regional (GLR)	**Runway Surface Type:**	Unknown
Airport Elevation:	1328 ft	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	Localizer Only
Runway Length/Width:		**VFR Approach/Landing:**	Full Stop

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:**	45.013611, -84.703056

Administrative Information

Investigator In Charge (IIC):	Mitchell F Gallo	**Report Date:**	11/29/2007
Additional Participating Persons:	Carolyn B Remol; Federal Aviation Administration; Grand Rapids, MI Aaron Spotts; Textron Lycoming; Williamsport, PA		
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 pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		

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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.