



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Rapid City, SD	<b>Accident Number:</b>	CHI07LA050
<b>Date &amp; Time:</b>	12/29/2006, 0200 MST	<b>Registration:</b>	N99TH
<b>Aircraft:</b>	Beech B-99	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	1 Minor
<b>Flight Conducted Under:</b>	Part 135: Air Taxi & Commuter - Non-scheduled		

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## Analysis

The airplane was on an instrument flight rules flight in night instrument meteorological conditions when the accident occurred. The airplane had been cleared for an ILS approach and the pilot elected to use a non-published procedure to intercept the final approach. After becoming established on the final approach, the airplane impacted the ground about 7 miles from the destination airport at an elevation approximately the same as the airport elevation. Flight inspections of the instrument approach performed prior to and subsequent to the accident revealed satisfactory performance of both the localizer and glideslope functions. The number one altimeter setting did not match the altimeter setting that was current at the time of the accident. Post accident examination of the altimeters revealed that the number one altimeter read 360 feet high. No determination was made as to whether the discrepancy existed prior to impact. However, the pilot did not report any pre-flight discrepancies with regard to the airplane's altimeters. No other anomalies were found or reported with regard to the airplane's structure or systems.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to follow the published instrument approach procedure which contributed to his failure to maintain altitude and clearance from terrain during the instrument approach. A factor was the night light condition.

## Findings

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Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER  
Phase of Operation: APPROACH

### Findings

1. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
2. (F) LIGHT CONDITION - NIGHT
3. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND
4. TERRAIN CONDITION - GROUND

## Factual Information

### HISTORY OF FLIGHT

On December 29, 2006, about 0200 mountain standard time, a Beech B-99, N99TH, piloted by a commercial pilot, sustained substantial damage when it impacted the ground during an instrument approach to runway 32 at the Rapid City Regional Airport (RAP), Rapid City, South Dakota. The 14 CFR Part 135 cargo flight was operated by Alpine Aviation as Alpine flight 408 (AIP408) and was in night instrument meteorological conditions on an instrument flight rules flight plan. The pilot received minor injuries. The flight originated from the Pierre Regional Airport, Pierre, South Dakota, about one hour prior to the accident.

In a written statement, the pilot reported that he elected to use the 7 nautical mile DME arc of the VOR Runway 32 approach to transition to the ILS approach and he used an altitude of 4,700 feet for the transition. He stated that after turning inbound on the final approach course he performed the before landing checklist, set the gear and flaps, and reported inbound on the common traffic advisory frequency. He stated that less than five minutes later, he felt a "sharp blow", added full power, and pitched the nose up but the recovery attempt was unsuccessful.

### PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with single engine land, multiengine land, and instrument airplane ratings. He also held a second class airman medical certificate issued on April 12, 2006. The medical certificate listed no limitations.

The pilot reported having a total of 3,652 hours of total flight experience, including 2,895 hours in the same make and model as the accident airplane. He listed 222 hours and 74 hours of flight experience in the preceding 90 and 30 days, respectively.

### AIRCRAFT INFORMATION

The airplane was a Beech model B-99, twin-engine airplane powered by two Pratt and Whitney PT6A turbopropeller engines. Each engine was rated 550 shaft horsepower. The airplane's maximum gross weight was listed as 10,900 pounds. The airplane was maintained in accordance with an approved airworthiness inspection program. The airplane had accumulated 39,795 hours time in service as of the airplane's most recent inspection performed on November 8, 2006.

### METEOROLOGICAL INFORMATION

At 0211, the reported weather at RAP was: wind 340 at 18 knots, gusting to 25 knots; visibility 2.5 miles; broken ceiling 1,300 feet; temperature -3 degrees Celsius; dew point -6 degrees Celsius; altimeter setting 30.35 inches of Mercury.

### AIDS TO NAVIGATION

The ILS runway 32 approach to RAP provided lateral and vertical guidance to aircraft approaching for landing. The approach chart did not depict a DME arc as an approved method of intercepting the ILS final approach course. The ILS runway 32 approach chart depicted the initial approach fix (IAF) as the Ranch locator outer marker. A procedure turn, at a minimum altitude of 5,500 feet, was depicted as the method for establishing an inbound course after flying outbound from the IAF. The chart depicted the final approach glide path altitude at the Ranch LOM, 4.6 nautical miles from the airport, as 4,688 feet.

Flight inspection reports for the RAP ILS runway 32 approach were obtained. The inspections performed on July 27, 2006, and February 28, 2007, listed satisfactory results for localizer and glideslope operation.

#### COMMUNICATIONS

According to communications transcripts, AIP408 checked on frequency with the Denver Air Route Traffic Control Center at 0112. At that time, AIP408 reported the airplane's altitude as 10,000 feet. The air traffic controller acknowledged and then provided AIP 408 with the current weather conditions at RAP, which included an altimeter setting of 30.31 inches of mercury. At 0118, AIP408 was cleared for the ILS Runway 32 approach to RAP. The flight was instructed to cross the initial approach fix at an altitude of 6,000 feet or higher. At 0127, air traffic control advised AIP408 that radar contact was lost and requested that the AIP408 report reaching 6,000 feet. At 0129 AIP408 reported reaching 6,000 feet. Denver ARTCC then advised AIP408 of approval to change to the airport advisory frequency, which AIP408 acknowledged. No further transmissions were received from AIP408 by the Denver ARTCC.

#### AIRPORT INFORMATION

RAP is located an elevation of 3,204 feet and was equipped with two intersecting runways. Runway 5/23 was 3,601 feet by 75 feet, and runway 14/32 was 8,701 feet by 150 feet. Five instrument approach procedures were listed for RAP including the ILS/LOC runway 32, and the VOR/TACAN runway 32 approaches. RAP is equipped with a control tower; however, at the time of the accident the control tower was not in operation.

#### WRECKAGE AND IMPACT INFORMATION

The airplane impacted the ground about 7 miles from RAP at an elevation of about 3,200 feet. Examination of the airplane subsequent to the accident revealed no anomalies with respect to the airframe, control systems, or engines.

The airplane's number one altimeter had a Kohlsman setting of 30.44 inches of mercury. The number two altimeter's Kohlsman setting was not recorded; however, the setting did not match the current altimeter setting reported at the time of the accident. The airplane's altimeters were removed and their readings compared to a master altimeter at a certified repair station. The number one altimeter read 360 feet high, and the number two altimeter read 10 feet low when compared to the master altimeter's reading. No determination was made as to whether the number one altimeter's error existed prior to impact. The pilot did not report any pre-flight discrepancies with regard to the airplane's altimeters. No other flight instrument anomalies were identified.

## Pilot Information

<b>Certificate:</b>	Commercial	<b>Age:</b>	37, 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>	No
<b>Medical Certification:</b>	Class 2	<b>Last FAA Medical Exam:</b>	04/01/2006
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	3652 hours (Total, all aircraft), 3069 hours (Total, this make and model), 3023 hours (Pilot In Command, all aircraft), 222 hours (Last 90 days, all aircraft), 74 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Beech	<b>Registration:</b>	N99TH
<b>Model/Series:</b>	B-99	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	U-155
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	2
<b>Date/Type of Last Inspection:</b>	11/01/2006, AAIP	<b>Certified Max Gross Wt.:</b>	10900 lbs
<b>Time Since Last Inspection:</b>		<b>Engines:</b>	2 Turbo Prop
<b>Airframe Total Time:</b>	39795 Hours as of last inspection	<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>ELT:</b>	Installed, activated, aided in locating accident	<b>Engine Model/Series:</b>	PT6A-27
<b>Registered Owner:</b>	ALPINE AVIATION INC	<b>Rated Power:</b>	1628 hp
<b>Operator:</b>	ALPINE AVIATION INC	<b>Operating Certificate(s) Held:</b>	On-demand Air Taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	TIMA

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night
Observation Facility, Elevation:	RAP, 3204 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	0211 MST	Direction from Accident Site:	140°
Lowest Cloud Condition:	Unknown	Visibility	2.5 Miles
Lowest Ceiling:	Broken / 1300 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	18 knots / 25 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	340°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.35 inches Hg	Temperature/Dew Point:	-3° C / -6° C
Precipitation and Obscuration:	Light - Snow; Mist		
Departure Point:	PIERRE, SD (PIR)	Type of Flight Plan Filed:	IFR
Destination:	Rapid City, SD (RAP)	Type of Clearance:	IFR
Departure Time:	0200 CST	Type of Airspace:	

## Airport Information

Airport:	RAPID CITY REGIONAL (RAP)	Runway Surface Type:	Asphalt
Airport Elevation:	3204 ft	Runway Surface Condition:	Unknown
Runway Used:	32	IFR Approach:	ILS
Runway Length/Width:	8701 ft / 150 ft	VFR Approach/Landing:	None

## Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor	Latitude, Longitude:	44.053333, -103.061944

## Administrative Information

Investigator In Charge (IIC):	John M Brannen	Report Date:	03/31/2008
Additional Participating Persons:	Mark Goodwin; FAA - Rapid City FSDO; Rapid City, SD		
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](#).