



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	RHINELANDER, WI	<b>Accident Number:</b>	CHI97FA047
<b>Date &amp; Time:</b>	12/28/1996, 1145 CST	<b>Registration:</b>	N998VB
<b>Aircraft:</b>	Beech C90	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 Minor, 8 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

There were five recorded transmissions of conversations from one of the pilots aboard the accident airplane and the Fort Dodge, Iowa AFSS; one on 12/27 and four on 12/28. The weather forecast for icing included wording such as '...moderate to isolated severe icing from seven thousand downward for your entire route of flight....' The pilot stated that he received 'Full Flight Service briefings...' and also indicated that he spoke to flight watch prior to takeoff. While executing the ILS approach to the destination airport, the pilot was unable to maintain the proper glidepath even with the application of full power. The pilot maintained marginal control of the airplane during the descent until impact with trees and the terrain about 10 miles west of the destination airport. The pilot and passengers reported 'vibration' and 'shudder' of the airplane prior to the impact. One passenger reported that she saw ice forming on the left 'rear' wings. Persons on the ground reported severe icing conditions around the time of the accident.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot-in-command's inadequate weather evaluation and continued flight into forecast severe icing conditions which exceeded the capability of the airplane's anti-ice/deice system. The icing conditions were a factor.

## Findings

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Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: APPROACH

### Findings

1. (C) WEATHER EVALUATION - INADEQUATE - PILOT IN COMMAND
2. (F) WEATHER CONDITION - ICING CONDITIONS
3. (C) FLIGHT INTO KNOWN ADVERSE WEATHER - CONTINUED - PILOT IN COMMAND

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Occurrence #2: IN FLIGHT COLLISION WITH OBJECT

Phase of Operation: APPROACH

### Findings

4. (C) AIRFRAME - ICE
5. PROPER GLIDEPATH - NOT POSSIBLE - PILOT IN COMMAND

## Factual Information

### HISTORY OF FLIGHT

On December 28, 1996, at 1145 central standard time, a Beech C90, N998VB, impacted trees and the terrain during an ILS approach to runway 9 at the Rhinelander-Oneida County Airport near Rhinelander, Wisconsin. The airplane sustained substantial damage during the impact which occurred about ten miles west of the intended destination. The pilot and one passenger reported minor injuries. Eight other passengers reported no injuries. The 14 CFR Part 91 personal flight was operating in instrument meteorological conditions on an instrument flight plan. The flight departed Moline, Illinois, about 1045. The pilot indicated that the airplane was unable to maintain flight and was vibrating prior to impact. Several pilots reported severe icing conditions in the area about the time of the accident.

During an interview, the pilot-in-command stated that he had been cleared to intercept the localizer approach to runway 9, at 3,500 feet mean sea level (msl), on a heading of 060 degrees. He stated that just prior to the turn onto the final approach heading, he began to feel a "vibration" through the control column, and then it stopped. Upon entering the turn the "shutter" began again. He said that the "shutter" became intense and the airplane was losing altitude. He stated that he added full power. When he saw that he was still descending and his airspeed was indicating 110 knots, he put the landing gear handle in the "down" position, shut off the fuel firewall valves, and prepared for impact.

The pilot rated passenger who was occupying the right cockpit seat stated that when the flying pilot began the turn to the final approach heading, "...shutter again began and that it all happened in a matter of seconds before hitting the ground."

One passenger told police that she saw ice forming on the left "rear" wings. All the passengers described a "vibration" just prior to the impact. One passenger said that prior to impact the, "...wingtips started to dip left and right as if hitting turbulence."

### PERSONAL INFORMATION

The pilot born February 20, 1947, was the holder of a private pilot certificate with privileges for single and multiengine land with an instrument rating for airplanes. He was the holder of a third class medical certificate issued April 11, 1995. His most recent biennial flight review was on April 17, 1996, in a Beech C90. At the time of the accident he had accumulated a total flight time of 932 hours with 338 hours in the make and model of airplane involved.

The pilot rated passenger occupying the right cockpit seat was born December 13, 1944. He was the holder of a private pilot certificate with privileges for single engine land airplanes and an instrument rating for airplanes. He held a third class medical issued on November 4, 1996. His most recent biennial flight review was on July 12, 1996, in a Beech B-35. At the time of the accident he had a total flight time of 611 hours with no hours in type.

### AIRCRAFT INFORMATION

The airplane was a Beech C90, N998VB, serial number LJ-785. The airplane was maintained on an Approved Airworthiness Inspection Plan (AAIP). The airplane had accumulated a total time of 6,301 hours at the time of the accident. The most recent inspection was accomplished on August 27, 1996. The airplane had operated 103 hours since that inspection.

## METEOROLOGICAL INFORMATION

The recorded weather at the destination airport (Rhineland, Wisconsin) observed five minutes after the accident was ceiling 300 feet overcast, with 2 1/2 miles visibility in snow and fog. The temperature was 23 degrees (F).

The pilot stated that he received, "Full Flight Service briefings..." He also indicated that he spoke to flight watch and made a phone call to an FBO at Rhineland, Wisconsin, prior to takeoff.

Weather forecasts indicated the possibility and probability of airframe icing conditions in the area of the accident during the period covering the time of the accident

There were five recorded transmissions of conversations from one of the pilots aboard the accident airplane and the Fort Dodge, Iowa, Automated Flight Service Station (AFSS). One call was made on December 27, 1996, and the remaining four on December 28, 1996. The transcripts of all the calls are attached as an addendum to this report. The forecasts for icing included wording such as, "... moderate to isolated severe icing from seven thousand downward for your entire route of flight..."

Several rescue personnel responded to the accident on snowmobiles. Two of those persons said that while traveling to and from the accident site they had difficulty keeping their face shields (on their helmets) clear of freezing precipitation.

## WRECKAGE AND IMPACT INFORMATION

The main airplane fuselage came to rest upright in a wooded area on a northerly heading. Impact marks consisting of broken trees leading up the fuselage, were on an easterly heading in the direction of travel. Left and right wing structures, although having received impact damage, remained attached to the fuselage.

Both engines, propellers and nacelles were broken away from the wings. The empennage was broken away just aft of the aft pressure bulkhead. Continuity of the flight controls was established through the fuselage. Primary electrical power was available during the post accident examination. No accumulation of airframe ice was found during the post accident examination.

The cabin and cockpit remained intact as examined after the accident. There was an intrusion from the outside into the cabin where one propeller blade penetrated the aft baggage compartment. There was no evidence of fire or smoke in any of the wreckage.

All propeller blades on both engines displayed rotational twisting, bending, and scoring. All blades had leading edge nicks and polishing on the camber side. Fuel was present in the main fuel tanks.

In his statement the pilot reported no mechanical anomalies preceding the accident. No pre-impact anomalies were found during the post accident examination of the engines and airframe.

## ADDITIONAL DATA/INFORMATION

Parties to the investigation were the Federal Aviation Administration, Flight Standards District Office, Milwaukee, Wisconsin, and Pratt and Whitney of Montreal, Canada.

The wreckage was released to a representative of the owner of the airplane on December 30,

1996.

### Pilot Information

Certificate:	Private	Age:	49
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	04/11/1995
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	932 hours (Total, all aircraft), 338 hours (Total, this make and model)		

### Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N998VB
Model/Series:	C90 C90	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	LJ-785
Landing Gear Type:	Retractable - Tricycle	Seats:	10
Date/Type of Last Inspection:	08/27/1996, AAIP	Certified Max Gross Wt.:	10500 lbs
Time Since Last Inspection:	103 Hours	Engines:	2 Turbo Prop
Airframe Total Time:	6301 Hours	Engine Manufacturer:	P&W
ELT:	Installed	Engine Model/Series:	PT6A-21
Registered Owner:	MUTUAL SECURITY, INC.	Rated Power:	550 hp
Operator:	MUTUAL SECURITY, INC.	Operating Certificate(s) Held:	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	KRH, 1623 ft msl	Distance from Accident Site:	10 Nautical Miles
Observation Time:	1150 CST	Direction from Accident Site:	90°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	2.5 Miles
Lowest Ceiling:	Overcast / 300 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	Calm /	Turbulence Type Forecast/Actual:	/
Wind Direction:		Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	-5° C
Precipitation and Obscuration:			
Departure Point:	MOLINE, IL (MLI)	Type of Flight Plan Filed:	IFR
Destination:	, WI (RHI)	Type of Clearance:	IFR
Departure Time:	1045 CST	Type of Airspace:	Class E

## Wreckage and Impact Information

Crew Injuries:	1 Minor	Aircraft Damage:	Substantial
Passenger Injuries:	1 Minor, 8 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Minor, 8 None	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	STEPHEN A WILSON	Report Date:	02/02/1998
Additional Participating Persons:	KAREN E LANNOYE; MILWAUKEE, WI CARL MASON; APPLETON, WI		
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](#).