



# Aviation Investigation Final Report

<b>Location:</b>	ST. PAUL, Minnesota	<b>Accident Number:</b>	CHI88FA091
<b>Date &amp; Time:</b>	April 5, 1988, 15:15 Local	<b>Registration:</b>	N181LL
<b>Aircraft:</b>	BEECH B90	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	5 None
<b>Flight Conducted Under:</b>	Part 135: Air taxi & commuter - Non-scheduled		

## Analysis

THE AIRPLANE WAS BEING OPERATED AS AN AIR AMBULANCE WHEN IT SUSTAINED SUBSTANTIAL DAMAGE DURING AN UNCOMMANDED HARD PITCHOVER. THE AIRPLANE WAS OPERATING IN VISUAL CONDITIONS ABOVE A SOLID CLOUD LAYER USING INSTRUMENT FLIGHT RULES. THE AIRPLANE RECOVERED FROM THE EXCURSION AND CONTINUED ON TO ITS DESTINATION. THE ATP RATED PILOT, THREE MEDICAL ATTENDANTS AND ONE PATIENT WERE NOT INJURED. TESTING OF THE PILOT'S WHEEL TRIM SWITCH SHOWED THE SWITCH WOULD STICK IN THE CLOSED OR ACTUATED POSITION AND NOT RETURN TO THE 'CENTER OFF' POSITION. THIS OCCURRED DURING TEMPERATURE CYCLING FROM ROOM TEMPERATURE TO BELOW FREEZING AND BACK AGAIN. THE CABIN HEATER HAD FAILED WITH AN OUTSIDE AIR TEMPERATURE OF -26 DEGS CELSIUS AND THE CABIN WAS COLD.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: MECHANICAL FAILURE AND STICKING OF THE PILOTS THUMB OPERATED TRIM SWITCH CAUSING NOSE DOWN PITCH COMMAND. THE FAILURE OF THE CABIN HEATER AND THE LOW CABIN TEMPERATURE ARE CONTRIBUTING FACTORS.

## Findings

Occurrence #1: ALTITUDE DEVIATION, UNCONTROLLED  
Phase of Operation: CRUISE

#### Findings

1. (C) ELECTRICAL SYSTEM,ELECTRIC SWITCH - FAILURE,PARTIAL
2. REMEDIAL ACTION - PERFORMED - PILOT IN COMMAND
3. (F) AIR COND/HEATING/PRESSURIZATION,CABIN TEMP CONTROL - INOPERATIVE
4. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED

## Factual Information

### Pilot Information

<b>Certificate:</b>	Airline transport	<b>Age:</b>	41, 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>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	Airplane single-engine	<b>Toxicology Performed:</b>	No
<b>Medical Certification:</b>	Class 1 Valid Medical--no waivers/lim.	<b>Last FAA Medical Exam:</b>	July 9, 1988
<b>Occupational Pilot:</b>	Yes	<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	5005 hours (Total, all aircraft), 900 hours (Total, this make and model), 2800 hours (Pilot In Command, all aircraft), 20 hours (Last 90 days, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	BEECH	<b>Registration:</b>	N181LL
<b>Model/Series:</b>	B90 B90	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	LJ-440
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	7
<b>Date/Type of Last Inspection:</b>	Unknown	<b>Certified Max Gross Wt.:</b>	9650 lbs
<b>Time Since Last Inspection:</b>	140 Hrs	<b>Engines:</b>	2 Turbo prop
<b>Airframe Total Time:</b>	5950 Hrs	<b>Engine Manufacturer:</b>	P&W
<b>ELT:</b>	Installed, not activated	<b>Engine Model/Series:</b>	PT6A-135
<b>Registered Owner:</b>	CRITICAL CARE INC.	<b>Rated Power:</b>	550 Horsepower
<b>Operator:</b>		<b>Operating Certificate(s) Held:</b>	On-demand air taxi (135)
<b>Operator Does Business As:</b>		<b>Operator Designator Code:</b>	

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument (IMC)	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>		<b>Distance from Accident Site:</b>	
<b>Observation Time:</b>		<b>Direction from Accident Site:</b>	
<b>Lowest Cloud Condition:</b>	Unknown	<b>Visibility</b>	
<b>Lowest Ceiling:</b>	Unknown	<b>Visibility (RVR):</b>	
<b>Wind Speed/Gusts:</b>	/	<b>Turbulence Type Forecast/Actual:</b>	/
<b>Wind Direction:</b>	0°	<b>Turbulence Severity Forecast/Actual:</b>	/
<b>Altimeter Setting:</b>		<b>Temperature/Dew Point:</b>	-8°C / -18°C
<b>Precipitation and Obscuration:</b>			
<b>Departure Point:</b>	MINOT , ND (MOT )	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	ST. PAUL , MN (STP )	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	14:00 Local	<b>Type of Airspace:</b>	Class E

## Airport Information

<b>Airport:</b>		<b>Runway Surface Type:</b>	
<b>Airport Elevation:</b>	0 ft msl	<b>Runway Surface Condition:</b>	
<b>Runway Used:</b>	0	<b>IFR Approach:</b>	None
<b>Runway Length/Width:</b>	0 ft / 0 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	4 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	1 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	5 None	<b>Latitude, Longitude:</b>	44.929679,-93.080429(est)

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Bruce, William
<b>Additional Participating Persons:</b>	JOHN WARD; WICHITA , KS DONALD BASTEDO; FT. LAUDERDALE , FL
<b>Original Publish Date:</b>	June 25, 1990
<b>Last Revision Date:</b>	
<b>Investigation Class:</b>	<a href="#">Class</a>
<b>Note:</b>	
<b>Investigation Docket:</b>	<a href="https://data.nts.gov/Docket?ProjectID=13939">https://data.nts.gov/Docket?ProjectID=13939</a>

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