



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	Ainsworth, NE	<b>Accident Number:</b>	CHI05LA050
<b>Date &amp; Time:</b>	01/01/2005, 1120 CST	<b>Registration:</b>	N35403
<b>Aircraft:</b>	Cessna 551	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 Minor, 3 None
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

The twin-engine corporate jet impacted terrain while maneuvering to land after a global positioning system (GPS) approach. The pilot reported that the airplane entered icing conditions during the approach and that the airplane descended out of instrument meteorological conditions between 300-400 feet above ground level (agl). The pilot reported that his windshield had become obscured by ice accumulation during the approach and that he "had difficulty seeing the runway." The pilot elected to land the airplane instead of executing the published missed-approach procedure. The airplane impacted terrain 439 feet short of the runway threshold while in a right turn. After the accident, there was ice accumulation on all booted airframe surfaces measuring 2-4 inches wide and 1/4 to 3/8 inch thick. The upper portions of the windscreens were contaminated with ice measuring about 3/8 inch thick. The remaining airframe portions, including the heated surfaces, were free of ice accumulation. The windshield bleed air switch was selected on "High" with the pilot's side windshield heat control knob approximately mid-range. Windshield alcohol was selected "On", but the alcohol reservoir was still full upon inspection. At the time of the accident, there was an overcast ceiling of 500 feet agl, 1-3/4 statute mile visibility with mist, and an outside temperature of -08 degrees Celsius. The published minimum descent altitude (MDA) for the GPS runway 17 approach is 500 feet agl, for an airplane equipped with a lateral navigation only GPS receiver. The pilot held a private pilot certificate with multi-engine land, instrument airplane, and Cessna 500 type rating. The pilot reported having 2,200 hours total flight time and 475 hours in the same make/model as the accident airplane.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's decision to continue below the minimum descent altitude (MDA) and his failure to fly the published missed-approach procedure. A factor to the accident was the pilot's improper use of windshield heat which resulted in the windshield becoming obscured with ice during the instrument approach in icing conditions.

## Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

### Findings

1. (F) WEATHER CONDITION - ICING CONDITIONS
2. (F) ANTI-ICE/DEICE SYSTEM - IMPROPER USE OF - PILOT IN COMMAND
3. (F) WINDOW, FLIGHT COMPARTMENT WINDOW/WINDSHIELD - OBSTRUCTED

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Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: LANDING

### Findings

4. (C) MINIMUM DESCENT ALTITUDE - CONTINUED BELOW - PILOT IN COMMAND
5. (C) MISSED APPROACH - NOT PERFORMED - PILOT IN COMMAND
6. TERRAIN CONDITION - GROUND

## Factual Information

On January 1, 2005, around 1120 central standard time, a Cessna 551 (Citation II), N35403, piloted by an instrument rated private pilot, was substantially damaged during an in-flight collision with terrain while attempting to land at Ainsworth Municipal Airport (ANW), Ainsworth, Nebraska. Instrument meteorological conditions (IMC) prevailed at the time of the accident. The personal flight was being operated under the provisions of 14 Code of Federal Regulations (CFR) Part 91 while on an instrument flight rules (IFR) flight plan. The pilot and three passengers were not injured. Two passengers reported minor injuries. The cross-country flight departed Reading Regional Airport (RDG), Reading, Pennsylvania, at 0808 eastern standard time.

At 1113:16 (hhmm:ss), the accident airplane was cleared for the Global Positioning System (GPS) Runway 17 instrument approach into ANW. The pilot stated that the airplane started to accumulate ice around 4,000 feet mean sea level (msl) during the approach. The pilot reported that he had "all of the anti-ice and deicing equipment working" during the approach. The pilot stated that "at some point the icing conditions became more than the equipment could handle" and the windscreen became obscured by ice. The pilot reported that he descended out of IMC "between 300 and 400 feet" above ground level (agl). The pilot stated that he "had difficulty seeing the runway" due to the accumulation of ice on the windscreen and he elected to land the airplane instead of executing the published missed-approach procedure.

A witness to the accident reported seeing the "aft end of a jet heading to the north in a slight bank to the right, I didn't notice the wheels down so I assumed that the jet was making a go-around for another attempt at the approach." The witness stated he didn't see the airplane impact the terrain but did "hear three loud audible pops and saw [what] appeared to be smoke rising over the hangar."

On January 2, 2005, a Federal Aviation Administration (FAA) inspector and an airframe representative performed an on-scene investigation. The first point of impact was about 439 feet north of the approach end of runway 17 (6,824 feet by 110 feet, asphalt). The aircraft traveled south about 18 feet prior to contacting an airport access road. The aircraft then became airborne and touched down for the second time after traveling south about 54 feet. The aircraft then slid in a right arc about 700 feet and came to rest parallel to a taxiway that services runway 17.

Temperatures at the accident site had remained well below freezing from the time of impact until the on-scene investigation. Pieces of rime ice were found along the wreckage path. These ice pieces were 1/4 to 3/8-inch thick and were shaped similar to the leading edge of a wing.

First responders had sprayed the airplane with fire suppression foam after the accident as a precaution. There was no evidence of an in-flight or post-impact fire. The foam had degraded the condition of the ice in some areas along both wings. However, photographs taken by first responders show ice accumulation on all booted surfaces measuring 2-4 inches wide and 1/4 to 3/8 inch thick. The upper portions of the windscreens were contaminated with ice measuring about 3/8 inch thick. The remaining airframe portions, including the heated surfaces, were free of ice accumulation.

The windshield bleed air switch was selected on "High" with the pilot's side windshield heat control knob approximately mid-range. Windshield alcohol was selected "On", but the alcohol

reservoir was still full upon inspection.

The closest weather reporting station to the accident site was located at ANW. The airport is equipped with an Automated Surface Observing System (ASOS). The following weather conditions were reported prior to and after the time of the accident:

At 1110: Wind 020 degrees true at 3 knots, visibility 2-1/2 statute miles (sm) with mist, overcast ceiling at 500 feet agl, temperature -08 degrees Celsius, dew point -09 degrees Celsius, altimeter setting 30.03 inches of mercury.

At 1130: Wind 030 degrees true at 3 knots, visibility 1-3/4 sm with mist, overcast ceiling at 500 feet agl, temperature -08 degrees Celsius, dew point -09 degrees Celsius, altimeter setting 30.02 inches of mercury.

The published minimum descent altitude (MDA) for the GPS runway 17 approach is 500 feet agl, for an airplane equipped with a lateral navigation only GPS receiver.

The pilot held a private pilot certificate with multi-engine land, instrument airplane, and Cessna 500 type ratings. The pilot reported having 2,200 hours total flight time and 475 hours in the same make/model as the accident airplane.

## Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	57, Male
<b>Airplane Rating(s):</b>	Multi-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 3 With Waivers/Limitations	<b>Last Medical Exam:</b>	05/01/2004
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	05/01/2003
<b>Flight Time:</b>	2200 hours (Total, all aircraft), 475 hours (Total, this make and model), 2200 hours (Pilot In Command, all aircraft), 60 hours (Last 90 days, all aircraft), 20 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

## Aircraft and Owner/Operator Information

<b>Aircraft Manufacturer:</b>	Cessna	<b>Registration:</b>	N35403
<b>Model/Series:</b>	551	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal	<b>Serial Number:</b>	551-0029
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	10
<b>Date/Type of Last Inspection:</b>	10/01/2003, Continuous Airworthiness	<b>Certified Max Gross Wt.:</b>	12500 lbs
<b>Time Since Last Inspection:</b>	188 Hours	<b>Engines:</b>	2 Turbo Fan
<b>Airframe Total Time:</b>	5870 Hours	<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	JT15D-4
<b>Registered Owner:</b>	Jet Services, LLC.	<b>Rated Power:</b>	2500 lbs
<b>Operator:</b>	Jet Services, LLC.	<b>Air Carrier Operating Certificate:</b>	None

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Instrument Conditions	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	ANW, 2589 ft msl	<b>Observation Time:</b>	1130 CST
<b>Distance from Accident Site:</b>	0 Nautical Miles	<b>Direction from Accident Site:</b>	0°
<b>Lowest Cloud Condition:</b>		<b>Temperature/Dew Point:</b>	-8° C / -9° C
<b>Lowest Ceiling:</b>	Overcast / 500 ft agl	<b>Visibility</b>	1.75 Miles
<b>Wind Speed/Gusts, Direction:</b>	3 knots, 30°	<b>Visibility (RVR):</b>	
<b>Altimeter Setting:</b>	30.02 inches Hg	<b>Visibility (RVV):</b>	
<b>Precipitation and Obscuration:</b>	Freezing - Mist		
<b>Departure Point:</b>	Reading, PA (RDG)	<b>Type of Flight Plan Filed:</b>	IFR
<b>Destination:</b>	Ainsworth, NE (ANW)	<b>Type of Clearance:</b>	IFR
<b>Departure Time:</b>	0808 EST	<b>Type of Airspace:</b>	

## Airport Information

<b>Airport:</b>	Ainsworth Municipal Airport (ANW)	<b>Runway Surface Type:</b>	Asphalt
<b>Airport Elevation:</b>	2589 ft	<b>Runway Surface Condition:</b>	Ice
<b>Runway Used:</b>	17	<b>IFR Approach:</b>	Global Positioning System
<b>Runway Length/Width:</b>	6824 ft / 110 ft	<b>VFR Approach/Landing:</b>	None

## Wreckage and Impact Information

<b>Crew Injuries:</b>	1 None	<b>Aircraft Damage:</b>	Substantial
<b>Passenger Injuries:</b>	2 Minor, 2 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	2 Minor, 3 None	<b>Latitude, Longitude:</b>	42.579167, -99.993056

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Andrew T Fox	<b>Adopted Date:</b>	07/31/2006
<b>Additional Participating Persons:</b>	Robert F Johnson; Federal Aviation Administration - Lincoln FSDO; Lincoln, NE Steve Miller; Cessna Aircraft Company; Wichita, KS		
<b>Publish Date:</b>			
<b>Investigation Docket:</b>	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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