National Transportation Safety Board
Aviation Accident Final Report

Location:	Belgrade, MT	**Accident Number:**	SEA06FA022
Date & Time:	11/29/2005, 1742 MST	**Registration:**	N701QR
Aircraft:	Cessna 425	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The airplane was on the final approach segment of an instrument flight rules (IFR) cross-country flight that originated approximately 3 hours and 45 minutes prior to the accident when radio communications with the aircraft were lost. The aircraft wreckage was located the following day approximately 2.8 miles from the destination airport. The airplane impacted terrain in a vertical descent and flat attitude and came to rest upright on its fuselage and wings. The cockpit and cabin were intact and both wing assemblies remained attached to the fuselage. Evidence of forward velocity and/or leading edge deformation was not observed to the wings or fuselage. Mixed ice was noted along the leading edge of both wings. At the time of the accident, weather conditions were reported as low ceilings and low visibility due to snow and mist. The accident occurred during dark night conditions. Air traffic control (ATC) transcripts indicated that shortly after entering the holding pattern at 11,000 feet the pilot was issued an approach clearance for the ILS. The pilot acknowledged the clearance and approximately two minutes later ATC communications with the pilot were lost. Pilot logbook records showed that the pilot's total flight time was approximately 1,987 hours. In the six-month period preceding the accident, the pilot logged approximately 40 hours total time, 9 hours of actual instrument time and 7 instrument approaches in the accident airplane. The pilot's total night flying experience was approximately 51 hours. The pilot made no entries in his pilot logbook indicating that he had flown at night in the six-month time frame preceding the accident. Pilots flying the ILS approach prior to the accident aircraft reported mixed icing during the descent and final approach. Post accident examination of the aircraft revealed no evidence to indicate a mechanical malfunction or failure.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain airspeed during the approach which resulted in an inadvertent stall. Factors associated with the accident were dark night conditions, clouds, icing conditions, low visibility and snow.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - IAF TO FAF/OUTER MARKER (IFR)

Findings
1. (F) WEATHER CONDITION - CLOUDS
2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND(CFI)
3. (F) LIGHT CONDITION - DARK NIGHT
4. STALL - INADVERTENT - PILOT IN COMMAND(CFI)
5. (F) WEATHER CONDITION - SNOW
6. (F) WEATHER CONDITION - ICING CONDITIONS

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
7. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On November 29, 2005, about 1742 mountain standard time, a Cessna 425 Conquest, N701QR, was destroyed after colliding with terrain approximately 2.8 nautical miles northeast of the Gallatin Field Airport (KBZN), Belgrade, Montana. The airplane was registered to Tech II, Inc, of Springfield Ohio, and was being operated by the pilot as an instrument flight rules (IFR) personal cross-country flight under the provisions of Title 14, CFR Part 91, when the accident occurred. The private pilot, the sole occupant of the airplane, was fatally injured. Instrument meteorological conditions prevailed for the flight that originated in Algona, Iowa, approximately 3 hours and 47 minutes prior to the accident.

Air traffic control (ATC) communications transcripts of the accident flight indicated that the accident aircraft was cleared, by Salt Lake City Center, for the ILS (instrument landing system) Runway 12 approach at 1738:21. Shortly after acknowledging the clearance, ATC radio communications with the pilot were lost.

Salt Lake City Center issued an Alert Notice (ALNOT) for the missing aircraft on the evening of November 29. Search and rescue efforts for the missing aircraft were terminated on the night of the accident due to weather conditions and darkness. The following morning, at 0809, the wreckage was located in an open field about 2.8 NM northeast of the airport; approximately two miles north (left) of the extended centerline for the landing runway.

Personnel from the Gallatin County Sheriff's Office reported that the pilot had flown into the airport on previous occasions, however this was the first time he had done so in "bad" weather conditions.

PILOT INFORMATION

The pilot held a private pilot certificate with airplane single-engine land, multi-engine land and instrument airplane ratings. The pilot's most recent FAA third-class medical certificate was issued on December 3, 2004, and contained a limitation requiring the pilot to wear corrective lenses.

Pilot training records showed that the pilot completed recurrent flight and ground training for the Cessna 425 through SIMCOM on April 3, 2005. The pilot successfully completed an instrument proficiency check (FAR 61.57[d]) and phase five of the Wings Pilot Proficiency Awards Program in conjunction with the April SIMCOM training. The pilot's initial Cessna 425 flight training was completed in June of 1999, at Flight Safety International.

Pilot logbook records showed that the pilot's total flight time was approximately 1,987 hours, including 1,675 hours as pilot-in-command and 401 hours in a Cessna 425. In the six-month period preceding the accident, the pilot logged approximately 40 hours total time, 9 hours of actual instrument time and 7 instrument approaches in the accident airplane. The pilot's total night flying experience was approximately 51 hours. The pilot made no entries in his pilot logbook indicating that he had flown at night in the six-month time frame preceding the accident.

AIRCRAFT INFORMATION

The twin engine Cessna Conquest 425, serial number 425-0148, was manufactured in 1982.

The airplane was equipped with two Pratt & Whitney PT6A-112 turbo prop engines, rated at 450 shaft horsepower. The pressurized airplane was certified for flight in icing conditions and single pilot operations. In addition to the originally installed instrumentation and avionics, the airplane was equipped with a Garmin GNS 530 global positioning system (GPS) with intergraded TAWS (Terrain Awareness and Warning System) . The GPS was certified for IFR en route, terminal and non-precision approach navigation.

The airplane's last inspection was completed on May 12, 2005. The inspection included phases 2, 3, 7, 13, 26, 27 and D in accordance with Cessna maintenance guidelines. Corresponding maintenance records showed that the airplane's total time at inspection was 4,504 hours. The right engine's total time at inspection was 4,504 hours; the left engine's total time at inspection was 4,507 hours. Maintenance records showed that the last altimeter system and altitude reporting equipment test was completed on February 5, 2004.

There were no known open logbook maintenance discrepancies with the aircraft at the time of the accident.

METEOROLOGICAL INFORMATION

The closest weather observation facility to the accident site was the destination airport, Gallatin Field Airport (KBZN), Bozeman, Montana, located approximately 2.8 miles south of the accident site at an elevation of 4,474 feet msl. The airport is equipped with an Automated Surface Observing System (ASOS). The following official Meteorological Aerodrome Reports (METARs) were issued surrounding the period of the accident:

On November 29, at 1656, the METAR observation was, in part, visibility 10 statute miles, broken clouds at 7,000 feet, overcast skies at 8,000 feet, temperature minus 8 degrees Celsius (C), dew point minus 11 degrees C, altimeter 29.70 inches of Hg.

At 1744, the SPECI (special weather observation report) was, in part, visibility 3 statute miles with light snow, overcast skies at 2,300 feet, temperature minus 7 degrees C, dew point minus 10 degrees C, altimeter 29.72 inches of Hg.

At 1756, the METAR observation was, in part, wind from 130 degrees at 4 knots, visibility 1-3/4 statute miles with light snow and mist, overcast skies at 1,600 feet, temperature minus 7 degrees C, dew point minus 9 degrees C, altimeter 29.73 inches of Hg.

At 1856, the METAR observation was, in part, wind from 190 degrees at 10 knots, visibility 1 statute mile with light snow and mist, broken clouds at 700 feet, overcast skies at 2,000 feet, temperature minus 6 degrees C, dew point minus 7 degrees C, altimeter 29.73 inches of Hg.

The Terminal Aerodrome Forecast (TAF) current for Gallatin Field Airport, Bozeman, Montana, was issued at 1038 and was current for a 24-hour period beginning at 1100 on November 29, 2005. The forecast for KBZN from 1100 was for variable winds at 5 knots, visibility better than 6 statute miles with showers in the vicinity, ceiling broken at 8,000 feet. From 1500, variable winds at 5 knots, visibility 2 statute miles and light snow, overcast skies at 2,500 feet, temporary changes expected between 1800 and 2200 for light snow and overcast skies at 2,500 feet. From 2200, winds from 130 degrees at 6 knots, visibility better than 6 statute miles with showers in the vicinity, broken clouds at 6,000 feet.

At 1325, the pilot of N701QR filed an IFR flight plan and received a weather briefing, to include the forecast, for the intended route of flight from the Fort Dodge, Iowa, Automated Flight Service Station (AFSS).

At 1545, the pilot of N701QR received an in-flight weather briefing from the Huron, South Dakota, AFSS. The briefing included the current and forecasted weather for Bozeman, Montana.

According to the U.S. Naval Observatory, official sunset was at 1642, and the end of civil twilight was at 1716. The Moon phase was waxing crescent with 4 percent of the Moon's visible disk illuminated.

Pilots flying the ILS approach prior to the accident aircraft reported mixed icing during the descent and final approach.

COMMUNICATION INFORMATION

At 1714:11, Salt Lake Center advised the pilot that he would be number two for the approach into Bozeman. The pilot responded, stating, "okay thanks."

At 1717:42, Salt Lake Center cleared N701QR to descend to 15,000 feet. The pilot acknowledged the clearance, stating, "one five thousand one seven oh one quebec romeo thank you."

At 1719:04, Salt Lake Center cleared N701QR to Bozeman, via direct Livingston and victor eighty-six. The pilot responded by stating "ah victor eighty-six to Bozeman just a minute."

At 1728:01, Salt Lake Center issued the following clearance: "November one quebec romeo after Bozeman VOR cleared direct manni hold northwest on the localizer expect further clearance zero zero four zero. The clearance was acknowledged at 1728:12.

At 1730:45, Salt Lake Center instructed the pilot to descend to 11,000 feet. The pilot acknowledged the clearance.

At 1734:03, Salt Lake Center instructed the pilot to report leaving 11,000 feet. The pilot acknowledged the clearance, stating, "at one one thousand doing a ah procedure turn to get into the holding pattern at manni."

At 1738:21, Salt Lake Center cleared the pilot for the ILS approach into Bozeman. The pilot acknowledged the clearance.

At 1739:23, Salt Lake Center instructed the pilot to report leaving 9,000 feet. The pilot acknowledged the clearance.

At 1740:45, Salt Lake Center asked the pilot if he had information "echo." The pilot acknowledged the controller stating, "affirmative." This was the last radio transmission from the pilot of N701QR.

Starting at 1741:35, Salt Lake Center radioed the aircraft multiple times without a response from the pilot.

A complete ATC communication transcript is enclosed in the public docket.

AIRPORT INFORMATION

The Bozeman Gallatin Field Airport serves as the primary airport for Gallatin County. The airport has two hard-surfaced asphalt runways, 12/30 and 21/03 magnetic. Runway 12/30 is

9,003 feet long and 150 feet wide. Runway 12 is equipped with a medium intensity approach lighting system with runway alignment indicator lights (MALSR), high intensity runway lights (HIRL) and a four-box visual approach slope indicator (VASI) located on the left side of the runway.

The airport is serviced by an Air Traffic Control tower. The tower operates from 0700 - 2300 local. After hour local traffic communications are accomplished via the published airport common traffic advisory frequency (CTAF). Salt Lake City Center provides approach/departure control services for the airport on a continuous basis.

There are four non-precision instrument approaches and one precision approach available at the airport. The minimum descent altitude/height (MDA) for the straight-in ILS runway 12 approach (the approach the accident flight was cleared for) is 4,650 feet above mean sea level, which is 211 feet above the touchdown zone elevation of 4,439 feet. The published minimum visibility for a straight-in ILS approach to the runway is 1/2 mile.

WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board's on site investigation began on the evening of November 30, 2005. Personnel from the NTSB, FAA, Cessna Aircraft and Gallatin County Sheriff's Office were in attendance for the on site portion of the investigation. Subsequent to the on site investigation, the wreckage was moved to a hangar facility at the Bozeman airport for further examination and teardown.

The wreckage was located in an open field approximately 2.8 miles northeast of the airport. The terrain was relatively flat and covered by approximately seven inches of snow.

The airplane impacted terrain in a flat attitude and came to rest upright on its fuselage and wings. The fuselage was oriented on a 045-degree magnetic heading. The cockpit and cabin were intact and both wing assemblies remained attached to the fuselage. Evidence of forward velocity and/or leading edge deformation was not observed to the wings or fuselage. Extensive vertically type crushing was observed to belly of the airplane.

Both wings remained attached to the fuselage and little damage was noted to the leading edge surfaces. The left wing assembly was intact and the flap was observed in the up position. Impact related damage was observed to the outboard section of the left aileron. The left engine and engine nacelle were intact and remained attached to the wing assembly. Impact related damage was observed to the underside of the nacelle assembly. The left side (number one) four bladed propeller assembly separated, as a unit, from the engine assembly and was located approximately 14 feet forward of the left engine. Extensive bending, opposite of the direction of rotation, circumferential deformation and leading edge damage were noted to the blades. One of the four blades separated from the hub assembly near the blade root.

The right wing assembly was intact. The flap remained attached to the wing and was observed in the up position. The outboard section of the wing was bent downward at an angle of approximately 25-degrees. The inboard section of the right aileron was intact and remained attached to the wing. Impact related damage was noted to the outboard section of the right aileron. The right engine and engine nacelle were intact and remained attached to the wing assembly. Impact related damage was observed to the underside of the nacelle assembly. The right side (number two) four bladed propeller assembly separated, as a unit, from the engine

assembly and was located immediately forward of the right engine. Extensive bending, opposite of the direction of rotation, circumferential deformation, and leading edge damage were noted to the blades.

The empennage assembly was intact and remained partially attached to the fuselage. The entire assembly, from approximately station 300 aft, was canted approximately 35-degrees toward the left side of the fuselage. A tear in the outer skin, which encircled the tail, was noted just forward of where the empennage joins the fuselage. The horizontal stabilizer, elevator, vertical stabilizer and rudder were intact and remained attached to the empennage. The rudder counter weight and associated faring structure had separated from the rudder assembly and was located approximately 25-feet to the left of the tail assembly.

Mixed ice, approximately 1/32 - 1/16 inch thick, was noted along the leading edge of both wings. Personnel from the Sheriff's Department reported that the ice was approximately 1/8 inch thick when they arrived onsite the morning after the accident.

The cockpit controls and instrumentation sustained moderate vertical deceleration type damage. Flight control continuity was established from the cockpit controls to their respective flight control surfaces. The horizontal situation indicator (HSI) course deviation indicator was set to approximately 120-degrees. The altimeter read approximately 4,500-feet msl, with a Kollsman setting of approximately 29.73 inches Hg.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was conducted on November 30, 2005. According to the postmortem report, the pilot's cause of death was attributed to multiple blunt traumatic injuries secondary to the crash.

The FAA Civil Aerospace Medical Institute (CAMI), Oklahoma City, Oklahoma, conducted a toxicological examination subsequent to the accident. According to the postmortem toxicology report, Pseudoephedrine was detected in the pilot's system.

Pseudoephedrine is an over-the-counter decongestant commonly used to treat symptoms associated with allergies and the common cold.

See attached toxicological report for specific test parameters and results.

ADDITIONAL DATA AND INFORMATION

Post accident examination and teardown of both engines revealed no evidence of internal component anomaly or pre-impact mechanical failure that would have prohibited normal operation of the engines. Rotational type damage was noted to the compressor and power sections of both engines.

Representatives from the FAA Wichita ACO and the Cessna Aircraft Company conducted post accident examination of the pilot and co-pilot side attitude indicator gyros on April 5, 2006. The examination reveled that the support housing for the pilot side internal gyro sustained extensive impact related damage. Rotational type wear marks were noted to the inside of the rotor housing and corresponding wear marks were noted to the gyro rotor. The gyro assembly was located in the nose of the airplane in an area that sustained extensive impact related damage.

The co-pilot side dash mounted gyro assembly sustained little impact related damage and the unit was intact when removed from the airframe. No rotational wear marks were noted to the gyro rotor or corresponding housing.

Fueling records showed the airplane was fueled at the Algona Municipal Airport on November 29, 2005. According to the fuel technician, the airplane was "topped off" with approximately 231 gallons of Jet A prior to departure.

On June 15, 2006, the airframe, engine and associated components were released to Kern and Wooley LLP, Los Angeles, California.

Pilot Information

Certificate:	Private	**Age:**	68, Male
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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With Waivers/Limitations	**Last FAA Medical Exam:**	12/01/2004
Occupational Pilot:		**Last Flight Review or Equivalent:**	04/01/2005
Flight Time:	1987 hours (Total, all aircraft), 1675 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N701QR
Model/Series:	425	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	425-0148
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	05/01/2005, AAIP	**Certified Max Gross Wt.:**	8200 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo Prop
Airframe Total Time:	4504 Hours as of last inspection	**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-112
Registered Owner:	Tech II, Inc	**Rated Power:**	450 hp
Operator:	Gerald A. Shiffer	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Night/Dark
Observation Facility, Elevation:	KBZN, 4471 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	1756 MDT	**Direction from Accident Site:**	165°
Lowest Cloud Condition:		**Visibility**	1.75 Miles
Lowest Ceiling:	Overcast / 1600 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.73 inches Hg	**Temperature/Dew Point:**	-7°C / -9°C
Precipitation and Obscuration:	Light - Showers - Snow		
Departure Point:	ALGONA, IA (AXA)	**Type of Flight Plan Filed:**	IFR
Destination:	Bozeman, MT (BZN)	**Type of Clearance:**	IFR
Departure Time:	1555 CST	**Type of Airspace:**	

Airport Information

Airport:	GALLATIN FIELD (BZN)	**Runway Surface Type:**	Asphalt
Airport Elevation:	4471 ft	**Runway Surface Condition:**	Snow
Runway Used:	12	**IFR Approach:**	ILS
Runway Length/Width:	9003 ft / 150 ft	**VFR Approach/Landing:**	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	45.831944, -111.160000

Administrative Information

Investigator In Charge (IIC):	Dennis Hogenson	**Report Date:**	10/03/2006
Additional Participating Persons:	Jerry Byrd; FAA FSDO; Helena, MT Steve Jones; FAA FSDO; Helena, MT Tom Moody; Cessna Aircraft Company; Wichita, KS Thomas Berthe; Pratt & Whitney Canada; Longueuil, Quebec,		
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/.		