National Transportation Safety Board
Aviation Accident Final Report

Location:	Great Bend, KS	**Accident Number:**	DEN07FA059
Date & Time:	02/09/2007, 0850 CST	**Registration:**	N45GM
Aircraft:	Beech H-18	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

Prior to the flight, the pilot obtained a weather briefing which included an AIRMET for IFR conditions and an AIRMET for icing that was "just off to the north." According to air traffic control (ATC) information, the en route portion of the flight was uneventful. ATC cleared the pilot for an ILS approach to runway 35, and the pilot acknowledged the approach clearance. When the airplane reached the outer marker ATC approved the pilot for a frequency change to the common traffic advisory frequency. The pilot acknowledged the frequency change, and no further communications were received from the pilot by ATC. Witnesses observed the observed the airplane approximately 200 feet above ground level (agl) on a northwesterly heading, west of runway 35. The airplane then entered a climbing left turn to the south and disappeared into the overcast cloud layer. Shortly thereafter, the witness observed the airplane in a "20 degree nose down, wings level attitude" on a southeasterly heading. The witness then lost sight of the airplane due to hangars obstructing his view. At the time of the accident, the witness stated that the ceiling was approximately 500 foot overcast with mist. The published missed approach procedure instructed the pilot to initiate a climbing left turn to a fix and hold. Examination of the accident site revealed the airplane impacted the terrain in a right wing, nose-low attitude. No ground impact marks were noted except in the immediate vicinity of the wing leading edges, engines, and propeller assemblies. The flaps and landing gear were in the extended position. The leading edge surfaces of the vertical and horizontal stabilizers revealed 1/4 to 1/2 inches of clear ice. The upper fuselage antenna displayed 1/4 to 1/2 inches of clear ice. Local authorities reported observing a "layer of ice" on the leading edges of both wings when they arrived to the accident site. Examination of the airframe and engines revealed no anomalies that would have precluded normal operations.

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 aircraft control during the missed approach which resulted in an inadvertent stall and impact with terrain. A contributing factor was the icing conditions.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MISSED APPROACH (IFR)

Findings
1. (F) WEATHER CONDITION - ICING CONDITIONS
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
4. (C) STALL - INADVERTENT - PILOT IN COMMAND

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

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On February 9, 2007, approximately 0850 central standard time, a Beech H-18 twin-engine airplane, N45GM, was destroyed when it impacted terrain following a loss of control while maneuvering near Great Bend Municipal Airport (GBD), Great Bend, Kansas. The airplane was registered to a private individual and operated by Bygone Aviation, L.L.C., Guymon, Oklahoma. The airline transport pilot, who was the sole occupant, sustained fatal injuries. Instrument meteorological conditions (IMC) prevailed at the time of the accident. The unscheduled domestic cargo flight was being operated under the provisions of Title 14 Code of Federal Regulations (CFR) Part 135 under an instrument flight rules (IFR) flight plan. The flight departed the Wichita Mid-Continent Airport (ICT), Wichita, Kansas, approximately 0815, and was en route to GBD.

Approximately 1 hour and 30 minutes prior to departure from ICT, the pilot contacted the Wichita Automated Flight Service Station (AFSS), Wichita, Kansas, to obtain a weather briefing for an IFR flight from ICT to GBD with a planned departure time of 0745. During the 5-minute briefing, the briefer informed the pilot of the weather conditions along her planned route which included an Airmen's Meteorological Information (AIRMET) for IFR conditions, an AIRMET for icing that was "just off to the north," and the current conditions at ICT and GBD. The pilot filed her flight plan with a planned true airspeed of 150 knots, an altitude of 8,000 feet mean sea level (msl), a time en route of 40 minutes, and ICT as an alternate destination airport. Prior to the end of the conversation, the briefer informed the pilot that a recent pilot weather report (PIREP) indicated the cloud tops out of ICT were at 5,500 feet msl and the reporting airplane accumulated moderate ice during the climb. The airplane then "lost the ice" at 6,500 feet msl.

According to the Federal Aviation Administration (FAA) and the operator, at 0749, during the pilot's preflight checks of the airplane, a FAA inspector performed a ramp inspection on the pilot and the airplane. The ramp inspection included the following: verification of the pilot's medical and pilot certificates, and the airplane's airworthiness certificate, minimum equipment list, checklist, and flight manual.

According to air traffic control information, the en route portion of the flight was uneventful. As the airplane approached GBD, FAA Kansas City Air Route Traffic Control Center (ARTCC) cleared the pilot for an instrument landing system (ILS) approach to runway 35 at GBD, and the pilot acknowledged the approach clearance. When the airplane reached the outer marker (BABSY), ARTCC approved the pilot for a frequency change to the common traffic advisory frequency at GBD. The pilot acknowledged the frequency change. No further communications were received from the pilot by ARTCC.

A witness, who was located on the ramp at GBD, reported he observed the airplane approximately 200 feet above ground level (agl) on a northwesterly heading, west of runway 35. The airplane then entered a climbing left turn to the south and disappeared into the overcast cloud layer. Shortly thereafter, the witness observed the airplane in a "20 degree nose down, wings level attitude" on a southeasterly heading. The witness then lost sight of the airplane due to hangars obstructing his view. At the time of the accident, the witness stated that the ceiling was approximately 500 foot overcast with mist.

Another witness, who was located at his residence adjacent to GBD, reported that he had heard the accident airplane "come in and out [of GBD] everyday." On the day of the accident, the witness heard "what sounded like the aircraft was making a turn...both engines sounded like they were running, slightly revving up." The witness then heard a "thump, no more noise." The witness reported "the visibility was poor" at the time of the accident.

GBD airport personnel reported that a commercial passenger flight (Beech 1900 airplane) arrived at GBD from Kansas City, Kansas, approximately 0800. The Beech 1900's flightcrew provided statements to the NTSB investigator-in-charge (IIC) concerning the weather conditions they experienced during the flight. According to the statements, approximately 70 nautical miles from GBD, ARTCC cleared the flight from a cruise altitude of 12,000 feet to descend at the pilot's discretion to 6,000 feet. ARTCC notified the flightcrew of multiple icing reports encountered below 10,000 feet in the GBD area. The flightcrew requested the GBD runway 35 ILS approach. For approximately 20 miles, the captain flew the airplane at the cloud tops, 8,000 to 9,000 feet, "to avoid picking up any ice accumulation." The captain reported, "as soon as the flight descended into the clouds, the left wing began accumulating ice. I would characterize the icing as light clear or light mixed icing. I did not consider the accumulation rate as hazardous. We were IMC the entire time from the start of the descent into the cloud tops at [8,000] or 9,000 feet until the flight broke out at approximately 800 feet [above ground level] and gained visual with the runway. I would estimate the total accumulation during the time we were IMC and in the clouds at 1/8 of an inch."

PERSONNEL INFORMATION

The pilot, age 34, held an airline transport pilot (ATP) certificate, issued October 4, 2006, with an airplane multi-engine land rating, and commercial pilot privileges with an airplane single-engine land rating, and a flight instructor certificate with single-engine, multi-engine and instrument airplane ratings. The pilot's most recent FAA first-class airman medical certificate was issued on October 4, 2006, with no restrictions or limitations.

The operator provided the pilot's personnel records to the NTSB IIC. A review of the pilot's flight time summary, dated October 17, 2006, indicated the pilot had accumulated 3,250 total flight hours of which 1,680 were in multi-engine airplanes, and 430 hours of actual instrument flight time. The operator reported the pilot had accumulated 255.5 hours in Beech 18 airplanes and 56 hours in Beech H-18 airplanes. The pilot's logbook was not located during the investigation. The personnel records revealed the operator hired the pilot in October 2006.

The pilot completed the operator's "initial" training in the accident airplane make and model on December 8, 2006. The initial training consisted of ground school, which included: Basic Indoctrination, General Emergency, Situation and Hands-On Drill, Aircraft Ground, Aircraft Differences, and Hazmat. In addition to the ground school training, the pilot completed 5 training flights with the operator's chief pilot. During the third flight, steep turns, slow flight, stalls; clean, takeoff, and landing configurations, were conducted; during the fourth flight, emergency situations and procedures were conducted; and during the fifth flight, precision and non-precision approaches, missed approaches, and go around from rejected landings were conducted. The pilot satisfactorily completed the 5 training flights.

On December 8, 2006, the pilot completed a Federal Aviation Regulations (FAR) Part 135 Airman Competency/Proficiency Check. The flight was conducted by the operator's check airman with a total flight time of 2.2 hours.

A review of the operator's monthly time and duty log revealed the pilot had accumulated approximately 60 flight hours in the accident airplane make and model in the months of December and January.

According to the operator's chief pilot, he had known the pilot for approximately 5 1/2 years. Approximately 3 years prior the pilot being hired by the operator, her employment with an air carrier was terminated due to a failed 6-month checkride. The pilot then flew with an on demand cargo company for a period of time. Between the previous on-demand cargo flight position and the pilot's position with the operator at the time of the accident, she held a couple non-aviation related positions.

The chief pilot reported that he frequently flew with the pilot after her Part 135 check flight. He reported that the pilot was a "good instrument pilot."

AIRCRAFT INFORMATION

The accident airplane, a 1965-model Beech H-18 (serial number BA-717), was a low-wing, tri-cycle retractable gear airplane. The airplane was powered by two 450-horsepower Pratt & Whitney R-985-AN-14B engines, and Hartzell three-bladed, hydraulically operated, constant-speed, feathering type propellers. The airplane was configured for cargo flight operations.

The airplane was issued a standard airworthiness certificate for normal category operations on November 25, 1964. The airplane was registered to a private individual on October 8, 2003.

A review of the maintenance records revealed that the airframe underwent its most recent annual inspection on November 12, 2006, at a total airframe time of 7,702 hours. The left and right engines underwent their most recent 100-hour inspections on November 12, 2006, at a time of 551.7 and 935.5 hours, respectively, since major overhaul.

On April 5, 2005, the airplane's altimeter and encoding systems were tested and inspected in accordance with Title 14 CFR Part 91.411, paragraphs (a)(2) and (3), and Part 43, appendix E. Also, the ATC transponder systems were tested and inspected in accordance with Part 91.413, and Part 43, appendix F.

The airplane's most recent weight and balance was calculated on April 22, 2006, at a maximum approved gross weight of 9,900 pounds (lbs), a useful load of 3,113 lbs, and an empty center of gravity (CG) of 105.4784 inches. A review of the cargo manifest indicated that total cargo weight was 670 pounds (lbs), which included 4 bags containing a total of 85 packages and 50 "loose" packages. The location of the bags and packages prior to impact could not be determined.

METEOROLOGICAL INFORMATION

At 0815, the GBD automated weather observing system (AWOS) reported the wind from 050 degrees at 5 knots, visibility 1 1/2 statute miles, sky overcast at 400 feet, temperature minus 5 degrees Celsius, dew point minus 6 degrees Celsius, and an altimeter setting of 30.36 inches of Mercury.

At 0855, the GBD AWOS reported the wind from 040 degrees at 6 knots, visibility 2 statute miles, sky overcast at 500 feet, temperature minus 4 degrees Celsius, dew point minus 6 degrees Celsius, and an altimeter setting of 30.37 inches of Mercury.

A review of the PIREPs for Kansas revealed numerous reports of moderate rime icing over Kansas during the time of the accident flight. The moderate icing was reported at or below

6,000 feet msl.

No AIRMETs or significant meteorological information (SIGMETs) for icing or turbulence were valid for the route of flight at the time of the airplane's departure. An AIRMET for IFR was in effect for the area.

AIRPORT INFORMATION

The Great Bend Municipal Airport, GBD, is a public, non-towered airport located 4 miles west of Great Bend, Kansas, at 38 degrees 20.655 minutes north latitude, and 98 degrees, 51.551 minutes west longitude, at a surveyed elevation of 1,887 feet. The airport features two asphalt runways, Runway 17/35, which is 7,850 feet by 100 feet, and Runway 11/29, which is 4,698 feet by 75 feet.

Runway 35 was equipped with a 1,400 foot medium intensity approach lighting system with runway alignment indicator lights. The runway was also equipped with a 4-box, 3 degree glidepath visual approach slope indicator (VASI) located on the left side of the runway. Runway 35 was configured for precision and non-precision approaches, which included an ILS and distance measuring equipment (DME) approach.

The ILS approach to runway 35 included an inbound course with a magnetic heading of 352 degrees. The minimum descent altitude for the inbound section of the approach was 3,600 feet mean sea level (msl) when established on the localizer with a glideslope intercept at BABSY locator outer marker (LOM). The BABSY LOM was located at 6.6 nautical miles (nm) DME on the approach course. After crossing BABSY LOM on the inbound course, the decision height for the approach was 2,083 feet and was located at the middle marker (MM), which was 0.5 nm from the runway threshold. The distance from BABSY LOM to the missed approach point (MAP) was 4.6 nm. The published missed approach procedure instructed the pilot to "Climbing left turn to 3600 direct to BABSY LOM/I-GBD 6.6 DME and hold."

WRECKAGE AND IMPACT INFORMATION

The wreckage came to rest upright in a flat, harvested wheat field approximately 1/2 miles west-southwest of the airport at 38 degrees 20.415 minutes north latitude and 98 degrees 52.462 minutes west longitude, at an elevation of approximately 1,900 feet mean sea level (msl). The main wreckage came to rest on a measured magnetic heading of 240 degrees. Several fragmented pieces of the airplane were located within a 100-foot diameter of the main wreckage. Examination of the accident site revealed no ground impact marks except in the immediate vicinity of the wing leading edges, engines, and propeller assemblies. The leading edge surfaces of the vertical and horizontal stabilizers revealed 1/4 to 1/2 inches of clear ice. The upper fuselage antenna displayed 1/4 to 1/2 inches of clear ice. Local authorities reported observing a "layer of ice" on the leading edges of both wings when they arrived to the accident site.

The left wing leading edge was crushed upward and aft displaying accordion style crush damage. The rear wing spar was separated at the fuselage. The flap was bent aft and remained attached to the wing. The aileron was wrinkled and remained attached to the wing. The engine remained partially attached to the engine nacelle. The engine cowling was crushed upward and aft. The propeller assembly remained partially attached and the propeller blades displayed forward twist and leading edge damage. The left main landing gear was found in the extended position. The de-ice boot was crushed around the wing leading edge.

The right wing leading edge was crushed upward and aft displaying accordion style crush damage. The main wing spar, outboard of the engine, was bent aft, and the rear wing spar was separated outboard of the engine. The flap was bent aft and the outboard attach fitting was separated. The aileron was bent and remained attached to the wing. The engine remained partially attached to the engine nacelle. The engine cowling was crushed upward and aft. The propeller assembly remained partially attached and the propeller hub was crushed. The propeller blades displayed forward twist and leading edge damage. The right main landing gear was found in the extended position. The de-ice boot was crushed around the wing leading edge.

The forward fuselage was crushed upward and aft. The windshield, cockpit, instrument panel and cabin were fragmented and destroyed. The fuselage floor was crushed upward. The nose landing gear was crushed upward into the forward fuselage floor. The cargo bags and loose packages came to rest near the forward section of the fuselage. No evidence of cargo shift prior to impact was noted. The empennage was bent and wrinkled forward of the horizontal stabilizer.

The left side of the horizontal stabilizer was intact and no visible damage was noted. The outboard 2 feet of the right side of the horizontal stabilizer was bent upward. The elevator remained attached and a wrinkle was noted approximately mid-span. The elevator trim was found in the neutral position. The left vertical stabilizer was intact and no visible damage was noted. The rudder and rudder trim surfaces remained attached. The lower section of the right vertical stabilizer was crushed upward and to the inboard. The rudder and rudder trim surfaces remained attached. Both rudder trims were found in the neutral positions.

Flight control continuity was established to all flight control surfaces. Functional testing of the de-ice systems could not be accomplished due to damage.

Examination of the engine control quadrant revealed the engine throttles and propeller controls were in the full forward position. The manifold heat levers were in the forward position. The flap selector was in the 30 degrees position. The right engine tachometer indicated 2,300 RPMs and the left engine tachometer indicated 1,400 RPMs. The left control yoke was separated. The left seat belt and shoulder restraint was cut by rescue personnel, and the right seat restraint was secured.

PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Barton County Coroner's Office, Hays, Kansas, on February 9, 2007. The body of the pilot was received with a leather flight jacket and upper long underwear with a hood.

Specimens for the toxicological tests were taken from the pilot during the autopsy. The FAA's Civil Aeromedical Institute (CAMI) examined the specimens. The tests revealed the presence of fluoxetine and norfluoxetine in the pilot's blood and liver. The toxicological tests were negative for carbon monoxide, cyanide, and ethanol.

A review of the pilot's FAA medical records indicated that the pilot had reported a psychological condition, but had not reported taking any medication. CAMI's manager reported that "fluoxetine and it's metabolite norfluoxetine are indications that this pilot was taking Prozac." Fluoxetine is an antidepressant of the selective serotonin reuptake inhibitor

(SSRI) class. According to FAA, the use of a psychotropic drug is disqualifying for aeromedical certification purposes. This includes all sedatives, tranquilizers, antipsychotic drugs, antidepressant drugs (including SSRI's), analeptics, anxiolytics, and hallucinogens.

ADDITIONAL INFORMATION

Parties to the investigation included the FAA Flight Standards District Office, Wichita, Kansas, and the Hawker Beechcraft Corporation, Wichita, Kansas.

The airplane wreckage was released to the owner's representative.

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	**Age:**	34, Female
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):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With Waivers/Limitations	**Last FAA Medical Exam:**	10/01/2006
Occupational Pilot:		**Last Flight Review or Equivalent:**	12/01/2006
Flight Time:	3250 hours (Total, all aircraft), 125 hours (Total, this make and model), 2300 hours (Pilot In Command, all aircraft), 125 hours (Last 90 days, all aircraft), 60 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N45GM
Model/Series:	H-18	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	BA-717
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	11/01/2006, Annual	**Certified Max Gross Wt.:**	9700 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	7702 Hours as of last inspection	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	R-985-AN-14B
Registered Owner:	William Chase	**Rated Power:**	450 hp
Operator:	BYGONE AVIATION LLC	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	B3GA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	GBD, 1887 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	0855 CST	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Thin Overcast / 500 ft agl	**Visibility**	2 Miles
Lowest Ceiling:	Overcast / 500 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	40°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.37 inches Hg	**Temperature/Dew Point:**	-4°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	WICHITA, KS (ICT)	**Type of Flight Plan Filed:**	IFR
Destination:	GREAT BEND, KS (GBD)	**Type of Clearance:**	IFR
Departure Time:	0815 CST	**Type of Airspace:**	

Airport Information

Airport:	GREAT BEND MUNI (GBD)	**Runway Surface Type:**	
Airport Elevation:	1887 ft	**Runway Surface Condition:**	
Runway Used:	NA	**IFR Approach:**	ILS
Runway Length/Width:		**VFR Approach/Landing:**	Go Around

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:**	38.335278, -98.868611

Administrative Information

Investigator In Charge (IIC):	Aaron M Sauer	**Report Date:**	12/20/2007
Additional Participating Persons:	Verle R Engle; Federal Aviation Administration; Wichita, KS Mike J Gibbons; Hawker Beechcraft Corporation; Wichita, KS		
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/.		