Aviation Investigation Final Report

Location:	MOORHEAD, Minnesota	**Accident Number:**	CHI00FA080
Date & Time:	February 24, 2000, 11:03 Local	**Registration:**	N7736R
Aircraft:	Beech 95-B55	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation		

Analysis

The twin engine airplane was destroyed on impact with level terrain while executing a missed approach. During a VOR-A approach, the pilot descended 400 feet below the minimum descent altitude and the air traffic controller advised him to check altitude. After declaring a missed approach, ATC issued, and the pilot acknowledged, two vectors, after which radar and radio contact were lost. At one point, the pilot is advised and acknowledged that the runway visual range at a nearby airport is 3,000 feet. The destination airport had an overcast ceiling of 300 feet agl and 1-1/2 mile visibility about 20 minutes before the accident, and a 100 foot overcast ceiling and 1/2 mile visibility about 20 minutes after the accident. Radar data records the aircraft at an altitude of 2,100 feet msl and 4 seconds later records the altitude as 1,600 feet msl. The pilot received his multiengine airplane rating 2 months prior to the accident and had logged 25 hours in multiengine airplanes, 23 hours in the accident airplane, 11.4 hours in the accident airplane as pilot-in-command, and 7.8 hours simulated instrument time in the accident airplane. No anomalies were found with respect to the aircraft that could be associated with a preexisting condition.

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. Factors to the accident were, the pilot's improper decision to attempt the approach in weather conditions below the approach/landing minimums, the weather, the pilot's lack of multiengine instrument experience, and spatial disorientation by the pilot.

Findings

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

Findings
1. (F) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
2. (F) LACK OF EXPERIENCE - PILOT IN COMMAND
3. MINIMUM DESCENT ALTITUDE - NOT MAINTAINED - PILOT IN COMMAND
4. (F) WEATHER CONDITION - BELOW APPROACH/LANDING MINIMUMS
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
6. (F) SPATIAL DISORIENTATION - PILOT IN COMMAND

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

Factual Information

HISTORY OF FLIGHT

On February 24, 2000, at 1103 central standard time, a Beech 95-B55, N7736R, piloted by an instrument rated commercial pilot, was destroyed when it impacted level terrain near Moorhead, Minnesota. The 14 CFR Part 91 business flight was operating on an instrument flight rules (IFR) flight plan. Instrument meteorological conditions prevailed at the time of the accident. The pilot and the two passengers were fatally injured. The flight originated from the Boone Municipal Airport, Boone, Iowa, at 0910, and was en route to the Moorhead Municipal Airport (JKJ), Moorhead, Minnesota.

The pilot was in contact with air traffic control (ATC) during the flight to JKJ. The pilot requested and was subsequently cleared for the VOR-A approach into JKJ. The pilot then advised ATC that he would be executing the missed approach. ATC issued the pilot vectors for the ILS 17 approach at the Hector International Airport (FAR), Fargo, North Dakota. After the pilot had acknowledged the first two vectors issued, radar and radio contact were lost.

The following is a summary of communications between ATC and the pilot of N7736R. All times listed are central standard time. The full transcript of these communications is appended to this report. "N7736R" denotes transmissions made by the accident aircraft. "ER" denotes transmissions made by the Fargo Air Traffic Control Tower Approach Control, East Radar position.

1042:12 N7736R fargo approach baron seven seven three six romeo's with ya level at six

1042:17 ER baron seven seven three six romeo fargo approach proceed direct to the v o r expect vectors for the v o r alpha approach at the moorhead airport maintain six thousand fargo altimeter two niner eight seven

1042:27 N7736R two niner eight seven and direct the v o r thanks

1042:49 N7736R is there anybody ah shot the v o r approach into moorhead

1042:53 ER i've had nobody only into fargo

1042:56 N7736R okay doke thanks

1043:00 ER and at fargo we're showing overcast ceilings three hundred one mile visibility

1043:06 N7736R okay what are you landing on

1043:08 ER runway one seven

1043:10 N7736R okay thanks

1043:12 ER winds are currently one three zero at eight

1043:16 N7736R (unintelligible)

1047:04 N7736R do you mind if three six romeo goes a little bit west of the v o r and ah intersects and comes on in

1047:13 ER baron three six romeo that's fine say heading

1047:16 N7736R ah three zero zero

1047:19 ER baron three six romeo roger heading three zero zero vectors for the v o r alpha approach descend and maintain three thousand one hundred and just to let you know the r v r at fargo is down to three thousand

1047:31 N7736R okay thanks

1047:34 N7736R and that was down to thirty one hundred right

1047:37 ER baron three six romeo affirmative

1049:24 ER baron three six romeo turn right heading three two five

1049:28 N7736R right three two five

1050:49 ER baron three six romeo turn right heading three five zero descend and maintain two thousand seven hundred

1050:54 N7736R three five zero down to twenty seven thanks

1052:04 ER baron three six romeo six miles from the v o r turn right heading zero three zero maintain two thousand seven hundred until established on a published portion of the approach cleared v o r alpha approach at moorhead airport

1052:15 N7736R three six romeo ah zero three zero cleared for the approach thanks

1055:41 ER baron three six romeo radar service terminated frequency change approved report cancellation of your i f r with me in the air or princeton flight service on the ground

1055:50 N7736R three six romeo will do and i don't know that we're going to get in

1055:54 ER bonanza three six romeo roger check your altitude

1055:59 N7736R yeah ah three six romeo we're heading back up missed approach

1056:03 ER bonanza three six romeo roger climb and maintain four thousand fly heading zero four zero

1056:11 N7736R heading zero four zero thanks

1056:16 ER baron three six romeo continue the right turn heading zero niner zero vector around the antenna

1056:45 ER baron three six romeo heading zero niner zero vectors i 1 s runway one seven final approach course maintain four thousand

1056:55 N7736R three six romeo

1056:58 ER baron three six romeo did you want to try for the i l s at fargo

1057:16 ER baron three six romeo approach

1057:32 ER baron seven seven three six romeo fargo

No further radio transmission was received from N7736R.

Radar data for the accident aircraft from 10:52:25 to 10:57:40 cst was plotted on the approach plate for the VOR-A approach at JKJ. This plot and the certified radar data are appended to this report. The data shows that, at 10:56:10, the aircraft descended to an altitude of 1,200 feet msl. The minimum descent altitude listed on the VOR-A approach plate for JKJ is 1,600 feet msl. At 10:56:29 the aircraft altitude was 1,300 feet msl and ground speed was 131 knots.

The next recorded altitude was 2,100 feet msl at 10:56:49 and ground speed was 78 knots. Four seconds later, at 10:56:53, the altitude was recorded to be 1,600 feet msl with a ground speed of 84 knots.

PERSONEL INFORMATION

The pilot was born on December 14, 1939, held a commercial pilot certificate issued on December 31, 1999, with single engine land, multiengine land, and instrument airplane ratings. The pilots second class aviation medical was performed February 8, 2000.

According to the pilots "Airman Certificate and/or Rating Application" dated December 30, 1999, the pilot had accumulated 5,700 total hours of flight time, 120 hours of instruction received, 5,580 hours as pilot in command, 600 hours of instrument time, and 800 hours of night flight time. The pilots logbook was found at the accident scene and entries show that the pilot had accumulated 25.5 hours in multiengine airplanes, 23 hours in the accident airplane, and 11.4 hours in the accident airplane as pilot in command. Of the hours listed in the logbook, 7.8 hours are recorded as simulated instrument time in the accident aircraft.

AIRCRAFT INFORMATION

The airplane was a Beech model 95-B55, serial number TC-1173. According to the aircraft logbooks, the airplane had accumulated 3,530.10 hours time in service as of the last annual inspection dated June 10, 1999.

The aircraft was powered by two Continental IO-520E2B engines that each produced 285 horsepower. According to the aircraft logbooks, the engines were installed new on the aircraft on September 25, 1974 under the provisions of a Supplemental Type Certificate. As of the last annual inspection, the left engine had accumulated 1,463.10 total hours time in service since installation and the logbooks did not record a major overhaul since the date of installation. As of the last annual inspection, the right engine had accumulated 1,463.10 total hours time in service since installation and an entry in the logbook shows that a major overhaul was performed on February 15, 1997 at a total engine time of 1280.8 hours.

METEOROLOGICAL INFORMATION

According to a report issued to the investigator in-charge by the Fargo Air Traffic Control Tower (ATCT), the pilot contacted the Fort Dodge, Iowa Automated Flight Service Station (AFSS) by telephone on 4 separate occasions on the date of the accident. During one of the telephone calls, at 0733, the pilot received a standard preflight pilot brief and filed an IFR flight plan for a flight from Boone, Iowa (BNW) to Moorhead, Minnesota (JKJ).

At 1039, the automated weather observing system (AWOS) located at JKJ, approximately 6 miles and 60 degrees magnetic from the accident site, was reporting: wind 120 degrees magnetic at 4 knots (kt); visibility 1 1/2 statute miles (sm); fog; overcast ceiling at 300 feet

above ground level (agl); temperature 37 degrees F; dewpoint 37 degrees F; altimeter setting 29.85 inches of mercury (inHg).

At 1117, the AWOS at JKJ reported: wind 130 degrees magnetic at 8 kt; visibility 1/4 sm; fog; overcast ceiling at 100 feet agl; temperature 37 degrees F; altimeter setting 29.85 inHg. The dewpoint for the 1117 report was blank.

At 1053, the Fargo, North Dakota AWOS, located 9 miles and 346 degrees magnetic from the accident site, was reporting: wind 150 degrees magnetic at 6 knots; visibility 1/2 sm; mist; overcast ceiling at 100 feet agl; temperature 40 degrees F; dewpoint 37 degrees F; altimeter setting 29.86 inHg.

At 1106, the Fargo, North Dakota AWOS was reporting: wind 150 degrees magnetic at 7 knots; visibility 1/2 sm; mist; fog; overcast ceiling at 100 feet agl; temperature 40 degrees F; dewpoint 37 degrees F; altimeter setting 29.86 inHg.

WRECKAGE AND IMPACT INFORMATION

The aircraft impacted a level open farm field about 6 miles southwest of the Moorhead Municipal Airport, Moorhead, Minnesota. The wreckage was distributed in a fan shaped pattern extending about 350 feet on a northerly heading.

Control system continuity was verified at the tail cone. Due to the extent of the damage to the airframe, control system continuity to the cockpit could not be verified. Aileron system continuity could not be verified due to the extent of damage. All control cable breaks examined exhibited a "horsehaired" appearance consistent with overload failure. The left elevator trim tab actuator showed a tab neutral position. The right elevator trim tab actuator showed a 4-degree tab down position. The rudder trim tab actuator showed an off scale tab left position. The aileron trim tab actuator, located in the left wing, showed a 6.5-degree tab up position. The wing flaps and landing gear were determined to be in the up positions. Both fuel selector valves were determined to be set for the main fuel tanks. Both fuel selector valves were found to contain a bluish colored fuel consistent with aviation gasoline. A bluish colored liquid consistent with aviation gasoline was found in one engine gascolator. No anomalies were detected with respect to the airframe that could be associated with a preexisting condition.

The left engine case was shattered. The top and bottom portions of the case were separated. The crankshaft was separated aft of the number 6 connecting rod journal. The fuel pump was the only accessory that remained attached to the engine. The oil screen was examined and no anomalies were noted. The fuel pump rotated freely and the fuel pump drive was intact. The number 1, 2, and 4 cylinder bottom spark plugs were removed and no anomalies were detected.

The right engine accessories were separated from the engine with the exception of the fuel

pump and propeller governor. The number 1 and 5 cylinder heads were partially separated from the cylinder. The right side cylinders were found intact. The engine oil sump was destroyed and the front of the case was shattered. The oil screen was examined and no anomalies were noted. The fuel pump rotated freely and the fuel pump drive was intact. The number 1, 2, 4, 5, and 6 cylinder upper spark plugs were removed and no anomalies were detected.

Both vacuum pumps were located and disassembled. The vacuum pump drives were found intact and no anomalies were detected with respect to the vacuum pumps. The vacuum system hoses were destroyed.

The aircraft electric turn coordinator was disassembled and the gyro was found to have evidence of rotational scoring.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed at the Dakota Heartland Health System, Fargo, North Dakota.

A forensic toxicology was performed by the Federal Aviation Administration. The results were negative for drugs and ethanol.

ADDITIONAL INFORMATION

Parties to the investigation were: Raytheon Aircraft Company, Wichita, Kansas; Teledyne Continental Motors, Mobile, Alabama; National Air Traffic Controllers Association, Washington, DC; Federal Aviation Administration Flight Standards District Office, Minneapolis, Minnesota.

The wreckage was released to a representative of the Moorhead Municipal Airport on February 26, 2000. The aircraft logbooks were released to a representative of the insurance company on October 18, 2000.

Pilot Information

Certificate:	Commercial	**Age:**	60,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	February 8, 2000
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	5713 hours (Total, all aircraft), 23 hours (Total, this make and model), 5593 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N7736R
Model/Series:	95-B55 95-B55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TC-1173
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	June 10, 1999 Annual	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520E2B
Registered Owner:	LARRY STOTTS	**Rated Power:**	285 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	JKJ ,917 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	11:17 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Unknown	**Visibility**	0.25 miles
Lowest Ceiling:	Overcast / 100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	130°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	3°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	BOONE , IA (BNW)	**Type of Flight Plan Filed:**	IFR
Destination:	(JKJ)	**Type of Clearance:**	IFR
Departure Time:	09:10 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	MOOREHEAD MUNICIPAL ARPT JKJ	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	Circling;VOR
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	46.859134,-96.749931(est)

Administrative Information

Investigator In Charge (IIC):	Brannen, John
Additional Participating Persons:	BARRY JOHNSON; MINNEAPOLIS , MN DARRIN GAINES; NORTH CANTON , OH JOHN KENT; SEAGOVILLE , TX STUART BOTHWELL; WICHITA , KS
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Investigation Class:	Class
Note:	
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