Aviation Investigation Final Report

Location:	BOWMAN, North Dakota	**Accident Number:**	CHI01LA221
Date & Time:	July 20, 2001, 23:09 Local	**Registration:**	N7382Y
Aircraft:	Piper PA-30	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	2 None
Flight Conducted Under:	Part 91: General aviation - Air drop		

Analysis

The pilot said they were dispatched on a routine cloud-seeding mission at 2250. All flight operations through takeoff were normal. The pilot said that after passing through 50 feet agl, the airplane would not climb. The pilot said he verified power on both engines and airspeed of 120 mph. He brought the gear up and the climb performance improved slightly. The pilot said, "The maximum altitude achieved was just below 3,100 feet msl (100 feet agl), as the rapidly increasing downdrafts from the invisible microburst soon overpowered any climb performance, and quickly pushed the aircraft downward as the VSI (vertical speed indicator) indication transitioned from slightly positive to 150+ fpm (feet per minute) negative." The pilot said the airplane's engines were at maximum power when they struck a tree approximately 1 mile from the departure end of the runway. The pilot said he pitched the nose up in preparation for the ground impact. The airplane broke free of the tree. The pilot said he leveled the wings, lowered the nose slightly to keep his speed up, and reduced the throttles to idle. The airplane touched down about 3 to 5 seconds after their collision with the tree. The pilot said that 1 minute after the crash, heavy rain from a thunderstorm occurred. An examination of the airplane revealed no anomalies. At 2253, the weather reported at Hettinger, North Dakota (HEI), 34 miles east of BPP, was few clouds at 8,000 feet agl, a broken ceiling of 12,000 feet agl, 10 miles visibility with light rain, winds 100 degrees at 9 knots, temperature 74 degrees Fahrenheit (F), dew point 68 degrees F, altimeter 29.80 inches of Mercury, and remarks, lighting in the distance west and northwest, rain began at 2245. At 2301, the weather reported at HEI was scattered clouds at 9,000 feet agl, a broken ceiling of 12,000 feet agl, 10 miles visibility with light thunderstorms and rain, winds 330 variable 030 at 8 knots, and remarks, lighting in the distance west to north, thunderstorms began at 2255. At 2322, the weather reported at HEI was 3,500 scattered, 10,000 broken, 12,000 overcast, 10 miles visibility with light thunderstorms and rain, winds 030 degrees at 32 knots, gusts to 41 knots, and remarks, peak wind 030 degrees at 41 knots recorded at 2317, wind shift at 2302, lightning in the distance all quadrants.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Altitude/clearance not obtained by the pilot during the initial climb. Factors relating to the accident were attaining the proper climb rate not being possible, the microburst, the dark night, and the tree.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: CLIMB

Findings
1. (C) ALTITUDE/CLEARANCE - NOT OBTAINED - PILOT IN COMMAND
2. (F) WEATHER CONDITION - MICROBURST/DRY
3. (F) PROPER CLIMB RATE - NOT POSSIBLE
4. (F) OBJECT - TREE(S)
5. MANEUVER TO AVOID OBSTRUCTIONS - ATTEMPTED - PILOT IN COMMAND
6. (F) LIGHT CONDITION - DARK NIGHT

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

Factual Information

On July 20, 2001, at 2309 mountain daylight time, a Piper PA-30, N7382Y, operated by a commercial pilot, sustained substantial damage when the airplane struck a tree and impacted terrain 1 1/8 miles north of the Bowman Municipal Airport (BPP), Bowman, North Dakota, during initial climb after take off. Visual meteorological conditions prevailed at the time of the accident. The cloud seeding flight was being conducted under the provisions of 14 CFR Part 91 without a flight plan. The pilot and copilot reported no injuries. The local flight was originating at the time of the accident.

In his written statement, the pilot said they were dispatched on a routine cloud-seeding mission at 2250. All flight operations through takeoff were normal. The pilot said that after passing through 50 feet above ground level (agl), the airplane would not climb. The pilot said he verified power on both engines and airspeed of 120 miles per hour (mph). He brought the gear up and the climb performance improved slightly. The pilot said, "The maximum altitude achieved was just below 3,100 feet MSL (mean sea level) (100 feet AGL), as the rapidly increasing downdrafts from the invisible microburst soon overpowered any climb performance, and quickly pushed the aircraft downward as the VSI (vertical speed indicator) indication transitioned from slightly positive to 150+ fpm (feet per minute) negative." The pilot said the airplane's engines were at maximum power when they struck a tree approximately 1 mile from the departure end of the runway. The pilot said he pitched the nose up in preparation for the ground impact. The airplane broke free of the tree. The pilot said he leveled the wings, lowered the nose slightly to keep his speed up, and reduced the throttles to idle. The airplane touched down about 3 to 5 seconds after their collision with the tree. The pilot said that 1 minute after the crash, heavy rain from a thunderstorm occurred.

In his written statement, the copilot said that the pilot used the maximum power take off procedure to help with the cross wind from the right. At about 40 to 50 feet agl, the climb performance began to diminish. "Engines sounded normal and systems were all within normal range." The copilot said, "When we were out of usable runway, the gear were brought up. Drag from the retracting gear leveled us out momentarily, then our climb performance increased slightly, and we were gradually climbed to our highest altitude of approx.[imately] 3,080 feet [msl]." The copilot said he had scanned the instruments and verified the airspeed at 120 mph and the wings level. "Our climb performance was much less than normal; it was being degraded by downdraft and wind shear; possibly from a microburst. We were climbing only approx.[imately] 50 (fpm)." The copilot sensed they were in trouble. He said that they saw a flash of something in the left landing light. "The pilot pulled back in an attempt to avoid the object. We struck the tree in a slightly nose-high attitude and heard a very loud 'bang'. Immediately after the impact, I saw the airplane's banked, nose-high condition on the attitude indicator, and the airspeed decreasing below 100 mph. The copilot said he got on the controls to level the wings and push the nose over. "The pilot pulled the throttles to idle, because we

knew ground impact was inevitable." The copilot said, " When the airspeed was above 110 and increasing, I slowly began pulling back on the control wheel to slow the impact with the ground, which I knew must be soon."

A Federal Aviation Administration inspector examined the airplane at the accident site. The airplane was resting upright in a field. The nose of the airplane was bent and crushed to the right and aft. The bottom forward fuselage was crushed upward. The left and right wings were bent aft at the wing roots. The engine nacelles were bent downward. The bottom forward cowlings were crushed upward and aft. Both propeller blades showed torsional bending and chordwise scratches. Flight control continuity was confirmed. An examination of the engines, engine controls, and other airplane systems showed no anomalies.

At 2253, the weather reported at Hettinger, North Dakota (HEI), 34 miles east of BPP, was few clouds at 8,000 feet agl, a broken ceiling of 12,000 feet agl, 10 miles visibility with light rain, winds 100 degrees at 9 knots, temperature 75 degrees Fahrenheit (F), dew point 70 degrees F, altimeter 29.80 inches of Mercury, and remarks, lighting in the distance west and northwest, rain began at 2245. At 2301, the weather reported at HEI was scattered clouds at 9,000 feet agl, a broken ceiling of 12,000 feet agl, 10 miles visibility with light thunderstorms and rain, winds 330 variable 030 at 8 knots, and remarks, lighting in the distance west to north, thunderstorms began at 2255. At 2322, the weather reported at HEI was 3,500 scattered, 10,000 broken, 12,000 overcast, 10 miles visibility with light thunderstorms and rain, winds 030 degrees at 32 knots, gusts to 41 knots, and remarks, peak wind 030 degrees at 41 knots recorded at 2317, wind shift at 2302, lightning in the distance all quadrants.

Pilot Information

Certificate:	Commercial	**Age:**	22,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:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	September 11, 2000
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 18, 2001
Flight Time:	480 hours (Total, all aircraft), 51 hours (Total, this make and model), 370 hours (Pilot In Command, all aircraft), 63 hours (Last 90 days, all aircraft), 33 hours (Last 30 days, all aircraft)		

Co-pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	27,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	No
Medical Certification:	Class 1 None	**Last FAA Medical Exam:**	July 12, 2001
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 23, 2001
Flight Time:	422 hours (Total, all aircraft), 43 hours (Total, this make and model), 174 hours (Pilot In Command, all aircraft), 68 hours (Last 90 days, all aircraft), 48 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7382Y
Model/Series:	PA-30	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Restricted (Special)	**Serial Number:**	30-436
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 31, 2001 Annual	**Certified Max Gross Wt.:**	3725 lbs
Time Since Last Inspection:	54 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	5712 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	IO-320-B1A
Registered Owner:	WEATHER MODIFICATION INC	**Rated Power:**	160 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:	HEI,2705 ft msl	**Distance from Accident Site:**	34 Nautical Miles
Observation Time:	22:53 Local	**Direction from Accident Site:**	97°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	24°C / 21°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	BOWMAN, ND (BOD)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	11:00 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	BOWMAN MUNICIPAL AIRPORT BPP	**Runway Surface Type:**	Asphalt
Airport Elevation:	2958 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	29	**IFR Approach:**	None
Runway Length/Width:	4800 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 None	**Latitude, Longitude:**	46.179912,-103.400505(est)

Administrative Information

Investigator In Charge (IIC):	Bowling, David
Additional Participating Persons:	JOHN G VOLD; FEDERAL AVIATION ADMINISTRATION; FARGO, ND
Original Publish Date:	June 3, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52826