



National Transportation Safety Board Aviation Accident Final Report

Location:	ARDOCH, ND	Accident Number:	CHI95FA285
Date & Time:	08/18/1995, 1642 CDT	Registration:	N85115
Aircraft:	Piper PA-31-350	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Business		

Analysis

After deplaning passengers at Thief River Falls after an air taxi flight, the pilot was reportedly anxious to return to his base in Minot to prepare for another trip the following day, and left for the return trip within a few minutes after his arrival at Thief River Falls. There was no record of a weather briefing. Observations of Doppler radar by the University of North Dakota, and a Safety Board meteorological study, show that the airplane had penetrated a thunderstorm when control was lost. The airplane had encountered the center of a microburst, and was located directly under the downdraft.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot-in-command's continuing flight into adverse weather. Factors were the pilot-in-command's failure to obtain a weather observation and the adverse weather.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CRUISE

Findings

1. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
2. (F) WEATHER CONDITION - THUNDERSTORM
3. (F) WEATHER CONDITION - MICROBURST/WET
4. (C) FLIGHT INTO ADVERSE WEATHER - CONTINUED - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT

Phase of Operation: CRUISE

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On August 18, 1995, at 1642 central daylight time, a Piper PA-31- 350, N85115, being operated by Pietsch Flying Service of Minot, North Dakota, was destroyed by impact with trees, terrain, and a post impact fire, four miles east-southeast of Ardoch, North Dakota, during an encounter with weather. The pilot and a pilot rated passenger sustained fatal injuries. The positioning 14 CFR Part 91 flight was operating in instrument meteorological conditions. No flight plan was on file. The flight departed Thief River Falls, Minnesota, about 1625, with the intended destination of Minot, North Dakota.

Investigators from the Federal Aviation Administration (FAA), Fargo Flight Standards District Office assisted in the investigation. They reported that they learned from talking to personnel at Pietsch Flying Service that the pilot had conducted a 14 CFR Part 135 operation prior to the accident flight and had deplaned passengers at Thief River Falls, Minnesota. They indicated that the pilot was anxious to return to his base of operations in Minot, North Dakota, to prepare for another trip to an air show the following day. They determined that he left Thief River Falls, Minnesota, for the return trip within a few minutes of his arrival there. The FAA investigators checked with FAA Flight Service and found no record of a weather briefing for the accident airplane around the time of the accident flight.

The owner of the property where the airplane accident occurred stated that although he did not witness the accident, he did live nearby and at the time of the accident there was a thunderstorm with heavy rain showers occurring.

OTHER DAMAGE

Trees were damaged during the impact and post impact fire.

PERSONAL INFORMATION

The pilot-in-command was born June 23, 1925. He was the holder of commercial and flight instructor certificates. He had accumulated 40,000 hours flight time, with 3,000 hours in this make and model of airplane. His most recent biennial flight review was three months prior to the accident. He was the holder of a second class medical certificate issued October 27, 1994.

The pilot rated passenger was born May 5, 1971. He was the holder of a commercial pilot certificate. He had accumulated 500 hours total flight experience with no previous time in make and model. He did not hold a multi-engine rating. His most recent biennial flight review was received when he successfully attained his commercial pilot's certificate three months prior to the accident. He was the holder of a second class medical certificate issued in December, 1994.

AIRCRAFT INFORMATION

The airplane was a Piper PA-31-350, N85115, serial number 31- 7405182. The airplane had a accumulated 8,814 hours total time. The most recent 100 hour inspection was conducted on August 14, 1995, 40 hours prior to the accident.

METEOROLOGICAL INFORMATION

Included as an addendum to this report are observations of Doppler radar by the University of North Dakota (UND) at Grand Forks, North Dakota, and a Meteorological Factual Report

prepared by the NTSB.

The UND report indicated "21:41:54Z (Time of crash) The strong cell that was located south of the crash site a minute earlier moved north and was located just east of the crash site at this time. The reflectivity values increased slightly over the past minute from 44-46 dBZ to 46-48 dBZ. Attenuation was still a problem due to moderate rain at the radar site."

"The velocity display indicated that the center of the microburst moved to the north approximately 1 mile over the past minute placing the center of the microburst just 1.4 miles east- southeast of the crash site. The microburst also increased in intensity from 16 to 22 meters per second from 36 to 49 miles per hours."

"In my opinion, based on Doppler radar information only, I feel that the aircraft had a head wind from the time it encountered the gust front until approximately 1/2 mile east of Interstate 29 at which point it encountered the center of the microburst and was located directly under the downdraft. The aircraft then experienced a tail wind component until the time of the crash. While all of this was going on the visibility was most likely 1/8 to 1/4 mile due to heavy rain."

WRECKAGE AND IMPACT INFORMATION

The aircraft fuselage was found upright on the west side of a crop field. The fuselage and wings had damage from impact and a post impact fire. A tree line to the east side of the field had tree top damage followed 210 feet to the west by a depression in the soft ground. At this point on the ground were slash marks on the left and right of the depression consistent with propeller strikes in the terrain. There was another ground scar 150 feet west of the first with a continuing mark on the ground terminating at the fuselage section at the west side of the field. The fuselage was lying on a heading of 015 degrees. The ground scar leading up to the fuselage was on a heading of 300 degrees.

The forward fuselage section sustained impact damage. The forward baggage area was crushed. The glareshield and the forward fuselage skin was opened exposing the back of the instrument panel and forward radio shelf. Both the pilot and co-pilot instrument panels were loose and had fire damage. All interior seats had been destroyed by fire. The upper fuselage skin had burned down to the bottom window line on both sides, from the windshield aft to the area of the aft fuselage bulkhead.

The left wing attach points suffered impact damage and had separated. The right wing forward attach points suffered impact and fire damage. Both wings suffered fire damage. The aileron bellcranks were found in place with control rods and cables. Both wing flaps and the landing gear were found retracted.

The left horizontal stabilizer and elevator showed minor impact damage. The right horizontal stabilizer had impact damage on the leading edge and was bent down about 45 degrees outboard of the elevator trim tab, locking the elevator in place. All elevator attach points were intact. The vertical stabilizer had impact damage to the left side aft of the de-ice boot. There was damage to the top of the vertical stabilizer consistent with tree strikes and one branch was found wedged between the rudder and vertical stabilizer. The rudder and attach points to the vertical stabilizer were intact.

The right engine was separated from the firewall and was found inverted, about 10 feet north of the firewall. The propeller and spinner remained attached to the engine. All three propeller blades were twisted, bent and loose. The cambered surfaces of each blade showed polishing.

The turbocharger remained attached to the mount, but the entire unit was impacted with mud. The left engine separated during the impact sequence and lay 100 feet to the west of the fuselage while the propeller was found approximately 250 feet to the southeast of the fuselage. The engine was resting upright. The turbocharger remained attached to the mount and bent to the right. The turbine was free to rotate. The propeller received damage to the leading edges of the propeller and the blades were bent and twisted. There was polishing and gouging of the cambered surfaces.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on both the pilot and pilot rated passenger by Pathology Associates, Ltd., University Station, Grand Forks, North Dakota, on August 19, 1995. No contributing pathological findings were reported in the post mortem examinations. Toxicology examination was performed on specimens from the pilot and were negative for drugs screened.

FIRE

A post impact fire destroyed the cabin and the rear cockpit section of the airplane.

ADDITIONAL DATA/INFORMATION

Parties to the investigation were the Federal Aviation Administration, Flight Standards District Office, Fargo, North Dakota; Piper Aircraft, Vero Beach, Florida; Lycoming, Williamsport, Pennsylvania.

The wreckage was released to a representative of the owner on August 22, 1995.

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	70, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	10/27/1994
Occupational Pilot:	Last Flight Review or Equivalent:		
Flight Time:	40000 hours (Total, all aircraft), 3000 hours (Total, this make and model), 200 hours (Last 90 days, all aircraft), 50 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N85115
Model/Series:	PA-31-350 PA-31-350	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	31-7405182
Landing Gear Type:	Retractable - Tricycle	Seats:	8
Date/Type of Last Inspection:	08/14/1995, 100 Hour	Certified Max Gross Wt.:	7000 lbs
Time Since Last Inspection:	40 Hours	Engines:	2 Reciprocating
Airframe Total Time:	8814 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	TSIO-540-J2BD
Registered Owner:	LWCR TRANSPORTATION, INC.	Rated Power:	350 hp
Operator:	PIETSCH FLYING SERVICE	Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	DWVA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	GFK, 844 ft msl	Distance from Accident Site:	15 Nautical Miles
Observation Time:	1650 CDT	Direction from Accident Site:	180°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	1 Miles
Lowest Ceiling:	Overcast / 1200 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	25 knots / 35 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	260°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	24° C / 22° C
Precipitation and Obscuration:			
Departure Point:	THIEF RVR FALLS, MN (TVF)	Type of Flight Plan Filed:	None
Destination:	MINOT, ND (MOT)	Type of Clearance:	None
Departure Time:	1625 CDT	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	STEPHEN A WILSON	Report Date:	05/09/1996
Additional Participating Persons:	ROBERT A HARRIS; FARGO, ND MIKE MC CLURE; VERO BEACH, FL GREGORY ERIKSON; WILLIAMSPORT, PA		
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 pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).