



National Transportation Safety Board Aviation Accident Final Report

Location:	HAYDEN, CO	Accident Number:	DEN99FA016
Date & Time:	10/28/1998, 0858 MST	Registration:	N35533
Aircraft:	Piper PA-31-350	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	1 Fatal
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The Part 135 cargo flight was approaching its destination on an IFR flight plan. The pilot had requested the ILS-DME approach to runway 10, but 2 minutes later, he changed his request to the VOR-B approach to runway 28. ARTCC cleared him for the approach to the non-towered airport. The pilot contacted the airport's Unicom, and requested that the ramp personnel be standing by with fuel and oxygen. The airplane was found 5.8 nm from the approach end of runway 28, at 7,900 feet. The approach minimums for the VOR-B was 7,900 feet, which the pilot could descend to at 8.7 nm. The VOR was located 285 degrees at 13.6 nm from the accident site, and the ILS-DME transmitter was located 285 degrees at 5.6 nm from the accident site. The airplane was equipped with a single DME display head, and it had a Nav 1/Nav 2 selector switch.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot not following instrument procedures and subsequently descended to minimums prematurely. Factors were the mountainous terrain and the falling snow.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: APPROACH - IAF TO FAF/OUTER MARKER (IFR)

Findings

1. (C) PROCEDURES/DIRECTIVES - NOT FOLLOWED - PILOT IN COMMAND
2. (C) DESCENT - PREMATURE - PILOT IN COMMAND
3. (F) TERRAIN CONDITION - MOUNTAINOUS/HILLY
4. (F) WEATHER CONDITION - SNOW

Factual Information

HISTORY OF FLIGHT

On October 28, 1998, approximately 0858 mountain standard time, a Piper PA-31-350, N35533, was destroyed following impact with terrain during an instrument approach to Hayden-Yampa Valley Airport, Hayden, Colorado. The instrument rated commercial pilot, the sole occupant in the airplane, was fatally injured. The airplane was operated by Sundance Air, Inc., of Denver, Colorado, under Title 14 CFR Part 135. Instrument meteorological conditions prevailed for the cross-country cargo flight which originated from Colorado Springs, Colorado, approximately 67 minutes before the accident. An IFR flight plan had been filed with the destination of Hayden, Colorado.

FAA records indicate that the pilot called Denver Automated Flight Service Station (AFSS) at 0606 and received a standard weather briefing for his flight from Colorado Springs, to Hayden, and to Rock Springs, Wyoming. At 0739, the pilot received his IFR clearance, and at 0751, he departed Colorado Springs for his flight to Hayden. According to FAA transcripts, Denver Air Route Traffic Control Center (ARTCC) cleared Barnacle 696 (N35533's call sign) to climb to 16,000 feet following departure.

As Barnacle 696 approached Hayden, the pilot requested the ILS-DME approach to runway 10 (see Aerodrome information/Aids to Navigation below). Two minutes later, at 0849, he called Denver ARTCC to change his request and asked for the VOR-B approach to runway 28. Denver ARTCC approved this request, and Barnacle 696 was cleared to descend to 12,000. At 0853, Barnacle 696 was cleared the approach. Two minutes later, he was told to contact Hayden CTAF.

According to an airport employee who was operating the Hayden Unicom, the pilot called at 0845 and requested airport advisories. The pilot called again at 0857 and requested ramp personnel be standing by with fuel and oxygen.

Airport personnel reported that the airplane failed to arrive and they subsequently notified local authorities. Search and rescue personnel located the airplane on Chavez Peak, at approximately 1230.

PERSONNEL INFORMATION

According to FAA records, the pilot received his commercial pilot certificate on May 25, 1994, and his flight instructor certificate on May 11, 1998. The pilot wrote on his last FAA medical application, dated November 3, 1997, that he had accumulated 1,411 hours of flight experience, and that he had flown 225 hours during the last 6 months.

The pilot's employer, Sundance Air, Inc., began training him in February 1998, and he completed his Part 135 qualification check ride on 04/23/98 (his employment start date). Company records indicate that the pilot had flown approximately 400 hours since his employment began.

AIRCRAFT INFORMATION

The airplane was a propeller-driven, cargo configured airplane, which was manufactured by the Piper Aircraft Company in 1979. It was certificated for a maximum gross takeoff weight of 7,000 pounds. The airplane was powered by two Textron Lycoming TIO-540-J2BD, six

cylinder, reciprocating, horizontally opposed, fuel injected, turbocharged engines which had a maximum takeoff rating of 350 horsepower. At the time of the last maintenance inspection, on October 9, 1998, the aircraft records indicated that the airframe had accumulated 12,411 hours.

The airplane's instrument panel was setup in such a way that the ILS and VOR displays were separate from the DME display. Only one DME display was provided with a selector switch that selected either Nav 1 or Nav 2 DME.

METEOROLOGICAL CONDITIONS

At 0856, the weather conditions at the Yampa Valley Airport (elevation 6,604 feet), 285 degrees 6 nm from the accident site (elevation 7,900 feet), were as follows: wind 280 degrees at 11 knots; visibility 5 statute miles; cloud condition 1,800 feet overcast; temperature 37 degrees Fahrenheit; dew point 36 degrees Fahrenheit; altimeter 30.05 inches of mercury. A witness at the airport reported that he believed that the weather conditions were worse (falling snow) to the south and east of the airport.

At approximately 1000, rescue personnel got within 300 feet of the airplane (but did not find it), and reported near zero visibility weather conditions with clouds and falling snow. The airplane was located approximately 3.5 hours later, when the weather conditions cleared.

AERODROME INFORMATION/AIDS TO NAVIGATION

The Yampa Valley Airport is uncontrolled with a Common Traffic Advisory Frequency (CTAF) of 123.0. The airport is serviced by a Very High Frequency Omnidirectional Radio (VOR) navigation antenna (CHE, 115.6 MHz) which is located 288 degrees at 5.4 nautical miles (nm) from the approach end of runway 28. The VOR antenna is co-located with a Distance Measuring Equipment (DME) signal, which will provides the distance in nm to the antenna. These two signals provide the necessary information for a pilot to fly the VOR DME-B instrument approach to runway 28 (see attached instrument approach plate). The minimum altitude that a pilot may fly on this instrument approach is 7,900 feet. If the pilot can't see the runway by 5.4 nm, he is instructed to execute a missed approach.

The Yampa Valley VOR DME-B instrument approach is designated a "B" approach because its gradient (545 feet per mile) is greater than the 400 feet per mile allowed in the Terminal Instrument Procedures (TERPS). Circle-To-Land criteria is utilized after the 400 feet per mile decent requirement is exceeded on a VOR non-precision instrument approach.

Runway 10 is serviced by an Instrument Landing System (ILS). This precision approach has its own dedicated DME signal which originates at the localizer antenna, located on the departure end of runway 10. If a pilot would fly over this localizer antenna, his ILS-DME would read "0," but, if at the same moment he would select the CHE VOR, his DME would read 5.4 nm.

WRECKAGE AND IMPACT INFORMATION

The airplane was found on a tree covered mountain (Chavez Peak, elevation 8,106 feet) approximately 5.8 nm from the approach end of runway 28 (N40 degrees 25 minutes 43.1 seconds, W107 degrees 05 minutes 35.5 seconds). Tree branches littered the ground on a heading of 285 degrees to the wreckage. A ground scar, wreckage debris, and scattered cargo, extended up-slope (approximately 45 degrees) for approximately 70 feet (see attached diagram). The elevation of the wreckage was determined to be 7,900 feet.

The empennage was separated from the fuselage just aft of the rear cabin door area. The

forward cabin section and cockpit area were fragmented by impact damage. The left wing separated from the fuselage and came to rest on top of the right wing. All the instrument panel components were destroyed, including the DME head and its Nav 1/Nav 2 selector switch.

All flight control surfaces were accounted for; control cable continuity could not be established due to impact damage. Both engine's crankshafts were rotated by hand, and thumb compression was observed on all six cylinders of each engine. Valve continuity was visually confirmed, and all accessory gears rotated on both engines. The turbocharger compressor blades were found undamaged and displayed coloration consistent with normal operation on both engines. Both turbocharger shafts rotated freely by hand.

The left engine's 3 propeller blades displayed leading edge gouging, chordwise striations across the cambered surface, and "S" bending. One of the blades separated from the propeller hub, and was located near the initial ground scar. The right 3 propeller blades remained attached to the hub, which was found separated from its crankshaft flange. The 3 propeller blades on the right engine also displayed leading edge gouging, chordwise striations across the cambered surface, and "S" bending.

All major components of the airplane were accounted for at the accident scene. There was no evidence of pre or postimpact fire. No preimpact engine or airframe anomalies, which might have affected the airplane's performance, were identified.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by Dr. Ben Galloway, a forensic pathologist, with the Routt County Coroner's Office, Steamboat Springs, Colorado, on October 29, 1998.

Toxicology tests were performed on the pilot by the FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma. According to CAMI's report (#9800299001), the pilot's carbon monoxide and cyanide tests were not performed due to lack of suitable specimens, and the volatiles that were identified were attributed to postmortem production. No drugs were detected in the liver fluid.

ADDITIONAL DATA

The airplane, including all components and logbooks, was released to a representative of the owner's insurance company on January 29, 1999.

Pilot Information

Certificate:	Commercial	Age:	35, 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):	Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	11/03/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	1800 hours (Total, all aircraft), 375 hours (Total, this make and model), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N35533
Model/Series:	PA-31-350 PA-31-350	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	31-8052047
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	10/09/1998, 100 Hour	Certified Max Gross Wt.:	7000 lbs
Time Since Last Inspection:		Engines:	2 Reciprocating
Airframe Total Time:	12411 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, aided in locating accident	Engine Model/Series:	TIO-540-J2BD
Registered Owner:	SUNDANCE AIR, INC.	Rated Power:	350 hp
Operator:	SUNDANCE AIR, INC.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	MGDA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	HDN, 6604 ft msl	Distance from Accident Site:	7 Nautical Miles
Observation Time:	0856 MST	Direction from Accident Site:	105°
Lowest Cloud Condition:	Thin Overcast / 1800 ft agl	Visibility	5 Miles
Lowest Ceiling:	Overcast / 1800 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	11 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	3° C / 2° C
Precipitation and Obscuration:			
Departure Point:	COLORADO SPRGS, CO (COS)	Type of Flight Plan Filed:	IFR
Destination:	, CO (HDN)	Type of Clearance:	IFR
Departure Time:	0751 MST	Type of Airspace:	Class G

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:	

Administrative Information

Investigator In Charge (IIC):	JAMES F STRUHSAKER	Report Date:	04/20/2000
Additional Participating Persons:	DALE W SHUEL; DENVER, CO		
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.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](#).