



National Transportation Safety Board Aviation Accident Final Report

Location:	DENVER, CO	Accident Number:	FTW95FA004
Date & Time:	10/01/1994, 1805 MDT	Registration:	N31YV
Aircraft:	BEECH 1900D	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Minor, 17 None

Flight Conducted Under: Part 135: Air Taxi & Commuter - Scheduled

Analysis

AS THE LEVEL 6 THUNDERSTORM PASSED OVER THE AIRPORT FROM NORTHWEST TO SOUTHEAST, THE CAPTAIN ELECTED NOT TO TAKE OFF BECAUSE OF THE FALLING HAIL. AFTER WAITING ABOUT 30 MINUTES, THE FLIGHT TOOK OFF ON RUNWAY 35L. THE CAPTAIN REQUESTED A RIGHT TURN, AND WAS ASSIGNED A HEADING OF 080 DEGREES AND CLEARED TO CLIMB TO 20,000 FEET. THE AIRPLANE ENTERED THE OVERCAST AND ENCOUNTERED 'LIGHT HAIL.' AS IT TURNED ONTO ITS ASSIGNED HEADING, THE AIRBORNE WEATHER RADAR INDICATED HEAVY PRECIPITATION AHEAD. A REQUEST WAS MADE FOR A TURN FURTHER RIGHT. SUDDENLY, THE RIGHT WINDSHIELD SHATTERED, SENDING GLASS PARTICLES INTO THE FIRST OFFICER'S EYES. THE AIRPLANE IMMEDIATELY DESCENDED TO VISUAL METEOROLOGICAL CONDITIONS, RETURNED TO THE AIRPORT, AND LANDED.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE CAPTAIN'S INACCURATE EVALUATION OF WEATHER CONDITIONS, AND HIS DECISION TO FLY INTO KNOWN ADVERSE WEATHER. A FACTOR WAS THE HAIL.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CLIMB - TO CRUISE

Findings

1. (C) WEATHER EVALUATION - INACCURATE - PILOT IN COMMAND
2. (C) FLIGHT INTO KNOWN ADVERSE WEATHER - INITIATED - PILOT IN COMMAND
3. (F) WEATHER CONDITION - HAIL

Occurrence #2: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: CLIMB - TO CRUISE

Findings

4. WINDOW, FLIGHT COMPARTMENT WINDOW/WINDSHIELD - DISINTEGRATED

Factual Information

HISTORY OF FLIGHT

On October 1, 1994, approximately 1805 mountain daylight time, a Beech 1900D, N31YV, was substantially damaged during an inflight encounter with adverse weather near Denver, Colorado. There were no injuries to the captain and 16 passengers, but the first officer sustained minor injuries. Instrument meteorological conditions prevailed.

The following is based on interviews with the captain and first officer, and the pilot/operator report. The airplane, flight 7658, operated by Mesa Airlines, Inc., d/b/a United Express, taxied to runway 35L at 1720, but was placed in the "penalty box" due to weather causing a traffic backlog. It began to rain heavily and several wind shear alerts were issued. When the flight was cleared to taxi onto the runway, the captain declined and decided to wait for better weather conditions. Hail began to fall and the right engine was shut down to conserve fuel. A Boeing 727, later identified as United Air Lines flight 898, took off at 1748 and turned to the left. Shortly thereafter, at 1750, the United pilot advised the control tower that traffic should avoid a westerly departure. The captain said the pilot sounded "thoroughly shaken." When weather conditions improved and the crew noted no precipitation echoes on the weather radar through various tilt angles, flight 7658 took off at 1759.

Because of the previous pilot report, the captain requested a right turn after departure. The flight was assigned a heading of 080 degrees and an altitude of 20,000 feet. The airplane entered the overcast and it began to rain, followed by "light hail." As the airplane was approaching 10,000 feet, the airborne weather radar indicated heavy precipitation ahead, and the crew requested a turn further to the right. The airplane then encountered heavy hail and the right windshield "exploded," sending glass particles into the first officer's eyes and temporarily blinding him. After telling air traffic control what had happened, the flight was cleared to land on any runway. The captain descended into visual meteorological conditions and landed on runway 26R.

METEOROLOGICAL INFORMATION

The captain said that he personally obtained a weather briefing via computer prior to departure. The reports indicated that visual meteorological conditions prevailed in Denver, Amarillo, and along the route. He said the weather reports were not "real time," but were probably at least one hour or more old. Asked why his dispatcher did not provide him with more timely weather information, the captain replied that his company operated under Federal Aviation Regulations Part 135 and did not have a dispatch office. Obtaining weather reports and filing flight plans was done by the flight crew.

Weather and air traffic control studies were made by the Safety Board's Operational Factors Division. These reports are attached as exhibits.

FLIGHT RECORDERS

Both cockpit voice and flight data recorders were removed from the airplane and were examined by the Safety Board's Engineering and Computer Services Division. No extraordinary data was retrieved from the flight data recorder. The ATC communications channel on the cockpit voice recorder was found to have been wired incorrectly when it was installed by the airplane manufacturer. No cockpit communications transcript was made.

Pilot Information

Certificate:	Airline Transport; 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:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	08/24/1994
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	6921 hours (Total, all aircraft), 1859 hours (Total, this make and model), 4786 hours (Pilot In Command, all aircraft), 266 hours (Last 90 days, all aircraft), 96 hours (Last 30 days, all aircraft), 8 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	Registration:	N31YV
Model/Series:	1900D 1900D	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Transport	Serial Number:	UE-31
Landing Gear Type:	Retractable - Tricycle	Seats:	19
Date/Type of Last Inspection:	09/26/1994, Continuous Airworthiness	Certified Max Gross Wt.:	14000 lbs
Time Since Last Inspection:	44 Hours	Engines:	2 Turbo Prop
Airframe Total Time:	4723 Hours	Engine Manufacturer:	P&W
ELT:	Installed, not activated	Engine Model/Series:	PT6A-67D
Registered Owner:	MESA AIRLINES, INC.	Rated Power:	
Operator:	MESA AIRLINES, INC.	Operating Certificate(s) Held:	Commuter Air Carrier (135)
Operator Does Business As:	UNITED EXPRESS	Operator Designator Code:	MASA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	DEN, 5333 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	1750 MDT	Direction from Accident Site:	280°
Lowest Cloud Condition:	Unknown / 0 ft agl	Visibility	1 Miles
Lowest Ceiling:	Overcast / 1300 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	23 knots / 35 knots	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	13° C / 12° C
Precipitation and Obscuration:			
Departure Point:	, CO (DEN)	Type of Flight Plan Filed:	IFR
Destination:	AMARILLO, TX (AMA)	Type of Clearance:	IFR
Departure Time:	1757 MDT	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 Minor, 1 None	Aircraft Damage:	Substantial
Passenger Injuries:	16 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Minor, 17 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ARNOLD W SCOTT,	Report Date:	05/18/1995
Additional Participating Persons:	ROBERT J LOFLIN; 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 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](#).