Aviation Investigation Final Report

Location:	MARINE CITY, Michigan	**Accident Number:**	CHI99MA269
Date & Time:	July 31, 1999, 08:25 Local	**Registration:**	N518DM
Aircraft:	Beech 65-A90	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	10 Fatal
Flight Conducted Under:	Part 91: General aviation - Skydiving		

Analysis

The airplane impacted the terrain approximately 2,065 feet south of the departure end of runway 22. Damage to the cockpit section of the wreckage indicated a nose down crush angle of approximately 80 degrees. The wreckage path was on a 208 degree heading, and the distance from the initial impact to the location of the empennage was about 142 feet. The cockpit and cabin were destroyed by post impact fire. Examination of the engines and propellers revealed no preexisting failures or conditions that would have prevented normal operation. The engines exhibited indications of rotation, and the witness marks on both sets of propellers were consistent with the propellers operating in the governing range at impact. Control continuity was established from the right aileron, elevator, and rudder. Witnesses reported the airplane seem to be operating normally during taxi and takeoff, but that it entered a steep left bank after clearing a 100 foot powerline located about 1,800 feet from the departure end of runway 22. After entering the steep left turn, the nose of the airplane dropped and the airplane impacted the ground. There was no evidence in the airplane's maintenance records of any annual maintenance inspection since August, 1997, although an airframe and powerplant mechanic reported that he had completed an inspection on June 30, 1999. There was no record in the airplane's mainteance records of compliance with five airworthiness directives applicable to the airplane.

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 adequate airspeed, which resulted in a stall, inflight loss of contol, and collision with the ground.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
2. (C) STALL - INADVERTENT - PILOT IN COMMAND
3. MAINTENANCE,ANNUAL INSPECTION - NOT PERFORMED - COMPANY/OPERATOR MANAGEMENT
4. MAINTENANCE,COMPLIANCE WITH AD - NOT COMPLIED WITH - COMPANY/OPERATOR MANAGEMENT

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

Findings
5. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On July 31, 1999, about 0825 eastern daylight time, a Beech Model 65-A90, N518DM, operated by the Parahawks Skydiving Center, impacted the ground during climbout from runway 22 at the Marine City Airport (76G), Marine City, Michigan. (All times in this report are eastern daylight time, based on a 24-hour clock.) The pilot and nine parachutists who were on board received fatal injuries, and the airplane was destroyed by impact forces and a postimpact fire. The local skydiving flight, which was operating under 14 Code of Federal Regulations (CFR) Part 91, was not on a flight plan, and visual meteorological conditions existed at the time of the accident.

During post accident interviews, a witness, who normally refueled the airplane during skydiving operations, reported that he saw the pilot about 0745 to 0800 near the hangar, and that the pilot looked fine and alert. He reported that before the airplane taxied for departure, he observed both engines running and rechecked the auxiliary power unit door to verify that it was closed. He stated that he then gave the pilot a thumbs-up signal and that the pilot returned the thumbs-up signal and smiled. The witness reported that the airplane seemed normal as he watched it taxi for takeoff.

Another witness, a parachutist who was standing near the windsock at the skydiving sandpit which is located north of runway 22, stated that he observed the airplane during its takeoff roll and climb. He reported seeing someone sitting in the copilot seat when the airplane was halfway down the runway. He stated that after the airplane departed the runway, it turned to the right and went behind trees. The witness stated that he then saw the airplane climb above the trees flying wings level for about 3 seconds. He reported that the airplane then entered a steep left bank about 200 to 250 feet above ground level (agl). The airplane continued in a steep left bank for about 5 seconds until it impacted the ground. The witness stated that he could see the entire top of the airplane before impact. The witness reported that he had never before seen the pilot turn left during climbout and that it appeared that the pilot was attempting to return to the airport.

Another witness, a parachutist who was standing about 50 yards from runway 22 and due south of the skydiving sandpit, reported that he also saw the airplane during its takeoff roll. He reported that the airplane was traveling about 45 mph when it passed the hangar and that it rotated off runway 22 approximately halfway down the runway. He stated that after rotation, the landing gear came up, the flaps were raised, and the airplane accelerated to about 110 to 120 knots. He reported that the airplane did not climb higher than 10 to 20 feet agl until it passed the end of the runway. At that point, the airplane banked about 15 to 20 degrees to the right, making a turn of about 90 degrees. The witness reported that the airplane then went

behind trees. Shortly after, he observed the airplane in a steep left turn that he estimated was 60 degrees angle of bank or greater. He reported that the airplane was running well and that he could see both engines when the airplane was in the left turn. The witness stated that the airplane's altitude was about the height of the powerlines that are located about 1800 feet southwest of the end of the runway (about 100 feet agl) and that the airplane did not fly over the powerlines. He reported that the nose of the airplane went down quickly but that he did not see the airplane impact the ground because his view was obstructed by trees. He reported that it appeared that the pilot intended to turn back to the airport.

Another witness, a homeowner who was standing outside his house about 1/2 mile from the departure end of runway 22 and to the left of the extended runway centerline, reported that he observed the airplane airborne over the runway with its gear retracted. He stated that the airplane accelerated normally, the engines sounded fine, and both propellers were turning. He reported that the airplane cleared the powerlines by 50 to 60 feet and that the airplane's peak altitude was at least 150 to 160 feet agl. He reported that the airplane went into a steep left bank after clearing the powerlines. He further reported that he did not see a wing rock or dip and that the bank angle kept increasing in a continuous fluid motion to about 90 degrees. The witness stated that the airplane made about 120 degrees of heading change in about 3 seconds before the nose went down. He reported that the nose of the airplane dropped at least 60 degrees before impacting the ground. He further reported that he heard the impact and the low explosion, which was followed by fire.

Another witness, a homeowner who observed the airplane from inside his house about 1/4 mile south of the powerlines, reported that he saw the airplane clear the powerlines. He stated that the wings dipped to the right and that the airplane then went into an extreme left bank. He reported that the time of the right wing dip to the time of impact was about 5 to 6 seconds. He further reported that he could see the airplane's belly and the bottom of its wings before impact. The witness stated that he did not see the impact because his view was obstructed by a hedgerow.

The airplane impacted the ground in a grassy field located about 2,000 feet south of the departure end of runway 22.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with the ratings and limitations of airplane multi-engine land, single-engine land, and type ratings for DA-20, Learjet, and DC-9. He held a Federal Aviation Administration (FAA) first-class medical certificate dated March 30, 1999.

Since June 1, 1998, the pilot had been employed as a DC-9 pilot by a 14 CFR Part 121 commercial airline and was flying as a DC-9 captain. According to his medical certificate application, the pilot had accumulated about 9,700 total flying hours as of March 30, 1999. The pilot's flight logbooks were not recovered during the course of the investigation.

A witness reported that the pilot had been flying since age 16. The witness stated that the pilot's father had operated a skydiving operation at 76G during the 1970s and 1980s and that the pilot had learned to fly and skydive during that time. The witness further reported that the pilot had performed about 8,000 total skydiving jumps.

The pilot and his mother owned and operated the Parahawks Skydiving Center at 76G and High Adventure II, Inc., which owned the accident airplane. The Parahawks Skydiving Center normally used the service of a contract pilot during skydiving operations. The accident pilot also flew the airplane when needed, and a third pilot was occasionally used during weekend operations.

According to Michigan State Motor Vehicle and court records, the accident pilot was arrested three times for alcohol-related offenses involving a motor vehicle. On October 28, 1991, the pilot was convicted of an Implied Consent Offense resulting from a June 7, 1991, refusal to be tested for alcohol by a law enforcement officer. His driving license was suspended for 6 months. On August 9, 1996, the pilot was convicted of an Operating While Impaired by Liquor offense resulting from an August 31, 1995, arrest. His driving license was suspended for 3 months. On September 11, 1998, the pilot was arrested on a charge of Operating Under the Influence of Liquor. The case had not come to trial at the time of the accident. According to the police report, the pilot was stopped about 0038 for improper lane use (weaving between the lanes of an interstate highway). The pilot failed a sobriety test and a preliminary breath test. A blood alcohol test indicated a reading of .12 grams of alcohol per 100 milliliters of blood. The arresting officer noted that "[The pilot] was advised that I suspected he was under the influence, and would be requesting him to take some sobriety test. At this point, [the pilot] asked me to just let him go, if I didn't let him go, he would lose his job."

The chief pilot of the Part 121 company by which the pilot was employed reported that the pilot was performing satisfactorily. No record of any disciplinary actions or flight emergencies existed. The chief pilot reported that during the pilot's employment interview in 1998, the pilot revealed that he had one driving while intoxicated (DWI) motor vehicle offense, which occurred about 6 to 7 years before his employment application. The company was unaware of any other alcohol-related offenses. The chief pilot stated that if the pilot had experienced a DWI while working for the company, his employment would have been in jeopardy.

The safety officer for the Parahawks Skydiving Center reported that, before the accident, he was unaware that the pilot had a record of alcohol-related offenses. The Parahawks main pilot reported that he knew that the pilot had one DWI but had not known of another offense. Both the safety officer and the main pilot reported that they learned about the accident pilot's other alcohol-related offenses through newspaper articles written after the accident.

AIRCRAFT INFORMATION

The airplane was a twin-engine Beech Model 65-A90, serial number LJ-251. The airplane's original registration date was March 8, 1967. The airplane was registered to High Adventure II,

Inc., on June 9, 1998. The total estimated time on the airframe was 8,986 hours.

The airplane's maximum gross weight was 9,300 pounds. The contract pilot for Parahawks, who last flew the airplane prior to the accident flight, reported the airplane had 55 gallons of fuel in each nacelle tank and no fuel in the wing tanks when the airplane departed on the accident flight. The parachutes weighed about 25 pounds. The gross weight of the airplane at takeoff was about 8,642 pounds.

The last airframe phase inspection (Phase 1) entered in the maintenance records was completed on August 25, 1997. However, an airframe and powerplants (A&P) mechanic reported that he performed the Phase 2 and Phase 3 airframe inspections, and that the last phase inspection (Phase 3) was completed on June 30, 1999. Work orders for the accident airplane and partially completed Beech Phase 2 and Phase 3 inspection forms were on file at the mechanic's place of work. The work orders indicated the Phase 2 inspection was completed on September 30, 1998, and the Phase 3 inspection was completed on June 30, 1999. The Beech inspection forms did not indicate the airplane's registration number, serial number, hours, cycles, date of inspection, or other identifying information. The mechanic reported that the pilot did not provide him with the airplane's maintenance records, so he was unable to enter information into the airplane's logbooks.

The engines were 550 shaft horsepower Pratt & Whitney Canada (PWC) PT6A-20 engines. The left engine had an estimated total time of 10,152 hours and an estimated 3,411 hours since overhaul. The right engine had an estimated total time of 8,987 hours and an estimated 3,618 hours since overhaul. The last entries in the left and right engine logbooks were recorded on February 18, 1998. As previously indicated, an A&P mechanic stated that Phase 2 and Phase 3 inspections were performed; however, there were only partially completed inspection forms for Phase 3, and no entries were made into the engine logbooks. The inspection forms did not indicate the engines' serial numbers, times, cycles, date of inspection, or other identifying information.

The contract pilot and the third pilot for the Parahawks Skydiving Center reported that they had not seen the airplane's maintenance records, which were maintained by the accident pilot. They further reported that the airplane was well maintained and that it operated normally.

The maintenance records did not indicate compliance with the following FAA airworthiness directives (AD) applicable to the accident airplane:

AD 99-10-07: Due 10 flight hours after June 6, 1999. (This compliance period expired for the accident airplane on June 17, 1999.) The AD addressed interference between the elevator control cables and equipment under the cockpit floor.

AD 98-15-13: Due 200 flight hours after August 12, 1998. (This compliance period expired on June 19, 1999.) The AD addressed fuel flow interruptions that could lead to engine failure.

AD 97-25-03: Due 30 days after January 1, 1998. The AD addressed a placard prohibiting lifting the power levers in flight to avoid travel beyond the flight idle stops, leading to severe nose-down pitch and a descent rate that could damage the airplane and injure passengers.

AD 97-25-01: Due 4 months after January 11, 1998. The AD applied to certain cabin pressurization out flow valves.

AD 97-06-06: Due 150 flight hours after May 9, 1997. This occurred on January 1, 1998. The AD addressed the uncommanded movement of the pilot and copilot seats.

The airplane was originally configured with two pilot seats and eight passenger seats. The airplane was modified for skydiving operations and the work was completed on May 28, 1998. The cabin door was removed. Four field-approved FAA form 337s, which were found in the airplane's maintenance records, detailed the following modifications:

(1) Removal of the passenger seats and installation of seat belts to accommodate 14 parachutists. The FAA form 337 detailing the installation of the seat belts indicated that the seat belts were to be configured with three sets of belts attached to the cargo tracks just forward of the wing spar. Ten more single seat belts were to be installed aft of the spar on the seat tracks at 20-inch intervals. The last seat belt was to be the one on the Beech-installed potty seat. The three belts anchored just forward of the spar were standard two-piece belts with two fasteners to the seat tracks as opposed to the aft 10 belts with one fastener to the seat track. The fasteners (tie down rings) used were rated at 4,000 pounds. A 2-inch air dam in front of the cabin door opening was also installed.

(2) Installation of a lexan roll-up wind block door.

(3) Installation of an exterior jump handle. (Dated 6/30/98)

(4) The fourth 337 form detailed the airplane's weight and balance after the airplane had been modified for skydiving. The weight and balance information indicated that the copilot seat and control yoke were removed. This modification was apparently not accomplished; the copilot seat and control remained in the accident airplane.

The FAA airworthiness inspector who reviewed the maintenance records reported that the FAA form 337s that were found with the airplane's maintenance records were not on file with the FAA in Oklahoma City, Oklahoma. The inspector also stated that the forms were "...not properly completed in that they were missing certificate information, certificate number of the signer, and no indication if the aircraft was approved or disapproved for return to service."

The FAA airworthiness inspector stated that "...this aircraft was definitely not airworthy. However, it may have been safe. The noted items above, although contrary to the regulations, may not have been a contributing factor to the accident." (See FAA Aviation Safety Inspector Report.)

METEOROLOGICAL INFORMATION

About 0755, the Selfridge Air National Guard Base, located 12 miles southwest of 76G, indicated the following meteorological conditions:

Winds 200 degrees at 10 knots; 10 miles visibility; scattered clouds 15,000 feet; overcast 25,000 feet; temperature 81 degrees F; dew point 70 degrees F; altimeter 29.70.

AIRPORT INFORMATION

Runway 22 at 76G is asphalt and is 3,100 feet long by 60 feet wide. As previously mentioned, a high-tension powerline that is about 100 feet high runs east and west and is located about 1,800 feet southwest of the departure end of runway 22.

WRECKAGE AND IMPACT INFORMATION

The main wreckage was located about 2,065 feet from the departure end of runway 22 on a magnetic heading of 208 degrees, and 285 feet southwest of a transmission line stanchion. The empennage of the main wreckage was oriented on a magnetic heading, as viewed from tail forward, of 268 degrees. The nose and cockpit sections, both engines, and the left main and nose landing gear were found 142 feet west of the empennage. The westernmost ground scar, which contained red-colored glass at its western edge, was about 17 feet long and 5 inches wide. The ground scar was oriented on a magnetic heading of 074 or 254 degrees. The cockpit and cabin areas of the airplane were consumed by post impact fire. An estimated 3 acres of the grass field northeast of the main wreckage was burned.

The cockpit section was about 5-1/2 feet in diameter and exhibited a nose-down pitch crush angle of about 80 degrees and a nose-right yaw crush angle of about 30 degrees. There was an estimated 20 pounds of melted metal beneath the nose section. The nose landing gear cylinder and several remote avionics units were located within the cockpit section. The nose landing gear piston and axial assembly did not exhibit deformation. The annunciator panel was destroyed. The throttle quadrant was found detached with the throttle, condition levers, and propeller controls in the forward position. The control column was found separated about 8 inches forward of the control lock hole. Both gas generator gauges (N1) were found separated from the instrument panel. The faces of these gauges exhibited fire damage and did not have a left or right designation. The needle positions on the gauges indicated about 101.1 percent rpm and 99.6 percent rpm. The altimeter setting was 29.65 inches.

The fuel crossfeed switch was in the OPEN position. Three of the four fuel boost pump switches were in the OFF position; one switch was destroyed. The left and right boost pump switches were in the OFF position. The left and right transfer switches were in the OFF position. The left fuel gauge indicated that the tank was nearly empty, and the right fuel gauge indicated about 1/2 tank of fuel. (See Fuel Panel attachment)

Two of the three left engine propeller blades, located about 17 feet east from the beginning of the westernmost ground scar, were unearthed from about 2 feet of soil. The remaining blade was found 198 feet north of this point. Each left engine propeller blade exhibited twisting and curling along the spans. The left spinner backplate was separated from the hub, and the screw holes were elongated in the tangential direction. The screws were still located in their respective holes. The right engine propeller blades were also unearthed from about 2 feet of soil just northeast of the cockpit location. Each right engine propeller blade exhibited twisting and bending. One of the right propeller blades exhibited chordwise scratching. The right spinner back plate was attached to the hub.

The left wing was separated from the fuselage and broken in three sections. The inboard and outboard trailing edge flaps were in the retracted position and attached to their respective wing structures. The threaded portion of the left aileron actuator screw was bent. The left aileron trim tab actuator was not found. There was no evidence of soot streaks on either the upper or lower sections of the left wing.

The right wing was found inverted with its lateral axis pointing on an outwardly magnetic heading of 336 degrees. The wing was attached at the spar attach points and was deformed about 29 inches inboard from the attach points. The wing's leading edge exhibited a 30 to 45 degree crush angle. The aileron was disintegrated, and white ash was found along the wing's outboard trailing edge. The extension of the flap actuator screw indicated that both trailing edge flaps were in the retracted position. The right main landing gear was found in the retracted position with the outboard gear door in the closed position. Aileron control continuity was established from the right wing to the fuselage.

The empennage, along with its respective control surfaces, was attached to the fuselage. The left and right elevator trim tab actuators were extended 1 inch, which corresponds to a 6-degree tab-down deflection or nose-up trim. The rudder trim tab actuator was extended 8-11/16 inches, which corresponds to a 5-degree right-tab deflection or nose-left trim. Elevator and rudder flight control continuity to the fuselage was established. (See Structures Report.)

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on the pilot and on the passenger in the copilot seat at the Port Huron Hospital Morgue, Port Huron, Michigan.

The FAA Civil Aeromedical Institute (CAMI) prepared Forensic Toxicology Fatal Accident Reports. The report concerning the pilot indicated that carbon monoxide and cyanide tests were not performed. The report on the pilot further indicated the following: 65 (mg/dL, mg/hg) ethanol detected in muscle; 2 (mg/dL, mg/hg) acetaldehyde detected in muscle; 52 (mg/dL, mg/hg) ethanol detected in kidney; 6 mg/dL, mg/hg) acetaldehyde detected in kidney; and no drugs detected in muscle. The report concerning the passenger in the copilot seat indicated that carbon monoxide and cyanide tests were not performed. The report on the

passenger further indicated the following: 94 (mg/dL, mg/hg) ethanol detected in muscle; 2 (mg/dL, mg/hg) acetaldehyde detected in muscle; 61 (mg/dL, mg/hg) ethanol detected in kidney; 5 (mg/dL, mg/hg) acetaldehyde detected in kidney; and no drugs detected in muscle.

The manager at CAMI stated, "The alcohol found in this case can not be attributed to ingestion or postmortem ethanol formation. It is impossible at this time to determine the source of ethanol in this case based on available information."

SURVIVAL ASPECTS

The airplane was configured with two forward-facing crew seats in the cockpit and two sets of seat tracks on both sides of the cabin. According to a Parahawks skydiver, the parachutists would sit on the cabin floor, facing aft, one person in front of the other (like in a toboggan). The two sets of parallel seat tracks allowed the parachutists to sit in between the tracks, secured to the cabin floor by seat belts clipped into the seat tracks. There were two different methods of restraining the parachutists to the cabin floor; the first method required parachutists to fasten the seat belts about their waists and clip the seat belts into both sides of the seat track. The second method required parachutists to fasten the seat belts through one side of their harness and clip the male and female ends of the buckle to one anchor ring installed in the outboard seat track.

The pilot and copilot seat frames were found burned among the fragments of the cockpit instruments and wiring. Both seats had the remains of the seat belt attachment hardware hooked to the floor anchor at the base of the seat frame, but the seat belt material was consumed by fire.

Five seat belt attachment hardware hooks were found attached to the seat track anchor rings in the aft section of the consumed fuselage. Molten fuselage aluminum throughout the cabin floor and along the right side of the cabin prevented the identification or retrieval of the remainder of the seat belt hardware. Four of the five anchor rings had single seat belt attachment hardware hooks, and the fifth anchor ring had two seat belt attachment hardware hooks. One of the seat belt anchors was found in the seat track in the aft cabin area, and a seat belt attachment hardware was hooked to the anchor ring. Three seat belt buckles were found latched. The seat belt material was consumed by the post impact fire. (See Survival Factors Specialist Factual Report of Investigation.)

The safety officer for the Parahawks Skydiving Center reported that all parachutists were required to wear seat belts until the airplane reached an altitude of 2,000 feet agl and to remain seated until 11,000 feet agl. He reported that a load shift during the accident flight was unlikely. He stated that the parachutists are packed tightly in the airplane and only the few parachutists in the back have room to move.

TESTS AND RESEARCH

Following the on-site examination of the PWC PTA6A-20 engines and Hartzell propellers, the engines and propellers were boxed and shipped to PWC's St. Hubert, Quebec, Canada, facility for disassembly and examination. The propellers were then shipped to Hartzell's Piqua, Ohio, facility for further examination. The examination of the engines and propellers by the National Transportation Safety Board's Powerplants Group did not disclose any preexisting failures or conditions that would have prevented normal engine operation. Further, the investigative team found indications of rotation within each engine and witness marks on both sets of propellers that were consistent with the propellers operating in the governing range. (See Powerplants Group Chairman's Factual Report.)

The left propeller blade with the fractured blade tip was sent to the Safety Board's Materials Laboratory for metallurgical examination, which determined that "the fractures contained no evidence of a preexisting crack. The fractures contained features typical of overstress separation." The examination further revealed that "The area containing the gouge marks was generally flat, consistent with impact of a solid flat object about the width of the gouged region..." and that "...the direction of the deformation is consistent with the propeller blade rotating when under engine power." (See Materials Laboratory Factual Report No. 00-32.)

The airplane's fuel system panel and various instruments recovered from the cockpit wreckage were sent to the Safety Board's Materials Laboratory for metallurgical examination. (See Materials Laboratory Factual Report No. 99-218.)

ADDITIONAL INFORMATION

Witness reported that the weekend of the accident the Parahawks Skydiving Center was celebrating its annual weekend pig roast and skydiving "boogie." Witnesses reported that the pilot was very upbeat and had been looking forward to the annual celebration. A witness reported that about 150 parachutists had arrived for the weekend skydiving gathering.

Skydiving flights were conducted on the night of Friday, July 30, 1999, until about 2030. A party ensued after the skydiving was completed. A witness reported that there were campfires and people singing songs but that it was not a wild party. One witness reported that the pilot left the party about 2230 to 2330. Another witness reported that the pilot left the party about 0130 to 0200 on Saturday, July 31, 1999.

A witness reported seeing the pilot at the airport's office about 0748 on Saturday morning. She reported that she and the pilot drank coffee together while he checked the weather for the day. She stated that a storm was predicted for about 2 hours in the afternoon. She reported that the pilot was very happy and sharp and that the pilot seemed well rested and was looking forward to the pig roast.

A police officer and recreational parachutist reported that he saw the pilot on Saturday morning about 0800 in the load shack. He reported that the pilot was trying to get a load of 10 parachutists manifested for the first jump of the morning. He described the pilot as being in a

good mood, smiling and laughing. He stated that he talked with the pilot and observed no evidence of the effects of alcohol. He reported that he observed the airplane during the taxi and takeoff and that the airplane and engines performed normally.

One of the parachutists reported that he had planned to skydive on the first flight of the day that was scheduled for 0900. He stated he was surprised when the airplane departed at 0820 to 0825, since he did not think there were enough skydivers to fill a flight that early in the morning.

Parties to the investigation included the Federal Aviation Administration, Raytheon Aircraft Company, Pratt & Whitney Canada, and Hartzell Propeller, Inc.

The airplane wreckage and maintenance records were released to High Adventure II, Inc.

Pilot Information

Certificate:	Airline transport	**Age:**	40,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 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 30, 1999
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	9700 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N518DM
Model/Series:	65-A90 65-A90	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	LJ-251
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	August 25, 1997 Continuous airworthiness	**Certified Max Gross Wt.:**	9300 lbs
Time Since Last Inspection:	521 Hrs	**Engines:**	2 Turbo prop
Airframe Total Time:	8986 Hrs	**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-20
Registered Owner:	HIGH ADVENTURE II	**Rated Power:**	550 Horsepower
Operator:	PARAHAWKS SKYDIVING CENTER	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MTC ,580 ft msl	**Distance from Accident Site:**	12 Nautical Miles
Observation Time:	07:55 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:	Unknown	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 15000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	27°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(76G)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	08:20 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	MARINE CITY AIRPORT 76G	**Runway Surface Type:**	Asphalt
Airport Elevation:	613 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	
Runway Length/Width:	3100 ft / 40 ft	**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	9 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	10 Fatal	**Latitude, Longitude:**	42.709587,-82.489471(est)

Administrative Information

Investigator In Charge (IIC):	Silliman, James
Additional Participating Persons:	BOB OLMSTEAD; BELLVILLE , MI TOM BERTHE; SOUTH BURLINGTO, VT JERRY STAAB; WICHITA , KS TOM MCCREARY; PIQUA , OH
Original Publish Date:	October 13, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=46913