National Transportation Safety Board
Aviation Accident Final Report

Location:	Long Beach, CA	**Accident Number:**	WPR11FA166
Date & Time:	03/16/2011, 1029 PDT	**Registration:**	N849BM
Aircraft:	BEECH 200	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	5 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

Witnesses reported that the airplane's takeoff ground roll appeared to be normal. Shortly after the airplane lifted off, it stopped climbing and yawed to the left. Several witnesses heard abnormal sounds, which they attributed to propeller blade angle changes. The airplane's flight path deteriorated to a left skid and its airspeed began to slow. The airplane's left bank angle increased to between 45 and 90 degrees, and its nose dropped to a nearly vertical attitude. Just before impact, the airplane's bank angle and pitch began to flatten out. The airplane had turned left about 100 degrees when it impacted the ground about 1,500 feet from the midpoint of the 10,000-foot runway. A fire then erupted, which consumed the fuselage.

Review of a security camera video of the takeoff revealed that the airplane was near the midpoint of the runway, about 140 feet above the ground, and at a groundspeed of about 130 knots when it began to yaw left. The left yaw coincided with the appearance, behind the airplane, of a dark grayish area that appeared to be smoke. A witness, who was an aviation mechanic with extensive experience working on airplanes of the same make and model as the accident airplane, reported hearing two loud "pops" about the time the smoke appeared, which he believed were generated by one of the engines intermittently relighting and extinguishing.

Postaccident examination of the airframe, the engines, and the propellers did not identify any anomalies that would have precluded normal operation. Both engines and propellers sustained nearly symmetrical damage, indicating that the two engines were operating at similar low- to mid-range power settings at impact. The airplane's fuel system was comprised of two separate fuel systems (one for each engine) that consisted of multiple wing fuel tanks feeding into a nacelle tank and then to the engine. The left and right nacelle tanks were breached during the impact sequence and no fuel was found in either tank. Samples taken from the fuel truck, which supplied the airplane's fuel, tested negative for contamination. However, a fuels research engineer with the United States Air Force Fuels Engineering Research Laboratory stated that water contamination can result from condensation in the air cavity above a partially full fuel tank. Both diurnal temperature variations and the atmospheric pressure variations experienced with normal flight cycles can contribute to this type of condensation. He stated that the simplest preventive action is to drain the airplane's fuel tank sumps before every flight.

There were six fuel drains on each wing that the Pilot's Operating Handbook (POH) for the airplane dictated should be drained before every flight. The investigation revealed that the pilot's previous employer, where he had acquired most of his King Air 200 flight experience, did not have its pilots drain the fuel tank sumps before every flight. Instead, maintenance personnel drained the sumps at some unknown interval. No witnesses were identified who observed the pilot conduct the preflight inspection of the airplane before the accident flight, and it could not be determined whether the pilot had drained the airplane's fuel tank sumps. He had been the only pilot of the airplane for its previous 40 flights. Because the airplane was not on a Part 135 certificate or a continuous maintenance program, it is unlikely that a mechanic was routinely draining the airplane's fuel sumps.

The witness observations, video evidence, and the postaccident examination indicated that the left engine experienced a momentary power interruption during the takeoff initial climb, which was consistent with a power interruption resulting from water contamination of the left engine's fuel supply. It is likely that, during the takeoff rotation and initial climb, water present in the bottom of the left nacelle tank was drawn into the left engine. When the water flowed through the engine's fuel nozzles into the burner can, it momentarily extinguished the engine's fire. The engine then stopped producing power, and its propeller changed pitch, resulting in the propeller noises heard by witnesses. Subsequently, a mixture of water and fuel reached the nozzles and the engine intermittently relighted and extinguished, which produced the grayish smoke observed in the video and the "pop" noises heard by the mechanic witness. Finally, uncontaminated fuel flow was reestablished, and the engine resumed normal operation.

About 5 months before the accident, the pilot successfully completed a 14 Code of Federal Regulations Part 135 pilot-in-command check flight in a King Air 90. However, no documentation was found indicating that he had ever received training in a full-motion King Air simulator. Although simulator training was not required, if the pilot had received this type of training, it is likely that he would have been better prepared to maintain directional control in response to the left yaw from asymmetrical power. Given that the airplane's airspeed was more than 40 knots above the minimum control speed of 86 knots when the left yaw began, the pilot should have been able to maintain directional control during the momentary power interruption.

Although the airplane's estimated weight at the time of the accident was about 650 pounds over the maximum allowable gross takeoff weight of 12,500 pounds, the investigation determined that the additional weight would not have precluded the pilot from maintaining directional control of 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 directional control of the airplane during a momentary interruption of power from the left engine during the initial takeoff climb. Contributing to the accident was the power interruption due to water contamination of the fuel, which was likely not drained from the fuel tanks by the pilot during preflight inspection as required in the POH.

Findings

Aircraft	Performance/control parameters - Not attained/maintained (Cause) Water - Inadequate inspection (Factor) Loading - Not specified
Personnel issues	Aircraft control - Pilot (Cause)

Factual Information

HISTORY OF FLIGHT

On March 16, 2011, at 1029 Pacific daylight time, a Beech Super King Air 200, N849BM, impacted terrain following a loss of control during takeoff from Long Beach Airport, Long Beach, California. The commercial pilot and four passengers were fatally injured; a fifth passenger was seriously injured. The airplane was substantially damaged. The airplane was being operated by Carde Equipment Sales LLC under the provisions of 14 Code of Federal Regulations Part 91. An instrument flight rules (IFR) flight plan had been filed for a cross-country flight to Salt Lake City, Utah, and the crash occurred on initial departure. Visual meteorological conditions prevailed at the time of the accident.

According to flight planning documents, about 0700, the pilot filed an IFR flight plan to fly from Long Beach to Salt Lake City. He was planning to fly the estimated 510-nautical-mile (nm) trip in 1:52 hours with three people.

Departure was planned for 0830. During the preflight of the airplane, the pilot had some difficulties with transmitting on the radios, which delayed the trip's departure. He called the owner's Aviation Manager, about 0845, for assistance. The two of them could not rectify the problem, so they walked to an adjacent building to talk with the Director of Maintenance for West Coast Maintenance. He and one of his employees suggested that they check the transmission switch position on the pilot's oxygen mask. The two men departed and the radio transmission problem was corrected. The owner's Aviation Manager stated that he did not observe the pilot perform the airplane's preflight; there were no witnesses identified who observed the pilot conducting the airplane's preflight inspection on the morning of the accident.

The pilot boarded his two original passengers, plus three additional passengers, and prepared to start the airplane's engines. At 1020, the pilot radioed the airport ground controller and requested taxi clearance to runway 30. A witness observed the airplane at the departure end of runway 30 prior to taking the active. He said it sat there for a few minutes doing some engine run-ups. At 1027, the local controller cleared the pilot for takeoff. Several witnesses reported that the initial ground roll appeared normal. Shortly after the airplane rotated and started to climb, it began to yaw left and level off. One witness said "the airplane sounded like it was in trouble." Another witness said it sounded like one of the engine's propellers "feathered, went to flat pitch or even went into beta mode, like a full power fan noise." A third witness said "the strange noise was like a propeller noise, not an engine sound." A fourth witness said that it appeared to him that the left propeller was windmilling.

Several witnesses said that, as the airplane began to bank left, its wings wobbled and its fuselage fishtailed. As the airplane's bank angle continued to increase, the airplane's yawing progressed to a left skid "until it looked like it was going sideways." One witness said that, as the skid continued to develop, he spoke aloud: "straighten it out, straighten it out, straighten it out." The witness reported that the airplane's "forward speed began to drop off and the airplane didn't seem to have any lift." As the bank angle increased to 45 to 90 degrees, the airplane's nose dropped down to near vertical. One witness said that as the airplane approached the ground he heard an engine "power up and the nose jerked upward just prior to [the airplane] crashing into the ground." Another witness said the bank angle and pitch "began to flatten out just before crashing down to the ground."

On the morning of the accident, the director of maintenance (DM) for West Coast Aircraft Maintenance was in his office on the Long Beach Airport. The office building was near where the accident airplane was regularly parked, and about 2,000 feet from the departure runway. He heard a loud pop and then immediately another loud pop. He knew that sound wasn't right for a departing airplane, and he immediately rushed to a doorway in time to see the accident aircraft just before it impacted the ground.

The witnesses reported that, on impact a fire erupted, which consumed the airplane. Airport fire and rescue personnel were at the scene in 3 to 5 minutes.

PERSONNEL INFORMATION

The 43-year-old pilot started his flight training in October 2001. At the time of the accident, he held a commercial pilot certificate with airplane single and multiengine land ratings, and an airplane instrument rating. His most recent first-class Federal Aviation Administration (FAA) medical certificate was issued on June 18, 2010. The pilot's flight logbook and the airplane flight records indicated that the pilot had 2,073 hours of total flight experience. He had approximately 1,113 hours of multiengine time, of which 463 hours were in the make and model of the accident airplane. Approximately 665 hours of his total flight time was in light single engine piston aircraft. No documentation could be found to indicate that he had received any training in full-motion King Air simulators.

The pilot had been employed, in May 2005, by Ameriflight, Inc., Billings, Montana, as a second-in-command (SIC) pilot in a Beechcraft Model 99. In October 2007, West Coast Charters, Santa Ana, California, employed the pilot as an SIC pilot in a Beechcraft King Air 200, the same make and model as the accident aircraft. Most of his King Air 200 flight time was acquired at West Coast Charters. On October 19, 2010, Rainbow Air, Long Beach, hired the pilot to fly as a pilot-in-command (PIC) in a Beechcraft Model 90. On that date, he successfully passed a Part 135 check, which also qualified as his FAA required flight review. He began flying the accident airplane as a contract single pilot on January 2, 2011. Between January and the accident he was the only pilot who flew the airplane, and the airplane's records indicate he made about 40 flights in it.

About mid-February 2011, the pilot flew with the owner's Aviation Manager to Bellingham, Washington, and back. The Aviation Manager was never "checked out" in Beech King Air 200s; he was experienced in other corporate jets and turboprop aircraft. The Aviation Manager said that he helped prepare for the flight by fueling the airplane while the pilot performed a preflight inspection. The Aviation Manager did notice that the pilot drained one or more of the airplane's 12 fuel sump drains, but he was not sure how many or exactly which sumps the pilot drained. He also observed that the pilot performed the draining while he was still fueling. Normal recommended procedures for draining fuel tank sumps is to wait at least 20 to 30 minutes after fueling to permit the settling of any water or any other possible contaminates.

AIRCRAFT INFORMATION

The airplane was a twin engine, propeller-driven, eight seat, pressurized aircraft, which was manufactured in 1981 by Beech Aircraft Company. At the time of manufacture, the airplane was equipped with Pratt & Whitney Canada model PT6A-41 engines, each fitted with a Hartzell Propellers, Inc., three bladed propeller. Each engine was rated at a maximum takeoff rating of 850 shaft-horsepower. The airplane was later modified in accordance with Supplemental Type Certificates SA00433AT and SA2698NM-S, which installed Pratt & Whitney Canada model

PT6A-42 turboprop engines, each fitted with a Hartzell Propellers, Inc., four bladed propeller. Each engine maintained the same maximum takeoff rating of 850 shaft-horsepower.

The four-bladed Hartzell propellers were constant-speed, full-feathering, and reversible. They were manufactured in June 1999. The airplane was equipped with an automatic feathering system, which was designed for use during takeoff and landing, and should be turned off when the airplane is established in cruise climb. If the power output was reduced in either engine during takeoff, once the engine's torque dropped from 2,230 foot/pounds (ft/lbs) to about 220 ft/lbs, the propeller blades would move towards the feathered position. This system is operationally checked before every takeoff, as required in the Pilot's Operating Handbook, Before Takeoff (Run-up) checklist.

The owner bought the airplane on August 12, 2009. It received its most recent annual inspection on August 9, 2010. According to airplane flight records, at the time of the accident, the airplane had flown 9,133 hours; the left engine had 5,695 total hours and 3,020 hours since its last overhaul; the right engine had 5,613 total hours and 3,325 hours since its last overhaul. The engine manufacturer recommends that the engines be overhauled every 3,000 flight hours. The propellers were installed about August 1999. The propeller manufacturer recommends that they be overhauled every 3,000 flight hours or every 6 years. The airplane's maintenance logbooks were not recovered, so an exact determination of the time on the propellers was not possible.

The airplane's fuel system consisted of two separate fuel systems; one in each wing, and each feeding its respective engine via the nacelle (engine feed) tank. Each wing fuel system had a main fuel system composed of multiple interconnected fuel cells that gravity fed the 57-gallon capacity nacelle tank. Each wing had a 79-gallon capacity auxiliary fuel tank located inboard of the engine nacelle, which, if fueled would automatically feed the nacelle tank. Each wing fuel system, including the nacelle tank, had a total fuel capacity of 193 gallons, or a total fuel capacity of 272 gallons per wing when the auxiliary fuel tank was serviced. An engine can be configured to draw fuel from the opposite wing fuel system, if needed, by activating an electric crossfeed valve.

The accident airplane had an empty weight of 8,160 pounds. It had a maximum gross takeoff weight of 12,500 pounds. Two days before the accident, the airplane was fully fueled with the addition of about 380 gallons of jet fuel. At 6.7 pounds per gallon, the fuel weight was 3,645 pounds. The remaining useful load capacity for people and baggage was 695 pounds. There were six adult males on board, and from their California State driver's licenses, their total weight came to 1,115 pounds. The occupant's personal baggage was weighed as it was removed from the wreckage and totaled 230 pounds. The airplane was estimated to be approximately 653 pounds overweight at takeoff.

The Beech Super King Air 200 Pilot's Operating Handbook Limitations section states that the airplane has an Air Minimum Control Speed (Vmc speed) of 86 knots. This is the lowest airspeed at which the airplane is directionally controllable when one engine suddenly becomes inoperative and the other engine is at takeoff power. At airspeeds below Vmc, the rudder is no longer able to overcome the asymmetrical yawing force produced by the remaining operating engine.

This airplane was not equipped with a flight data recorder or cockpit voice recorder. Federal

regulations did not require them on this airplane.

METEOROLOGICAL INFORMATION

At 1040, the reported weather conditions at Long Beach Airport (LGB, elevation 60 feet), were: wind 200 degrees at 3 knots; visibility 10 statute miles; cloud condition, overcast at 800 feet; temperature 61 degrees Fahrenheit; dew point 54 degrees Fahrenheit; altimeter setting 30.13 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The airplane's initial point of impact was on an asphalt runway. A ground scar proceeded on a 205-degree magnetic track across flat grass terrain for about 425 feet, where the burned fuselage was found upright on a 300-degree magnetic orientation. The wreckage was located approximately 1,500 feet from the midpoint of its intended departure runway. The debris field leading to the fuselage contained both propeller assemblies, the left engine, and components of both main landing gear. The right wing remained attached to the fuselage and its engine was in place, but remained attached to the airframe only by control cables, electrical wiring, and fuel lines.

The aft portion of the fuselage, from the pressure bulkhead back, and the empennage separated from the main fuselage. It was found lying next to the forward portion of the fuselage and still connected to it by wires and cables. The T-tail stabilizer, with its elevator and trim tab, had separated from the vertical stabilizer and was found approximately 35 feet from the main wreckage. The fuselage exhibited compression buckling, sooting, and thermal discoloration throughout its length. Rescue personnel cut large holes in the fuselage above and aft of the right wing and forward on the left side next to the pilot's station to facilitate the extrication of the occupants.

Flight control continuity was established from the pilot's control column and rudder pedals to the ailerons, rudder, and elevator. The flaps were found in the up position and the landing gear in the down position. The power levers, propeller levers, and condition levers on the central pedestal were all found full forward.

The left torque gauge was reading about 700 ft/lbs and the right torque gauge was reading about 1,700 ft/lbs. The maximum rated takeoff torque for the engines was 2,230 ft/lbs. The airframe manufacturer's representative stated that the torque gauges were powered by alternating current and that their readings should not be considered representative of the torque being developed at impact; the torque gauge system wiring was compromised during the impact sequence.

All of the left wing main fuel tanks, including the left wing nacelle tank, were breached. The left auxiliary fuel tank appeared intact, but did not contain any fuel. With the exception of the inboard center fuel tank, all of the right wing main fuel tanks, including the right wing nacelle tank, were breached. The right auxiliary tank and the right inboard center fuel tank visually appeared intact and contained some liquid, which was consistent with jet fuel. Approximately 30 gallons of fluid were retrieved from these two tanks, and visual inspection of the fluid revealed no evidence of contamination. No airframe anomalies were noted that would have precluded normal flight operations.

On April 19, 2011, a team of investigators from the Transportation Safety Board Canada, Hawker Beechcraft Corporation, and Pratt & Whitney Canada convened to examine the two

engines. Over the next 3 days, each engine was photographed, documented, and disassembled. The engine manufacturer's representative stated that both engines displayed minimal deformation to their external housings, including light compressional and torsional deformation to their exhaust ducts. The left and right engines displayed signatures to their compressor 1st stage, compressor impeller and shroud, compressor turbine vane ring, compressor turbine, 1st stage power turbine vane ring and shroud, 1st stage power turbine, 2nd stage power turbine vane ring and shroud, and 2nd stage power turbine consistent with their making contact with their adjacent components during the impact sequence. These contact signatures were similar throughout both engines. The manufacturer's representative stated that the similarity between the contact signatures of the two engines suggests that they were producing symmetrical power at the time of impact, likely in a low to middle power range.

The engines displayed no indications of any pre-impact anomalies or distress that would have precluded normal engine operation prior to impact.

On April 20, 2011, a team of investigators from the FAA, Hawker Beechcraft Corporation, and Hartzell Propeller, Inc., convened to examine the two propeller assemblies. During the examination, each propeller assembly was photographed, documented, and disassembled. The propeller manufacturer's representative stated that both propellers were severely damaged by impact. The damage to both propellers was remarkably similar, which suggests that they both impacted in a similar manner and were operating at similar power. The blades had multiple bends, twisting, leading edge damage, and the outer 1/3 of one blade was torn off. Tip damage to all blades was relatively mild, which could indicate low power at the time of impact, but could also be attributed to impact at a steep nose down attitude. In general, the blade damage suggested impact with both engines producing power.

There were no pre-impact discrepancies noted that would have precluded normal operation of the propellers.

MEDICAL AND PATHOLOGICAL INFORMATION

The County of Los Angeles, Department of Coroner, performed an autopsy on the pilot on March 17, 2011.

The FAA's Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma, performed toxicology tests on the pilot. According to CAMI's report, the pilot's blood was tested for carbon monoxide, cyanide, ethanol (volatiles) and drugs with negative results.

TESTS AND RESEARCH

A video study was performed on a recording collected from an airport security camera, located at 33:48:44 north, 118:09:13 west. The wide angle design of the camera's lens, the storage of frames per second, and the approximate 2,000-foot distance from the camera to the runway resulted in a low quality image of the aircraft. The video was used for estimating the groundspeed of the airplane and its altitude over about 3.5 seconds, from the time about 100 feet above ground level, to the time when the loss of control occurred.

The study results indicate that the accident airplane reached an estimated groundspeed of 130 knots and an altitude slightly greater than 140 feet above the ground. At about 2 seconds into the video, a darker grayish area appears behind the airplane, which could be smoke generated by one of the airplane's engines. At the same point where the darker grayish area appears, the airplane begins to yaw left, which progressed until the airplane impacted the ground.

The airplane appeared to be flying normally for about 2 seconds of the video. Then it departed to the left of the runway and impacted the ground about 9 seconds later. The darker grayish area appeared and the commencement of the aircraft's loss of control began approximately above the midpoint of the 10,000-foot-long runway.

Several additional laboratory tests were conducted in support of this investigation. Five fuel samples were obtained from the fuel truck that fueled the airplane. These five 1-gallon samples were sent to Wright-Patterson Air Force Base for testing by the US Air Force's fuel laboratory. No anomalies with the samples were identified. Additionally, the Honeywell General Aviation Enhanced Ground Proximity Warning System onboard the airplane, the airplane's warning annunciator panel, and the left and right firewall fuel filter bowl assemblies and their elements were examined. No pertinent information was obtained from these examinations. For further information on these examinations, see the public docket for this investigation.

ADDITIONAL INFORMATION

In mid-February 2012, an FAA inspector from the Long Beach Flight Standards District Office (FSDO) was giving a Part 135 check-ride to a line pilot employed by West Coast Charters, Santa Ana, California. The inspector noticed that, during the pilot's preflight of a King Air 200 airplane, he did not drain the airplane's fuel tank sumps. When he questioned the pilot about it, the pilot responded with "we [pilots] don't do that, the mechanics do that." The inspector pointed out to the pilot that the Pilot's Operating Handbook for the airplane requires that the King Air's 12 fuel tank sumps be drained during preflight before every flight. Follow-up communications between Long Beach FSDO inspectors and the Chief Pilot of West Coast Charters verified that this was standard practice.

The DM for West Coast Maintenance said the King Air's fuel system has several tanks or cells, which feed the engine's nacelle inverted "L" shaped (57 gallon) fuel tank. He said maintenance personnel are required to open the nacelle tank every 24 months for inspection and cleaning. When this is done, it is common to find water, debris, and biomicrobial contaminants in the tank. He said the entire engine's fuel supply must flow to the bottom of this tank. The DM said that regular draining of the King Air's 12 fuel tank sumps would minimize the water and debris found in the nacelle tank upon inspection.

The DM said that, during the accident airplane's departure, as the airplane rotated for takeoff, if water was present in the bottom of the nacelle tank, it would shift aft covering the fuel intake port to the engine. This "slug" of water would then flow to the engine's 14 fuel nozzles, where it could extinguish the engine's fire; the engine would stop producing power and its propeller would move from coarse to fine pitch.

Subsequently, jet fuel would follow the water, and the engine's internal heat would likely be sufficient to relight the atomized fuel. The engines were equipped with auto ignition systems, and if they were in the on position, they may also have been triggered to relight the engine. The DM believes that the two pops he heard were attempts by the engine to relight the reintroduced fuel. He said that each pop would have been accompanied by grayish white smoke.

The DM also said that water found in airplane fuel tanks does not necessarily come from contaminated fuel trucks. Airplane refueling trucks have stringent checks and documentation requirements of their filters and are subject to regular tank sump sampling. He believes that the biggest source of introduced water into fuel tanks is daily temperature variations and atmospheric temperature variations. That is, if a fuel tank is not completely full, there is a

cavity of air above the fuel, and due to the tank's venting system, the air in that cavity will move in and out as daily temperature rise and fall, or as the airplane climbs to cruise altitude and descends at its destination.

The United States Air Force has a fuels engineering research laboratory located at Wright-Patterson Air Force Base. One of their Senior Research Engineers stated that "the cavity above fuel in a partially filled fuel tank is vulnerable to aircraft fuel tank breathing through its vent system. This breathing of air, in-and-out, causes water to condense within the fuel tanks." He said that there are many variables which affect this phenomenon, including: diurnal temperature and pressure variations, flight altitude pressure variations, relative atmospheric humidity, fuel tank size and volume above the fuel, and fuel storage time. The senior engineer further stated that good housekeeping practices of an airplane's fuel source and regular draining of the fuel tank sumps is the simplest way to reduce the presence of water in aircraft fuel tanks.

The FAA Advisory Circular number 20-43C, titled "Aircraft Fuel Control" states:

"All aviation fuels absorb moisture from the air and contain water in both suspended particle and liquid form. The amount of suspended particles varies with the temperature of the fuel. Whenever the temperature of the fuel is decreased, some of the suspended particles are drawn out of the solution and slowly fall to the bottom of the tank. Whenever the temperature of the fuel increases, water is drawn from the atmosphere to maintain a saturated solution. Changes in fuel temperature, therefore, result in a continuous accumulation of water."

"The presence of any contamination in fuel systems is dangerous. Laboratory and field tests have demonstrated that when water was introduced into the fuel tank, it immediately settled to the bottom. Fuel tanks are constructed with sumps to trap this water. It is practically impossible to drain all water from the tanks through the fuel lines, so it becomes necessary to regularly drain the fuel sumps in order to remove all water from the system."

"If left undrained, the water accumulates and will pass through the fuel line to the engine and may cause the engine to stop operating."

One of the airplane manufacturer's test pilots stated: "King Air fuel tanks must be drained before every flight, it seems like a little bit of water is always being drained off."

History of Flight

Initial climb	Loss of engine power (partial) Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	**Age:**	43, 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):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without Waivers/Limitations	**Last Medical Exam:**	06/18/2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	10/19/2010
Flight Time:	2080 hours (Total, all aircraft), 130 hours (Last 90 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	BEECH	**Registration:**	N849BM
Model/Series:	200	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	BB-849
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	12500 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo Prop
Airframe Total Time:		**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-42
Registered Owner:	CARDE EQUIPMENT SALES LLC	**Rated Power:**	850 hp
Operator:	CARDE EQUIPMENT SALES LLC	**Air Carrier Operating Certificate:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	LGB, 44 ft msl	**Observation Time:**	1040 PDT
Distance from Accident Site:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Thin Overcast / 800 ft agl	**Temperature/Dew Point:**	16°C / 12°C
Lowest Ceiling:	Overcast / 800 ft agl	**Visibility**	10 Miles
Wind Speed/Gusts, Direction:	3 knots, 200°	**Visibility (RVR):**	
Altimeter Setting:	30.13 inches Hg	**Visibility (RVV):**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Long Beach, CA (LGB)	**Type of Flight Plan Filed:**	IFR
Destination:	Heber City, UT (36U)	**Type of Clearance:**	IFR
Departure Time:	1029 PDT	**Type of Airspace:**	

Airport Information

Airport:	Long Beach Airport (LGB)	**Runway Surface Type:**	Asphalt
Airport Elevation:	44 ft	**Runway Surface Condition:**	Dry
Runway Used:	30	**IFR Approach:**	None
Runway Length/Width:	10000 ft / 200 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	4 Fatal, 1 Serious	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	5 Fatal, 1 Serious	**Latitude, Longitude:**	33.817222, -118.156389

Administrative Information

Investigator In Charge (IIC):	James F Struhsaker	**Adopted Date:**	08/29/2012
Additional Participating Persons:	Jocelyn MacGregor; Federal Aviation Administration FSDO; Long Beach, CA Paul` Yoos; Hawker Beechcraft; Wichita, KS		
Publish Date:	08/29/2012		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=78557		

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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