National Transportation Safety Board
Aviation Accident Final Report

Location:	Libby, MT	**Accident Number:**	WPR13FA073
Date & Time:	12/19/2012, 0002 MST	**Registration:**	N499SW
Aircraft:	BEECH B100	**Aircraft Damage:**	Destroyed
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Business		

Analysis

When the flight was about 7 miles from the airport and approaching it from the south in dark night conditions, the noncertificated pilot canceled the instrument flight rules (IFR) flight plan. A police officer who was on patrol in the local area reported that he observed a twin-engine airplane come out of the clouds about 500 ft above ground level and then bank left over the town, which was north of the airport. The airplane then turned left and re-entered the clouds. The officer went to the airport to investigate, but he did not see the airplane. He reported that it was dark, but clear, at the airport and that he could see stars; there was snow on the ground. He also observed that the rotating beacon was illuminated but that the pilot-controlled runway lighting was not. The Federal Aviation Administration issued an alert notice, and the wreckage was located about 7 hours later 2 miles north of the airport. The airplane had collided with several trees on downsloping terrain; the debris path was about 290 ft long. Postaccident examination of the airframe and engine revealed no mechanical malfunctions or failures that would have precluded normal operation.

The town and airport were located within a sparsely populated area that had limited lighting conditions, which, along with the clouds and 35 percent moon illumination, would have restricted the pilot's visual references. These conditions likely led to his being geographically disoriented (lost) and his subsequent failure to maintain sufficient altitude to clear terrain. Although the pilot did not possess a valid pilot's certificate, a review of his logbooks indicated that he had considerable experience flying the airplane, usually while accompanied by another pilot, and that he had flown in both visual and IFR conditions. A previous student pilot medical certificate indicated that the pilot was color blind and listed limitations for flying at night and for using color signals. The pilot had applied for another student pilot certificate 2 months before the accident, but this certificate was deferred pending a medical review.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The noncertificated pilot's failure to maintain clearance from terrain while maneuvering to land in dark night conditions likely due to his geographic disorientation (lost). Contributing to the accident was the pilot's improper decision to fly at night with a known visual limitation.

Findings

Aircraft	Altitude - Not attained/maintained (Cause)
Personnel issues	Geographic disorient (lost) - Pilot (Cause) Incorrect action performance - Pilot (Cause) Decision making/judgment - Pilot (Factor) Visual function - Pilot (Factor)
Environmental issues	Mountainous/hilly terrain - Contributed to outcome Dark - Effect on personnel

Factual Information

HISTORY OF FLIGHT

On December 19, 2012, about 0002 mountain standard time (MST), a Beech B100, N499SW, collided with trees near Libby, Montana. Stinger Welding was operating the airplane under the provisions of 14 Code of Federal Regulations (CFR) Part 91. The non-certificated pilot and one passenger sustained fatal injuries; the airplane was destroyed from impact forces. The cross-country personal flight departed Coolidge, Arizona, about 2025 MST with Libby as the planned destination. Visual meteorological conditions prevailed at the nearest official reporting station, and an instrument flight rules (IFR) flight plan had been filed.

The Federal Aviation Administration (FAA) reported that the pilot had been cleared for the GPS-A instrument approach procedure for the Libby Airport (S59), which was located 7 nm south-southeast of Libby. The pilot acknowledged that clearance at 2353. At 2359, the airplane target was about 7 miles south of the airport; the pilot reported the field in sight, and cancelled the IFR flight plan. Recorded radar data indicated that the airplane was at a Mode C altitude of 11,700 feet mean sea level at that time, and the beacon code changed from 6057 to 1200.

A track obtained from the FilghtAware internet site indicated a target at 2320 at 26,000 feet that was heading in the direction of Libby. The target began a descent at 2340:65. At 2359:10, and 11,700 feet mode C altitude, the beacon code changed to 1200. The target continued to descend, and crossed the Libby Airport, elevation 2,601 feet, at 0000:46 at 8,300 feet. The track continued north; the last target was at 0001:58 and a Mode C altitude of 5,000 feet; this was about 3 miles south of Libby and over 4 miles north of the airport.

A police officer reported that he observed a twin-engine airplane come out of the clouds over the city of Libby about 500 feet above ground level. It turned left, and went back into the clouds. The officer thought that it was probably going to the airport; he went to the airport to investigate, but observed no airplane. It was dark, but clear, at the airport with about 3 inches of snow on the ground, and he could see stars. He also observed that the rotating beacon was illuminated, but not the pilot controlled runway lighting. He listened for an airplane, but heard nothing.

When the pilot did not appear at a company function at midday on December 18, they reported him overdue. The Prescott, Arizona, Automated Flight Service Station (AFSS) issued an alert notice (ALNOT) at 1102 MST; the wreckage was located at 1835.

PERSONNEL INFORMATION

A review of FAA medical records revealed that the 54-year-old pilot first applied for an Airman Medical and Student Pilot Certificate in August 2004. On that Medical Certification Application, the pilot reported having 500 hours total time with 200 hours in the previous 6 months. No alcohol or medication usage was reported; however, the pilot was determined to be red/green color blind.

On June 9, 2010, the pilot reported on an application for an Airman Medical and Student Pilot Certificate that he had 925 hours total time with 150 hours in the previous 6 months. He was issued a third-class medical certificate that was deemed not valid for night flying or using color signal control.

On May 16, 2012, the pilot received a driving while intoxicated (DWI) citation in Libby.

The pilot reported on an application for an Airman Medical and Student Pilot Certificate dated October 16, 2012, that he had a total time of 980 hours with 235 hours logged in the previous 6 months. Item 52 for color vision indicated fail. This application reported a new diagnosis of hypertension, and use of medications to control it. This application reported yes in item 17 (v) for history of arrest of conviction for driving while intoxicated. The FAA deferred the issuance of the Student Pilot and Medical Certificate, indicating that they were investigating a failure to report within 60 days the alcohol-related motor vehicle action that occurred in Montana on May 16, 2012.

The National Transportation Safety Board (NTSB) investigator-in-charge (IIC) reviewed copies of the pilot's logbooks beginning on March 21, 2010, and ending November 4, 2012. The entries indicated a total time of 978 hours during that time period. Time logged for the 90 days prior to the accident was 34 hours. The logbooks recorded numerous trips to Libby with three entries in the previous 90 days. The last solo flight endorsement, in a Cessna 340, was signed off by a certified flight instructor in August 2011. The logbook contained several entries for flights in instrument flight rules (IFR) conditions.

The IIC interviewed the chief pilot for the company, who was hired to fly the Stinger Company's Cessna CJ2 jet, which they purchased about 4 years earlier. The accident pilot owned the company, and would typically have the chief pilot arrange for a contract pilot to fly with him in the accident airplane. The chief pilot was standing by to fly the owner in the CJ2, but the owner never contacted him or requested another pilot for the accident airplane.

The IIC interviewed a contract pilot who flew with the accident pilot on December 16, 2012; this was their only flight together. It was a 6-hour round trip from Coolidge to La Paz, Mexico. The airplane was in perfect condition; everything was working, and they had no squawks. The pilot had paper charts, as well as charts on an iPad. The contract pilot felt that the pilot handled the airplane well, was competent, and understood all of the systems. The pilot coached the contract pilot on the systems installed including the autopilot. They used it on the outbound trip, and it operated properly. They used the approach mode into La Paz including vertical navigation. The pilot had no complaints of physical ailments or lack of sleep, and fuelled the airplane himself.

The passenger was a company employee who was not a pilot.

AIRCRAFT INFORMATION

The airplane was a Beech B100, serial number BE89. The airplane's logbooks were not provided and examined.

The IIC interviewed Stinger Welding's aviation maintenance chief, whose 4-year employment was terminated about 1 month after the accident. He stated that the airplane typically flew 200-400 hours a year; the company had flown it about 800 hours since its acquisition. The chief was not aware of any unresolved squawks as the owner usually had him take care of maintenance needs immediately. The airplane had been out of service for maintenance for a long time the previous year, having taken almost 7 months to get the propeller out of the shop due to the repair cost. The maintenance chief said that the owner kept the onboard Garmin GPS databases up to date. The airplane was operated under Part 91 CFR, and inspections being delayed were: the 6-year landing gear inspection was past due; the 12-month items were due; and the 3-year wing structure and wing bolt inspection was due.

METEOROLOGICAL CONDITIONS

The closest official weather observation station was Sandpoint, Idaho (KSZT), which was 46 nautical miles (nm) west of the accident site at an elevation of 2,131 feet mean sea level (msl). An aviation routine weather report (METAR) issued at 2355 MST stated: wind from 220 degrees at 5 knots; visibility 10 miles; sky 2,800 feet overcast; temperature 0/32 degrees Celsius/Fahrenheit; dew point -3/27 degrees Celsius/Fahrenheit; altimeter 29.72 inches of mercury. Illumination of the moon was 35 percent.

AIRPORT INFORMATION

The Airport/ Facility Directory, Northwest Pacific U. S., indicated that Libby Airport had an Automated Weather Observation System (AWOS)-A, which broadcast on frequency 118.575.

Libby runway 15/33 was 5,000 feet long and 75 feet wide; the runway surface was asphalt. The airport elevation was 2,601 feet.

The airport was located within the general confines of the Kootenai National Forest, and beyond the town of Libby; the area was lightly inhabited.

WRECKAGE AND IMPACT INFORMATION

The IIC and investigators from the FAA and Honeywell examined the wreckage on site. Detailed examination notes are part of the public docket. The center of the debris field was about 2.5 miles north of the airport at an elevation of 4,180 feet.

A description of the debris field references debris from left and right of the centerline of the debris path; the debris was through trees on a slope that went downhill from left to right. The debris path was about 290 feet long along a magnetic bearing of 125 degrees.

The first identified point of contact (FIPC) was a topped tree with branches on the ground below it and in the direction of the debris field. About 50 feet from the tree were composite shards, and a piece of the composite engine nacelle, which had a hole punched in it.

The next point of contact was a 4-foot-tall tree stump with shiny splinters on the stump. The lower portion of the tree had been displaced about 30 feet in the direction of the debris field with the top folded back toward the stump. Underneath the tree trunk were the nose gear and control surfaces followed by wing pieces.

One engine and propeller with all four blades attached was about 50 feet from the stump, and on the right side of the debris path. This was later determined to be the right engine. Next on the left side of the debris path was the outboard half of one propeller blade; another propeller blade was about 10 feet further into the debris field.

Midway into the debris field were several trees with sheet metal wrapped around them. Near the midpoint of the debris field, a portion of the instrument panel had imbedded into a tree about 15 feet above the ground. The wiring bundle hung down the tree trunk to ground level. To the left of the instrument panel was one of the largest pieces of wreckage. This piece contained the left and right horizontal stabilizers, vertical stabilizer, and part of one wing with the landing gear strut attached. The rudder separated, but was a few feet left of this piece.

Next in the debris field was a 6- by 8-foot piece of twisted metal, which contained the throttle quadrant.

About 100 feet right of the debris path centerline and downhill from the throttle quadrant was a 10-foot section of the aft cabin. This section was connected by steel cables and wires to a 4- by

7-foot piece of twisted metal.

The furthest large piece of wreckage was the second engine; this was later determined to be the left engine. The left propeller hub with two blades attached had separated from the engine; the other two blades were located earlier within the debris field.

MEDICAL AND PATHOLOGICAL INFORMATION

The Forensic Science Division, Department of Justice, State of Montana, completed an autopsy, and determined that the cause of death was blunt force injuries.

The FAA Forensic Toxicology Research Team, Oklahoma City, Oklahoma, performed toxicological testing of specimens of the pilot.

Analysis of the specimens indicated no carbon monoxide detected in blood (cavity), no test performed for cyanide, no ethanol detected in muscle or kidney, and no findings for tested drugs.

TESTS AND RESEARCH

The IIC and investigators from the FAA, Textron Aviation, and Honeywell examined the wreckage at Avtech, Kent, Washington, on February 13, 2013.

Detailed examination notes are part of the public docket. Investigators observed no mechanical anomalies that would have precluded normal operation of the airframe or engines.

The engines had been modified from Honeywell models to National Flight Services, INC., models per a supplemental type certificate (STC SE002292AT), and installed in the airplane per STC SA00856AT.

The left engine was TPE331-6-511B, serial number P-27185C based on a Beechcraft data tag on the engine. The starter/generator input shaft fractured and separated; the fracture surface was angular and twisted.

No metallic debris was adhering to the engine chip detector.

The engine inlet fractured and separated from the engine gearcase housing. Earthen debris was observed on the first stage compressor impeller. Vanes of the first stage impeller were bent opposite the direction of rotation.

Overall, the compressor case and plenum displayed crush damage. Upon removal of the airframe exhaust, investigators observed earthen debris within the engine exhaust. There was a fine layer of dried mud/earthen debris on the forward suction side of the third stage turbine blades. Investigators observed metal spray deposits on the third stage turbine stator vanes.

All four propeller blades exhibited leading edge damage; a section of one blade was not recovered with the aircraft wreckage, but this blade's tip was recovered.

The right engine was a TPE331-6-511B, serial number P27190C.

Investigators observed rotational scoring in multiple locations on the propeller shaft. The first stage compressor impeller displayed tearing and battering damage; some vanes were bent opposite the direction of rotation. Investigators observed wood debris in the engine inlet area.

Investigators observed metal spray deposits noted on the suction side of the third stage turbine stator vanes.

All four of the right propeller's blades displayed leading edge damage and chordwise scoring. One tip fractured and separated; it was not recovered. All blades bent aft at midspan; they exhibited s-bending and tip curling.

History of Flight

Maneuvering	Controlled flight into terr/obj (CFIT) (Defining event)

Pilot Information

Certificate:	None	**Age:**	54
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	None None	**Last FAA Medical Exam:**	10/17/2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 980 hours (Total, all aircraft), 34 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	**Registration:**	N499SW
Model/Series:	B100	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	BE 89
Landing Gear Type:	Retractable - Tricycle	**Seats:**	11
Date/Type of Last Inspection:		**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Turbo Prop
Airframe Total Time:		**Engine Manufacturer:**	National Flight Service, Inc.
ELT:	Installed, not activated	**Engine Model/Series:**	TPE331-6-511B
Registered Owner:	STINGER WELDING INC	**Rated Power:**	750 hp
Operator:	STINGER WELDING INC	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night
Observation Facility, Elevation:	KSZT, 2131 ft msl	**Distance from Accident Site:**	46 Nautical Miles
Observation Time:	2355 MST	**Direction from Accident Site:**	264°
Lowest Cloud Condition:		**Visibility**	10 Miles
Lowest Ceiling:	Overcast / 2800 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.72 inches Hg	**Temperature/Dew Point:**	0°C / -3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Coolidge, AZ (P08)	**Type of Flight Plan Filed:**	IFR
Destination:	Libby, MT (S59)	**Type of Clearance:**	IFR
Departure Time:	2025 MST	**Type of Airspace:**	

Airport Information

Airport:	Libby (S59)	**Runway Surface Type:**	
Airport Elevation:	2601 ft	**Runway Surface Condition:**	Rough; Vegetation
Runway Used:	N/A	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	48.320556, -115.475556

Administrative Information

Investigator In Charge (IIC):	Howard D Plagens	**Report Date:**	02/04/2015
Additional Participating Persons:	Bobby Radtke; FAA FSDO; Helena, MT David Studtmann; Honeywell; Phoenix, AZ Paul Yoos; Hawker Beechcraft; Wichita, KS		
Publish Date:	02/04/2015		
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=85852		

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