Aviation Investigation Final Report

Location:	Minden, Nevada	**Accident Number:**	WPR09FA235
Date & Time:	May 9, 2009, 16:10 Local	**Registration:**	N1533Z
Aircraft:	Beech 95	**Aircraft Damage:**	Substantial
Defining Event:	Collision with terr/obj (non-CFIT)	**Injuries:**	5 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses reported that the pilot had taken four friends that were attending an outdoor working group on a local flight. The airplane made two to three low passes over the working group. On the final pass, the airplane was slightly above the tops of the local houses, between 100 and 300 feet above ground level (agl). Recovered GPS data indicated that the airplane was traveling from northeast to southwest at 120 knots ground speed. The witnesses stated that the airplane then made a sudden steep climbing left turn that approached 90 degrees angle of bank, appeared to decelerate at the top of the climbing turn, then dropped towards the ground nose first to ground impact. The witnesses noted that the engines could be heard "running perfectly" throughout the maneuver. Post accident examination of the airplane established continuity from all control surfaces to the cockpit. Examination of both engines revealed no abnormal conditions or signatures.

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 an adequate airspeed while maneuvering during a low altitude maneuver that resulted in a stall.

Findings

Aircraft	Airspeed - Not attained/maintained
Personnel issues	Decision making/judgment - Pilot
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Abrupt maneuver
Maneuvering-low-alt flying	Aerodynamic stall/spin
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT) (Defining event)

HISTORY OF FLIGHT

On May 9, 2009, at 1610 Pacific daylight time, a Beech BE-95-A55, N1533Z, impacted terrain while maneuvering at low altitude near Minden, Nevada. The airplane was operated by the private pilot under the provisions of Title 14 Code of Federal Regulations Part 91. The pilot and four passengers were killed, and the airplane was substantially damaged. Visual meteorological conditions prevailed, and a visual flight plan had not been filed. The flight originated at Minden-Tahoe Airport, Minden, about 1600.

Witnesses reported to the Douglass County Sheriff that the pilot had taken four friends that were attending an outdoor working group on a local flight. The airplane made two to three passes over the working group. On the final pass, witnesses reported that the plane was slightly above the tops of the local houses, between 100 and 300 feet above ground level (agl), traveling from northeast to southwest. The airplane made a sudden steep climbing left turn, appeared to decelerate at the top of the climbing turn, then dropped towards the ground nose first, and impacted the grass field. Witnesses consistently reported that the airplane appeared to be in 90 degrees angle of bank just before it descended. The engines could be heard "running perfectly" throughout the maneuver.

A hiker in the hills to the west of the accident site photographed the airplane just before the accident. The photographer was above the airplane and the photograph depicts the airplane flying over the grass pasture with the landing gear and flaps retracted. The airplane casts a shadow on the ground directly below it. The distance between the airplane and shadow appears to be between 2 to 4 wingspans. The photograph is located in the official docket of this investigation report.

A Garmin 295 handheld global positioning system (GPS) unit was recovered from the airplane. The GPS was sent to the Safety Board Vehicle Recorders Laboratory for data recovery. The data recovered was disjointed, and the recorded altitudes are below ground elevation. The flight track appears to start in mid flight, near the accident location, and makes a rough figure eight pattern before abruptly ending over the accident location. The final leg of the GPS track proceeds from northeast to southwest at approximately 120 knots ground speed. The GPS track plot is contained in the official docket of this investigation report.

PERSONNEL INFORMATION

The pilot, age 58, held a private pilot certificate, with ratings for airplane single-engine land, airplane single-engine sea, airplane multiengine land (visual flight rules (VFR) only), and instrument airplane, issued on May 30, 1996. He held a third-class airman medical certificate issued on December 12, 2008, with the limitation that he must use corrective lenses for near and distant vision.

Examination of the pilot's logbook revealed an incomplete record of his flying activities; two entries for 2005, one entry for 2006, and one entry for 2008. His most recent flight review was dated April 28, 2008. A friend of the pilot, who is also a pilot, stated that the accident pilot was known to make irregular entries in his logbook, and used it only to record required flights such as a check ride. According to this witness, the pilot operated an aircraft sales company out of the Minden Airport and flew almost every day. On the pilot's December 12, 2008, application for his medical certificate he indicated that he had 4,700 hours of total flight hours, and had accumulated 90 hours within the previous 6 months. The pilot also held a mechanic certificate with ratings for airframe and powerplant, with inspection authorization (IA) issued on May 3, 1994. His IA was dated March 2009.

AIRCRAFT INFORMATION

The five-place, low wing, twin engine airplane, serial number (S/N) TC-326, was manufactured in 1962. It was powered by two Teledyne Continental Motors IO-470-L 260-horsepower engines, and equipped with McCauley two-bladed constant speed propellers. The airplane maintenance records were not located and were not examined by investigators. The airplane's weight and balance documentation was not located.

Utilizing the stall speed chart located in the Pilot's Operating Handbook for the Beechcraft BE-95-A55, a stall speed for 60 degrees angle of bank was estimated for the airplane at max gross weight, 4,880 pounds. With the flaps up, power idle, the stall speed at 60 degrees angle of bank is approximately 105 knots.

WRECKAGE AND IMPACT

The wreckage was located in an open grass field, consisting of moist soft earth and mud. The surrounding area consisted of rural farm houses and barn structures. The airplane wreckage was confined to the immediate crash location. No ground scars leading up to the wreckage were identified. The nose of the airplane and both engines were embedded into the ground about 2.5 feet. The tail section and fuselage were present and elevated slightly above the ground. All control surfaces (elevator, rudder, ailerons, trim tabs) and flaps were present on their hinges. Both wings exhibited leading edge crushing. The occupiable space in the cabin had been collapsed to about half the normal space by the bottom fuselage of the airplane being crushed up in to the bottom of the instrument panel. The nose of the airplane was crushed up and aft. First responders had peeled back the cabin roof to access the victims.

First responders reported fuel odor and leakage into the ground. The wreckage was oriented from tail to nose on a bearing of 342 degrees magnetic.

Control continuity was established by tracing the control cables from the tail and ailerons to the cockpit area. All cables were found to pass through the appropriate guides and attached to the appropriate bell cranks or control chain ends. The left flap actuator was measured extended 3.5 inches, the right flap actuator was measured extended 4.0 inches, which corresponds to approximately a 10-degree flap setting. Engine control cables were trapped within the wreckage structure but were traced from the engines to the cockpit. All engine control cables were attached to the engines' throttle body or propeller governor. The left and right fuel selector valves were removed and tested using compressed air. The left fuel selector was set to "AUX", and the right fuel selector was set to "MAIN." The Hobbs meter read 4001.1.

Complete engine examinations were performed on each engine. The left engine was rotated and thumb compression achieved on all cylinders. The right engine could not be rotated because of ground impact damage; engine continuity was verified by examining the cylinders and engine case by using a bore scope. All magnetos provided spark at all fixtures. Fuel was identified in both engines' manifold valves.

Examination of the wreckage revealed no evidence of preimpact mechanical malfunction.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on May 11, 2009, by the Washoe County Medical Examiner. The autopsy findings include blunt trauma to the head, abdomen, and upper and lower extremities. The cause of death was reported as "multiple injuries due to blunt force trauma."

Forensic toxicology was performed on specimens collected from the pilot during the autopsy by the Forensic Toxicology Research Team, Oklahoma City, Oklahoma. The results of the analysis were negative for carbon monoxide, cyanide, and ethanol. There were positive results for diphenhydramine, which was detected in blood and the liver.

ADDITIONAL INFORMATION

Accelerated Stalls (FAA-H-8083-3A, Airplane Flying Handbook)

"During flight, the angle of attack of an airplane wing is determined by a number of factors, the most important of which are the airspeed, the gross weight of the airplane, and the load factors imposed by maneuvering.

At the same gross weight, airplane configuration, and power setting, a given airplane will consistently stall at the same indicated airspeed if no acceleration is involved. The airplane will, however, stall at a higher indicated airspeed when excessive maneuvering loads are

imposed by steep turns, pull-ups, or other abrupt changes in its flightpath. Stalls entered from such flight situations are called “accelerated maneuver stalls,” a term, which has no reference to the airspeeds involved.

Stalls which result from abrupt maneuvers tend to be more rapid, or severe, than the unaccelerated stalls, and because they occur at higher-than-normal airspeeds, and/or may occur at lower than anticipated pitch attitudes, they may be unexpected by an inexperienced pilot. Failure to take immediate steps toward recovery when an accelerated stall occurs may result in a complete loss of flight control, notably, power-on spins.”

Pilot Information

Certificate:	Private	**Age:**	58,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; 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 3 With waivers/limitations	**Last FAA Medical Exam:**	December 31, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	April 28, 2008
Flight Time:	(Estimated) 4700 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N1533Z
Model/Series:	95 A55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TC-326
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	Unknown	**Certified Max Gross Wt.:**	4880 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	4001 Hrs	**Engine Manufacturer:**	Textron Lycoming
ELT:	C91 installed	**Engine Model/Series:**	O-360
Registered Owner:	Gary Annas	**Rated Power:**	180 Horsepower
Operator:	Gary Annas	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KTVL,4722 ft msl	**Distance from Accident Site:**	13 Nautical Miles
Observation Time:	15:53 Local	**Direction from Accident Site:**	200°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / 14 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.09 inches Hg	**Temperature/Dew Point:**	18°C / -2°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	MInden, NV (KMIV)	**Type of Flight Plan Filed:**	None
Destination:	MInden, NV (KMIV)	**Type of Clearance:**	None
Departure Time:	16:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Minden-Tahoe Airport KMIV	**Runway Surface Type:**	
Airport Elevation:	4722 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	4 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	5 Fatal	**Latitude, Longitude:**	38.929164,-119.818336

Administrative Information

Investigator In Charge (IIC):	McKenny, Van
Additional Participating Persons:	Andrew Swick; Teledyne Continental Motors; Sacramento, CA Don Morgan; Federal Aviation Administration; Reno, NV Lee Oscar; Federal Aviation Administration; Reno, NV
Original Publish Date:	April 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=73800