Aviation Investigation Final Report

Location:	Covelo, California	**Accident Number:**	WPR24FA018
Date & Time:	October 20, 2023, 18:01 Local	**Registration:**	N8248K
Aircraft:	Beech A36	**Aircraft Damage:**	Destroyed
Defining Event:	Collision during takeoff/land	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot and passenger departed from their home in Utah to a coastal airport in Northern California. After a 4 hour and 11-minute flight, the airplane arrived at the intended destination, but did not descend and subsequently turned inland, possibly due to the presence of cloud cover at the destination. The airplane landed and the pilot obtained about 90 gallons of fuel at an airport about 40 nautical miles southeast of the intended destination. The accident occurred during the subsequent departure from runway 28. A witness reported that the airplane lifted off near the end of the 3,670-ft-long runway, clearing trees by about 20 ft before it began a left turn that progressed into a steep turn with an estimated 70-80° bank angle. The witness then noted that, “as it was banking, it started coming lower,” and that when the airplane started to bank, “it lost a lot of altitude from that [the start of the bank] to when it hit the mountain.”

The wreckage was mostly consumed by postcrash fire. Although another witness reported hearing a “popping” sound from the airplane, postaccident examination of the airplane and engine revealed no preimpact mechanical anomalies that would have precluded normal operation. Performance calculations indicated that the airplane would have required a takeoff ground roll distance of about 2,600 ft based on its loading and the atmospheric conditions about the time of the accident. It could not be determined whether the pilot initiated the takeoff from the beginning of the runway and used substantially more runway than that predicted by performance calculations, or if the pilot may have initiated the takeoff from the taxiway intersection nearest the self-service fuel pumps, from which point about 2,400 ft of runway was available.

The airport was surrounded by mountainous terrain. The Federal Aviation Administration chart supplement insufficiently described the topography off the departure end of runway 28, as it

failed to include any description of the peaks and valleys immediately off the end of the runway nor did it include the presence of a 4,000 foot-tall mountain peak about 1 nm west of the runway end. A witness stated that most airplanes departing the accident airport used runway 10. The terrain off the departure end of runway 10 comprised mostly open farm fields for several miles.

The reason for the pilot's steep turn just after takeoff could not be determined based on the available information. It is possible that he may have been maneuvering due to the rising terrain or attempting to return to the runway due to a perceived problem (the "pop" sound noted by a witness). The angle of descent indicated by impact signatures at the accident site was more consistent with a controlled flight into terrain event than that of an aerodynamic stall and loss of control; therefore, it is likely that the pilot failed to maintain clearance from trees while maneuvering after takeoff. A departure from runway 10 instead of runway 28 would have provided the pilot with more favorable terrain clearance and forced landing sites if the pilot had encountered an anomaly during the takeoff.

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 clearance from trees after entering a steep banked turn for unknown reasons. Contributing to the accident was the pilot's decision to take off toward rising terrain.

Findings

Personnel issues	Aircraft control - Pilot
Aircraft	Airspeed - Not attained/maintained
Environmental issues	Mountainous/hilly terrain - Effect on operation
Organizational issues	(general) - FAA/Regulator

Factual Information

History of Flight

Initial climb	Collision during takeoff/land (Defining event)

On October 20, 2023, about 1801 Pacific daylight time, a Beechcraft A36, N8248K, was destroyed when it was involved in an accident near Covelo, California. The pilot and passenger were fatally injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

Automatic dependent surveillance - broadcast (ADS-B) data retrieved from a web-based source showed that the airplane departed Heber City, Utah, about 1235 and flew to Shelter Cove Airport (0Q5), Shelter Cove, California. The airplane reached the town of Shelter Cove at 1646, but maintained an altitude of about 3,500 ft mean sea level and completed a 180° left turn to the northeast while over the airport. At 1650:35, the airplane turned to the east and continued about 7.5 nautical miles (nm). The ADS-B flight track data ceased at 1654:29 about 1 nm east of Garberville Airport (O16), Garberville, California. A fuel receipt indicated that the pilot purchased about 90 gallons of fuel at Round Valley Airport (O09), Covelo, California (about 31 nm southeast of O16), on the day of the accident; the fuel receipt was not timestamped.

The airplane was departing O09 when the accident occurred. According to a witness, the airplane lifted off the runway surface near the departure end of runway 28 at O09. As the airplane passed near the witness' house, his kids waved to the pilot, who then waved back. The airplane then began a left turn in a nose-high attitude before it disappeared from the witness' view. About this time, a second witness observed the airplane as it cleared a group of trees by about 20 ft while it continued its left turn about 60 ft above ground level. As the airplane turned towards the east, its bank angle increased to about 70-80° and the airplane subsequently descended into the ground. The witness noted that, "as it was banking, it started coming lower," and that when the airplane started to bank, "it lost a lot of altitude from that [the start of the bank] to when it hit the mountain." The airplane exploded after it impacted the ground and a postcrash fire ensued.

The first witness reported that the engine sounded normal and then he heard a "popping" sound. The second witness stated that the engine sounded normal.

Pilot Information

Certificate:	Airline transport	**Age:**	54,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Unknown
Instrument Rating(s):	Airplane	**Second Pilot Present:**	
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	September 12, 2023
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	20000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N8248K
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:	1991	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-2678
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	April 17, 2023 Annual	**Certified Max Gross Wt.:**	1650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	20510.1 Hrs as of last inspection	**Engine Manufacturer:**	Continental Motors
ELT:		**Engine Model/Series:**	IO-550-B
Registered Owner:	PLANE HAVEN LLC	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KUKI,626 ft msl	**Distance from Accident Site:**	40 Nautical Miles
Observation Time:	17:56 Local	**Direction from Accident Site:**	175°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	6 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.86 inches Hg	**Temperature/Dew Point:**	26°C / 5°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Covelo, CA (O09)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	18:01 Local	**Type of Airspace:**	Class G

Weather satellite imagery indicated cloud cover along the coast at the time of the accident.

According to a witness, the skies at the accident airport were clear with little to no wind at the time of the accident. The calculated density altitude based on temperature, weather and barometric pressure from the closest airport weather station about 39 nm southwest of O09 was 3,220.6 ft.

The pilot obtained a weather briefing about 1219 through ForeFlight before departure from Utah. O09 was not listed in any of the flight planning categories.

Airport Information

Airport:	ROUND VALLEY O09	**Runway Surface Type:**	Asphalt
Airport Elevation:	1434 ft msl	**Runway Surface Condition:**	
Runway Used:	28	**IFR Approach:**	None
Runway Length/Width:	3670 ft / 60 ft	**VFR Approach/Landing:**	None

According to the Federal Aviation Administration chart supplement, runway 28 at O09 was 3,670 ft long and had a 270-ft-long displaced threshold. There were trees in the vicinity of the runway.

The airport was surrounded by peaks and valleys mountainous terrain. A review of the surrounding terrain showed there was 200 to 400- ft of rising peaks between valleys immediately off the departure end of runway 28. In addition, there was an approximately 4,000-ft- tall mountain peak about 1 nm west of the runway 28 departure end. A resident who lived near the departure end of runway 28 reported that airplanes normally departed the other direction (using runway 10).

A taxiway and self-service fuel pump was located near the approach end to runway 28. (See Figure 1.) The distance from the taxiway intersection to the departure end of runway 28 was about 2,400 ft.

Figure 1: Airport fuel island and runway entrance

The airport was surrounded by mountainous terrain. (See Figure 2.) A review of the surrounding terrain showed 200 to 400-ft peaks between valleys immediately off the departure end of runway 28. In addition, there was an approximate 4,000-ft-tall mountain peak about 1 nm west of the runway 28 departure end. A resident who lived near the departure end of runway 28 reported that airplanes normally departed the other direction (using runway 10). The topography off the departure end of runway 10 was mostly flat and at the same field elevation as O09 for 2-4 nm depending on the direction of flight.

Figure 2: Flight path, accident site, and surrounding terrain

The Federal Aviation Administration chart did not describe the topography off the departure end of runway 28 including the peaks and valleys immediately off the end of the runway or the presence of a 4,000 foot-tall mountain peak about 1 nm west of the runway end.

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:		**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	39.79105,-123.27963(est)

The airplane came to rest oriented on a northeasterly heading on a hillside about 0.4 nm west of the departure end of runway 28, at an elevation about 1,500 ft msl. The airplane's major structures were all accounted for at the accident site. The first point of impact (FPI) was

marked by several trees about 20 ft tall with broken treetops and broken branches at the base of each tree. A 50-ft-long debris path was traced from the FPI to the main wreckage, which was mostly consumed by postcrash fire.

Postaccident examination of the wreckage revealed no preimpact mechanical anomalies with the airframe or engine that would have precluded normal operation.

Medical and Pathological Information

An autopsy of the pilot was performed by the Mendocino County Sheriff-Coroner. The autopsy report was reviewed by the NTSB Investigator-In-Charge. According to the autopsy report, the cause of death was blunt force trauma of the head and trunk.

Additional Information

The airplane weight and balance was calculated using an empty weight of 2,599 lbs, a fuel weight of 684 lbs, pilot and passenger weights of 227 lbs and 160 lbs respectively, and a baggage weight of 100 lbs. According to the calculation, the airplane's gross weight at the time of the accident was about 3,770. The airplane was equipped with wingtip fuel tanks, which had been installed under supplemental type certificate SA4-1629. According to the STC, the maximum takeoff weight for the accident airplane was 3,833 lbs.

Performance

The airplane's ground roll was computed using the flaps-up takeoff distance chart from the pilot operating handbook (POH) and temperature of 26°C, a tailwind of 1 kt, and an obstacle of 50 ft. The chart also accounted for the following conditions: takeoff power, mixture full rich, landing gear retracted after positive climb established, cowl flaps open, and a paved, level, dry runway surface. According to the chart, the takeoff speed over a 50 ft obstacle was about 84 kts. The computations indicated that the airplane would have required a ground roll of at least

2,500 ft. According to STC SA4-1629, the takeoff distance is increased by 5% for every 100 lbs above 3,650 lbs for takeoffs at all heights above 50 ft. This would have extended the takeoff roll to 2,625 ft.

The climb chart in the POH showed a climb rate of about 1,190 fpm based on a pressure altitude near sea level, a temperature of 26°C, and a weight of 3,600 lbs (the maximum provided in the chart). According to STC SA4-1629, at weights above 3,650 lbs, the climb rate should be reduced by 100 fpm when the total weight is 3,780 lbs and the airplane is operating at sea level.

Stall Speeds

The POH included a chart to compute the airplane's stall speeds at idle power. At the chart's maximum weight envelope of 3,650 lbs and a maximum bank angle of 60°, the airplane's stall speed would have been 84 kts.

According to the POH, the stall speed at idle power with flaps retracted at 0° of bank was about 69 kts indicated airspeed (KIAS). Based on the stall information in STC SA4-1629, at 0° of bank, the stall speed with flaps retracted at 3,700 lbs would have been 63 KIAS. At 3,833 lbs, the stall speed would have been 64.5 KIAS.

An analysis of the airplane's turning performance was completed using Figure 2.29 contained in the publication Aerodynamics for Naval Aviators (NAVWEPS 00-80T-80), based on a witness statement regarding where the turn began and the location of the wreckage. According to the chart, the bank angle required to maintain a turn radius of about 600 ft at an estimated true airspeed (TAS) of about 90 kts (84 kts KIAS) was about 51° given a constant altitude.

Figure 3: Start of turn and estimated distance

Administrative Information

Investigator In Charge (IIC):	Stein, Stephen
Additional Participating Persons:	Matthew Deseelhorst; Federal Aviation Administration; Oakland , CA Anthony Hershberger; Textron Aviation; Wichita, KS Peter Basile; Textron Aviation; Wichita, KS
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