Aviation Investigation Final Report

Location:	SAN GORGONIO MO, California	**Accident Number:**	LAX98FA095
Date & Time:	February 23, 1998, 11:00 Local	**Registration:**	N3103W
Aircraft:	Beech A36	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane collided with mountainous terrain about 11.3 nautical miles south-southeast of the departure airport. The departure airport's automated weather observation system was reporting skies clear to 12,000 feet above ground level (agl), with winds from 220 degrees at 14 knots gusting to 26 knots at the estimated time of departure. The pilot received a weather briefing 1 hour 46 minutes prior to departure. He was informed that the winds at 9,000 feet mean sea level (msl) over the area were 210 degrees at 50 knots, and that conditions would get worse by 1100. The briefing also contained AIRMETS for mountain obscuration, moderate turbulence, and moderate rime and mixed icing above the freezing level. The accident site elevation was approximately 10,300 feet msl. The airplane approached the accident site on a heading of approximately 240 degrees. This would have placed the airplane on the lee side of a high ridgeline with winds exceeding 50 knots. There was a valley extending towards the southwest directly in front of and 90 degrees to the ridgeline on which the airplane crashed. This valley may have produced a funneling effect, which would have significantly accelerated the wind flow over the ridge. Satellite imagery of the site at the time of the accident showed high clouds above the mountains. The cloud tops were estimated to be 13,000 feet. Additionally, rotor clouds could be seen southwest of the crash site. Studies have shown that severe turbulence, wind shear, and downdrafts are commonly found on the downwind side of high mountainous terrain when high wind conditions exist. The maximum climb rate for the airplane at 9,000 feet under static conditions was calculated to be 900 feet per minute. No preimpact mechanical malfunctions were found during examination of the wreckage.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inability to maintain altitude due to an encounter with adverse winds and

downdrafts on the lee side of a mountain. Also causal was the pilot's inadequate weather evaluation, which precipitated his intentional flight into an area of known adverse weather in high mountainous terrain. Factors include terrain induced turbulence and downdrafts as a result of high wind conditions.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CRUISE

Findings
1. WEATHER CONDITION - MOUNTAIN WAVE
2. (F) WEATHER CONDITION - TURBULENCE,TERRAIN INDUCED
3. (F) WEATHER CONDITION - DOWNDRAFT
4. (C) WEATHER FORECAST - DISREGARDED - PILOT IN COMMAND
5. (C) WEATHER EVALUATION - INADEQUATE - PILOT IN COMMAND
6. (C) WIND INFORMATION - DISREGARDED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CRUISE

Findings
7. TERRAIN CONDITION - MOUNTAINOUS/HILLY
8. WEATHER CONDITION - DOWNDRAFT
9. AIRCRAFT PERFORMANCE,CLIMB CAPABILITY - EXCEEDED
10. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On February 23, 1998, about 1100 hours Pacific standard time (PST), a Beech A36, N3103W, collided with mountainous terrain in the San Gorgonio Wilderness Area about 11.3 nautical miles south-southeast of Big Bear City, California. The airplane was destroyed and the commercial pilot and passenger received fatal injuries. The airplane was being operated by the pilot as a personal flight under 14 CFR Part 91 when the accident occurred. The flight originated from the Big Bear City Airport about 0930, and was destined for Carlsbad, California. Visual meteorological conditions prevailed at Big Bear City Airport at the time of departure. There was no flight plan filed for the flight.

A pilot at the Big Bear City Airport witnessed the accident airplane depart the airport. The pilot's attention was drawn to the accident airplane because of deteriorating weather conditions. The pilot observed the accident airplane takeoff from runway 26, turn east over the airport, and climb to approximately 9,000 feet above mean sea level (msl). The witness last saw the airplane turn southeast towards Palm Springs, California. The pilot also indicated there were strong winds blowing from the west associated with a frontal system. The pilot also observed clouds south of the airport with bases 500 feet above ground level (agl).

Concerned family members reported the airplane overdue. An emergency locator transmitter beacon (ELT) was also heard emanating from the San Gorgonio Wilderness Area. Marginal weather conditions existed in the area, which impeded the search. The San Bernardino Sheriff's Department Aviation Division located the accident airplane about 1.5 nautical miles southeast of San Gorgonio Peak on February 24, 1998, at 1050. The accident site elevation was approximately 10,300 feet msl.

Recorded radar data was obtained from the Federal Aviation Administration (FAA) Los Angeles Air Route Traffic Control Center (ARTCC) in the form of a National Track Analysis Program printout and is attached to the report. A 1200 code secondary beacon target with mode C altitude readout was observed in the vicinity of the Big Bear airport coinciding with the witnesses reported departure time. Two different radar antennae sites tracked the target. One was San Pedro, located 77 nautical miles southwest of the accident site on a bearing of 240 degrees at an elevation of 1,400 feet msl. The second site was Mt. Laguna, located 79 nautical miles southeast of the accident site on a bearing of 150 degrees at an elevation of 6,200 feet msl.

A primary radar target was displayed about 2 miles east of the Big Bear airport approximately 0945. The target was tracked in a northeasterly direction from the airport until 0953, when secondary radar received a reply from the target transponder, which was identified as a 1200

code with a mode C indication of 8,400 feet msl.

At 0954, the target began moving in a wide arc from a northeasterly heading to a southwesterly heading. The target moved in a clockwise arc for approximately 10 miles. During this time the mode C report indicated an average altitude of 8,800 feet msl. The radar target was lost at 1029. The last recorded location of the target was 10.78 miles on a bearing of 066 degrees from the accident site. Mt. San Jacinto at 10,804 feet msl is between the Mt. Laguna radar site and the target's last known position. Additionally, Mt. San Gorgonio, at 11,499 feet msl, is located between the radar site at San Pedro and the last known position.

PERSONNEL INFORMATION

A review of FAA airman records revealed the pilot held a commercial pilot certificate with airplane single engine land and instrument airplane ratings. He held a flight instructor certificate with an airplane single engine land rating. The pilot held a second-class medical certificate issued September 17, 1997, with a limitation requiring the pilot to wear corrective lenses. No personal pilot records were recovered, and the flight time appearing on page 3 of this report was obtained from the pilot's last FAA medical application.

AIRCRAFT INFORMATION

The aircraft was a Beech A36, serial number E-495. A review of the aircraft logbooks revealed an annual inspection was completed on February 15, 1998, at a total time of 2,529.0 hours. The airplane had a Teledyne Continental Motors IO-550-B4F, serial number 281539-R, installed. The total time on the engine as of the last annual was 822 hours since new and 180 hours since major overhaul. A postimpact fire destroyed the tachometer. Actual airframe and engine times could not be obtained.

METEOROLOGICAL INFORMATION

The Big Bear City Airport was equipped with an automated weather observation system (AWOS). The airport elevation was 6,748 feet msl. At 0900, February 23, 1998, the AWOS was reporting scattered clouds at 1,900 feet agl, and winds from 220 degrees at 12 knots gusting to 27 knots. At 1000, the AWOS was reporting skies clear below 12,000 feet agl, with winds from 220 degrees at 14 knots gusting to 26 knots. At 1100, the AWOS was again reporting scattered clouds at 1,600 feet agl, and winds from 230 degrees at 13 knots gusting to 22 knots.

Review of FAA system records disclosed that the pilot received a standard weather briefing from the Riverside Automated Flight Service Station on the day of the accident at 0814. In the briefing he was informed that the winds aloft over Big Bear airport at 9,000 feet were 210 degrees at 50 knots. The pilot was advised that AIRMETS were in effect for mountain obscuration, moderate turbulence below 14,000 feet, and for moderate rime and mixed icing from the freezing level to 20,000 feet. The briefer also informed the pilot that the conditions

were expected to get worse between 1100 and 1200.

A weather study was performed by a Safety Board meteorologist and is attached to this report. The pertinent items are as follows:

There was an AIRMET for turbulence issued February 23 at 0645. AIRMET TANGO was for occasional moderate turbulence below 14,000 feet due to increasing southerly/southwesterly wind flow. Conditions were forecast to continue beyond 1300 through 1900.

Winds aloft at the time of the accident were generally from the southwest approximately 40 to 50 knots. The winds aloft forecast for the Ontario International Airport, located at 253 degrees and 35 miles from the accident site were: at 9,000 feet, 210 degrees at 38 knots; at 12,000 feet, 220 degrees at 45 knots; and at 18,000 feet, 230 degrees at 72 knots. The winds aloft forecast for Lindberg Field, San Diego, located at 181 degrees and 83 miles from the accident site were: at 9,000 feet, 220 degrees at 36 knots; at 12,000 feet, 230 at 48 knots; and at 18,000 feet, 240 at 74 knots. The forecast was valid for February 23 from 0900 to 1300 PST.

Weather satellite data was obtained for the accident region. At the estimated time of departure of 1000, the data showed clear skies from the departure point to the last radar return from the airplane. There were high clouds over the San Gorgonio Wilderness Area. The mountaintops were not visible. Additionally, the satellite data showed wave clouds were present near the accident site at the time of departure.

WRECKAGE AND IMPACT INFORMATION

The wreckage was found on the northeastern slope of a ridgeline running southeast from Mt. San Gorgonio in the San Gorgonio Wilderness Area of the San Bernardino Mountains, about 10,350 feet msl. There was a valley oriented on an approximate 220-degree bearing and 5 to 10 miles from the accident site. The terrain on either side of the valley was in excess of 9,000 feet msl. The accident site was on an 11,000-foot ridgeline running southeast at a 90-degree angle to the valley. The terrain sloped upward to the crest at an angle of approximately 19 degrees. The surface was characterized by medium to large boulders and rocks with moderately spaced pine trees approximately 20 to 50 feet in height.

There were two disturbed treetops oriented in a line leading to the main wreckage on a bearing of 240 degrees. The first tree was 96 feet from the main wreckage on a magnetic bearing of 060 degrees. The second tree was 66 feet and on the same bearing of 060 degrees. There were two large trees located 46 feet behind and on either side of the main wreckage. The trees were 15 feet 6 inches apart and lined up on a bearing of 330 and 150 relative to each other. These two trees had no damage to the tops, but exhibited impact damage approximately 15 feet up the trunks. Parts of the left and right wings were observed on or near each tree respectively.

The fuselage was found pointing upslope on a bearing of 238 degrees. The engine and nose

section were detached and resting 5 feet in front and to the right of the main fuselage. The nose section was pointed approximately 45 degrees to the right of the fuselage. The cabin was burned from the instrument panel to the aft door and entry step. There were no flight instruments found. The aft portion of the fuselage was relatively intact. The remains of the main cabin door were found in the cabin and examined. The upper hook was found intact and was not deformed. The linkage between the door handle and the upper hook was intact. The utility door latch mechanisms were intact, and the lower two door latches were extended.

The vertical stabilizer was undamaged. The right horizontal stabilizer was attached and undamaged. The left horizontal stabilizer was separated from the fuselage, remaining attached only by the elevator trim cables. The outboard portion of the elevator and counterweight horn was missing.

The right wing was found resting against a tree 46 feet behind and 8 feet to the right of the fuselage. The leading edge was crushed in a semicircular shape conforming to the shape and dimensions of the tree. The right wing tip tank was found 200 feet behind the fuselage on a magnetic bearing of 009 degrees. A piece of the right wing flap and rear spar was found 2 feet to the right of the right trailing edge wing root.

The left wing was separated at about 1/2 the wingspan. The inboard half, including part of the left wing flap, was still attached to the fuselage. The outboard half was found on a bearing of 100 degrees, and about 43 feet from the fuselage. The wingtip tank and a portion of the aileron were still attached. The inboard portion of the aileron and outboard portion of the wing flaps were found resting on a tree 46 feet aft and about 7 feet to the left of the fuselage.

MEDICAL AND PATHOLOGICAL INFORMATION

The San Bernardino County Coroner's office performed a post mortem examination of the pilot. The County of San Diego Office of the Medical Examiner performed a toxicological examination. No ethanol, carbon monoxide, or other drugs were detected. The FAA Toxicology and Accident Research Laboratory also performed toxicological tests. Results were positive for ethanol. The highest concentration detected was 55 milligrams per deciliter of ethanol in the muscle fluid.

TESTS AND RESEARCH

During a post crash examination, mechanical continuity was established throughout the engine. Compression was established for all cylinders. Accessory section drive continuity was established. The magnetos operated and produced spark. Oil was present and clean. Both instrument air pressure pumps were disassembled and found to be undamaged. The fuel pump vanes were intact. The fuel selector was found in the right main tank position.

The flight control cables were examined at the recovery site. The elevator control and trim tab cables were intact and functional when activated. The left wing aileron control cables were

found intact. The left aileron down cable was separated from the bell crank. The right wing aileron control cables were found separated from the aileron bell crank, with overload signatures evident. The aileron control rod was buckled. The rod end was attached to the aileron control horn. The two rudder control cables were found intact with the bell crank attaching hardware.

ADDITIONAL INFORMATION

The wreckage was released to the to the owner's representative on August 27, 1998. The owner's representative took possession of the wreckage on September 19, 1998.

Pilot Information

Certificate:	Commercial	**Age:**	57,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	September 17, 1997
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	4200 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3103W
Model/Series:	A36 A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	E-495
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	February 15, 1998 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated	**Engine Model/Series:**	IO-550-B4F
Registered Owner:	H. CLAY REAVIS, JR.	**Rated Power:**	300 Horsepower
Operator:	HOWARD R. BURCHILL	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	L35 ,6748 ft msl	**Distance from Accident Site:**	11 Nautical Miles
Observation Time:	10:00 Local	**Direction from Accident Site:**	154°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	14 knots / 26 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	6°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	BIG BEAR CITY , CA (L35)	**Type of Flight Plan Filed:**	None
Destination:	CARLSBAD , CA (CRQ)	**Type of Clearance:**	None
Departure Time:	10:00 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	BIG BEAR L35	**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	34.080043,-116.900833(est)

Administrative Information

Investigator In Charge (IIC):	Wilcox, Tom
Additional Participating Persons:	CATHERINE G VAN ASSCHE; RIVERSIDE , CA MICHAEL J GRIMES; MOBILE , AL PAUL E YOOS; WICHITA , KS H. CLAY REAVIS; NEWPORT BCH , CA
Original Publish Date:	August 13, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=29939