



Aviation Investigation Final Report

Location:	TRUCKEE, California	Accident Number:	LAX97FA177
Date & Time:	May 11, 1997, 21:08 Local	Registration:	N6174N
Aircraft:	Beech A36TC	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	5 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Four witnesses observed the aircraft taxi to the takeoff end of runway 28 and delay for what they thought was sufficient time to accomplish an engine and flight control checkout. During takeoff, the aircraft was observed to liftoff at the midfield point on the 7,000 foot runway and begin a shallow climb. Near the departure end of the runway, at an estimated altitude of 100 to 150 feet agl, witnesses observed the aircraft enter a turn to the left and begin to rapidly lose altitude. The aircraft continued to lose altitude throughout the turn until it impacted the ground. Postcrash investigation did not disclose any preexisting flight control, fuel, or engine system malfunctions, nor did toxicology results of the pilot indicate impairment. The flight departure was to the west (at dusk) toward a good visual horizon left by the setting sun. However, as the aircraft turned left, the forward visual horizon became less discernible due to darkness and lack of ground references, such as lights, which were minimal. At the time of takeoff, the density altitude was approximately 7,800 feet msl.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the pilot to maintain altitude and clearance above the terrain, while turning (for an unknown reason) back toward the airport after takeoff. Factors relating to the accident were: the environmental conditions (light conditions at dusk and high density altitude) and lack of visual cues, while turning toward darker conditions; and spatial disorientation of the pilot.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: MANEUVERING - TURN TO REVERSE DIRECTION

Findings

1. (F) LIGHT CONDITION - DUSK
2. (F) WEATHER CONDITION - HIGH DENSITY ALTITUDE
3. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
4. (F) SPATIAL DISORIENTATION - PILOT IN COMMAND
5. (F) VISUAL/AURAL PERCEPTION - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On May 11, 1997, at 2108 hours Pacific daylight time, a Beech A-36TC, N6174N, en route to San Jose, California, collided with terrain immediately after takeoff from Truckee, California. The aircraft was destroyed by impact and subsequent fire, and the pilot and four passengers received fatal injuries. The aircraft was being operated as a personal flight by the pilot/owner when the accident occurred. Visual meteorological conditions prevailed and no flight plan was filed.

Four witnesses stated that they observed the aircraft taxi to the takeoff end of runway 28 and delay for what they thought was sufficient time to accomplish an engine and flight controls checkout. On takeoff, the witnesses observed the aircraft liftoff at the midfield point on the 7,000-foot runway and begin a shallow climb. Near the departure end of the runway, at an estimated altitude of 100 to 150 feet agl, the witnesses observed the aircraft enter a turn to the left and begin to lose altitude. The aircraft was observed to continually lose altitude throughout the turn until it impacted the ground. Evidence at the crash site indicated that the aircraft had turned through a total of 220 degrees from the runway heading impacting the ground on a magnetic heading of 060 degrees.

A witness, located in a building approximately 300 feet from the crash site, reported hearing a loud "pop" similar to a rifle report which was followed immediately by the sound of the engine "revving up". These sounds were followed 3 to 4 seconds later by the sound of the aircraft impact with the ground.

PERSONNEL INFORMATION

The pilot's logbook and other credentials were destroyed by fire. FAA records indicated that he was the holder of a private pilot certificate with airplane ratings for single engine land and instrument. He also held a current third-class medical certificate with a restriction to wear corrective lenses while piloting an aircraft. At the time of his last flight physical examination on April 2, 1997, he reported a total flight time of 4,000 hours with 72 hours in the last 6 months. During an interview with the family, his relatives stated that he had about 1,000 hours in the Beech A-36 model aircraft.

The pilot's wife, who occupied the right front seat, also held a private pilot certificate with an airplane single engine land rating, and had reported a total flight time of 1930 hours with 28 in the last 6 months at her last flight physical examination on April 2, 1997.

AIRCRAFT INFORMATION

Relatives of the pilot reported that the aircraft maintenance records were carried onboard the airplane. Review of records from the FAA Aircraft Registry and manufacturing documents from Beech Aircraft revealed that the aircraft was a 1981 model and powered by a normally aspirated 285 horsepower reciprocating engine. Records available at the engine overhaul facility where the engine was last overhauled indicated an engine total time of 2,169 hours with 109 hours since last overhaul.

WRECKAGE AND IMPACT INFORMATION

The aircraft was found approximately 1,000 feet left of the runway 28 centerline and 100 feet short of the runway's departure end. The median wreckage distribution and ground scars from the initial point of impact were oriented on a magnetic bearing of 060 degrees. Initial wreckage debris in the field included left wing and engine compartment components. A detailed wreckage distribution diagram is attached.

The engine and main cabin had come to rest on a magnetic heading of approximately 340 degrees in an inverted attitude. The tail section was in an upright attitude and was located 20 feet behind the main fuselage. The right wing was found 10 feet to the right of the fuselage lying on its bottom side, while the left wing was approximately 100 feet to the left of the fuselage lying on its top side.

Two of the three propeller blades were still attached to the hub, with the third blade located approximately 225 feet to the right of the fuselage. All three blades exhibited torsional twisting, aft bending, and chordwise striations. Examination of the engine and propeller controls revealed that the throttle was full open, the prop was in low pitch (high RPM), and the mixture was mid-range between full rich and idle cutoff. It was not possible to determine flight control system or engine controls continuity due to the extreme damage incurred during impact and the subsequent fire.

The landing gear and wing flap actuators were both in the retracted position. The retaining pins for both front cabin doors were extended and had impact damage. The forward utility door had separated from the airframe and its locking handle was found in the locked position. The rear half of the utility door was consumed by fire and could not be inspected.

METEOROLOGICAL INFORMATION

At the time of departure from Truckee, the weather was reported by the airport AWOS to be clear with ceiling and visibility unlimited. The free air temperature and dew point were 68 and 20 degrees Fahrenheit, respectively. The wind was from 275 degrees magnetic at 5 knots and the altimeter setting was 30.24 inHg. With a field pressure altitude of 5,800 feet and a free air temperature of 68 degrees, the density altitude was calculated to be 7,800 feet. Although the sun had set behind the local mountains at the time of takeoff, photographs taken immediately after the crash indicate a clear and easily discernible visual horizon when looking to the west in

the direction of takeoff. However, when looking east, the visual horizon was not so evident and other ground references, such as lights were minimal.

TESTS AND RESEARCH:

On May 12, 1997, a fuel sample was obtained from the Truckee airport refueling facility and analyzed by the United Testing Group of Sparks, Nevada. Their report stated that the fuel sample analyzed was the proper grade of aviation fuel and that it contained less than 0.05 percent water by volume and no particulate matter

An engine teardown inspection was performed on May 22, 1997, with the assistance of a Continental Engine technical representative. The representative stated in his report that "nothing was noted that would have precluded the engine from developing power prior to impact."

Because one propeller blade was located a considerable distance from the rest of the prop assembly, the McCauley propeller and hub were shipped to the Safety Board's laboratory in Washington, D.C. for teardown inspection and lab analysis. The lab results indicated that there was no evidence of fatigue failure in the prop elements, and that all three blades appeared to have been in the hub and positioned at the same angle of attack at the time of impact. A McCauley technical representative assisted in the teardown inspection.

MEDICAL AND PATHOLOGICAL INFORMATION

On May 16, 1997, the Institute of Forensic Sciences in Oakland, California, performed an autopsy on the pilot and all four passengers. The toxicological analysis stated that all occupants had approximately 0.04 percent ethanol in their heart blood and less than 2.0 percent saturation of carbon monoxide.

ADDITIONAL INFORMATION

After completion of the engine and propeller teardown inspections, the remains of the airframe and engine were released on June 27, 1997, to Mr. A. D. Llorente who was a certified representative of Ewert's Photo-Scientific, Inc., the registered owner of the aircraft. The aircraft remains were located at the Plain Parts, Pleasant Grove, California, at the time of release.

Pilot Information

Certificate:	Private	Age:	64,Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 Valid Medical-w/ waivers/lim	Last FAA Medical Exam:	April 2, 1997
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	4000 hours (Total, all aircraft), 1000 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N6174N
Model/Series:	A36TC A36TC	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal; Utility	Serial Number:	E-1959
Landing Gear Type:	Retractable - Tricycle	Seats:	6
Date/Type of Last Inspection:	Unknown	Certified Max Gross Wt.:	3650 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Continental
ELT:		Engine Model/Series:	IO-520-BB
Registered Owner:	FOT-OPTIX, INC.	Rated Power:	285 Horsepower
Operator:		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:	Dusk
Observation Facility, Elevation:	KRN ,4889 ft msl	Distance from Accident Site:	24 Nautical Miles
Observation Time:	21:30 Local	Direction from Accident Site:	38°
Lowest Cloud Condition:	Clear	Visibility	20 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	5 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	275°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	20°C / -7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(TRK)	Type of Flight Plan Filed:	None
Destination:	SAN JOSE (SJC)	Type of Clearance:	None
Departure Time:	21:05 Local	Type of Airspace:	Airport advisory area;Class E

Airport Information

Airport:	TRUCKEE-TAHOE TRK	Runway Surface Type:	Asphalt
Airport Elevation:	5900 ft msl	Runway Surface Condition:	Dry
Runway Used:	28	IFR Approach:	None
Runway Length/Width:	7000 ft / 100 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	3 Fatal	Aircraft Fire:	On-ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	5 Fatal	Latitude, Longitude:	39.329059,-120.23973(est)

Administrative Information

Investigator In Charge (IIC): Armstrong, Weldon

Additional Participating Persons: ADRIAN W GRIEVE; RENO , NV
MICHAEL J GRIMES; LANCASTER , CA
JOHN E WARD; WICHITA , KS
THOMAS M KNOPP; VANDALIA , OH

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Investigation Class: [Class](#)

Note:

Investigation Docket: <https://data.nts.gov/Docket?ProjectID=29617>

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, “accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person” (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB’s statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available [here](#).