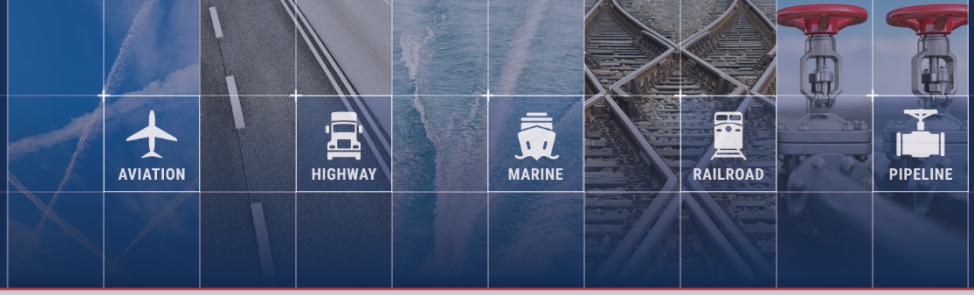

Aviation Investigation Final Report

Location:	SHOW LOW, Arizona	**Accident Number:**	LAX94FA171
Date & Time:	March 19, 1994, 21:45 Local	**Registration:**	N5222U
Aircraft:	CESSNA 206	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

THE FLIGHT DEPARTED ON A PERSONAL VFR CROSS-COUNTRY NIGHT FLIGHT TOWARD MOUNTAINOUS TERRAIN. THE PILOT RECEIVED A WEATHER BRIEFING THAT INDICATED VFR WAS NOT RECOMMENDED. THE DESTINATION WEATHER CONDITIONS CONSISTED OF RAIN, LOW CEILINGS AND LOW VISIBILITY, ICING CONDITIONS, AND MOUNTAIN OBSCURATION. THE PILOT DEPARTED ABOUT 1 1/2 HOURS AFTER THE BRIEFING AND DID NOT ARRIVE AT THE DESTINATION. AFTER BEING REPORTED OVERDUE, THE AIRCRAFT WAS LOCATED 2 DAYS LATER ABOUT 9 MILES EAST OF THE DESTINATION AIRPORT. THE PILOT WAS NOT INSTRUMENT CURRENT AND THE AIRCRAFT WAS NOT CERTIFICATED FOR INSTRUMENT FLIGHT.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the pilot's intentional VFR flight into known adverse IMC weather conditions. Inadequate preflight planning, dark night operations, and weather conditions that included low ceilings and mountain obscuration were factors in the accident.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CRUISE - NORMAL

Findings

1. TERRAIN CONDITION - MOUNTAINOUS/HILLY
2. (F) LIGHT CONDITION - DARK NIGHT
3. (F) PREFLIGHT PLANNING/PREPARATION - INADEQUATE - PILOT IN COMMAND
4. (F) WEATHER CONDITION - LOW CEILING
5. (C) FLIGHT INTO KNOWN ADVERSE WEATHER - INTENTIONAL - PILOT IN COMMAND
6. (F) WEATHER CONDITION - OBSCURATION

Factual Information

History of the Flight

On March 19, 1994, about 2145 hours mountain standard time, a Cessna 206, N5222U, collided with terrain about 9 miles east of Show Low, Arizona. The airplane was being operated as a visual flight rules (VFR) cross-country personal flight under Title 14 CFR Part 91 when the accident occurred. The airplane, owned by Action Medical Service, Winslow, Arizona, was destroyed by impact. The certificated airline transport pilot and a passenger received fatal injuries. Instrument meteorological conditions prevailed in the area at the time of the accident. A flight plan was not filed. The flight originated at the Chandler Municipal Airport, Chandler, Arizona.

The pilot contacted the Prescott Automated Flight Service Station (AFSS) about 1833 hours and obtained a weather briefing for an intended route of flight from Chandler to Show Low. The flight service station specialist indicated that VFR flight was not recommended.

The time of departure from Chandler is not known; however, the pilot contacted Phoenix Terminal Radar Controllers (TRACON) about 2055 hours and reported that he had just departed Chandler. The pilot was provided with radar advisories until 2107:26 hours. At that time, the pilot was advised that flight following with the Albuquerque Air Route Traffic Control Center (ARTCC) was available. No further communication was received from the pilot. A ground witness near the area of the accident reported overcast cloud conditions, and rain with thunder and lightning.

The operator reported that the pilot was authorized to utilize the aircraft for personal travel. The airplane was reported overdue when the pilot failed to report for work on March 21, 1994. Search personnel located the airplane visually about 1010 hours on March 23, 1994. No emergency locator transmitter signal was received from the airplane.

The accident occurred during the hours of darkness at latitude 34 minutes, 14.31 minutes north, and longitude 109 degrees, 48.71 minutes west.

Crew Information

The pilot held an airline transport pilot certificate with an airplane multiengine land and instrument airplane ratings. The pilot also held a commercial pilot certificate with an airplane single-engine land rating. In addition, the pilot was a certified flight instructor with airplane single-engine, multiengine, and instrument airplane ratings. The most recent first-class medical certificate was issued to the pilot on December 7, 1993, and contained no limitations.

No personal flight records were located for the pilot and the aeronautical experience listed on page 6 of this report was obtained as an estimate provided by the operator. The pilot's total aeronautical experience consisted of about 2,400 hours, of which about 100 hours were accrued in the accident aircraft make and model. In the preceding 30 days prior to the accident, the pilot accrued a total of 25 hours. The operator also indicated that the pilot was not current for flight in instrument conditions.

Aircraft Information

The recording hour meter in the tachometer gauge was destroyed. Examination of the maintenance records revealed that the last entry in the aircraft's logbook was February 6, 1994. As of that date, the airplane had accumulated a total time in service of 6,281 flight hours. The most recent annual inspection was accomplished on September 3, 1993, 161 flight hours before the accident. The operator reported that the aircraft was equipped for VFR flight only. The navigational equipment installed included two com/nav radios, a loran receiver, and an ADF receiver that was inoperative.

The engine had accrued a total time in service of 6,031 hours of operation. The maintenance records note that a major overhaul was accomplished on September 5, 1986, 1,115 hours of operation before the accident.

Meteorological Information

The closest official weather observation station is Show Low, Arizona, which is located 9 nautical miles west of the accident site. The Federal Aviation Administration (FAA) reported that the airport is normally attended until 1800 hours; however, a surface observation at 1845 hours indicated in part: Sky condition and ceiling, estimated 2,000 feet broken clouds, 6,000 feet overcast; visibility, 10 miles in light rain; temperature, 47 degrees F; dew point, 45 degrees F; wind, 180 degrees at 12 knots, gusts to 22 knots; altimeter, 29.89 inHg; ceilings lower south through west, rain began at 1735 hours.

The Show Low airport manager reported that at 1920 hours, a Beech Baron reported heavy icing conditions at 10,000 feet. At 2125 hours, the manager indicated that the weather remained poor; visibility varied from 1 to 4 miles; ceilings varied from 500 to 1,500 feet with areas to the north better than the south.

Beginning at 1833:14 hours, the pilot requested and received a standard weather briefing from the Prescott AFSS. He indicated to the briefer that he was planning a VFR flight at 9,000 feet with a departure from Chandler in 1/2 hour to Show Low. The briefer advised that VFR flight was not recommended and included a synopsis of weather conditions that included: Occasional moderate turbulence below 18,000 feet, mountain obscuration along the route, and occasional moderate icing from 10,00 to 23,000 feet. The forecast included 8,000 to 9,000 feet scattered clouds, 12,000 feet broken, tops of the clouds to 23,000 feet and until 2100 hours, widely scattered light rain showers or thunderstorms.

The briefer provided information contained in notices to airmen (NOTAMs) that the Scottsdale nondirectional beacon (NDB) was out of service. There was no indication of local (Show Low) NOTAMs. At 1837:38 hours, the pilot indicated that..."Ok, I probably won't be going." The briefer reiterated that the flight was not recommended due to darkness, low clouds, and possible rain shower activity. A transcript of the weather briefing is included in this report.

A paramedic working at the Show Low airport reported low ceilings, rain, and windy conditions. Two aeromedical pilots operating flights between Phoenix, Arizona, and Show Low, reported thunderstorm activity and icing conditions between 9,000 to 13,000 feet.

Aids to Navigation

A low altitude airway (V 190) is located between the Phoenix VORTAC and the St. Johns VORTAC oriented on the Phoenix 054 degree radial. The St. Johns VORTAC is located about 44 nautical miles northeast of Show Low. The FAA reported that several aircraft reported the St. Johns VORTAC out of service on March 19, 1994. They noted that the Prescott AFSS published a NOTAM about the VORTAC at 1753 hours. One pilot operating into the Show Low airport reported that the St. Johns VORTAC azimuth indicating capability was inoperative.

Communications

Review of the air-ground radio communications tapes maintained by the FAA at the Phoenix TRACON facility revealed that the aircraft communicated with the positions of South and North Departure. No unusual communications were noted between the TRACON and the accident aircraft. At 2107:26 hours, radar contact with the aircraft was lost. The pilot was advised to squawk VFR (1200), a frequency change was approved, and that flight following advisories was available with Albuquerque ARTCC. The pilot acknowledged at 2107:33 hours. A transcript of communications is included in this report.

National Track Analysis Program (NTAP) radar data from the Albuquerque ARTCC was requested by National Transportation Safety Board investigators to determine the flight track of the accident airplane. The FAA provided a computer print of the NTAP data in the vicinity of the accident from 2115 to 2200 hours. The print contained no data.

The Arizona Wing of the Civil Air Patrol reported that during their search efforts for the aircraft, they were provided with NTAP data from the Air Force Rescue Coordination Center (AFRCC). The data reflected radar returns that originated near Chandler, Arizona, at 2057 hours and 3,700 feet, and continued northeast toward Show Low, Arizona. The NTAP data sheet identifies the radar track as the accident aircraft. The last radar return reflected on the data sheet ends at 2130 hours and 11,900 feet, about 27 miles southwest of the accident site.

Aerodrome and Ground Facilities

The destination airport, Show Low, Arizona, has a published elevation of 6,412 feet mean sea level. It is attended from 0700 hours to 1800 hours and is served by several commuter airlines. Aircraft traffic communications are conducted on a common traffic advisory frequency (CTAF). The airport manager at Show Low reported that no radio communications were received from the accident aircraft. There is one published nonprecision instrument approach for the airport utilizing an NDB.

Wreckage and Impact Information

Safety Board investigators examined the airplane wreckage at the accident site on March 24, 1994. Ground scars and the wreckage examination revealed that the airplane initially struck a tree about 21 feet above the ground on about a 028 degree heading (all heading/bearings noted in this report are oriented toward magnetic north).

All of the airplane's major components were found at the main wreckage area. After the initial contact, the airplane struck several additional trees. One tree, located about 80 feet from the first point of impact along the wreckage path, displayed extensive surface gouging and scaring about midheight. The main portion of the fuselage came to rest about 140 feet from the initial point of impact after striking numerous large rocks and about a 10-foot-high rock wall.

The first evidence of ground contact was about 110 feet from the initial point of tree contact into about 20-degree upsloping terrain. At that point, the propeller was found separated from the engine along with a portion of the nose wheel assembly.

From the initial point of tree contact to the propeller, the following portions of the aircraft were located:

About a 2 foot by 2 foot section of the left wing leading edge that was extensively crushed. The outboard half of the left wing with the aileron attached, separated at about the wing lift strut attach point. The wing exhibited extensive leading edge aft crushing and folding in a chordwise direction. The separated rudder exhibited a semi-circular aft crushing signature about midheight. The right wing lift strut was separated from its respective wing and fuselage attach points and was bent in a "U" shape. The left wing lift strut was found separated from its fuselage attach point and fractured about midspan. The right main gear strut was separated from the fuselage and was missing the entire wheel assembly.

The right horizontal stabilizer with the elevator and elevator trim tab attached, separated from the fuselage at the inboard attach fitting. The leading edge exhibited semi-circular aft crushing about 2 feet inboard from the tip. The elevator trim tab actuator was found extended 1 5/8 inches. According to the manufacturer, the extended trim tab actuator corresponds to a 5 degree tab-up (nose down) setting.

The right wing separated from the fuselage and exhibited crushing and opening of the structure. The flap remained attached to the wing. The right aileron separated from the wing

and exhibited semi-circular aft crushing signatures. The flap jackscrew actuator was not extended. The flap jackscrew setting corresponds to a flaps up setting.

From the propeller to the fuselage point of rest, the following portions of the aircraft were located:

The inboard half of the left wing, with the flap attached, exhibited leading edge aft crushing and folding. The separated outboard end of the wing segment displayed aft and downward curling of the wing structure. The flap exhibited a semi-circular crush signature in a forward direction along the trailing edge of the flap, about 3 1/2 feet outboard from the inboard attach point. The remaining half of the left wing lift strut was found separated from its fuselage attach point.

The left horizontal stabilizer assembly with the elevator attached, separated from the empennage and was found folded to the right over the vertical stabilizer. It exhibited aft crushing along the leading edge about 8 inches inboard from the tip. The vertical stabilizer separated from its fuselage attach point and was folded under the empennage. The upper end of the vertical stabilizer exhibited aft semi-circular crushing signatures about midheight.

The main portion of the fuselage containing the empennage and cabin area was folded over the edge of about a 10-foot-high rock wall with the tail hanging vertically down the face of the wall. The instrument panel and engine separated from the fuselage and were located to the left of the fuselage point of rest. The left main gear assembly was folded aft and under the fuselage. All of the aircraft seats separated from their respective seat tracks and were located to the right and forward of the fuselage. The front seatbelts separated from their respective floor attach points. Both front seatbelts were found still buckled. A position light bulb that was not destroyed was the rear bulb that is located at the aft end of the tail cone. The outer glass cover of the assembly was intact; however, the bulb was shattered leaving the bulb filament support posts intact with the filament broken. Examination of the broken filament revealed that it separated near one support post while remaining attached to the other post. The filament displayed elongation of several sections of the filament coils.

Due to the impact damage, Safety Board investigators were unable to operate the flight controls by their respective control mechanisms; they were, however, able to establish continuity of the flight control cables from the cabin/cockpit area to the point of impact related separation. All of the separated ends of the flight control cables exhibited broom-straw type signatures.

The cockpit and instrument panel area were found destroyed. Safety Board investigators, however, obtained some instrument readings (see Supplement B for details). Portions of the instrument panel, including radios and instruments, were located about 150 feet forward of the fuselage point of rest. Examination of the directional gyro and attitude indicator gyro rotors did not reveal any rotational scoring or scratching.

The propeller assembly separated from the engine crankshaft and the hub spring was broken from its housing. One propeller blade exhibited a 90-degree forward bend about 6 inches inboard from the tip, leading edge gouging, chordwise and spanwise scratching, "S" bending, and torsional twisting. The second blade exhibited a 45-degree aft bend and 90-degree aft curling about 6 inches inboard from the tip. It also exhibited leading edge gouging, diagonal scratching marks from the leading edge to trailing edge in an outboard direction, "S" bending, and torsional twisting.

The engine separated from the fuselage and sustained impact damage to the underside and front portion of the engine. The oil sump was crushed upward against the engine case, exposing the interior of the engine. Several exhaust tubes were crushed in an upward direction and exhibited smooth folded edges without any cracking or breaks at the fold edges. The number five cylinder sustained separation and damage to cylinder head. Cylinder head damage, exposing the valves, was evident on the numbers six, four, and three cylinders. Due to the engine damage, the crankshaft could not be rotated. The cam shaft exhibited damage to the propeller governor drive gear and the main cam gear. The crankshaft appeared intact.

The magnetos separated from the accessory case. Hand rotation produced spark at all terminals. The spark plugs exhibited no unusual combustion signatures. One plug had evidence of tiny segments of pine needles around the electrode.

The fuel selector was positioned on the left tank. The fuel gascolator screen was found separated from its housing; however, it did not have any evidence of contamination. A small amount of blue-colored fuel was noted dripping from the left wing during movement of the wreckage.

The vacuum pump separated from the engine and an internal examination revealed that the block was fractured. The vanes were all present and free to move. The average length of the vanes was about 9/16 of an inch.

Medical and Pathological Information

A post mortem examination of the pilot was performed under the authority of the Apache County Medical Examiner by the Forensic Science Center, 2825 E. District, Tucson, Arizona, on March 25, 1994. The examination revealed that the cause of death for the pilot was attributed to multiple blunt trauma.

A toxicological examination of the pilot was conducted by the FAA's Civil Aeromedical Institute (CAMI) on April 8, 1994, and was negative for all alcohol and screened drugs.

Additional Information

Wreckage Release

The Safety Board released the wreckage located at Air Transport, Phoenix, Arizona, to the owner's representatives on April 4, 1994. No parts or components were retained by the Safety Board.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	29,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	December 7, 1993
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	2400 hours (Total, all aircraft), 100 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N5222U
Model/Series:	206 206	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	2060222
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	September 3, 1993 Annual	**Certified Max Gross Wt.:**	3300 lbs
Time Since Last Inspection:	161 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	6281 Hrs	**Engine Manufacturer:**	CONTINENTAL
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520-A
Registered Owner:	PAUL A. WOLFE	**Rated Power:**	285 Horsepower
Operator:	ACTION MEDICAL SERVICE	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night/dark
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Unknown	**Visibility**	2 miles
Lowest Ceiling:	Overcast / 1000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	20 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	270°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:	N/A - None - Rain		
Departure Point:	CHANDLER , AZ (P10)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	00:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**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:**	34.230449,-110.069084(est)

Administrative Information

Investigator In Charge (IIC):	Erickson, Scott
Additional Participating Persons:	RENALDO LUTZ; SCOTTSDALE , AZ JOHN HUY; WICHITA , KS MICHAEL GRIMES; LANCASTER , CA
Original Publish Date:	December 19, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
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