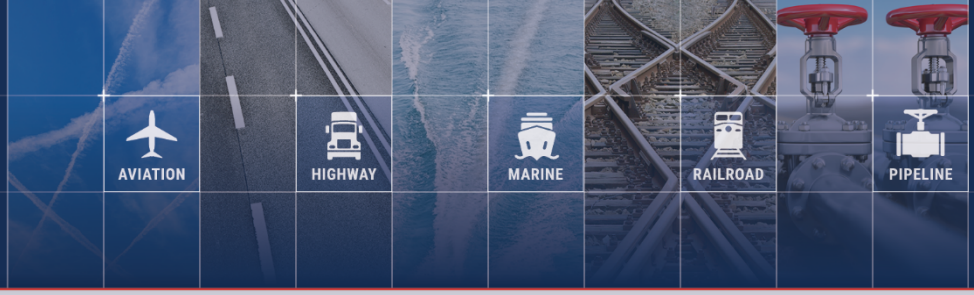


# Aviation Investigation Factual Report

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|---|---|---|---|
| **Location:** | BREMERTON, Washington | **Accident Number:** | SEA97FA215 |
| **Date & Time:** | September 23, 1997, 23:30 Local | **Registration:** | N6756H |
| **Aircraft:** | Cessna 172M | **Aircraft Damage:** | Substantial |
| **Defining Event:** | | **Injuries:** | 3 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Factual Information

HISTORY OF FLIGHT

On September 23, 1997, at 2330 Pacific daylight time, N6756H, a Cessna 172M, operated by Pegasus Air, Inc., collided with a tree and impacted a pond during final approach to the Bremerton National Airport near Bremerton, Washington. The airplane was substantially damaged and there was no fire. The private pilot and his two passengers were fatally injured. Visual meteorological conditions prevailed and no flight plan had been filed. The personal flight departed from Friday Harbor, Washington, and was destined for the Bremerton National Airport. The flight was conducted at night under 14 CFR 91.

According to a flight instructor (interview synopsis attached), the accident pilot arrived at the Pegasus Air office, located at the Bremerton National Airport, one day before the accident. The accident pilot told the instructor that he wanted to "get checked out" to rent airplanes at Pegasus Air. The instructor stated that the accident pilot told him that he was visiting the area from California and wanted to fly around the local area with friends. The instructor further stated that the pilot had been scheduled for only one hour for the check-out, and that the instructor had another scheduled activity after that hour.

About 25 minutes into the check-out, while the instructor and the accident pilot were in the Pegasus office during the oral portion of the check-out, the instructor told the accident pilot that there was not enough time to complete both the ground and flight portions of the check-out during the scheduled time. The two agreed that only the ground portion would be completed that day, and that the flight portion would be rescheduled for the following day during a one-hour flight. The instructor also asked the pilot to complete a Pegasus Air Aircraft Rental Application (attached).

The instructor stated that he examined the accident pilot's license, medical certificate, and personal flight log book during the ground portion of the check-out, but that he "did not pay attention" to the accident pilot's night flying experience. The instructor stated that he was unaware that the pilot wanted to fly at night, and was under the impression that the check-out was for day flights only under visual flight rules (VFR). The instructor further stated that the accident pilot never mentioned that he had intended on flying at night, nor did he ask any questions about night flying requirements for Pegasus Air.

The instructor stated that the accident pilot "showed up early" on the following day (the day of the accident) and performed a preflight inspection of the airplane. The instructor arrived at the airplane about 1500 and the two went flying around the local area. The instructor stated that the accident pilot performed power-on and power-off stalls, slow flight at minimum controllable airspeed, steep turns, and a simulated forced landing approach. The instructor

stated that the accident pilot "did fine" during the maneuvers, and that he was "safe." The accident pilot then performed five landings back at the Bremerton National Airport as the instructor was evaluating him from the right front seat. The instructor stated that the landings were "fine" and "safe," and that the accident pilot's airport traffic pattern work needed some "polishing." Immediately after the flight, the instructor had to leave for an appointment, but it was understood that the accident pilot had successfully completed the check-out flight. After the check-out flight, the accident airplane was dispatched to the accident pilot by the president of Pegasus Air. In an interview with the Safety Board (synopsis attached), the president stated that she was unaware of the pilot's night flying experience before the accident, and was also unaware that the flight instructor had checked out the pilot for day VFR flights only.

The president stated that she was aware that the accident pilot had scheduled the airplane from 1500 until 1600 on the day of the accident to receive the check-out with the instructor, and then from 1600 until 2200 for a personal flight with his wife and friend. She stated that the pilot had called one day before the accident to schedule the airplane for these times. She further stated that she told the accident pilot that she would be closing up the office around 2130 and that the pilot should return the airplane keys to a "drop box" located outside of the Pegasus Air office after he returned from the flight.

Entries in the Pegasus Air flight authorization sheet (copy attached) for the accident flight that were completed by the pilot and the president of Pegasus indicate that the pilot's destination was Friday Harbor. The pilot signed his name under a block that stated that he read and understood the Aircraft Rental Agreement (attached). The signature of the president's first name also appeared on the form underneath a block titled "FLIGHT AUTHORIZED BY." The Hobbs out time was recorded as 267.2 hours on the form, and the tachometer time was recorded as 101.0 hours.

The Pegasus Air Aircraft Rental Agreement cites the following: "All flights shall be during daylight hours between sunrise and sunset.... Night operation must be approved by the operator prior to takeoff.... For flights exceeding 50 miles at night, the following will apply: A) Instrument rating. B) Authorization from a company flight instructor."

The president stated that she dispatched the accident airplane to the accident pilot about 1630, and that the flight departed about 1730 with the accident pilot, his wife and his friend on board. A receipt (copy attached) found on one of the passengers after the accident indicated that it was from a restaurant in the town of Friday Harbor, located 63 nautical miles to the north of the Bremerton National Airport. The receipt indicated that all three occupants had completed dinner about 2000 hours on the evening of the accident. The activities of the three occupants between 2000 and 2255 could not be determined.

According to recorded radar data and voice communications (data and transcripts attached) from the Federal Aviation Administration (FAA), the accident pilot contacted Whidbey Island Radar Approach Control at 2255 for routine VFR flight following. The pilot was then handed

off to Seattle Approach Control at 2309 for flight following as the airplane flew toward the Bremerton National Airport from the northwest at an altitude of about 5,000 feet above mean sea level (msl).

At 2312:54, as the airplane was gradually descending through an altitude of 4,000 feet msl, the controller asked the pilot if the pilot had listened to the automated weather observation station (AWOS) recording for the Bremerton National Airport. The pilot acknowledged that he had. At 2320:21, after the airplane had descended to an altitude of about 500 feet above the ground (900 feet msl), the controller asked the pilot: "...do you have Bremerton in sight?" The pilot responded with "...we don't have Bremerton in sight quite yet, I don't think, but we're right on course." During this time, the airplane was located about 15 nautical miles north-northwest of the Bremerton National Airport. The airplane then initiated a gradual climb and turned toward the southeast.

At 2324:42, the airplane leveled at 2,600 feet msl (about 2,200 feet above terrain) and turned to a ground track of 162 degrees. At 2325:30, the controller said "good night" to a Northwest Airlines pilot, and the accident pilot responded with "good night five six hotel." The controller replied: "Cessna five six hotel, that was for another aircraft, sir. If you want, you can remain this frequency. Let me know when you have Bremerton in sight." The accident pilot responded with: "Okay, will do."

At 2327:15, the controller asked the accident pilot: "... the airport would be at twelve o'clock and two and a half miles. Do you have it in sight?" The pilot responded: "I think we do Seattle." The controller immediately responded: "Cessna five six hotel, understand you do have it in sight, sir?" The pilot replied: "I'm not sure. I think that's it. I've never... it's the first time coming in here in the middle of the night." The controller then said: "Cessna five six hotel, just let me know when you're sure you have it in sight please." The pilot immediately responded: "... we have Bremerton in sight."

The controller then terminated the flight following and cleared the pilot to change frequencies so that the pilot could contact the airport. The pilot replied: "Thank you, Seattle. Good night." This was the accident pilot's last known transmission. No distress calls were received. Radar data indicate that the airplane was descending through about 1,600 feet msl (about 1,200 feet above terrain) due west of the airport at the time of the last transmission.

Recorded radar continued to track the airplane for the next two minutes. The ground track shows that the airplane banked to the right and entered a left downwind leg to runway 01 at the Bremerton National Airport. The airplane then initiated a continuous left turn south of runway 01. The airplane overshot the final approach course to the runway, and continued to turn left toward the course until it disappeared below radar coverage. The airplane altered its ground track a total of 149 degrees in 46 seconds during the left turn. The last recorded radar hit of the airplane was at 0630:09 and was located about 1/4-mile south of the accident site coordinates. The airplane was about 150 feet above terrain (600 feet msl), turning left through a magnetic bearing of 050 degrees, and travelling at a ground speed of 112 knots during this

time. (Plots of the airplane's flight path overlaid against a topographic chart during the final 5 minutes of flight are attached.)

The airplane wreckage was located in swampy terrain on the following morning about 1/2-mile south of the approach threshold of runway 01 at the Bremerton National Airport by an airplane that was flying over the airport.

The accident occurred during the hours of darkness near the following coordinates: 47 degrees, 28.65 minutes North and 122 degrees, 46.60 minutes West.

PERSONNEL INFORMATION

The pilot, male, age 46, possessed an FAA Private Pilot Certificate with a rating for airplane single-engine land. He was issued the certificate on September 26, 1995 and was not instrument-rated. According to FAA records, the pilot was issued an FAA Third Class Medical Certificate on May 10, 1996, with no limitations. The pilot was also issued FAA Airframe and Powerplant Mechanic licenses on July 27, 1992. The pilot had no prior accident, incident or violation history according to FAA records.

An examination of the pilot's flight log (excerpted copies attached) revealed that he had logged a total of 132 hours of flight time since he began flight training in 1994. On April 29, 1995, the pilot failed his first FAA Private Pilot practical flight examination after accumulating 81.4 hours of flight time. The pilot logged 10 more flights before failing his second FAA Private Pilot practical flight examination on June 10, 1995. After 10 more flights of mostly landing practice, the pilot successfully passed the FAA Private Pilot practical flight examination on his third attempt; he had logged a total of 117.3 hours at the time of the examination.

An examination of the pilot's flight log also revealed that the pilot had logged a total of 3.3 hours of night flight time, all of which were accumulated during flight instruction while pursuing the Private Pilot Certificate. The most recent night flight entry was made on April 10, 1995, 2 years and 5 months before the accident flight. Entries in the logbook also indicated that all of the pilot's previous flight time occurred in the Long Beach, California, area.

The president of Pegasus Air who dispatched the airplane to the pilot, and the flight instructor who flew with the pilot on the day of the accident, stated that they did not observe any conversations or mannerisms by the pilot that would have indicated a problem with the pilot's physical, mental, or emotional health.

AIRCRAFT INFORMATION The aircraft, N6756H, a Cessna model 172M "Skyhawk," was manufactured by the Cessna Aircraft Company in 1975. It had been registered to and operated by Pegasus Air, Inc. since 1991. The airplane was powered by a Textron Lycoming model IO-320-E2D reciprocating engine that was rated at 150 horsepower.

An examination of the maintenance records revealed that the aircraft and engine underwent a

100-hour inspection on August 15, 1997. At the time of the accident, the airplane had flown an additional 68.8 hours since the inspection. The airframe had accumulated a total of 5,103 operating hours, and the engine had accumulated 1,495 hours since its last major overhaul on December 18, 1992. No unresolved discrepancies were noted in the airframe, engine, or propeller log books.

According to receipts and logs (copies attached) obtained from the fueling service at the Bremerton National Airport, the accident airplane received 11.9 gallons of 100 low lead aviation gasoline on the day of the accident.

METEOROLOGICAL INFORMATION

The following meteorological data was recorded by the Bremerton National Airport AWOS (print-out attached) about the time of the accident: Calm winds; no ceiling; 10 statute miles of visibility; temperature 56 degrees F; dew point 48 degrees F; altimeter setting 29.89 inches of Hg.

The Safety Board utilized a computer program (print-out attached) to determine the positions of the sun and moon at the time of the accident. According to the program, the sun had set at 1907 (4 hours and 23 minutes before the accident) and the end of evening civil twilight occurred at 1938. The moon was 4.4 degrees (azimuth) above the horizon at a magnetic bearing of 48.7 degrees; 53 percent of the moon's surface was illuminated.

AERODROME AND GROUND FACILITIES

The Bremerton National Airport has a single paved runway, oriented 010 - 190 degrees magnetic, with no air traffic control services. Runway 01 - 19 is 6,200 feet long and 150 feet wide. The elevation on the approach threshold of runway 01 is 439 feet msl. The elevation at the opposite end is 433 feet msl. The airport is public and has a rotating beacon that operates from dusk until dawn.

The terrain surrounding the airport consists of rolling hills that are slightly higher in elevation than the runway. The terrain rises to about 1,700 feet msl about 20 nautical miles north of the airport. This elevated terrain can create a visual illusion of increased altitude above the runway surface when viewed from the south looking north along runway 01.

Runway 01 - 19 is served by High Intensity Runway Lighting (HIRL) that is constantly lit during evening hours. The HIRL provides runway edge lighting along the entire length of the runway. According to officials at the Bremerton National Airport, the HIRL for runway 01 was lit at the time of the accident

Runway 01 was also served by a 4-box Visual Approach Slope Indicator (VASI) lighting system. The VASI is pilot-activated by keying a microphone on a frequency of 123.05 megahertz. The VASI is a system of lights arranged to provide visual descent guidance information during the

approach to a runway. These lights are visible from 3-5 miles during the day, up to 20 miles at night, and provide guidance for a 3-degree angle of descent to the runway. The visual glide path of the VASI provides safe obstruction clearance within plus or minus 10 degrees of the extended runway centerline and to 4 nautical miles from the runway threshold. The FAA requires that private pilot applicants demonstrate knowledge of the use of VASI; however, the use of a VASI is not required for airport operations.

According to officials at the Bremerton National Airport, the VASI for runway 01 was placed out of service by the FAA at the time of accident. According to the FAA (correspondence attached), the VASI was temporarily shut down on September 16, 1997, because the nearby runway localizer shelter was being refurbished, requiring that the electrical power be shut off. Because the VASI power is fed from the localizer shelter, the power to the VASI was also shut off. A Notice to Airman (NOTAM) regarding the VASI outage was issued (NOTAM attached) by the Seattle Flight Service Station on September 16, 1997. The Safety Board determined that the accident pilot would have had access to the NOTAM, if requested.

Runway 19 also has a VASI and was operable at the time of the accident. Runway 19 is also served by pilot-activated medium intensity approach lighting (MALSR). According to the published operational restrictions for the Bremerton National Airport, runway 19 is designated as the "calm wind" runway, and should be used when the winds are less than 5 knots.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was examined at the accident site by the Safety Board on September 24, 1997, one day after the accident, and again on September 25, 1997, at the Bremerton National Airport.

The airplane wreckage was partially submerged in a 3-foot-deep pond about 1/2-mile south of the approach threshold of runway 01 of the Bremerton National Airport, and along the extended runway centerline. The airplane was resting in a nose-down attitude and remained intact, except for the propeller, engine cowling, and right elevator which were separated from the airplane. The airplane was nearly inverted and its tailcone was pointed toward the airport.

A 12-inch diameter tree, freshly topped about 50 feet above the ground, was found on the edge of the pond about 300 feet from the wreckage. The wreckage was located on a magnetic bearing of about 310 degrees from this tree.

No evidence of fire or in-flight structural failure was found. Both wings remained completely attached to the fuselage and exhibited uniform "accordion" crush damage along the entire span of their leading edges. The wing-to-fuselage interface had been crushed downward into the cabin area. The airplane had fixed tricycle landing gear. Both main landing gear spring steel struts remained attached to the fuselage and were not damaged.

No evidence of a preimpact flight control malfunction was found. Flight control cable

continuity was verified for all flight controls. An examination of the electrically-driven flap jackscrew revealed that none of the jackscrew threads were exposed. According to the Cessna Aircraft Company, the lack of exposed threads corresponds to a fully-retracted wing flap position. The elevator trim tab actuator was found pulled from its mounting bracket; a reliable indication of its trim position could not be determined.

The majority of the engine controls, flight instruments, cockpit gauges, radio equipment, and electrical switches were intact. None of the circuit breakers were tripped. The taxi light, landing light, navigation light, and strobe light switches were selected to the OFF position. The beacon light switch was found in the ON position. The altimeter setting read 29.86. The throttle and fuel mixture controls were found in the full forward position. (A complete listing of all cockpit readings is attached as Supplement B.)

The Hobbs meter read 1269.5 hours, indicating that the airplane had accumulated 2.3 hours of operation since its recorded departure from Bremerton.

The COMM 1 transceiver frequency was selected to 123.50 megahertz (the common traffic advisory frequency for the Bremerton National Airport is not this frequency, rather it is 123.05 megahertz). The COMM 2 transceiver frequency was selected to 120.10 megahertz, which corresponds to one of the frequencies used by the pilot to communicate with Seattle Approach Control. The NAV 1 navigation frequency was selected to 116.85 megahertz (the Seattle VORTAC frequency is not this frequency, rather it is 116.80 megahertz). The NAV 2 navigation frequency was selected to 112.6 megahertz and was selected to the OFF position. The Automatic Direction Finder (ADF) navigation frequency was selected to 206 kilohertz, which corresponds to the Kitsap ADF frequency at Bremerton.

The engine remained partially attached to the fuselage at its mounts. No external evidence of a catastrophic mechanical failure was noted. The propeller had separated from its flange and was not located. The propeller flange was bent and twisted downward and aft. Three of the crankshaft flange bushings remained attached to the flange and were stretched downward.

The engine was removed from the airframe, partially disassembled, and inspected. The inspection did not reveal any evidence of preimpact mechanical malfunction. The crankshaft was rotated through 360 degrees of travel. Valve train and crankshaft continuity was verified during crankshaft rotation. Positive "thumb" compression was noted in all four cylinders. Continuity to all engine accessories was verified with no binding noted. The carburetor was disassembled; the float bowl was filled with a liquid that had the consistency, odor, and color of 100 low lead aviation gasoline. MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was performed by Dr. Emmanuel Q. Lacsina, M.D., of the Kitsap County Coroner's Office, Bremerton, Washington, on September 25, 1997. According to the autopsy report, the cause of death was cited as: "drowning complicating multiple blunt impact injuries to the head, chest and abdomen sustained as the pilot [of] a light plane that crashed."

Specimens taken from the pilot were analyzed by the FAA Civil Aeromedical Institute, Oklahoma City, Oklahoma. According to their report (attached), negative results for ethanol, carboxyhemoglobin, cyanide, and all screened drugs were reported.

SURVIVAL ASPECTS

The front two seats and rear bench seat remained attached to the floorboard and received minor damage. According to search and rescue personnel, all three occupants were wearing their lap belts, but none were wearing shoulder harnesses. Shoulder harnesses were available for the two front seat occupants only.

According to autopsies performed on the two passengers by the Kitsap County Coroner's Office, the cause of death of the right front seat occupant, a 44-year-old male passenger, was cited as: "drowning complicating chest injuries." The cause of death of the rear seat occupant, a 48-year-old female passenger, was "multiple blunt impact injuries to the head, neck, chest, and abdomen.... The severity of the injuries would indicate that death was instantaneous."

The airplane was equipped with an emergency locator transmitter (ELT), manufactured by Pointer, Inc., Tempe, Arizona. The ELT (model no. 3000, serial no. 300770) is of an FAA Technical Standard Order (TSO) C91 type design. A label found on the ELT indicated that its batteries were installed on February 14, 1997. According to a representative of the Kitsap County Sheriff's Office (excerpts of report attached), the antenna cable and coupler were found separated from the ELT unit, and the ELT was found partially separated from its mounting. According to the Washington State Aeronautics Division, no ELT signal had been received from the Bremerton area on the evening of the accident.

ADDITIONAL INFORMATION

All aircraft wreckage was released to Mr. William G. Bertles, Insurance Claims Representative, Phoenix Aviation Managers, Inc., Lakewood, Colorado, on September 25, 1997. Mr. Bertles was representing the registered owner and operator of the airplane at the time of this release.

## Pilot Information

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|---|---|---|---|
| **Certificate:** | Private | **Age:** | 46,Male |
| **Airplane Rating(s):** | Single-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 3 Valid Medical--no waivers/lim. | **Last FAA Medical Exam:** | May 10, 1996 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 132 hours (Total, all aircraft), 80 hours (Total, this make and model), 15 hours (Pilot In Command, all aircraft), 4 hours (Last 90 days, all aircraft), 3 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft) | | |

## Aircraft and Owner/Operator Information

| | | | |
|---|---|---|---|
| **Aircraft Make:** | Cessna | **Registration:** | N6756H |
| **Model/Series:** | 172M 172M | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal; Utility | **Serial Number:** | 17265569 |
| **Landing Gear Type:** | Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | August 15, 1997 100 hour | **Certified Max Gross Wt.:** | 2400 lbs |
| **Time Since Last Inspection:** | 69 Hrs | **Engines:** | 1 Reciprocating |
| **Airframe Total Time:** | 3519 Hrs | **Engine Manufacturer:** | Lycoming |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | O-320-E2D |
| **Registered Owner:** | PEGASUS AIR, INC. | **Rated Power:** | 150 Horsepower |
| **Operator:** | | **Operating Certificate(s) Held:** | On-demand air taxi (135) |
| **Operator Does Business As:** | | **Operator Designator Code:** | |

## Meteorological Information and Flight Plan

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|---|---|---|---|
| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Night/dark |
| **Observation Facility, Elevation:** | PWT ,439 ft msl | **Distance from Accident Site:** | 1 Nautical Miles |
| **Observation Time:** | 11:30 Local | **Direction from Accident Site:** | 10° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | 10 miles |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / None | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 0° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 29 inches Hg | **Temperature/Dew Point:** | 13°C / 9°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | FRIDAY HARBOR (FHR ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | (PWT ) | **Type of Clearance:** | None |
| **Departure Time:** | 00:00 Local | **Type of Airspace:** | Class D |

## Airport Information

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|---|---|---|---|
| **Airport:** | | **Runway Surface Type:** | |
| **Airport Elevation:** | | **Runway Surface Condition:** | |
| **Runway Used:** | 0 | **IFR Approach:** | None |
| **Runway Length/Width:** | | **VFR Approach/Landing:** | Full stop;Traffic pattern |

## Wreckage and Impact Information

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|---|---|---|---|
| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Substantial |
| **Passenger Injuries:** | 2 Fatal | **Aircraft Fire:** | None |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 3 Fatal | **Latitude, Longitude:** | 47.570487,-122.630195(est) |

## Administrative Information

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|---|---|
| **Investigator In Charge (IIC):** | Guzzetti, Jeffrey |
| **Additional Participating Persons:** | CHUCK K SICOTTE; RENTON , WA<br>JEFFREY POSHWATTA; KENT , WA<br>CLAUDE UNDERWOOD; WICHITA , KS |
| **Report Date:** | October 2, 1998 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=42514 |