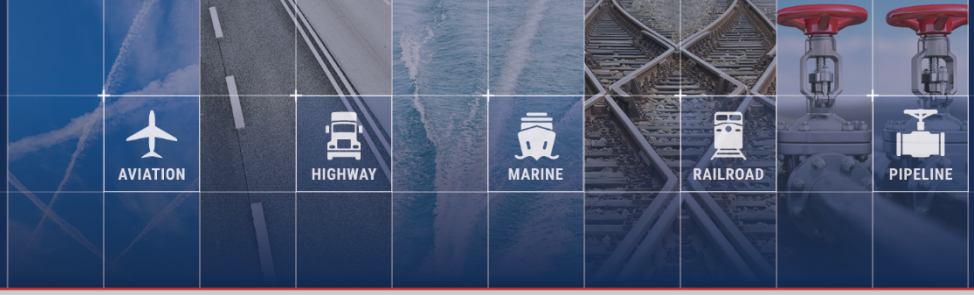

Aviation Investigation Final Report

Location:	PORTLAND, Oregon	**Accident Number:**	SEA99FA028
Date & Time:	January 8, 1999, 18:12 Local	**Registration:**	N141LC
Aircraft:	Pacific Aviation Composites LC 40-550FG	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Radar data and air traffic communications indicated that the pilot initially contacted approach control while the airport was under night visual conditions. Shortly after the initial contact, the weather conditions deteriorated and instrument meteorological conditions became effective. The pilot was advised of the weather conditions and given vectors to intercept the ILS 10L approach. As the aircraft was turning inbound to intercept the localizer, the air traffic controller notified the pilot that it appeared that he was aligned for the ILS 10R approach. The pilot advised the controller that he had tuned in the wrong frequency and asked the controller for the correct frequency. The controller informed the pilot of the correct frequency for the ILS 10L approach. Due to other air traffic, the controller instructed the pilot to turn to a northerly heading for vectors to the ILS 10L approach. The pilot complied with the controllers instructions and shortly thereafter was aligned for the ILS 10L approach. After the aircraft was established on the localizer and cleared to land, the flight course maintained a constant descent rate, magnetic heading and airspeed. Approximately one mile short of the runway, the course heading began to turn to the northeast of runway centerline. The last radar targets indicated that the aircraft continued to turn to the northeast and descend below radar coverage. The weather reported at the time of the accident and shortly after the accident, indicated that the ceilings conditions were below the approach minimums and both ceilings and visibility were deteriorating. Documentation of the wreckage that was recovered, indicated that the aircraft impacted the river in a nose low attitude. The pilot's flight logbook indicated that the pilot had recently been signed off for an instrument competency check that was performed under simulated flight conditions. The logbook indicated that the last flight logged under actual conditions was performed approximately seven years prior to the accident. The last simulated instrument flight was logged approximately three years prior to the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Aircraft control was not maintained and the pilot's lack of total experience in type operation. Weather conditions reported ceilings below approach/landing minimums and a dark night condition were factors.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
1. (F) WEATHER CONDITION - BELOW APPROACH/LANDING MINIMUMS
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) LACK OF TOTAL EXPERIENCE IN TYPE OPERATION - PILOT IN COMMAND
4. (F) LIGHT CONDITION - DARK NIGHT

Factual Information

HISTORY OF FLIGHT

On January 8, 1999, approximately 1812 Pacific standard time, a Pacific Aviation Composites LC 40-550FG, N141LC, registered to and operated by Pacific Aviation Composites as a 14 CFR Part 91 personal flight, impacted the Columbia River about one mile west of Portland International Airport, Portland, Oregon, while on approach to runway 10L. Instrument meteorological conditions prevailed at the time and no flight plan was filed. The aircraft was destroyed and the commercial pilot and his passenger were fatally injured. The flight originated from Bend, Oregon, about one hour prior to the accident.

Air Traffic Control (ATC) personnel reported that the pilot contacted Portland Approach and reported that he was 28 miles east of Portland International (PDX) for landing. Shortly after the initial contact, the controller notified the pilot that the airport was going to instrument conditions. The pilot then requested and received IFR instructions. The flight was cleared for the ILS runway 10L approach. As the aircraft was turning inbound to intercept the localizer, the controller notified the pilot that it appeared that he was lined up for runway 10R. The tower controller instructed the flight to go around to the north and the pilot was given vectors for the runway 10L approach. Radar data indicates that the aircraft was bracketing the runway 10L localizer and descending, when the aircraft dropped off radar coverage about one mile west of the runway. Shortly after the accident, search and rescue personnel located floating debris in the Columbia River.

Witnesses located at various positions along the Columbia River reported to the Port of Portland Police what they saw or heard at about the time of the accident. One witness reported that she heard a "fast, low flying aircraft," and that the "engines sounded normal." This witness did not see or hear the aircraft crash. Another witness who was aboard a tug in the middle of the Columbia River at about 1815, reported that he heard and saw what appeared to be a little "Cessna" flying directly overhead. This witnesses stated that it sounded like the plane was "sputtering and missing on a continuous basis." The witness stated that the airplane appeared to be quite high in elevation.

PERSONNEL INFORMATION

At the time of the accident, the pilot held a commercial certificate for single and multi-engine land aircraft, and was rated for instrument flight. The pilot's flight logbooks indicate a total flight time of about 2,315 hours, with about 620 hours in the LC 40-550FG. The logbooks indicate that the pilot had accumulated a total of 11 hours of actual instrument flight time. About 86 hours had been accumulated under simulated conditions. The logbooks indicated that the last logged flight under actual instrument conditions was on February 11, 1992. The

last logged simulated flight was on December 8, 1995. There were no other instrument flights logged until November 13, 1998, when the pilot flew with a flight instructor for about one hour and 36 minutes under simulated conditions. The flight consisted of VOR holding, a VOR-DME approach and an ILS approach. On December 22, 1998, the pilot flew another simulated instrument flight for one hour and 40 minutes. This flight consisted of VOR holding, an ILS approach and a VOR approach. On December 24, 1998, the pilot was signed off for an instrument competency flight after completing VOR holding, a VOR approach, and an ILS approach with a DME arc. This flight lasted one hour and 35 minutes. All of these flights were flown in the LC 40-550FG with an instructor on board.

Company personnel reported that the pilot was the test pilot for the company and had been employed since June 1996. All of the flights, except the three flights previously described, were logged under visual conditions.

METEOROLOGICAL INFORMATION

At 0959, the pilot contacted McMinnville Flight Service Station (FSS) for a standard weather briefing from Bend, to Aurora, Oregon. The specialist asked if this was for an IFR flight. The pilot responded that he would prefer VFR, but that he could "shoot an approach in Aurora." The specialist reported that VFR was not recommended due to low IFR conditions at Aurora. The specialist asked the pilot for the time of the flight. The pilot responded in the next two hours. The specialist reported that the airmets for IFR were expected to improve by 1100, however, there was not much improvement for the surface reports. The area and terminal forecasts were improving by 1100. The specialist reported that west of the Cascades, there was a flight precaution for icing above 8,000 feet with moderate rime icing. The pilot responded that he would wait a little bit and call back later. The conversation concluded at 1001. There was no further contact between the pilot and McMinnville FSS.

At 1759, the weather at Portland was reported as visibility of three miles and mist. The ceiling was overcast at 300 feet. The temperature was 37 degrees F. The altimeter was 30.49" Hg. The wind was from 170 degrees at five knots.

At 1823, the weather at Portland was reported as visibility of one and one quarter miles, with 10R runway visual range of 4,500 feet, variable to 6,000 feet, with mist. The ceiling was 300 feet overcast. The temperature and dewpoint were 37 degrees F. The wind was from 180 degrees at six knots. The altimeter was 30.49" Hg.

COMMUNICATIONS

At 1740, the pilot contacted Portland Approach. The transmission was unreadable and the controller instructed the pilot to try again. At 1742, the pilot's second transmission was readable. The pilot reported that he was about 28 miles east of the airport and descending through 5,000 feet for landing at Portland. The controller gave the pilot a discrete transponder code and instructed the pilot to remain in visual conditions.

At 1743, the controller informed the pilot that Portland was going to go to instrument conditions and asked the pilot if he was capable of instrument flight. The pilot acknowledged that he was. The controller instructed the pilot to remain in visual conditions and to proceed southwest bound. At 1744, the controller asked the pilot if he was requesting an instrument clearance at this time. The pilot responded that he would want a clearance only if visual conditions were not possible.

At 1748, the pilot was cleared to the Portland Airport via radar vectors to the Instrument Landing System (ILS) runway 10L approach. The pilot was instructed to turn to a heading of 270 degrees and to climb to and maintain 4,000 feet. The pilot acknowledged by repeating that he was cleared via radar vectors to 10L approach and 4,000 feet.

At 1749, the controller notified the pilot that Portland's weather was below basic VFR. The winds were from 170 degrees at nine knots. The altimeter was 30.49" Hg. The visibility was four miles and the ceiling was broken at 300 feet. The pilot acknowledged this information.

At 1750, the pilot was instructed that he was to follow an MD-80 at his 12 o'clock position at three miles and descending out of 7,500 feet. The pilot acknowledged that he had the traffic in sight. The controller instructed the pilot to maintain visual separation from the traffic and to turn right to a heading of 280 degrees. The pilot acknowledged this instruction.

At 1751, the pilot was instructed to reduce his speed to 130 knots. The pilot acknowledged this instruction.

At 1753, the pilot continued to receive radar vectors and was requested to descend and maintain 3,000 feet.

At 1757, a Cessna 182 reported to the controller that he needed runway 10R as runway 10L was below minimums. (location unknown)

At 1758, the pilot was instructed to maintain 150 knots, and to descend to 2,500 feet.

At 1759, the Portland Approach controller announced the current weather to all aircraft. The visibility was three miles with mist. The ceiling was overcast at 300 feet. The temperature was three degrees Celsius. The altimeter was 30.49" Hg. The wind was from 170 degrees at five knots.

At 1800, the controller asked the pilot if 150 knots was practical until about a three mile final. The pilot acknowledged affirmative.

At 1801, the controller informed the pilot that he was three miles from Blazr (Final Approach Fix) and told him to turn right to a heading of 70 degrees and to maintain 2,000 feet until established on the approach. The controller cleared the pilot for the ILS runway 10L approach.

The pilot acknowledged this transmission by stating "one lima charlie."

At 1802, the controller informed the pilot that it looked like he had lined up for the right (10R runway) ILS, and asked if that is what he wanted. The pilot responded that he was sorry and that he needed the correct frequency, as he had dialed in the right ILS (10R runway). The controller informed the pilot that the frequency for the left (10L runway) was 111.3. The pilot acknowledged 111.3. The controller then instructed the pilot to turn left to a heading of 60 degrees. The pilot acknowledged the heading change, and the controller informed the pilot to keep the left turn tight to a heading of 20 degrees and to maintain 2,000 feet. The pilot responded "one lima charlie."

At this point, the final sector controller informed the tower coordinator that the pilot had had the wrong localizer frequency tuned in and that he was going to take him out (to the north) and sequence him in behind a Horizon Air flight.

At 1802, the controller instructed the pilot to fly a heading of 220 degrees and to maintain 2,000 feet. The controller informed the pilot that he was going to cross the 10L localizer at 2,000 feet. The pilot responded "one lima charlie." The controller then informed the pilot of traffic at the 12 o'clock position and two miles heading southeast at 1,300 feet. The pilot responded that he had the traffic in sight.

The controller continued to give the pilot heading changes and requested that he reduce his airspeed to 130 knots.

At 1805, the controller asked if the pilot had the 10L localizer tuned in. The pilot responded that he did.

At 1806, the controller informed that pilot that he was four miles from Blazr and requested that he turn to a heading of 130 degrees and to maintain 2,000 feet until established on the approach. The controller cleared the pilot for the ILS 10L approach. The pilot responded 120 degrees and that he was cleared for the ILS 10L. The controller responded that that was correct and advised him to maintain his present speed if practical to a four mile final. The pilot responded "one lima charlie."

At 1807, the controller asked the pilot to confirm his heading of 130. The pilot responded "affirmative speed is 130." The controller responded that his heading should be 130 for the intercept, and that it looked like he was veering off to the northeast. The pilot responded "one lima charlie." The controller then instructed the pilot to turn right to a heading of 160. The pilot responded "160."

At 1808, the controller instructed the pilot to turn left to a heading of 130 to intercept the final approach course and to report when he was established. The pilot responded "one lima charlie, 130." Shortly after, the pilot acknowledged that he was intercepting the localizer. The controller then cleared the pilot for the 10L ILS approach, and advised him to contact Portland

tower.

At 1808, the pilot contacted the Portland tower and reported that he was established on the 10L ILS. The controller then cleared the pilot for landing and reported that the wind was from 150 degrees at six knots. The pilot acknowledged that he was cleared to land.

At about 1810, the tower controller cleared a United Airlines aircraft for landing on 10L behind the Lancair. The controller notified the United pilot that the Lancair was on a one and a half mile final.

At 1811, the tower controller asked the Lancair pilot if he was on missed approach. There was no response from the pilot.

At 1812, the tower controller instructed the United Airlines flight to go-around.

WRECKAGE AND IMPACT INFORMATION

Wreckage floating on the water was recovered by search and rescue personnel shortly after the accident. The items recovered consisted of small segments of the upper and lower skin for both the left and right wings. Not all of the wing skin was recovered. A majority of both flaps were recovered. It was determined that the flaps were deployed at the time of the collision with the water. The fuel drains in the wing skins were intact and closed. No spar sections or control systems parts were recovered.

The complete empennage section was recovered. The horizontal stabilizer was intact, with the elevator attached at the hinges. The elevator balance for the right side displayed an imprint of down stop and attachment damage. The elevator balance for the left side was torn off and missing. The elevator trim was intact and indicated a 30 percent nose down trim. The vertical stabilizer was intact with the rudder attached at the hinges. The rudder trim tab and actuator were intact. The rudder trim indicated 25 percent deflection to the left.

Approximately 80 percent to 90 percent of the upper engine cowling was recovered in several pieces. Only a few pieces of the lower cowling were recovered. A section of the fuselage skin on the left side, which separated from the cockpit at the forward edge of the baggage door opening, was recovered. The right side fuselage skin was separated at the door frame. The rudder cables were intact and had cut into the left side skin of the tail section. The elevator push rod was bent to the left, which resulted in damage to the left hand side of the access hole in the vertical stabilizer spar. The right side rear window was still intact with only a small crack. The two rear and the front seat cushions were recovered. Multiple interior panels were recovered.

To this date, no other wreckage has been located or recovered. See attached Technical Findings.

MEDICAL AND PATHOLOGICAL INFORMATION

On May 14, 1999, the passenger was found in the water about two miles downstream from the suspected accident site. On May 24, 1999, the pilot was also found in the water.

An autopsy was performed on the pilot by Larry V. Lewman, M.D., Portland, Oregon. The pilot's cause of death was determined to be asphyxia by drowning.

Toxicological samples were sent to the Federal Aviation Administration Civil Aeromedical Institute, Oklahoma City, Oklahoma, for examination. Testing for carbon monoxide and cyanide were not performed. The volatile concentrations were due to putrefaction of the samples. No drugs were detected in muscle samples.

ADDITIONAL INFORMATION

The wreckage was released to the owner's representative on March 8, 1999. At the time of the release, the wreckage was being stored in a storage facility near the Portland International Airport.

Radar data provided from Portland Terminal Radar Approach Control (TRACON)(see attached Radar data), indicated that the flight maintained assigned altitudes within +/- 100 feet. The aircraft made heading and airspeed changes as instructed by the controller. After the aircraft was established on the localizer and cleared to land, the flight course maintained a constant descent rate, magnetic heading and airspeed. Below 500 feet above ground level, the altitude reading switched to either coast mode or the data was missing. Heading and airspeed information continued. Approximately one mile short of the runway, the course heading began a turn to the northeast (left) of runway centerline. The last two radar hits identified the aircraft at 300 feet, then at 100 feet, before the target was lost. The last radar target indicated a heading of 56 degrees and an airspeed of 105 knots.

The approach plate current at the time of the accident for ILS runway 10L, indicated that 480 feet was the decision height (height at which a decision must be made to either continue the approach or to execute a missed approach) with one mile visibility. The height above the touchdown zone was 450 feet. (See attached approach plate).

The missed approach point is located .2 miles DME, or .5 miles from the approach end of the runway. The published missed approach procedure was to climb to 700 feet, then a climbing left turn to 4,000 feet via the 160 degree radial to the Battleground VORTAC.

Pilot Information

Certificate:	Commercial	**Age:**	39,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):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	October 28, 1998
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	620 hours (Total, this make and model), 3215 hours (Pilot In Command, all aircraft), 52 hours (Last 90 days, all aircraft), 36 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Pacific Aviation Composites	**Registration:**	N141LC
Model/Series:	LC 40-550FG LC 40-550F	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	Yes
Airworthiness Certificate:	Experimental (Special)	**Serial Number:**	40002
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	December 24, 1998 Continuous airworthiness	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	548 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-550-N
Registered Owner:	PACIFIC AVIATION COMPOSITES	**Rated Power:**	310 Horsepower
Operator:		**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:	PDX ,30 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	17:56 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Unknown	**Visibility**	3 miles
Lowest Ceiling:	Overcast / 300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	190°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	3°C / 3°C
Precipitation and Obscuration:	N/A - None - Fog		
Departure Point:	BEND , OR (S07)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	IFR
Departure Time:	17:00 Local	**Type of Airspace:**	Class C

Airport Information

Airport:	PORTLAND INTERNATIONAL PDX	**Runway Surface Type:**	Asphalt
Airport Elevation:	30 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	10L	**IFR Approach:**	ILS
Runway Length/Width:	8000 ft / 150 ft	**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:**	45.509273,-122.689315(est)

Administrative Information

Investigator In Charge (IIC):	Eckrote, Debra
Additional Participating Persons:	JIM REED; HILLSBORO , OR MICHAEL GRIMES; LANCASTER , CA DIETER KOEHLER; BEND , OR
Original Publish Date:	June 22, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=45628