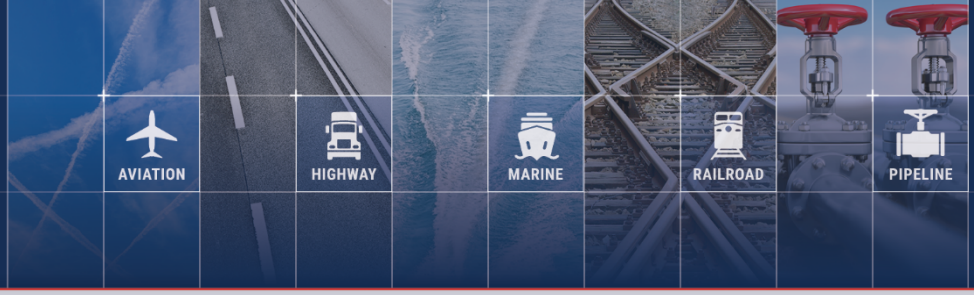

Aviation Investigation Factual Report

Location:	Corvallis, Oregon	**Accident Number:**	WPR10GA113
Date & Time:	January 17, 2010, 16:22 Local	**Registration:**	N702
Aircraft:	Cessna 182R	**Aircraft Damage:**	Substantial
Defining Event:	Controlled flight into terr/obj (CFIT)	**Injuries:**	2 Fatal
Flight Conducted Under:	Public aircraft		

Factual Information

HISTORY OF FLIGHT

On January 17, 2010, about 1622 Pacific standard time (PST), a Cessna 182R, N702, collided with mountainous terrain 9 miles northwest of Corvallis, Oregon. The Department of Interior, US Fish and Wildlife Service, operated the airplane as a public-use positioning flight. The commercial pilot and passenger were killed; the airplane was substantially damaged. Visual meteorological conditions prevailed, and a flight plan had been filed. The flight originated at Newport Municipal Airport, Newport, Oregon, about 1600.

According to US Fish and Wildlife Service officials, the airplane had completed a wildlife survey in the vicinity of Olympia, Washington. The airplane landed at Newport Municipal Airport, the pilot purchased fuel, and he updated their flight plan. The pilot phoned his girlfriend, told her that there was a break in the weather, and that he was having trouble contacting Flight Service. They were going to fly to Corvallis, and if she had not heard from him by 1700, to call the Federal Aviation Administration (FAA). The pilot and his passenger departed Newport about 1600 for the Corvallis airport, which is 38 miles east of Newport, and where the airplane was based. Although the pilot had updated his flight plan while in Newport, the pilot never activated the flight plan once airborne.

At 1833, the airplane was reported overdue and search efforts commenced. The terrain between Newport and Corvallis is mountainous with elevations between 1,000 and 1,750 feet mean sea level (msl). A combination of air and ground search and rescue teams located the wreckage around 0830 on January 18th by homing in on the airplane's emergency locater transmitter (ELT) beacon. The terrain elevation in the vicinity of the wreckage is approximately 1,500 feet msl.

The radar data that was collected included uncorrected altitude information based on an atmospheric pressure reference of 29.92 inches of mercury (inHg). To convert the altitude data to altitude msl, a conversion of 1 inHg equal to 1,000 feet was used, and applied to the local pressure altitude setting at the time of the accident, 29.32 inHg. Using this conversion, the radar altitude information minus 600 feet equated to the msl altitude. Radar data showed the airplane over the Oregon coast northwest of the Newport Municipal Airport at 1605. The track proceeded easterly, roughly following Highway 20, at an altitude of 2,900 feet msl. At 1617, the airplane’s track started a very gradual descent to 2,200 feet msl. At 1620, the track turned to the southeast, and continued the shallow descent to 2,000 feet msl. The last radar return occurred at 1622, 1,800 feet msl, in the vicinity of the where the wreckage was located.

A portable GPS (Garmin GPSMap 396) was recovered and sent to the National Transportation Safety Board’s Vehicle Recorder Laboratory for data recovery. GPS recorded altitude is based

on a datum plane that for practical purposes approximates msl altitude. The GPS data recovered for the accident flight started at 1557:55, and data was recorded roughly every 10 seconds until 1622:25. The track mirrored the radar track previously described. During the majority of the airplane's transit to the east, the average altitude was around 2,700 feet msl. At 1617, the airplane began a gradual descent while heading in a southeastern direction. At 1620, the GPS unit recorded an altitude of 2,435 feet msl. During the final minute of the GPS data the altitude descended from 2,166 feet agl to 1,693 feet agl, and the average ground speed was 119 knots.

PERSONNEL INFORMATION

The pilot, age 52, held a commercial pilot certificate with ratings for airplane single engine land and sea, airplane land, and instrument airplane, issued April 26, 1995. He held a second-class medical certificate issued on September 1, 2009, with the restriction that he wear corrective lenses. The pilot's logbook was not recovered for examination. The pilot reported on his last FAA medical application that he had accumulated 4,463 hours of flight time. The pilot's employer, US Fish and Wildlife Service-Department of the Interior, provided records dated February 2, 2009, in which the pilot reported 4,294 flight hours; 4,165 hours of single engine time; 14 hours multi-engine time; 62 hours of actual instrument time; 85 hours simulated instrument time; 148 hours of night time; and had accumulated 354.2 hours over the previous 12 months. The most recent Interagency Pilot Evaluation/Qualification Check was performed on March 9, 2009, in a Cessna 182. No "U"s (unsatisfactory) areas or skill deficiencies were noted during the check. The pilot was issued a qualification card for "Recon, low level VFR C-182."

The pilot's girlfriend of 7 years stated that his sleep patterns had been normal in the recent days, that he did not take any medication or over-the-counter drugs, and that he had not complained of any physical ailments. Tuesday January 12th was a day off work for the pilot. On January 14-15 he flew in the vicinity of Finely Wildlife Refuge, and stayed overnight in McMinnville. The weather on January 16th was not conducive for flying, he stayed home, and went to bed around 2130. On January 17th he woke up around 0730, monitored the weather, decided to fly, and was out of the house at 1030.

AIRCRAFT INFORMATION

The four seat, high wing, fixed-gear airplane, serial number (S/N) 182-68528, was manufactured in 1985. It was powered by a Teledyne Continental Motors IO-470-F(26) 260-HP engine, and equipped with a two blade McCauley constant speed propeller. The airplane was not equipped with anti-ice or deicing equipment.

Examination of the airplane's logbook revealed that the most recent annual inspection was performed on April 20, 2009; aircraft total time was 4,869.7 hours. On September 21, 2009, a 100-hour inspection was performed at an aircraft total time of 4,966.5 hours; engine tach time was 2,604.2 hours.

The engine tach read 2,656.4 hours when examined at the accident scene. Examination of the engine logbook revealed that the engine had been installed new on the airplane on September 13, 2004. The most recent 100-hour inspection was performed on September 21, 2009, at an engine total time of 854.2 hours. The weight and balance data sheet, dated April 20, 2009, showed an aircraft weight of 1,792.44 pounds, and a useful load of 1,307.56 pounds. A fuel receipt from the Newport Municipal Airport FBO showed that the accident airplane took on 26 gallons of Avgas at 1534, on January 17th. The pilot reported in his flight plan that he had 3 hours of fuel onboard the airplane.

METEOROLOGICAL INFORMATION

The NWS Surface Analysis Chart for 1600 PST (0000Z) depicted a surface low pressure center off the Oregon coast with a sea level pressure of 972-hectopascals (hPa), and an occluded front stretching southeastward toward the northern California coast, with a warm front extending into northern California. The station models depicted calm to southeasterly winds; light to moderate rain in the vicinity of the accident site, with overcast skies over most of the region. A regional weather radar mosaic of the northwestern U.S., valid at 1622 PST, identified “very light” to “light to moderate” precipitation intensities across some of the region, with stronger intensities near the Portland, Oregon, area.

Corvallis Municipal Airport (KCVO) is located about 9 miles to the southeast of the accident site at an elevation of 250 ft. The airport was equipped with a non-federal Automated Weather Observing Station (AWOS-3), which reported every 20 minutes.

At 1555, Corvallis (KCVO) reported winds calm; visibility 5 miles; few clouds at 700 feet above ground level (agl), with ceiling broken at 4,400 feet and overcast at 5,000 feet; temperature 11 degrees Celsius (C); dew point of 8 degrees C; and altimeter setting of 29.33 inHg.

At 1615, Corvallis (KCVO) reported wind from 010 degrees at 5 knots; visibility of 5 miles; weather missing; few clouds at 700 feet agl with ceilings broken at 4,400 feet and overcast at 5,000 feet; temperature 11 degrees C; dew point 8 degrees C; and altimeter setting of 29.32 inHg. Remarks: automated observation system without a precipitation discriminator, hourly precipitation 0.03 inches.

At 1635, Corvallis (KCVO) reported wind from 020 degrees at 10 knots; visibility of 5 miles; weather missing; few clouds at 3,700 feet with scattered clouds at 4,300 feet and ceiling overcast at 5,000 feet; temperature 11 degrees C; dew point 8 degrees C; and an altimeter setting of 29.31 inHg. Remarks: automated observation system without a precipitation discriminator, hourly precipitation 0.06 inches.

A rawinsonde launch at 1600 from Salem, Oregon (KSLE), located approximately 28 miles to the northeast of the accident site, provided timely information about the vertical temperature, dew point, and wind profile of the atmosphere. The KSLE 1600 PST rawinsonde identified a

near-saturated layer between the surface and a height of approximately 1,150 feet agl, where relative humidity did not drop below 96%. The lifting condensation level was identified as 249 feet agl. A temperature inversion existed between 1,150 feet and 1,550 feet agl, and the atmosphere exhibited less saturated conditions with the relative humidity dropping to 83%. Above 4,000-5,000 feet agl, the atmosphere became saturated through about 10,000 feet. The freezing level was identified as about 5,000 feet. The rawindsonde data identified a critical layer of wind shear between 1,200 feet msl and 2,000 feet, where the wind increased from 10 knots at 135 degrees to 26 knots at 160 degrees, respectively. Above 2,000 feet, the wind continued to veer and increase in magnitude with height, and reached a peak intensity of 58 knots at 210 degrees at an altitude of 8,200 feet msl.

Calculations made by the Universal Rawinsonde Observation program (RAOB) indicated a region of severe clear air turbulence between 1,200 and 2,000 feet. RAOB also indicated a modest CAPE (convective available potential energy) amount of 192 J/kg in this atmosphere. Although a very shallow unstable layer did exist from the surface to approximately 450 feet, conditions above 450 feet remained stable to the top of the temperature inversion at 1,700 feet, with a conditionally unstable environment above the inversion to 5,000 feet. In addition, given the terrain parameters in the vicinity of the final portion of the accident aircraft's flight path, RAOB determined there was no significant mountain wave action at attitudes below 9,000 feet.

The closest WSR-88D weather radar to the accident location was from Portland, Oregon (KRTX), located approximately 72 miles north of the accident site. The 0.5-degree base reflectivity image scan for time 1624 was overlaid on the NOAA-15 AVHRR image from time 1627. The field-of-view from the KRTX 0.5-degree scan ranges from approximately 5,353 feet to 8,980 feet msl, and does not capture the altitudes for the final portion of the accident aircraft's flight. The base reflectivity data indicated the accident aircraft was below an area of 20-25 dBZ reflectivity's, but does not indicate whether the aircraft was encountering precipitation at its flight altitudes.

Based on witness statements of hearing thunder in the vicinity of and around the time of the accident, a report of cloud-to-ground lightning strikes was obtained from the National Lightning Detection Network (NLDN) operated by Vaisala. The results indicated that within a 15 statute mile (sm) distance from the accident site between 1500 and 1645, the NLDN detected no cloud-to-ground lightning strikes.

Approximately 90 minutes before the accident, the pilot of a general aviation airplane made a successful approach and landing at the Corvallis Municipal Airport. The latter portion of that flight was documented from the cockpit using a low-definition "Go Pro" camera. The airplane's position in space was also well documented using GPS equipment, allowing good correlation between still-video images from the camera and the airplane's location. The pilot provided a handwritten assessment of the weather conditions for their approach and landing at Corvallis. The pilot estimated visibility near the Corvallis airport to be 2 1/2 miles, with visibilities "definitely worse toward the coastal range," and indicated the coastal range and foothills were

“totally obscured in mist and low cloud.” The pilot could not identify the base of the overcast layer above the airplane; however, he estimated the scattered layer beneath the airplane to have bases of 650 feet with tops near 800 feet. The pilot also indicated that light mist and drizzle were in the area, and that his airplane encountered rain soon after landing at Corvallis.

The National Weather Service (NWS) does not issue Terminal Aerodrome Forecasts (TAFs) for the Corvallis Municipal Airport. The closest TAF to the accident site was from Salem, Oregon (KSLE), located 28 miles northeast of the accident site. The TAF issued for Salem (elevation 214 feet) at 1544 forecasted between 1600 and 1900: wind from 060° at 5 knots; visibility 5 miles in light rain and mist; scattered clouds at 3,500 feet agl, and ceilings overcast at 5,000 feet.

An Area Forecast for the Willamette Valley, issued at 1245, forecasted overcast ceilings between 4,000-5,000 feet agl, with layered clouds up to flight level (FL) 240, with occasional light rain until 1600. Beginning at 1600, broken ceilings were forecasted to be between 2,000-3,000 feet with an overcast cloud layer at 7,000 feet, visibility occasionally between 3 to 5 miles in light rain and mist.

An AIRMET SIERRA (update 3) for mountain obscuration, issued at 1245, was in affect for the accident flight.

At approximately 1552, the pilot of N702 contacted Prescott Automated Flight Service Station WS085 to file a VFR flight plan from Newport (KONP) to Corvallis (KCVO). When asked by flight services, “…do you already know about all the AIRMETs today?” the pilot replied, “I do.”

WRECKAGE AND IMPACT

The terrain surrounding the accident location consisted of mountain foothills with the highest peak being approximately 1,750 feet msl. The terrain was heavily wooded with Douglas Fir and Grand Fir trees that were typically 12 to 16 inches in diameter and 110 feet tall. The main debris field was approximately 370 feet long, on a 062-degree magnetic heading, and was between 200 and 300 feet below the terrain peak (elevation 1,750 feet msl). The debris field was on a 25-degree terrain slope. The nearby hilltop had a cell phone tower located at the top.

The debris field started with the left wing tip, and sections of left wing and left aileron followed uphill, on a bearing of 062 degrees, to the main wreckage. The main wreckage was centered around the cockpit. The engine was located 70 feet to the southeast; the entire right wing was located downhill (westerly) about 90 feet, and above the right wing the entire tail/empennage was wrapped around a fir tree 65 feet up. Two trees had been topped about the same elevation between the tail and where the cockpit laid. The cockpit had been separated from the rear part of the cabin just behind the front seats; additionally, it had also been separated from the cabin overhead. The flight control cables were traced from the tail and ailerons to the cockpit through multiple cable overload breaks. All control surface bell cranks had control cable ends attached. The flap actuator extension measurement was 0.2 inches, which corresponds to the

flap in the fully retracted position. The engine had been separated from the firewall, but the fuel strainer and throttle body/fuel control remained connected to the firewall.

The engine exhibited impact damage with wood fragments embedded into the cooling fins of the number 5 cylinder. The oil pan had been breached but approximately 2 quarts of oil were drained from the engine. The engine was rotated using the accessory drive, and thumb compression was achieved on all cylinders in sequence. The fuel pump was removed. The drive coupling was intact, and the pump was rotated by hand with no binding felt. The left magneto was found separated from its mounting pad; it was rotated by hand and spark was produced on all posts. Fluid in the fuel distribution valve tested negative for water using water detection paste. Wood and tree limb organic matter were observed in the induction system. The propeller was located next to the engine embedded into the base of a tree. Leading edge polishing was observed on both blades.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot on January 19, 2010, by the Benton County Medical Examiner, Clackamas, Oregon. The autopsy findings include “blunt force head trauma,” and the report listed the specific injuries.

Forensic toxicology was performed on specimens from the pilot by the FAA Forensic Toxicology Research Team, Oklahoma City, Oklahoma. The toxicology stated that no carbon monoxide or cyanide was detected in blood. No ethanol was detected in vitreous, and none of the listed drugs were detected in blood.

ORGANIZATIONAL AND MANAGEMENT INFORMATION

According to the Department of Interior investigative report, “Interim Report-Cessna C-182 Accident, Corvallis, OR, January 17, 2010,” it is not clear why the pilot decided to undertake the flight/mission during the course of a 3-day weekend; Monday, January 18th, was Martin Luther King, Jr. Day, a Federal holiday. Within the Migratory Bird Program of the US Fish and Wildlife Service, flight scheduling and management decisions are made at the local unit/individual pilot level. The program does not employ any policy guidance to aid the pilot in making risk managed decisions with respect to flight scheduling decision making.

Pilot Information

Certificate:	Commercial	**Age:**	52,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; 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:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	September 30, 2009
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 9, 2009
Flight Time:	(Estimated) 4463 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N702
Model/Series:	182R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	182-68528
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	September 21, 2009 100 hour	**Certified Max Gross Wt.:**	3100 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	4966 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	C126 installed, activated, aided in locating accident	**Engine Model/Series:**	O-470 SERIES
Registered Owner:	UNITED STATES DEPARTMENT OF INTERIOR	**Rated Power:**	230 Horsepower
Operator:	UNITED STATES DEPARTMENT OF INTERIOR	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KCVO,250 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	16:35 Local	**Direction from Accident Site:**	120°
Lowest Cloud Condition:	Few / 3700 ft AGL	**Visibility**	5 miles
Lowest Ceiling:	Overcast / 5000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	20°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.3 inches Hg	**Temperature/Dew Point:**	11°C / 8°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Newport, OR (KONP)	**Type of Flight Plan Filed:**	VFR
Destination:	Corvallis, OR (KCVO)	**Type of Clearance:**	None
Departure Time:	16:00 Local	**Type of Airspace:**	

Airport Information

Airport:	Corvallis Municipal Airport KCVO	**Runway Surface Type:**	
Airport Elevation:	250 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	44.5625,-123.447219

Administrative Information

Investigator In Charge (IIC):	McKenny, Van
Additional Participating Persons:	Jarvis Cochran; Federal Aviation Administration; Portland, OR Stephen V Rauch; US Dept of Interior; Boise, ID Andrew Swick; Teledyne Continental Motors; Sacramento, CA Tom Moody; Cessna Aircraft Company; Wichita, KS
Report Date:	November 1, 2010
Last Revision Date:	July 8, 2024
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=75273