 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: ANC95GA048		Aircraft Registration Number: N97843	
		Occurrence Date: 04/12/1995		Most Critical Injury: Fatal	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place BUMPING LAKE	State WA	Zip Code 98929	Local Time 0615	Time Zone PDT	
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:			
Aircraft Information Summary					
Aircraft Manufacturer Cessna		Model/Series 182Q /182Q		Type of Aircraft Airplane	
Revenue Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>*** Note: : NTSB investigators either traveled in support of this investigation or conducted a significant amount of investigative work without any travel, and used data obtained from various sources to prepare this public aircraft accident report. ***</p> <p>HISTORY OF THE FLIGHT</p> <p>On April 12, 1995, about 0615 Pacific daylight time, a Cessna 182Q, N97843, crashed during an emergency landing, about 4 miles east of Bumping Lake, Washington. The airplane, registered to the Civil Air Patrol (CAP), Maxwell Air Force Base, Alabama, and operated by the Washington Wing of the CAP (WACAP), sustained substantial damage. The airplane was being operated as a visual flight rules (VFR), cross-country flight to Boise, Idaho. The pilot's itinerary included a proposed business meeting. The CAP indicated the flight was a military auxiliary proficiency training flight. The Yakima County Coroner reported the pilot received minor injuries during the accident but later succumbed to hypothermia. The certificated private pilot, the sole occupant, filed a VFR flight plan to Yakima, Washington. A primary radar target was located departing the Auburn Municipal airport, Auburn, Washington, at 0502.</p> <p>At 0409, the pilot obtained a weather briefing from the Federal Aviation Administration (FAA), Seattle Automated Flight Service Station (AFSS). The pilot indicated the route of flight was from Auburn, to Yakima, Washington, with a continuation to Boise, Idaho, via Pendleton, and Baker City, Oregon. The briefing included a local field Notice to Airmen (NOTAM) that the unicom radio facility at the Auburn airport was out of service. The pilot then filed his VFR flight plan to Yakima, Washington.</p> <p>After departure, the pilot opened his flight plan with the Seattle AFSS at 0519. A review of primary radar data located a target at 0519 that was about 20 miles southeast of Auburn. No further communication was received from the pilot. When the pilot failed to close his flight plan, the FAA began a telephone and airport search for the airplane. About 0850, the airplane was declared overdue and an alert notice (ALNOT) was issued.</p> <p>The FAA notified State of Washington, Department of Aeronautics (WADOA) personnel of the missing airplane. An aerial and ground search was initiated for the missing airplane. Poor weather conditions in the area, including low ceilings, snow, and thunderstorms, hampered search efforts. Emergency locator transmitter (ELT) signals in the area of the search were intermittent throughout the search. Search personnel did not locate any discreet transponder radar data from the airplane.</p> <p>On April 15, 1995, about 1115 hours, the airplane was located about 32 miles northwest of Yakima, Washington. The location was about 4.5 miles southeast of Bumping Lake Dam in the William O. Douglas Wilderness Area on the northwest ridge of Nelson Butte.</p>					
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The accident occurred during the hours of daylight at latitude 46 degrees, 49.37 minutes north, and longitude 121 degrees, 12.49 minutes west, about 7,100 feet mean sea level.

CREW INFORMATION

The pilot held a private pilot certificate with an airplane single engine land rating. The most recent third class medical certificate was issued to the pilot on July 5, 1994, and listed no limitations.

According to the WACAP, the pilot's total aeronautical experience consisted of about 266 hours, of which 96 were accrued in the accident airplane make and model. In the preceding 90 and 30 days prior to the accident, the pilot accrued a total of 31 and 11 hours respectively. On July 12, 1994, the pilot received a CAP Form 101T (training) authorization for search and rescue mission pilot that was signed by his unit commander. The pilot qualified to fly a CAP Cessna 182 on July 22, 1994, by completion of a check ride (CAP Form 5). The pilot received a CAP Form 101 authorization for transport mission pilot on September 21, 1994. The pilot had not completed a search and rescue mission pilot check ride (CAP Form 91).

AIRCRAFT INFORMATION

The airplane had accumulated a total time in service of 1,583 flight hours. The most recent annual inspection was accomplished on March 31, 1995, 3 flight hours before the accident.

The engine had accrued a total time in service of 25 hours of operation since being installed as a remanufactured engine. An annual inspection was accomplished on March 31, 1995.

METEOROLOGICAL INFORMATION

The closest official weather observation station at Stampede Pass, Washington, is located 28 miles north of the accident site at an elevation of 3,800 feet msl. At 0533, a special observation was reporting, in part:

Sky condition and ceiling, measured ceiling 2,600 feet broken, 5,000 feet overcast; visibility, 4 miles in light snow; temperature 34 degrees F; dew point, 25 degrees F; wind, 100 degrees at 13 knots, gusts to 21 knots; altimeter, 29.87 inHg; remarks, snow began at 0527.

A 0556 special observation at Stampede Pass was reporting, in part:

Sky condition and ceiling, measured ceiling 1,800 feet overcast; visibility, 2 1/2 miles in light snow; temperature, 34 degrees F; dew point, 26 degrees; wind, 110 degrees at 10 knots, gusts to 19 knots; altimeter, 29.87 inHg.

A 0550 observation from Yakima, Washington, elevation 1,100 feet msl, located 32 miles southeast of the accident site, was reporting, in part:

Sky condition and ceiling, measured ceiling, 7,000 feet overcast; visibility, 20 miles; temperature, 45 degrees F; dew point, 31 degrees F; wind, 010 degrees at 4 knots; altimeter, 29.95 inHg.

A 0650 observation from Yakima was reporting, in part:

Sky condition and ceiling, measured ceiling 5,000 feet overcast; visibility, 30 miles in light rain; temperature, 43 degrees F; dew point, 33 degrees F; wind, 150 degrees at 3 knots; altimeter, 29.95 inHg.

Examination of meteorological data from the area of the accident was conducted by a National Transportation Safety Board meteorologist.

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In the area of the accident, radar data indicated weak radar echoes. Upper air data indicated that the winds aloft were southerly about 25 knots near 10,000 feet. Cloud tops were decreasing and were moving to the northeast.

The transcribed weather broadcast for the Seattle, Stampede Pass, and Ellensburg, Washington areas stated, in part: "All heights are mean sea level except ceilings. Cascades/ Passes partly obscured by clouds. West of the Cascades, 3,000 to 5,000 feet scattered clouds, cirrus clouds above. Between 0500 and 0800, isolated visibilities 3 to 5 miles in fog. At 0900, 4,000 feet scattered clouds, 8,000 feet scattered to broken clouds, 12,000 feet scattered to broken clouds, cirrus clouds above. East of the Cascades, 6,000 to 8,000 feet scattered clouds, thin cirrus clouds above. At 1000, 6,000 feet scattered to broken clouds, 12,000 feet scattered to broken clouds, cirrus above. No amendments available for Stampede Pass or Ellensburg."

Airmet Zulu, issued for icing and freezing levels and valid until 0700, stated in part: "Icing...Washington, Oregon, California and coastal waters, Idaho, Montana, and Nevada. From 120 miles west of Hoquiam, Washington to Missoula, Montana to Salmon, Idaho to 40 miles southeast of Rome, Oregon to 150 miles west of Salinas, California to 120 miles west of Fortuna, California to 120 miles west of Hoquiam. Occasional moderate rime/mixed icing in clouds and precipitation between 6,000 and 16,000 feet. Conditions spreading into eastern portion of the area and continuing beyond 1000 through 1300. Freezing level...Washington, 4,000 feet in northwestern Washington, sloping to 6,000 feet southeastern..."

COMMUNICATIONS

During the weather briefing, the AFSS specialist advised the pilot of potential hazardous weather conditions by providing information about an AIRMET. The specialist stated, in part:"...they're showing an AIRMET from Hoquiam to just north of Yakima and south of that line, occasional moderate icing, rime or mixed, and that's from six thousand to sixteen thousand and that's the only airmet that we do have that's on your route and you're on the northern edge of that, synoptic-wise..."

The specialist included a route forecast, stating, in part:"...on the route forecast that goes across Stampede pass, ah looks like they're calling for west of the Cascades, three to five thousand scattered, cirrus above that and that's up until sixteen hundred zulu (0900), and with some isolated visibilities three to five miles in fog, and they, looks like there might be some fog developing for a little while this morning east of the Cascades, six to eight thousand, scattered thin cirrus above and that's up to about ten a.m., so it looks good goin over there..." A complete transcript of telephone communications between the pilot and the Seattle AFSS is attached to this report.

A review of FAA National Track and Analysis Program (NTAP) radar data from the Seattle Air Route Traffic Control Center (ARTCC) did not reveal any discrete transponder codes associated with the accident airplane. ARTCC personnel located primary radar hits from a review of NTAP data and were assisted by California Civil Air Patrol (CACAP) Pacific Region personnel in Oakland, California.

An enclosed NTSB graphical representation of radar data depicts NTAP points as diamonds. Straight lines between data points are for continuity of data points and may not necessarily reflect the aircraft position at anytime between the points.

WRECKAGE AND IMPACT INFORMATION

A Safety Board investigator examined the airplane wreckage at the accident site on April 18, 1995. The wreckage was located approximately 4.5 miles from the Bumping Lake Dam on a 130 degree magnetic bearing, approximately 205 feet west of the northwest ridge of Nelson Butte. From the top of the ridge to a spot about 50 feet uphill from the wreckage, the terrain slopped down about 23 degrees. From that spot to the wreckage, the steepness of the slope was reduced to about 10 degrees. Just downhill from the airplane, the angle of slope increased to about 40 degrees. The nose of the airplane was oriented on a 015 degree magnetic heading, which was approximately parallel with the top of the ridge directly uphill from the wreckage.

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The airplane was sitting in snow that was estimated to be five to ten feet deep. From the top of the ridge to just below the wreckage, there were widely scattered groups of small coniferous trees. Most of the trees were between three and eight feet high. Downhill from the wreckage, the trees became much more dense.

The fuselage, from the engine cowling back to the first bulkhead aft of the rear window, was laying in a nose down attitude of about 28 degrees. The lower engine cowling and most of the engine compartment was embedded in the snow, with about one-half of one propeller blade exposed above the surface. The lower portion of the windshield was broken out, and the left cabin door was found separated from the fuselage. The flaps were extended to the 30 degree position. The trailing edge of the elevator trim tab was displaced 3/8 inch up from the elevator. The airplane manufacturer reported that the displacement corresponded to a five degree tab up setting.

The top portion of the fuselage was split open at the rear window bulkhead and there was a "V" shaped gap, about two and one-half feet wide at the top, running around approximately three-quarters of the structure. From that point aft, the fuselage was hanging toward the ground and twisted counter-clockwise, with the trailing portion of the empennage sitting in the snow.

Except for the gap in the fuselage and some bent/torn skin about half the span of the left wing, most of the impact damage was limited to an area forward of the cabin door posts.

The airplane's battery was still mounted to the airplane floor and both cables were still connected to their respective terminals. Initial testing of the battery found that it contained no charge.

The inside of the cabin was relatively intact, with all seats remaining attached to their railings. The instrument panel was also intact, but displayed some distortion/twisting, and the left hand grip of the pilot's control yoke had been torn off. The airplane's transponder was found in the "standby" position.

After the wreckage was removed from the accident site, the airplane's electrical system was connected to a military power cart generating 28 volts DC. The VHF communications radios were turned to the "on" position. Although the faces of the radios illuminated, and selection of different channels were possible, an attempt to transmit to the on-field control tower, both with a headset microphone and the hand-held microphone, was not successful. Both microphones were later shown to function properly. The reason for the failure to transmit was not determined. A WACAP FM radio that was installed in the airplane was removed and during later tests, functioned properly.

The ELT had been removed by rescue personnel, but the coaxial cable leading from the ELT to its externally mounted antenna was still attached to the antenna jack. The cable had an eight inch diameter loop about half-way between the antenna base and the ELT. This loop was clamped tightly with a plastic tie-wrap, limiting the overall length of the antenna cable to 19 inches. Without the tie-wrap in place, the cable was about 41 inches in length. The end of the cable which had been attached to the ELT had a sharp bend in it, and both the plastic covering and the wire shielding mesh were kinked and distorted.

After the airplane was recovered, the ELT was remounted in the fuselage. When the cable from the antenna to the ELT was held in place at the ELT connection, the cable was noted to be under extreme tension at its tie-wrap limited length of 19 inches.

According to rescue personnel, the end of the cable which attaches to the ELT had pulled almost totally away from its jack. It was reported to be still laying in contact with the jack when initially found, but when rescue personnel reached into the fuselage to remove the ELT, the cable fell off the jack when brushed lightly by the rescuer's arm.

When the wreckage was lifted out of the snow, it was noted that the carburetor heat box was bent, dented, and distorted. The tubing from the engine heat manifold to the male fitting on the carburetor heat box was disconnected.

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The fitting itself was dented and misshapen, and the metal hose clamp which had held the tubing to the fitting was lying in the snow under the lower cowl, undamaged.

The propeller did not display any leading edge indentations, chord-wise scarring, or longitudinal twisting. The engine crankcase, cylinders, and accessories were not damaged.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was conducted by the Yakima County Coroner's Office, 128 N. Second Street, Yakima, Washington, 98901, on April 17, 1995. The examination revealed that the pilot sustained injuries that included abrasions, lacerations, and contusions. The cause of death for the pilot was attributed to hypothermia. The coroner noted that the pilot was wearing a flight suit over dress clothes, flight jacket, and dress shoes. The coroner did not state a date and time of death.

A toxicological examination was conducted by the FAA's Civil Aeromedical Institute (CAMI) on December 1, 1995. The examination revealed that 59.00 mg/dl of acetone was detected in the urine and 24.00 mg/dl of acetone was detected in the blood. Medical personnel at CAMI indicated that the level of acetone could be attributed to the pilot being a diabetic or to fasting. The pilot was not a known diabetic.

SURVIVAL ASPECTS

The State of Washington mandates survival kits to be carried on airplanes used for compensation and in any rented or leased airplane. Airplanes owned by and exclusively used in the service of the U.S. government are exempt. The accident airplane, operated by the WACAP, was exempt from the requirement. The pilot had received training in survival skills and was a CAP survival skills instructor. CAP personnel reported that he usually carried a personal survival kit in the airplane. A kit was located in the pilot's personal vehicle at the departure airport. Several CAP aircraft have some type of survival items stored in each airplane; however, no consistent policy mandates an aircraft survival kit.

After the accident, the crash site was subjected to low temperatures and snow. Ground search personnel reported that the pilot appeared to have utilized portions of the airplane in an attempt to build a shelter. Search personnel noted that the pilot wrote several messages after the crash. One note, hand written on paper with a date and time of April 12, 1995, 1400, indicated that he had lost engine power and crashed about 0615. It also indicated that he had been unconscious for an unspecified period of time. A hand written message was noted on the pilot's sun visor indicating..."cabine to wes". A third message was noted on the rear of the front passenger seat indicating..."1700 going down hill". A fourth message was noted on the back of the pilot's right hand indicating..."1500 can't see (smudge mark)", and "to cold to (smudge mark)". Investigators noted that several food wrappers were located in and around the airplane along with several areas of urination. A military shovel reported to be the airplane the night before the accident was not recovered from the accident site.

Rescue personnel recovered the pilot and contents of the airplane from the wreckage, including the ELT. The WADOA SAR mission coordinator reviewed the items recovered from the airplane and disseminated them to the WACAP. The pilot's personal items were disseminated to a personal representative of the pilot's family. A portable cellular telephone was located in the pilot's flight suit with a cigarette lighter power adapter attached to the phone. WADOA personnel reported that the telephone antenna was broken; however, when tested after recovery by plugging into a power source and holding the antenna in place, it acquired a cellular signal. A cellular phone battery was not located in the wreckage. Cellular phone coverage existed in the area of the accident.

SEARCH AND RESCUE

The WADOA is responsible for the conduct of aerial search and rescue missions within the state. It conducts aerial search training for pilot volunteers who wish to assist the state during SAR missions. After completion of training, the WADOA may utilize those pilots, based on their training and geographic location, for aerial searches.

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The list of pilot volunteers includes CAP members, Washington Pilots Association members and nonaffiliated volunteers. The WADOA does not require that aircraft operated by volunteers during search mission be equipped with directional finding (DF) equipment.

The CAP is a federally chartered corporation and a U.S. Air Force civilian auxiliary organization headquartered at Maxwell Air Force Base, Alabama. The prosecution of SAR missions for the Air Force is one of the tasks performed by the CAP. U.S. Air Force personnel are assigned to each state CAP wing as CAP/USAF advisors. CAP search and rescue mission pilots may utilize CAP aircraft 4 hours per month to maintain their flight proficiency. These flights are considered by the CAP as "military" flights. All aircraft operated by the WACAP are DF equipped.

The U.S. Air Force Rescue Coordination Center (AFRCC), Langley AFB, Virginia, is responsible for managing a national network of search resources, both federal and nonfederal. Under a letter of agreement with WADOA, dated November 2, 1977, the AFRCC is the controlling agency when an incident involves military aircraft, scheduled air carrier aircraft, CAP aircraft while conducting SAR activities under U.S. Air Force authority, or when a downed CAP corporate aircraft is the object of a search. The WADOA is the controlling agency when an incident involves civil aircraft, ground searches, or CAP flights classified as general aviation, not operating under Air Force authority. Under the letter of agreement, the CAP is not designated as the primary controlling agency for any SAR missions; however, the CAP may become the mission coordinator on a AFRCC mission.

When an ALNOT is issued, WADOA and AFRCC will coordinate to determine which agency is the controlling agency. The controlling agency will issue a mission number. The controlling agency will assign a SAR mission coordinator.


The location of ELT signals is processed by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Environmental Satellite, Data, and Information Service, U.S. Mission Control Center (USMCC). Each location is logged as a site number with a latitude and longitude. A site number may include several satellite passes over the target area. This information is sent to the AFRCC to assist in locating missing aircraft.

The search conducted by the WADOA for the accident airplane, was divided into geographic search grids that are 15 minute quadrangle divisions of latitude and longitude lines. Each grid has a numerical designator. Each 15 minute quadrangle grid is further divided down into quarter sections and numbered "A" through "D". The accident airplane was located in grid 272C. A plot of the USMCC site numbers was prepared utilizing numerical identifiers for each ELT site number. Selected ELT site numbers that were located in the area of grid 272 were then depicted on an attached NTSB plot map. Each position is depicted as a star shape and is a graphical representation of their location.

Site #	Date	Pacific Daylight Time	4a: 25789	April 13, 1995	0225 4b:	April 13,
1995 0301 4c:	April 13, 1995	0407 6:	25899	April 13, 1995	0749 9a:	26367 April 13,
1995 2153 9b:	April 14, 1995	0109 10a:	26521	April 14, 1995	0613 10b:	April 14, 1995
0736 11: 26659	April 14, 1995	1211 13a:	26867	April 14, 1995	1941 13b:	April 14, 1995
2140 16a: 27143	April 15, 1995	0325 16b:		April 15, 1995	0417 17a:	27209 April 15, 1995
0643 17b:	April 15, 1995	0729				

Ground search teams employed electronic monitoring for ELT signals in addition to the use of four-wheel-drive vehicles and snowmobiles. They reported receiving intermittent weak ELT signals while monitoring from high terrain in the White Pass area, south of the accident scene. Numerous attempts to pinpoint a signal and/or reestablish the reception of a signal were unsuccessful.

A historical chronology of the search for the accident airplane was compiled from WADOA logs, AFRCC logs, WACAP logs, and various ground search agency logs. On April 11, 1995, the pilot obtained a flight release for the accident flight from the WACAP. The pilot's intended purpose of the flight was personal business and CAP flight proficiency. The flight was listed by WACAP as a category "C1" flight (non-reimbursable CAP corporate mission, proficiency flights). Following the accident, Civil Air Patrol/U.S. Air Force (CAP/USAF) personnel reviewed the pilot's qualifications and determined that the accident flight met the requirements of a U.S.

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Air Force category "B1" flight (non-reimbursable Air Force assigned flight specifically conducted for training CAP aircrews to support assigned USAF missions). A list of CAP mission numbers is attached to this report.

April 12, 1995

About 0933, the WADOA search and rescue (SAR) mission coordinator was briefed by WADOA staff. AFRCC was also notified and they opened a search incident at 0955. About 1032 AFRCC confirmed the missing airplane was a CAP aircraft. In response to an inquiry from AFRCC at 1040, the WADOA confirmed that they were retaining control of the search. AFRCC personnel reported that they felt who was in charge of the search did not have any bearing on the search protocol. WADOA began soliciting resources for an aerial and ground search.

About 1124, WADOA was notified by AFRCC of an ELT signal that was being heard by Renton, Washington, air traffic control tower personnel. The signal was not near the accident location. WADOA search aircraft launched from Auburn and Evergreen airports. About 1140, a WADOA volunteer pilot/observer team from Yakima, Washington, responded to the Yakima airport to begin a search. They notified WADOA at 1200 that marginal weather conditions prevented a launch. At 1342, search personnel in Yakima again confirmed that weather conditions prevented any airborne search.

Between 1403 and 1445, WADOA launched SAR ground search resources from the King County Sheriff's Office, Pierce County, Yakima County, and Kittitas County. King County launched a helicopter into the search area. Washington State National Guard helicopters were requested but did not launch because the weather conditions were below their operational limits.

About 1309, the AFRCC was notified by the CAP/USAF Pacific Region Liaison Officer (PRLO), that the accident flight was a USAF training flight and requested that AFRCC issue a SAR mission number. AFRCC did not issue a mission number at that time.

About 1320, WADOA requested National Track and Analysis Program (NTAP) radar data and ELT data from AFRCC. AFRCC made a request to the Seattle Air Route Traffic Control Center (ARTCC) for any data, based on the last known radio contact the pilot made with Seattle AFSS at 0519. About 1409, CAP/USAF Liaison operations personnel authorized WACAP mission number 911-T-WA-001 to begin a SAR mission in anticipation of receiving an AFRCC mission number. WACAP aircraft begin flying in the search area.

About 1430, Seattle ARTCC notified AFRCC that there was no discrete radar data on the accident airplane and were looking for any primary radar data. At 1530, Seattle ARTCC again notified AFRCC that they had no data.

At 1450, AFRCC contacted WADOA to advise that the CAP believed the accident flight to be an authorized CAP/USAF mission. The WADOA expressed their concern that WACAP aircraft were flying in the search area. After some discussion, the AFRCC decided that WADOA was the best choice to continue as the controlling agency. About 1545, CAP/USAF Liaison operations personnel rescinded the WACAP mission number, believing that the accident flight was a personal flight.

About 1607, the WACAP wing commander authorized local training mission number 95WG008 to continue searching for the accident aircraft. These flights were primarily conducted to listen for ELT signals. No signals were heard.

Between 1646 and 1800, WADOA continued to coordinate ground search resources. At 1812, WADOA again contacted AFRCC to express their concern that WACAP aircraft were flying in the search area without WADOA control or coordination. About 1818 the King County helicopter was forced to leave the search area due to poor weather conditions.

At 2007, WADOA received information from ground search teams that snow was falling at 3,500 feet in the Rimrock Lake area (about 10 miles south of the accident site). Pierce County search teams forwarded a report of an ELT signal at 2030 in the area of Renton airport. Additionally, they reported that a military C-141 aircraft heard an ELT signal from the south side of Mount Rainier.

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At 2212, the Pierce County search teams reported poor weather conditions in their search area. WADOA made preparations to establish a SAR base of operations at Thun Field, Puyallup, Washington, for the following day.

About 2240, WADOA contacted AFRCC to get all first alert ELT hits in the entire state. Three were sent and were located in search grid 333.

At 2315, the WADOA mission coordinator contacted the Seattle ARTCC to request a temporary flight restriction around the search area. This request was to prevent WACAP aircraft from flying through the search area without WADOA permission. (FAA personnel ultimately would not issue a NOTAM for restricted airspace; however, an advisory NOTAM was issued to alert pilots about search aircraft activity.)

WADOA indicated that the aerial search was centered along the V-4 airway and included Enumclaw, Green River, Norse Peak Wilderness, Lester, Stampede Pass, and Hanson Reservoir. WADOA reported that the daily search activity summary for April 12, 1995, was: 2 WADOA aircraft with 5 sorties; 1 King County helicopter with 3 sorties. WACAP indicated that 5 of their aircraft were involved in searches. Ground search personnel included four-wheel-drive vehicles, ELT monitoring teams, amateur radio monitoring teams, and snowmobiles.

April 13, 1995

About 0309, the WADOA mission coordinator is advised by AFRCC of 2 ELT locations, one of which is a carrier only signal. These were located near grid 272. The mission coordinator was sleeping at the time and requested that the information be temporarily stored. At 0458, the previously noted ELT information was given to the WADOA mission coordinator by AFRCC, who indicated that the signal was no longer being heard. WADOA additionally requested any reports of ELT signals that may have been heard by aircraft in contact with Seattle ARTCC.

About 0610, AFRCC was contacted by the CAP/USAF PRLO who confirmed the date of the AFRCC/WADOA letter of agreement concerning search control agencies. The PRLO urged AFRCC to take control of the search. At 0620, the PRLO also contacted CAP/USAF headquarters staff to urge the same thing.

At 0630, WADOA opened their search base of operations at Thun Field. A fixed wing search pilot was briefed on the location of ELT signals. Grid number 272C contained several sites and was the area of most concern. Weather conditions at the search base were described as marginal with high winds and rain showers.

About 0713, AFRCC called WADOA to inquire about their search plans and if they wanted the use of a military C-130 electronic search aircraft. WADOA responded by requesting the C-130 and did not have a definitive answer about the search plans until personnel reported to the search base. WADOA requested all federal search assets, except the CAP. WADOA logs indicated that the WACAP had been flying in the search area without WADOA authorization. At 0720, AFRCC requested that Seattle ARTCC continue searching for any radar data in the area of ELT signals.

At 0744, WADOA advised AFRCC that they had 3 WADOA helicopters, and 8 national guard helicopters available. At 0800, a WADOA fixed wing search aircraft departed for grid 272C. At 0918, AFRCC forwarded an ELT location (based on a first alert at 0740) in grid 272C. WADOA indicated that several ground search teams and helicopters were en route to the area.

About 0935, AFRCC contacted the WADOA to confer about permitting WACAP participation in the search. The WADOA mission coordinator also met with the pilot's wife and agreed to allow WACAP pilots, without any command or administrative staff, to participate in the search. WADOA requested a CAP/USAF noncommissioned officer (NCO) to act as a liaison between the WADOA and WACAP. AFRCC opened mission number 95M696.

At 1105, WACAP report the first official launch of their aircraft. Grid 272C continued to be covered by poor weather conditions. The C-130 electronic aircraft search did not produce any results as the search area contained too much electronic background noise.

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AT 1240, personnel from the California Wing of the CAP (CACAP) contacted AFRCC to request any NTAP data from Seattle ARTCC be transferred to the Oakland, California, ARTCC. CACAP personnel indicated that they could analyze the data on a commercially available computer program to assist in locating the missing airplane. WADOA was notified of the request and stated that they would take any data that was available from the CACAP program.

About 1321, Seattle ARTCC contacted AFRCC to report that a primary radar target had been noted in the area of federal airway V-4 near the location of a previous ELT signal near grid 272. ARTCC began tracking the primary target backwards from the ELT, toward Auburn, Washington. AFRCC inquired if the primary target flew past the ELT location and requested new NTAP data for April 12, 1995, from 0400 to 0630. At 1342, CACAP requested that AFRCC center a new request for NTAP data on a location about 20 to 30 miles southeast of Auburn. At 1411, WADOA is advised by AFRCC about the NTAP data transfers and WADOA advised that due to bad weather, search personnel were beginning to stand down. About 1530, WADOA released Army National Guard helicopters from the search area due to their requirement for maintenance.

At 1545, Seattle ARTCC reported to AFRCC that all NTAP data had been transferred to Oakland ARTCC. About 2025, CACAP personnel reported to AFRCC that the NTAP data sent to Oakland did not contain latitude and longitude information. Another attempt to retrieve the necessary data would be completed the next morning (April 14, 1995).

About 1700, WADOA could no longer launch aircraft into the search area due to poor weather. Yakima County ground search personnel continued to search with snowmobiles in the higher elevations of the mountains.

AT 1702, AFRCC advised WADOA that another airplane had crashed near Index, Washington. The pilot of the second airplane reported carburetor icing problems. WADOA began coordinating the second search. The Thun Field search base closed for the day at 2251.

The search activity summary for April 13, 1995, was: 39 WADOA aircraft with 42 sorties; 11 WACAP aircraft with 34 sorties; 15 military aircraft with 25 sorties; 102 ground personnel with 15 vehicles.

April 14, 1995

About 0610, WADOA briefed AFRCC on the current status of the search and requested the C-130 electronic search airplane, (it was not available to assist). AFRCC advised that they would send NTAP data when it became available and indicated that an intermittent ELT signal had returned briefly, then disappeared in the area of grid 272C. At 0657 and 0852, WADOA was briefed about ELT locations by AFRCC. During mission planning, WADOA ordered that aircraft should be kept in grid 272 at all times, if possible. Ground personnel are directed to also concentrate on the area. Weather conditions continued to hamper search efforts.

About 0913, CACAP notified AFRCC that due to a higher priority, Seattle ARTCC was unable to send the necessary NTAP data containing latitude and longitude to Oakland ARTCC. They would notify AFRCC when data was received. At 1219, the data was received at Oakland ARTCC.

At 1650, a WACAP aircraft crew reported a radio direction finding (DF) equipment needle swing in grid 272. There was no audible sweep tone. WADOA reported that they contacted AFRCC with the information and received confirmation that the satellite also detected some kind of signal. Continued search in the grid did not locate anything. Weather conditions in the search area again deteriorated.

About 1702, AFRCC called WADOA to provide a SARSAT data merge from the USMCC, located at 46.42.5N and 120.09.6W. WADOA informed AFRCC that the second missing aircraft had been located and indicated that they would call back for the SARSAT data. The SARSAT info was passed to WADOA at 1749.

National Transportation Safety Board

FACTUAL REPORT**AVIATION**

NTSB ID: ANC95GA048

Occurrence Date: 04/12/1995

Occurrence Type: Accident

Narrative (Continued)

About 2100, the CACAP provided updated NTAP data to the AFRCC and reported that they felt the accident airplane departed prior to the time the ALNOT specified. This was the first indication from primary radar data of a departure time of 0502 on April 12th. CACAP requested all 1200 transponder codes and the assistance of an FAA specialist in Seattle ARTCC in an attempt to locate further radar data.

At 2120, WADOA shut down the search base for the day. They reported that the daily search summary was: 35 WADOA aircraft, with 47 sorties flown; 13 WACAP aircraft with 47 sorties flown; 12 military aircraft with 15 sorties flown; and 75 ground personnel.

At 2354, the CACAP informed AFRCC that they were working with the Seattle ARTCC and located more NTAP data. Any information would be faxed to AFRCC in the morning.

April 15, 1995

About 0640, the WADOA opened their search base for the day. Good weather conditions are reported in the search area. The plan included stationing a DF equipped aircraft in grid 272. The pilot who noted the DF swing on the previous day was to fly in an Army National Guard helicopter and show the pilot exactly where the DF signal was observed. An Army Cobra helicopter would follow and search the area with their enhanced optical equipment. About 0800, search aircraft are launched into the area.

About 0816, CACAP talked with AFRCC and requested the latest NTAP data on a disk. They indicated that Seattle ARTCC had located additional radar track information that covered an additional 10 to 12 miles. At 0845, AFRCC requested an update from WADOA about their search efforts. They report that 14 aircraft are in the air.

About 0900, AFRCC contacted CACAP and requested the latest NTAP that they had been working on. CACAP requested from AFRCC, additional pages of radar data from Seattle ARTCC. At 1008, AFRCC received a final radar plot from CACAP with all of the latest data. At 1010, WADOA is apprised of the suspected last known position based on NTAP data at latitude 47 degrees, 02.09 minutes north and longitude 121 degrees, 13.36 minutes west.

The accident airplane was located by a WACAP aircraft in grid 272C about 1115 hours. At 1215, a military helicopter crew landed at the accident site and confirmed that the pilot did not survive. At 1245, a Tacoma Mountain Rescue team arrived by helicopter and recovered the pilot and contents of the airplane.

TESTS AND RESEARCH

On May 15, 1995, Safety Board investigators conducted a functional test of the ELT, a Dorne and Margolin ELT 6.1. The ELT was taken to Artex, Inc., of Canby, Oregon, and the backing plate was removed so that the internal components could be inspected. No corrosion, cracks, dents, loose connections or any other damage was noted.

After the internal inspection was complete, the activation switch was turned to the "on" position, and the unit was tested for sweep tone transmission. The initial test was performed by connecting the unit to an oscilloscope, followed by a separate test, in which an antenna was connected to the ELT, and an attempt was made to pick up the transmission with a hand-held radio tuned to 121.50 Hz.

The tests were first performed using the ELT's battery pack, and then repeated using an external power supply. In all instances, the unit transmitted a carrier signal, but no sweep tone was present.

The following day, another attempt was made to test the unit for sweep tone transmission. This time, a coaxial cable, which originally ran from the unit to the airplane's external antenna, was connected to the ELT. After turning the switch to the on position, a sweep tone was received on a hand-held radio.

National Transportation Safety Board

FACTUAL REPORT**AVIATION**

NTSB ID: ANC95GA048

Occurrence Date: 04/12/1995

Occurrence Type: Accident

Narrative (Continued)

Because the temperatures at the accident site had dropped below freezing during the search, the unit was put in a freezer for 24 hours, and then tested again. During this test, with the same coaxial cable acting as an antenna, the unit once again transmitted a sweep tone.

Because of the intermittent nature of the sweep tone transmission, the unit was sent to the manufacturer, Dorne and Margolin, where a teardown inspection was monitored by the FAA on September 5, 1995. During that inspection, the sweep tone transmission was again intermittent, and the technician suspected the tuning crystal. He removed the crystal, installed a new one, and retested the unit. With the new crystal installed, the unit transmitted a sweep tone on a continuous basis. After the successful test, the old crystal was reinstalled, and the ELT once again transmitted on an intermittent basis. The exact nature of the crystal failure could not be determined.

On May 9, 1995, the engine was removed from the airframe for shipment to the manufacturer. At that time, an oil sample was taken for evaluation by a Spectrometric Oil Analysis Program (SOAP). This sample was submitted to Aviation Laboratories, Gardena, California. The SOAP report stated that the oil sample appeared "normal". There were no abnormal amounts of iron, copper, nickel, chromium, silver, magnesium, aluminum, lead, silicon, titanium, or tin.

On June 12, 1995, the engine was examined at the manufacturer's facility in Mobile, Alabama, under the direction of an NTSB investigator. The engine was placed in an engine test cell and started. The manufacturer reported that the engine operated normally on the test stand.


Between May 1, and May 3, 1996, the airplane's battery was examined at the manufacturers facility in Redlands, California, under the direction of an NTSB investigator. The examination revealed the battery case was undamaged. It had a residual charge of 4.4 volts. Initial charging revealed that the battery began to accept a charging rate of about 1.0 amps. The charging rate increased to 4.0 amps. An emergency capacity test was performed in which the battery was discharged at 17 amps to 1.75 volts per cell, during which the battery provided power for 32.58 minutes. The minimum time for the emergency capacity test is 30 minutes. The manufacturer reported that the battery met or surpassed all design parameters. The manufacturer also reported that at minimum power usage, the battery may have provided about 2 hours of charge.


ADDITIONAL INFORMATION


Additional party representatives to the investigation were Mr. Claude Underwood, Cessna Aircraft Corp., P.O. Box 7704, Wichita, KS, 67277, and Mr. Herman Ross, FAA, Seattle Flight Standards District Office, 1601 Lind Ave, SW, Renton, Washington, 98055.

Additional Safety Board investigators participating in this accident investigation were Mr. Kurt Anderson, Northwest Regional Office, Seattle, Washington, Mr. Wesly M. Robbins, North Central Regional Office, Chicago, Illinois, and Mr. Wayne Pollack, Southwest Regional Office, Gardena, California.

The Safety Board released the wreckage, located at McChord Air Force Base, Washington, to the CAP on August 9, 1995. The airplane's ELT was retained by the Safety Board for examination until its release on October 17, 1995.

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: ANC95GA048			
		Occurrence Date: 04/12/1995			
		Occurrence Type: Accident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used 0	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Approach/Arrival Flown: NONE					
VFR Approach/Landing: Forced Landing					
Aircraft Information					
Aircraft Manufacturer Cessna		Model/Series 182Q /182Q		Serial Number 18267217	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Tricycle					
Amateur Built Acft? No	Number of Seats: 4	Certified Max Gross Wt. 3100 LBS		Number of Engines: 1	
Engine Type: Reciprocating	Engine Manufacturer: Continental		Model/Series: O-470-U	Rated Power: 230 HP	
- Aircraft Inspection Information					
Type of Last Inspection Annual	Date of Last Inspection 03/1995	Time Since Last Inspection 25 Hours		Airframe Total Time 1583 Hours	
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?/Type Yes /		ELT Operated? Yes	ELT Aided in Locating Accident Site? Yes		
Owner/Operator Information					
Registered Aircraft Owner CIVIL AIR PATROL		Street Address 105 HANSELL ST.			
		City MAXWELL AFB	State AL	Zip Code 36112	
Operator of Aircraft CIVIL AIR PATROL		Street Address 105 HANSELL ST.			
		City MAXWELL AFB	State AL	Zip Code 36112	
Operator Does Business As:			Operator Designator Code:		
- Type of U.S. Certificate(s) Held: None					
Air Carrier Operating Certificate(s):					
Operating Certificate:			Operator Certificate:		
Regulation Flight Conducted Under: Part 91: General Aviation					
Type of Flight Operation Conducted: Public Use					
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First Pilot Information																																																																																																	
Name			City		State	Date of Birth	Age																																																																																										
On File			On File		On File	On File	29																																																																																										
Sex: M	Seat Occupied: Left		Occupational Pilot? Business			Certificate Number: On File																																																																																											
Certificate(s): Private																																																																																																	
Airplane Rating(s): Single-engine Land																																																																																																	
Rotorcraft/Glider/LTA: None																																																																																																	
Instrument Rating(s): None																																																																																																	
Instructor Rating(s): None																																																																																																	
Current Biennial Flight Review?																																																																																																	
Medical Cert.: Class 3		Medical Cert. Status: Valid Medical--no waivers/lim.			Date of Last Medical Exam: 07/1994																																																																																												
<table border="1"> <thead> <tr> <th rowspan="2">- Flight Time Matrix</th> <th rowspan="2">All A/C</th> <th rowspan="2">This Make and Model</th> <th rowspan="2">Airplane Single Engine</th> <th rowspan="2">Airplane Multi-Engine</th> <th rowspan="2">Night</th> <th colspan="2">Instrument</th> <th rowspan="2">Rotorcraft</th> <th rowspan="2">Glider</th> <th rowspan="2">Lighter Than Air</th> </tr> <tr> <th>Actual</th> <th>Simulated</th> </tr> </thead> <tbody> <tr> <td>Total Time</td> <td>266</td> <td>96</td> <td>266</td> <td>1</td> <td>64</td> <td></td> <td>3</td> <td></td> <td></td> <td></td> </tr> <tr> <td>Pilot In Command(PIC)</td> <td>235</td> <td>65</td> <td>235</td> <td></td> <td>62</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instructor</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Instruction Received</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 90 Days</td> <td>31</td> <td>28</td> <td>31</td> <td></td> <td>17</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 30 Days</td> <td>11</td> <td>11</td> <td>11</td> <td></td> <td>7</td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Last 24 Hours</td> <td>1</td> <td>1</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>								- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air	Actual	Simulated	Total Time	266	96	266	1	64		3				Pilot In Command(PIC)	235	65	235		62						Instructor											Instruction Received											Last 90 Days	31	28	31		17						Last 30 Days	11	11	11		7						Last 24 Hours	1	1	1							
- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument								Rotorcraft	Glider				Lighter Than Air																																																																														
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Seatbelt Used? Yes		Shoulder Harness Used? Yes			Toxicology Performed? Yes		Second Pilot? No																																																																																										
Flight Plan/Itinerary																																																																																																	
Type of Flight Plan Filed: VFR																																																																																																	
Departure Point		State		Airport Identifier		Departure Time		Time Zone																																																																																									
AUBURN		WA		S50		0502		PDT																																																																																									
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YAKIMA		WA		YKM																																																																																													
Type of Clearance: None																																																																																																	
Type of Airspace: Class G																																																																																																	
Weather Information																																																																																																	
UAT C/S Source of Wx Information: Flight Service Station																																																																																																	

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			Occurrence Date: 04/12/1995		
			Occurrence Type: Accident		


Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
SMP	0556	PDT	3800 Ft. MSL	28 NM	330 Deg. Mag.
Sky/Lowest Cloud Condition: Unknown			0 Ft. AGL	Condition of Light: Day	
Lowest Ceiling: Overcast			0 Ft. AGL	Visibility: 0 SM	Altimeter: 29.00 "Hg
Temperature: 34 °C		Dew Point: 26 °C	Weather Conditions at Accident Site:		
Wind Direction: 110		Wind Speed: 10		Wind Gusts: 19	
Visibility (RVR): 0 Ft.		Visibility (RVV) 0 SM			
Precip and/or Obscuration:					

Accident Information					
Aircraft Damage: Substantial		Aircraft Fire: None		Aircraft Explosion: None	

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot	1				1
Second Pilot					
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants					
Other Crew					
Passengers					
- TOTAL ABOARD -	1				1
Other Ground	0	0	0		0
- GRAND TOTAL -	1	0	0		1

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	Occurrence Date: 04/12/1995	
	Occurrence Type: Accident	
Administrative Information		
Investigator-In-Charge (IIC) SCOTT R. ERICKSON		
Additional Persons Participating in This Accident/Incident Investigation: DOUG ISAACSON MAXWELL AFB, AL KARL HOEHN SEATTLE, WA BILL BRUBAKER SEATTLE, WA MICHAEL GRIMES MOBILE, AL		
FACTUAL REPORT - AVIATION		