National Transportation Safety Board
Aviation Accident Final Report

Location:	NORTH BEND, OR	**Accident Number:**	SEA95FA111
Date & Time:	06/01/1995, 1554 PDT	**Registration:**	N6877S
Aircraft:	AERO COMMANDER 680	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

APPROXIMATELY TWO MINUTES AFTER TAKEOFF, WITNESSES SAW THE AIRPLANE PULL UP SHARPLY INTO A STEEP CLIMB FROM UNDERNEATH AN 800-FOOT CEILING. THE AIRPLANE WENT INTO AN UNCONTROLLED, NEARLY VERTICAL DIVE AND IMPACTED INTO A RIVER. THE PILOT DID NOT HOLD MULTI-ENGINE OR INSTRUMENT RATINGS. INDIVIDUALS WHO KNEW THE PILOT, INCLUDING AN INSTRUCTOR WHO HAD FLOWN WITH HIM, STATED THAT THEY HAD DOUBTED THE PILOT'S COMPETENCE BUT THAT THE PILOT HAD BEEN CONFIDENT OF HIS OWN FLYING ABILITY.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: THE PILOT INITIATING FLIGHT INTO WEATHER CONDITIONS BEYOND WHAT HE WAS CAPABLE OF HANDLING. THE PILOT'S OVERCONFIDENCE IN HIS PERSONAL ABILITY AND THE LOW CEILING WERE FACTORS IN THE ACCIDENT.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CLIMB

Findings
1. (F) WEATHER CONDITION - LOW CEILING
2. (C) FLIGHT INTO ADVERSE WEATHER - INITIATED - PILOT IN COMMAND
3. (F) OVERCONFIDENCE IN PERSONAL ABILITY - PILOT IN COMMAND
4. (C) AIRCRAFT CONTROL - UNCONTROLLED - PILOT IN COMMAND
5. LACK OF CERTIFICATION - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
6. TERRAIN CONDITION - WATER

Factual Information

HISTORY OF FLIGHT

On June 1, 1995, approximately 1554 PDT, an Aero Commander 680, N6877S, was destroyed in an inflight collision with water adjacent to the North Bend, OR municipal airport. The commercial pilot/co-owner, whose pilot certificate carried only an airplane single-engine land category and class rating, and his two passengers were fatally injured. The flight was a local 14 CFR 91 flight out of North Bend. Instrument meteorological conditions existed but no flight plan had been filed.

The crew of a U.S. Coast Guard helicopter which had just landed at North Bend, CG6552, saw the airplane take off on runway 31. The pilot-in-command of CG6552 stated that he became concerned about this since the 800-foot ceiling was below minimum weather requirements for normal visual flight rules (VFR) and he had not heard the pilot of this airplane call for or receive an air traffic control (ATC) clearance to operate in North Bend's Class E surface area airspace under either special visual flight rules (SVFR) or instrument flight rules (IFR). He radioed a warning to the crew of another Coast Guard helicopter, CG6529, which was inbound to North Bend from the west on a SVFR clearance, to watch out for the airplane. The pilot-in-command of CG6552 stated that from the Coast Guard wash rack parking spot on the airport, he saw the airplane continue straight ahead after takeoff and enter the clouds in a wings-level climb.

Several members of the crew of CG6529, the airborne Coast Guard helicopter inbound to North Bend from the west, witnessed the water impact. They stated that they initially spotted the airplane as it passed between 400 and 1300 feet off to the right of their helicopter, about 100 feet higher than the helicopter and in a steep climb. Some crew members stated that the airplane went into the clouds in this climb. Ten to twenty seconds later, they spotted the airplane again, this time in a near vertical dive. They described the airplane's flight path in the dive as going from directly over their helicopter, downward and outward along the helicopter's 3-o'clock line and into the Coos River in a near vertical attitude. CG6529 was approximately over the settling ponds immediately across the Coos River from, and to the west of, North Bend airport at the time of the initial sighting. The co-pilot, who was flying the helicopter, stated that CG6529 was eastbound at approximately 100 to 110 knots and 500 feet altitude at the time of the event.

A weather observer at the North Bend airport also witnessed portions of the accident sequence including the water impact. He stated that at approximately 1545 PDT, the pilot of N6877S called him on the North Bend UNICOM frequency for a radio check and then taxied N6877S to runway 31. He said that he then heard the pilot of N6877S call on UNICOM that he was taking runway 31, and saw the airplane take off from runway 31. A certified copy of the North Bend airport flight contact record was annotated "COM 6877S 1545 T/O R/W 31 (MISHAP)". At this time he went off shift from weather observation duties and went out to the edge of Runway 4 to perform bird control and foreign object removal from the runway. From a vantage point approximately 2000 feet east of the impact point, he said his attention was drawn to the aircraft by high-pitched engine noise. He stated that looking up, he saw the airplane in a near vertical dive, impacting the water in this attitude with a slight roll rate to the right.

Another individual witnessed approximately 40 to 50 seconds of the flight immediately before water impact from his front yard, about 1/2 mile southeast of the impact point. This witness

stated that he initially saw the airplane climbing to the west, then suddenly make a steep-banked turn of almost 360 degrees. He reported that the turn descended back to the runway at which point the airplane followed a takeoff ground track. The airplane then disappeared behind trees. The witness said the airplane then reappeared in an almost vertical climb, then pivoted around its left wing and entered a near vertical dive. The witness then heard the water impact, but did not see it since the impact point was obstructed from view by terrain. He stated that the engines sounded very smooth and powerful with no sounds of missing or backfiring throughout the sequence, characterizing them as going "full bore" at the time of impact. This witness stated that the airplane never entered the clouds.

Two individuals witnessed portions of the event from the vicinity of a lumber chip dock on the opposite river bank northwest of the airport. One reported that after takeoff, the airplane stopped climbing and made a "flat turn" to the west over his position, then made a banked 90-degree turn to the south. This witness stated that the airplane then disappeared into the clouds in level flight and that he observed no more of the sequence. He reported that the airplane made a "very loud engine noise" with an "odd 'heavy throb' sound". The other witness made the following statement:

...I saw a twin engined [aircraft] take off from the airport heading in a Northwesterly direction. This aircraft attracted my attention because it was extremely loud.... The plane disappeared into the overcast....

In a very short time, 2-3 minutes, my attention was directed to the Coast Guard [helicopter] flying in an easterly direction, or up the Bay, and at this time I saw the plane come out of the overcast and it appeared to me that it was going to collide with the chopper but it passed to its rear. To me it appeared that it came within about 100 feet of the chopper. At this time it seemed to have about 200 ft. elevation. It suddenly pulled up [sharply], almost vertical and disappeared into the overcast.

In just a very short time, possibly seconds, it plunged out of the overcast in an almost vertical flight and crashed into the Bay about 25 to 30 yards from the shore line into shallow water. There was one big splash - then nothing. Something was sticking out of the water, but I [couldn't] tell what portion of the plane it was. Prior to the crash I saw no smoke or fire and I believe the landing gear was still retracted.

I can't say for sure how the engines were operating, if they were on full power or not. There was no apparent rotation by the plane, as if in a spin. It was headed in a south-westerly direction when it crashed.

There were buildings, etc. directly in front of the aircraft when it pulled up into the overcast just prior to the crash....

This witness supplied a sketch with his written statement indicating that the airplane turned left after takeoff, continuing around approximately 270 degrees to an easterly heading over the water. He also indicated the path of the Coast Guard helicopter on his statement, which showed that as seen by him, the airplane passed behind and to the right of the helicopter on an approximately parallel ground track just before the accident.

The Coast Guard took a statement from a witness which read as follows:

At approximately 1550...I witnessed a twin engine plane come from an Easterly direction sloping down to approximately 100 feet from the parking lot at the BLM boat ramp on the

North Bend Spit. He then pulled up into the air, made a wide loop and came nearly vertical into the water of Coos Bay. His engines seemed to be nearly full throttle during the entire time....

The Coast Guard provided a tape recording of the North Bend Coast Guard Air Station operations center radio traffic at the time of the accident. On this tape, approximately two minutes elapsed between the radioed warning from the pilot of CG6552 that an aircraft had just taken off from runway 31, and a call from CG6529's crew that they had just witnessed an aircraft crash. A transcript of this recording supplied by the Coast Guard showed that CG6552's radio warning of an aircraft taking off was broadcast between 1552 and 1553 PDT, and that CG6552's crew queried CG6529's crew as to whether the aircraft was on land or in the water at 1555 PDT.

The quality assurance section of the automated flight service station (AFSS) at McMinnville, OR, which controls the North Bend Class E surface area airspace, reported that they had no record of providing any type of service, to include weather briefing, flight plan filing, issuance of ATC clearance, or inflight radio contact, to N6877S.

The airplane impacted in the Coos River, approximately 100 yards offshore from the airport side and abeam a point 1500 feet northeast of the approach end of North Bend runway 4.

The accident occurred during the hours of daylight at 43 degrees 25.14 minutes North and 124 degrees 15.43 minutes West.

PERSONNEL INFORMATION

According to FAA records, the pilot held a commercial pilot certificate with an airplane single-engine land category and class rating, issued in 1969. He did not hold multi-engine or instrument ratings. The pilot's FAA medical records indicated that he had approximately 1,450 hours total pilot time. The most recent FAA medical certificate on file for the pilot was a second class medical certificate issued on October 13, 1992.

Investigators recovered the front cover of the pilot's logbook from the aircraft wreckage. This front cover had old temporary airman certificates, including the temporary commercial pilot certificate, and old medical certificates taped onto the inside portion. The remainder of the pilot's logbook was not found.

Two individuals who knew the pilot personally submitted written statements which indicated that although they believed the pilot and his wife were very friendly and likeable people, they had serious doubts about the pilot's flying proficiency. The assistant manager of the North Bend airport, in a statement dated June 5, 1995, said the following:

...[The pilot and his wife] would fly [their airplane] very seldom....I doubt if they flew the aircraft more than 10 times in the last 30 months that it has been based at North Bend...each flight was a "happening". [The pilot] aborted takeoff 3 times on one occasion and returned to the ramp much to our relief. Often they would taxi out, make a run up and return to the ramp, again to our relief. I was shown by [the pilot's wife] the hand written procedures that she would [read] to [him] during the flight, speeds, RPM, manifold pressures and such. We were [always] fearful for them on each flight. My standing orders to the weather observation crew was to watch them very closely.

All the while [the pilot] and [his wife] were very confident in [his] ability to fly. On a couple of occasions [he] was asked about any recent proficiency training that he had

received, to which he answered that he had none because that is where most of the accidents happen....

A certificated flight instructor who stated that he had flown with the pilot submitted an account of his efforts to provide the pilot with a multi-engine checkout in the Aero Commander. This instructor stated that he has about 6,000 hours total flight time including 2,000 hours of multi-engine instructional experience in light twin-engine aircraft. He stated that he gave 9 instructional flights to the pilot in May 1993, after the pilot had become dissatisfied with a previous instructor experienced in the Aero Commander. In his letter, he made, among others, the following remarks concerning the training flights and his opinions of the pilot's flying proficiency which resulted:

"The bulk of the training was remedial in nature, designed to improve [the pilot's] basic flying skills to meet FAA Practical Test Standards (PTS)."

"...his flying, navigation, and communication skills were below acceptable [practical test] standards. Also, his checklist [usage]/discipline, general airmanship, and situational awareness were substandard."

"...we practiced slow flight/minimum controllable airspeed, steep turns, and stalls. In all maneuvers, he exhibited a surprising lack of knowledge of how to properly complete the maneuver....My impression was that I was working with a pre-solo student, not an experienced pilot with 1000+ hours, and many hours of previous instruction in the AC-680...I shifted to a 'remedial, proficiency/airmanship building' syllabus, instead of a more aggressive multi-engine curriculum...."

"...After our last flight together, I had a somewhat frank discussion with [the pilot] recommending a course of instruction to overcome his flying deficiencies. I suggested 1) general flying/cross country proficiency in a single engine aircraft 2) a course of multi-engine instruction to earn the FAA rating in a less complex twin..., and then 3) transition training in the AC- 680....I don't think he took my critique seriously. I believe [he] thought I was being overly critical and he thought his flying ability was OK."

"My bottom line was 'I would not sign [him] off to fly a Cessna 150 solo, let alone an Aero Commander.'...[He] was not competent to fly as pilot-in-command of an AC-680. [He] needed a significant amount of additional instruction...because of deficiencies in airmanship, situational awareness, navigation, communication, etc....he would be unable to competently pass an FAA evaluation in accordance with the PTS...."

No evidence of additional training accomplished after May 1993 was found. The pilot had no history of accidents, incidents, or enforcement actions against his certificate within the past 5 years, according to FAA records.

AIRCRAFT INFORMATION

The aircraft, an Aero Commander 680, was manufactured in December 1956. It was equipped with two Lycoming GSO-480-B1A6 pressure- carbureted, supercharged, 6-cylinder horizontally opposed reciprocating engines rated at 340 b.h.p. each, and 3-bladed Hartzell full-feathering, constant-speed propellers geared down at a ratio of 120:77. According to information on file with Twin Commander Aircraft Corporation, it had been owned by the pilot and his wife since May 1992.

The airplane's last annual inspection was on March 18, 1995, according to the aircraft logbook,

which was recovered from the wreckage. An FAA query on the record of the mechanic who signed off this inspection revealed that the mechanic's FAA inspection authorization (IA) had expired 2 years previously. Investigators were unable to contact this mechanic. The previous annual inspection occurred on August 9, 1993. The aircraft logbook dated back to 1967 and indicated that the airframe total time was 4,784.1 hours at the March 18, 1995 annual inspection.

Along with the aircraft logbook, investigators recovered 2 pages of a left engine logbook, consisting of one page dated August 28, 1974 and one page annotated "left prop log" containing entries from December 6, 1988 to January 15, 1995; and a complete right engine logbook dating back to August 28, 1974, from the wreckage. The last entry in the partial left engine logbook was "NOTE: See new left engine log book [dated] 3/18/95." This logbook was not recovered. All three logbooks recovered contained entries of maintenance work signed by the pilot/owner, annotated "A & P 2032332." The FAA coordinator to the investigation performed an FAA record query of this certificate number. This query revealed that the certificate number used by the pilot/owner to sign off the aircraft and engine logbook entries corresponded to a pilot certificate held by another individual. The FAA had no record that the pilot/owner was certified as an A & P mechanic.

According to the response logs of the North Bend Fire Department, the airplane experienced a left engine failure at approximately 1534 PDT on June 1, 1994, one year before the accident. The North Bend deputy fire chief, who saw the airplane after landing during this incident, reported that the engine failure involved a complete separation of one cylinder, exposing a piston, as well as structural damage to the left wing. Several people at the airport, including the assistant airport manager in his written statement, expressed their belief that the pilot had repaired the engine damage himself. A fixed base operator (FBO) at Bandon, OR provided a receipt for aircraft hardware sales dated November 21, 1994, and a work order for engine cylinder, valve and valve seat service to the owner dated October 21, 1994. The FBO stated in a telephone conversation with the investigator that the pilot/owner had rented hangar space from him for approximately one month from September to October 1994, that the owner had had his engine off of his airplane and had been working on it, and that the owner had bought parts from somewhere else (the FBO stated he did not know which company.) None of the recovered logbooks contained any documentation of major repairs to the airframe or engines following the reported engine failure.

METEOROLOGICAL INFORMATION

North Bend airport employs a staff of National Weather Service qualified weather observers. It records and transmits weather observations at regular intervals and maintains a weather log. The assistant airport manager submitted a certified copy of the airport weather log for the day of the accident. The 1553 PDT weather observation was: ceiling 800 feet overcast, visibility 10 miles, temperature 55 degrees Fahrenheit, dew point 49 degrees Fahrenheit, wind from 330 degrees magnetic at 18 knots, altimeter setting 29.93 inches Hg.

Pilots can obtain weather information either through weather observers on North Bend's UNICOM frequency, or via radio or telephone from an AWOS-3 Automated Weather Observation System at the airport. Additionally, a radio frequency is available at North Bend for communication with McMinnville AFSS.

AERODROME AND GROUND FACILITIES

According to the Klamath Falls sectional aeronautical chart in effect from April 27 to October 12, 1995, North Bend airport is surrounded by Class E airspace extending from the surface to, but not including, 18,000 feet above mean sea level for a radius of 5 statute miles around North Bend airport, with further extensions to the southwest, east, and northeast. Control of this airspace area is exercised by McMinnville AFSS.

WRECKAGE

The airplane impacted water approximately 6 to 7 feet deep during an ebb tide. The Coast Guard photographed the wreckage from a helicopter shortly after the accident. A fuel slick on the water coming from the airplane and spreading downstream (southwest) was evident in these photographs.

The airplane wreckage was examined at the accident site on June 2, 1995. The wreckage was located on a sandbar in a tidal area and was only accessible for on-site examination for approximately one hour at morning low tide. Wreckage was discovered in four major sections consisting of main wreckage, nacelle section, and two wing sections. All major structural components, both engines and all six propeller blades were located at the site. Several smaller and lighter pieces had been washed downstream with an ebb tide including the wing sections which were approximately 100 feet southwest of the main wreckage. There was no baggage anywhere in the wreckage.

The main wreckage consisted of the empennage along with a section of wing root and engine nacelle. A large pool of water, approximately 30 feet long, 6 feet wide and 2 feet deep, with its long axis oriented approximately east-west, was in the sand about 50 feet northwest of the main wreckage. No aircraft parts were seen in this pool. The large pool, two nacelle/main landing gear sections, both engines, and the main wreckage were all in a line running approximately northwest to southeast. A smaller pool, approximately 6 feet in diameter and 6 inches deep, was about 10 feet southwest of the main wreckage.

Both engines had separated from their mounts. Each engine had a crack running completely around the girth of the crankcase immediately forward of the lifting eye. One engine, marked Engine A for identification, was adjacent to the main wreckage. This engine's gearbox was separated. Its supercharger remained attached. The other engine, marked Engine B for identification, was located on the sandbar about 20 feet north of the main wreckage. This engine's supercharger was separated and adjacent to the engine but the gearbox, propeller hub, and one propeller blade (marked Blade 1 for identification) remained attached. Two T. W. Smith overhaul stickers were observed on Engine B. Blade 1 was bent in an "S" bend in its outer half and torsionally twisted.

Two propeller blades (marked Blades 3 and 4 for identification) attached to a propeller hub and gearbox were located underneath the nacelle section, between Engine B and the main wreckage. Blade 3 was bent back 60 degrees at a point 1 foot out from the blade shank. The leading edge tip of Blade 3 was curled forward. Just inboard of this tip curl, Blade 3's leading edge had a 4- inch-long shiny flat spot. Blade 4 was torsionally twisted about 60 degrees and had chordwise scratching on its rear surface.

Three propeller blades (marked Blades 2, 5, and 6 for identification) were lying loose, all within 50 feet of the main wreckage. Blade 2 was bent back 25 degrees at a point one-third of the way out from its shank and was torsionally twisted 90 degrees. The blade clamp had separated from Blade 2; the clamp was in two separate halves. Blade 5 was curled back about 60 degrees

about 1 foot from the blade tip and was torsionally twisted. Blade 6 was bent back 14 degrees at mid-length. It was torsionally twisted and exhibited leading edge gouging along the outer two-thirds of the blade. The blade clamps on Blades 5 and 6 remained attached to their blades.

A section of instrument panel and several loose instruments were located in the vicinity of the left wing section. These included tachometers, cylinder head temperature gauges, fuel quantity gauges, magnetic compass, directional gyro, gear and flap position indicators, and two altimeters including one placarded "NO IFR". Sections of both control yokes and all four rudder pedals were also located southwest of the main wreckage. The yoke sections and pedals were all lying loose on the sandbar individually.

There was no evidence of fire in any of the wreckage.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed by Dr. Gerald Bassett, Coos County Medical Examiner, at the Bay Area Hospital, Coos Bay, OR, on June 16, 1995.

Toxicology tests on the pilot performed by the Armed Forces Institute of Pathology under contract to the FAA Civil Aeromedical Institute revealed no evidence of pilot impairment or incapacitation.

SURVIVAL ASPECTS

CG6529 crewmembers stated that after witnessing the accident, the pilot-in-command of CG6529 immediately took the controls of the helicopter, maneuvered it into position over the accident site, and deployed a rescue swimmer to look for survivors. CG6529 then returned to shore, took aboard another rescue swimmer, and deployed him to the site. Boats from the City of North Bend arrived on scene shortly thereafter. Rescuers found all aircraft occupants dead at the scene.

TESTS AND RESEARCH

The aircraft wreckage was examined in further detail at Specialty Aircraft, Inc., Redmond, OR, on June 16, 1995. Representatives from the NTSB, FAA and Twin Commander Aircraft Corporation participated in this examination. During this examination, investigators established control cable continuity from the elevators and rudder to a point approximately 10 feet forward of the aft end of the fuselage, where the control cables had been cut to enable recovery of the empennage from the river. All flight control surfaces and flaps were located. Additional instruments and controls were located including the engine controls, manifold pressure gauges, and instrument panel clock. A section of the right side of the cabin was found with an accordion crush on its forward edge. The angle between the fuselage stripe on this section and the accordion crush was measured at 59 degrees.

A teardown of the engines was conducted under the supervision of the NTSB investigator-in-charge at the Lycoming plant in Williamsport, PA between August 9 and August 14, 1995. Neither engine had a data plate; the gearbox and gearbox cover were missing from Engine A and the data plate was missing from Engine B's gearbox cover. Engine A had serial number L-723-33A stamped into its case. This did not match the serial numbers of either engine in the recovered logbooks (L-2014-33 for the left engine and L-1210-33 for the right engine.) A check of Lycoming's manufacture records indicated that L-723-33A was manufactured in 1956 as an O-480-1, the military version of the civilian model GSO-480-B1A6. This engine had been returned to Lycoming in 1959, remanufactured, and shipped back to the U.S. military. It had

not been returned to Lycoming since the 1959 remanufacture. Engine B had serial number L-2222-33 stamped into the case. This number matched the number on a T.W. Smith overhaul warranty certificate, dated July 31, 1974, filed loose inside the right engine logbook. The T.W. Smith overhaul stickers on Engine B's case also matched a T.W. Smith overhaul sticker on the cover of the right engine logbook. The right engine logbook indicated that the right engine had been installed on the aircraft on August 28, 1974, and that the right engine had 965.1 hours since major overhaul at the March 18, 1995 annual inspection. Both engines exhibited external salt-water corrosion and contained water and sand.

Disassembly of Engine B revealed that it was one tooth (7.5 degrees) out of time. The engine oil sump was broken off. The crankshaft rotated freely after the cylinders and pistons were removed. No internal engine components were broken, and all bearings were intact. There was a counterweight rotational score mark inside the case on the forward side of cylinders number 3 and 4. The corresponding crankshaft counterweight was undamaged. Both magnetos produced a spark on all 6 cylinders when tested. The oil pump was internally intact and contained oil. No metal was noted in the oil system. The vacuum pump contained water and silt internally but no internal component damage. The propeller gearbox broke free and turned freely approximately 1.6 turns on the engine side per turn of the propeller shaft after cleaning. The supercharger was packed with sand and turned freely after being cleaned out. The supercharger drive shaft was fractured on a plane 90 degrees to the shaft axis at the approximate point of supercharger separation. The supercharger drive shaft spline section was removed and sent to the NTSB Materials Laboratory in Washington, DC for further examination of the fracture surface. The Materials Laboratory reported that this fracture was a torsional overstress fracture.

Disassembly of Engine A revealed that the crankshaft was bent approximately 0.031 inches at the forward end, where the propeller gearbox had separated from the engine. The crankshaft would not rotate until all cylinders and pistons and the left half of the crankcase were removed. No internal engine components were broken, and all bearings were intact. Both magnetos produced a spark on all 6 cylinders when tested. The engine oil sump contained sand, water, and oil. The oil pump was internally intact and contained oil. There was no oil filter installed in the oil system. The vacuum pump contained water and silt and was corroded internally but had no internal component damage. The generator and propeller governor both broke free and rotated. The propeller shaft was bent approximately 2.5 degrees and the shaft at the aft end of the propeller gearbox was bent about 5 degrees in the same direction as the propeller shaft. The propeller gearbox would not rotate. The accessory gear train rotated normally when the accessory gearbox cover was removed.

Both carburetors had separated from their engines. One carburetor, serial number 863328, had its throttle plate in the wide open position and had one fuel nozzle blocked with sand. The other carburetor, serial number 862574, matched the number on a carburetor overhaul tag, dated July 16, 1987, which was annotated "Rt Engine" and filed loose inside the right engine logbook, as well as a right engine logbook entry dated December 6, 1988 stating that carburetor serial number 862574 had been installed on the right engine. The throttle plate on this carburetor was 3/16" from the wide open stop and all four fuel nozzles were unobstructed. Neither carburetor throat contained any obstructions. The throttle linkages on both carburetors were corroded and would not move.

In its report of the engine teardown, Textron Lycoming summarized its findings as follows:

The engine disassembly of engine serial number L-2222-33 did not reveal any pre-crash discrepancies or anomalies that would indicate this engine was not capable of running and producing power prior to the accident. However, the amount of power produced at a given manifold pressure would have been [affected] by the internal engine timing being one tooth out.

The engine disassembly of engine serial number L-723-33A did not reveal any pre-crash discrepancies or anomalies that would indicate this engine was not capable of running and producing power prior to the accident.

ADDITIONAL INFORMATION

The aircraft wreckage was released to Mr. Joseph Casella, personal representative of the owner's estate, on August 14, 1995. At the time of release, the aircraft wreckage was in storage at Specialty Aircraft, Inc., Redmond, OR.

Pilot Information

Certificate:	Commercial	**Age:**	67, Male
Airplane Rating(s):	Single-engine Land	**Seat Occupied:**	Unknown
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Expired	**Last FAA Medical Exam:**	10/13/1992
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	1450 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	AERO COMMANDER	**Registration:**	N6877S
Model/Series:	680 680	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	680-462-132
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	03/18/1995, Annual	**Certified Max Gross Wt.:**	7000 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	4785 Hours	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	GSO-480-B1A6
Registered Owner:	CASELLA, FRANK AND ANGIE	**Rated Power:**	340 hp
Operator:	CASELLA, FRANK AND ANGIE	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	OTH, 14 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	1553 PDT	**Direction from Accident Site:**	130°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	Overcast / 800 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	18 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	330°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	13°C / 9°C
Precipitation and Obscuration:			
Departure Point:	(OTH)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	1552 PDT	**Type of Airspace:**	Class E

Airport Information

Airport:	NORTH BEND MUNICIPAL (OTH)	**Runway Surface Type:**	
Airport Elevation:	14 ft	**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	
Runway Length/Width:		**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	GREGG NESEMEIER	**Report Date:**	01/29/1996
Additional Participating Persons:	DAVID D JOURDAN; HILLSBORO, OR ROGER J ADERMAN; ARLINGTON, WA GREGORY A ERIKSON; WAYNE, IL JAMES F BROWN; WILLIAMSPORT, PA		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov, or at 800-877-6799. Dockets released after this date are available at http://dms.ntsb.gov/pubdms/.		