National Transportation Safety Board
Aviation Accident Final Report

Location:	SEATTLE, WA	**Accident Number:**	SEA97FA188
Date & Time:	08/13/1997, 1913 PDT	**Registration:**	N3172A
Aircraft:	Beech 1900C	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Serious
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The Beech 1900C cargo aircraft was loaded with more than 4,962 pounds of cargo during an approximate 20 minute period. No scale was available at the aircraft, forcing loaders to rely on tallying either waybill weights or estimates of total cargo weight and center of gravity (CG) during the brief loading period. Additionally, a strike had shut down a major cargo competitor at the time with substantial cargo overflow to the operator. Post-crash examination determined the cargo load was 656 pounds greater than that documented on the pilot's load manifest, and the CG was between 6.8 and 11.3 inches aft of the aft limit. The airplane behaved normally, according to the pilot, until he initiated full flaps for landing approaching the threshold of runway 34L at the Seattle-Tacoma International airport. At this time, the aircraft's airspeed began to decay rapidly and a high sink rate developed as the aircraft entered into a stall/mush condition. The aircraft then landed hard, overloading the nose and left-main landing gear which collapsed. A post-impact fuel system leak during the ground slide led to a post-crash fire.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A stall/mush condition resulting from an aft center of gravity which was inaccurately provided to the pilot-in-command by contractual cargo-loading personnel. Additional causes were overloading of the aircraft's landing gear and fuel leakage resulting in a post-crash fire. Factors contributing to the accident were the pilot's improper lowering of flaps in an aft CG situation and the inadequate company procedures for cargo loading.

Findings

Occurrence #1: HARD LANDING
Phase of Operation: LANDING - FLARE/TOUCHDOWN

Findings
1. (C) STALL/MUSH
2. PROPER DESCENT RATE - NOT POSSIBLE - PILOT IN COMMAND
3. (F) LOWERING OF FLAPS - INITIATED - PILOT IN COMMAND
4. (C) AIRCRAFT WEIGHT AND BALANCE - INACCURATE - DISPATCHER
5. (F) PROCEDURE INADEQUATE - OTHER PERSON

Occurrence #2: GEAR COLLAPSED
Phase of Operation: LANDING - ROLL

Findings
6. (C) LANDING GEAR - OVERLOAD

Occurrence #3: FIRE
Phase of Operation: STANDING

Findings
7. (C) FUEL SYSTEM - LEAK
8. FLUID,FUEL - FIRE

Factual Information

HISTORY OF FLIGHT

On August 13, 1997, at 1913 Pacific daylight time, a Beech 1900C, N3172A, registered to and operated by Ameriflight, Inc., and being flown by an airline transport pilot, was destroyed when the aircraft's left main and nose landing gear collapsed following a loss of control and subsequent in-flight collision with the runway on landing at the Seattle Tacoma (SEATAC) International airport, Seattle, Washington. A post-crash fire ensued, damaging the center structure of the aircraft and wing root areas. The pilot, who was the sole occupant, sustained serious injuries. Visual meteorological conditions existed at the time, and an instrument flight rules (IFR) flight plan was in effect. The flight, which had originated from Portland, Oregon, was an unscheduled cargo run which was to have been operated under 14CFR135.

N3172A, call sign "AMFlight 262" (AMF262) departed Portland International airport at 1830 on the evening of August 13 en route to the SEATAC International airport. At 1859, the pilot of AMF262 contacted Seattle terminal radar approach control (TRACON) inbound, and advised he was at 10,000 feet. The aircraft was given vectors to SEATAC, a descent to 7,000 feet and, at 1904, was switched to Seattle approach (final) control on frequency 133.65 mHz (refer to ATTACHMENT T-I).

At 1905:11, Seattle TRACON (final) contacted AMF262 and requested that the aircraft reduce speed to 210 knots and descend to and maintain 6,000 feet. Over the next four minutes the pilot of AMF262 verified SEATAC airport in sight, was cleared for a visual approach to runway 34L, was advised of traffic preceding him by five miles for the same runway, and was asked to "maintain that speed if you can until about five mile final." At 1909, AMF262 was asked to contact SEATAC air traffic control tower (ATCT) (refer to ATTACHMENT T-II).

At 1909:50, the pilot of AMF262 contacted SEATAC ATCT reporting "over the mall for 34 left" (NOTE: "the mall" is located at the 7.5 nautical mile fix south of SEA VORTAC, which in turn, is located at the south end of the SEATAC airport runways). The local controller responded in part with "follow an airbus on a one mile final, caution wake turbulence, wind two seven zero at five, runway three four left cleared to land" and this was acknowledged by the pilot (refer to ATTACHMENTS T-III and RDR-I).

Four of the controllers in the SEATAC ATCT facility observed the aircraft crash and two of these controllers reported seeing the aircraft in an "unusual descent" (refer to attached statements C-I through C-IV).

Several other witnesses located on the SEATAC airport reported observing the accident. These witnesses reported seeing the aircraft "coming down at the wrong angle, too steep, like a helicopter," at "a high angle of attack and very low airspeed," "aircraft nose high, in approximately a 25 to 30 degree angle of descent, obviously stalled," and that "it looked like the aircraft stalled at about 300-400 ft. AGL (above ground level), and that the C.G. (center of gravity) appeared to be aft because the nose never dipped down after the stall, and the aircraft just pancaked in flat" (refer to attached statements S-I through S-IV).

The pilot-in-command (PIC) was interviewed on August 19, 1997, at Harborview Hospital, Seattle, Washington. The PIC reported no mechanical nor communication malfunctions during the flight to Seattle. During the PIC's interview, he reported that the takeoff from Portland was uneventful, the aircraft accelerated normally, becoming airborne after a reasonable ground

roll, and the climb performance was as expected. He also reported that the flight to SEATAC was uneventful, he was cleared to land on runway 34L and that although visual conditions existed, he utilized the ILS and normally flew one-half to a full dot above glide slope to avoid potential wake vortex conditions.

The PIC reported that his intention was to touch down in the latter third of the touchdown area (the aircraft's destination was the cargo area in the northeast corner of the SEATAC airport - refer to DIAGRAM I). He further reported that his first indication of something out of the ordinary was somewhere between one quarter mile short of the threshold and the physical end of runway 34L. He stated that he had lowered full (landing) flaps and upon full extension noticed a decrease in airspeed below Vref (Vref is defined as any reference speed). Note: Vref speeds for flaps up and flaps landing at selected aircraft weights are provided to the pilot on the "Beech 1900 Normal Procedures Checklist" (refer to ATTACHMENT CL-I, page 2). He also reported that the pitch attitude of the aircraft did not change appreciably with flap extension, and the pitch change seemed to be normal for this event.

The PIC reported remembering trying to counteract the airspeed decay by applying nose down elevator but did not remember events beyond that time until attempting to exit the aircraft. He also reported that he did not recall hearing the stall warning horn prior to the accident, and that he was able to trim the aircraft throughout the flight and experienced no pitch trim difficulties.

The PIC reported that subsequent to the crash he recalled releasing his restraint system and unlatching and partially opening the cabin door. He observed AFFF (Aqueous Film Forming Foam, a fire fighting agent) entering the aircraft through the cabin door, and then reported that he allowed the door to rock back to a closed position. He also reported that there was smoke in the cockpit which prevented him from seeing the instrument panel.

The SEATAC Aircraft Rescue and Fire Fighting (ARFF) Fire Run Report showed that the ARFF crew was dispatched at 1913:25, responded at 1914:46 and arrived at the site at 1915:36. The fire was knocked down using a turret and hand lines and the pilot was extricated from the cockpit by two ARFF responders. The report also indicated that the forward cabin door was partially open upon arrival of the ARFF team, and that the forward cabin area and door was partially blocked by cargo.

OTHER DAMAGE

Several runway lights along the west edge of runway 34L were knocked out during the aircraft's ground slide. Additionally, small abrasions and gouges of the runway's paved surface were noted.

PERSONNEL INFORMATION

The 34 year old PIC had logged approximately 6,370 hours of flight time at the time of the accident, including 4,225 hours of multi-engine flight time and 4,359 hours of PIC time. He had been issued an airline transport pilot certificate June 8, 1997, with a type rating in the BE-1900 aircraft. His most recent medical examination was conducted September 4, 1996, and he was issued a first class certificate with no limitations.

The PIC had been hired by Horizon Air on October 2, 1995, and began flying as a first officer in the DeHavilland DHC-8, twin turboprop aircraft. He was subsequently issued a voluntary leave of absence on May 25, 1997, as Horizon Air faced potential reductions of pilots and

requested volunteers for such absences. The leave of absence was projected to last six months. The PIC had been trained by Horizon Air in weight and balance procedures for the DHC-8 aircraft prior to his beginning line flights.

The PIC was hired by Ameriflight in late May of 1997, underwent Beech 1900 and company training, and began line flights on June 9, 1997. He had logged a total of 106 hours of flight time in the cargo version BE-1900C (all PIC) at the time of the accident.

Records maintained by Horizon Air showed the PIC as having logged a total of 1,230 hours of BE-1900 time (397 as pilot-in-command and 833 as second-in-command) as of June 26, 1995. This flight time was in scheduled FAR Part 135 passenger operations for GP Express in the 19 seat passenger version of the Be-1900.

The PIC reported during his interview that he had an estimated 1,500 total hours of BE-1900 time (both passenger and cargo versions) and that he was familiar ("cognizant") of pitch and airspeed changes in tail heavy flights.

AIRCRAFT INFORMATION

N3172A, a Beech 1900C, serial number UB-47, was manufactured in 1985 as a 19-seat passenger aircraft, and issued a standard (normal) airworthiness certificate on December 12 of that year. The aircraft was subsequently converted to a cargo configuration in accordance with a Major Repair and Alteration, dated June 14, 1995 (FAA Form 337) by the operator, a certificated repair station (certificate number JIKR213F). This modification included an increase of the zero fuel weight from 14,000 pounds to 15,000 pounds (refer to ATTACHMENT MRA). The maximum gross takeoff weight (MGTOW) of 16,600 pounds was not affected. The aircraft's forward center of gravity limits varied from a minimum of 274.5 inches at 11,600 pounds increasing to a maximum of 282.8 inches at MGTOW. The aircraft's aft center of gravity limit was 299.9 inches at all weights (refer to ATTACHMENT CG-I). The aircraft's basic operating weight (BOW) for flight 262, which includes the weight of the aircraft (including all fluids exclusive of usable fuel), and the weight of the pilot, was 8,954 pounds (refer to ATTACHMENT LPS-I).

The cargo configured BE-1900C (s/n UB-47): is divided into nine cargo zones (A through J) of equal size and load bearing capacity. Section K, directly aft of section J is larger and is directly opposite the aft cargo door. Section L is a stepped-up shelf-like area directly aft of section K. The maximum structural load capacity of sections A through J is 600 pounds per area. The maximum structural load capacity of section K is 700 pounds, and 630 pounds for section L (refer to ATTACHMENT APV-I).

There are two additional areas of cargo storage available on the BE-1900C (s/n UB-47), the nose baggage compartment forward of the cockpit with a maximum structural load capacity of 150 pounds, and the forward cabin baggage compartment (jumpseat bay or ACM area) with a maximum structural load capacity of 250 pounds (refer to ATTACHMENT APV-II).

WEIGHT AND BALANCE

Cargo loading procedures to be used by the Operator's pilots were described in the Ameriflight Operations Manual, "Operations Procedures Section," pages 6.6 through 6.9, carried aboard the aircraft (refer to ATTACHMENT AOM-I). Specifically, the first page of this section of the Operations Manual states "Cargo weight may be determined by using the shipper's weight as shown on a bill of lading or manifest or by scale weighing prior to loading. Shipper's weights

will be verified by periodically spot weighing cargo."

According to DHL employees interviewed, standard DHL procedures at the time of the accident were to weigh each piece of cargo bound for a flight. The weight was documented on the associated waybill which was then affixed to the individual piece of cargo (refer to ATTACHMENT DHL-I which shows a representative waybill from AMF262). AMF262 would have been met by one large box truck and from two to four vans carrying cargo destined for dissemination at Seattle, or connecting to the DHL Boeing 727 departing Seattle shortly after AMF262's scheduled arrival time. It was not the responsibility of DHL employees to physically load the outbound flight. This task was accomplished by contract employees from Evergreen Eagle. No scale was available at the aircraft. Loading and distribution of cargo can only be accomplished through a knowledge of load limitations within the specific aircraft cargo compartments (refer to ATTACHMENTS LPS-I, APV-I and APV-II) along with an accurate tally of total cargo weights accrued in each compartment.

The "PM Lead Courier" for DHL was interviewed and provided the following information: He oversaw the loading of AMF262 on the evening of August 13th, which spanned an approximate 20 minute time frame (1805 to 1825 local). Refer to photographs 1 through 3 which shows the majority of offloaded cargo onboard AMF262 subsequent to the accident. Photograph 4 shows the interior cargo compartment of the aircraft aft of the cockpit (ACM compartment aft to compartment "L"). He reported that the aircraft was "full with freight" (refer to ATTACHMENT IV-I).

The driver of the DHL large box truck was interviewed and provided the following information: On August 13th he departed the DHL weighing facility with 2,457 pounds of freight and staged the truck after which the "Evergreen ground crew commenced to loading the aircraft." He also reported that "because of the limited time frame that we have I helped unload my truck-" and that "because we don't have a scale for accuracy I could only estimate what I felt was close to 900 lbs per zone." He reported that he received a total weight of 4,962 pounds to be enplaned (refer to ATTACHMENT LPS-I) by radio and ensured that the tail compartment ("L") was loaded with 250 pounds of freight and "added the remaining balance to zone "J-K" to be 700 lbs" (refer to ATTACHMENT IV-II).

A courier for DHL was interviewed and provided the following information: On August 13th, having returned from his route, weighed his cargo, and loaded the cargo onto vans for the airport. He reported that "at 6:20 I called in the weight to airport operations and drove the last van to planeside. (The) van was unloaded and I placed the export paperwork bag into (the) front of the plane" (refer to ATTACHMENT IV-III).

At the time of the accident United Parcel Service (UPS), a major air/surface freight company, was on strike. The strike had commenced at midnight on July 31st. Air freight normally carried by UPS was passing over to reliever carriers such as AmeriFlight and DHL.

According to the BE-1900 Load Planning Sheet for flight AMF262 (ATTACHMENT LPS-I), the aircraft was dispatched from Portland with a total cargo load of 4,962 pounds and 1,700 pounds of fuel yielding (after taxi burn) an adjusted takeoff weight of 15,506 pounds (1,094 pounds below MGTOW). The Load Planning Sheet also showed, based upon the recorded distribution of weights, a total moment of 45,727/100 inch-pounds (center of gravity (CG) of 294.90 inches).

A courier/ramp agent for DHL at Seattle reported in an interview that on the evening of August

13 she received a radio call from AMF262 indicating an estimated time of arrival of 1915. The pilot, according to the agent stated "he was "extremely heavy" and requested the tail stand be installed before he shut down the engines" and that "he also requested that loading personnel be advised to be careful when opening the cargo door because the compartment was full and freight could fall out" (refer to attached statement RI-I).

Subsequent to the accident, the cargo was removed from the aircraft and stored at a secure location at SEATAC airport. The cargo was then examined, identified by personnel who were present during its offloading by ARFF responders following the accident, and weighed by a team of individuals under the guidance of FAA operations personnel (refer to attached statements WB-I, WB-II and WB-III). The examination and weighing of the cargo revealed that 59 pounds of cargo had been stowed in the nose compartment, a total of 984 pounds had been stowed in the ACM (Z net bay) area and compartment A/B, and 660 pounds had been stowed in compartment L (refer to ATTACHMENTS APV-I & II showing the locations of these compartments). The examination and weighing of the remainder of the cargo revealed that a total of approximately 3,915 pounds had been distributed between compartments C/D, E/F, G/H, and J/K although the precise distribution within and among these compartments was not known. The total cargo weight, which was adjusted conservatively for AFFF fluid containment, was measured as 5,618 pounds, or 656 pounds more than was reflected on the Load Planning Sheet (and less than the MGTOW allowable).

Due to the inability to precisely establish cargo locations within compartments C/D, E/F, G/H, and J/K, a best-case, worst-case scenario was calculated with two intermediate cases. The results of these case evaluations were as follows:

	Total Moment	CG
Worst Case	48,426.14/100 in-lb	311.2 inch
Best Case	47,733.85/100 in-lb	306.7 inch
Intermediate Case(1):	47,976.57/100 in-lb	308.3 inch
Intermediate Case(2):	48,118.62/100 in-lb	309.2 inch

In all cases, the CG exceeded the aft limit for the actual landing weight (15,562 pounds) of the aircraft by 6.8 inches (best case scenario) to 11.3 inches (worst case scenario). Refer to ATTACHMENT WBC which documents all four cases of weight and center of gravity, as well as that recorded on the Load Planning Sheet for AMF262 on the night of the accident.

METEOROLOGICAL INFORMATION

A special aviation weather surface observation was taken at SEATAC for 1922 hours and reported the following meteorological conditions:

Sky condition: few clouds at 17,000 feet, scattered clouds at 25,000 feet, visibility 10 miles, temperature 79 degrees Fahrenheit, dew point 61 degrees Fahrenheit, winds 270 degrees (mag) at 3 knots, altimeter setting 29.99 inches of Mercury.

COMMUNICATIONS

There were no reported communication difficulties between the PIC and the ground facilities during the approach and landing phase of the flight (refer to ATTACHMENTS CT-I, CT-II, and CT-III).

AERODROME INFORMATION

The Seattle-Tacoma International Airport is served by two parallel runways (34L and 34R). Runway 34L is 9,425 feet in length and 150 feet in width, with 25 foot paved extensions beyond

the left and right edges of the runway. The runway surface is grooved concrete with a 0.8% upslope and a centerline magnetic bearing of 340.6 degrees. The runway is marked and lighted for precision instrument operations including white side stripes 75 feet left and right of a white painted centerline. Additionally, the runway is equipped with "distance to go" markers (internally lighted) located every 1,000 feet and 150 feet west of the centerline of the runway.

Runway 34L is served by three high-speed taxi exits (northbound) and runway exit "D" at its north terminus. The first, exit "K," begins approximately 3,900 feet beyond the south threshold, followed by exit "H" approximately 1,300 feet further north, and exit "F" approximately 1,700 feet beyond "H" (refer to DIAGRAM I). Exit "F" provides the most direct routing to the cargo ramp area when exiting runway 34L.

FLIGHT AND COCKPIT VOICE RECORDERS

The aircraft was not equipped with either a flight data or cockpit voice recorder.

WRECKAGE AND IMPACT INFORMATION

The aircraft crashed at the SEATAC International Airport. The first evidence of ground impact (IGI) was at a point on runway 34L, 53 feet west of the centerline and nearly abeam the "5000 foot remaining" runway marker (refer to photograph 5). A broad area of white paint transfer was observed at the IGI. The paint was smeared on the grooved surface of the pavement and the direction of smearing was oriented along a 335 degree magnetic bearing line. Tire scuff marks were observed on the pavement surface immediately left and right of the previously described paint smear. A series of slash marks containing fibers of propeller blade material were observed slightly beyond each set of the tire smear marks. The slashes were oriented approximately perpendicular to the 335 degree bearing line. The slash marks on the left of the bearing line were more prominent and covered a greater longitudinal distance than those on the right. A spray of propeller fragments (fiberglass and composite material) lay on the runway surface from the slash marks and north, and a trail of hydraulic fluid was observed beginning at the right tire scuff marks extending several hundred feet north (refer to photograph 6).

The aircraft was observed at its final resting place (FRP) at a point 650 feet north of the IGI and 112 feet west of the runway centerline. The inboard left flap was observed lying on the runway slightly north of the IGI and the nose-gear strut was observed at the pavement edge just short of the FRP (refer to photograph 7). The aircraft's longitudinal axis was oriented along a 213/033 degree magnetic bearing line with the nose directed south southwest (refer to CHART I). The vertical stabilizer, including the attached horizontal tailplane assembly, was observed to have partially separated and rotated clockwise when viewed from the aircraft's left side (refer to photograph 8). The nose and left-main landing gear assemblies were observed to have separated from the airframe and the aircraft came to rest on the underside of its fuselage. All four left propeller blades were observed to have been ground down to within 12-18 inches of the propeller hub (refer to photograph 9). The right-main landing gear remained attached, and the right engine and wing were observed to be canted clockwise when viewed from the aircraft's right side. All four right propeller blades were observed to have been ground down to within a few inches of the propeller hub (refer to photograph 10). The right wing was observed to have rotated clockwise approximately 22 degrees (refer to photograph 11).

An area of fire damage was noted under the inboard area of the right wing. Additionally, a fire pattern breaching the fuselage and travelling from the bottom to the top of the fuselage was observed at the aft edge of the right wing. A large flattened area was noted on the underside of

the fuselage and the ventral fin was observed to be bent and crushed to the right (viewed from behind) approximately 45 degrees. The paint and aluminum fuselage skin in this flattened area was observed to be heavily abraded (refer to photograph 12). The plane of the flattened area was measured along the longitudinal axis and found to be consistent with an approximate 10 degrees nose up attitude upon runway contact. When measured along the lateral axis it was found to be approximately 6 degrees left wing down upon runway contact (refer to photograph 13).

The majority of fragments which separated from the aircraft were observed in an area extending approximately 265 feet north of the IGI point and over 200 feet west of the runway centerline. Heavier pieces of wreckage were noted along the wreckage distribution with the nose landing gear strut, fork assembly and tire nearest to the FRP (fuselage), and the left main landing gear assembly outboard tire approximately 150 feet southwest. The left main landing gear strut was observed lying on the edge of the pavement 100 feet west of the centerline and 233 feet north of the IGI point.

The flaps were observed in the fully extended (35 degree landing position). The Captain's airspeed indicator displayed two reference airspeed bugs located back to back. These bugs were set approximately 105 and 108 knots on the indicator periphery. Documentation of the flight deck was recorded (refer to ATTACHMENT CD-I).

Post-crash examination revealed that the flap jackscrew units were consistent with the 35 degree full flap extension observed at the site. Additionally, the elevator trim indicator showed 3.1 degrees nose down, and the left and right elevator trim tab actuators showed 5 degrees tab up at the site.

Post crash examination revealed that one of the Brownline "Z-net" deck hook attach fittings had been installed incorrectly. The fitting was observed in the left floor track nearly abeam the forward edge of the cabin door rather than in the right floor track abeam the ACM (jump) seat (refer to photograph 14 and ATTACHMENT APV-II).

MEDICAL AND PATHOLOGICAL INFORMATION

Toxicological evaluation of samples from the pilot, taken at 2020 hours on the evening of the accident, was conducted by Harborview Medical Center, Seattle, Washington. The screen results, which tested negative for ethyl alcohol and ethanol, were released by the pilot to the investigator-in-charge.

TESTS AND RESEARCH

The pitch trim system, including the controller, K2 relay, trim switch and disconnect switch, was removed and tested at the facilities of American Avionics, Inc. No evidence of a pitch trim runaway condition was found (refer to ATTACHMENT AA-I).

The stall warning lift transducer and lift computer were shipped to the FAA's Farmingdale FSDO and hand carried to the facilities of SafeFlight Instrument, Corp. These items were subsequently tested and no significant "out of tolerance" condition was noted (refer to ATTACHMENT SF-I).

The ARTEX Emergency Locator beacon, model ELT 110-4 (TSO C91A), which was located in the empennage of the aircraft, was found in the armed position. However, the unit did not activate. Discussions with a technical representative of the manufacture revealed that the ELT, as designed for fixed-wing aircraft, has a "G" switch designed to operate due to forces along the

longitudinal axis of the unit (aircraft) and not along the vertical or lateral axis of the aircraft.

In March of 1988, following the crash of a Beech 1900C at Homer, Alaska, (Ryan Air flight 103, November 23, 1987), the Safety Board observed a series of flight tests on the Be 1900 designed to examine the airplane's flight characteristics when the CG is moved beyond the aft limit. The tests showed that the static stability of the airplane deteriorated rapidly as the CG moved aft. Extending flaps in the aft CG configuration caused the static stability to deteriorate further (refer to ATTACHMENT AAR-88/11). The weight of the Ryan Air flight and AMF262 were within several hundred pounds of one another.

ADDITIONAL INFORMATION

On-site examination of the wreckage was conducted on the evening of the accident, and the early morning hours of the following day. The aircraft, along with its cargo, was conditionally released for movement off the accident site to individual secure sites on the airport for further examination. The cargo was released following its documentation. The main wreckage was released on September 2, 1997 (refer to NTSB Form 6120.15 #1). Components and records retained for additional testing and examination were returned on December 30, 1998 (refer to NTSB Form 6120.15 #2).

Pilot Information

Certificate:	Airline Transport; Flight Instructor; Commercial	**Age:**	34, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	09/04/1996
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	6370 hours (Total, all aircraft), 106 hours (Total, this make and model), 4359 hours (Pilot In Command, all aircraft), 123 hours (Last 90 days, all aircraft), 53 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3172A
Model/Series:	1900C 1900C	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	UB-47
Landing Gear Type:	Retractable - Tricycle	**Seats:**	2
Date/Type of Last Inspection:	07/25/1997, AAIP	**Certified Max Gross Wt.:**	16600 lbs
Time Since Last Inspection:	33 Hours	**Engines:**	2 Turbo Prop
Airframe Total Time:	23892 Hours	**Engine Manufacturer:**	P&W
ELT:	Installed, not activated	**Engine Model/Series:**	PT6A-65B
Registered Owner:	AMERIFLIGHT, INC.	**Rated Power:**	1100 hp
Operator:	AMERIFLIGHT, INC.	**Operating Certificate(s) Held:**	On-demand Air Taxi (135)
Operator Does Business As:		**Operator Designator Code:**	JIKA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	SEA, 429 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	1922 PDT	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Scattered / 25000 ft agl	**Visibility**	10 Miles
Lowest Ceiling:	None / 0 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	270°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	26°C / 16°C
Precipitation and Obscuration:			
Departure Point:	PORTLAND, OR (PDX)	**Type of Flight Plan Filed:**	IFR
Destination:	(SEA)	**Type of Clearance:**	IFR
Departure Time:	1830 PDT	**Type of Airspace:**	Class B

Airport Information

Airport:	SEATTLE-TACOMA INTNL (SEA)	**Runway Surface Type:**	Concrete
Airport Elevation:	429 ft	**Runway Surface Condition:**	Dry
Runway Used:	34L	**IFR Approach:**	Visual
Runway Length/Width:	9425 ft / 150 ft	**VFR Approach/Landing:**	Straight-in

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	N/A	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	STEVEN A MCCREARY	**Report Date:**	06/11/1999
Additional Participating Persons:	JOHN A FLORES; RENTON, WA JOHN W HAZLET, JR.; BURBANK, CA JOHN E WARD; WICHITA, KS		
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/.		