National Transportation Safety Board
Aviation Accident Final Report

Location:	YAKIMA, WA	**Accident Number:**	SEA98FA023
Date & Time:	12/12/1997, 2230 PST	**Registration:**	N72VF
Aircraft:	Aero Commander 690A	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The flight was operating into the Yakima airport at night during the period the airport operates as non-towered. Some witnesses reported the aircraft initially appeared lower than normal and that it descended and impacted the ground at a steep angle, and some witnesses reported an abrupt entry into the descent. The aircraft crashed 2.2 nautical miles east of the runway threshold, slightly right of the localizer course The pilot was 'cleared for approach' by air traffic control (ATC) and he subsequently initiated an instrument landing system (ILS) approach to runway 27. The last radar position showed the aircraft approximately on the localizer, at glide slope intercept altitude, 9 nautical miles east of the airport. Three minutes after the last radar position, the pilot reported to ATC he had broken out and had the airport in sight, and canceled instrument flight rules (IFR). ATC then terminated service and approved a frequency change.. Ceiling was 1,500 feet overcast with 6 miles visibility in mist, with no significant icing forecast. No evidence of mechanical problems was found; however, much of the aircraft was consumed by an intense post-crash fire.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of aircraft control for undetermined reasons.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

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

Findings
2. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On December 12, 1997, approximately 2230 Pacific standard time, a Twin Commander (formerly Aero Commander) 690A, N72VF, registered to Yakima Theatres Inc. of Yakima, Washington, collided with terrain while on approach to Yakima Air Terminal, Yakima, Washington. The airplane was destroyed by impact forces and a post-crash fire, and the airplane's private pilot-in-command (a Yakima business owner whose holdings included Yakima Theatres Inc.) and one passenger, the pilot's 16-year-old son, were fatally injured. The 14 CFR 91 personal flight departed Boeing Field, Seattle, Washington, about 2149. An instrument flight rules (IFR) flight plan had been filed for the accident flight, and according to FAA air traffic control (ATC) records, the pilot canceled IFR at 2227, reporting to the Seattle Air Route Traffic Control Center (ARTCC) that he had the destination airport in sight. Night visual meteorological conditions (a 1,500 foot overcast ceiling with 6 statute miles visibility in mist) were reported at Yakima at 2156.

The Yakima air traffic control tower and the local approach control facility (Chinook Approach) close daily at 2200. During the hours that these facilities are closed (2200 to 0600), the airport operates as a non-towered airport within a Class E surface airspace area, and Seattle ARTCC provides ATC services to IFR aircraft operating to the airport. According to the FAA's transcript of communications between Seattle ARTCC and the accident aircraft, Seattle ARTCC issued N72VF a "cleared for approach" clearance to Yakima at 2209:35. According to the FAA Pilot/Controller Glossary, the phraseology "cleared approach" authorizes the pilot to execute any standard or special instrument approach to the airport.

National Track Analysis Program (NTAP) ATC radar data indicated that at 2220:05, approximately 10 minutes after being cleared for approach, N72VF initiated a descending, approximately 270-degree left turn resembling a procedure turn for the Yakima ILS runway 27 approach. The aircraft began this maneuver from a position approximately 13 nautical miles east-southeast of the airport at an altitude of 4,200 feet, and descended to 3,500 feet (the glide slope intercept altitude for the Yakima ILS runway 27 approach) during the turn (the ILS approach procedure specifies a minimum altitude of 4,000 feet until established on the localizer course inbound.) The last recorded ATC radar position of the aircraft, at 2224:16, was approximately on the runway 27 extended centerline, about 9 nautical miles east of the airport, at 3,500 feet. The average track and ground speed between the last two recorded NTAP secondary radar positions of the aircraft (i.e. from 2222:40 to 2224:16) was computed to be approximately 272 degrees magnetic at 131 knots (the runway 27 localizer course is 269 degrees magnetic.)

Approximately 3 minutes after the time at the last recorded radar position, at 2227:02, the pilot reported to ATC: "o k [I]'ve broken out have [Y]akima in sight gonna land [I]'d like to cancel [IFR]." The Seattle ARTCC controller then instructed the pilot to set his transponder to the visual flight rules (VFR) code setting, and approved a frequency change. The last transmission received from the accident aircraft by Seattle ARTCC, at 2227:10, was, "thank you."

The crash was witnessed by several individuals. Broad points of agreement among the witnesses were that the airplane appeared lower than normal for that point on the approach to the airport, that the airplane descended and impacted the ground at a steep angle, and that an

explosion or fireball occurred at ground impact. Additionally, some witnesses reported that the airplane went abruptly from a slight descent angle to straight down, or that the airplane pulled up into a steep nose-up pitch attitude then abruptly pitched down to ground impact. Witness estimates of the airplane's initial altitude above the ground ranged from 60 to 400 feet. (NOTE: Based on the published glide slope angle of 3 degrees and threshold crossing height of 58 feet, the ILS glide path at a ground distance of 2.2 nautical miles from the threshold [the approximate distance from the threshold to the crash site] was computed to be 759 feet above touchdown zone elevation.) Additionally, one witness reported he saw a propeller stopped, one witness reported he heard an engine sputtering (but also reported he heard the engines racing immediately before the airplane impacted the ground), and two witnesses (a husband and wife riding in a car approximately 1 mile away from the crash site) reported the airplane appeared to them to be on fire prior to ground impact (the husband stated the airplane initially looked like a "falling star" or meteor, and the wife stated it initially looked like a firework or a flare.)

The accident occurred during the hours of darkness at 46 degrees 33.3 minutes North and 120 degrees 28.8 minutes West.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with airplane single-engine land, airplane multiengine land, and instrument-airplane ratings, and a second class medical certificate issued on September 24, 1996. The medical certificate carried a limitation requiring the wear of corrective lenses while exercising the privileges of the airman certificate.

The pilot completed recurrent training on the Twin Commander 690A at FlightSafety International's Bethany Learning Center, Bethany, Oklahoma, on November 8, 1997, and completed a biennial flight review and instrument competency check in the accident aircraft on November 21, 1997. Noland Decoto Flying Service of Yakima, a fixed-base operator (FBO) which maintained the accident aircraft and one of whose instructors administered the last flight review to the accident pilot, reported that the pilot had over 4,800 hours total time including over 80 hours in the AC-690A.

AIRCRAFT INFORMATION

According to FAA records, Yakima Theatres Inc. became the registered owner of the accident aircraft (a 1975 Twin Commander [formerly Aero Commander] model 690A, serial number 11242) on July 14, 1997, approximately five months before the accident. Noland Decoto reported that the aircraft was configured with two crew and six passenger seats. The aircraft was on a manufacturer's approved inspection program, and received its last inspection in accordance with this program, a 100-hour/periodic inspection performed by Martin Aviation of Santa Ana, California, on April 25, 1997. Noland Decoto reported that the aircraft had been flown 92 hours since this inspection. The airframe total time at the time of the accident was approximately 7,001 hours.

The airplane's two AlliedSignal (formerly Garrett) TPE331-5-251K turboprop engines both had approximately 4,175 hours since overhaul at the time of the accident. Work was accomplished on both engines by Eagle Creek Aviation Services of Indianapolis, Indiana, on February 1, 1993, to allow both engines an extension to 5,400 hours time between overhauls (TBO) in accordance with Garrett Service Bulletin 72-0404. Eagle Creek Aviation Services also performed a hot section inspection on both engines at that time. At the time of this work, both

engines were documented as having 3,541.1 hours since overhaul.

Both of the aircraft's Hartzell HC-B3TN-5NL/LT10673 3-bladed propellers were overhauled on July 31, 1997, by Western Aircraft Propeller Service, Inc. of Troutdale, Oregon, and reinstalled on the accident aircraft on August 7, 1997, by Aero Air of Hillsboro, Oregon.

According to documentation in the aircraft records, a reinforcing doubler, manufactured from 1/4 inch 2024-T3 aluminum, was installed on the rear spar of the accident aircraft's vertical stabilizer by Aero Air on August 7, 1997. Documentation of the repair indicated that the doubler was installed due to discovery of a spurious 1/8 inch diameter hole that had been erroneously drilled through the spar cap. An FAA field approval, signed by an FAA designated engineering representative (DER), was obtained for this repair. The repair was accomplished pursuant to engineering report LGK072397, "Fin Spar Repair, Aero Commander 690A, S/N 11242", dated July 23, 1997, prepared by the same FAA DER (DER number NM2520). According to this report, the doubler was to be attached using seven HL20PB-5 "Hi-Lock" fasteners installed through existing 5/32 inch diameter fastener holes in the spar cap, and the doubler and fastener combination was designed to carry the entire structural load of the spar.

All of the airplane's 22 interconnected fuel cells were removed and replaced by Eagle Creek Aviation Services during major maintenance to the aircraft on February 1, 1993, at 6,366.7 hours airframe total time. Aero Air subsequently recorded that it repaired wing fuel leaks in the accident aircraft on August 7, 1997. The repairs consisted of tightening clamps on three left wing fuel cells and one right wing fuel cell, and replacing two right wing fuel cells as well as the upper and lower center fuel cells with new cells. Downtown Airpark, Inc. of Oklahoma City, Oklahoma, subsequently replaced 18 of the aircraft's fuel cells (all except the two left aft inboard and upper and lower center fuel cells, per part numbers referenced in the aircraft log entry) on November 10, 1997, approximately 24 flight hours before the accident.

Downtown Airpark also installed an Apollo 2001 Global Positioning System (GPS) and an S-TEC System 65 two-axis autopilot/flight director system with yaw damper, altitude preselect, and PN-101 horizontal situation indicator (HSI) on November 5, 1997. The Apollo 2001 GPS is certified for non-precision IFR approach operations. The S-TEC System 65 autopilot installation was performed per FAA Supplemental Type Certificate (STC) number SA09013AC-D, issued to S-TEC Corporation of Mineral Wells, Texas. It could not be determined whether or not the GPS or autopilot systems were being used at the time of the accident.

An altimeter and static systems test to 35,000 feet was documented in the aircraft records as having been performed on January 16, 1996.

The accident aircraft was equipped and approved for flight into icing conditions.

METEOROLOGICAL INFORMATION

According to FAA records, the pilot obtained a preflight weather briefing by telephone from the Seattle, Washington, Automated Flight Service Station (AFSS) at 1017 on the day of the accident. The pilot filed two flight plans at that time, one for Yakima to Boeing Field and one for Boeing Field to Yakima. The pilot subsequently telephoned the Seattle AFSS at 2125 and requested an update on weather at Yakima, and was given an abbreviated weather briefing.

The 2156 Yakima METAR observation reported the following conditions: wind calm; visibility 6 statute miles in mist; ceiling 1,500 feet overcast; temperature 0 degrees C; dewpoint minus 1 degree C; and altimeter setting 30.56 inches Hg, with a remark indicating pressure rising

rapidly.

The 2256 Yakima automated METAR observation reported the following conditions: wind calm; visibility 8 statute miles; ceiling 1,500 feet overcast; temperature 0 degrees C; dewpoint minus 1 degree C; and altimeter 30.56 inches Hg.

The area forecast in effect at the time of the accident forecast broken to scattered clouds at 4,000 feet, with cloud tops at 5,000 feet, for Washington east of the Cascades. An AIRMET advisory in effect during the time frame of the accident indicated that no significant ice was expected, with freezing level at the surface in eastern Washington sloping to 8,000 to 11,000 feet in western Washington.

There was 100% moon illumination (a full moon) above the overcast on the night of the accident.

AIDS TO NAVIGATION

The pilot was "cleared for approach" by ATC, which according to FAA standard radio phraseology authorizes the pilot to execute any standard or special instrument approach to the airport. Yakima has four published instrument approaches: ILS runway 27, localizer/distance measuring equipment (DME) back course-B, VOR/DME or TACAN or GPS runway 27, and VOR or GPS-A. Of the four published approaches, the recorded NTAP radar positions and altitudes of the accident aircraft and the crash site location most closely matched the published ground track and altitudes for the ILS runway 27 approach.

The Yakima runway 27 ILS received a periodic FAA flight inspection on May 23, 1997. This inspection checked the localizer, DME, glide slope, lighting system, 75 mHz markers, and compass locators. During this inspection, the localizer, front course, localizer back course, and glide slope were all rated "unrestricted", and the 75 mHz markers, compass locator, DME, and lighting systems were rated satisfactory.

A special FAA flight inspection of the Yakima runway 27 localizer, DME, lighting systems, 75 mHz markers, and compass locator was conducted on October 2, 1997. The special flight inspection was performed at the request of system maintenance personnel in order to return the facility to service following extensive maintenance to the facility. During this inspection, the localizer front course was rated "unrestricted", and the 75 mHz markers, compass locator, DME, and lighting systems were all rated satisfactory.

COMMUNICATIONS

Seattle ARTCC approved a frequency change for the accident flight at 2227:06. During the hours when the Yakima airport control tower is closed (from 2200 to 0600), the Yakima control tower frequency (133.25 mHz) is the airport's common traffic advisory frequency (CTAF). There were no reports of any communications with, or from, the accident aircraft after the pilot acknowledged the frequency change. The Yakima control tower does not record communications on tower/CTAF frequency when the tower is closed.

AERODROME AND GROUND FACILITIES

Yakima Air Terminal is a 14 CFR 139 certificated air carrier airport, and receives scheduled passenger air carrier service under 14 CFR 121 and 14 CFR 135. The airport is served by two regional carriers, Horizon Air (which operates Bombardier Dash-8 aircraft into the airport) and Skywest (operating as United Express with Embraer EMB-120 aircraft into the airport.)

As of December 21, 1998, approximately 15 daily passenger air carrier arrivals were scheduled into the airport.

Yakima runway 27 is equipped with an ILS, but is not equipped with a visual glide path indicating system such as visual approach slope indicator (VASI) or precision approach path indicator (PAPI). In a memorandum to the Yakima airport manager dated April 26, 1995, the Yakima air traffic control tower (ATCT) manager stated that during the 18 months preceding the memo, the airport had experienced a higher than normal occurrence (8 instances) of runway 27 threshold light outages due to damaged or broken light fixtures. The memo stated that as far as could be determined, most damage was being done after dark and during times when the tower was not in operation, and indicated that the damage may have been due to aircraft landing short of the runway threshold and striking the threshold lights. The ATCT manager suggested in this memo that the airport manager pursue the possibility of a PAPI installation for runway 27 by the FAA Airports Safety and Certification Division.

The Yakima airport supervisor subsequently sent a letter dated April 28, 1995, to the FAA Airports Division in Renton, Washington, requesting assistance and guidance regarding having a VASI or PAPI installed on runway 27. The airport supervisor stated to the NTSB that following the April 28, 1995, communication to the FAA Airports Division, the FAA informed him that it planned to install a 3-box PAPI on runway 27; however, as of the time of the accident, the airport was still awaiting receipt of FAA funding to install the system.

Yakima runway 27 is equipped with high-intensity runway lights (HIRL) and a medium-intensity approach lighting system with runway alignment indicator lights (MALSR). During the hours the tower is closed, runway lights and MALSR are pilot-controlled by keying the aircraft radio transmit button on the CTAF, with intensity controlled by the number of times the transmit button is keyed within a 5-second interval. The Yakima airport supervisor stated to the NTSB that when the tower is closed, the runway lights are on continuously at low intensity, with MALSR off. MALSR can be activated, and runway light intensity increased, by keying the transmit button 5 times for medium intensity or 7 times for high intensity. It could not be determined whether or not the runway lights and MALSR were actually activated for the accident approach.

FLIGHT RECORDERS

The accident aircraft was not equipped, nor was it required to be equipped, with a cockpit voice recorder or flight data recorder.

WRECKAGE

The aircraft wreckage was examined at the accident site by investigators from the NTSB, FAA, Twin Commander Aircraft Corporation, and AlliedSignal Engines on December 13 and 14, 1997. The crash site was in a tree stand on level ground approximately 2.2 nautical miles from the runway 27 threshold, and was slightly north (right) of the runway 27 extended centerline. Breaks in tree branches at the crash site were confined to branches generally directly above the aircraft wreckage. The aircraft had come to rest upright and facing approximately south.

The aircraft's nose cone, both engines and engine nacelles, outboard wing sections out to each wing tip, and empennage were all found at the accident site. Both propellers, with all six propeller blades, were also located at the crash site (one left propeller blade, detached from the hub, was found buried in the ground underneath the wreckage.) The wreckage was extensively fire-damaged, with the complete fuselage forward of the empennage and both inboard wing

sections (inboard of the engine nacelles) substantially consumed by fire. The majority of the left horizontal stabilizer was also substantially consumed by fire, although approximately the inboard 3 to 4 feet of the left horizontal stabilizer leading edge structure remained attached to the airframe in its normal location. The right wing section outboard of the engine nacelle contained two major burn areas, the smaller one being in the leading edge immediately outboard of the nacelle and the larger one being through the complete wing chord approximately midway between the nacelle and the wingtip.

The forward section of the aircraft back to approximately the cabin entry door was demolished; most cockpit instruments found were out of the instrument panel and were impact-damaged and/or burned beyond readability. Two communications radio frequency selectors were found, with one being set to the airport CTAF, 133.25 mHz. The automatic direction finder [ADF] frequency selector was also found set to 371 kHz, the frequency of the DONNY compass locator on the Yakima ILS runway 27 approach.

While some surviving aircraft components were physically separated from the airframe and the empennage was bent up and over approximately 180 degrees relative to its normal position on the aircraft, those wreckage components which survived the post-crash fire were otherwise generally arranged in the pre-impact shape and layout of the aircraft, without significant scatter of major aircraft components. The landing gear was found in the down position, and the left and right outboard flaps were found in the full down (40 degrees) position.

Several tree branches near the left propeller, and one tree branch near the right propeller, were found with fresh smooth-faced saw-type cuts through them. (NOTE: The local fire department's incident report stated that no vegetation was cut by the fire department during its response to the crash.)

No evidence of preimpact airframe or systems malfunction was found during the on-site examination.

FIRE

Of the eight witnesses who provided statements to the NTSB, two (a husband and wife riding in a car together, approximately 1 mile away from the crash site) reported that the aircraft appeared to them to be on fire before ground impact. Witnesses were generally in agreement that an explosion or fireball occurred at ground impact.

A post-crash fire occurred, of sufficient intensity that it had to be extinguished by firefighters. According to the local fire department report of the incident, approximately 1,200 gallons of water, along with foam firefighting agent, were required to extinguish the fire after the first fire unit on scene depleted its 500-gallon water tank in an unsuccessful attempt to extinguish it.

The aircraft's fuselage was observed at the accident site by investigators to be extensively fire-damaged. During the on-site examination, investigators examined the wreckage for evidence of inflight fire and none was found.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies on the pilot and passenger were conducted by the Yakima County Coroner at the Yakima County Morgue, Yakima, Washington, on December 13, 1997. The cause of death for both aircraft occupants was determined to be massive blunt trauma to head, trunk, and extremities. The pilot's autopsy report noted severe fatty change of the liver and mild to moderate fibrosis, and stated: "Although autopsy failed to determine whether or not [the pilot]

was incapacitated by any medical condition immediately preceding the crash, severe fatty change of the liver is a risk factor for cardiac arrhythmia." No further evaluation of the possibility of a cardiac condition being suffered inflight by the pilot was possible at autopsy.

Toxicology tests on both aircraft occupants were performed by the FAA Civil Aeromedical Institute (CAMI), Oklahoma City, Oklahoma. Toxicology tests on the pilot screened for ethanol and drugs and did not detect these substances. Carbon monoxide and cyanide analyses were not performed on the pilot due to a lack of suitable specimens. Toxicology tests on the passenger screened for carbon monoxide and cyanide, and did not detect either carboxyhemoglobin or cyanide in the passenger's blood.

The pilot was 60 years old at the time of the accident. According to FAA records, the pilot reported only a history of hay fever or allergies on his September 24, 1996, FAA second-class medical certificate application. The aviation medical examiner's report of this examination noted an abnormal finding only in area 44 (identifying body marks, scars, tattoos-back scar). The examination report recorded his blood pressure as 122/86, his resting pulse as 70, his height as 73 inches and his weight as 266 pounds.

An FAA Statement of Demonstrated Ability found in the pilot's wallet by investigators, dated May 31, 1974, indicated the pilot had defective distant vision (20/200 left eye uncorrected) and defective color vision, but was authorized second class medical privileges (provided glasses were worn for distant vision) based on operational experience and a special flight test. Although the pilot possessed this FAA waiver for distant vision and color vision, the pilot's FAA medical record indicated that he tested normal for color vision and was within FAA second-class distant vision standards (testing 20/25 uncorrected and 20/20 corrected in both left and right eyes) on his September 24, 1996, second class FAA medical examination.

SURVIVAL ASPECTS

The crash was witnessed and aid personnel responded immediately to the crash scene. The local fire department reported that access to the crash site was delayed due to determining the exact location of the plane, fencing surrounding the field where the plane crashed, and conflicting reports as to the best access route to the site. Upon arrival at the crash site, firefighters had to suppress the post-crash fire in order to reach the aircraft occupants. Both occupants were found dead at the scene.

TESTS AND RESEARCH

The aircraft's two AlliedSignal TPE331-5-251K engines (left engine serial number P-06271 and right engine serial number P-06443) were sent to the facilities of the engine manufacturer, AlliedSignal Engines of Phoenix, Arizona, for a disassembly/teardown examination. This examination was conducted at the AlliedSignal Aerospace Services Repair and Overhaul Facility in Phoenix on February 3 and 4, 1998, with the NTSB investigator-in-charge (IIC) in attendance and under his supervision.

Disassembly examination of the right engine revealed some debris in the right engine fuel filter element and fuel filter housing. This debris was collected and sent to AlliedSignal's Phoenix Material Laboratory for analysis and identification. AlliedSignal's analysis of the debris (report number 76659, dated May 5, 1998, attached) identified four types of material: a silicone rubber (which the analysis report stated was indicative of an adhesive or sealant), a nitrile butadiene elastomer (the analysis report stated this material is typically used for fuel tank liners, fuel hoses, gaskets and O-rings), a polyester believed to be a dacron polyester, and a

cellulose (cotton-like) material. Notwithstanding the debris found in the right engine fuel filter element and fuel filter housing, AlliedSignal's report of the complete teardown activity (number 21-10184, dated June 12,1998, narrative attached) concluded: "The teardown and examination of both engines disclosed that the type and degree of damage was indicative of engine rotation and operation at the time of impact with the ground. No pre-accident conditions were found on either engine which would have interfered with normal operation." This conclusion was based on overall physical evidence of engine rotation and operation observed on both engines during the examination (detailed in the AlliedSignal teardown report.)

A night visual glide path evaluation flight on the Yakima runway 27 ILS approach environment was conducted by the NTSB IIC at Yakima on November 12, 1998. The evaluation flight was conducted in a Cessna 210 aircraft chartered from Noland Decoto Flying Service. During the evaluation, the NTSB IIC videotaped the visual cues on the Yakima runway 27 ILS approach from an altitude of approximately 1,500 feet above ground level (AGL) (the height of the overcast ceiling on the night of the accident) to approximately 750 feet AGL (corresponding to the glide slope altitude at a distance of approximately 2.2 nautical miles from the threshold, where N72VF crashed.)

The evaluation comprised three ILS approaches to runway 27, the first and third of which were videotaped. The first two approaches were flown with runway lights set to low intensity and MALSR off, with the last approach being flown with runway lights at medium intensity and MALSR and sequence flashing lights on. A planned fourth approach, intended to be flown with runway lights at high intensity and MALSR and sequence flashing lights on, was omitted due to high gusty winds and turbulence. The flight was conducted under moonless conditions. Weather conditions for the evaluation flight, as reported by the airport's Automatic Terminal Information Service (ATIS), were scattered clouds at 7,000 feet and 10 statute miles visibility.

The night visual glide path evaluation demonstrated that the runway environment was more easily identifiable with runway lights at medium intensity and MALSR on than with runway lights at low intensity and MALSR off, but did not disclose any clearly identifiable visual illusions or areas of the approach environment which could be mistaken for the landing runway.

ADDITIONAL INFORMATION

The airplane wreckage was released to Mr. James V. Stiger of Barrus & Stiger, Bellevue, Washington, on January 20, 1999. Mr. Stiger is an insurance adjuster representing the pilot/airplane owner's estate.

Pilot Information

Certificate:	Private	**Age:**	60, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	**Last FAA Medical Exam:**	09/26/1996
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	4800 hours (Total, all aircraft), 80 hours (Total, this make and model), 4800 hours (Pilot In Command, all aircraft), 30 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Aero Commander	**Registration:**	N72VF
Model/Series:	690A 690A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	11242
Landing Gear Type:	Retractable - Tricycle	**Seats:**	8
Date/Type of Last Inspection:	04/25/1997, AAIP	**Certified Max Gross Wt.:**	10300 lbs
Time Since Last Inspection:	92 Hours	**Engines:**	2 Turbo Prop
Airframe Total Time:	7001 Hours	**Engine Manufacturer:**	Garrett
ELT:		**Engine Model/Series:**	TPE331-5
Registered Owner:	YAKIMA THEATRES INC.	**Rated Power:**	718 hp
Operator:	YAKIMA THEATRES INC.	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night/Dark
Observation Facility, Elevation:	YKM, 1095 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	2156 PST	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Visibility**	6 Miles
Lowest Ceiling:	Overcast / 1500 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	Calm /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	0°C / -1°C
Precipitation and Obscuration:			
Departure Point:	SEATTLE, WA (BFI)	**Type of Flight Plan Filed:**	IFR
Destination:	(YKM)	**Type of Clearance:**	None
Departure Time:	2145 PST	**Type of Airspace:**	Class E

Airport Information

Airport:	YAKIMA AIR TERMINAL (YKM)	**Runway Surface Type:**	Asphalt
Airport Elevation:	1095 ft	**Runway Surface Condition:**	
Runway Used:	27	**IFR Approach:**	
Runway Length/Width:	7603 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-Ground
Total Injuries:	2 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	GREGG NESEMEIER	**Report Date:**	09/28/1999
Additional Participating Persons:	TOM CRARY; SPOKANE, WA ROGER J ADERMAN; ARLINGTON, WA STEVEN G MACON; PHOENIX, AZ		
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/.		