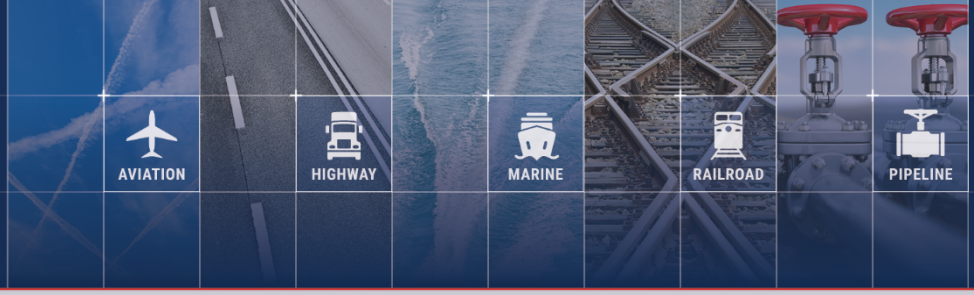

Aviation Investigation Factual Report

Location:	SAN CARLOS, Arizona	**Accident Number:**	LAX97GA198
Date & Time:	June 3, 1997, 10:40 Local	**Registration:**	N8KB
Aircraft:	Beech 95-B55	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Public aircraft		

Factual Information

HISTORY OF FLIGHT

On June 3, 1997, about 1040 hours mountain standard time, a Beech 95-B55, N8KB, collided with terrain during a routine fire reconnaissance of the San Carlos Indian Reservation (SCIR), San Carlos, Arizona. The aircraft was being operated by Safford Aviation, under an exclusive use contract to the Bureau of Indian Affairs as a public-use aircraft. The mission was a routine fire patrol conducted under 14 CFR Part 91 of the Federal Aviation Regulations. Visual meteorological conditions prevailed and no flight plan was filed. The aircraft was destroyed during the impact sequence and subsequent postcrash fire. The certificated commercial pilot and his observer received fatal injuries. The aircraft had previously been in contact with the San Carlos Dispatch radio operator and was giving agency flight following reports. The flight originated at San Carlos at 1007.

There were no known eyewitnesses to the accident. According to the Bureau of Indian Affairs, the crew of N8KB (referred to in their logs as P-2) called the San Carlos dispatch at 1027 and reported their location was Baskin Tank, and that they were en route to Elwood Tank. The dispatcher tried to reach P-2 via aircraft radio on an agency FM frequency at 1051, and again at 1054, with no response. At 1057, another fire patrol aircraft, H350, a Bell 206L1, took off and proceeded to Coupon Tank due to black smoke being reported. At 1156, H350 landed at the incident site and discovered the downed aircraft. The aircraft came to rest in a portion of the Black River Canyon, which is located in Apache County, Arizona.

A copy of the SCIR dispatch log was obtained and reviewed. The log noted in a 1007 entry "P2 off ground...enroute to Seneca." The flight was recorded as reporting "over Salt Crossing heading to Black River Crossing" at 1018. At 1027, the aircraft reported "passing Baskin Tank heading to Elwood Tank." The dispatcher tried to call P-2 again at 1051 and received no response. He tried to make radio contact with them again at 1054, without success. At 1117, the dispatchers contacted the operator of the aircraft and asked them to contact Prescott Flight Service station. According to calculations provided by the operator, at normal patrol airspeeds, the elapsed time from Baskin Tank to the crash site would have been approximately 13 minutes, with a distance traveled of about 32 miles.

A thorough review of dispatch logs from all available sources revealed discrepancies with respect to the time(s) various events were noted to have occurred.

The chief pilot of Safford Aviation was interviewed regarding the patrol route and the timing of the position reports. He concluded that the aircraft was on a "normal" morning reconnaissance flight and that both the route and timing of the reporting points were consistent with all other flights over the past 4 years. Additionally, he opined that "the speed of

the aircraft (estimated to be an average ground speed of 145.2 mph) was within normal parameters for this mission flown." A map, which is appended to this report, depicts the actual route flown with a solid red line, and the intended route of flight with a dashed red line. Additionally, the map shows the known reporting points/timing of the accident flight. The previous 4 days worth of dispatch logs were reviewed during the investigation and they disclosed that the route and timing of the position reports were consistent with the accident flight.

The FAA Air Route Traffic Control Center (ARTCC) at Albuquerque, New Mexico, controls the airspace over the area of the accident site and the patrol mission route. The Quality Assurance specialists at Albuquerque ARTCC stated that the radar coverage in the area of the accident has a general floor of 9,500 feet msl. At the Safety Board's request, Albuquerque ARTCC examined their recorded radar data for the date of the accident. For a time frame from 15 minutes before to 15 minutes after the accident, no primary or secondary 1200 beacon codes were observed. Additionally, the Jackel MOA (military operations area) was inactive from 1020 to 1350 local time. According to Prescott Flight Service station, there were no ELT signals reported at the time in question for this area.

The Safety Board was informed that there were individuals present at the Black River pump station near the accident site. The occupants of the station were identified and interviewed by telephone on September 10, 1997. A witness stated that to the best of his recollection he called in and reported seeing smoke from the accident site "about 10 AM." He said he was standing out on the porch on the west side of the house, which was located about 3 miles west of the pump station, when he noticed a "big ball of smoke." He said the smoke then disappeared and later reappeared as a light brown haze. He reported that he did not "hear any noise or explosion." He also said he did not see the airplane fly over the house that particular day. He stated that the reconnaissance airplane usually came over the pump station from west to east, but that this particular day he did not see the airplane fly overhead.

A review of the SCIR "Aircraft Pre-Accident Plan and Hazard Map Instructions" booklet stated that an aircraft will be initially considered "overdue" when it has not completed a required check-in by radio or telephone within the time frame specified in the flight following request. This time frame may be an elapsed period of time such as every 15 minutes for reconnaissance flights, or may be ETA at a destination or reporting point. Dispatchers or persons responsible for flight following are responsible for initiating actions and documenting all actions, contact, conversations and times, as specified by the Pre-Accident Plan.

During the fire patrol missions, the aircraft uses two FM frequencies for radio contact with dispatch. The aircraft transmits on 171.700 MHz and receives on 172.425 MHz. According to the operator of the aircraft, had the aircraft encountered some sort of mechanical malfunction, which would have allowed the pilot to make a distress call, they would have utilized the guard frequency as called out in procedures specified in the contract. The operator stated in a memorandum dated September 25, 1997, that the "guard" or emergency frequency is a FM frequency of 168.625 MHz, which is monitored by both the USDA and DOI agencies. He

explained that the radios installed in his aircraft transmit at 10 watts output. In order to activate the guard frequency, the pilot or observer need only flip a toggle switch located on the face of the radio which is located directly in front of the observer. The operator said that if the pilot initiated a call on the guard frequency from the position of the crash site, it "would have probably been received by several different agencies." He stated that based on his experience flying, various USFS locations in Winslow, Phoenix, Tucson, Springerville, and Silver City, as well as the Bureau Land Management (BLM) dispatch in Safford, would have heard the transmission. The operator said he found that the San Carlos Indian Reservation Dispatch does not have the capability to monitor the Guard frequency. Review of available records disclosed no evidence of contact between any of these stations and the aircraft on the date of the accident.

The Safety Board performed a test fight and was not able to contact San Carlos dispatch on the guard frequency, but was able to communicate on the guard frequency with the USFS in Tucson, Arizona. An on-site inspection of the dispatch communication capabilities at San Carlos revealed that they can only transmit and receive on the FM frequencies 171.700 MHz and 172.425 MHz, and the Unicom frequency of 122.8 MHz. They do not have the capability of utilizing the simplex guard frequency of 168.425 MHz. Additionally, the White River Indian Reservation does not have the capability to monitor the guard frequency without "being notified ahead of time and reprogramming the radio frequency." The operator in his summary stated that there were four possibilities for the accident aircraft to declare an emergency: Guard Frequency on FM, primary forestry frequency, Unicom frequency 122.8 (which San Carlos monitors), and the emergency frequency of 121.5. He said that the pilot was very familiar with the options to make a distress call.

PERSONNEL INFORMATION

The crew for the mission consisted of a pilot and observer. During the investigation, material and records concerning the crews training and experience were examined from the FAA Airman's Record Center, Safford Aviation, and the DOI Office of Aircraft Services. Occupant seating positions were identified by the Pima County Forensic Science Center, with the pilot in the left front seat and the observer in the right front seat. The pilot was an employee of Safford Aviation and the observer worked for the Bureau of Indian Affairs.

The pilot was the director of maintenance for Safford Aviation and had collateral duties as a pilot in the company's 14 CFR Part 135 on-demand air taxi operation, and for the fire patrol contract. Review of FAA airman records disclosed that he held a commercial pilot certificate, with airplane ratings for single engine land, multiengine land, and instruments. His most recent second-class medical certificate was issued on January 6, 1997, without limitations.

The pilot's personal flight records were not recovered and were believed by family members to have been on the aircraft. According to all sources of information, the pilot had accrued a total flight time of about 1,610 hours, with 795 in multiengine aircraft, and 110 hours in the Beech 95-B55. His most recent check rides in accordance with the provisions of 14 CFR 135 were

completed on April 8, 1997, in a Aero Commander 500 aircraft. Additionally, on May 6, 1997, the pilot completed an Interagency Pilot Evaluation/Qualifications Check in the Aero Commander aircraft. A line check in accordance with 14 CFR 135.299 was completed in the accident aircraft on January 12, 1997. The chief pilot of Safford Aviation stated that he gave the pilot a route/line check over the fire patrol route flown on the accident flight in September 1996. The line check included the altitudes and course lines to be flown.

The chief pilot also stated that the pilot and the observer had been paired together before on many fire patrol missions. The pilot had also been given several orientation flights on actual reconnaissance flights with the chief pilot acting as pilot-in-command and the observer acting as the aerial observer. According to the chief pilot, the observer could direct the pilot to deviate from a patrol track line; however, the pilot had the option of vetoing any altitude or course change for safety reasons.

Review of the FAA Airman Record files disclosed that the observer was issued a private pilot certificate with an airplane single engine land rating in April 1978. The last medical certificate of record was a third-class medical dated January 18, 1977. No evidence was found to indicate that the observer had any recent pilot flight experience.

AIRCRAFT INFORMATION

According to the best records the operator could find, the airplane was acquired by Safford Aviation, (under different management personnel), in February 1985. A review of the maintenance records disclosed that it had accrued a total time in service of 8,566.9 hours. The most recent 100-hour inspection was accomplished on May 24, 1997, 10.9 hours prior to the accident. According to the records review and interviews with the chief pilot, no unresolved maintenance discrepancies existed against the aircraft at departure.

The aircraft was equipped with a 40-gallon (37 usable) main tank in each wing leading edge (Beech anti-slosh reservoir system), and a 31-gallon (all usable) auxiliary tank in each wing panel outboard of the landing gear wheel well. Each main tank was equipped with a Beech anti-slosh fuel cell reservoir assembly. The airport fueling records disclosed that the aircraft was last fueled on June 3, 1997. The operator reported that the aircraft departed on the accident flight with full fuel tanks totaling 117 usable gallons of 100 low lead aviation fuel.

The airframe was equipped with Micro Aero Dynamics, Inc., vortex generators which were installed on the wings under Supplemental Type Certificate No. SA5789NM.

Both engines were overhauled on July 1, 1996, and had accrued a time in service of 208.5 hours since overhaul completion. As of the accident, the total times in service for the engines were 1,490.2 hours for the left and 3,244.1 hours for the right. As noted in the propeller logbooks, the propellers (left S.N. EB-3226A and right S.N. EB-3227A) were installed new on the aircraft on August 25, 1993, under STC SA795CE with an aircraft tach time of 5,828.7. The last entry for both propellers was a 100-hour inspection performed on May 24, 1997. At that

time, both propellers indicated a total time since new of 1,163.5 hours.

METEOROLOGICAL INFORMATION

Weather observations were taken by the SCIR at the Hilltop Look-out site on the day of the accident. This location is about 42 miles southeast of the accident site. At the time of the accident, the station was reporting in part: temperature 77 degrees Fahrenheit; dew point 56 degrees Fahrenheit; and winds southeast at 7-8 knots with high clouds evident. No unusual meteorological phenomena were observed by any Bureau of Indian Affairs observers.

WRECKAGE AND IMPACT INFORMATION

The accident site is in a narrow horseshoe shaped canyon formed by the Black River drainage at a measured elevation of 5,620 feet msl. The wall on the west side of the river rises steeply from the river to about 6,100 feet. The bank on the east side of the river is characterized by much shallower terrain slope which rises to match the terrain elevations on the other side of the river. The current in the main channel of the river flows from south to north. The area is characterized by an area of both deciduous and evergreen trees on both sides of the river. The wreckage came to rest on a sandbar of rocks located at the apex of a horseshoe bend in the river. The rocks varied in size from small pea size gravel to rocks that were several inches in diameter. The river itself was relatively shallow at this particular point. Several members of the Tribal Police Department waded out into the river identifying parts of the aircraft and did not get wet beyond mid-calf. The coordinates of the aircraft point of rest were measured with a GPS unit at 33 degrees 29.93 minutes north latitude, by 109 degrees 48.82 minutes west longitude.

All major aircraft components were located in the immediate area of the ground impact and final resting point of the aircraft. The right wingtip was found just submerged in shallow water, approximately 60 feet from the main wreckage, at the 7 o'clock position to the aircraft's tail. The separated right wing tip component consisted of the most outboard 36 inches of the right wing. The screw holes through which the attaching hardware passes were elongated and torn open in a span wise direction. The right wing tip exhibited an even according deformation spanwise on it's leading edge structure and on it's center panel structure from wing station 191 to 228. There was an area of deformation located on the leading edge of the wing tip located on the inboard 1/3 that was crushed up and aft. There were no appreciable semicircular indentations found on the wingtip. Additionally, no inorganic or organic material transfers were noted on the leading edge. The landing light lense cover and landing light assemblies were not located with the wing tip in the river. Both the upper and lower green navigation light lens covers were intact. Outer portions of the right elevator skin (with no trim tab attached) were found approximately 4 feet from the left side of the tail section, and were not submerged in the water.

The trees in the area of the accident site were examined by the Safety Board for residual marks or transfers from the accident aircraft. Two trees were found upstream that exhibited breaks.

Tree No.1 was located in a direction of about 120 degrees from the main wreckage site (the 4 o'clock position to the aircraft tail) about 300 yards distant. One main limb and several secondary limbs were found lying on the opposite side of the tree from where the wreckage was located. The broken limbs appeared dry and did not exhibit any leafy foliage. There was no evidence of impact marks, cuts, or transfers of any kind. The main limb was broken into several pieces. The limb segments were found in line and adjacent to one another with no evidence of lateral movement at ground contact.

The trunk of tree No.1 was cut down in order to examine the remaining section of the break. The break appeared dry and lifeless with no evidence of leafy foliage in the upper extremities and there was no evidence of impact marks, cuts, or transfers of any kind.

Tree No.2 consisted of a stump and a 3-foot section of trunk that were located at the main wreckage site. The stump and section of the trunk were burned and charred. The break was dry with no evidence of leafy foliage. There was no evidence of impact marks, cuts, or transfers of any kind.

A 20- to 25-foot section of the upper part of a tree trunk was also found about 20 to 30 feet from the crash site on a heading of about 330 degrees from the nose of the aircraft. This section was outside the fire area and did not display any impact marks or transfers of any kind. The break was dry with no evidence of leafy foliage. There was no evidence of impact marks, cuts, or transfers of any kind. There were no transitional sections found between the burnt stump and the broken upper sections.

The Safety Board examined the riverbank between tree No. 1 and the main aircraft wreckage site. Other than the components referred to in this narrative, no debris associated with the aircraft was observed on the riverbank or in the water. (Complete tree examination report is appended.)

The aircraft fuselage was oriented on a magnetic bearing of about 350 degrees on the rocky river bank (the lateral axis of the wings was measured at 240 degrees). With the exception of the propellers, the main cabin door, the right wing tip, and an emergency exit window frame, and a section of right elevator skin, the entire aircraft was involved in a fire with melting and thermal damage noted to even large aluminum extrusions. The fuselage from the nose to the empennage at station 257.6 was almost completely consumed. The tip of the pitot tube was bent upward at an angle of 40 degrees. The main spar web (over the entire span) and the firewalls of both engine nacelles were deformed on a 40-degree angle to the horizontal.

Two craters and a long thin ground disturbance extending on each side of the main wreckage were observed in front of the aircraft nose. This ground disturbance was devoid of rocks, unlike the surrounding river bank which was covered with rocks of varying dimension averaging from a diameter of 1-2 inches to some in excess of 7 inches in diameter. The axis of the disturbance was measured on a magnetic bearing of 330 degrees. Red navigation light lens fragments were found on northwest end of the disturbance, and the southeast end of the

scar merged with the right wing tip area. An intact red navigation light lens cover was found in front of the left wing on the river bank. No debris or other wreckage components were found on the north side of the two propeller craters.

The propeller assemblies were located in the craters and identified by serial number with respect to their installation positions on the aircraft. All blades were retained in the hubs. The distance between the propeller hubs was measured at 12.0 feet apart. According to Beech Aircraft, the design dimension between the propeller hubs on a 95-B55 is 11 feet 7 inches. The overall dimension between the extreme ends of the disturbance was about 39 feet. The wingspan of a 95-B55 is 37 feet 10 inches.

A portion of the crankshaft propeller mounting flange was still bolted to the right propeller hub. Both propeller hubs were buried in the ground, with the longitudinal axis of each hub oriented on a 30-45 degree axis to the horizontal. The propeller blades from both hubs in order of rotation exhibited symmetrical damage with respect to one another.

Both wings remained attached to the fuselage center section carry through structure. The leading edges exhibited symmetrical leading edge crush deformation. Both wings exhibited thermal destruction, which was more severe on the right wing. The left wing flap actuator was found in the retracted position and the right actuator was thermally destroyed. Flap drive continuity was established from the left actuator through the drive motor worm gear to the right actuator.

The landing gear actuator was thermally destroyed; however, the main gear retract arms were geometrically observed to be parallel to one another and crossed over the remains of the gear box. The landing gear was in their respective wheel wells with no evidence of fore or aft bending loads noted. The ailerons and their respective balance weights were present.

The empennage aft of station 257.6 exhibited thermal distress. The vertical stabilizer and rudder were attached in their normal fashion, with the rudder balance weight attached. The left horizontal stabilizer and elevator were present with no impact damage noted. The right horizontal stabilizer and elevator exhibited thermal distress nearing destruction; however, the elevator hinge and hangers were intact. The rudder trim jackscrew was measured at 3.84 inches of extension, which, according to Beech Aircraft, corresponds to one degree right tab (1 degree nose left as seen in the cockpit) setting. Neutral setting, zero degrees, corresponds to 3.89 inches. Both elevator trim jackscrews were measured at 1 1/8 inches, which corresponds to a 5- to 6-degree tab down (5-6 degrees nose up) setting.

Control system continuity was established from the cockpit controls to the individual control surfaces. Due to the extensive thermal destruction of the airframe, aluminum bell cranks and pulleys, except those aft of FS 257.6 were no longer present, but the steel flight control attaching hardware was in place. The control cables were traced from the rudder, aileron, and elevator flight control surfaces to the cockpit. No unusual operating signatures were observed to any control surface limit stop and no evidence of cable pull/run was noted.

The main cabin door was found approximately 25 feet behind the main wreckage on the shoreline. The hinges were noted to have been torn from the fuselage mounting points. The inside operating handle was found in the locked position. The bolt, upper latch hook, and bottom pin were extended and deformed. The bottom forward corner of the main cabin entry door was observed to exhibit crush deformation, with the folds oriented on about a 35-degree angle to the horizontal.

The crush lines found on the pitot tube, door forward bottom edge, firewall on both sides and the entire main spar was consistently measured between 35 to 40 degrees. In addition, the propeller hub assemblies were found buried in the ground with the longitudinal axis of 35 to 40 degrees to the vertical. The crush angle and amount of deformation was consistent on all components that were examined.

No shadowing or feathering signatures were observed on any rivets. The Beech technical representative reported that no evidence of in-flight fire signatures were found in the nacelles.

AIRCRAFT RECOVERY

The helicopter pilot that was hired for the aircraft recovery efforts was interviewed on January 15, 1998. The pilot said the aircraft was recovered on June 8, 1997. He said he flew 5-6 sling loads of wreckage out of the accident site to the recovery zone. The helicopter flew 1.0 hours of flight time in order to perform this particular mission, with a total time of 1.6 hours flown. He said that the drop site for the aircraft wreckage was located to the northwest of the accident site. The drop site was located on top of the plateau, approximately 1 1/2 miles away from the crash site.

He stated that when he picked up the loads with the net, he was facing in a southerly direction. When he took off, he carried the sling load of wreckage right at the waters edge between the rocks and sand for the first 100 feet of altitude. After he was sure he had cleared any obstacles, he turned left to follow the bend in the river, at which point the load would shift and be directly over the center of the river. He said his flight path took him directly over the trees located upstream, which had the broken limbs that were discussed in the wreckage and impact section of the narrative.

The pilot stated that he personally witnessed small pieces of the aircraft wreckage fall out of the net as he took off and flew upstream. He said that his usual procedure was to have his head out of the door of the helicopter where he could ensure that the load had cleared any obstacles, at which time he would visually look back inside the cockpit.

TESTS AND RESEARCH

Calculations were performed to reconstruct the aircraft's gross weight and center of gravity for both takeoff and at the estimated accident time. Review of the maintenance records disclosed

that the aircraft was last weighed on January 29, 1997, and this information was used as a basis for the calculations. The known weights of the occupants, the dispatch fuel load, and all other equipment known to be onboard the aircraft was added to the empty weight at the station locations shown in the aircraft flight manual weight and balance section. According to the operator, the company pilots were instructed to use a power setting of 18-19 inches of manifold pressure and 2,400 rpm, which yields a total fuel flow of 19 gallons per hour at cruise. The operator stated that the pilots are instructed to burn fuel from the mains only during the flight profile flown by the pilot on the accident flight.

Using the aircraft performance data and the known flight profile power settings, the calculations disclosed that the resultant CG would move aft about 1 inch over the course of the flight. The accident site gross weight was calculated to be about 4,555 pounds, with the resultant CG of 79.8 inches. According to the Pilot's Operating Handbook, using the weights between 3,800 and 4,740 pounds, the CG range would be between 77.5 inches and 86.0 inches.

During the wreckage examination, the elevator trim jackscrew was measured at 1 1/8 inches. According to Beech Aircraft, this dimension corresponds to a setting of 5 to 6 degrees tab down. Utilizing the derived weight and center of gravity at the estimated accident time, Beech Aircraft engineering representatives, who consulted company flight test personnel, calculated that the tab setting represents a trim speed for the aircraft of 135 mph, or about 120 knots.

As noted in the Wreckage and Impact section of this narrative, the river canyon at the accident site has a 400-foot radius turn around the river bend. Review of the General Turning Performance chart contained Aerodynamics For Naval Aviators (page 179, Figure 2.29, NAVWEPS 00-80T-80) notes that the bank angle required to do a constant altitude 400-foot radius turn at 120 knots is 73 degrees. The stall speed chart contained in the Beech 95-B55 Pilot Operating Handbook discloses that the stall speed for 4,550 pounds and a 73-degree bank angle is 111knots/127 mph.

COMPONENT EXAMINATION

Following recovery of the aircraft from the site to the facilities of Air Transport in Phoenix, Arizona, detailed examinations were conducted of the engines, propellers, and airframe components. Detailed reports of the disassembly and examinations are appended to this report.

The fuel selector valves were examined in comparison to factory production drawings. The index plate for the right engine selector valve was found between the AUX and the OFF position. The index plate for the left engine was in the AUX position.

At the accident site the throw-over control wheel, which had separated from the control column tube, was observed to be near the right side of the cockpit. The assembly was reconstructed using manufacturer's drawings. The locking pin hole on the left side of the outer

control column tube assembly was found elongated.

The left engine was disassembled, with no unusual operating signatures noted.

The right engine was examined, with heat distress from fire damage noted to the fuel lines and components from the engine driven fuel pump to the fuel distributor manifold. The fuel injector nozzles and the associated lines from the distributor were clear of debris. A solid plastic appearing material was observed under the screen of the distributor manifold, in the fuel-metering unit, and on the engine driven fuel pump rotor and vanes. The material had the appearance of having flowed into its final resting position. Samples of the accident aircraft fuel hoses, exemplar hoses, and the contaminated fuel system components were submitted to Seal Laboratories, El Segundo, California, for analysis. The laboratory concluded that the material in the fuel-metering unit and associated fuel system components was chemically the same as the hose material. (A full report is appended.)

Rotation of the crankshaft produced compression in all cylinders, with normal valve action and lift observed. Accessory gear train continuity was established. The spark plugs exhibited normal operating signatures when compared to a Champion plug comparison chart. The right magneto was broken from the mounting flange, while the left magneto remained tight in the clamp. Hand rotation of both magnetos produced strong sparks at each lead in firing order.

Both propellers were disassembled by a Hartzell factory technical representative who examined the internal hub components and blade butt impressions. According to the examination report, both propellers were operating symmetrically at blade angles in the governed range during the impact sequence. The blades from both propellers exhibited symmetrical damage patterns. The right propeller cylinder was found displaced about 30 degrees towards the mid-section between blades R2 and R3. The left propeller cylinder was displaced about 50 degrees towards the L2 blade. See the appended complete report, which contains detailed disassembly findings on all internal angles and deformation patterns.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies on the pilot and observer were performed by the Pima County Forensic Science Center (FSC), with tissue and fluid samples retained for toxicological examination. The samples were submitted to the FAA Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma. Separate toxicological studies were conducted by FSC. The pilot and the observer were positively identified using comparative dental analysis by Dr. Walter H. Birkby, Ph.D, D ABFA, a Forensic Anthropologist at the FSC.

According to the Manager, Toxicology and Accident Research in Oklahoma City, the samples from the pilot and observer were negative for all screened drug substances.

The pilot was also tested for volatiles. All positive ethanols were confirmed by Radiaative Energy attenuation. According to the report provided by CAMI, "the pilot was positive for

Ethanol of 11.000 (mg/dL, mg/hg) detected in Muscle Fluid, 19.000 (mg/dL, mg/hg) Ethanol detected in Brain and 2.000 (mg/dL, mg/hg) Acetaldehyde detected in Muscle Fluid. According to CAMI, "the ethanol found in this case may be the result of postmortem ethanol production." No drugs were detected in the urine.

According to the second toxicological examination performed in Tucson, Arizona, the samples from the pilot and observer were negative for all screened drug substances.

According to the pathologist who performed the autopsies, neither occupant exhibited injuries, which, in his opinion, could clearly be associated with flight control manipulation.

ADDITIONAL INFORMATION

The wreckage was released to the registered owner at the conclusion of the component examinations on June 11, 1997. At the time the release was executed, the wreckage and all recovered components were located at the facilities of Air Transport in Phoenix, Arizona. Fuel system components from the left engine to include the fuel distributor, fuel metering unit, and fuel pump rotor and vane, and two fuel lines were retained for laboratory analysis. At the conclusion of the analysis, these components were returned to Air Transport to be retained with the rest of the wreckage on October 23, 1997.

Additional parties to the investigation not included on page 5 are:

Dave Broadnax Department of the Interior Boise, ID 83702

Doug Benson Safford Aircraft Services Safford, AZ 85546

Mike Grimes Teledyne Continental Motors Lancaster, CA 93536

Pilot Information

Certificate:	Commercial	**Age:**	31,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	January 6, 1997
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	1610 hours (Total, all aircraft), 110 hours (Total, this make and model), 1510 hours (Pilot In Command, all aircraft), 85 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N8KB
Model/Series:	95-B55 95-B55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TC-1404
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	May 24, 1997 100 hour	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:	11 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	8594 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	IO-470-L
Registered Owner:	SAFFORD AVIATION SERVICES INC.	**Rated Power:**	260 Horsepower
Operator:	US DEPT OF INTERIOR	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	77°C / 56°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(4A27)	**Type of Flight Plan Filed:**	Company VFR
Destination:		**Type of Clearance:**	None
Departure Time:	10:07 Local	**Type of Airspace:**	Class G

Airport Information

Airport:		**Runway Surface Type:**	
Airport Elevation:		**Runway Surface Condition:**	
Runway Used:	0	**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	33.539356,-110.469268(est)

Administrative Information

Investigator In Charge (IIC):	Childress, Deborah
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Report Date:	June 17, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=29639