Aviation Investigation Final Report

Location:	CARTERVILLE, Missouri	**Accident Number:**	CHI01FA206
Date & Time:	July 13, 2001, 00:57 Local	**Registration:**	N91WC
Aircraft:	Beech E-55	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	6 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane arrived in the vicinity of Joplin, Missouri, just after midnight. At 0011:38, Kansas City ARTCC (ZKC) informed the pilot that the weather at the Joplin Regional Airport (JLN) was 800 broken, 5,000 overcast and 10 miles visibility. The pilot, operating under visual flight rules, told ZKC that they would need an instrument approach into JLN. ZKC cleared the pilot to JLN and gave the pilot radar vectors to the ILS to runway 13. At 0031:35, the pilot told ZKC that he was getting warning flags for the localizer and glide slope. The pilot elected to transition to the ILS for runway 18. ZKC gave him vectors for the approach. At 0033:46, ZKC asked the pilot if he still had plenty of fuel? The pilot confirmed he had 2 hours of fuel on board. At 0042:30, ZKC cleared the pilot for the ILS approach. At 0046:36, ZKC lost radar contact with the airplane. The pilot told ZKC they were at 2,700 feet, descending. At 0048:40, ZKC transmitted to the pilot that his airplane was just about over JLN at 2,400 feet. The pilot told ZKC they were going missed approach and requested another approach to runway 18. At 0055:16, the pilot transmitted, "... we're having a little problem here I think we've lost an engine I'm trying to get leveled off here and get back to 4,000 feet." ZKC told the pilot, "... keep me advised." At 0056:06, ZKC transmitted that he showed the airplane descending below 2,300 feet. There was no response from the airplane. The last positions recorded by ZKC radar showed the airplane 3 miles east of JLN in a rapid descent. Witnesses on the ground heard an airplane make several passes over Carterville, Missouri. One witness said that on the airplane's third pass, it sounded like a single engine airplane. Another witness said she saw the lights on the airplane. The witness described the airplane pitch up into a 30-degree nose high climb, roll counterclockwise, and then enter a 45-degree dive toward the ground. The airplane continued its counterclockwise roll until she lost sight of it behind some trees. A witness residing in the house across the street from the house the airplane struck, said when he heard the airplane, it sounded like it was in a nosedive barrel roll. The witness said it was loud and fast. It sounded like a loud engine running and it sounded like one engine, not two. An examination of the airplane revealed no pre-impact anomalies. The published decision height for the ILS/DME runway 18 approach at JLN is 1,165 feet. The pilot had 6,823.8 total

flying hours. Approximately 1,440 hours were in multi-engine airplanes. The pilot's last recorded flight in a multi-engine airplane was in a Cessna 337 on October 26, 2000. According to the previous owner of the airplane, the pilot got checked out in the airplane 6 days before the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to maintain aircraft control and the pilot's improper in-flight planning and decisions. Factors relating to the accident were the pilot's lack of experience in the airplane, the inadvertent spiral, and the residence.

Findings

Occurrence #1: LOSS OF ENGINE POWER
Phase of Operation: APPROACH

Findings
1. (F) REASON FOR OCCURRENCE UNDETERMINED

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH

Findings
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND
4. (F) LACK OF EXPERIENCE - PILOT IN COMMAND
5. USE OF INAPPROPRIATE MEDICATION/DRUG - PILOT IN COMMAND
6. (F) SPIRAL - INADVERTENT - PILOT IN COMMAND
7. AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
8. (F) OBJECT - RESIDENCE

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On July 13, 2001, at 0057 central daylight time, a Beech E-55, N91WC, twin-engine airplane, piloted by a commercial pilot, was destroyed after it departed controlled flight and impacted into a garage in a residential area of Carterville, Missouri, 3 miles east of the Joplin Regional Airport (JLN), Joplin, Missouri. Prior to the crash, the airplane lost power on one engine. Instrument meteorological conditions prevailed at the time of the accident. The personal flight was being conducted under the provisions of 14 CFR Part 91. The airplane departed Sulphur, Louisiana, on July 12, 2001, at approximately 2230, without a flight plan on file. On reaching the Joplin area, the commercial pilot filed an instrument flight rules (IFR) plan with the Kansas City Air Route Traffic Control Center (ZKC). The cross-country flight was to terminate at Joplin, Missouri. The pilot and five passengers on board sustained fatal injuries in the crash. There were no injuries to persons on the ground.

At 0011:38, ZKC established radio contact with N91WC. The pilot informed ZKC that he was going to start a slow descent into the Joplin airport. ZKC asked the pilot if he had the current weather for landing. The pilot said, "negative". ZKC informed the pilot that the weather at JLN was winds 050 degrees at 7 knots, 10 miles visibility, ceilings of 800 feet broken and 5,000 feet overcast, and an altimeter of 29.99 inches of Mercury (Hg). The pilot responded that they were going to need an IFR approach into JLN. ZKC cleared N91WC direct to JLN and told them to maintain 4,000 feet mean sea level (msl).

At 0017:25, ZKC inquired, [N91WC] "are you heading over towards joplin now?" The pilot said his global positioning system (GPS) equipment was showing he was heading direct to JLN. ZKC asked the pilot what heading he was on. The pilot responded, "forty two degrees." ZKC said, "ok yeah that ought to be good if you turn right to uh about a zero three five zero four zero heading that'll take you direct joplin looked like you were heading to the north there looked like you were heading straight north."

At 0018:05, the pilot inquired, "and what kind of approach we gonna make?" ZKC said, "it'll be approach of your choice they've got i l s they've got uh back course uh just let me know what you want to do i can vector you for i l s if you want."

The pilot said, "i've got the approach plate out now for the i l s uh one eight." ZKC said, "all right turn uh fifteen degrees left vectors i l s uh you say you want to do i l s one eight?" The pilot said, "i guess that'll do." ZKC then said, "ok they got vectors uh they've got the i l s one three or one eight it'll be your choice uh."

After rechecking the winds, the pilot told ZKC, "i guess we'll uh let me see if i got that one

approach plate."

At 0021:50, the pilot said, uh center one whiskey charlie i've got that approach plate out now." ZKC told the pilot, "ok thank you and uh turn fifteen degrees left vectors i l s runway one three into joplin fifteen left."

At 0028:35, ZKC told the pilot, "november niner one whiskey charlie turn right heading one zero zero one hundred on the heading." The pilot responded, "one zero zero roger."

At 0029:30, ZKC told the pilot, "november one whiskey charlie continue right turn heading one three zero you're eight miles north west of lunns intersection then maintain three thousand two hundred until established cleared i l s runway one three into joplin over." The pilot responded, "one whiskey charlie roger."

At 0030:22, ZKC asked the pilot, "and one whiskey charlie are you on the localizer inbound now?" The pilot responded, "one whiskey charlie doesn't show uh it on." ZKC said, "all right turn uh let's go fifteen left you may have turned a little tight left to join i'll let you know when you're on it."

At 0031:14, the pilot said, "we show on the localizer now." ZKC said, "all right one whiskey charlie you're cleared i l s one three into joplin thirty two hundred."

At 0031:35, the pilot said, "... i just got a red flag on this localizer uh center one whiskey charlie." ZKC said, "all right you say you're not getting it in now." The pilot responded, "uh got a red flag on the nav here". ZKC asked the pilot, "... you want to try another approach there something else then?" The pilot said, "i've lost uh the localizer and glide slope both i guess i ought to go over there and try that one eight". ZKC said, "… we can vector you up there … maintain your present altitude … you can climb up to four thousand … vectors for the i l s runway one eight and let's turn left heading zero three zero take you in from the east side there."

At 0033:46, ZKC asked, "you say you still got plenty of fuel you say you got two hours fuel there?" The pilot responded, "uh yes sir."

At 0038:51, ZKC told the pilot, "uh you can turn left now head to the north heading three six zero." The pilot responded, "left three six zero." ZKC told the pilot, "we'll take you up here about ten miles turn you back in on the localizer one eight."

At 0041:14, ZKC told the pilot, "november nine one whiskey charlie turn left heading two seven zero." The pilot responded, "left two seven zero roger." At 0042:06, ZKC told the pilot, "... continue left turn heading of two zero zero two hundred on the heading." The pilot acknowledged.

At 0042:30, ZKC told the pilot, "… you're one three miles north of the airport heading of one

ninety maintain three thousand two hundred until established cleared i l s runway one eight into joplin you should be joining here in half a mile or so."

At 0045:11, ZKC said, "one charlie whiskey i show you right on the localizer now inbound do you concur with that." The pilot said, "well it's showing slightly left to our left."

At 0045:36, ZKC said, "and one whiskey charlie say your altitude radar contact is lost." The pilot said, "one whiskey charlie two thousand seven hundred descending." ZKC said, "roger and are you established now." The pilot said, "uh i'm about a needle width to the uh left i mean to the uh right of course."

At 0046:36, ZKC asked the pilot, "are you established inbound yet?" The pilot said, "we're close."

At 0047:27, the pilot said, "uh we're showing 2,500 feet."

At 0047:53, ZKC told the pilot, uh one whiskey charlie radar contact is lost change to advisory approved cancel out this frequency if unable you need to cancel out through radio."

At 0048:40, ZKC said, "and november one whiskey charlie if you're still with the center can hear me i show you just about over the airport twenty four hundred feet."

At 0048:47, the pilot said, "uh one whiskey charlie we're going to make a missed approach and go try it again uh never could get the runway lights on i don't think."

At 0050:55, ZKC asked, "ok do you want to try another approach there what kind do you want to try?" The pilot said, "well we'll try that one more time see if we can get down through it." ZKC said, "nine one whiskey charlie roger you can climb and maintain four thousand you're radar contact a mile south of the joplin airport four thousand left heading zero two zero vectors for the i l s runway one eight again." The pilot responded, "that's a left zero two zero you say." ZKC said, "yeah we'll head you up to the northeast again of zero two zero vectors for the i l s runway one eight. The pilot acknowledged.

At 0055:06, ZKC said, "and one whiskey charlie center." There was no response.

At 0055:13, ZKC said, "november nine one whiskey charlie center."

At 0055:16, the pilot said, "one whiskey charlie we're having a little problem here i think we've lost an engine i'm trying to get leveled off here and get back up to four thousand feet." ZKC told the pilot, "one whiskey charlie roger just keep me advised."

At 0056:06, ZKC said, "november nine one whiskey charlie i show you descending below the minimum safe altitude two thousand three hundred over." There were no further transmissions from N91WC.

The last position recorded by ZKC radar for N91WC showed the airplane 3 miles east of JLN in a descent.

Several witnesses in Carterville, Missouri, heard the airplane flying in the area beginning approximately 0015. One witness said he heard the airplane going east, then west, and then back east again. The witness said that when he heard the airplane travel east the second time, it sounded like a single-engine airplane. The witness also said it sounded like the airplane was "awful low".

Another witness saw the airplane just before the accident. She said she could see the lights on the airplane. The witness described the airplane pitch up into a 30-degree nose high climb, roll counterclockwise, and then enter a 45-degree dive toward the ground. The airplane continued its counterclockwise roll until she lost sight of it behind some trees.

A witness in the residence across the street (west) of the garage the airplane struck said he heard the airplane. "It sounded like a nosedive barrel roll. It was loud and fast." The witness said, "It sounded like a loud engine running and it sounded like one engine, not two." The witness said he was heading for his front door when the airplane hit. He said the impact knocked him to the floor. The witness said he got up, opened his front door and saw the tail of the airplane in his yard. The witness' wife said that their house started to shake just before the airplane hit. She said the impact was loud and that she had never heard anything like it before in her life.

PERSONNEL INFORMATION

The 70 year old pilot held a commercial pilot certificate with ratings for single-engine and multi-engine, instrument airplanes, issued on February 24, 1999. The pilot also held a flight instructor certificate with provisions to instruct in single-engine and multi-engine instrument airplanes. The pilot's instructor pilot certificate was due for renewal on April 30, 2002. Additionally, the pilot held a ground instructor's certificate and a control tower operator's certificate.

According to his personal logbook, as of May 26, 2001, the pilot had 6,823.8 total flying hours. Approximately 1,440 hours were in multi-engine airplanes. The pilot's last recorded flight in a multi-engine airplane was on October 26, 2000, in a Cessna 337. The pilot's logbook showed within the 90 days preceding the accident flight, the pilot recorded 4.3 hours of night time. The logbook showed in the 6 months preceding the accident flight, the pilot recorded 4.8 hours simulated instrument time and 1.8 hours actual instrument time. Between December 18, 2000 and May 26, 2001, the pilot flew 9 instrument approaches. The approach flown on May 26, 2001, was an ILS. The pilot completed a biennial flight review on April 17, 2000.

The pilot held a second-class medical certificate dated June 27, 2001. The certificate cited the following limitations: "must wear lenses for distant - possess glasses for near vision, limited

second class/full third class privileges, and miscellaneous restriction assigned."

The pilot's aeromedical records showed he underwent coronary bypass surgery on July 24, 1998. The pilot regained his medical certificate on June 11, 1999. The pilot also suffered from asthma, a condition that predated his heart problems.

The previous owner of the airplane said that she thought the pilot got his checkout in the airplane on July 7, 2001.

AIRCRAFT INFORMATION

The airplane, serial number TE-909, was manufactured in 1973. It was white in color with light and dark blue stripes on the fuselage, vertical stabilizer and wing tips. The airplane had been recently purchased by a businessman who was one of the passengers on board at the accident. Previously, the airplane was owned by the president of an engineering company and was used for that company's business purposes. The previous owner said the airplane was purchased by the new owner around June 27, 2001. The previous owner said that the current owner had in his possession the bill of sale and the paperwork to submit to the Federal Aviation Administration (FAA). The airplane had an annual inspection performed on October 14, 2000. The airplane had a Hobbs meter time of 1,590.6 hours and a total airframe time of 3,388.4 hours at the annual inspection. The Hobbs time recorded at the accident was 1,597.7 hours.

The airplane was equipped with instrument landing system equipment, distance measuring equipment, a localizer receiver, and a global positioning satellite (GPS) receiver.

METEOROLOGICAL INFORMATION

At 0055, the automated weather observing system at JLN, located 3.4 miles west of the accident site, recorded an overcast ceiling of 800 feet above ground level, 10 miles visibility, temperature 70 degrees Fahrenheit (F), dew point 68 degrees F, winds 060 degrees at 7 knots, and altimeter 30.00 inches Hg.

AIDS TO NAVIGATION

The published initial approach fix for the ILS/DME approach to runway 18 at JLN is MITBY intersection, 9.7 nautical miles (nm) from the end of the runway. The final approach course for the localizer is 178 degrees. The glide slope can be intercepted at MITBY at an altitude of 3,000 feet msl. A step down altitude of 2,500 feet msl is published for the localizer. The final approach fix for the localizer is 4.7 nm from the end of the runway. The altitude at the final approach fix is 2,500 feet msl. The minimum descent altitude for the localizer is 1,340 feet msl (375 feet height above airdrome). The decision height (minimum descent altitude) for the ILS approach is 1,165 feet msl (200 feet height above touchdown). The published minimum safe altitude for the approach is 3,100 feet within a 25 nm radius of the outer marker for

runway 13, is 3.7 nautical miles northwest of the field on a 314-degree heading.

AIRPORT INFORMATION

Runway 18 at JLN is equipped with a medium intensity approach lighting system (MALSR) with runway alignment indicator lights and sequenced flashing lights. The runway is also equipped with a precision approach path indicator (PAPI) lighting system. Both the MALSR and PAPI systems are pilot controlled (PCL).

According to the airport manager, the JLN air traffic control tower opens at 0600 and closes at 2100. The runway lights are turned on when it gets dark and remain on all night. Before the tower closes, tower personnel check the pilot controlled lights. The lights operate on the common traffic advisory frequency of 119.8 megahertz. By clicking the microphone button several times, a pilot can increase the brightness intensity of the runway lights from low to medium, and medium to high.

The airport manager said he received notification of the accident at 0104. The manger said that ZKC told him that the pilot told them that he could not get the lights to come on. The manager said he told ZKC that the lights were on. The airport manager said when he arrived at the airport he noticed the airport lights and the beacon were on. He said he used his radio to click up the PCL. The medium and high intensity settings worked. The airport manager said he checked the lighting at the approach end of runway 31. He said he could see the visual lighting to runway 18. Everything was working.

At 0400, field sector inspectors from the FAA arrived and inspected the navigation equipment and the airport lighting. Everything was found operational.

WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board on-scene investigation began on July 13, 2001, at 1245.

The accident site was located in a residential area located in the 400 block of Cedar Street in Carterville, Missouri. The site began at a garage on the north side of a house at 421 Cedar Street, continued along a 229-degree magnetic heading, crossing Cedar Street, continued through the front and side yards of the residence at 418 Cedar Street, continued through the back yard of the residence at 10 Vandella Street, and ending at the yard's west fence; a total distance of 300 feet.

The front half of the garage at 421 Cedar Street was broken downward. The north wall of the garage was broken outward. The collapsed roof over the garage came to rest on top of a car that was parked in the garage. Shingles, truss pieces, insulation, pieces of concrete block, and drywall fanned outward for approximately 70 feet in a 140-degree arc, starting at 225 degrees and circling west and north to 005 degrees.

Approximately 10 feet west of the front of the garage, there was an impact scar in a concrete driveway. The scar measured 17 feet wide, 5 feet long and was 16 inches at its deepest point. The left elevator counterweight and airplane step were found in the impact scar.

The airplane's left propeller was located at the northwest corner of the house's foundation. It was broken torsionally at the base of the flange. The three blades were bent and twisted aft.

A faded-red colored pickup truck, parked along the north side of the driveway, showed a 10-inch wide, 7-inch long, and 5-inch deep dent in the right aft corner of the cab. White parallel paint streaks ran diagonally through the dent. A 4-foot white paint rub was observed on the top rail of the right side bed of the truck.

Approximately 10 feet northwest of the impact scar, there was an 8-foot long section of the airplane's left outboard wing. It was broken longitudinally from leading edge aft to the inboard edge of the aileron. The bottom and leading edge of the wing was bent upward and crushed aft. Several small pieces of wood, similar to the wood in the roof trusses, were embedded in the bottom of the wing skin. The left auxiliary fuel tank was broken open. The left aileron was bent and bucked. Control continuity to the left aileron was confirmed.

Approximately 15 feet southwest of the impact scar, there were the airplane's left engine, engine nacelle, cowling, and left main landing gear. The nacelle was upright and resting on top of a pushed over tree. The nacelle was broken aft longitudinally and crushed. The cowling was broken downward. The left main fuel tank was broken open and fragmented. There was no smell of fuel in the area the left engine nacelle.

Approximately 70 feet from the impact scar along a 229-degree magnetic heading, were the airplane's right engine, right engine mount, and part of the right engine nacelle. The engine was broken aft. A piece of concrete was found embedded in the crankshaft.

Approximately 4 feet south-southwest of the right engine, was a portion of the nose dome. It was broken laterally along the rivet lines. About 10 feet south-southwest of the right engine and 71 feet from the impact scar, was the nose gear, the left flap, some clothing and several personal items. The nose gear strut was broken aft. The nose wheel rim was also broken. The flap was bent and broken.

The airplane's fuselage and empennage rested inverted on the west edge of street and in the front yard of the residence at 418 Cedar Street, approximately 110 feet from the impact scar on a 226-degree magnetic heading. The cockpit and cabin were separated from the fuselage. The remaining top of the airplane was bent inward. The windscreen, pilots' windows, and cabin windows were broken out and fragmented. The window frames were broken aft longitudinally at the cabin roof. The bottom of the fuselage, beginning at the location where the aft cabin wall attaches, was torn open and crushed aft.

The vertical stabilizer was broken downward at the base. The top forward cap of the vertical stabilizer and rotating beacon were broken aft. The rudder remained attached and showed minor damage. The rudder trim tab was deflected to the right 20 degrees. The right horizontal stabilizer was bent aft approximately 75 degrees at the root, and was crushed and broken. The right elevator was broken out. The left horizontal stabilizer and elevator were bent upward approximately 10 degrees, and were bent and buckled rearward. The bottom of the left elevator showed a 9-inch long tear approximately 16 inches outboard of the inboard edge. The elevator trim tab was deflected up 3 degrees. The left outboard edge of the left elevator was broken aft longitudinally along the rivet line. Flight control continuity to the elevators and rudder were confirmed.

Just west of the fuselage in the front yard of 418 Cedar Street was the right main landing gear, gear door, pieces of the right flap, a 4-foot section of nacelle, and a 28-inch long section of wing spar. Also resting in the front yard of 418 Cedar Street, up against the side of the fuselage was the top portion of a tree that was severed through its 4-inch diameter trunk.

The airplane's right wing rested just south of the aft fuselage section. It was broken longitudinally inboard of the nacelle. The wing was bent and broken upward at the fracture. The right position light was broken out. The upper and lower wing skins showed bends and buckles. A 4-foot long, 12-inch wide dull red paint smear was observed on the bottom wing skin beginning near the tip and running inboard. A piece of garage door track rested on top of the wing. The right aileron remained attached, but was bent and buckled. Flight control continuity to the right aileron was confirmed.

Approximately 120 feet from the impact scar, on a 228-degree magnetic heading, rested the right propeller. The three propeller blades were bent aft and twisted. Two of the blades showed 1/8-inch deep nicks along the leading edge. The outer 5 inches of one propeller blade was broken off chordwise. All blades showed chordwise scratches.

Resting next to the right propeller was the cargo door. It was broken out and bent. In a 10-foot area around the right propeller were clothing, papers, pieces of cabin walls and insulation, and broken Plexiglas.

The main cabin door was located 130 feet from the impact scar on a 229-degree heading. The doorframe was bent aft and broken. The door window was broken out and fragmented. The airplane's right propeller spinner was also located in this area. The spinner was broken out, torn open, and showed rotational scoring marks.

A debris field, beginning at the right propeller and cabin door, fanned out along a 229-degree heading for approximately 110 feet. The debris field was 78 feet at its widest point. Within this area were personal effects, logbooks, cabin insulation and cabin interior wall fragments, pieces of fragmented Plexiglas, tree branches, wood shards, fuel lines, seats, and flight instruments.

Two trees along the wreckage path in the debris field showed discolored and shriveled leaves on their lower branches, to approximately 12 feet above the ground.

At the end of the debris field, 229 degrees and 240 feet from the initial impact scar, rested the remainder of the airplane's cabin and forward fuselage. The fuselage section was found resting on the broken top bar of a chain-link fence. The fuselage section was broken open, twisted, and fragmented. The instrument panel and control pedestal were crushed upward and broken. Cabin seats were broken aft. The right main landing gear wheel was resting south of the forward fuselage.

Surviving flight instruments examined at the accident scene showed the following indications:
Airspeed indicator - 170 knots
Altimeter - 2,420 feet, Kollsman window - 30.20 inches Hg
Attitude indicator - 10 degree right bank turn
Radio magnetic indicator needle - 180 degrees
Turn and bank indicator - 10 degree left bank turn
Vertical speed indicator - 1,900 feet descent

Surviving flight control levers examined at the accident scene were observed in the following positions:
Flap lever - up

Engine control levers examined at the accident scene were observed at the following positions:
Left throttle - midrange
Left mixture knob - lean
Left propeller lever - midrange
Right throttle - midrange
Right mixture knob - destroyed
Right propeller lever - full forward (low pitch)

A second debris field, beginning at the forward fuselage, spanned the back yard of the residence at 10 Vandella Street, until reaching a second chain-link fence at the west edge of the yard. The second debris field contained the fragmented airplane battery, headsets, a flashlight, carpet, a piece of the control column and yoke, and the oxygen tank. The oxygen tank, the farthest recognizable airplane component, rested approximately 290 feet from the impact scar.

The airplane's engines, propellers, fuel selector panel and valves, and GPS receiver were retained for further examination. An examination of the remaining airplane systems revealed no anomalies.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was conducted by the Greene County, Missouri, Medical Examiner at

Springfield, Missouri, on July 14, 2001.

The results of FAA toxicology testing of specimens from the pilot revealed the following volatile concentrations:

>> 14 (mg/dL, mg/hg) ETHANOL detected in blood.
No ETHANOL was detected in muscle or kidney.
>> 4 (mg/dL, mg/hg) ACETALDEHYDE detected in blood.
>> 1 (mg/dL, mg/hg) N-PROPANOL detected in blood.

According to the FAA Toxicology and Accident Research Laboratory, the presence of Ethanol, Acetaldehyde, and N-Propanol are consistent with postmortem putrefaction.

>> DILTIAZEM present in blood and liver.
>> 9.637 (ug/mL, ug/g) THEOPHYLLINE detected in blood.
>> SALICYLAMIDE detected in powder and pills.
>> CAFFINE detected in powder and pills.

Diltiazem is used to control blood pressure. Theophylline is used to treat respiratory problems as emphysema or asthma. It can also be prescribed for patients suffering angina. Salicylamide and Caffine in combination are used as an over-the-counter pain reliever.

TESTS AND RESEARCH

A lineman at the Southland Airport, Sulphur, Louisiana, said that when the airplane departed, it was fully fueled. The lineman said that when the airplane landed at Southland on July 10, the owner told him to top off the fuel tanks. The lineman said he put 41.8 gallons of fuel in the main fuel tanks. The lineman said he visually checked the fuel in the auxiliary tanks. They were full of fuel. The lineman said that the airplane's owner called the airport at 2105 and asked to have the airplane pulled out. He said that the owner's group arrived at the airport at 2215.

The airplane's previous owner said she met with the airplane's current owner to discuss some of the techniques involved in operating it. She recalled that the current owner told her that he was running the fuel tanks to empty before switching and that he was landing the airplane while burning fuel out of the auxiliary fuel tanks. He also asked her, on behalf of the pilot, if the fuel gauges worked. She said she told the current owner that the fuel gauges did work, but that she uses time rather than the gauges to determine when to switch tanks and when to refuel. She also said she told the current owner, "You don't take every drop of fuel out of the tanks before you switch. You have to land on the mains. It's in the POH (Pilot's Operating Handbook)." She said she told him, "You should never land on the auxiliaries." The previous owner described the fuel management technique she used. She said she would takeoff and burn out of the main tanks for 1-1/2 hours or when the needles got to the top of the yellow bands, then she would switch to the auxiliary tanks and burn out of them. She said she would

empty the auxiliary tanks, then go back to the main tanks. She said, "It depends on your flight plan - at what altitude you're going to fly at."

The airplane's King 90B GPS receiver was examined at the FAA Flight Standards District Office, Kansas City, Missouri. The unit had sustained extensive damage. No information could be retrieved from it.

The airplane's engines were examined at Teledyne Continental Motors, Mobile, Alabama, on October 30, 2001. The examination revealed no pre-impact anomalies with either engine that could have precluded normal operation. An examination of the fuel selector valves showed both valves positioned to their respective main fuel tanks.

The airplane's propellers were examined at Hartzell Propeller, Incorporated, Piqua, Ohio, on November 28, 2001. The examination revealed no pre-impact anomalies with either propeller that could have precluded normal operation. The examination of the left propeller revealed blade angles "consistent with normal operation with power ON while at moderate or high airspeed." The examination of the right propeller revealed, "Two blades were twisted toward low pitch. The blade preload plates had multiple impact marks in a wide range of blade angles, some of which were outside of (both above and below) the normal operating range. The wide variety of marks suggests that they occurred from multiple strikes during the impact sequence and are not useful for estimating a pre-impact blade angle. The harsh twisting, bending, and tearing of one blade tip clearly suggests power ON at the time of impact." The Propeller Accident Report is provided as an addendum to this report.

ADDITIONAL INFORMATION

Parties to the investigation were the FAA Flight Standards District Office, Kansas City, Missouri, Raytheon Aircraft Company, Teledyne Continental Motors, and Hartzell Propeller, Incorporated.

The airplane's weight and balance computations were provided by the Raytheon Aircraft Company. Weights of the occupants were obtained from their respective driver's licenses. The computations were based on the airplane having full fuel and the female passengers seated in the back of the airplane.

	Weight (lbs)	Arm (inches)	Moment (lbs-inches)	
Airplane Basic Empty Weight	3,660.3	78.3	286,731.7	
Fuel Onboard Main	444.0	75.0	33,300.0	
Fuel Onboard Auxiliary	372.0	93.0	34,596.0	
Pilot & Passenger 1	425.0	87.0	36,975.0	
Passengers 2 & 3	350.0	128.0	44,800.0	
Passengers 4 & 5	286.0	152.0	43,472.0	
Baggage	50.0	180.0	9,000.0	

Total at Takeoff	5,582.3	87.58	488,874.7

According to the E-55 Pilot's Operating Handbook (POH), the maximum takeoff weight (MToW) published is 5,300 pounds. The center of gravity range for the airplane at MtoW is 78.0 inches forward to 86 inches aft. The published weight and balance table in the POH indicates that the center of gravity will tend to move aft as fuel is consumed.

The POH Endurance Profile for the 136-gallon usable fuel load, assuming a full-throttle power setting (2,300 RPM, 24 inches Hg manifold pressure), standard day (ISA), and a pressure altitude of 6,000 feet msl, indicates the airplane would have an endurance of approximately 4 hours. The airplane departed Sulphur, Louisiana, on July 12, 2001, at approximately 2230. The accident occurred on July 13, 2001, at 0057. This would be approximately 2 hours and 27 minutes of airplane operation. According to the Raytheon Aircraft Company, the higher-than-approved takeoff weight, the aft loading, and the level of experience of the pilot could contribute to higher-than-normal fuel consumption for all phases of flight.

All of the aircraft wreckage and retained components were released and returned to John R. Ashford and Associates, Incorporated, Denison, Texas.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	70,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:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	June 27, 2001
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	April 17, 2000
Flight Time:	6824 hours (Total, all aircraft), 3 hours (Total, this make and model), 6654 hours (Pilot In Command, all aircraft), 35 hours (Last 90 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N91WC
Model/Series:	E-55	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TE-909
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	October 14, 2000 Annual	**Certified Max Gross Wt.:**	5300 lbs
Time Since Last Inspection:	7 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	1597.7 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520-C(7)
Registered Owner:	Earl J. Trahan	**Rated Power:**	285 Horsepower
Operator:	James W. Seaman	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	JLN,981 ft msl	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	00:55 Local	**Direction from Accident Site:**	270°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Overcast / 800 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	22°C / 21°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Sulphur, LA (L75)	**Type of Flight Plan Filed:**	IFR
Destination:	Joplin, MO (JLN)	**Type of Clearance:**	IFR
Departure Time:	22:30 Local	**Type of Airspace:**	Class D;Class E

Airport Information

Airport:	Joplin Regional Airport JLN	**Runway Surface Type:**	Asphalt
Airport Elevation:	981 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	18	**IFR Approach:**	ILS
Runway Length/Width:	5003 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	5 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	6 Fatal	**Latitude, Longitude:**	37.154167,-94.434722

Administrative Information

Investigator In Charge (IIC):	Bowling, David
Additional Participating Persons:	Steven B Davis; Federal Aviation Administration; Kansas City, MO Jim Wesley; Federal Aviation Administration; Kansas City, MO Brain D Cassidy; Raytheon Aircraft Company; Wichita, KS Scott Boyle; Teledyne Continental Motors; Arvada, CO Tom McCreary; Hartzell Propeller, Incorporated; Piqua, OH
Original Publish Date:	September 9, 2002
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=52698