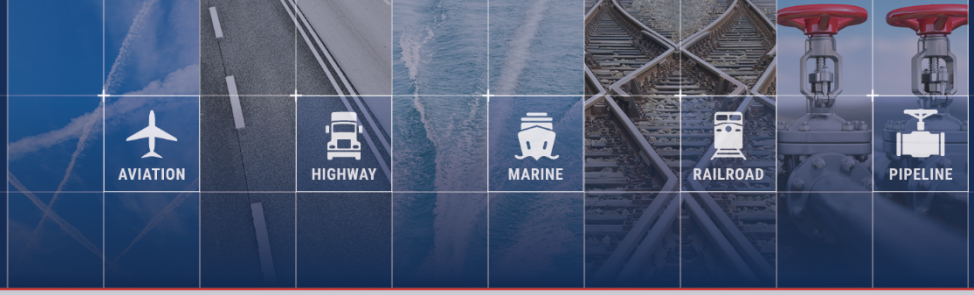

Aviation Investigation Final Report

Location:	Johnson City, Tennessee	**Accident Number:**	MIA02FA039
Date & Time:	December 4, 2001, 10:50 Local	**Registration:**	N50KF
Aircraft:	Beech BE-55-T42A	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

According to eyewitnesses, the Beech Baron was seen flying in formation, with a Cessna 210 at a low altitude, flying below treetop height and fast. As the formation neared the airport, the Beech closed in on the Cessna as the number two position in a right echelon. The pilot of the lead aircraft estimated that their airspeed at the time he executed his pitch-up was about 190 knots. The flight of two appeared to be flying into the "break," military style, for landings on runway 22. About the mid-point of the 3,000 foot runway, the lead aircraft executed an abrupt pitch up and left bank, and the Beech continued forward, colliding with a tree at the departure end of the runway. Some eyewitnesses stated the Beech went inverted following tree strike. The Beech continued airborne until impacting the rear portion of the roof of a two story manufacturing plant and came to rest about 202 feet beyond the building into a tree and vine thicket, and was consumed by post crash fire. No discrepancies were found with the airframe or the engine.

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 altitude clearance above the tree resulting in a collision with the tree, subsequent collision with a building, and the ground.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING

Findings
1. (C) ALTITUDE/CLEARANCE - NOT MAINTAINED - PILOT IN COMMAND
2. OBJECT - TREE(S)
3. OBJECT - BUILDING(NONRESIDENTIAL)

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

Findings
4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On December 4, 2001, about 1050 eastern standard time, Beech Baron B-55-T42A, N50KF, registered to First Coast Flight Service, Inc., operating as a Title 14 CFR Part 91 personal flight, crashed while maneuvering over the Johnson City Stolport, Johnson City, Tennessee. Visual meteorological conditions prevailed and no flight plan was filed. The aircraft was destroyed, a commercial building received substantial damage, and the commercially-rated pilot, the sole occupant, was fatally injured. The flight departed Abington, Virginia, about 35 minutes before the accident.

According to numerous eyewitnesses, the Baron was seen flying in formation, at times in trail and at times abreast of, a Cessna 210 at a low altitude. As the loose formation neared the Johnson City airport, the Baron closed into a parade formation on the Cessna as the number two position in a right echelon. Witnesses stated the formation was flying below treetop height and fast. The pilot of the lead aircraft estimated that their airspeed at the time he executed his pitch-up was about 190 knots. The flight of two appeared to be flying into the "break", military style, for landings on runway 22. At about midlength or slightly past the midlength point of the 3,000-foot runway, the lead aircraft executed an abrupt pitch up and left bank, and the Baron continued forward, colliding with a tree at the departure end of the runway. Some eyewitnesses stated the Baron went inverted following tree strike. The Baron continued airborne until impacting the rear portion of the roof of a two-story manufacturing plant and came to rest about 202 feet beyond the building into a tree and vine thicket, and was consumed by postcrash fire. The Cessna pilot stated that he saw or heard nothing abnormal until he saw the fire and smoke.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate for airplane, single-engine land and multiengine land, with instrument rating, airplane. His most recent FAA second-class medical certificate was issued on September 5, 2000, with no restrictions. Attempts to locate the pilot's personal flight logbook were unsuccessful, but he stated his total flight time as 10,000 hours on his application for his latest medical. The pilot's employer stated the pilot worked as a pilot/salesman for a local aircraft salvage/brokerage in Johnson City. FAA records listed the address of the pilot as Dallas, Texas, however, a Tennessee property data report listed the pilot as having purchased a home in the Johnson City area on April 2, 2001.

AIRCRAFT INFORMATION

At the time of the accident, the aircraft was being returned to its home base following a

prepurchase inspection performed by Mountain Empire Aviation at Virginia Highlands Airport, Abington, Virginia. The prospective buyer had declined the purchase when a review of the airframe logbooks revealed that both wing spars possessed a crack that had been stop-drilled. The cracks appeared not to have been a factor in the accident. Engine compression readings had been checked, and were all within limits. A copy of the prepurchase inspection results are an attachment to this report. Maintenance logs revealed that the aircraft underwent an annual inspection on April 11, 200,1 at a Hobbs hour meter time of 106.1 hours. The Hobbs meter time reported by Mountain Empire Aviation at the time of the prepurchase inspection was 314.2 hours. The Hobbs meter was destroyed in the accident. The total time on the airframe reported at the time of its annual inspection was 9737.9 hours.

METEOROLOGICAL INFORMATION

The Aviation Routine Weather Report, (METAR) for 1053 at the Tri-Cities Regional Airport was; clear skies, 10 statue miles visibility, and calm winds. The altimeter setting was 30.42 inches Hg, and the temperature was 51 degrees F, with the dew point 34 degrees F.
The Tri-Cities airport is located northwest of the accident site about 9 statue miles.

WRECKAGE AND IMPACT INFORMATION

The Baron first collided with a 2-inch diameter branch of a 75 foot hardwood tree at about the 65-foot level, and left its complete left wing tip in the tree. The coordinates of the tree are N36 degrees 21.58 minutes by W082 degrees 18.77 minutes, or about 200 feet from the departure end of pavement of runway 22, slightly left of centerline. Standing on the centerline of runway 22, and looking in the direction of the airplane's path, the perfect outline of the Baron's bottom side was carved in the tree's branches. The path of the aircraft after tree collision continued airborne for 245 feet to a manufacturing plant and over flew most of the 455-feet length of the two-story, flat roofed building, diagonally. Collision between the roof and the aircraft occurred about 53 feet from the rear side of the building, and tore out substantial amounts of aluminum roofing and siding, fiberglass insulation, and fire protection water deluge piping. After leaving pieces of left wing and left wing fuel bladder wedged within the folds of peeled back aluminum roofing, the aircraft yawed left 90 degrees and plunked down behind the building, upright and 90 degrees, (left) from its original direction of flight, bounced, and came to rest 202 feet beyond the building.

The main wreckage site contained only the empennage and most of the right wing and engine nacelle, found upright and in their respective, relative positions. Everything from the nose cone to 40% of the empennage was consumed by post crash fire, except for the charred seat frames. The instrument panel, cockpit console, flight controls, and engine controls were totally consumed. The right wing skin was consumed by fire, leaving wing and nacelle substructure only. The outer 80% of the vertical and horizontal stabilizers escaped burning. The right cockpit entry door and a left cowling half had separated and were found left of the wreckage, unburned. Examination of their respective latches revealed that each was properly secured, precrash. Locations of the left wing pieces were documented, collected, and reassembled on

the ground. All parts were accounted for. The heading from tree collision to the wreckage's final resting point was 205 degrees, magnetic. Examination of damage to the building's aluminum roof revealed that the aircraft was between 75 and 120 degrees of left bank at first impact. The left wing, (in numerous pieces) and left engine were separated from the airframe following collision with the building's steel roof trusses. Both engines had separated and crossed paths. Both propellers had separated and were located right of wreckage path centerline, the left propeller at 69 feet, and the right propeller at 110 feet from the rear of the building. The right engine was 78 feet beyond the main wreckage, left of wreckage path centerline, and the left engine was 96 feet beyond the main wreckage, right of centerline. Furthermost along the wreckage path was the right main landing gear at 120 feet beyond the main wreckage. Post crash fire caused a grass fire that scorched grass and weeds for 200 feet back to the building. The grass fire had the appearance of being fuel fed from the fuel spray following the left wing disintegration.

The fuel selector valves were dug out of the main wreckage rubble and disassembled by a Beechcraft investigator. Although all markings were illegible, the internal positioning of the valves revealed that the left engine was being fed by the left main fuel tank. The right fuel selector valve was found positioned between "main" and "crossfeed". Both flap actuator extensions corresponded to a flaps up position. The left aileron trim actuator corresponded to an aileron setting of 2 degrees of up tab. The right elevator trim tab actuator corresponded to a setting of about 5 degrees down tab. The rudder tab actuator corresponded to a setting of zero tab deflection.

The left propeller separated due to a crankshaft fracture aft of the propeller flange. It was found on the ground in line with bent lengths of heavy, thick walled sprinkler piping. The spinner was heavily dented in both a rotational pattern and a head-on linear pattern. One blade had curled aft and inward 135 degrees and then aft 90 degrees. The other blade exhibited aft bending of about 30 degrees with an "S" bend shape. The leading edges were heavily scarred and each tip had chunks broken off. The right propeller also separated due to a crankshaft fracture aft of the flange. Its spinner exhibited no denting or deformation on half its diameter and rotational denting on the other half. Both blades revealed forward bending of about 40 degrees and showed chord wise sand burnishing that matched the shape and depth of ground scars in the wreckage path prior to the main wreckage.

The IO-470-L engines, serial numbers CS-201073-9-L and CS-192878-R, were removed from the wreckage site, taken to a nearby hangar, and a disassembly examinations were performed. The engines were rotated by their respective crankshaft stubs and revealed proper valve train and piston to magneto timing relationships, as well as continuity of accessory drive gear trains. Left and right magnetos produced spark at all towers for both engines. The spark plugs showed normal coloration per Champion Spark Plugs Check-A-Plug chart AV-27. Lubricating oil appeared of the proper grade and uncontaminated. A slight amount of fuel was found in each fuel manifold valve. The fuel was tested negatively for water content.

The lead aircraft in the formation, a Cessna 210, N5878F, was examined for possible in flight

collision with the Baron. There were no collision marks on the aircraft to suggest inadvertent incursion into either aircraft's air space during formation flight, or at the time of the Cessna's left bank into the downwind leg.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot-in-command, at the East Tennessee State University, Medical Examiner's Office, Johnson City, Tennessee, on January 5, 2003. According to the autopsy report the cause of death was "...Multiple injuries...." No significant pre-existing disease was noted on the autopsy.

Toxicological tests were conducted at the Federal Aviation Administration, Research Laboratory, Oklahoma City, Oklahoma, and revealed, "No ethanol or drugs were detected "

TESTS AND RESEARCH

According to a fueling receipt from Virginia Highlands Airport, Abington, Virginia, N50KF received 54.1 gallons of 100 octane LL aviation fuel prior to its departure for the flight to Johnson City. The airport supplied a contamination check sheet for the fueling facility and the fueling vehicle on the day of the fueling. All checks were noted to have been satisfactory. The check sheet is an attachment to this report.

The AOPA airport directory advises that the Johnson City Stolport has one runway, 4-22, and cautions that trees exist on both ends. It further advises that pattern takeoffs be executed on runway 4 and landings be executed on runway 22.

ADDITIONAL INFORMATION

The wreckage and all its components were released by the NTSB to a representative of the owner on December 6, 2001, and signed for on the NTSB form 6120.15, "Release of Wreckage".

According to FAA Aircraft Records branch, on February 1, 2002, Textron Financial Corporation Receivable Trust Number 2 and Bank of New York, trustee, filed documents of "release of lien" for N50KF.

Pilot Information

Certificate:	Commercial	**Age:**	43,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):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	September 5, 2000
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	10000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N50KF
Model/Series:	BE-55-T42A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	TC-880
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	April 11, 2001 Annual	**Certified Max Gross Wt.:**	5100 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	9738 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-470-L
Registered Owner:	First Coast Flight Service, Inc.	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	TRI,1519 ft msl	**Distance from Accident Site:**	9 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	330°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.42 inches Hg	**Temperature/Dew Point:**	11°C / 1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Abington, VA (VJI)	**Type of Flight Plan Filed:**	None
Destination:	Johnson City, TN (0A4)	**Type of Clearance:**	None
Departure Time:	10:15 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Johnson City Stolport OA4	**Runway Surface Type:**	Asphalt
Airport Elevation:	1550 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	22	**IFR Approach:**	None
Runway Length/Width:	3000 ft / 50 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	36.359722,-82.312774

Administrative Information

Investigator In Charge (IIC):	Stone, A. C.
Additional Participating Persons:	James W Matthews; FSDO FAA; Nashville, TN Stuart E Bothwell; Raytheon Aircraft Co.; Wichita, KS Jerry Stabb; Raytheon Aircraft Co.; Wichita, KS
Original Publish Date:	September 30, 2003
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=53877