

# **Aviation Investigation Factual Report**

Location:	Warsaw, North Carolina	Accident Number:	ATL02FA091
Date & Time:	April 27, 2002, 14:06 Local	Registration:	N2152D
Aircraft:	Beech BE-35	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

# **Factual Information**

## HISTORY OF FLIGHT

On April 27, 2002, at about 1406 eastern daylight time, a Beech BE-35, N2152D, registered to a private owner, operating as a 14 CFR Part 91 personal flight, experienced an in-flight break up near Warsaw, North Carolina. Instrument meteorological conditions prevailed at the accident site. No flight plan was filed. The airplane was destroyed. The commercial pilot and one passenger sustained fatal injuries. The airplane departed Greenville, North Carolina, at 1231.

According to data extracted from a Garmin GPS III Pilot handheld unit, recovered from the wreckage, the flight initially departed Selkirk, New York at 0820, landed in Greenville, North Carolina, at 1202, and departed Greenville, North Carolina, at 1231. According to recovered radar data, at 1405:44, the flight was observed in a right turn at 9000 feet. At 1405:54, the flight was last observed on radar at 4,400 feet. At 1405 the Garmin GPS III Pilot confirmed that the flight was in a very tight right turn at its' last data extraction. The pilot did not establish radio contact with the air traffic control system.

According to two witnesses near the accident site stated that while working in a flowerbed they heard an airplane. A short time later, they twice heard a noise that sounded like thunder. When they heard the noise the second time, they also heard what sounded like an engine sputtering. They looked up to see the airplane but it was initially blocked from view by dark clouds. They ran to the other side of the house where they heard the engine cutting in and out. One witness stated that she saw the airplane blown up and saw it tumbling. The witness observed both wings attached to the airplane, as the airplane started spiraling towards the ground and disappeared from view behind trees.

#### PERSONNEL INFORMATION

Review of information on file with the FAA Airman's Certification Division, Oklahoma City, Oklahoma, revealed the pilot was issued a commercial pilot certificate on March 22, 2000, with ratings for airplane single engine land and sea, and instrument airplane. The pilot held a second-class medical certificate issued on October 16, 2000, with the limitation, "holder shall wear lenses that correct for distant vision and possess glasses that correct for near vision while exercising the privileges of his airman certificate." In addition, the pilot was issued a statement of demonstrated ability on July 3, 1989 for defective distant vision poorer than 20/200 corrected to 20/20 bilaterally. The pilot indicated on his application for the FAA second-class medical certificate that he had accumulated 1,290 hours. The pilot's logbook was not recovered for examination.

## AIRCRAFT INFORMATION

The aircraft maintenance logbooks were not recovered for examination. An airframe and power plant mechanic in Ballston, New York stated that the pilot had rented a hangar at the South Albany Airport for a week, and an annual inspection was started on October 14, 2001. The annual inspection was not signed off due to discrepancies that needed to be completed.

#### METEOROLOGICAL INFORMATION

The nearest weather reporting facility at the time of the accident was Duplin County Airport, Kenansville, North Carolina, and 8.9 nautical miles southeast of the crash site. The 1401 surface weather observation was: wind 140-degrees at 4 knots, visibility 10 miles, ceiling 1,700 broken, 2,400 broken, 5,000 overcast, temperature 64 degrees Fahrenheit, dew point temperature 62 degrees Fahrenheit, and altimeter 30.26.

The National Weather Service Weather Depiction Chart issued for 1500 on April 27, 2002, depicted visual flight rule weather conditions over the northeast from New York southward to the mid-Atlantic coast over North Carolina. Over eastern North Carolina, South Carolina, and across Georgia and northern Florida an area of marginal visual flight rule weather conditions were depicted. The Wilmington, North Carolina station model, which reported instrument Flight Rules weather conditions, with visibility 3/4 mile in moderate rain and an overcast ceiling at 1,300 feet.

The 1353 base reflectivity image depicts a band of level 1 to level 2 intensity thunderstorms extending east through south of the accident site. Another short band of thunderstorms extends southwest through west of the accident site. The 1433 base reflectivity image depicts the line of thunderstorm activity over the accident site.

## WRECKAGE AND IMPACT INFORMATION

The wreckage was located in heavily wooded areas near Jim Sauls Road, Warsaw, North Carolina. The crash debris extended about 1/2 mile long on a heading of 149-degrees magnetic. The left stabilizer was located to the right of the crash debris line and the ruddervator was not attached. A segment of the ruddervator was located to the left of the crash debris line. The upper and lower surface of the right wing and flap assembly was located to the right of the crash debris line. The right main landing gear separated from the wreckage and was located to the right of the crash debris line in a local residence back yard. The main cabin area and left wing came to rest on a heading of 220-degrees magnetic.

Examination of the wreckage revealed the airplane was resting on its right side. The engine assembly and accessories were imbedded in the ground on its right. The propeller assembly was attached to the propeller flange. The spinner exhibited evidence of rotation and crushing. One propeller blade was bent aft 10-inches outboard of the propeller hub and curled aft 110-degrees with a slight twist. The leading edge of the propeller blade had circular indentations

11-inches inboard of the propeller tip. The remaining propeller blade has evidence of a slight "s" bending at the tip of the propeller blade.

The nose wheel was in the retracted position. The cabin was compressed inward on the right side of the fuselage extending aft from the firewall rearward to the rear cabin bulkhead. The cabin structure is twisted to the right. The right wing separated at the wing root. The inboard 17-inches of the right wing was buckled upward about 10-inches. The outboard wing was bent upward 90-degrees with a diagonal crease extending from the leading edge of the wing aft to the main front wing spar. The upper and lower skin of the right wing separated at the front main spar extending from the wing root outboard 87 inches with the right flap assembly. No paint transfer was noted on the upper or lower wing surface. The right main fuel tank was ruptured. The flaps were not extended. The lower wing attachment fitting separated at the attachment bolt holes. The upper wing attachment fitting separated at the attachment bolt holes. The upper wing attachment fitting separated at the attachment bolt holes. The upper wing the right and inward laterally.

The bottom of the fuselage was compressed upward towards the upper aft fuselage skin. The bottom of the aft fuselage is separated at the outboard longitudinal rivet line about five feet long. The aft fuselage rested against a 10-inch diameter tree. The left side of the aft fuselage rivet line separated from the top of the fuselage centerline in a downward direction.

The routing holes for the elevator trim were abraded in the upper aft corner. The left and right stabilizers and ruddervators separated from the fuselage. The right stabilizer and one ruddervator were not located. Both ruddervator bell cranks were present at the main wreckage crash site.

The left wing was accelerated forward and separated at the aft spar. The leading edge of the left wing sustained minor damage. The lower surface of the left wing exhibited evidence of downward bending. Diagonal wrinkling was present from the trailing edge of the left flap starting 22-inches outboard from the trailing edge of the flap extending forward and outboard 76-inches laterally. The left main landing gear was retracted. The aileron and flaps were attached and the flaps were not extended. The inboard forward corner of the left wing was crushed. The left wingtip lower surface was damaged. The left main fuel tank was ruptured.

Airframe components necessary for flight were present at the crash site except for the right stabilizer and one ruddervator. Continuity of the flight control system was confirmed for pitch, roll, and yaw.

Examination of the engine assembly and accessories revealed no evidence of a pre-exiting mechanical failure or malfunction. A small amount of fuel was present in the inlet of the engine driven fuel pump, and from the carburetor vent line back to the left main fuel tank. Continuity of the gear train, valve train, and thumb compression was confirmed. Both magnetos when rotated by hand produced bright blue sparks on all ignition towers. The starter, generator, and right magneto were broken out of the accessory case. The air oil separator sustained impact damage. The fuel pump outlet elbow and mounting flange was broken, the

coupling was intact, and rotated freely by hand. The vacuum pump outlet elbow was broken, the drive coupling was intact, and produced vacuum when rotated by hand.

# MEDICAL AND PATHOLOGICAL INFORMATION

Dr. John Almeida, Medical Examiner, Onslow Memorial Hospital, Department of Pathology, Jacksonville, North Carolina, conducted postmortem examination of the pilot, on April 28, 2002. The reported cause of death was multiple blunt force trauma. Postmortem toxicology of specimens from the pilot was performed by the Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma. Marijuana and prescription drugs were found in the deceased pilot's luggage when searched by the Duplin County Sheriff's Office. The results were negative for carbon monoxide, cyanide, and ethanol. Ephedrine an asthma medication was detected in the blood and urine. Phenylpropanolamine a decongestant and a weight loss product was present in the blood and urine. Triprolidine a sedating antihistamine was present in the blood and urine. Tetrahydrocannabinol (THC) 0.0048 (ug/ml, ug/g) the active substance in marijuana was detected in the blood. Tetrahydrocannabinol carboxylic acid (THC-COOH) the primary inactive metabolite of THC was present in the blood, and 0.1418 THC-COOH was present in the urine.

Review of Ellenhorn's Medical Toxicology, US Government Standards, states on page 397, "Studies of aircraft pilot performance following the smoking of one cigarette containing 2 0 mg of THC suggest that impairment of performance can last as long as 24 hours after smoking. The user may be unaware of the drugs influence."

Dr. John Almeida, Medical Examiner, Onslow Memorial Hospital, Department of Pathology, Jacksonville, North Carolina, conducted postmortem examination of the passenger, on April 28, 2002. The cause of death was multiple blunt force trauma. No specimens were analyzed by the Forensic Toxicology Research Section, Federal Aviation Administration, Oklahoma City, Oklahoma.

## TEST AND RESEARCH

Portions of the right wing, aft fuselage and tail, including the aft end of the fuselage, the left stabilizer, and a portion of the left ruddervator were submitted to the NTSB Materials Laboratory for further analysis. Examination of the right wing revealed it was fractured near the point where it was attached to the fuselage and was partially separated further outboard. Examination of the fractures on the submitted pieces showed that all breaks were typical of overstress separations. No evidence of fatigue cracking, corrosion, or other deterioration was noted associated with any of the fractures from the right wing. Examination of the fracture area near the fuselage showed that the forward and rear spars contained fracture features and deformation indicative of an upward bending load. Further, more, extensive compression buckling was noted in the top part of the spars. Although both the rear and forward spars were fractured at the outboard partial separation, the two primary pieces of structure from this area remained attached to each other through the lower skin. Compression buckling was noted in the vertical legs of both the upper and lower caps of the front spar. At the rear spar, the lower cap had compression buckling and the upper spar cap had only minor deformation, indicative of a fracture primarily under tension loads.

Examination of the left stabilizer revealed no evidence of fatigue cracking, corrosion, or other deterioration. The left forward spar fracture area revealed minor deformation on the upper portion of the spar and downward deformation on the lower portion of the spar, indicative of excessive loads on the stabilizer acting down and to the left. Similar features were noted on the left stabilizer rear spar, except that the spar contained twisting deformation adjacent to the fracture.

A portion of the inboard end of the left ruddervator remained attached to the pushrod through the ruddervator horn. Deformation patterns associated with the skin fractures on this ruddervator piece indicated an aft and downward motion of the remainder of the ruddervator relative to the horn piece.

Visual examination of the right stabilizer forward spar fracture area (only the inboard fracture half was available for examination) revealed minor deformation on the lower portion of the spar and upward deformation on the upper portion of the spar, indicative excessive loads on the stabilizer acting up and to the left. Examination of the rear spar for the right stabilizer showed compression buckling on the upper portion of the spar and minor deformation of the lower portion of the spar. A portion of the right horns pushrod exhibited fracture features and associated deformation typical of overstress tensile fracture.

## ADDITIONAL INFORMATION

The wreckage of N2152D was released to Mr. Steven M. Poss, Atlanta Air Salvage, Griffin, Georgia, on April 30, 2002. Portions of the right wing, aft fuselage and tail, including the aft end of the fuselage, the left stabilizer, and a portion of the left ruddervator were released to Mr. Chris Cartwright, Atlanta Air Salvage on July 30, 2002. The Garmin GPS III Pilot hand held computer was released to the son of the deceased pilot on July 8, 2002.

# **Pilot Information**

Certificate:	Commercial	Age:	54,Male
Airplane Rating(s):	Single-engine land; Single-engine sea	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 Medicalw/ waivers/lim	Last FAA Medical Exam:	October 16, 2000
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:	1290 hours (Total, all aircraft)		

# Aircraft and Owner/Operator Information

Aircraft Make:	Beech	Registration:	N2152D
Model/Series:	BE-35	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	D-3502
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:		Certified Max Gross Wt.:	2725 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	Continental
ELT:	Installed, not activated	Engine Model/Series:	E-225-8
Registered Owner:	Steven J. Finch	Rated Power:	225 Horsepower
Operator:		Operating Certificate(s) Held:	None

# Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
<b>Observation Facility, Elevation:</b>	DPL,137 ft msl	Distance from Accident Site:	9 Nautical Miles
Observation Time:	14:01 Local	Direction from Accident Site:	101°
Lowest Cloud Condition:		Visibility	10 miles
Lowest Ceiling:	Broken / 1700 ft AGL	Visibility (RVR):	
Wind Speed/Gusts:	4 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	140°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.26 inches Hg	Temperature/Dew Point:	18°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipita	tion	
Departure Point:	Greenville, NC (PGV)	Type of Flight Plan Filed:	None
Destination:		Type of Clearance:	None
Departure Time:	12:31 Local	Type of Airspace:	Class G

# Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal	Latitude, Longitude:	35.047222,-78.139999

## **Administrative Information**

Investigator In Charge (IIC):	Smith, Carrol A.
Additional Participating Persons:	Jeffrey S Riddell; FAA FSDO-05; Greensboro, NC Brian D Cassidy; Raytheon Aircraft Company; Wichita, KS Albert Butler; Teledyne Continental; Daphine, AL
Report Date:	October 31, 2002
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=54608

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available here.