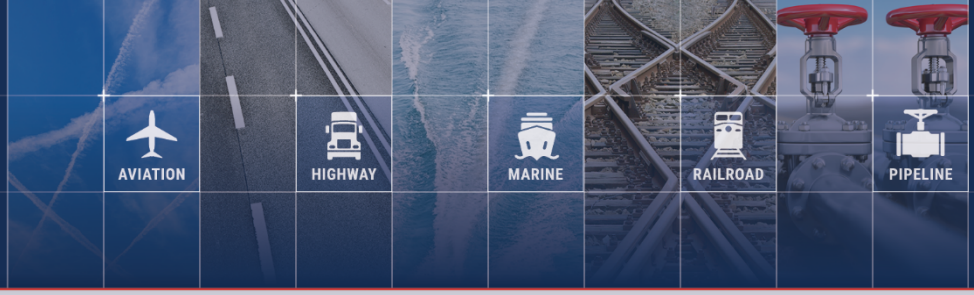

Aviation Investigation Final Report

Location:	Wayne, New Jersey	**Accident Number:**	NYC07FA056
Date & Time:	January 15, 2007, 19:43 Local	**Registration:**	N711SK
Aircraft:	Beech A36	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane approached the destination airport in night instrument meteorological conditions. The pilot received a clearance for the localizer approach, and radar and global positioning (GPS) data revealed the airplane was established on the localizer course centerline. The airplane crossed the final approach fix 200 feet below the minimum descent altitude (MDA) for the fix, and over the next 1.5 miles, descended on an approximate 7-degree approach angle and a 945 feet-per-minute rate of descent. The airplane continued its descent and struck trees on a ridgeline approximately 400 feet below the intermediate MDA for that segment of the approach. A witness at the crash site saw the airplane through thick fog in a wings-level descent just prior to contact with the trees. She stated that the engine ran smoothly and without interruption. Other witnesses described thick fog along the ridgeline throughout the day prior to the accident, with visibility less than 1/8 mile. Examination of the damaged trees, the crash site, and the airplane revealed signatures consistent with engine power at ground contact. Examination of the wreckage revealed no mechanical anomalies. Post accident flight check results for the localizer approach were "Satisfactory." Further examination of air traffic control (ATC) records revealed that the pilot's first takeoff on the day of the accident was 12 hours prior to 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 comply with the published instrument approach procedure, which resulted in controlled flight into terrain.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings
1. OBJECT - TREE(S)
2. (C) IFR PROCEDURE - NOT COMPLIED WITH - PILOT IN COMMAND
3. FATIGUE - PILOT IN COMMAND
4. WEATHER CONDITION - FOG
5. LIGHT CONDITION - DARK NIGHT

Factual Information

HISTORY OF FLIGHT

On January 15, 2007, at 1943 eastern standard time, a Beech A36 Bonanza, N711SK, was destroyed when it impacted trees and a residential street in Wayne, New Jersey, during an instrument approach to Essex County Airport (CDW), Caldwell, New Jersey. The certificated airline transport pilot was fatally injured. The flight originated at Charlotte Douglas International Airport (CLT), Charlotte, North Carolina, about 1659 eastern standard time. Instrument meteorological conditions prevailed, and an instrument flight rules (IFR) flight plan was filed for the personal flight conducted under 14 Code of Federal Regulations Part 91.

According to the published Federal Aviation Administration (FAA) instrument approach procedure, the "LOC RWY 22" approach had an inbound course of 223 degrees. The minimum descent altitude outside the final approach fix, SNAFU locator outer marker (LOM), was 2,000 feet mean sea level (msl). The LOM was 5.3 miles from the runway. The minimum descent altitude for the intermediate segment of the approach, outside KOLLI intersection, was 860 feet msl. If an airplane were equipped to identify KOLLI intersection, the minimum descent altitude for the final segment of the approach inside KOLLI was 540 feet msl. The airport elevation was 173 feet msl.

Radar and voice communication data provided by the FAA revealed that the airplane was cleared for the "LOC RWY 22" approach. At 1936, the pilot reported to the CDW tower controller that he was 8 miles from SNAFU. At 1939, when the airplane was 3 miles from SNAFU, the tower controller instructed the pilot to report when the airplane reached SNAFU. At 1941, the pilot reported that the airplane was over SNAFU. There were no further communications from the pilot.

One witness was traveling in her car when she noticed the airplane with "red and green lights" illuminated, as it approached in a wings-level descent, just above treetop height. The witness said that when she noticed the airplane, she shut off the radio, and rolled down the window. When asked to describe the sound of the engine, she said that it was smooth and continuous with no interruption. According to the witness, "[The engine] ran at a very steady pace. It wasn't up-shifting or down-shifting; it was a very steady hum."

The witness described the angle of descent as shallow, and that the airplane descended sharply "at the end," and exploded at ground contact. When asked if there were any lights on the airplane that resembled headlights, she said, "No, only red and green." The witness described the weather at the time of the accident as "very foggy."

Two witnesses who were in their home heard the airplane approach, but did not see the

accident. They each said that they heard a "jingling" or "rattling" sound before they heard a loud "thump" and then an explosion. They each also described the sound, and said that it began in front of their house and moved up the street towards the crash site.

Several other residents along the street said that they heard the crash, and the subsequent explosion, but did not see or hear the airplane as it approached.

The accident occurred during the hours of night at 40 degrees 55 minutes north latitude, 74 degrees 14 minutes west longitude.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with a rating for airplane multi-engine land, limited to centerline thrust. He additionally held a commercial pilot certificate with a rating for airplane single engine land, multi-engine land, rotorcraft helicopter, and instrument helicopter.

He also held a flight instructor certificate with a rating for airplane single engine, instrument airplane, and rotorcraft helicopter.

The pilot's most recent second-class medical certificate was issued July 14, 2005. He reported 3,249 total hours of flight experience on that date.

Examination of the pilot's logbook revealed that he had logged 4,455 total hours of flight experience, 2,676 hours of which were in single engine airplanes, and 2,000 hours of which were in make and model. He logged 565 total hours of instrument flight experience, 439 hours of which were in actual instrument meteorological conditions. The pilot logged 1,125 total hours of rotorcraft experience.

AIRCRAFT INFORMATION

According to FAA and maintenance records, the airplane was a 1976 model, and had accumulated approximately 4,935 total hours of operation. The airplane's most recent annual inspection was completed June 18, 2006, at 4,796 aircraft hours.

METEOROLOGICAL INFORMATION

At 1953, the weather reported at CDW, 4 miles southwest of the accident site, included scattered clouds at 500 feet, scattered clouds at 1,000 feet, and 4 miles of visibility in mist. The winds were variable at 4 knots. The temperature was 6 degrees Celsius and the dew point was 6 degrees Celsius.

Witnesses who lived around the crash site said that the fog was thick along the street the entire day. One witness described the fog as "soup-like." A police officer who lived in the neighborhood and responded to the site said that the visibility was 1/8 of a mile or less at the

time of the accident.

WRECKAGE AND IMPACT INFORMATION

The airplane was examined at the site on January 15, 2007, and all major components were accounted for at the scene. The airplane came to rest inverted, in the driveway of a private residence at an elevation of 395 feet msl.

The wreckage path was oriented about 220 degrees, and was about 515 feet in length. It was divided into 1-foot increments called wreckage points (WP). The initial impact point (WP zero) was in a tree about 80 feet above the ground. Broken and angularly cut branches, as well as the airplane step, were located beneath the tree.

The second significant tree strike was in a tree about 30 feet tall at WP 377. The initial ground scar was in the middle of the street at WP 442. Four parallel gouge marks were noted in the pavement abeam the ground scar. The length and curvature of the gouges were consistent with the span and the leading edges of the propeller blades.

The main wreckage was located at WP 515, oriented 340 degrees, and was destroyed by impact and a post crash fire. The engine compartment, cockpit, cabin area, and left wing were completely destroyed and consumed by fire. The right wing was largely intact and the right main landing gear was in the down and locked position. The wing section inboard of the landing gear was consumed by fire. The leading edge of the right wing was crushed aft in compression. Two concave dents, perpendicular to the leading edge, were located 2 feet and 4 feet inboard of the wing tip, respectively. Wood and tree bark were observed in the dents. A broken section of tree branch about 4 inches in diameter was located next to the right wing. The size and curvature of the branch was consistent with a dent in the wing's leading edge.

The engine was separated from its mounts, and rested next to the main wreckage. It was heavily damaged by impact and post crash fire.

The propeller hub was separated from the engine and fractured into several pieces. The pieces and all three propeller blades were scattered along the wreckage path between WP 442 and WP 515. All three propeller blades displayed similar twisting, bending, leading-edge gouging, and chord wise scratching.

The tail section was intact and displayed only minor impact and fire damage. The leading edge of the right horizontal stabilizer displayed small, concave dents along the leading edge. The dents had small pieces of wood and tree bark embedded in them. The rudder, elevator, and elevator trim tabs were intact and free to move through their respective ranges.

Flight control cable continuity was established from the cockpit area to all flight control surfaces.

Examination of the wreckage was suspended, and resumed in Clayton, Delaware on January 18, 2007.

All of the engine accessories were removed from the engine. The crankshaft was rotated with a pry bar from the propeller flange. Continuity was established though the powertrain and valvetrain to the accessory section. Valvetrain continuity was confirmed to all valves except the intake valve for the number two cylinder. The number two cylinder pushrod was impact damaged. Compression was confirmed to all cylinders using the thumb method.

The engine driven fuel pump exhibited impact and fire damage. The pump rotated, and the drive coupling was intact and bent to one side. Both magnetos were found separated from the engine, and both exhibited impact and fire damage. The vacuum pump remained attached to the engine. The vacuum drive coupling was thermally damaged, but the rotor and vanes were intact. The propeller governor remained attached to the engine. The induction system remained attached and exhibited impact damage. The spark plugs were removed and appeared gray in color and moderately worn when compared to the Champion AV-27 Check-a-Plug chart.

The electric fuel boost pump was removed from the wreckage for examination. The pump was fire damaged but appeared intact. The pump was connected to a 12-volt battery and the pump motor rotated at high rpm.

The fuel selector valve was removed from the wreckage and examined. The selector handle was in the LEFT TANK detent. The fuel selector screen was installed opposite the prescribed direction, but was free of obstruction or debris. The valve rotated freely to all positions.

TESTS AND RESEARCH

A Garmin GPSMAP 396 portable global positioning system (GPS) receiver was recovered from the wreckage and forward to the National Transportation Safety Board Vehicle Recorders Division. A vehicle performance specialist successfully harvested the tracklog from the accident flight and completed a GPS Special Study.

Examination of the tracklog data revealed that the airplane crossed SNAFU about 200 feet below the published minimum descent altitude of 2,000 feet msl, and the final tracklog point was in the immediate vicinity of the first tree strike, 4 miles from the approach end, and on the extended runway centerline for runway 22 at CDW.

Approximately 1.3 minutes prior to the last recorded position, the airplane had slowed to a groundspeed of 60 knots. The airplane then accelerated to a maximum groundspeed of 96 knots by the end of the recording. During this period, the airplane descended approximately 1,276 feet over a distance of about 1.9 miles, which corresponded to an approximate 7-degree approach angle and a 945 feet-per-minute rate of descent.

A radar study completed by a Safety Board air traffic control (ATC) specialist revealed similar ground track and descent profiles for the accident flight. An examination of ATC records revealed that the accident pilot's first takeoff on the day of the accident was at 0743 EST.

On January 17, 2007, the FAA performed a flight check inspection of the "LOC RWY 22" approach at CDW. The flight check results were "Satisfactory."

MEDICAL AND PATHOLOGICAL INFORMATION

The FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed the toxicological testing of the pilot.

The Supervising Senior Medical Examiner of the Office of the State Medical Examiner, Newark, New Jersey, performed an autopsy on the pilot.

Pilot Information

Certificate:	Airline transport; Commercial; Flight instructor	**Age:**	55,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane single-engine; Helicopter; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	July 1, 2005
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	November 1, 2005
Flight Time:	4455 hours (Total, all aircraft), 2000 hours (Total, this make and model), 33 hours (Last 90 days, all aircraft), 13 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N711SK
Model/Series:	A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Utility	**Serial Number:**	E-877
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	June 1, 2006 Annual	**Certified Max Gross Wt.:**	3600 lbs
Time Since Last Inspection:	139 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4935 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-520-BA
Registered Owner:	Berg-A-King Flying Corporation	**Rated Power:**	285 Horsepower
Operator:	Andrew Coppolo	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	CDW,173 ft msl	**Distance from Accident Site:**	4 Nautical Miles
Observation Time:	19:43 Local	**Direction from Accident Site:**	220°
Lowest Cloud Condition:	Scattered / 500 ft AGL	**Visibility**	4 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.76 inches Hg	**Temperature/Dew Point:**	7°C / 7°C
Precipitation and Obscuration:	N/A - None - Mist		
Departure Point:	CHARLOTTE, NC (CLT)	**Type of Flight Plan Filed:**	IFR
Destination:	CALDWELL, NJ (CDW)	**Type of Clearance:**	IFR
Departure Time:	16:59 Local	**Type of Airspace:**	

Airport Information

Airport:	Essex County Airport CDW	**Runway Surface Type:**	Asphalt
Airport Elevation:	173 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:	22	**IFR Approach:**	Localizer only
Runway Length/Width:	4553 ft / 80 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	40.923889,-74.238609

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Michael R Terre; FAA/FSDO; Teterboro, NJ Tim Rainey; Hawker Beechcraft; Wichita, KS
Original Publish Date:	June 30, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65144