Aviation Investigation Final Report

Location:	STATESVILLE, North Carolina	**Accident Number:**	ATL94FA102
Date & Time:	May 22, 1994, 13:06 Local	**Registration:**	N1551K
Aircraft:	BEECH A36	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

THE FLIGHT WAS ON AN IFR FLIGHT PLAN, AND THE WEATHER IN THE VICINITY WAS VFR CONDITIONS. THE PILOT HAD BEEN CLEARED TO DESCEND FROM 9000 FT TO 7000 FT. RADAR DATA SHOWS THAT THE AIRCRAFT DESCENDED TO 7000 FT, LEVELED OFF MOMENTARILY, AND THEN MADE A STEEP RIGHT TURN AND BEGAN A DESCENT. ATTEMPTS TO COMMUNICATE WITH THE PILOT AFTER THE DESCENT WERE UNSUCCESSFUL. THE AIRCRAFT IMPACTED THE TERRAIN AT A HIGH RATE OF SPEED IN A NOSE DOWN LEFT TURN. THE WRECKAGE WAS DISTRIBUTED ON A HEADING OF 170 DEG, OVER AN AREA APPROX 540 FT LONG. THERE WERE NO RECORDED INSTANCES OF PRIOR MECHANICAL PROBLEMS WITH THE AUTOPILOT SYSTEM.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A LOSS OF CONTROL FOR UNDETERMINED REASON(s).

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: CRUISE

Findings
1. (C) REASON FOR OCCURRENCE UNDETERMINED

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

Factual Information

HISTORY OF FLIGHT

On May 22, 1994, at 1306 eastern daylight time, a Beech A36, N1551K was destroyed following an uncontrolled collision with terrain near Statesville, North Carolina. The commercial pilot was fatally injured in the collision. The aircraft was being operated under the provisions of 14 CFR Part 91 by the pilot. Visual meteorological conditions existed at the time, and an instrument flight rules flight plan was in effect for the flight. The flight departed Arlington, Tennessee at 1021, and was enroute to Mocksville, North Carolina.

The flight was cleared by air traffic control to descend from 9000 feet to 7000 feet for Mocksville. Radar data showed that the aircraft descended to 7000 feet, leveled off momentarily, and then began a descending right turn. No further communications were established with the pilot of the aircraft. Witnesses, located approximately one mile north of the accident site, stated the aircraft passed over at tree top level traveling from south to north. The aircraft then made a sharp climbing course reversal and disappeared over the trees. Another witness, located approximately 1000 feet north of the accident site, stated that the aircraft passed over his residence just above the tree tops. He stated that at that time, the aircraft was in an approximate 90 degree left wing down attitude.

The aircraft contacted a group of trees, impacted the terrain, a lawn mower, and a mobile home.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with airplane single engine and instrument airplane ratings. He held a third class medical certificate with a limitation for the use of eyeglasses while operating aircraft.

No pilot log books were located for the pilot. His medical application dated August 30, 1993 showed at that time, he had approximately 1300 hours of flight experience.

The pilots wife stated that he had suffered a seizure while at home on the evening of January 22, 1994. His personal physician confirmed that the pilot had been admitted to the hospital on January 22, 1994 with what appeared to be a seizure. He stated that all tests to determine the cause of the seizure were negative. He stated that the pilot had been taking an anti inflammatory drug in combination with aspirin, and that he felt that might have caused the problem.

Additional personnel information may be obtained in this report on page 3 under section titled

Pilot Information.

AIRCRAFT INFORMATION

The Beech A36 is a single engine, 6 place, retractable tricycle landing gear airplane.

The aircraft had been modified with a turbonormalizing system in accordance with supplemental type certificate number SA5223NM.

Additional aircraft information may be obtained in this report on page 2 under section titled aircraft information.

METEOROLOGICAL INFORMATION

Visual meteorological conditions existed at the time of the accident. Witnesses in the area reported that the skies were clear, and there was a light wind in the area out of the west.

Additional meteorological information may be obtained in this report on page 3 under section titled Weather Information.

WRECKAGE AND IMPACT INFORMATION

The aircraft impacted the terrain on a heading of 170 degrees. The area of the accident was sparsely populated, and consisted of gently rolling woodlands and pasture land.

There was general disintegration of the aircraft over an area of approximately 540 feet in length. (See Wreckage Distribution Diagram for Details.)

All flight control surfaces were accounted for in the aircraft wreckage. All flight control cable fractures showed signs of typical tensile overload failure.

The aircraft engine suffered severe impact damage which removed all of the engine accessories and the number five and six cylinders. The engine interior appeared clean, and had slight carbon deposits in the combustion areas. The spark plugs were clean, and exhibited little wear when compared with a manufacturer's inspection chart. There was fuel found in the fuel lines attached to the fuel servo.

The propeller blades were separated from the hub. The propeller blades showed signs of "S" bending, and twisting toward low pitch. There were chordwise scratches on the surface of the blades.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy of the pilot was conducted by the North Carolina Office of The Chief Medical

Examiner in Chapel Hill, North Carolina. The Medical Examiner lists the cause of death as multiple traumatic injuries sustained in the aircraft accident.

No toxicological examination was conducted due to the absence of suitable specimens.

TEST AND RESEARCH

A test of the aircraft autopilot system was conducted at the facilities of Allied Signal Aerospace, Incorporated in Olathe, Kansas on July 20, 1994. The test were conducted under the supervision of Aviation Safety Inspector Gary Benson of the Kansas City Federal Aviation Administration Flight Standards District Office. The following is a synopsis of those tests.(See Attached Laboratory Notebook for Details.)

KS 270A Pitch Servo

The servo motor pinion gear was in contact with the edge of the through hole of the base plate. There was a static impact mark on the edge of the through hole.

When an autopilot (AP) clutch engage signal was provided by the test set the engage solenoid engaged normally and it disengaged when the engage signal was removed. The servo motor did not run when the engage signal was applied. The engage solenoid would also disengage when test set power was turned off.

When a servo command signal was applied the servo motor ran in the correct direction for the applied command signal. the servo motor breakout voltage was 1.5 volts in both directions. Linear servo speed control was demonstrated with varying command signals for both directions of rotation.

The trim sense micro switches functioned for both a clockwise and a counterclockwise torque.

KM 275 Pitch Servo Mount

The base plate was warped and there were both static and rotational marks on the inside of the capstan gear housing. There was an impact mark on the upper land of one of the capstan teeth.

The slip clutch torque values were measured at 21 inch pounds clockwise, and 20 inch pounds counterclockwise. The specification in the installation manual is 18 plus or minus 2 inch pounds.

KS 272A Trim Servo

The servo cover was broken exposing the interior components. There was dirt on most of the interior components. A piece of debris was on one of the servo motor brushes. The transfer

relay bracket was bent so that the relay was in contact with the servo motor. There was a crack in the servo housing near the printed circuit board.

When an auto electric trim engage signal was provided by the test set the engage solenoid engaged normally, and it disengaged when the engage signal was removed. The engage solenoid would also disengage when test set power was turned off. When a manual electric trim engage signal was provided by the test set the engage solenoid engaged normally, and it disengaged when the engage signal was removed. The engage solenoid would also disengage when test set power was turned off.

The servo motor would not run in either direction when a manual electric trim command signal was applied. The servo motor would not run in the clockwise direction when an auto electric trim command signal was applied. The servo exhibited a shorted condition when a counterclockwise direction auto electric trim command signal was applied. It was verified that the trim transfer relay worked. The manual electric trim drive voltage was plus 19.1 volts. The specification calls for a voltage between 15.5 volts. and 21.0 volts.

KM 275 Trim Servo Mount

The base plate was warped and there were both static and rotational marks on the inside of the capstan gear housing. There were impact marks on the upper lands of several of the capstan teeth.

The slip clutch torque values were measured at 40 inch pounds clockwise and 40 inch pounds counterclockwise. The specification in the installation manual is 40 plus or minus 3 inch pounds.

KS 271A Roll Servo

The servo base plate was warped and the servo motor pinion gear was missing. There were four static impact marks on the pinion gear through hole of the base plate. There were several cracks in the servo cover. The engage plate assembly was broken and part of the assembly was missing. The engage solenoid housing was broken. One of the servo motor brushes was missing which precluded testing the servo motor.

When an engage signal was provided by the test set the engage solenoid engaged normally and it disengaged when the engage signal was removed. The engage solenoid would also disengage when test set power was turned off.

KM 275 Roll Servo Mount

The base plate was warped, and the capstan assembly and the capstan bearing post were missing. There were both static and rotational marks in the capstan housing.

ADDITIONAL INFORMATION

The aircraft wreckage was released to the owner's insurance representative, Mr. Mark Thompson of USAIG, on May 24, 1994.

Pilot Information

Certificate:	Commercial	**Age:**	51,Male
Airplane Rating(s):	Single-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 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	August 30, 1993
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1300 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	BEECH	**Registration:**	N1551K
Model/Series:	A36 A36	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	E-2515
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	April 7, 1994 Annual	**Certified Max Gross Wt.:**	3650 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	656 Hrs	**Engine Manufacturer:**	CONTINENTAL
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550-B
Registered Owner:	SHEARIN, JACOB C.	**Rated Power:**	300 Horsepower
Operator:		**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:	CLT ,749 ft msl	**Distance from Accident Site:**	60 Nautical Miles
Observation Time:	12:50 Local	**Direction from Accident Site:**	250°
Lowest Cloud Condition:	Clear	**Visibility**	20 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	30°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	26°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	ARLINGTON , TN (LHC)	**Type of Flight Plan Filed:**	IFR
Destination:	MOCKSVILLE , NC (8A7)	**Type of Clearance:**	IFR
Departure Time:	10:21 Local	**Type of Airspace:**	Class E

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:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	35.780456,-80.880683(est)

Administrative Information

Investigator In Charge (IIC):	Sasser, Roff
Additional Participating Persons:	FRED KLEIN; WINSTON-SALEM , NC
Original Publish Date:	April 25, 1995
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=3294