Aviation Investigation Final Report

Location:	FARMINGDALE, New York	**Accident Number:**	BFO95FA097
Date & Time:	September 24, 1995, 17:05 Local	**Registration:**	N3176G
Aircraft:	Beech F33A	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses saw the airplane take off from runway 14. According to them, the airplane went into a steep, nose high attitude, during the initial climb after lift-off, then it entered a spin, descended, and crashed. During an examination of the aircraft after the accident, the elevator trim was found in the full nose-up position. No mechanical malfunction was found during an examination of the main pitch servo and pitch trim servo. No preimpact mechanical failure of the airplane or engine was found. A toxicology test of the pilot's liver specimen showed 2.6 mg/kg Imipramine and 5.9 mg/kg Desipramine; these are antidepressants, which were not approved for use while operating an aircraft.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: failure of the pilot to maintain pitch control of the airplane during the initial climb after lift-off, which resulted in a steep climb, loss of airspeed, and a resultant stall/spin and subsequent crash. A factor relating to the accident was: failure of the pilot to properly set the elevator trim before takeoff.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings

1. (F) ELEVATOR TRIM - IMPROPER - PILOT IN COMMAND
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
4. (C) STALL/SPIN - INADVERTENT - PILOT IN COMMAND
5. USE OF INAPPROPRIATE MEDICATION/DRUG - PILOT IN COMMAND

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

Factual Information

HISTORY OF FLIGHT

On September 24, 1995, at 1705 eastern daylight time, a Beech F33A, N3176G, collided with the ground during takeoff at Republic Airport, in Farmingdale, New York. The certificated private pilot, the sole occupant, was fatally injured. The aircraft was destroyed. The aircraft was operated as a personal flight under 14 CFR Part 91. Visual meteorological conditions prevailed at the time and a flight plan was not filed. The trip originated in Bedford, Massachusetts, on September 23. The accident occurred as the airplane departed Farmingdale, with an intended destination of Bedford, Massachusetts.

There were several witnesses who saw the airplane takeoff and impact the ground west of runway 14. Witness statements are appended. One witness stated "...I viewed an aircraft in a vertical position on upwind leg for runway 14 at about 400 feet. At that point he continued beyond a vertical position... I heard a sound of full power being added (low to high). After that he started a spin straight down (1 1/2 rotations). The aircraft struck the ground in an extreme nose down attitude, folded on itself and exploded. The aircraft struck the ground with the cockpit facing me." The airplane impacted the ground 253 feet off the right side, and 5000 feet down the 6000 foot-long runway. The wreckage was oriented on a magnetic heading of 280 degrees and the forward section was destroyed by fire.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with single engine land privileges and an instrument rating. According to the pilot's log book, he had logged more than 578 hours of flight time, including 146 hours in the accident make and model airplane. The pilot held a valid Third Class Medical Certificate, issued August 16, 1994.

AIRCRAFT INFORMATION

The 1988 Beech F33A airplane, serial no. CE-1271, was equipped with a Continental IO-520-BB engine, serial number 578396. According to the engine log book, the airplane had accumulated over 812 hours of flight time at the time of the most recent annual inspection, that was completed on October 6, 1994.

METEOROLOGICAL INFORMATION

The 1645 eastern daylight time weather observation for Republic Airport, Farmingdale, New York, reported the following conditions:

Sky condition, ceiling 2,000 feet broken; visibility, 30 miles; temperature, 67 degrees Fahrenheit (F); dew point, 47 degrees F; wind out of 100 degrees at 8 knots; and altimeter setting, 30.22 inches Hg.

WRECKAGE AND IMPACT INFORMATION

The airplane impacted the ground 253 feet off the right side, about 5,000 feet down the 6,000 foot-long runway. The wreckage was oriented on a magnetic heading of 280 degrees, and the forward section of the airplane was destroyed by fire. Both wings sustained fire damage. The left wing exhibited leading edge crush. Both wing flaps remained attached to their respective wings. The flap actuator was retracted. The main landing gear push rods were retracted. According to Beech these positions correspond to flaps up and gear up.

The empennage remained intact. Both elevator trim tabs were found in the down position. The elevator trim actuator measured 2.00 inches. According to Beech this corresponds to 27 degrees tab down. The autopilot control head was in the off position. Further examination of the main pirch servo and pitch trim servo is described in the ADDITIONAL INFORMATION section of the narrative.

The engine was located in a crater about 2 feet deep. All six cylinders remained secured to the crankcase. The propeller assembly had separated and was located in the crater. One of the propeller blades was twisted midspan, and exhibited evidence of chordwise scratching. Further examination of the engine revealed that the crankshaft propeller mounting flange was separated at the engine oil seal. The throttle, propeller and mixture controls were positioned full forward. The magnetos, engine starter, and some accessories separated. The magnetos did not rotate when turned by hand. The fuel pump was removed and the coupler drive was intact. The propeller governor sustained impact damage. The engine did not rotate when turned by hand. A postaccident engine teardown was conducted at Teledyne Continental Motors facility, in Mobile, Alabama. A summary of the teardown is located in the ADDITIONAL INFORMATION section of the narrative.

MEDICAL/PATHOLOGICAL INFORMATION

A Medical Examination of the pilot was performed by Dr. Palutke, Medical Examiner of the Suffolk Medical Examiner's Office, Hauppauge, New York, on September 25, 1995. Toxicological examination was conducted for the Federal Aviation Administration (FAA) Aeronautical Center by the Department of Defense Armed Forces Institute of Pathology, in Washington, D. C. Toxicological test results were positive for drugs (antidepressants). The tests revealed the following:

Imipramine was detected in the liver by gas chromatography and confirmed by gas chromatography/mass spectrometry. The liver contained 2.6 mg/kg of imipramine as quantitated by gas chromatography.

Desipramine was detected in the liver by gas chromatography and confirmed by gas chromatography/mass spectrometry. The liver contained 5.9 mg/kg of desipramine as quantitated by gas chromatography.

According to the 1995 Physician's Desk Reference (PDR), Imipramine is used to treat symptoms of depression. The PDR states that imipramine "...may impair the mental and/or physical abilities required for the performance of potentially hazardous tasks, such as operating an automobile or machinery..."

ADDITIONAL INFORMATION

Main Pitch Servo and Pitch Trim Servo Examination

The main pitch servo and the pitch trim servo were removed from the wreckage and sent to Allied Signal Aerospace, in Olathe, Kansas. On March 26, 1996, a component examination and functional test were conducted under the supervision of the FAA. The examination revealed that the pitch servo had no visible impact damage. According to the Allied Signal investigator, the unit exhibited fire damage and corrosion due to fire suppressant chemical intrusion. The cover was removed and the unit was inspected prior to functional testing. The engage solenoid was in the disengaged position and the solenoid plunger moved freely. When powered, the solenoid engaged and disengaged normally.

According to the Allied Signal investigator, the servo motor drives in both directions as commanded, and the servo speed was measured and found to be within specifications. He reported that the servo feedback tachometer had a bent shaft, which was straightened to allow engagement of the tachometer drive gear to the motor gear. He stated that the tachometer appeared to be functional. The Allied Signal investigator indicated that the autotrim sense switches were tested and found to be electrically non-functional, i.e. the switches could be activated mechanically, but electrical continuity was not measured in the activated (closed) position. He stated that the servo clutch was initially frozen. After breaking free the stuck clutch, the torque was measured at 15/17 inch pounds of torque. Specification is 16 +/-2 inch pounds for this application.

The Allied Signal investigator reported that the pitch trim servo sustained fire damage and chemical corrosion damage, similar to the main pitch servo. The cover was removed and a visual inspection conducted. The investigator stated that the engage solenoid was in the disengaged position and the solenoid plunger moved freely. Power was applied to the unit, and the solenoid and the motor functioned normally in both the autotrim and manual electric trim modes. The manual electric trim regulator voltage was measured at 15.2 volts d.c. According to the manufacturer, the specification range for this servo part number is 14 to 17 volts d.c. The Allied Signal investigator reported that manual trim motor speed was measured at 2 RPM, which is correct for this application. The servo clutch was found to operate within its normal torque specifications.

Engine Teardown/Examination

The engine was shipped to the Teledyne Continental Motors (TCM) facility, in Mobile, Alabama. On February 22, 1996, an engine examination was conducted under the supervision of the FAA. According to the Product Analysis Manager from Continental, the engine sustained fire and impact damage. The crankcase exhibited impact damage on the right side. The crankshaft main bearings exhibited normal operational signatures. The engine crankshaft flange and the crankshaft propeller flange separated.

The magnetos, fuel pump and fuel manifold were disassembled. According to the manufacturer's representative, all internal components appeared normal with the exception of fire and impact damages. The examination revealed normal operational signatures throughout the engine. The TCM representative stated that all internal components appeared lubricated. He reported that the teardown/examination did not disclose evidence of mechanical malfunction that would have precluded operation. See details of engine examination, attached.

The wreckage was released to Kevin M. Olsen, of Olsen and Associates Inc., Insurance Claims Specialists on February 20, 1996.

Pilot Information

Certificate:	Private	**Age:**	65,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 16, 1994
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	578 hours (Total, all aircraft), 146 hours (Total, this make and model), 55 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft), 6 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3176G
Model/Series:	F33A F33A	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	CE-1271
Landing Gear Type:	Retractable - Tricycle	**Seats:**	5
Date/Type of Last Inspection:	October 6, 1994 Annual	**Certified Max Gross Wt.:**	3400 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	Continental
ELT:	Installed, activated	**Engine Model/Series:**	IO-520-BB
Registered Owner:	VINCENT BAJAKIAN	**Rated Power:**	285 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:	FRG ,82 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	16:45 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Unknown	**Visibility**	30 miles
Lowest Ceiling:	Broken / 4000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	19°C / 8°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(FRG)	**Type of Flight Plan Filed:**	None
Destination:	BEDFORD , MA (BED)	**Type of Clearance:**	None
Departure Time:	17:03 Local	**Type of Airspace:**	Class D

Airport Information

Airport:	REPUBLIC FRG	**Runway Surface Type:**	Asphalt
Airport Elevation:	82 ft msl	**Runway Surface Condition:**	
Runway Used:	14	**IFR Approach:**	None
Runway Length/Width:	6827 ft / 150 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:**	40.730953,-73.440734(est)

Administrative Information

Investigator In Charge (IIC):	Drake-nurse, Beverley
Additional Participating Persons:	RON HUGHES; FARMINGDALE , NY DALE CARTER; MOBILE , AL JOHN WARD; WICHITA , KS PHIL GOETTEL; OLATHE , KS
Original Publish Date:	November 11, 1996
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=9005