# Aviation Investigation Final Report

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| **Location:** | Sutton, West Virginia | **Accident Number:** | NYC06FA162 |
| **Date & Time:** | June 30, 2006, 10:30 Local | **Registration:** | N6867T |
| **Aircraft:** | Cessna 310D | **Aircraft Damage:** | Destroyed |
| **Defining Event:** | | **Injuries:** | 2 Fatal |
| **Flight Conducted Under:** | Part 91: General aviation - Personal | | |

## Analysis

After performing a preflight inspection of the airplane and taxiing to the end of the 4,000-foot long runway, the pilot began the takeoff roll. According to witnesses, before reaching the mid-point of the runway the airplane became airborne in a "tail low" pitch attitude. Shortly thereafter, the airplane banked and drifted left, over the grass, and then it banked and drifted right, but did not drift far enough to be back over the runway pavement. The airplane then began to "wobble" laterally, and "mush" or "stall" as it climbed out. The airplane subsequently struck trees located about 450 feet from the departure end of the runway in an approximate 30-degree left bank. The trees were 250 feet left of the runway centerline and 70 feet above the airport elevation. Examination of the wreckage revealed no evidence of any preimpact failures or malfunctions.

## 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 sufficient airspeed during takeoff-initial climb to avoid a stall/mush. A factor associated with the accident was the inadvertent stall/mush.

### Findings

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

Findings

1. (C) AIRSPEED(VS) - NOT MAINTAINED - PILOT IN COMMAND
2. (F) STALL/MUSH - INADVERTENT - PILOT IN COMMAND
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Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. OBJECT - TREE(S)

## Factual Information

HISTORY OF FLIGHT

On June 30, 2006, at 1030 eastern daylight time, a Cessna 310D, N6867T, was destroyed when it impacted trees and terrain after takeoff from Braxton County Airport (48I), Sutton, West Virginia. The certificated private pilot and the passenger were fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the flight destined for Hampton Roads Executive Airport (PVG), Newport News, Virginia. The personal flight was conducted under 14 CFR Part 91.

A pilot based at Braxton County Airport, stated that the accident airplane had arrived the night prior to the accident, and that he had assisted the accident pilot in securing the airplane. The accident pilot stated that he was flying from Iowa to Newport News, Virginia. He had landed at Braxton County Airport due to weather conditions, and hoped to depart later in the evening. After obtaining a weather briefing from a flight service station, the pilot elected to stay the night.

A witness observed the pilot on the morning of the accident as he performed a preflight inspection of his airplane, boarded with his passenger, and then started the engines. The airplane then back-taxied to the end of runway 19, and paused for a period of time in the runup area. Shortly thereafter, it began the takeoff roll. As the airplane approached the windsock, airborne and about halfway down the runway, it banked and drifted left, over the grass. The airplane then banked and drifted right, but did not drift far enough to be back over the runway pavement. The airplane then began to "wobble" laterally as it climbed out. The witness then lost sight of the airplane behind trees, and shortly thereafter, heard the sounds of impact and saw a plume of smoke.
Another witness was working in an area adjacent to the runway, and was familiar with normal airport operations. He observed that during the takeoff the airplane was in a "tail low" pitch attitude, and as it climbed, it appeared to "mush" or "stall." He then saw the right wing of the airplane strike a tree in the vicinity of the accident site. He described the engine sounds as "normal."

A third witness did not see the airplane, and did not hear its engines, but reported hearing 3 loud "pops" similar in sound to gunshots around the time of the accident. Moments later he heard a loud sound similar to a "dump truck crashing."

Local firefighters responded to the scene to render assistance and extinguish the post-crash fire.

The accident occurred during the hours of daylight at 38 degrees, 40.819 minutes north

latitude, 80 degrees 39.122 minutes west longitude.

## PERSONNEL INFORMATION

The pilot held a private pilot certificate with ratings for airplane single engine land, airplane single engine sea, and airplane multiengine land. His most recent FAA third class medical certificate was issued on September 14, 2005. A partially fire consumed pilot logbook was recovered from the wreckage. Examination of the logbook revealed that the pilot recorded 3,339 hours of flight experience in single engine airplanes, and 459 hours of flight experience in multi engine airplanes.

## AIRCRAFT INFORMATION

The accident airplane was a Cessna 310D, manufactured in 1960. A review of the airplane's maintenance records revealed the most recent annual inspection was completed on September 12, 2005. At that time the airplane had accrued 4,012 total hours of operation.

The Cessna 310 Owner's Manual provided a chart for computing distances required for takeoff. Assuming the takeoff was performed from a hard surface runway, with a 15 degree flap setting, the airplane loaded to a 4,400 pound gross weight, no wind, a pressure altitude of 2,500 feet, and a temperature of 75 degrees Fahrenheit; about 850 feet of ground roll was required for takeoff, and 1,500 feet was required to clear a 50-foot obstacle.

## METEOROLOGICAL INFORMATION

The weather reported at Upshur County Regional Airport (W22), Buckhannon, West Virginia, about 26 nautical miles northeast, at 1040, included clear skies, winds 200 degrees true at 4 knots, temperature 68 degrees Fahrenheit, dewpoint 57 degrees Fahrenheit, and an altimeter setting of 30.19 inches of mercury.

## AIRPORT INFORMATION

Braxton County Airport had a single 4,000-foot-long by 60-foot-wide runway, oriented in a 01/19 configuration. The airport elevation was 1,275 feet.

## WRECKAGE AND IMPACT INFORMATION

The initial impact point was a tree about 40 feet tall, at an elevation about 70 feet above the airport elevation. The tree was about 450 feet from the departure end of runway 19, on a heading of 160 degrees magnetic, and was about 250 feet left of the extended runway centerline. The outboard portion of the right wing, including a portion of the right main fuel tank, was lodged at the top of the tree. Examination of the right wing revealed a concave depression, about 5 inches in diameter, at an angle corresponding to about 30-degrees left bank at impact. The right main fuel tank was ruptured, and evidence of fire existed in and at

the base of the tree.

About 50 feet beyond the initial impact point, in a direction about 145 degrees magnetic, was another portion of the right wing, about 3 feet in length, which included the right auxiliary fuel tank. The tank was compromised, and almost completely consumed by fire. The empennage of the airplane was located about 80 feet further along the wreckage path, in a direction of 150 degrees magnetic, and was entangled and hanging from a tree.

The main wreckage was located about 80 feet beyond the empennage, in a direction about 160 degrees magnetic, and had come to rest oriented in a direction of about 330 degrees magnetic. A portion of the right wing, inboard and inclusive of the engine nacelle, remained attached to the fuselage. The left wing and a portion of the left engine nacelle was located adjacent to the fuselage, and was separated at the wing root. The left engine had separated from the wing, and was located about 100 feet beyond the fuselage, in a direction of 160 degrees magnetic. Numerous broken and burned tree branches were located along the wreckage path. Several of the severed tree branch portions, some up to 1 inch in diameter, exhibited 45-degree angled cuts.

The majority of the fuselage, including the cockpit and cabin, was consumed by fire. Flight control continuity was confirmed from the control column to the aft portion of the fuselage, where the empennage had separated, and to the separated portions of both wings. Continuity was further established from the separated outboard portions to all the respective flight controls, and all cable breaks displayed signatures consistent with overload failure. The elevator trim tab was deflected to the full down, or nose up, position, and the rudder trim tab was deflected 15 degrees nose right. Both of the trim tab cables displayed signatures consistent with overload failure. The nose landing gear was separated from its attachment points and the respective landing gear doors were open. Both main landing gear were collapsed and dislodged from their respective wells, and both actuators were in the down position. The landing gear gearbox and linkages were consistent with a landing gear down position. Examination of the flap actuation mechanism revealed signatures consistent with a 15-degree flap setting.

Both the left and right cockpit fuel selector handles were selected to the main tank positions. The right fuel selector valve was selected to the right main fuel tank. The right gascolator was attached and intact, but one of the fuel lines leading to it was compromised and exposed. Examination of the fuel inside the gascolator revealed the presence of water. The left gascolator was not located. The left auxiliary fuel tank was intact, and contained about 5 gallons of fuel, which was absent of debris or water.

The left propeller was sheared from the engine aft of the propeller flange, and both fracture surfaces exhibited signatures consistent with torsional overload. The propeller was located under the aft portion of the main fuselage. One blade was fire damaged, and exhibited s-bending. The other blade was bent aft and exhibited bending 4 inches from the tip. Both blades were oriented roughly perpendicular to the plane of rotation. Disassembly of the

propeller revealed a witness mark on one of the blade's preload plate. The witness mark was consistent with contact between the preload plate and the opposite blade's pitch change knob, and equated to an approximate 13-degree blade angle at impact.

The left engine was inverted, and most of the cowling was intact. The crankshaft of the engine was rotated through the accessory section, and continuity of the valvetrain and powertrain were confirmed. Compression was obtained on all cylinders. Rotation of the crankshaft also produced spark on all six of the top magneto terminal leads. Two of the six top sparkplugs were oil soaked, and the other four were light gray in color. All six fuel injector nozzles were free of obstruction. Examination of the fuel manifold valve revealed that it contained fuel, and that the fuel was absent of water. The fuel manifold valve screen was absent of debris.

The right propeller remained attached to its respective engine. Both blades were oriented roughly parallel with the plane of rotation and exhibited leading edge gouging. One blade was missing a portion about 1/2-inch from the tip, was curled and bent aft, and exhibited chordwise scratches. The other blade had a 1-inch tear, and was fire-damaged.

The right engine remained attached to its nacelle, and was fire-damaged. The crankshaft of the engine was rotated by hand at the propeller, and continuity of the valvetrain and powertrain were confirmed. Compression was obtained on all cylinders. Rotation of the crankshaft also produced spark on all six of the top magneto terminal leads. The sparkplugs were light gray in color. All six fuel injector nozzles were free of obstruction. Examination of the fuel manifold valve revealed that it contained trace amounts of fuel, and that the fuel screen was absent of debris.

The wreckage was released to a representative of the owner's insurance company on January 3, 2007.

## Pilot Information

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| **Certificate:** | Private | **Age:** | 76,Male |
| **Airplane Rating(s):** | Single-engine land; Single-engine sea; Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | |
| **Instrument Rating(s):** | None | **Second Pilot Present:** | No |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | Yes |
| **Medical Certification:** | Class 3 With waivers/limitations | **Last FAA Medical Exam:** | September 1, 2005 |
| **Occupational Pilot:** | No | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 3798 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

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| **Aircraft Make:** | Cessna | **Registration:** | N6867T |
| **Model/Series:** | 310D | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | | **Amateur Built:** | |
| **Airworthiness Certificate:** | Normal | **Serial Number:** | 39167 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 4 |
| **Date/Type of Last Inspection:** | September 1, 2005 Annual | **Certified Max Gross Wt.:** | 4830 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 2 Reciprocating |
| **Airframe Total Time:** | 4012 Hrs as of last inspection | **Engine Manufacturer:** | Continental |
| **ELT:** | Installed, not activated | **Engine Model/Series:** | IO-470-D |
| **Registered Owner:** | On file | **Rated Power:** | 260 Horsepower |
| **Operator:** | On file | **Operating Certificate(s) Held:** | None |

## Meteorological Information and Flight Plan

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| **Conditions at Accident Site:** | Visual (VMC) | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | W22,1275 ft msl | **Distance from Accident Site:** | 0 Nautical Miles |
| **Observation Time:** | 10:40 Local | **Direction from Accident Site:** | 340° |
| **Lowest Cloud Condition:** | Clear | **Visibility** | |
| **Lowest Ceiling:** | None | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | 4 knots / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | 200° | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | 30.19 inches Hg | **Temperature/Dew Point:** | 20°C / 14°C |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Sutton, WV (48I ) | **Type of Flight Plan Filed:** | None |
| **Destination:** | Norforlk, VA (PVG ) | **Type of Clearance:** | None |
| **Departure Time:** | 10:30 Local | **Type of Airspace:** | |

## Airport Information

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| **Airport:** | Braxton County Airport 48I | **Runway Surface Type:** | Asphalt |
| **Airport Elevation:** | 1275 ft msl | **Runway Surface Condition:** | Dry |
| **Runway Used:** | 19 | **IFR Approach:** | None |
| **Runway Length/Width:** | 4000 ft / 60 ft | **VFR Approach/Landing:** | None |

## Wreckage and Impact Information

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| **Crew Injuries:** | 1 Fatal | **Aircraft Damage:** | Destroyed |
| **Passenger Injuries:** | 1 Fatal | **Aircraft Fire:** | On-ground |
| **Ground Injuries:** | N/A | **Aircraft Explosion:** | None |
| **Total Injuries:** | 2 Fatal | **Latitude, Longitude:** | 38.680278,-80.651947 |

## Administrative Information

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| **Investigator In Charge (IIC):** | Diaz, Dennis |
| **Additional Participating Persons:** | Thomas E Fye; FAA/FSDO; Charleston, VA<br>Thomas J Teplik; Cessna Aircraft Company; Wichita, KS<br>Jason Lukasik; Teledyne Continental Motors; Mobile, AL<br>Tom McCreary; Hartzell Propeller Inc.; Piqua, OH |
| **Original Publish Date:** | March 26, 2007 |
| **Last Revision Date:** | |
| **Investigation Class:** | Class |
| **Note:** | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=64021 |