Aviation Investigation Final Report

Location:	Montgomery, New York	**Accident Number:**	NYC07FA047
Date & Time:	December 14, 2006, 13:10 Local	**Registration:**	N8FH
Aircraft:	Cessna 310Q	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The accident flight was the airplane's first flight after an annual inspection was completed. After takeoff, the airplane's pitch oscillated as it climbed approximately 200 to 500 feet agl. The airplane then made a left turn, descended, and impacted trees upright. Review of maintenance records, and an interview with a mechanic that worked on the airplane, revealed that the airplane's elevator trim actuator was removed and replaced as part of the maintenance associated with the annual inspection. In total, four mechanics worked on the airplane, one of which held and inspector authorization (IA), and endorsed the aircraft logbooks at the completion of the annual inspection. Examination of the right horizontal stabilizer revealed that the upper elevator trim cable crossed the lower elevator trim cable as they traveled from the elevator trim actuator, to the pulley located at the center of the empennage. Review of a Cessna Aircraft Company Illustrated Parts Catalog revealed that there should be no crossing of the elevator trim cables traveling from the elevator trim actuator, to the pulley at the center of the empennage. In addition, the elevator trim tab was found in the full (10-degree) nose down position.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Improper maintenance performed on the airplane by maintenance personnel, and the failure of the mechanic with an inspection authorization (IA) to verify the maintenance work performed, which resulted in a reverse elevator trim system, and subsequent loss of control and collision with trees during the initial climb from takeoff.

Findings

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

Findings
1. FLT CONTROL SYST,ELEVATOR TRIM/TAB CONTROL - REVERSED
2. (C) MAINTENANCE - IMPROPER - OTHER MAINTENANCE PERSONNEL
3. (C) MAINTENANCE,ANNUAL INSPECTION - NOT VERIFIED - OTHER MAINTENANCE PERSONNEL

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
4. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On December 14, 2006, about 1310 eastern standard time, a Cessna 310Q, N8FH, was substantially damaged when it impacted trees shortly after takeoff from Orange County Airport (MGJ), Montgomery, New York. The certificated commercial pilot was fatally injured. Visual meteorological conditions prevailed for the planned flight to Morristown Municipal Airport (MMU), Morristown, New Jersey. No flight plan was filed for the personal flight conducted under 14 CFR Part 91.

The accident flight was the airplane's first flight after an annual inspection was completed. Witnesses reported that the accident pilot performed a preflight inspection of the airplane, and conducted an engine run-up prior to taxi. The airplane then taxied to runway 26, a 3,672-foot-long, 100-foot-wide, asphalt runway. After departing runway 26, the airplane's pitch oscillated as it climbed approximately 200 to 500 feet above ground level (agl). The airplane then made a left turn, descended, and impacted trees upright. The airplane subsequently came to rest in a wooded marsh area, about 1 mile southeast of the airport.

The accident occurred during the hours of daylight; located about 41 degrees, 29.42 minutes north latitude, and 74 degrees, 14.98 minutes west longitude.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate, with ratings for airplane single engine land, airplane multiengine land, and instrument airplane. He also held a private pilot certificate, with a rating for airplane single engine sea. The pilot's most recent Federal Aviation Administration (FAA) second class medical certificate was issued on September 27, 2004. At that time, the pilot reported a total flight experience of 4,600 hours.

The pilot's logbook was recovered; however, the most recent entry was a biannual flight review, dated May 2, 2003.

AIRCRAFT INFORMATION

According to the airframe and engine logbooks, the airplane's most recent annual inspection was completed on December 6, 2006. At that time, the airplane had accumulated 3,949.8 hours of operation.

The airplane was based at MMU. During the approximate 6-month period prior to the accident flight, the airplane remained at MGJ for maintenance associated with the most recent annual

inspection. According to aircraft logbooks and a maintenance invoice, the elevator trim actuator was removed and replaced as part of that maintenance.

A mechanic at the maintenance facility, stated that he and three other mechanics worked on the airplane during that time. After the maintenance was completed, a mechanic with an inspection authorization (IA) endorsed the aircraft logbooks. A ground test was performed on the airplane after the maintenance was completed. The mechanic further stated that no flight test was performed as he and the other three mechanics were not qualified to fly the airplane.

METEOROLOGICAL INFORMATION

The reported weather at MGJ, at 1254, was: wind from 220 degrees at 10 knots; visibility 10 miles; sky clear; temperature 53 degrees Fahrenheit; dew point 45 degrees Fahrenheit; altimeter 29.96 inches Hg.

WRECKAGE AND IMPACT INFORMATION

The wreckage was examined on December 15 and 16, 2006. All major components of the airplane were accounted for at the scene. A debris path was observed, which originated with severed trees, and extended on an approximate 090-degree course for about 150 feet. The debris path terminated at the main wreckage. Fire damage was noted to the vegetation along the debris path.

The main wreckage included the cockpit, cabin, empennage, right horizontal and vertical stabilizers, and the right engine. The main wreckage was oriented about a 060-degree heading. The left engine had separated, and was located about 20 feet northwest of the main wreckage. The left wing separated near the left engine. The right wing had separated outboard of the engine. The empennage remained intact, but the tailcone and left horizontal stabilizer had separated. Both wingtips, the tailcone, and the left horizontal stabilizer were located along the debris path. The landing gear was extended, and the nose gear had separated. The flaps remained attached, and were extended.

The right horizontal stabilizer remained attached to the empennage, and the elevator trim actuator was located in the right horizontal stabilizer. Further examination of the right horizontal stabilizer revealed that the upper elevator trim cable crossed the lower elevator trim cable as they traveled from the elevator trim actuator, to the pulley located at the center of the empennage. Review of a Cessna Aircraft Company Illustrated Parts Catalog revealed that there should be no crossing of the elevator trim cables traveling from the elevator trim actuator, to the pulley at the center of the empennage. In addition, the elevator trim tab was found in the full (10-degree) nose down position.

Both propellers had separated from their respective engine, and all three propeller blades remained attached to each propeller. All propeller blades exhibited s-bending and/or leading edge gouging.

An inspection was performed on both engines. The crankshafts on both engines were rotated by hand, via an accessory gear drive. Camshaft, crankshaft, and valve train continuity were confirmed on both engines. Thumb compression was attained on all cylinders, except the left engine number five cylinder, which exhibited impact damage; and the right engine number six cylinder, which exhibited a stuck exhaust valve. On the left engine, the right magneto produced spark at all towers when rotated. The left magneto had been water soaked, and did not produce spark when rotated. On the right engine, both magnetos had been water soaked, and did not produce spark when rotated. Both oil filters were opened for examination and found to be absent of metallic contamination.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Westchester County Medical Examiner's Office, White Plains, New York.

Toxicological testing was conducted on the pilot at the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicology report revealed:

"...LOSARTAN present in Blood..."

Review of the pilot's most recent application for an FAA second class medical certificate revealed that he reported hydrochlorathiazide as a currently used medication.

ADDITIONAL INFORMATION

The wreckage was released to a recovery company on December 14, 2006.

Pilot Information

Certificate:	Commercial; Private	**Age:**	79,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):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	September 1, 2004
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	May 1, 2003
Flight Time:	4600 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N8FH
Model/Series:	310Q	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	310Q1035
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	December 1, 2006 Annual	**Certified Max Gross Wt.:**	5200 lbs
Time Since Last Inspection:	0 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3950 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	IO-470
Registered Owner:	Frank L. Holland	**Rated Power:**	260 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MGJ,365 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	12:54 Local	**Direction from Accident Site:**	330°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	220°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	12°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Montgomery, NY (MGJ)	**Type of Flight Plan Filed:**	None
Destination:	Morristown, NJ (MMU)	**Type of Clearance:**	None
Departure Time:	13:10 Local	**Type of Airspace:**	

Airport Information

Airport:	Orange County Airport MGY	**Runway Surface Type:**	Asphalt
Airport Elevation:	365 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	26	**IFR Approach:**	None
Runway Length/Width:	3672 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	41.490276,-74.249725

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Stan Peters; FAA/FSDO; Teterboro, NJ Seth Buttner; Cessna Aircraft Company; Wichita, KS John Kent; Continental Motors; Mobile, AL
Original Publish Date:	September 27, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65010