National Transportation Safety Board
Aviation Accident Final Report

Location:	Franklin, NC	**Accident Number:**	ERA12FA225
Date & Time:	03/15/2012, 1350 EDT	**Registration:**	N7700T
Aircraft:	CESSNA 501	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control on ground	**Injuries:**	5 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot was not familiar with the mountain airport. The airplane was high during the first visual approach to the runway. The pilot performed a go-around and the airplane was again high for the second approach. During the second approach, the approach angle steepened, and the airplane pitched nose-down toward the runway. The nosegear touched down about halfway down the runway followed by main gear touchdown. The airplane then bounced and the sound of engine noise increased as the airplane banked right and the right wing contacted the ground. The airplane subsequently flipped over and off the right side of the runway, and a postcrash fire ensued.

Examination of the airframe and engines did not reveal any preimpact mechanical malfunctions. The examination also revealed that the right engine thrust reverser was deployed during the impact sequence, and the left engine thrust reverser was stowed. Although manufacturer data revealed single-engine reversing has been demonstrated during normal landings and is easily controllable, the airplane had already porpoised and bounced during the landing. The pilot's subsequent activation of only the right engine's thrust reverser would have created an asymmetrical thrust and most likely exacerbated an already uncontrolled touchdown. Had the touchdown been controlled, the airplane could have stopped on the remaining runway or the pilot could have performed a go-around uneventfully.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's failure to achieve a stabilized approach, resulting in a nose-first, bounced landing. Contributing to the accident was the pilot's activation of only one thrust reverser, resulting in asymmetrical thrust.

Findings

Aircraft	Thrust reverser - Incorrect use/operation (Factor) Descent/approach/glide path - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)

Factual Information

HISTORY OF FLIGHT

On March 15, 2012, about 1350 eastern daylight time, a Cessna 501, N7700T, operated by a private individual, was substantially damaged while landing at Macon County Airport (1A5), Franklin, North Carolina. The certificated private pilot and four passengers were fatally injured. The personal flight was conducted under the provisions of 14 Code of Federal Regulations Part 91. Visual meteorological conditions prevailed and an instrument flight rules flight plan was filed for the flight that departed from Venice Municipal Airport (VNC), Venice, Florida, about 1150.

Review of radar and communication data from the Federal Aviation Administration (FAA) revealed that at 1340, the airplane was at 7,300 feet, when an Atlanta Center controller approved a frequency change to the local airport common traffic advisory frequency. The pilot acknowledged the frequency change and no further communication was received by Atlanta Center.

Two witnesses, one of which was a pilot, worked for a fixed-based-operator (FBO) at 1A5 and were standing on the ramp area at the time of the accident. They reported that the airplane approached runway 25, a 5,001-foot long, 75-foot-wide, asphalt runway. The airplane was high during the approach, performed a go-around, and made a left turn for another approach. During the second approach, the airplane was high again and the approach angle steepened, nose-down toward the runway. The nosegear touched down approximately half-way down the runway, followed by main gear touchdown. The airplane then bounced and the witnesses heard the engine noise increase. It then banked right and the right wing contacted the ground. The airplane subsequently flipped over off the right side of the runway and a postcrash fire ensued.

The airport was 2,020 feet above mean sea level and surrounded by mountains.

The owner of the FBO had no record of the airplane having previously been to the airport.

PILOT INFORMATION

The pilot, age 62, held a private pilot certificate with ratings for airplane single-engine land, airplane multiengine land, and instrument airplane. He also held a type rating for the Cessna 501. His most recent FAA third-class medical certificate was issued on December 20, 2010. Review of the pilot's logbook revealed that he had accumulated a total flight experience of approximately 1,159 hours. About 185 hours were in the accident airplane, which were flown during a 2-year period preceding the accident. The pilot had flown the accident airplane about 8 hours and 16 hours during the 30-day and 90-day periods preceding the accident, respectively. Review of the logbook did not reveal any previous trips to 1A5.

The pilot had been involved in a prior accident on March 12, 2006 (NTSB ID No. MIA06CA072), in which he was the pilot-in-command of a Piper PA32-301 that departed the side of a runway while landing. The probable cause of that accident was "The failure of the pilot to maintain directional control during the landing roll with a crosswind, resulting in collapse of the nose landing gear."

AIRCRAFT INFORMATION

The seven-seat airplane, serial number 501-0248, was manufactured in 1982. It was powered by two Pratt and Whitney Canada JT15D-1B engines, each capable of generating 2,200 pounds of thrust. The airplane was maintained under a manufacturer's approved inspection program. Its most recent phase inspections were completed on February 20, 2012. At that time, the airframe and engines had accrued 4,825.2 total hours of operation.

The airplane was equipped with thrust reversers that formed the aft portion of the engine nacelles when in the stowed position. The reversers are activated by pilot operation of the thrust reverser throttle levers and deployed by hydraulic pressure supplied by an engine driven pump directed to the drive actuators. The reversers can only be deployed when the primary throttle levers are in the idle thrust position and the airplane is on the ground as sensed by either of the main gear squat switches. When commanded, the thrust reversers fully deploy within 1.5 seconds. After deployment, engine power can be increased by moving the thrust reverser throttle levers aft for maximum reverse thrust. Stops installed on the thrust reverser levers are set to 90 percent N1 at sea level on a standard day.

To stow the thrust reversers, the pilot can move the reverse thrust levers through the idle reverse detent to the stow position. The airplane was also equipped with an emergency stow switch for each thrust reverser, located on the cockpit glareshield.

Review of a Cessna 500/501 operation manual revealed: "Single engine reversing has been demonstrated during normal landings and is easily controllable."

METEOROLOGICAL INFORMATION

The recorded weather at 1A5, at 1350, was: wind from 260 degrees at 3 knots; sky clear; visibility 10 miles; temperature 23 degrees C; dew point 7 degrees C, altimeter 30.28 inches of mercury.

WRECKAGE INFORMATION

The airplane came to rest in a grassy area, about 50 feet off the right side of the runway, approximately 4,250 feet beyond the approach end of runway 25. The wreckage was inverted and oriented about a magnetic heading of 350 degrees. Approximately 100 feet of skid marks were observed about 2,300 feet beyond the approach end of the runway, consistent with the left and right main landing gear tires. Another 55-foot skid mark was observed about 250 feet beyond the first skids, which was consistent with the left main landing gear tire.

A postcrash fire consumed a majority of the cockpit and cabin. The horizontal stabilizer, vertical stabilizer, elevator, and rudder remained intact and were charred. The left side of the elevator had partially separated from the horizontal stabilizer. The left wing inboard section was consumed by fire. The left wing outboard section was crushed and charred. A section of left aileron remained partially attached to the outboard left wing. With the exception of one flap hinge remaining, the left flap had separated from the left wing. The left main landing gear had also separated from the left wing.

The right wing inboard section had separated from the fuselage, was crushed and charred. The outboard section had been consumed by fire. The right aileron separated and was found near the left wing. A section of right flap remained attached to the right wing. The right main landing gear remained attached to the right wing. The nosegear separated and the nosewheel and tire assembly was located on the runway, adjacent to the main wreckage. Examination of the landing gear, landing gear selector handle, flaps and flap selector handle revealed that the

landing gear and flaps were in the fully extended position.

Emergency medical service personnel reported that they had to cut control cables and move the right wing to gain access to the occupants. Control continuity was confirmed from the elevator, through push-pull tubes and a bellcrank, to control cables near the aft cabin area. At the aft cabin area, one cable was cut and the other cable turnbuckle had melted. The cables then extended from that point to the forward cockpit area. Continuity was also confirmed from the rudder through cables to the rudder pedals. The rudder cables had also been cut near the aft cabin area. Aileron control continuity was confirmed from their respective bull-wheels at the ailerons, through cables to the aileron sector assembly at the aft cabin area. The cables had been cut near that point and continued to extend to the forward cockpit area.

Measurement of the elevator trim jackscrew revealed an approximate 13-degree elevator trim tab down position. Measurement of the rudder trim jackscrew revealed an approximate neutral rudder tab position.

The right engine thrust-reverser was found in the deployed position and penetration damage was noted on the cowling underneath the reverser, consistent with the right thrust reverser being deployed during the impact sequence. The left engine thrust-reverser was found in the stowed position. The right throttle lever was observed in the aft position, near the flight idle stop, with its thrust reverser lever in the deploy position. The left throttle lever was in a mid-range position with its thrust reverser lever in the stow position. The engines were forwarded to the manufacturer's facility for teardown examination under the supervision of an FAA inspector.

Teardown examination of the of both engines revealed that their respective low pressure compressor fan blade tips were bent opposite the direction of rotation and sand was noted on the high pressure turbine blades, consistent with the engine operating at the time of impact. The examination did not reveal any preimpact mechanical anomalies that would have precluded normal engine operation.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Macon County Medical Examiner, Winston-Salem, North Carolina, on March 16, 2012.

Toxicological testing was performed on the pilot by the FAA Bioaeronautical Science Research Laboratory, Oklahoma City, Oklahoma. Review of the toxicology report revealed:

"...Pravastatin detected in Urine

Pravastatin NOT detected in Blood

31 (mg/dl) Glucose detected in Vitreous

148 (mg/dl) Glucose detected in Urine

7.3 (%) Hemoglobin A1C detected in Blood..."

ADDITIONAL INFORMATION

Landing Distance

Review of performance data for the make and model airplane revealed that at an estimated landing weight of 9,500 pounds, the airplane required a landing distance of approximately

2,180 feet on a dry runway, without wind factored. The distance also assumed a landing reference speed (Vref) of 99 knots, a temperature of 25 degrees C, and no use of thrust reversers.

History of Flight

Landing-flare/touchdown	Landing area overshoot Abnormal runway contact
Landing-aborted after touchdown	Loss of control on ground (Defining event) Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Private	**Age:**	62, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 None	**Last FAA Medical Exam:**	12/20/2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	09/13/2010
Flight Time:	1159 hours (Total, all aircraft), 185 hours (Total, this make and model), 16 hours (Last 90 days, all aircraft), 8 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N7700T
Model/Series:	501	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	501-0248
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	02/20/2012, AAIP	**Certified Max Gross Wt.:**	11850 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo Fan
Airframe Total Time:	4825 Hours as of last inspection	**Engine Manufacturer:**	Pratt and Whitney Canada
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	JT15D-1B
Registered Owner:	JAKUBOWSKI BOGDAN	**Rated Power:**	2200 lbs
Operator:	JAKUBOWSKI BOGDAN	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Day
Observation Facility, Elevation:	1A5, 2020 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	1350 EDT	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Clear	**Visibility**	10 Miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	260°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.28 inches Hg	**Temperature/Dew Point:**	23°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Venice, FL (VNC)	**Type of Flight Plan Filed:**	IFR
Destination:	Franklin, NC (1A5)	**Type of Clearance:**	IFR
Departure Time:	1150 EDT	**Type of Airspace:**	

Airport Information

Airport:	Macon County Airport (1A5)	**Runway Surface Type:**	Asphalt
Airport Elevation:	2020 ft	**Runway Surface Condition:**	Dry
Runway Used:	25	**IFR Approach:**	None
Runway Length/Width:	5001 ft / 75 ft	**VFR Approach/Landing:**	Full Stop

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	4 Fatal	**Aircraft Fire:**	On-Ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-Ground
Total Injuries:	5 Fatal	**Latitude, Longitude:**	35.220556, -83.425556

Administrative Information

Investigator In Charge (IIC):	Robert J Gretz	**Report Date:**	01/15/2013
Additional Participating Persons:	Rene Gonzalez; FAA/FSDO; Charlotte, NC Andrew Hall; Cessna Aircraft Company; Wichita, KS Jeff Davis; Pratt and Whitney Canada; Bridgeport, WV		
Publish Date:	01/15/2013		
Investigation Docket:	http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=83139		