National Transportation Safety Board
Aviation Accident Final Report

Location:	Edenton, North Carolina	**Accident Number:**	ERA10LA302
Date & Time:	June 7, 2010, 19:32 Local	**Registration:**	N7022D
Aircraft:	Beech 60	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	1 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

This report was modified on June 26, 2013. Please see the public docket for this accident to view the original report.

The pilot was receiving instruction and an instrument proficiency check (IPC) from a flight instructor. Following an hour of uneventful instruction, the IPC was initiated. During the first takeoff of the IPC, the pilot was at the flight controls, and the flight instructor controlled the throttles. Although the pilot normally set about 40 inches of manifold pressure for takeoff, the flight instructor set about 37 inches, which resulted in a longer than expected takeoff roll. Shortly after takeoff, at an altitude of less than 100 feet, with the landing gear extended, the flight instructor retarded the left throttle at 83 to 85 knots indicated airspeed; 85 knots was the minimum single engine control speed for the airplane. The pilot attempted to advance the throttles, but was unable since the flight instructor's hand was already on the throttles. The airplane veered sharply to the left and rolled. The pilot was able to level the wings just prior to the airplane colliding with trees and terrain. The pilot reported that procedures for simulating or demonstrating an engine failure were never discussed. Although the flight instructor's experience in the accident airplane make and model was not determined, he reported prior to the flight that he had not flown that type of airplane recently. The flight instructor was taking medication for type II diabetes. According to his wife, the flight instructor had not experienced seizures or a loss of consciousness as a result of his medical condition.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The flight instructor's initiation of a simulated single engine scenario at or below the airplane's minimum single engine control speed, resulting in a loss of airplane control. Contributing to

the accident was the flight instructor's failure to set full engine power during the takeoff roll and the flight instructor's lack of recent experience in the airplane make and model.

Findings

Aircraft	Directional control - Incorrect use/operation
Personnel issues	Incorrect action selection - Instructor/check pilot
Personnel issues	Recent experience w/ equipment - Instructor/check pilot
Personnel issues	Incorrect action performance - Instructor/check pilot
Personnel issues	Predisposing condition - Instructor/check pilot
Personnel issues	Use of medication/drugs - Instructor/check pilot

Factual Information

HISTORY OF FLIGHT

On June 7, 2010, about 1932 eastern daylight time, a Beech 60, N7022D, was substantially damaged when it impacted trees and terrain following takeoff from Northeastern Regional Airport (EDE), Edenton, North Carolina. The airplane was registered to and operated by the commercial pilot under the provisions of 14 Code of Federal Regulations Part 91 as an instructional flight. The certificated commercial pilot sustained serious injuries, and the certificated flight instructor was killed. Day, visual meteorological conditions existed at the time, and no flight plan was filed. The local flight was originating at the time of the accident.

A witness, who was sitting at the door of a maintenance hangar on the airfield, observed the takeoff roll. He made a comment to two others standing next to him that the airplane was "taking a long time to get off the ground." Subsequently, another bystander came running in their direction, saying that the airplane had crashed. He then observed smoke coming from the woods, about two-thirds of the way down the runway.

According to the pilot, the flight instructor in the right seat was administering an instrument proficiency check. The pilot and flight instructor discussed general procedures and airplane systems, followed by about an hour of flight instruction. After the first hour of instruction, the flight instructor asked the pilot if he wanted to complete the check that day and the pilot responded yes. The pilot set up his navigation systems for the departure, and prepared to taxi onto the runway. He looked over at the flight instructor, and noticed that his face was very red and his shirt was soaked in sweat. He noted that the airplane was "very hot" inside. He asked the flight instructor if he was "ready to go" and the flight instructor responded yes. A second flight segment was initiated on runway 01 at EDE, and the pilot commenced the takeoff while the flight instructor controlled the throttles. During the takeoff roll, the flight instructor did not advance the engine throttles to the full forward position; the manifold pressure reached 36 to 37 inches on each engine, not the 40 inches he expected. At 83 knots, the pilot rotated to a 10-degree nose up attitude, observed the vertical speed indicator move in a positive direction, and called "positive rate, gear up."

The pilot was about to say "I need 40 inches of [manifold pressure] for the climb" and saw a quick movement of the flight instructor's hands down and aft. The pilot was surprised that the flight instructor was simulating an engine failure with 36 inches manifold pressure on one engine, the other engine windmilling, landing gear extended, and with only 83 to 85 knots of airspeed. The pilot estimated that as the airplane attained an altitude of about 100 feet, and 85 knots. The airplane began to veer to the left, and the pilot reached for the left throttle to add power; however, the flight instructor's hands remained on the throttles. The pilot recalled a visible split in the throttle positions. The airplane continued to roll to the left and the pilot was able to level the wings just prior to the impact with trees. After ground impact, the airplane caught fire.

The pilot reported that, after unbuckling his seat belt, he observed that the flight instructor was not in the right seat. The airplane was "engulfed in fire." The flight instructor was laying face

down, in the aisle, between the middle seats. The pilot attempted to move him, but was unable, and egressed the airplane before the fuel tanks began to explode.

Following the accident, the pilot reported that, during preflight duties and in flight, the flight instructor did not discuss how he would simulate or demonstrate an engine failure during or after takeoff. He also reported that there were no mechanical malfunctions or failures with the airplane during the accident flight.

PERSONNEL INFORMATION

The pilot receiving the instrument proficiency check held a commercial pilot certificate with airplane single-engine land, multi-engine land, and instrument airplane ratings. He reported 1,558 hours total time, including 343 hours in the Beech 60. He reported 55 hours in the 90 days prior to the accident, and 12 hours in the 30 days prior to the accident. This pilot was last issued an FAA medical certificate on April 21, 2009, when he was issued a Class 3 certificate.

According to FAA records, the pilot administering the instrument proficiency held airline transport pilot, commercial pilot, flight engineer, flight instructor, and mechanic certificates. As a flight instructor, he held airplane single and multi-engine land and instrument airplane ratings. His flight instructor certificate was last renewed on March 28, 2010. His total civilian flying experience reported to the FAA was 30,000 hours. This pilot was last issued an FAA medical certificate on November 27, 2007, when he was issued a Class 1 certificate.

The pilot reported that the flight instructor stated prior to the flight that he had not flown a Beech 60 “in a while.” The pilot did not query the flight instructor on his Beech 60 total time or the last time he had flown one. When queried, the flight instructor’s wife did not know how much flight time her husband had flown in the Beech 60.

AIRCRAFT INFORMATION

According to the NTSB form 6120.1, Pilot/Operator Aircraft Accident/Incident Report, the total time on the airplane at the time of the accident was 3,562 hours. The airplane reportedly received an annual inspection on December 12, 2009.

According to the Beech 60 (Beechcraft Duke 60) Pilot’s Operating Manual, minimum single engine control speed, or the airspeed below which the airplane cannot be controlled laterally and directionally in flight with one engine operating at takeoff power and the other engine with its propeller windmilling, is 85 knots.

METEOROLOGICAL INFORMATION

The 1921 weather observation for EDE included scattered clouds at 11,000 feet, surface winds calm, 10 statute miles visibility, temperature 23 degrees Celsius, dew point 18 degrees Celsius, and an altimeter setting of 29.96 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

An inspector from the Federal Aviation Administration responded to the accident site and examined the wreckage. According to the inspector, the wreckage was found to the left of the runway 01 centerline, and the wreckage path was oriented on a heading of 350 degrees. The wreckage came to rest facing south. Although the engine controls were displaced from their normal positions, the throttle controls were visibly split; the left throttle lever displaced aft of the right throttle lever. A 6-inch diameter tree exhibited impact marks consistent with where the right wing was separated from the airplane. The cockpit, cabin, and left wing were nearly consumed by fire. The left engine propeller blades did not exhibit torsional twisting, while the right engine propeller blades were consumed by fire.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the flight instructor was performed at the East Carolina University Brody School of Medicine, Greenville, North Carolina. The autopsy report noted the case of death as multiple blunt trauma due to the airplane crash. The report also noted that the flight instructor sustained multiple rib fractures, a transected spine, and lacerations of the right lung and diaphragm. Evidence of some smoke inhalation was noted, with soot in the airways and a carbon monoxide level in the blood of less than 5 percent saturation.

Forensic toxicology was performed on specimens of the flight instructor by the FAA Bioaeronautical Sciences Research Laboratory (CAMI), Oklahoma City, Oklahoma. The CAMI toxicology report was negative for ethanol, cyanide, and carbon monoxide (10 percent saturation cutoff). Glipizide was detected in the blood and urine.

The flight instructor's wife reported that her husband was taking glipizide for type II diabetes. She estimated that he ate just before 2:00 pm on the day of the accident, as this was when she went to work that day. To her knowledge, he never experienced any diabetic episodes such as seizures or passing out. She was not aware that her husband was flying without a current FAA medical certificate and did not know why he allowed it to lapse.

History of Flight

Initial climb	Simulated/training event
Initial climb	Loss of control in flight (Defining event)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

Pilot Information

Certificate:	Commercial	**Age:**	48,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	April 21, 2009
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	June 21, 2009
Flight Time:	1558 hours (Total, all aircraft), 343 hours (Total, this make and model), 1400 hours (Pilot In Command, all aircraft), 55 hours (Last 90 days, all aircraft), 12 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Flight instructor Information

Certificate:	Airline transport; Commercial; Flight engineer; Flight instructor	**Age:**	68,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	November 27, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 28, 2010
Flight Time:	30000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N7022D
Model/Series:	60	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	P-13
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	December 3, 2009 Annual	**Certified Max Gross Wt.:**	7000 lbs
Time Since Last Inspection:	54 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	3562 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	TIO-541-E1A4
Registered Owner:		**Rated Power:**	380 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:	EDE,20 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	19:21 Local	**Direction from Accident Site:**	
Lowest Cloud Condition:	Scattered / 11000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.95 inches Hg	**Temperature/Dew Point:**	23°C / 18°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Edenton, NC (EDE)	**Type of Flight Plan Filed:**	None
Destination:	Edenton, NC (EDE)	**Type of Clearance:**	None
Departure Time:	19:32 Local	**Type of Airspace:**	

Airport Information

Airport:	Northeastern Regional EDE	**Runway Surface Type:**	Asphalt
Airport Elevation:	20 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	01	**IFR Approach:**	None
Runway Length/Width:	6000 ft / 100 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal, 1 Serious	**Latitude, Longitude:**	36.027778,-76.566947(est)

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Doug Badgett; FAA/FSDO; Greensboro, NC
Original Publish Date:	June 20, 2011
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76234