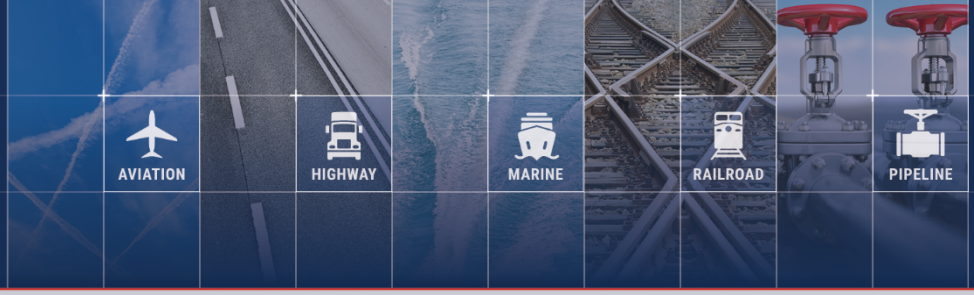

Aviation Investigation Final Report

Location:	St. Ignace, Michigan	**Accident Number:**	CEN10FA394
Date & Time:	July 13, 2010, 17:00 Local	**Registration:**	N3081N
Aircraft:	Beech 58	**Aircraft Damage:**	Substantial
Defining Event:	Loss of control in flight	**Injuries:**	4 Fatal, 1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

Witnesses observed the airplane abort two takeoffs prior to the accident takeoff. During the second and third (accident) takeoff rolls, one engine did not sound like it was developing full power. In between the three takeoff attempts, the pilot did not perform an engine run-up. During the accident takeoff roll, one engine still did not sound like it was developing full power and the airplane rotated shortly before the end of the runway. The airplane briefly became airborne, with the wings rocking back and forth, and then impacted an interstate highway with its left wing, which was consistent with an aerodynamic stall. The airplane impacted a cable median barrier and a fire ensued. The airplane continued into a ditch, nosed over, and came to rest inverted. A postaccident examination of the airframe and engines revealed no anomalies that would have precluded normal operation.

The pilot had some moderate heart disease and sleep apnea that were documented in his medical records. Toxicology findings noted the use of an unreported medication (atenolol) that was taken at an undetermined time prior to the accident. Approximately 10 minutes prior to the accident flight, the pilot amended his instrument flight rules clearance with an air traffic controller via the airplane's radio. No problems with the pilot's conversation or speech were noted during the recorded transmissions, and the investigation could not conclusively determine whether the pilot's medical conditions or medication use were related to the accident.

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 aircraft control during takeoff for undetermined reasons.

Findings

Personnel issues	Aircraft control - Pilot
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Takeoff	Loss of control in flight (Defining event)
Takeoff	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On July 13, 2010, at 1700 eastern daylight time, a Beech 58 twin-engine airplane, N3081N, sustained substantial damage when it impacted terrain shortly after takeoff from the Mackinac County Airport (83D), St. Ignace, Michigan. The private pilot and three passengers were fatally injured and one passenger was seriously injured. The airplane was registered to Tri United, Inc., Skokie, Illinois, and operated by the pilot. Visual meteorological conditions prevailed, and an instrument rules flight (IFR) plan was filed for the 14 Code of Federal Regulations Part 91 personal flight. The flight was departing at the time of the accident.

According to information provided by air traffic control, local authorities, and witnesses, the airplane departed Chicago Executive Airport (PWK), Wheeling, Illinois, at 1210, and arrived at 83D at 1354. According to a 83D fixed based operator (FBO) representative, the pilot came into the lobby and asked if he was at Mackinac Island. The representative explained to him that 83D was not on the island and she then pointed the island out through a window to the pilot. Mackinac Island is located approximately 5 miles east of 83D. The airplane then departed 83D and arrived at Mackinac Island Airport (MCD) a few minutes later.

Approximately 1630, the airplane returned to 83D from MCD and obtained 60 gallons of fuel. At 1644, the pilot contacted air traffic control services via his airplane radio to amend his IFR clearance.

Witnesses, who were mechanics at a local maintenance facility, observed the airplane attempt to takeoff on runway 25 three different times. During the first attempt, the airplane traveled approximately half way down the runway and then the takeoff was aborted. The pilot taxied the airplane back to runway 25 and attempted a second takeoff without an engine run-up. During the second takeoff attempt, the airplane traveled approximately three-quarters of the way down the runway and the takeoff was aborted. One witness stated that during the second takeoff roll, it sounded as if the engines were not throttled up to full power, and it appeared that the pilot had problems maintaining directional control of the airplane.

The pilot taxied the airplane back to runway 25 and attempted a third takeoff without an engine run-up. One of the mechanic witnesses stated that during the third takeoff attempt, "It appeared and sounded as if the right engine was running properly and the left engine was not at the same RPM. The pilot was having difficulty maintaining directional control...with the left engine sputtering and misfiring and traces of black smoke coming from the left engine exhaust." Witnesses observed the airplane become airborne near the departure end of the runway with the wings rocking back and forth, and the left wing impacted the northbound lanes of Interstate 75, which is located approximately 1,000 feet from the departure end

of runway 25. The airplane continued through the highway median, traveled across the southbound lanes of the interstate and came to rest inverted in a grassy area adjacent to the interstate. A post crash fire ensued and consumed a majority of the airplane.

The seriously injured passenger, who was seated in the rear seat, exited the airplane after it came to rest. According to the passenger, he was sleeping at the time of the accident and had no recollection of the accident sequence.

PERSONNEL INFORMATION

The pilot, age 73, held a private pilot certificate with airplane single and multi-engine land and instrument ratings. His most recent Federal Aviation Administration (FAA) third-class medical examination was conducted on December 30, 2008. After review, the FAA issued the pilot a Class 3 Special Issuance Medical Certificate that was not valid for any class after December 31, 2010. In addition, the certificate noted a restriction for corrective lenses for near and distant vision.

The pilot's flight time logbook was destroyed during the accident. On his most recent medical application, the pilot reported 2,211 total flight hours and 67 in the previous six months.

A review of the pilot's FAA airman records showed that the pilot was issued his single engine land airplane rating on May 22, 1989, his instrument rating on May 27, 1990, and his multi-engine land airplane rating on August 29, 1991.

On December 7, 2006, the pilot was reexamined by the FAA in the accident airplane as the result of an undisclosed violation. The reexamination was disapproved by the FAA inspector for undisclosed reasons. On January 9, 2007, the pilot was reexamined by the FAA in the accident airplane. The reexamination was disapproved by the FAA inspector for undisclosed reasons. On that date, the pilot voluntarily surrendered his multi-engine land and instrument ratings.

On July 9, 2009, the pilot received his multi-engine land rating. On the rating application, the pilot reported 2,985 total flight hours and 2,097 hours in the accident airplane make and model.

On December 7, 2009, the pilot received his instrument rating for single engine land airplanes. On the rating application, the pilot reported 3,147 total flight hours.

On December 29, 2009, the pilot received his instrument rating for multi-engine land airplanes. On the application, the pilot reported a total of 3,166 total flight hours and 2,238 hours in the accident airplane make and model.

AIRCRAFT INFORMATION

The airplane was a 1987 Beech 58 (Baron), serial number TH-1526. It was a six-place, twin-engine airplane, with a retractable tricycle landing gear configuration. The airplane was powered by two 300-horsepower Teledyne Continental Motors IO-550-C engines. The left and right engine serial numbers were 271844-R and 271853-R, respectively. The engines were equipped with 3-blade, constant speed McCauley propellers.

Maintenance records showed the most recent annual inspection was completed on November 18, 2009, at a total airframe time of 3,902.6 hours. The left and right engines' most recent 100-hour inspections were completed on November 18, 2009, at a total time since major overhaul of 378.9 hours.

The airplane's weight and balance documentation was not located. Based on the weight of the occupants, estimated fuel load, and estimated baggage, the airplane was within the gross weight limitations at the time of the accident.

METEOROLOGICAL INFORMATION

Weather conditions reported at the time of the accident were clear sky, calm winds, and a temperature of approximately 80 degrees Fahrenheit. The calculated density altitude was approximately 2,300 feet.

AIRPORT INFORMATION

The Mackinac County Airport is a public, non-towered airport located 2 miles northwest of St. Ignace, Michigan, at a surveyed elevation of 624 feet. The airport features one runway, Runway 7/25, which has a concrete surface, and is 3,800 feet long by 75 feet wide.

Fuel records from the 83D airport FBO showed the airplane received 60.33 gallons of fuel prior to the planned departure. Three other airplanes obtained fuel from the FBO prior to the accident airplane. Fuel test results showed no anomalies with the fuel provided by the FBO.

WRECKAGE AND IMPACT INFORMATION

Initial ground impact was on the northbound lanes of Interstate 75 about 1,000 feet west of runway 25. The debris path was oriented on an approximate 230-degree magnetic heading. The main wreckage, which consisted of the fuselage, empennage, both wings, and right engine, came to rest inverted about 150 feet from the initial impact point. Grass scorched by the postimpact fire extended to the north and around the main wreckage.

The fuselage was consumed by fire. The cockpit and instrument panel were destroyed and consumed by fire. The cockpit and cabin seat frames were found separated from their attach fittings. The nose landing gear remained attached and the retract/extend arm was in the retracted position. The empennage was partially consumed by fire. The empennage flight control surfaces remained attached to their respective fittings.

The right wing was partially consumed by fire. The aileron and flap were consumed by fire. The flap actuator was consumed by fire and a flap position could not be determined. The landing gear remained attached and was found in the retracted position. The engine remained attached to the firewall and was damaged by fire. The right propeller remained attached to the engine crankshaft. The propeller blades contained leading edge gouging, s-type bending, and chordwise scratching.

The left wing was bent aft, twisted upright, and consumed by fire. The aileron was separated and partially consumed by fire. The flap was consumed by fire. The flap actuator was consumed by fire and a flap position could not be determined. The landing gear remained attached and found in the retracted position. The left engine was separated and came to rest in the debris path. The left propeller remained

attached to the engine crankshaft. The propeller blades contained leading edge gouging, s-type bending, and chordwise scratching.

Flight control continuity was confirmed to all flight control surfaces. No anomalies consistent with a preimpact failure or malfunction of the airframe were observed.

PATHOLOGICAL INFORMATION

An autopsy was not performed on the pilot. The FAA's Civil Aeromedical Institute (CAMI) performed toxicology testing on the pilot's blood specimen. The tests for carbon monoxide, cyanide, and ethanol were negative. The following drugs were detected in the specimen: unspecified level of Amlodipine, unspecified level of Atenolol, and 5.6 percent Hemoglobin A1C. Amlodipine is a prescription medication that is a long-acting calcium channel blocker that is used to control high blood pressure and treat chronic angina. Atenolol is a beta blocker medication used to control high blood pressure or control heart rate. The use of Atenolol was not reported on his most recent medical certificate application.

The NTSB Medical Officer reviewed the medical records maintained by the FAA Aerospace Medical Certification Division, as well as records kept by the pilot's physicians. The following information was extracted from those records. The pilot had recurrent coronary artery disease with angioplasty procedures in 1999, 2000, 2003, and 2008. In January 2010, cardiovascular testing was normal with no evidence of disease progression since the angioplasty and stenting in 2008. The pilot had been diagnosed with obstructive sleep apnea and treatment with continuous positive airway pressure (CPAP) had been recommended. The diagnosis was not reported to the FAA. The pilot reported he stopped using the CPAP device. The pilot was a type-2 diabetic who controlled his condition with oral medication.

Air traffic control communications were reviewed to determine if there were any relevant speech patterns that were consistent with a medical issue.

TESTS AND RESEARCH

The engines were examined at Teledyne Continental Motors, Mobile, Alabama, under the supervision of the NTSB investigator-in-charge. Postaccident examination of the engines revealed the engines could not be test run due to impact and fire damage, and a teardown inspection was completed. The teardown inspection showed no anomalies that would have prevented normal engine operation.

The left engine throttle and fuel control unit were bench tested, and the unit functioned with no anomalies. The left engine fuel pump could not be bench tested due to damage. The pump was disassembled and no anomalies were noted. The left engine fuel manifold valve was bench tested and no anomalies were noted.

The right engine throttle and fuel control unit was damaged due to impact and fire. The unit could not be bench tested due to damage. The right engine fuel pump could not be bench tested due to damage. The pump was disassembled and no anomalies were noted. The right engine fuel manifold valve was damaged by fire. The valve could not be bench tested. The valve was disassembled and no anomalies were noted.

The propellers were examined at McCauley, Wichita, Kansas, under the supervision of the NTSB investigator-in-charge. Examination of the propellers revealed the blade angles at the time of impact were in the low pitch operating range position. No anomalies were noted with the propellers.

Pilot Information

Certificate:	Private	**Age:**	73,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:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 With waivers/limitations	**Last FAA Medical Exam:**	December 30, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	December 29, 2009
Flight Time:	(Estimated) 3166 hours (Total, all aircraft), 2238 hours (Total, this make and model), 2274 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N3081N
Model/Series:	58	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	TH-1526
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	November 18, 2009 Annual	**Certified Max Gross Wt.:**	5500 lbs
Time Since Last Inspection:		**Engines:**	2 Reciprocating
Airframe Total Time:	3903 Hrs as of last inspection	**Engine Manufacturer:**	CONT MOTOR
ELT:	Installed, not activated	**Engine Model/Series:**	IO-550-C
Registered Owner:	On file	**Rated Power:**	300 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	27°C
Precipitation and Obscuration:			
Departure Point:	St. Ignace, MI (83D)	**Type of Flight Plan Filed:**	IFR
Destination:	Wheeling, IL (PWK)	**Type of Clearance:**	IFR
Departure Time:	17:00 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:	3 Fatal, 1 Serious	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal, 1 Serious	**Latitude, Longitude:**	45.888053,-84.747222(est)

Administrative Information

Investigator In Charge (IIC):	Sauer, Aaron
Additional Participating Persons:	John Miller; Federal Aviation Administration; Grand Rapids, MI Ernest Hall; Hawker Beechcraft Corporation; Wichita, KS Jason Lukasik; Teledyne Continental Motors; Mobile, AL
Original Publish Date:	October 3, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76626