Aviation Investigation Final Report

Location:	Muskegon, Michigan	**Accident Number:**	CEN10LA432
Date & Time:	July 24, 2010, 20:25 Local	**Registration:**	N24584
Aircraft:	Beech A24R	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Serious
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that he flew three flight legs before the accident flight. After the third flight leg the airplane was refueled with 42.4 gallons of fuel. He performed a preflight that included checking the fuel for contamination and none was evident. The taxi and pretakeoff engine run-up were normal. The airplane was about 200 feet in the air when the engine started running rough and backfiring. He performed the emergency checklist procedures for engine failure after liftoff by switching fuel tanks and adjusting the mixture, but was not able to successfully address the engine problems. The pilot was unable to maintain altitude so he executed a forced landing to a wooded area less than a mile from the airport. The airplane struck trees and terrain during the forced landing. Much of the airplane structure was consumed by the postimpact fire. The postaccident inspection of the engine and fuel system revealed no preexisting anomalies that would preclude normal engine operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A loss of engine power for undetermined reasons.

Findings

Aircraft	(general) - Not specified
Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)
Emergency descent	Collision with terr/obj (non-CFIT)
Uncontrolled descent	Collision with terr/obj (non-CFIT)

On July 24, 2010, about 2025 eastern daylight time, a Beech A24R, N24584 impacted the terrain after a loss of engine power during the initial climb after departing from the Muskegon County Airport (MKG), Muskegon, Michigan. The airline transport pilot was seriously injured. The airplane was destroyed by a postimpact fire. The 14 Code of Federal Regulations Part 91 personal flight originated from MKG with DuPage Airport (DPA), West Chicago, Illinois, as the intended destination. Visual meteorological conditions prevailed at the time of the accident and no flight plan was filed.

The pilot reported that he flew three flight legs before the accident flight. Earlier in the day he departed DPA and flew to Manistee, Michigan, and then to Cadillac, Michigan, where he dropped off a passenger. He departed Cadillac, Michigan, and flew to MKG, where the airplane was refueled with 42.4 gallons of fuel.

The pilot reported that he performed a preflight inspection at MKG that included checking the fuel for contamination. No contamination was evident. The taxi and pre-takeoff engine run-up were normal s was the initial departure. When the airplane was about 200 feet in the air he retracted the landing gear, and the engine started running rough and backfiring. He performed the emergency checklist procedures for engine failure after liftoff. He reported that he switched fuel tanks and adjusted the fuel mixture to try to get the engine to run smoothly. The airplane was losing altitude so he decided against attempting to return to the airport. He banked left in order to avoid some houses and he executed a forced landing in a wooded area. Although he heard the stall warning horn sound, he maintained flying speed. The airplane hit a pine tree and impacted the terrain about 40 feet away from the pine tree, and less than a mile from the airport. A local resident arrived at the scene shortly after the accident occurred. He assisted the pilot in evacuating the airplane. Soon after the pilot escaped from the airplane, the airplane was engulfed in flames and much of the airplane structure was consumed by the fire.

The pilot held an airline transport pilot certificate with single-engine land, multi-engine land, and instrument airplane ratings. He was a certified flight instructor with single-engine land, multi-engine land, and airplane instrument ratings. He had a total of about 2,504 flight hours with 39 hours in the make and model of the accident airplane. He held a first-class medical certificate.

The airplane was a single-engine Beech A24R, serial number MC-125. It had seating for six and

the maximum gross weight was 2,635 pounds. The engine was a 200-horsepower Lycoming IO-360-A1B1. The last annual maintenance inspection was conducted on July 7, 2010, and the total airframe time was 2,730 hours at the time of the inspection.

A Federal Aviation Administration airworthiness inspector examined the airplane at the accident site and at a hanger where the airplane wreckage was moved for inspection. The flight controls exhibited continuity. The right wing had extensive fire damage. The left wing was largely intact. About 5 – 6 gallons of light blue fluid were drained from the left fuel tank. The cockpit and instrument panel were consumed by fire.

The engine exhibited extensive fire damage. The crankshaft was rotated and all the cylinders exhibited “thumb” compression. The bottom spark plugs were removed and appeared clean. The right magneto had spark on all four leads. The left magneto did not spark. Its impulse coupling worked but its wire leads were fire damaged. No fuel was found in the fuel lines or fuel divider. The engine driven fuel pump exhibited sucking action. The fuel servo had fire damage and minor impact damage. The electric fuel boost pump appeared to be jammed. The fuel selector was fire damaged. The fuel selector placard was consumed by fire. Air was blown through the left tank fuel line and through the fuel selector. The air intake was clean and the filter element appeared clean. The propeller remained attached to the engine. All three blades exhibited some degree of aft bending.

The following fuel system components were examined at RLB Accessories in Addison, Illinois: 1) Fuel injector servo 2) Engine driven fuel pump 3) Electric boost pump 4) Gascolator, and 5) Fuel selector. The inspection of the fuel servo revealed that the - 2538283 [dash 2538283] seat was fire damaged. A new seat was installed and the fuel servo passed the bench test. The engine driven fuel pump was able to pump fluid when manipulated. The electric boost pump exhibited fire and impact damage. It appeared to be jammed. The motor was removed from the pump and the motor operated when electrical power was applied. The gascolator was intact but fire damaged. The fuel screen was intact but appeared to be discolored from fire damage. The gascolator bowl retaining bolt was loose and there was no safety wire attached. The gascolator fuel inspection valve exhibited impact damage. The fuel selector valve exhibited fire and impact damage. Air could be blown through the fuel lines that led to the left and right fuel tanks when the valve was appropriately positioned.

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	39,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:**	
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	February 20, 2010
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	March 1, 2010
Flight Time:	2504 hours (Total, all aircraft), 39 hours (Total, this make and model), 1711 hours (Pilot In Command, all aircraft), 112 hours (Last 90 days, all aircraft), 85 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N24584
Model/Series:	A24R	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	MC-125
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 20, 2010 Annual	**Certified Max Gross Wt.:**	2635 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2730 Hrs as of last inspection	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, not activated	**Engine Model/Series:**	I0360-A1B1
Registered Owner:	GIERLOFF RICHARD J	**Rated Power:**	200 Horsepower
Operator:	Christopher F. Porter	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MKG,629 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	19:55 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:	Scattered / 9000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	15 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	200°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.87 inches Hg	**Temperature/Dew Point:**	25°C / 22°C
Precipitation and Obscuration:			
Departure Point:	Muskegon, MI (MKG)	**Type of Flight Plan Filed:**	None
Destination:	West Chicago, IL (DPA)	**Type of Clearance:**	VFR
Departure Time:	20:20 Local	**Type of Airspace:**	

Airport Information

Airport:	Muskegon County Airport MKG	**Runway Surface Type:**	Asphalt
Airport Elevation:	629 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	24	**IFR Approach:**	None
Runway Length/Width:	6501 ft / 150 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious	**Latitude, Longitude:**	43.167499,-86.235275(est)

Administrative Information

Investigator In Charge (IIC):	Silliman, James
Additional Participating Persons:	John Golda; FAA Grand Rapids FSDO; Grand Rapids, MI
Original Publish Date:	July 18, 2011
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76742