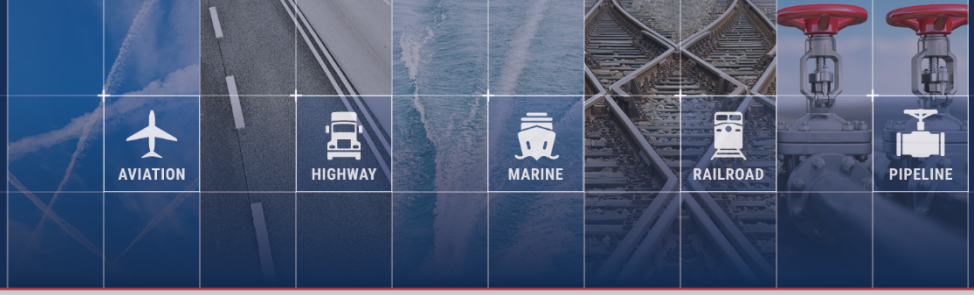

Aviation Investigation Final Report

Location:	Dexter, Maine	**Accident Number:**	ERA15LA334
Date & Time:	August 29, 2015, 08:30 Local	**Registration:**	N2013G
Aircraft:	Beech B19	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (partial)	**Injuries:**	1 Serious, 1 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The student pilot and flight instructor had flown for about 30 minutes before landing and conducting a subsequent takeoff. The instructor stated that, during the initial climb, the engine experienced a partial loss of power. He conducted a forced landing to a field during which the airplane impacted trees, resulting in substantial damage to the engine firewall, fuselage, and left wing. Examination of the engine revealed no evidence of any preimpact mechanical anomalies.

The flight instructor calculated that the total distance required to clear a 50-ft obstacle during the takeoff was 1,300 ft; however, postaccident calculations based on performance data in the airplane's flight manual indicated a required takeoff distance of about 1,700 ft. Given that there were 30-ft-tall trees located 50 ft beyond the departure end of the 1,250-ft-long turf runway, it is likely that the airplane had insufficient distance available for takeoff and initial climb to clear the trees.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight instructor's inadequate preflight planning, which resulted in collision with trees and terrain during takeoff.

Findings

Not determined	(general) - Unknown/Not determined

Factual Information

History of Flight

Initial climb	Loss of engine power (partial) (Defining event)
Landing	Off-field or emergency landing
Landing	Collision during takeoff/land

On August 29, 2015, about 0830 eastern daylight time, a Beech B19, N2013G, was substantially damaged when it impacted trees and terrain near Dexter Regional Airport (1B0), Dexter, Maine. The flight instructor sustained serious injuries and the student pilot was not injured. Visual meteorological conditions prevailed, and no flight plan had been filed for the local instructional flight, operating under the provisions of 14 Code of Federal Regulations Part 91. The flight was originating at the time of the accident.

According to the flight instructor, the airplane initially departed Old Town Airport (OLD), Old Town, Maine, around 0800. There, he and the student pilot had performed a preflight inspection together with no anomalies noted. The student pilot noted that there was about 43 gallons of fuel in the airplane and drained all three sump points with no evidence of water found in the fuel tanks. The engine oil level was at 6 quarts, which was within limits, as was the drop of engine rpm during the magneto check in the engine run-up.

After taking off from runway 22, the flight proceeded toward 1B0. After about 30 minutes, the airplane overflew the runway, fuel tanks were switched, and the airplane landed uneventfully on runway 34. After landing, the flaps were fully retracted and the carburetor heat was secured. The fuel boost pump remained on.

According to the flight instructor, "We had already calculated the ground roll and 50' clearance and found that we had the length necessary with reasonable margin for error based on temperature, and expected performance and were anticipating to be off the ground in no more than 700' and clear a 50' obstacle by around 1,300'.". After taxiing to runway 25, the student pilot commenced the takeoff roll at the threshold with full power; oil pressure, fuel pressure, and temperature were "normal." In addition, the throttle, mixture, and carburetor heat were checked to be in their correct full forward positions.

According to the flight instructor, with the student pilot at the controls, the airplane lifted off the turf runway, about 600 ft down the runway. The climb was "normal" until about 50 or 60 ft above the runway, and just as the airplane was approaching the departure end the flight instructor noticed that the engine power "suddenly" dropped by 200 rpm, and that the airplane was no longer climbing. The flight instructor took the controls and saw a slight clearing ahead and to the left. He turned the airplane in a 10° bank toward the clearing, and it started slowly sinking into a tree line.

Just before the airplane hit the first tree, the instructor extended the flaps in an attempt to clear it. The propeller was still turning as the instructor heard it cut through the 50-ft tree, although "it could have

been wind-milling." The instructor believed the propeller then stopped spinning entirely, the airplane descended into a second tree, and tumbled to the ground.

According to the flight instructor, the airplane was manufactured in 1978. It was equipped with a Lycoming O-320 series, 150-hp, engine. The most recent annual inspection was performed July 21, 2015. According to a Federal Aviation Administration (FAA) inspector, the airframe had accumulated 5,168 total hours of operation at the time of the accident. According to the airplane's type certificate data sheet, its maximum gross weight was 2,150 pounds. The flight instructor reported that the airplane's weight at the time of the accident was 2,000 pounds.

The 0853 recorded weather observation at Bangor International Airport (BGR), Bangor, Maine, located about 22 nautical miles southeast of the accident location, included wind from 210° at 3 knots, visibility 10 miles, overcast clouds at 25,000 ft agl, temperature 17°C, dew point 14°C, and an altimeter setting of 30.17 inches of mercury.

1B0 was located 3 miles east of Dexter, Maine, at an elevation of 533 feet msl. It had two runways designated as 16/34 and 7/25. Runway 16/34 was an asphalt runway, which was 3,008 ft-long by 75-ft-wide. Runway 7/25 was a turf runway, which was 1,250 ft long and 120 ft wide. There were 30 ft-tall trees located about 50 feet beyond the departure end of runway 25.

The airplane came to rest inverted about 400 feet from the departure end of runway 25. The firewall, left wing, and fuselage were substantially damaged. Fuel was noted draining from the wings. The propeller remained attached to the crankshaft. One propeller blade remained straight and the other blade was bent aft about 30°. An examination of the engine by an FAA inspector revealed no obvious mechanical anomalies with the engine.

The carburetor icing probability chart from Federal Aviation Administration (FAA) Special Airworthiness Information Bulletin CE-09-35 Carburetor Icing Prevention, June 30, 2009, showed a probability of serious icing at glide power at the temperature and dew point reported at the time of the accident.

According to manufacturer published performance information, assuming a takeoff weight of 2,150 pounds, the total ground roll required to take off on a grass surface at sea level with calm wind and a temperature of 15°C was 1,105 ft, and the total distance required to clear a 50 ft obstacle was 1,710 ft. The total ground roll required to takeoff on a grass surface at sea level with calm wind at 25°C was 1,220 ft, and the total distance required to clear a 50 ft obstacle was 1,886 ft.

Flight instructor Information

Certificate:	Commercial; Flight instructor	**Age:**	37,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Without waivers/limitations	**Last FAA Medical Exam:**	August 29, 2011
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	October 30, 2014
Flight Time:	1490 hours (Total, all aircraft), 24 hours (Total, this make and model), 1393 hours (Pilot In Command, all aircraft), 65 hours (Last 90 days, all aircraft), 33 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student pilot Information

Certificate:	Student	**Age:**	18,Female
Airplane Rating(s):	None	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	Lap only
Instrument Rating(s):	None	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 14, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	46 hours (Total, all aircraft), 24 hours (Total, this make and model), 24 hours (Last 90 days, all aircraft), 24 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N2013G
Model/Series:	B19	**Aircraft Category:**	Airplane
Year of Manufacture:	1978	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	MB-903
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	July 21, 2015 Annual	**Certified Max Gross Wt.:**	2227 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	5168 Hrs at time of accident	**Engine Manufacturer:**	LYCOMING
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320 SERIES
Registered Owner:	On file	**Rated Power:**	150 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:	BGR,192 ft msl	**Distance from Accident Site:**	22 Nautical Miles
Observation Time:	08:53 Local	**Direction from Accident Site:**	125°
Lowest Cloud Condition:	Thin Overcast / 25000 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 25000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.17 inches Hg	**Temperature/Dew Point:**	17°C / 14°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Dexter, ME (1B0)	**Type of Flight Plan Filed:**	None
Destination:	Dexter, ME (1B0)	**Type of Clearance:**	None
Departure Time:	08:30 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Dexter Regional 1B0	**Runway Surface Type:**	Grass/turf
Airport Elevation:	533 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	25	**IFR Approach:**	None
Runway Length/Width:	1250 ft / 120 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Serious, 1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 1 None	**Latitude, Longitude:**	45.000556,-69.2425(est)

Administrative Information

Investigator In Charge (IIC):	Moats, Heidi
Additional Participating Persons:	Mark Auclair; FAA/FSDO; Portland, ME
Original Publish Date:	August 28, 2017
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB did not travel to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=91906