Aviation Investigation Final Report

Location:	Osage Beach, Missouri	**Accident Number:**	CEN15LA172
Date & Time:	March 11, 2015, 12:43 Local	**Registration:**	N774TA
Aircraft:	Beech B19	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Serious, 2 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot reported that, shortly after takeoff, he noticed that the oil pressure was dropping. Shortly after the oil pressure dropped, the engine seized, and the pilot subsequently ditched the airplane in a lake.

When the airplane was recovered, the oil dipstick was missing. However, more than 4 quarts of oil and only about 1 to 2 cups of water were drained from the engine. If the dipstick had not been in the engine at impact, the engine would have been full of water. Further, the pilot reported that he had replaced the dipstick after checking the oil; so, the dipstick likely was in place at impact. No signs of oil were found in the engine cowling, and no oil streaks were observed underneath the fuselage. A postaccident examination of the engine revealed that the crankshaft middle bearing had seized. The third bearing aft, which was between the two banks of cylinders, and the No. 3 connecting rod bearing had rotated and exhibited severe heat distress and mechanical damage. The No. 4 piston wrist pin plug was deformed, and the deformation had damaged the side of the piston. Aluminum pieces and shavings were found throughout the engine. It is likely that, as the No. 4 wrist pin plug wore down, its shavings entered the oil system and clogged the oil passages, which caused the engine to seize. The examination also revealed that the engine parts installed on the airplane, including the No. 4 piston wrist pin plug, were not approved by the engine manufacturer.

Probable Cause and Findings

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

The failure of the No. 4 piston wrist pin plug and the subsequent entry of its metal shavings into the oil system, which clogged the oil passages and caused the engine to seize. Contributing to the accident was the installation of engine parts that were not approved by the engine manufacturer.

Findings

Aircraft	Recip engine power section - Fatigue/wear/corrosion
Aircraft	Oil - Fluid condition
Aircraft	Recip engine power section - Related maintenance info

Factual Information

History of Flight

Enroute-climb to cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing	Ditching

On March 11, 2015, at 1243 central daylight time, the pilot of a Beech B19, N774TA, ditched in Lake Ozark, Osage Beach, Missouri, after oil pressure was lost and the engine seized. One passenger was seriously injured, but the pilot and another passenger escaped injury. The airplane was substantially damaged. The airplane was registered to GDS Properties and operated by the pilot, both of St. Charles, Missouri, under the provisions of 14 Code of Federal Regulations Part 91 as a personal flight. Visual meteorological conditions prevailed at the time of the accident, and no flight plan had been filed. The cross-country flight originated from Grand Glaize-Osage Beach Airport (K15), Osage Beach, Missouri, about 1225, and was en route to Creve Coeur Airport (1H0), St. Louis, Missouri.

The pilot told a Federal Aviation Administration (FAA) inspector that everything appeared to be normal when he conducted his preflight inspection, although the oil did appear darker than usual. There was 6 quarts of oil on the dipstick and the oil had just been changed two days before. During the engine run-up, all engine instruments were "in the green." Shortly after takeoff, when the airplane had attained an altitude of about 2,800 feet, he noticed the oil pressure was dropping and he turned back towards K15. Shortly thereafter, the propeller stopped and the engine seized. He ditch in Lake Ozark. The occupants exited the airplane and climbed out on the wing. The pilot said that as they awaited rescue, he thought he smelled a twinge of burnt oil.

The FAA inspector examined the airplane and verified there was ample fuel on board, and that it was blue in color. He found the throttle linkage connected. The engine could not be turned by hand. The inspector said he could not find the oil dipstick when the airplane was recovered from the lake. The pilot, however, was adamant that he had replaced the dipstick after checking the oil.

On April 15 and 16, 2015, the engine was disassembled and examined at Dawson Aircraft in Clinton, Arkansas. The oil dipstick was missing, but more than 4 quarts of oil and only 1 to 2 cups of water were drained from the engine. There were no signs of oil in the engine cowling, and there were no oil streaks underneath the fuselage.

The no. 2 middle bearing on the crankshaft had seized. The third bearing aft between the two banks of cylinders had rotated, and the bearing for the no. 3 connecting rod had rotated. There was evidence of severe heat distress and mechanical damage to the no. 3 rod bearing. The latter had started squeezing out the sides of the connecting rod end. The no. 4 piston wrist pin plug was deformed and had damaged the side of the piston. Aluminum pieces and shavings were noted throughout the engine. The engine parts appeared to have been manufactured by Superior Air Parts, Inc., and not by Textron Lycoming.

Pilot Information

Certificate:	Private	**Age:**	45
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	3-point
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	April 22, 2013
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 450 hours (Total, all aircraft), 375 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Beech	**Registration:**	N774TA
Model/Series:	B19	**Aircraft Category:**	Airplane
Year of Manufacture:	1976	**Amateur Built:**	
Airworthiness Certificate:	Normal; Utility	**Serial Number:**	MB825
Landing Gear Type:	Tricycle	**Seats:**	4
Date/Type of Last Inspection:	October 30, 2014 Annual	**Certified Max Gross Wt.:**	2150 lbs
Time Since Last Inspection:	18 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2451 Hrs at time of accident	**Engine Manufacturer:**	Lycoming
ELT:	C91A installed, not activated	**Engine Model/Series:**	O-320-E3D
Registered Owner:	GDS Properties	**Rated Power:**	150 Horsepower
Operator:	GDS Properties	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KAIZ,869 ft msl	**Distance from Accident Site:**	6 Nautical Miles
Observation Time:	12:35 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	3 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	180°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.28 inches Hg	**Temperature/Dew Point:**	19°C / 17°C
Precipitation and Obscuration:			
Departure Point:	Grand Glaize, MO (K15)	**Type of Flight Plan Filed:**	None
Destination:	St. Louis, MO (1H0)	**Type of Clearance:**	None
Departure Time:		**Type of Airspace:**	Class G

Airport Information

Airport:	Grand Glaize-Osage Beach Arto K15	**Runway Surface Type:**	Asphalt
Airport Elevation:	876 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	32	**IFR Approach:**	None
Runway Length/Width:	3205 ft / 60 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Serious, 1 Minor	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Serious, 2 Minor	**Latitude, Longitude:**	38.110553,-92.680557(est)

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	
Original Publish Date:	August 25, 2015
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=90874