



The National Transportation Safety Board

Office of Aviation Safety
Central Region
Memorandum for the Record
Engine and Propeller
Examination Findings
CEN19FA120
Lake Mississippi

The engine and propeller were located at the accident site with the main wreckage and buried in a 3-ft-deep crater. The aircraft and engine were recovered from the accident site and transported to a secure facility, and examinations were conducted. The last annual was completed on May 22, 2018 at a tach time of 2508.42.

The engine remained attached to its mount; however, the engine mount was fragmented. The engine oil sump was fractured, residual oil was observed. The induction air box was crushed and separated from the carburetor, which was fractured and separated from the engine. The throttle and mixture control cables were separated from the carburetor, and the throttle cable remained attached to its separated attaching point on the carburetor. The induction air filter was crushed. The engine's exhaust system was fragmented and separated from the engine. The engine driven vacuum pump remained attached to the engine. Disassembly of the vacuum pump revealed its rotor and vanes were intact and the vanes were free within the rotor. The drive coupling was intact.

The carburetor was impact separated at the throttle plate. The fuel inlet screen was not recovered. No fuel was observed during the examination or at the accident site, but hydraulic deformation was observed on the breached wing tanks. All engine control cables were impact separated. All liquid carrying lines were impact destroyed. The carburetor air box was impact destroyed. Both magnetos were secure on their respective mounts. They were not tested. The right magneto was removed to facilitate the vacuum pump removal. All spark plugs were secure, they were not removed. Both the starter and alternator were impact destroyed. The vacuum pump was secure on its mount. The driven shaft was rotated by hand with no mechanical restriction. The unit was disassembled, all components were intact.

Used engine oil was observed in and on the engine during the engine examination. The oil sump was destroyed. The intake system was impact destroyed. The exhaust system was destroyed. The starter housing was visually examined, and it was noted that there were scoring marks consistent with starter ring gear support impact during the impact sequence. The rotational scoring marks observed are consistent with the starter ring gear support being driven at the time of impact.

The propeller assembly was attached to the engine and was deformed aft around the engine. Both propeller blades exhibited S-Type bending and chord wise abrasions. The propeller was secure on the crankshaft propeller flange. Both blades were observed bent rearward around the engine. The leading edge of both propeller blades displayed polishing. Both propeller blades displayed S bending. The damage signatures were consistent with the absorption of rotational forces applied from the crankshaft at the time of impact.

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