



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety

May 9, 2019

ENGINE EXAMINATION

ERA19FA164

(3 Pages)

1.0 EXAMINATION PARTICIPANTS:

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2.0 ACCIDENT SUMMARY

On May 6, 2019, at 1247 central daylight time, a Piper PA-28-140, N5542U, was destroyed after it impacted terrain at Foley Municipal Airport (5R4), Foley, Alabama. The flight instructor was seriously injured, and the student pilot was fatally injured. Visual meteorological conditions prevailed, and no flight plan was filed for the local flight, which originated at the Foley Municipal Airport (5R4), Foley, Alabama. The airplane was registered to Lightning Aviation and operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

According to a witness, who was a flight paramedic on an instructional flight at 5R4, he was turning from the base leg to final approach leg of the traffic pattern when the accident airplane had just taken off from runway 36 after a touch-and-go maneuver. He heard the flight instructor announce on the radio, "My engine just quit!" He saw the accident airplane about 300-400 ft above ground level (agl) pitched up high "like a power-on stall" and then "lean to the left to start a spin." He added that it was only about 3 seconds from the time he saw the airplane in a nose-high pitch to when it was descending toward the ground.

A flight instructor at 5R4 reported that he flew the accident airplane the day prior to the accident flight and experienced engine roughness when performing simulated engine-out procedures with a student. He stated that on the last simulated engine-out procedure, when he added power at 600 ft agl, the engine started shaking. He leaned the mixture and the engine ran smoothly again. He wrote up a maintenance ticket when he landed and stated that the mechanic cleaned the sparkplugs, performed an engine run-up, and signed off the maintenance write-up. The instructor subsequently flew the airplane and noted no issues.

3.0 EXAM SUMMARY

The engine and its accessories were examined. The top spark plugs were removed and visually examined with no anomalies noted. The rocker box covers were removed, and no anomalies were noted with the valve springs and rocker arms. Manual rotation of the engine's crankshaft produced compression on all four cylinders. The left and right magnetos were removed, and sparks were observed on all towers when each magneto was rotated by hand. Examination of the engine's cylinders with a lighted borescope revealed the No. 4 cylinder piston exhibited a circular impact mark consistent with an exhaust valve strike. The No. 4 cylinder was removed from the crankcase. The rocker arm, valve keepers, and springs were removed. The exhaust valve could not be removed from the valve guide by hand and was removed utilizing a hammer and a drift. The oil pickup screen was free from debris. The carburetor was removed and disassembled with no anomalies noted. The engine driven fuel pump was removed from the engine and actuated by hand. Bubbles were observed around the gasket when the pump arm was actuated. Four screws on the periphery of the pump were loose.

Examination of the propeller blades revealed one blade was bent forward about mid span. The blade exhibited spanwise scratches on the forward face and leading-edge polishing. The other blade was bent aft about mid span with twisting towards low pitch. The outer portion of the blade exhibited leading edge polishing and chordwise scratches.