

Dan Baker
Senior Air Safety Investigator
AS-WPR

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Subject: WPR23LA031, N3131J, Engine Examination Notes

On November 11, 2022, about 1147 mountain standard time, a Cessna C-150 airplane, N3131J, was substantially damaged when it was involved in an accident near Payson, Arizona. The pilot was seriously injured. The airplane was operated as a 14 Code of Federal Regulations Part 91 personal flight.

The airplane was the second airplane in a flight of two that departed Phoenix Deer Valley Airport (DVT) Phoenix, Arizona, at 1115 with a planned destination of Ak-Chin Regional Airport (A39) Maricopa, Arizona. The pilot stated he was climbing over rising terrain and about 1,000 ft above the ground when the engine started running rough. He applied carburetor heat and manipulated the engine controls, but the engine did not respond. He attempted to land in a clearing but, collided with trees before reaching the desired landing area. The airplane came to rest inverted.

Examination

The engine was examined at Air Transport of Phoenix on January 26, 2023.

Hobbs: 813.7

Tachometer: 571.5



Figure 1 - Wreckage at Storage Facility

Crushing and deformation of the left side of the engine cowling was evident. The engine was broken free from the left rear engine mount and the remaining mounts were bent. The propeller remained attached the engine. One blade exhibited scratching along the length of the leading edge of the blade. No chordwise scratching was evident on either blade.

The top and bottom spark plugs were removed. Both of the No. 1 cylinder spark plugs exhibited damage consistent with material impacting them from inside the cylinder (figure 2). The No. 3 cylinder bottom spark plug had a flake of white foreign matter embedded between the electrode and plug wall. (figure 3).



Figure 2 - No 1 Cylinder Spark Plugs

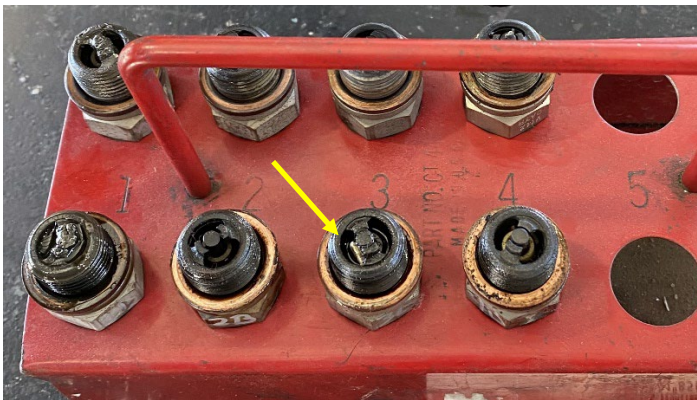


Figure 3 - No. 3 Cylinder Bottom Spark Plug Debris (FAA Photo)

The No. 1 and 3 cylinders were removed. The No. 1 cylinder exhaust valve was found separated and embedded in the piston face, part of the intake valve was missing, and the piston was cracked. The cylinder top and piston face exhibited peening and impact damage (figures 4 and 5). Scoring damage was visible on the piston and cylinder wall surfaces. A section of a broken valve was recovered from inside the heat exchanger.



Figure 4 - No. 1 Piston with embedded Exhaust Valve and Crack



Figure 5 - No. 1 Cylinder Interior

The inside top and piston face of the no. 3 piston had a large buildup of carbon-like material (figure 6). The piece of debris found in the No. 3 bottom spark plug was of similar consistency.



Figure 6 - No. 3 Piston

The oil filter was removed, cut open and examined. No foreign objects or metal was evident. The filter was marked as installed 5/13/22, 539.3 tach time, and aircraft registration N3131J.