

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR25LA040

WRECKAGE FOLLOW-UP EXAMINATION

February 27, 2025

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A. ACCIDENT

Location: Cortes Lakes, Arizona
Date: November 17, 2024
Time: 0930 mountain daylight time
Airplane: Cessna 172l
Registration: N8390L

B. PARTICIPANTS

NTSB-IIC Andrew Swick
 NTSB, AS-WPR
 Phoenix, Arizona

Party Member Mark Platt
 Lycoming Engines-Sr. Air Safety Investigator
 Phoenix, Arizona

C. SUMMARY

The engine examination revealed a separated mixture control cable near the carburetor mixture linkage arm. The throttle cable hardware at the carburetor was also missing a cotter pin on the castellated nut and the hardware was finger loose. The spark plug electrode areas, cylinder combustion areas and internal surfaces of the exhaust tubes revealed that the engine was operating at a lean condition.



Figure 1-Recovered engine

D. DETAILS OF THE INVESTIGATION

1.0 Recovered Wreckage

The nose landing gear, both forward seat assemblies, propeller, instrument panel and its associated instruments and the engine were recovered by the owner from the accident site. The wreckage was in the owner's hangar at the Deer Valley Airport (DVT), Phoenix, Arizona, when the examination was conducted.

The propeller was examined and showed impact damage to one of the blades. The damaged blade was bent aft near its midsection and had multidirectional scoring.



Figure 2-Propeller assembly.

The instrument panel was intact and did not have any instruments that would have contained nonvolatile memory of the accident flight.

2.0 Engine Examination

The engine was examined and only revealed impact damage to the exhaust muffler and exhaust pipe. The upper spark plugs were removed from the cylinders and the electrode areas were undamaged and displayed coloration consistent with a lean fuel/air mixture. Both magnetos remained attached to the engine. The magnetos were timed and found to be at about 25° before-top-dead-center (BTDC) at cylinder No. 1. The crankshaft was rotated through the vacuum pump accessory mount and spark was obtained from each ignition lead end, all in firing order.



Figure 3-Upper spark plugs.

The oil dip stick revealed over 6 quarts of clear oil in the sump. The oil suction screen was found secure and when removed, it was found uncontaminated.

The cylinder rocker covers were removed, and the cylinder overhead components were undamaged and coated with an oily residue. During the crankshaft rotation cylinder "thumb" compression was established on all cylinders and in firing order. Cylinder valve continuity was established, and proper rocker movement was observed. The cylinders were examined with a lighted boroscope and each combustion chamber was mechanically undamaged and there was no evidence of foreign object ingestion or detonation. The valve heads were intact and undamaged and no evidence of contact with the piston face. The No. 1 exhaust stack was removed from the cylinder and the interior surfaces were light in color and thickness. The inner exhaust cone was undamaged.

The gas path and combustion signatures observed at the spark plugs, combustion chambers and exhaust system components displayed coloration consistent with an exceptionally lean fuel/air mixture during operation.

The carburetor remained attached to the oil sump mounting flange. The airbox was removed prior to the examination and was not present. The fuel inlet line separated at the carburetor fitting. The throttle cable remained attached to the throttle linkage arm however the castellated nut was finger loose and the cotter pin was missing. The throttle and mixture cable housing clamping hardware remained secure. The mixture control arm remained attached to the carburetor. The cable was separated near the crimping hardware on the attachment bolt. As viewed through a jeweler's loupe, the cable separation surfaces were rough in appearance and were covered in a carbon residue. The carburetor was disassembled and was free of fuel and contaminants. The carburetor's internal components were undamaged and

revealed normal operating conditions. The fuel accelerator pump plunger seal remained pliable and intact. No external fuel staining was observed.

The carburetor mixture linkage arm and portions of the separated cable was sent to the NTSB Materials Laboratory for further examination.



Figure 4-Separated mixture cable near the carburetor.



Figure 5-Mixture cable end.



Figure 6-Mixture cable end at linkage.

Submitted by:

Andrew Swick
Aviation Accident Investigator