

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



WPR23LA023

## **ENGINE EXAMINATION**

Factual Report

February 27, 2023

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## **A. ACCIDENT**

Location: Marble Canyon, Arizona  
Date: 10/15/2022  
Time: 0830 MST  
1530 UTC  
Airplane: N6031Q, Mooney M20E

## **B. ENGINE EXAMINATION PARTICIPANTS**

NTSB-IIC	Albert Nixon NTSB, AS-WPR Phoenix, Arizona
FAA Inspector	Carey Atnip FAA FSDO Las Vegas, Nevada
FAA Inspector	John Waugh FAA FSDO Las Vegas, Nevada
FAA Inspector	Rudy Cano FAA FSDO Las Vegas, Nevada

## **C. SUMMARY**

The examination of the engine revealed no evidence of preimpact mechanical failures or malfunction that would have precluded normal operation. The only anomaly noted was the clamp on the mixture control cable protective sleeve was loose and when examined, no anomalies were noted in the mixture control movement and the cable.

## **D. DETAILS OF THE EXAMINATION**

### **1.0 Engine Prior to the Examination**

The engine and cowling assembly remained attached to the airframe during the relocation of the wreckage from the accident site. The airplane wreckage was in the process of being sold, and the airplane instrumentation, wings, and horizontal stabilizers were removed.



**Figure 1: Engine viewed at accident site.**



**Figure 2: Right wing viewed from the rear.**

**NOTE: Pictures courtesy of airport manager.**

## **1.1 Exterior Engine Examination**

The Lycoming O-360-AA engine, serial number L-177051A, was secured to the airframe and no damage was noted to the engine mounts or engine mounting carriage. There was impact damage sustained to the bottom portion of the engine, particularly the left side.

The propeller was not attached.



**Figure 3-Front view of the wreckage.**

## **1.2 Engine Examination**

Control continuity between the cabin engine controls and the engine were verified. The clamp on mixture cable protective sleeve was noted to be loose. Therefore, the mixture cable was examined, and no anomalies were noted and movement of the mixture control in the cockpit was obtained with no binding or flexing of the cable noted. The cylinder rocker covers were removed, and all the cylinder overhead components were undamaged and had a layer of residual oil. All spark plugs were removed and examined, and the electrodes were undamaged and displayed normal wear. A borescope examination of the combustion chambers revealed normal operating signatures. A comparable propeller was installed, and manual rotation was able to be accomplished and thumb compression was established at each cylinder with appropriate valve movement noted.

A loose clamp on the protective sleeve of the mixture cable was the only anomaly noted. The mixture control cable was examined, and no anomalies were noted. Additionally, the movement of the mixture control in the cockpit was obtained with no binding or flexing of the cable noted.

The engine was determined to be able to be safely run. A battery charger and external fuel source that connected to the airplane fuel line near the wing root were utilized. The oil cooler sustained impact damage and was leaking and therefore removed. The oil lines to and from the oil cooler were secured before the engine run.

The engine was subsequently run at various power setting with no anomalies noted.

Submitted by:

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Senior Aviation Accident Investigator