



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Western Pacific Region

July 30, 2021

AIRFRAME AND ENGINE EXAMINATION SUMMARY

WPR21FA288

A. ACCIDENT

Location: Tucson, AZ
Date: July 27, 2021
Aircraft: N966EZ
NTSB IIC: Albert Nixon

B. EXAMINATION PARTICIPANTS:

Albert Nixon
Senior Aviation Accident Investigator
National Transportation Safety Board
Federal Way, WA

Mark Platt
Senior Air Safety Investigator
Lycoming Engines
Williamsport, PA

C. SUMMARY

Examination of the airplane airframe and engine was conducted on July 29 and 30, 2021, at the facilities of Air Transport in Phoenix, Arizona. No evidence of preimpact mechanical failures or malfunctions were noted during the examination of the airframe and engine to would have precluded normal operation.

D. DETAILS OF THE INVESTIGATION

1.0 AIRFRAME EXAMINATION

Flight control continuity was established from the rudders and ailerons to the flight control sticks. The rudders and ailerons moved freely and were attached at all their respective attach points. The canard was separated from the fuselage. Elevator continuity was established from the cockpit control sticks to the breakage in the push/pull rod at the front of the fuselage. The fracture surfaces were consistent with overload. The elevator push rod that attached to the canard was separated, however, movement of remaining portion of the flight control tube resulted in appropriate deflection of the elevator. The elevator was attached to the canard at all the respective attachment points. On the canard, the trim continuity was established. The trim

indicator was neutral in the cockpit and able to move.



Figure 1: Airplane wreckage as viewed from the front left side.

In the front cockpit, the ignition was selected to both; the throttle, mixture, and carb heat levers were all full forward. The speed brake switch was deployed. The fuel selector was in the left tank position. The seat belts were a 4-point type.

The back seat was noted to be situated near the trailing edge of the wing and visibility to the front and side was limited by the wing.

2.0 ENGINE EXAMINATION

The Lycoming O-320-E2G engine was attached to the fuselage by the engine mount assembly. The airplane type had the engine installed with the engine crankshaft facing aft in a “pusher” style set up. No damage or anomalies were observed on the exterior examination of the engine.

The top sparks plugs were removed and examined. Examination revealed that the spark plug electrodes were undamaged, exhibited no wear, and when compared to the Champion Spark Plugs Check-A-Plug chart AV-27, exhibited coloration consistent with normal operation. The rocker covers were removed, and each rocker box area was lubricated with uncontaminated oil.

The crankshaft was rotated by hand using the propeller and thumb compression was obtained on all four cylinders. The valve train was observed to operate in proper order and no anomalies were noted. During crankshaft rotation, spark wall obtained on all ignition leads.



Figure 2: The engine as viewed from the right side of the airplane during the examination.

The magneto to engine timing was observed to be appropriate. The combustion chambers of the cylinders were examined with a lighted borescope and revealed normal operating signatures and no anomalies were noted.

The carburetor was removed and disassembled. A steady stream of fuel at the accelerator discharge tube was observed during throttle lever actuation. Examination of the carburetor revealed no anomalies.

All engine compartment fuel lines were found to be secured. Fuel was drained from the engine compartment fuel lines and was consistent with the appearance of odor of aviation fuel. No evidence of water contamination or other visible contaminants was noted. The engine driven fuel pump was examined, and fuel was observed to discharge at the outlet port during manual activation of the pump; no anomalies were noted.

The exhaust system was found free of obstructions.

The two bladed wooden propeller was attached to the crankshaft flange. In addition, the spinner remained attached to the propeller. Both propeller blades had splintered down one; one blade was about 12 inches from the hub and the other blade was about 8 inches from the hub.

Submitted by: Albert Nixon