National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594

WPR23LA162

WRECKAGE EXAMINATION SUMMARY

Factual Report

July 13, 2023

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A. ACCIDENT

Location: Grand Canyon, Arizona
Date: 4/19/2023
Time: 1400 Local
Airplane: Cessna R182

B. PARTICIPANTS

IIC	Andrew Swick NTSB AS-WPR Phoenix, Arizona
Party Member	Kurt Gibson Textron Aviation, Air Safety Investigations Wichita, Kansas

C. DETAILS OF THE EXAMINATION

1.0 Airframe Examination

During the recovery process, fuel was drained from both wing fuel tanks. The wings, wing struts, horizontal stabilizer and elevators were removed from the airplane.

The forward fuselage had impact damage and was crushed upwards. The remaining fuselage was buckled throughout. The nose landing gear had impact damage and the wheel assembly separated. The right main landing gear brake caliper separated. The engine remained secured to three of the four engine mounts. The upper left engine mount bracket was fractured separated. The windscreen separated.

The cabin area airframe structure was buckled. The instrument panel was bend and distorted. The flap handle was positioned about midrange and the indication needle was in the up position. The landing gear handle was found in the down position. The carburetor heat control was out about an inch. The throttle, mixture and propeller controls were found in the full-forward position and the cowl flaps handle was about 3/4 open. Engine control cable continuity was obtained.

The rudder trim wheel indication needle position was undetermined. The elevator trim wheel had impact damage and the indication needle position was undetermined.The tachometer read 3,185.0 and the Hobbs meter read 3,732.2. No instrumentation with nonvolatile memory was installed in the instrument panel.

Figure 1-Follow-up examination, main wreckage.

Flight control cable continuity was attained. Flight control cables were cut in several areas during the recovery process. The flaps were disconnected from their pushrods and the flap jack screw was fully extended, which corresponds with the flaps being fully extended.

Both wings were crushed upwards from the midsections to the wing tips. The wings were buckled throughout. The fuel caps were removed and the cap seals and cap vent valves were undamaged. The fuel tanks were undamaged and their ports were clear of obstructions. The fuel tank vent lines were unobstructed when air pressure was added.

The horizontal stabilizer, vertical stabilizer and elevators were undamaged. The elevator trim actuator was about 5 degrees tab up.

The fuel selector valve handle was found in the "Both" position. The handle bracket assembly had impact damage and the selector valve could not be moved. The selector valve handle linkage was disconnected and the selector valve moved freely between it's detents. The fuel strainer bowl was removed and contained a blue colored fuel. The fuel strainer screen was removed and was free of contaminates. Air pressure was added to the wing root area fuel tank connections and the selector

valve in various positions. A blue colored fuel was obtained from the gascolator throughout the test. No contaminates were found in the fuel.

The engine was removed from the airframe. The air induction box was disassembled and was free of obstruction and contaminates. The caburetor and the fuel pump were removed from the engine. The fuel pump was manually actuated and pumped fuel freely from a bucket. About 3.5 ounces of fuel was drained from the carburetor bowl. The carburetor was secured for further testing.

2.0 Engine Examination

The upper spark plugs were removed from the Lycoming O-540-J3C5D (serial number L-20948-40A) engine. The spark plug electrode areas were dark and had a sooty residue. The electrodes showed a normal wear condition. The cylinder rocker covers were removed and the cylinder overhead components were lubricated and undamaged. About 4 quarts of oil was indicated on the dipstick. Information on the removable oil filter read "3,183.6, 3-29-23." The crankshaft was rotated by hand through the propeller assembly. Cylinder thumb-compression and valve continuity was obtained. Spark was also obtained from the ignition lead ends. The exhaust pipes were removed and the internal exhaust muffler surfaces showed normal operating conditions. The lower spark plugs were removed from the engine and two of the spark plug electrode areas were oil soaked. The remaining had a dark and sooty residue. The electrodes showed a normal wear condition.

3.0 Propeller Examination

The propeller assembly remained attached to the crankshaft propeller flange. The spinner separated from the hub. The propeller blades remained loose in the hub and had impact damage. The propeller blades were bent forward with leading edge damage and chord-wise gouging near the tips.

Submitted by:

Andrew Swick
Aviation Accident Investigator