

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24LA388

EXAMINATION SUMMARY

October 14-15, 2024

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A. ACCIDENT

Location: Spartanburg, South Carolina
Date: September 20, 2024
Time: 1543 EDT
2043 UTC
Airplane: Cessna 172K, N7037G, S/N: 17258737
Tach: 751.67, Hobbs: 2104.9

B. EXAMINATION SUMMARY

IIC	Damian Galbraith NTSB - ERA Vero Beach, Florida
Party Coordinator	Mike Childers Lycoming Engines - ASI Georgia

C. SUMMARY

On September 20, 2024, about 1543 eastern daylight time, a Cessna 172K airplane, N7037G, was substantially damaged when it was involved in an accident near Spartanburg, South Carolina. The commercial pilot sustained minor injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 flight test.

The pilot reported that the purpose of the flight was to perform a local “break-in” flight for the airplane’s recently installed engine. There were no engine anomalies noted during the preflight inspection, engine run-up checks, and subsequent takeoff roll. During the airplane’s initial climb at an altitude of about 100 ft, the pilot observed an RPM decline followed by a total loss of engine power. With no remaining runway and unable to return to the airport, the pilot elected to perform a forced landing in a field. During the landing roll, the airplane nosed over and came to rest inverted about .3 miles northeast of the runway.

The airplane owner reported that the engine was overhauled on 10/12/2014 by a third party and was not put in service. He recently purchased the engine and installed it on the accident airplane. He further stated that he performed ground runs on the engine but did not check the oil pump suction screen or oil filter media before the accident flight.

D. DETAILS OF THE EXAMINATION

1.0 Accident Site



Photograph of accident site (provided by FAA)

The airplane came to rest inverted in a field about 0.3 miles northeast of runway 5 of the Spartanburg Downtown memorial Airport / Simpson Field (SPA), Spartanburg, South Carolina.

2.0 Airframe Examination

The on-scene examination was performed by the FAA inspector on September 20, 2024. The wreckage was recovered to a secure facility in Griffin, Georgia. An engine examination was performed on 10/14-15/2024.

2.1 Fuselage

Impact damage was noted to the firewall and aft fuselage.

2.2 Empennage

Impact damage was noted to the rudder and vertical stabilizer. No anomalies were noted to the elevator or horizontal stabilizer.

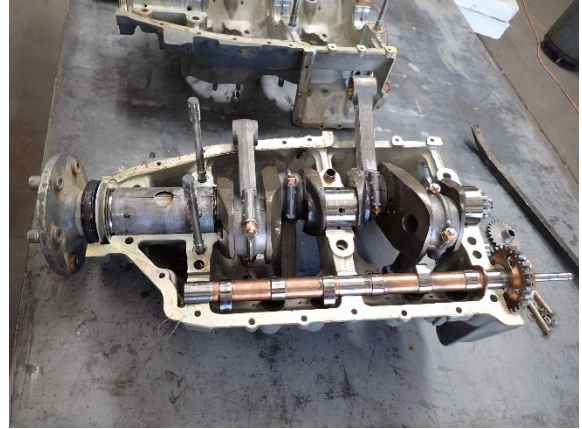
2.3 Wings

Impact damage was noted to the outboard left wing. Deformation and skin separations were noted to the inboard area of the right wing.

2.4 Fuel/Fuel System

No anomalies were noted to the airframe or engine fuel systems.

3.0 Engine Examination



Photograph of front main bearing and crankshaft.



Photograph of sectioned crankcase and noted obstructed passage.

According to the airplane's records, the engine was overhauled on October 12, 2014, and converted from an O-320-E2A to a D2G in accordance with Lycoming Service Instruction 1304J dated 11/12/1999. The engine serial number was L-17772-27AC. The "C" was added to the serial number to reflect the engine model change as instructed by the Lycoming Service Instruction.

The engine was equipped with a SureFly electronic type ignition system that was installed on the right magneto location and a Kelly Aero magneto was installed on the left position. Both ignition sources remained attached to the engine and produced spark from their ignition towers during field test. The spark plugs electrodes exhibited normal wear and were gray coloration when compared to the Champion Check-A-Plug card.

The engine oil sump contained about 8 quarts of oil and there were no anomalies noted to the oil cooler or oil lines. The crankshaft could not be rotated via hand rotation of the attached propeller. Removal and examination of the four cylinders revealed no anomalies to their interiors and residual oil was observed on the valvetrain and internal engine components. The four connecting rods rotated freely on the crankshaft when facilitated by hand. No debris was observed in the oil pump suction screen or oil filter media.

The engine was removed from the airframe and disassembled. The oil sump contained an accumulation of black in color oily sludge. No anomalies were noted to the oil pump during hand rotation of its drive gear. The camshaft, follower faces, and lifters were unremarkable. There was no evidence of oil starvation or lack of lubrication noted to the Nos. 2 & 3 main bearings.

The front main bearing was discolored and exhibited rotational abrasion at its rear oil passage (bearing surface area) and corresponding crankshaft surface. No anomalies were noted to the front main bearing's front oil passage (bearing surface area) or corresponding crankshaft surface.

Oil passage continuity checks with low-pressure air revealed an obstruction between the oil header and front main bearing's rear oil passage. The right crankcase half was sectioned at the front main bearing area for identification of the obstruction. Further examination revealed the oil passage was obstructed with an unknown gritty material. Additionally, an oil passage was obstructed to the No. 4 cylinder intake cam follower bore with a similar debris noted to that of the front main bearing passage. Abrasion was noted to the No. 4 cylinder intake cam follower body. All other oil passages were clear of obstruction, and the remaining seven cam follower bodies were free of abrasion.



Photograph of the No. 4 cylinder intake cam follower and oil passage debris.



Photograph of debris recovered from the rear oil passage of the crankcase's front main bearing area.

The debris was sent to the NTSB laboratory for further examination.

4.0 Propeller Examination

The two-bladed aluminum fixed pitched propeller remained attached to the engine. One propeller blade exhibited aft deformation to its outboard area. No leading-edge damage was noted to either blade. The propeller spinner remained attached and exhibited aft deformation.

Submitted by:

Damian Galbraith
Aviation Accident Investigator