



NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety

Engine Examination

A. ACCIDENT ERA20LA332

Location: Hagerstown, MD
Date: September 23, 2020
Time: 1145 Eastern Daylight Time (EDT)
Operator/Pilot: Matthew Johnson
Aircraft: Glasair 1RG
Engine: Lycoming O-320-E2A sn SH 583
Registration: N324DJ

B. ENGINE EXAMINATION PARTICIPANTS:

IIC: Peter Wentz
 National Transportation Safety Board
 Ashburn, Virginia

Participant: Kenneth Crowder
 Federal Aviation Administration
 Baltimore, Maryland

C. ENGINE EXAMINATION LOCATION:

Aircraft Performance Services, Inc.
Hagerstown Regional Airport-Richard A Henson Field (HGR)
Hagerstown, Maryland
October 21, 2020

D. SUMMARY

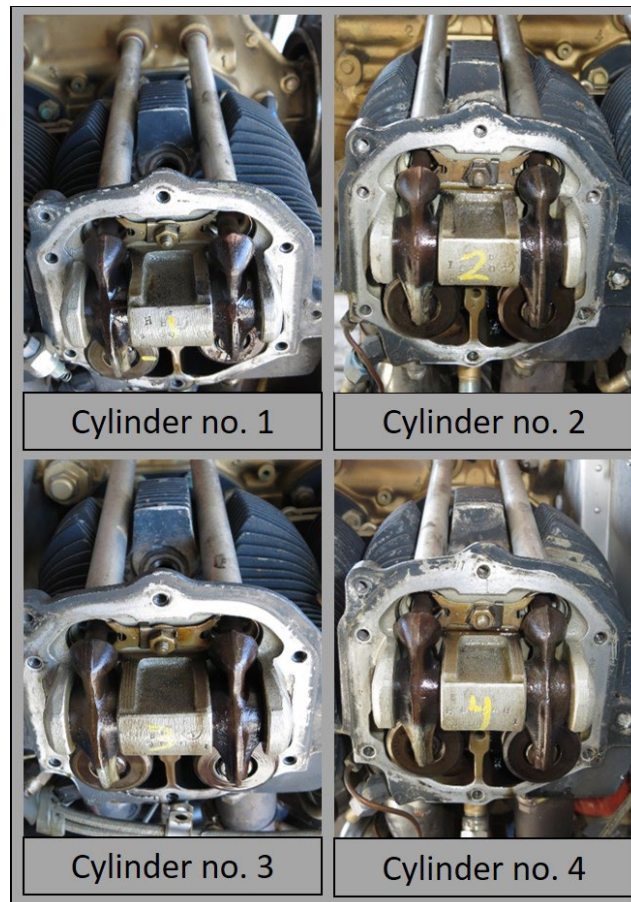
On September 23, 2020, about 1145 eastern daylight time, a Glasair 1RG, N324DJ, was substantially damaged when it was involved in an accident at Hagerstown Regional Airport-Richard A Henson Field (HGR), Hagerstown, Maryland. The pilot and passenger were not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight. The airframe and engine were recovered from the accident site and transported to a secure location, photograph 1 shows the engine before examination.



Photograph 1 – Accident airplane engine at recovery facility.

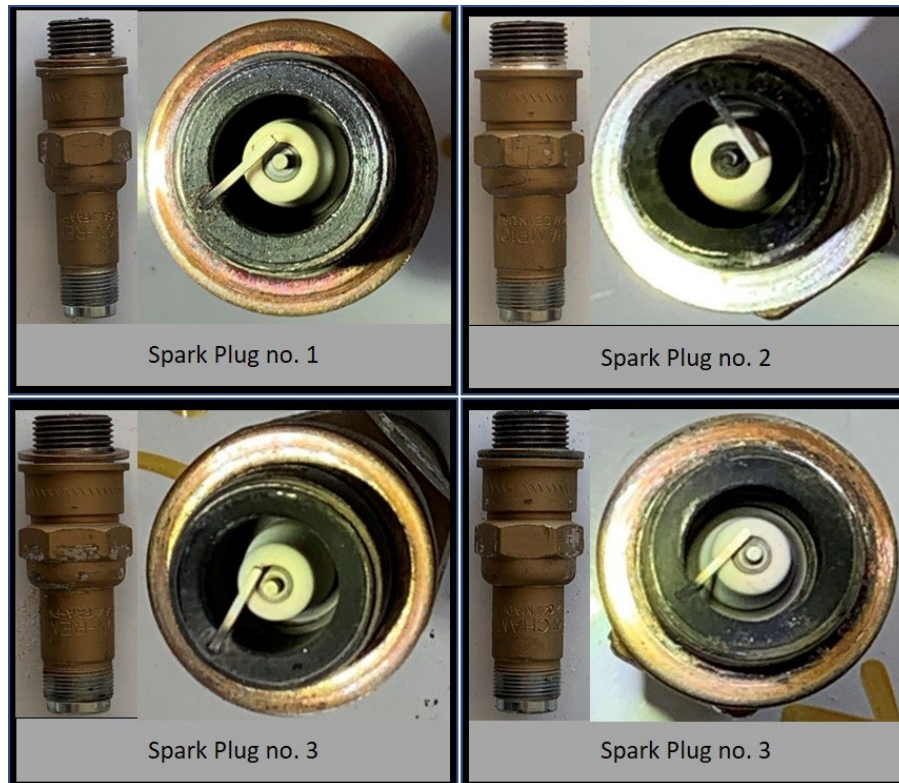
E. DETAILS OF THE EXAMINATION

The accident airplane engine was a Lycoming, O-320-E2A sn SH 583. The engine was attached to the motor mounts on the airframe during the examination. The engine crankshaft and valvetrain continuity were confirmed by rotating the propeller by hand. All valve push rods, and rocker arms were undamaged and operated as expected. The top spark plugs were removed, and all (1-4) spark plugs appeared normal. Both magnetos produced spark on all leads when the engine was rotated by hand and each plug wire was ground to the engine. The airplane was equipped with 3 fuel tanks, (two wing tanks and a header tank). The carburetor was removed and when manually operated; the accelerator pump ejected a small trace of fuel. The carburetor (Precision Model MA-4SP) was disassembled, and a small trace of fuel was present, the fuel was tested using Kolor Kut (water finding paste) and found no water present. The float was tested by passing air thru the system, then the float was moved to a closed position and the air stopped. The engine driven fuel pump was removed and operated, all parts moved without resistance, A crack was witnessed on the fuel intake port from impact forces. The pump was disassembled and examined, no tears in the diaphragm were observed. The accessory port on the back of the engine was opened the gear moved freely when the propeller was manually turned. There were trace amounts of fuel found in both the carburetor and fuel pump, but no fuel noted in any of the three fuel tanks or fuel lines.

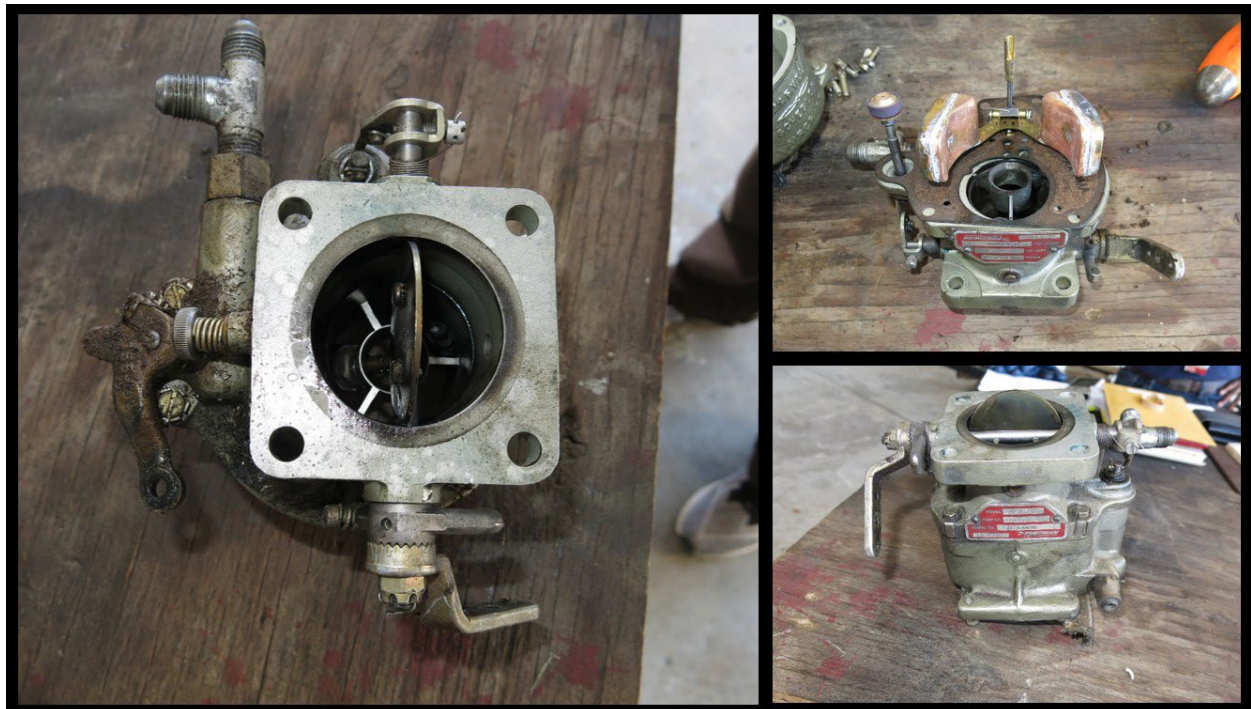


Photograph 2 –Cylinders

The top spark plugs were removed from each cylinder head for examination. The spark plugs were manufactured by Champion.



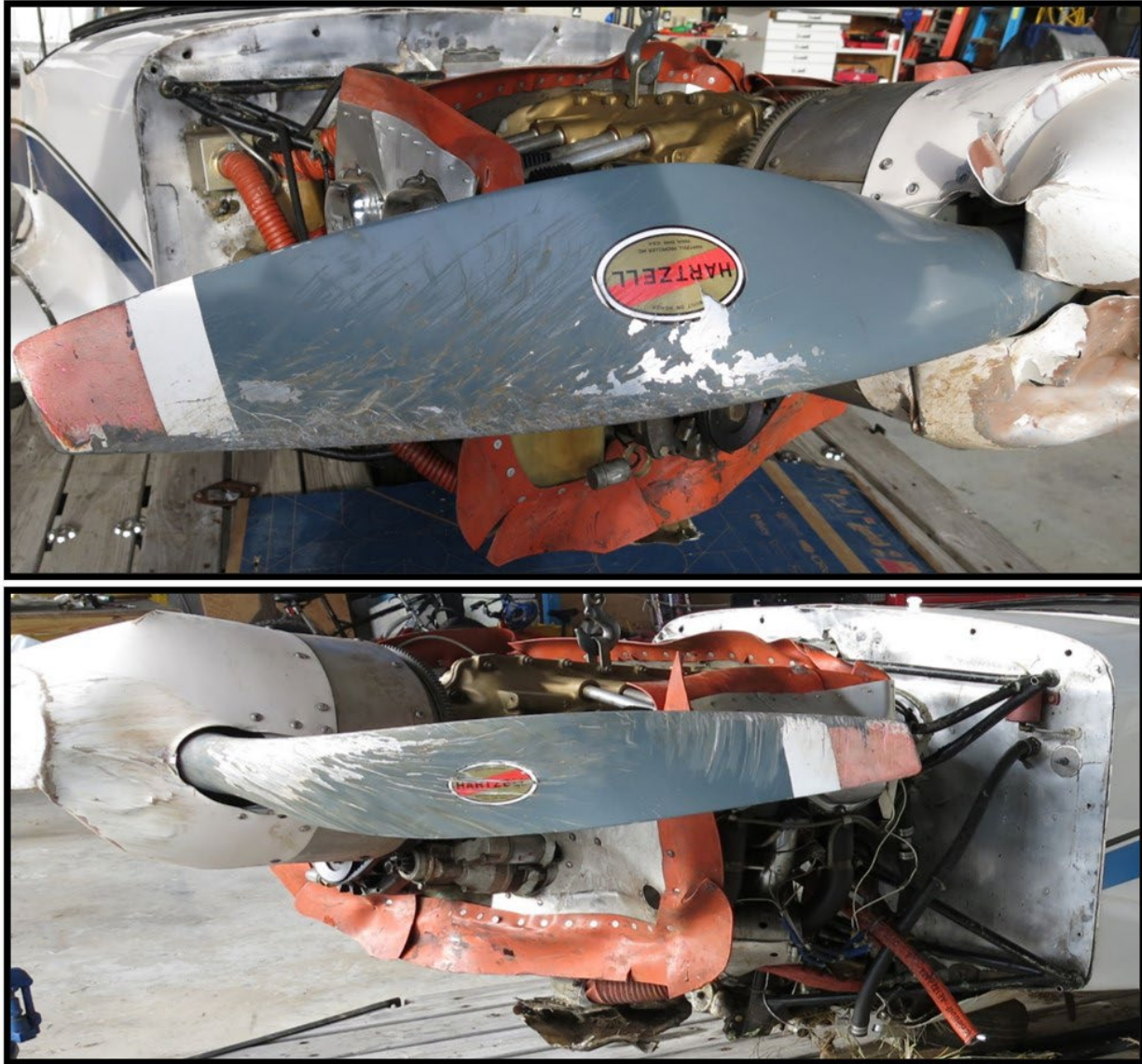
Photograph 3 –Champion top spark plugs removed from the accident engine.



Photograph 4 –Precision Model MA-4SPA Carburetor.



Photograph 5 –Engine driven fuel pump



Photograph 6 –Hartzell two bladed propeller