

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA22LA109

ENGINE EXAMINATION

N879CD, Cirrus SR-22

A. ACCIDENT DETAILS

Location: Lexington, South Carolina
Date: January 13, 2022
Time: 1326 EST
Airplane: N879CD, Cirrus SR-22

B. EXAMINATION PARTICIPANTS

Investigator In Charge	Lynn Spencer NTSB/AS-ERA Washington, DC
Investigator	Daniel Boggs NTSB/AS-ERA Washington, DC
Group Member	Danny Cox FAA/FSDO Atlanta, GA
Group Member	James Manning FAA/FSDO Atlanta, GA
Group Member	Les Doud Hartzell Propeller Piqua, OH

C. SUMMARY

On January 13, 2022, about 1326 eastern standard time, a Cirrus SR-22, N879CD, was substantially damaged when it was involved in an accident near Lexington, South Carolina. The pilot and passenger were not injured. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

According to the pilot, a preflight inspection of the airplane was conducted with no anomalies noted. The pilot conducted a run-up and departed for Charleston Air Force Base/International Airport (CHS), Charleston, South Carolina, on a visual flight rules (VFR) flight plan about 1300. About 20 minutes into the flight, at 5,500 ft, the pilot reported seeing a red oil annunciator light illuminate, followed by the oil pressure gauge fall to zero pressure. The pilot stated that the engine tachometer was near red line and that the engine sounded like it was over speeding, so he reduced the throttle to slow the engine. At 2,000 ft he deployed the CAPS and the airplane slowly

descended to the water. A post-accident examination of the airplane by a Federal Aviation Administration inspector revealed substantial damage to the fuselage and left elevator. Additionally, the engine exhibited a hole on the top of the case near the No. 6 cylinder. An examination was completed April 6, 2022; however, notes of that exam were never located. Therefore, this follow-up exam was performed.

D. MAINTENANCE RECORDS REVIEW

Review of maintenance records revealed that the most recent annual inspection was completed on November 29, 2021, at a total time in service of 2,408.3 hrs. The maintenance entry in the engine logbook read: "Changed oil and filter, service with 8 qts W100. Clean, insp and regap spark plugs. Remove & replaced magnetos after O/H and time to engine. Leak ck and run up OK." A Serviceable Parts Tag was attached to the logbook page. A previous entry on December 4, 2015, noted the replacement of the No. 2 cylinder after repair at tachometer time of 1,906.9 hours. A Serviceable Parts Tag was attached to the logbook page. Review of the propeller logbook revealed that an annual inspection of the propeller took place on August 12, 2020, at a total time in service of 2,305.9 hours. On March 5, 2021, at tachometer time of 2,357.1 hours, the propeller governor was removed and replaced. A Serviceable Parts Tag was attached to the logbook page.

E. PHOTOS FROM ORIGINAL EXAMINATION

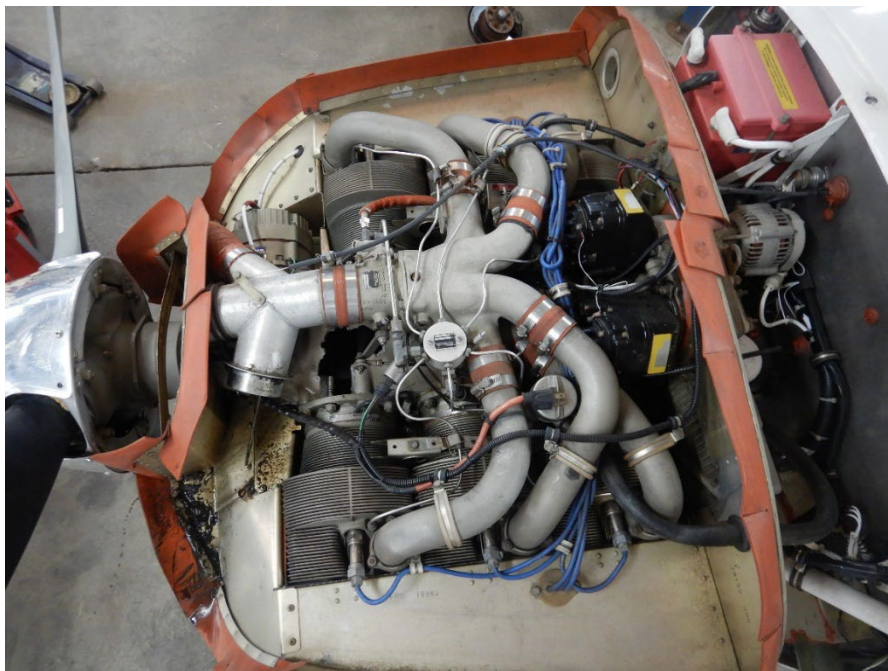


Photo 1 - Engine as observed from above with a hole in the crankcase above cylinder No. 6.



Photo 2 - Close-up view of crankcase hole.



Photo 3 - View of air filter.

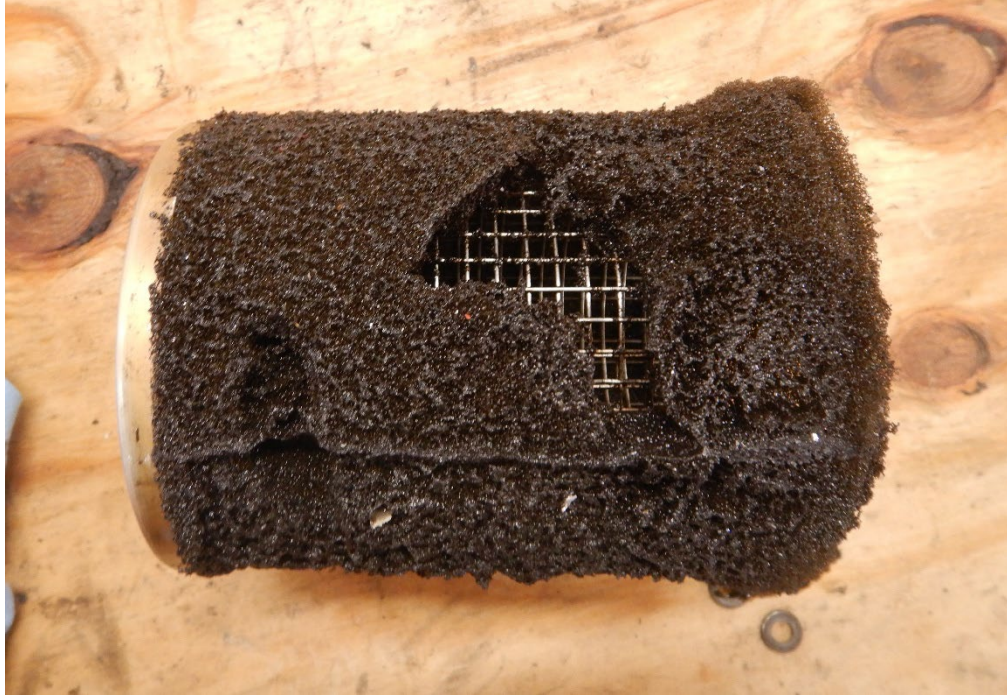


Photo 4 - Side view of air filter.



Photo 5 - View of propeller with blades attached.



Photo 6 - View of recovered metal debris.

F. ENGINE EXAMINATION AND PHOTOS

A follow-up engine examination took place on June 13, 2023, at Atlanta Air Salvage in Griffin, Georgia.

As first viewed, the engine had been completely dismantled, with the crankcase split, and the camshaft, crankshaft and all cylinders removed. Examination of the engine revealed that all crankshaft connecting rod journals showed evidence of lubrication distress. Additionally, the No. 3 main journal bearing had shifted, resulting in the blockage of the oil ports. The crankcase exhibited lock slot elongation as a result of the bearing shift. The No. 6 connecting rod bearing showed evidence of spinning and was fused to the crankshaft journal. The cylinder No. 1 connecting rod bearings were fused together on the crankshaft, and the bearing surface was smeared and torn. The bearing metal had melted and re-solidified along the edges.



Photo 7 - View of left side of split crank case showing hole above cylinder No. 6.

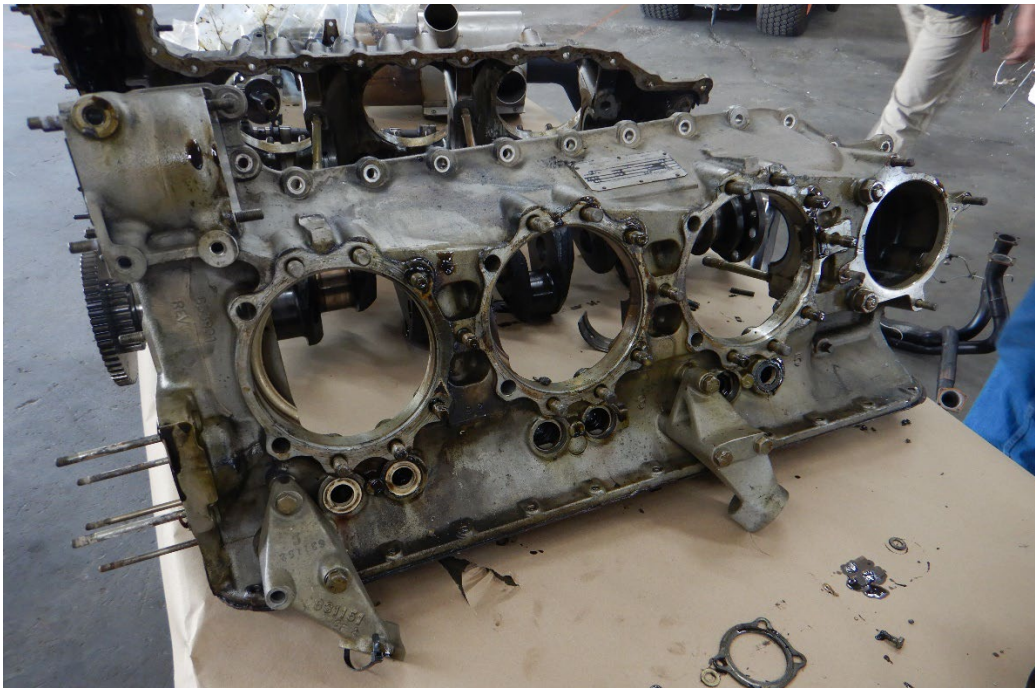


Photo 8 - View of right side of split crankcase



Photo 9 - View of crankshaft with burnt connecting rod journals.



Photo 10 - Close-up view of burnt connecting rod journal.



Photo 11 - Close-up view of burnt connecting rod journal.



Photo 12 - View of spalling of fused bearing on cylinder No. 1.



Photo 13 - View of removed fused bearing from cylinder No. 1.

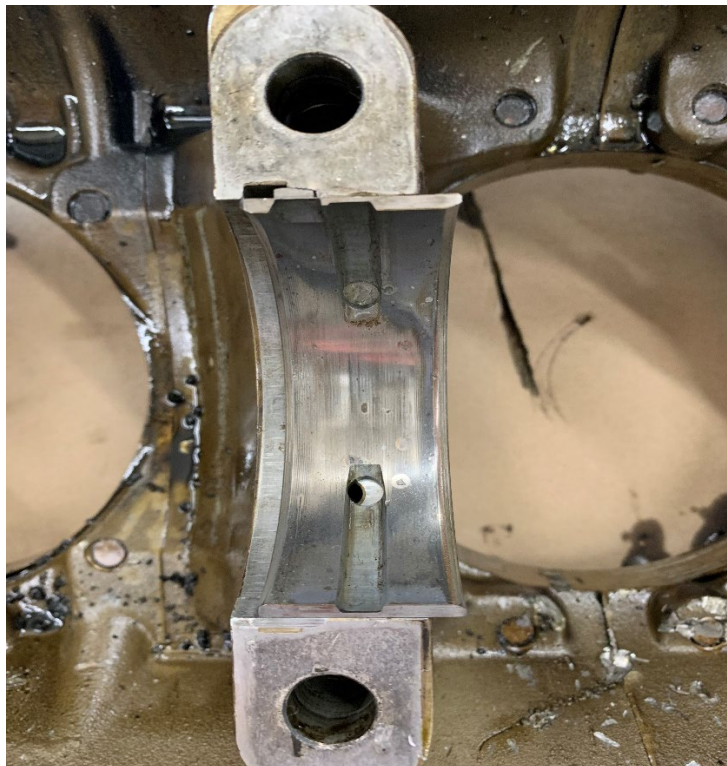


Photo 14 - View of No. 3 main journal bearing as seated in right side of crankcase, blocking the oil port.

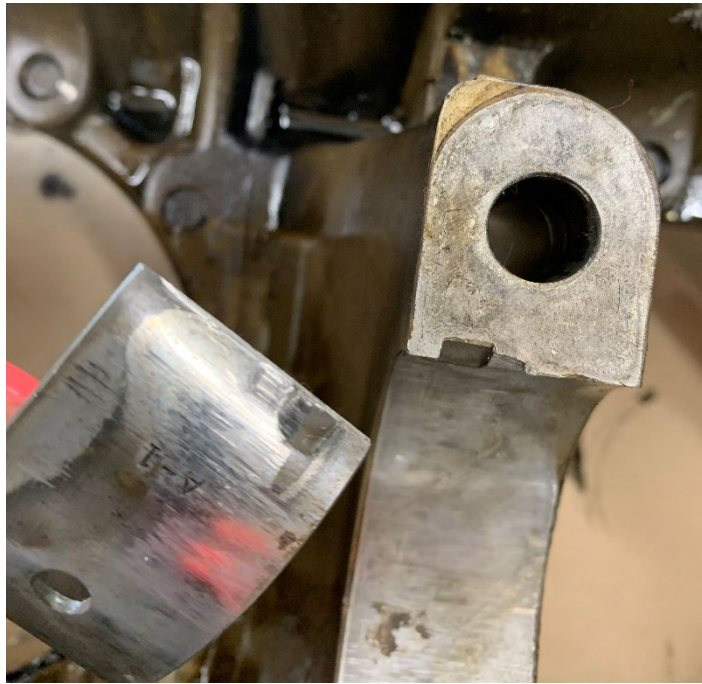


Photo 15 - Close-up view of damaged bearing and No. 3 main journal with damage on right crankcase.



Photo 16 - View of damaged bearing and No. 3 main journal with damage on left crankcase.



Photo 17 - Close-up view of bearing and No. 3 main journal damage on left crankcase



Photo 18 - View of portions of the No. 6 connecting rod bearing fused to the crankshaft journal.



Photo 19 - Engine data plate.