

# National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



ERA24LA141

## ENGINE EXAMINATION SUMMARY

## A. ACCIDENT

Location: Winokur, Georgia

Date: March 16, 2024

Time: 1530 EDT

1930 UTC

Airplane: Cirrus SR22; N469GB

Engine: Continental IO-550N68B / Ser# 1012361

## B. WRECKAGE EXAMINATION SUMMARY

NTSB Investigator Aaron McCarter  
National Transportation Safety Board  
Washington DC

Party Member J. Ferrell; Continental (Did not attend examination)

Examination Group:

| INSPECTION WITNESSES |                       |              |                       |
|----------------------|-----------------------|--------------|-----------------------|
| NAME                 | Phillip Grice         | NAME         | Randy Bryant          |
| ADDRESS              | Mobile, Alabama       | ADDRESS      | Mobile, Alabama       |
| ORGANIZATION         | Continental Aerospace | ORGANIZATION | Continental Aerospace |
| PHONE                |                       | PHONE        |                       |
| NAME                 | Lisa Jersild          | NAME         | Aaron McCarter        |
| ADDRESS              | Mobile, Alabama       | ADDRESS      | Washington DC         |
| ORGANIZATION         | Continental Aerospace | ORGANIZATION | NTSB                  |
| PHONE                |                       | PHONE        |                       |

Figure 1 Examination group participating/witnessing examination of engine.

## C. SUMMARY

On March 16, 2024, about 1530 eastern daylight time, a Cirrus SR22, N469GB was substantially damaged when it was involved in an accident near Reidsville, Georgia. The private pilot and passenger were not injured. The airplane was operated as a Title 14 Code of Federal Regulations Part 91 personal flight.

The pilot stated that he departed St Simons Island Airport (SSI), St Simons Island, Georgia with an intended destination of W H 'Bud' Barron Airport (DBN), Dublin, Georgia, which was his home airport. During takeoff, climb and initial cruise portion of the flight, all of the engine parameters and the airplane performance were normal. About 30 minutes into the flight, without warning, the engine made a "loud noise" and stopped producing power. This was immediately followed

by oil spraying onto the windscreen. The CAPS System was utilized and there were no injuries. There was a large hole in the crown of the engine crankcase.

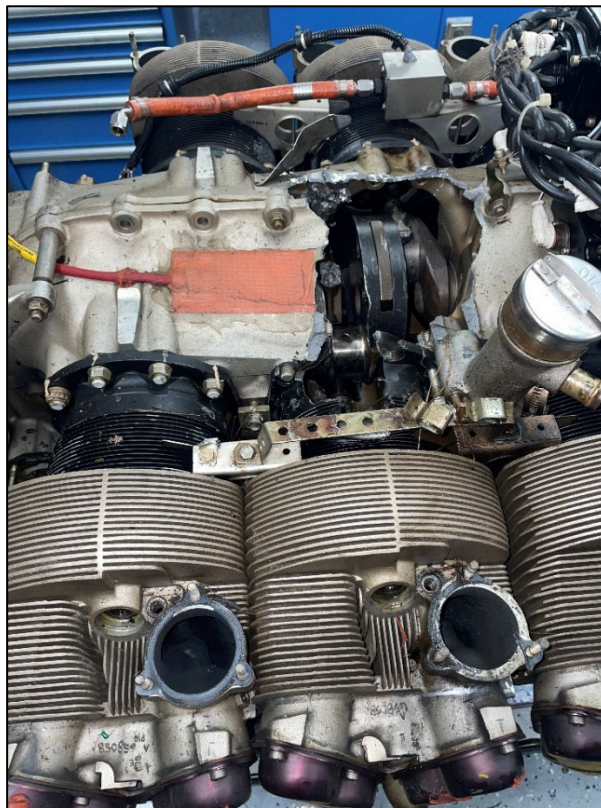
## **D. DETAILS OF THE INVESTIGATION**

### **1.0 Accident Site**

Dense wooded terrain. Latitude 31.0° Long: -82.0° Estimated.

### **2.0 Engine Examination**

Continental Engines, Mobile, Alabama. The engine exhibited a 9 by 6-inch hole on the top of the crankcase between cylinders Nos 3 and four. The engine was placed on the disassembly stand for a complete teardown examination.



*Figure 2: Top of engine showing hole damage at the #3 and 4 cylinders.*

The engine crankshaft is unable to be rotated. Jammed with no movement at all through either the propeller hub or the accessory section.

Crankcase cracked in multiple locations.

Induction tube contained an impact hole and shrapnel impact marks.

Spark plugs were normal in appearance in accordance with the Champion Spark Plug examination chart.

Cylinder Nos. 1-6 valvetrain, valves, springs and pushrods appeared well lubricated and showed no signs of irregularities.

Fragments of connecting rod discovered in crankcase and oil sump.

Connecting rod bushing fragments (brass color) discovered in oil sump and throughout engine crankcase.

Camshaft fractured.

Oil filter opened and pleating revealed substantial metal/ferrous material.



*Figure 3 Connecting rod assemblies minus the number 4 that was destroyed.*

- Connecting rod No. 1: Bushing migrated and chipped.
- Connecting rod No. 2: Serial number AE15CA744, Bushing migrated and chipped.
- Connecting rod No. 3: Serial number AE15CA522, Bushing migrated and chipped.
- Connecting rod No. 4: Serial number AE15CA524, Bushing missing. connecting rod fragmented and discovered in the oil sump.
- Connecting rod No. 5: Serial number AE15CA552, Bushing migrated and chipped.
- Connecting rod No. 6: Serial number AE15CA551, Bushing migrated and chipped.



Figure 4 Close up of connecting rod bushings migration and damage. This is indicative of all remaining rods and their respective bushings.



Figure 5 The number 4 connecting rod bushing discovered in sump and crankcase.

### 3.0 Oil Change and Analysis

The owner had the oil changed every 30 hours. The engine was under an oil analysis (OA) program. No evidence of material in oil filter until the most recent change, but it was minute trace amounts. OA

program only recently started seeing small increases in iron, but no flags. The accident flight was only 15 hours since the last oil change on February 16, 2024. The **Critical Service Bulletin CSB07-01A** was not referenced in the logbook entries. In addition, the mechanic was called during the examination; he was open and transparent. He stated that he did not follow the service bulletin but believed that he went over and above considering that he opened the oil filter, examined the pleats and sent the oil off for analysis; he also had direct communication with the laboratory.<sup>1</sup> There were no red flags or indications that would lead to such a rapid failure.

|                               |                       | UNIT /<br>LOCATION<br>AVERAGES | 23         | 30        | 29        | 17         | 16        | UNIVERSAL<br>AVERAGES |
|-------------------------------|-----------------------|--------------------------------|------------|-----------|-----------|------------|-----------|-----------------------|
|                               |                       |                                | 10/24/2023 | 7/20/2023 | 3/23/2023 | 11/28/2022 | 9/30/2022 |                       |
| ELEMENTS IN PARTS PER MILLION | MI/HR on Oil          | 31                             |            |           |           |            |           |                       |
|                               | MI/HR on Unit         | 1,493                          | 1,468      | 1,445     | 1,415     | 1,387      | 1,370     |                       |
|                               | Sample Date           | 1/24/2024                      |            |           |           |            |           |                       |
|                               | Make Up Oil Added     | 3 qts                          |            | 3 qts     | 2 qts     | 1 qt       | 0 qts     |                       |
|                               | ALUMINUM              | 4                              | 5          | 3         | 4         | 5          | 4         | 7                     |
|                               | CHROMIUM              | 5                              | 12         | 5         | 4         | 5          | 4         | 13                    |
|                               | IRON                  | 67                             | 60         | 66        | 65        | 62         | 45        | 55                    |
|                               | COPPER                | 6                              | 8          | 5         | 4         | 4          | 2         | 5                     |
|                               | LEAD                  | 4788                           | 7336       | 4810      | 4423      | 5276       | 3765      | 4406                  |
|                               | TIN                   | 3                              | 1          | 1         | 0         | 1          | 0         | 2                     |
|                               | MOLYBDENUM            | 1                              | 5          | 2         | 1         | 2          | 1         | 6                     |
|                               | NICKEL                | 9                              | 12         | 10        | 6         | 8          | 6         | 13                    |
|                               | MANGANESE             | 1                              | 1          | 1         | 1         | 1          | 0         | 1                     |
|                               | SILVER                | 0                              | 0          | 0         | 0         | 0          | 0         | 0                     |
|                               | TITANIUM              | 0                              | 0          | 0         | 0         | 0          | 0         | 0                     |
|                               | POTASSIUM             | 0                              | 1          | 0         | 0         | 0          | 0         | 0                     |
|                               | BORON                 | 1                              | 1          | 1         | 0         | 0          | 0         | 1                     |
|                               | SILICON               | 3                              | 5          | 3         | 2         | 3          | 3         | 6                     |
|                               | SODIUM                | 2                              | 2          | 1         | 0         | 2          | 1         | 2                     |
|                               | CALCIUM               | 1                              | 4          | 0         | 0         | 0          | 0         | 23                    |
|                               | MAGNESIUM             | 0                              | 0          | 0         | 0         | 0          | 0         | 0                     |
|                               | PHOSPHORUS            | 2                              | 6          | 1         | 3         | 0          | 0         | 183                   |
|                               | ZINC                  | 3                              | 5          | 2         | 1         | 2          | 1         | 4                     |
|                               | BARIIUM               | 0                              | 0          | 0         | 0         | 0          | 0         | 0                     |
| Values<br>Should Be*          |                       |                                |            |           |           |            |           |                       |
| PROPERTIES                    | SUS Viscosity @ 210°F | 92.7                           | 86-105     | 91.5      | 93.8      | 88.5       | 94.0      | 90.9                  |
|                               | cSt Viscosity @ 100°C | 18.62                          | 17.0-21.8  | 18.35     | 18.89     | 17.62      | 18.93     | 18.20                 |
|                               | Flashpoint in °F      | 480                            | >430       | 455       | 455       | 430        | 435       | 440                   |
|                               | Fuel %                | <0.5                           | <1.0       | <0.5      | <0.5      | TR         | <0.5      | <0.5                  |
|                               | Antifreeze %          | -                              | -          | -         | -         | -          | -         | -                     |
|                               | Water %               | 0.0                            | 0.0        | 0.0       | 0.0       | 0.0        | 0.0       | 0.0                   |
|                               | Insolubles %          | 0.4                            | <0.6       | 0.3       | 0.4       | 0.3        | 0.3       | 0.4                   |
|                               | TBN                   |                                |            |           |           |            |           |                       |
|                               | TAN                   |                                |            |           |           |            |           |                       |
|                               | ISO Code              |                                |            |           |           |            |           |                       |

Figure 6: February 16, 2024, Oil Report.

Submitted by:

Aaron McCarter  
Air Safety Investigator

<sup>1</sup> Blackstone Laboratories  
ENGINE EXAMINATION SUMMARY