



## ENGINE EXAMINATION REPORT

|                        |                                               |
|------------------------|-----------------------------------------------|
| ENGINE MODEL           | IO-550-N50B conv. to turbo-normalized TAT STC |
| ENGINE SERIAL NUMBER   | 691489                                        |
| AIRCRAFT MAKE & MODEL  | Cirrus SR22                                   |
| AIRCRAFT SERIAL NUMBER | 2908                                          |
| AIRCRAFT REGISTRATION  | N764CT                                        |
| FILE NUMBER            | 17-630                                        |

| NAME              | SIGNATURE                                                                            | DATE       |
|-------------------|--------------------------------------------------------------------------------------|------------|
| Nicole L. Charnon |  | 06/12/2019 |

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**PAGE 2 of 7****GENERAL INFORMATION**

| <b>EXAMINATION</b> |                                               | <b>ACCIDENT DATA</b>     |                 |
|--------------------|-----------------------------------------------|--------------------------|-----------------|
| <b>DATE</b>        | May 21 and 22, 2019                           | <b>NTSB ACCIDENT #</b>   | WPRLA18174      |
| <b>FACILITY</b>    | Continental                                   | <b>NTSB INVESTIGATOR</b> | Tealeye Cornejo |
| <b>ADDRESS</b>     | 2039 S. Broad Street<br>Mobile, Alabama 36615 | <b>FAA INVESTIGATOR</b>  | Steve Meisner   |
|                    |                                               | <b>ACCIDENT DATE</b>     | 06/19/2018      |
|                    |                                               | <b>ACCIDENT LOCATION</b> | Aguila, AZ      |

**ENGINE INFORMATION**

|                            |                                                 |
|----------------------------|-------------------------------------------------|
| <b>ENGINE POSITION</b>     | Single-Engine                                   |
| <b>TOTAL TIME</b>          | 1,955.4 hours at time of last maintenance entry |
| <b>TIME SOH</b>            | N/A (see significant logbook information below) |
| <b>TYPE &amp; TIME SLI</b> | Unknown (Hobbs meter was destroyed)             |
| <b>BUILD DATE</b>          | 11/18/2007                                      |
| <b>IN SERVICE DATE</b>     | 01/09/2008                                      |

**Significant logbook information:**

Review of the aircraft maintenance records revealed that the engine was modified with a Tornado Alley Turbo (TAT) Supplemental Type Certificate (STC) and installed on the accident airplane in January 2008. On June 9, 2011, at a total time of 671.3 hours, the magnetos underwent a 500-hour inspection and were reinstalled on the engine and timed to 21.5° BTDC. On July 27, 2012, at a total time of 817.6 hours, the #3 cylinder was removed and replaced as was the magneto filter. The magnetos were timed to 22° BTDC. On August 8, 2014, at a total time of 979.1 hours, the cylinders underwent a borescope inspection and the sparkplugs were replaced. Again, on May 24, 2017, at a total time of 1,713.2 hours, the sparkplugs were replaced. The last entry was dated May 9, 2018, at a total time of 1,955.4 hours when an annual inspection was conducted. Many of the maintenance entries indicated that a magneto-to-engine timing check was conducted, but nowhere did it list an additional 500-hour inspection of the magnetos, which accumulated 1,284.1 hours since their last comprehensive inspection in 2011.

**Report Summary:**

Search Code(s):

15-12-74, 43-01-29, 15-12-65, 10-10-03

Following a preliminary examination in July 2018, the engine was sent to Continental's manufacturing facility for a teardown examination. The engine teardown revealed that the #2 and #5 pistons experienced a pre-ignition/detonation event that partially eroded the pistons. The eroded pistons permitted the pressurization of the crankcase, which resulted in an oil starvation. The lack of lubrication resulted in the destruction of the #2 connecting rod bearing and the fracture of the #2 connecting rod. All of the connecting rod bearings displayed some degree of thermal distress and distortion due to a lack of lubrication. The cause of the pre-ignition/detonation event could not be determined.

**Disposition of engine following exam:**

The engine was released by the NTSB investigator-in-charge (IIC) and returned to the recovery facility under shipper request AD01157.

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|                     |                   |                     |                        |
|---------------------|-------------------|---------------------|------------------------|
| <b>NAME</b>         | Phillip Grice     | <b>NAME</b>         | Lisa Jersild           |
| <b>ADDRESS</b>      | Mobile, Alabama   | <b>ADDRESS</b>      | Mobile, Alabama        |
| <b>ORGANIZATION</b> | Continental       | <b>ORGANIZATION</b> | Continental            |
| <b>PHONE</b>        |                   | <b>PHONE</b>        |                        |
| <b>NAME</b>         | Randy Bryant      | <b>NAME</b>         | Tealeye Cornejo        |
| <b>ADDRESS</b>      | Mobile, Alabama   | <b>ADDRESS</b>      | Western Pacific Region |
| <b>ORGANIZATION</b> | Continental       | <b>ORGANIZATION</b> | NTSB – Aviation Safety |
| <b>PHONE</b>        |                   | <b>PHONE</b>        |                        |
| <b>NAME</b>         | Brannon Mayer     | <b>NAME</b>         |                        |
| <b>ADDRESS</b>      | Duluth, Minnesota | <b>ADDRESS</b>      |                        |
| <b>ORGANIZATION</b> | Cirrus            | <b>ORGANIZATION</b> |                        |
| <b>PHONE</b>        |                   | <b>PHONE</b>        |                        |

**EXTERNAL INSPECTION OF ENGINE**

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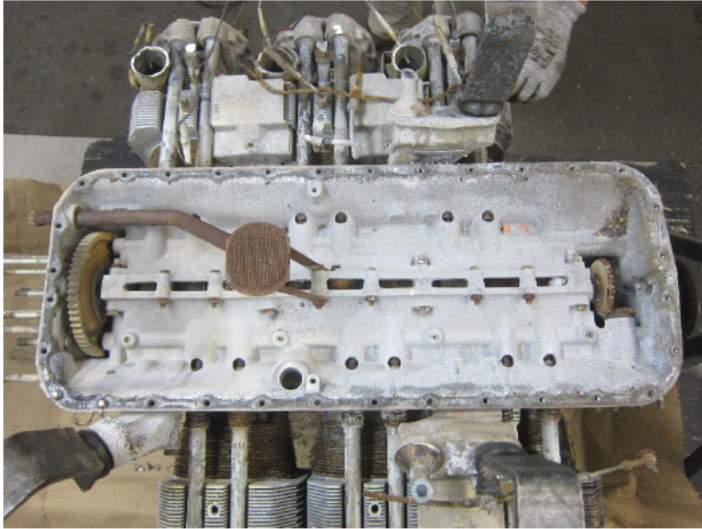
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### INTERNAL INSPECTION OF ENGINE

**NOTE:** The cylinders and connecting rods had to be cut to facilitate the disassembly of the engine.



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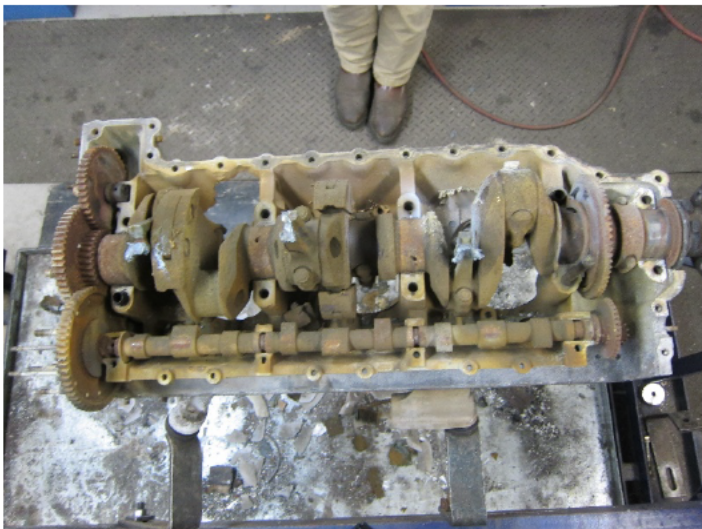
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