

National Transportation Safety Board

Office of Aviation Safety
Central Region



CEN22FA405

EXAMINATION SUMMARY

April 24, 2024

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A. ACCIDENT

Location: Tomball, Texas
Date: September 1, 2022
Time: 1707 central daylight time
Aircraft: Cirrus SR22, N420SS

B. PARTICIPANTS

Investigator Timothy Sorensen
Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

Investigator Brian Rutt
Aviation Accident Investigator
National Transportation Safety Board
Denver, Colorado

Party Representative Phillip Grice
Manager, Product Field Performance
Continental Aerospace Technologies
Mobile, Alabama

Party Representative Joshua Hoskins
Regional Field Service Manager
Cirrus Aircraft
Duluth, Minnesota

C. ACCIDENT SUMMARY

On September 1, 2022, about 1707 central daylight time, a Cirrus Aircraft SR22 airplane, N420SS, was substantially damaged when it was involved in an accident near Tomball, Texas. The flight instructor was fatally injured, and the pilot and passenger sustained serious injuries. The airplane was operated as a Title 14 *Code of Federal Regulations* Part 91 instructional flight.

An examination of the throttle and control unit, fuel pump, fuel distribution valve, fuel injector lines, fuel nozzles, and fuel flow transducer, was conducted at Continental Aerospace Technologies (Mobile, Alabama) on April 24, 2024, under direct oversight of the NTSB.

D. EXAMINATION SUMMARY

1.0 Throttle and Control Unit

Continental – Part No. 653353-5A1 (s/n A22CA107)

The throttle and control unit was previously removed from the engine and received as a component. It appeared intact and undamaged. Visual examination did not reveal any anomalies. The butterfly valve rotated normally under hand pressure.

The unit was placed on a test bench and the production test protocol was performed. At an idle (2°) throttle position, the measured fuel flow was 18.12 lbs/hr. The specification requirement was 14.0 - 14.7 lbs/hr. Fuel flow at the remaining test points was within the specification requirements. The noted deviation at the idle throttle position is associated with a ground-adjustable value that is specific to the airplane installation. No anomalies, including any external leakage, were observed. The unit was not disassembled or examined further.

2.0 Engine-Driven Fuel Pump

Continental – Part No. 655921-6A1 (s/n B22CA065)

The engine-driven fuel pump was previously removed from the engine and received as a component. It appeared intact. Visual examination did not reveal any anomalies. The drive coupling was received with the unit and was intact.

Initial attempts to turn the pump drive shaft by hand were not successful. Limited rotation was observed when additional torque with a small wrench was applied. The pump was disassembled. No anomalies with respect to the components themselves was observed. However, the drive shaft and bearing exhibited minor debris and markings/spotting corresponding to the debris. There was no physical evidence of a solid particle rubbing on the drive shaft. The debris was removed from the bearing inner diameter with plastic bristle brush, and the drive shaft was polished with a Scotch Brite pad. The pump assembly was reassembled. It rotated normally under hand pressure. The pump was installed on a production test bench and subjected to the standard test protocol for a production unit.

The pump tested within production specifications with two exceptions. At a pump input speed of 2,600 rpm, the discharge pressure was 44.66 psi. The maximum allowable was 34.70 psi. At a pump input speed of 1,600 rpm, the discharge pressure was 22.57 psi. The maximum allowable was 19.75 psi. The pump was tested as a component and requires adjustment after it is installed on an engine, and then should be readjusted every 100 hour. No other anomalies, including any external leakage, were observed.

3.0 Fuel Distribution Valve / Fuel Injector Lines / Fuel Injector Nozzles

Continental 646433-5A5 (s/n C22CA031)

The fuel distribution valve was previously removed from the engine and received as a component. The valve assembly appeared undamaged and intact. The fuel injector lines and nozzles were received with the valve assembly. Each line and nozzle had been disassembled from the valve.

The injector lines and nozzles were connected to the valve assembly as appropriate. The valve assembly, with injector lines and nozzles, was installed on a production test bench and the standard test protocol was completed. The valve assembly performed within specifications for a production unit. No anomalies, including any external leakage, were observed. The unit was not disassembled or examined further.

4.0 Fuel Flow Transducer

Part No. 15415-004 (s/n 234141)

The fuel flow transducer was previously removed from the engine and received as a component. The assembly appeared undamaged. To facilitate testing of the fuel flow transducer, the fuel pump was installed on the analytical department test bench. Fuel pressure and flow rate through the pump, without the transducer installed, were 49.89 psi and 148.8 lbs/hr, respectively.

The transducer was subsequently connected to the fuel pump outlet. The fuel pressure and flow rate through the transducer were 42.66 psi and 145.3 lbs/hr, respectively. No anomalies, including any external leakage, were observed. The unit was not disassembled or examined further.

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