



MEMORANDUM FOR RECORD

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Date: 6/28/2022
NTSB Accident Number: CEN22LA093

Examination Notes

On January 02, 2022, about 1040 mountain standard time, a Zenith CH750, N750DP, was substantially damaged when it was involved in an accident near Montrose, Colorado. The pilot was uninjured. The airplane was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 cross-country flight.

On May 10, 2022, an FAA Airworthiness Inspector provided federal oversight for an engine examination that was conducted by Smiling Aviation at the request of the NTSB. The following information was provided by the FAA Inspector who oversaw the engine run and examination:

Went to Smiling Aviation to meet up with personnel that had helped take fuel samples, etc. on this aircraft. The manager had a sample of the fuel in her office that I examined and found several pieces of material floating in what she stated was a clean jar. These pieces of material were looked at after we went to the aircraft and had completed the engine runs. The sample seemed to be contaminated by a 1/2" piece of green paint, same color as the aircraft and a blue fiber which may have come from a rag used to wipe down the sample jar in the beginning. Sample showed no water etc that may have caused any problem with the engine.

Traveled to Paonia, Colo on May 10th to meet up with the owner at his hanger. On arrival the wings of the aircraft had been removed for transportation off the mountain and were located in the hanger so that I could see them. Vent lines through the wings were blown through and no obstructions were noted. The owner stated that he had a better vent system into the wings and drilled the caps to help provide even more venting of the tanks. There was some fuel left in the tanks and with flashlight there was a little sediment, nothing that the filters would be plugged by and would remove before the engine pump.

The owner had a rig to provide fuel to the engine including vent lines return lines and a 5 gallon tank. With this and the vent arrangement of the aircraft we could successfully shut off the venting of the fuel. Then proceeded to start and run the engine. Engine came to life immediately and after warming it up it was ran to almost full power. Even though the aircraft was tied to a truck the aircraft made enough power to pull the straps apart. During the course of about 4 different runs the engine ran strong and always made power with no drop in fuel pressure and lag in RPMs.

During a couple more runs it was decided that we should try the backup Engine Control unit, Engine runs turned to a different story. During the run on the backup engine control unit the engine coughed and finally quit after a few seconds. We did this a couple times to make sure it was not a flake, Back up ECU caused the engine to quit numerous times. In discussion with the owner, he was told by the manufacturer of the engine to never use the backup ECU and stated that he has heard from other owners about engine failures of this aircraft.

No fuel pressure drop was ever seen during the runs and the engine performed as needed. The vent system and all fuel filters were checked and were clean. Only part that was not checked was the fuel regulator that was on mounted on the firewall behind some sheetmetal.

All wiring and fittings on the engine were examined for connection and tightness.

Only found a small amount of coolant on top of the engine, from either being upside down or being serviced for the runs.

After reviewing the information above, the aircraft owner supplied the following additional information:

I did some more testing by running the fuel pumps with a charger on the batteries, the pressure stayed at 41#. During the time I had the fuel pumps running I wiggled wires and tapped on the pumps but they just kept running. After about 20 minutes I decided to drain the header tank to the level of the fuel pumps inlet to see what would happen. When the level dropped to the inlet of fuel pump 1 the pressure jumped up and down wildly, not a steady drop like the data showed, I stopped draining the header tank and turned pump 2 on and it was still supplied with fuel and the pressure cam back up to 41# and stayed steady, the inlet for pump 2 is lower in the header tank than pump 1. I opened the header tank drain and as the fuel drained out it started to suck air and the pressure jumped around wildly, not a steady drop. I turned the boost pump on and when the fuel reached the inlet for pump 2 the pressure came back up tp 41# and stayed steady even though there was air in the fuel filters like you saw when we first started the engine.

I researched the fuel regulator and even called the manufacturer of the engine and found that it either works or doesn't and if it has gone bad it would leak fuel, there was no leakage of fuel. There is a port on top of the pressure regulator vented to the atmosphere and I was told to put a suction on it and if it didn't leak off the diaphragm was still intact, I put a hose on it and created a suction on it, it did not leak off. I also put pressure on it and created a vacuum while the fuel pumps were working and it raised the fuel pressure and lowered it accordingly.

I'm not sure any of this means anything but just wanted to let you know what I did.

---End of Record---