



National Transportation Safety Board

Office of Aviation Safety Central Region

Device Download and Data Summary

NTSB Accident No:	CEN19LA199
Accident Date/Time:	Saturday, June 29, 2019, at 1246 CDT
Accident Location:	Paducah, Kentucky 36°56'21.25"N 88°34'10.36"W 372 ft mean sea level
Aircraft Make/Model:	Zenair CH750 STOL
Aircraft Registration:	N170MV
GPS Device:	Dynon Avionics SV-D1000T (s/n 22076)

SUMMARY

A Dynon Avionics SV-D1000T (s/n 22076) primary flight display was recovered from the airplane at the accident site. The device contained data that was downloaded at the National Transportation Safety Board Vehicle Recorder Laboratory. The downloaded data included several flights that were flown between May 13, 2019, and June 29, 2019. The device recorded airplane position and engine parameters every 0.25 seconds. The downloaded data was reviewed with Microsoft Excel and plotted with OriginLab Origin software.

DATA SUMMARY

According to the downloaded data, on June 29, 2019, at 1115:52, the pilot started the engine while at Mayfield Graves County Airport (M25), Mayfield, Kentucky. At 1121:03, the pilot increased the throttle to takeoff power and departed on runway 1 at M25. He maintained an average altitude of 675 ft and average engine speed of about 2,750 rpm during the flight between M25 and Kentucky Dam State Park Airport (M34), Calvert City, Kentucky. At 1223:30, the pilot landed on runway 10 at M34 and shut down the engine at 1224:39. Based on the recorded data, the engine start, taxi, and flight from M25 and M34 was 1 hour 8 minutes 47 seconds.

At 1230:07, the pilot restarted the engine while on the ramp at M34. At 1230:59, the pilot increased throttle to takeoff power and departed on runway 28 at M34. After takeoff, the pilot maintained an engine speed of about 2,750 rpm. The fuel pressure remained about 31 pounds per square inch (psi) until 1243:05, when over the next 49 seconds, the fuel pressure decreased to

20 psi before it returned to 31 psi, and the exhaust gas temperature (EGT) for all four engine cylinders increased about 30°C before returning to their previous temperatures, as shown in figure 4 and figure 5.

At 1244:19, the airplane had climbed to 4,741 ft msl, the highest recorded altitude for the flight, and the engine speed decreased from 2,700 rpm to 2,200 rpm with corresponding decreases in fuel pressure and EGT. However, at 1244:57, while the airplane was in a sustained descent, the EGT for cylinder Nos. 1 and 3 began to decrease rapidly, and fuel pressure decreased below 23 psi with the engine speed about 2,100 rpm, as shown in figure 4 and figure 5.

Between 12:44:57 and 1245:42, the EGT decreased 335°C (626°C to 291°C) and 461°C (659°C to 198°C) for the No. 1 and No. 3 cylinders, respectively. However, in contrast, during the same 45 second period, the EGT for cylinder Nos. 2 and 4 increased about 60°C (640°C to 700°C).

About 1245:34, the airplane's indicated airspeed and descent rate were about 114 knots and 3,200 feet per minute (fpm), respectively, as shown in figure 3. At 1245:42, The EGT for cylinder Nos. 2 and 4 also began to decrease rapidly when the fuel pressure dropped as low as 7.5 psi, as shown in figure 5.

At 1246:01, the fuel pressure had decreased to 7.5 psi and, at 1246:23, the engine momentarily stopped rotating. Between 1246:23 and 1246:31, the fuel pressure increased from 10 psi to 20 psi while the engine speed varied between 87 rpm and 304 rpm. At 1246:31, the engine stopped a second time and the oil pressure decreased to 0 psi. At this point, the EGT was about 90°C and 210° for cylinder Nos. 1 and 3 and cylinder Nos. 2 and 4, respectively. The fuel pressure continued to increase and reached 31 psi at the end of the recorded data.

At 1246:41, about 10 seconds after the engine stopped the second time, the final recorded data showed the airplane in a right turn about 60 feet above the ground, and in a 542 fpm descent at 48 knots indicated airspeed, as shown in figure 3. The final recorded position was about 263 ft south of the accident site. The elevation at the accident site was 372 ft msl.

Based on the recovered PFD data, the engine start, taxi, and flight between the M34 and the accident site was about 16 minutes 34 seconds. When combined with the previous flight from M25 to M34, the engine was operated a total of 1 hour 25 minutes 21 seconds on the day of the accident.

CEN19LA199 -- Dynon Avionics SV-D1000T Flight Parameters (Entire Flight)

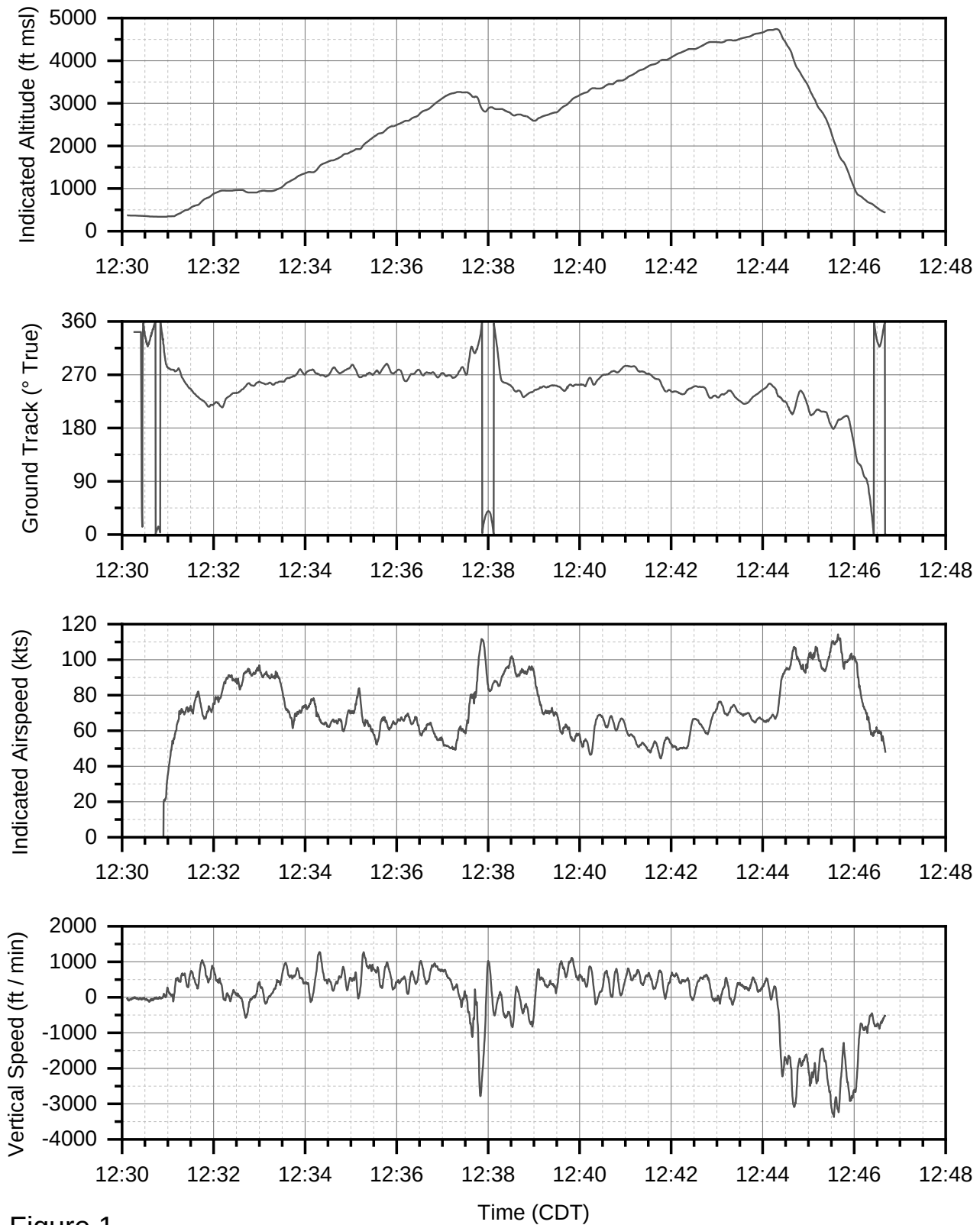


Figure 1.

CEN19LA199 -- Dynon Avionics SV-D1000T Engine Parameters (Entire Flight)

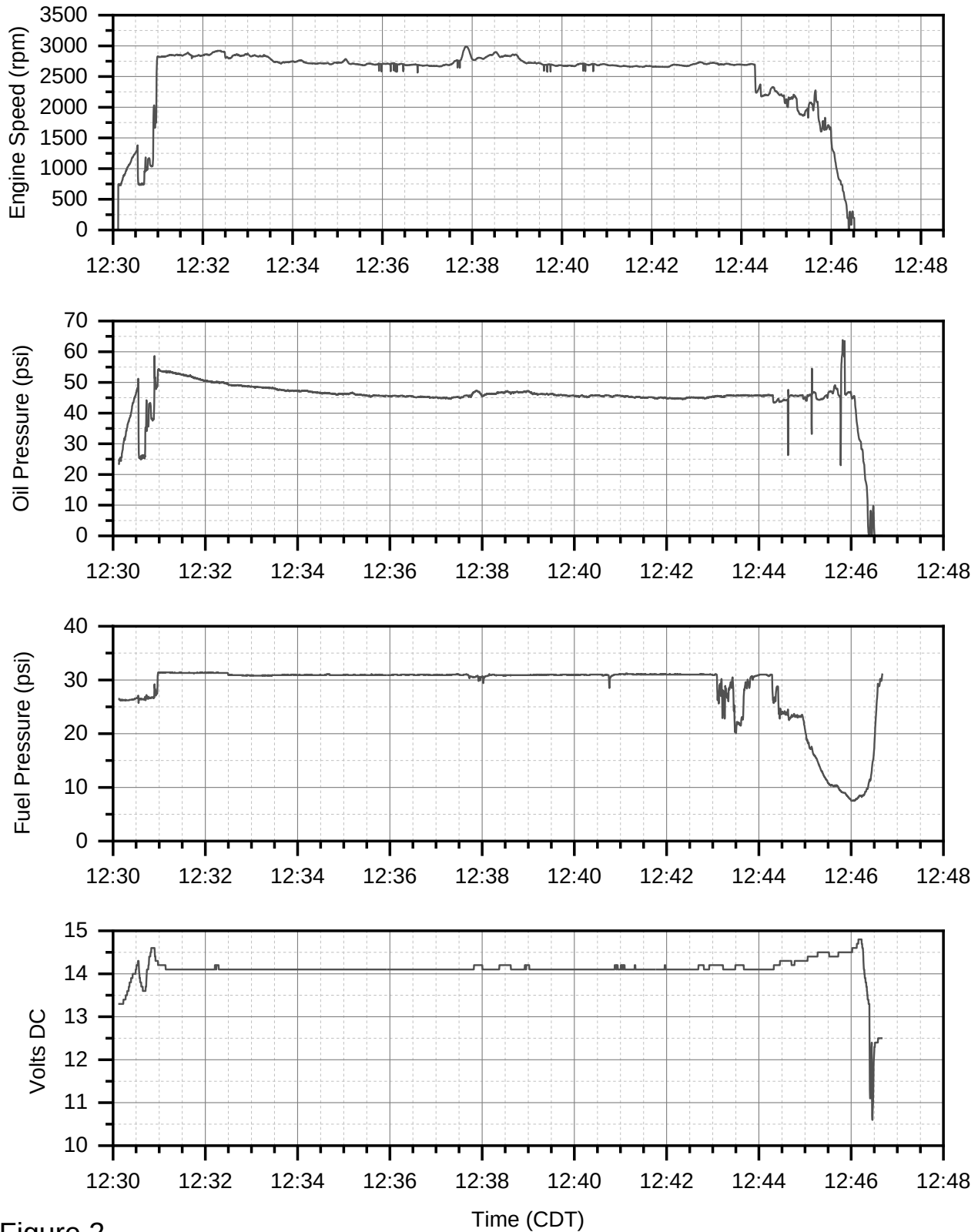


Figure 2.

CEN19LA199 -- Dynon Avionics SV-D1000T Flight Parameters (End of Flight)

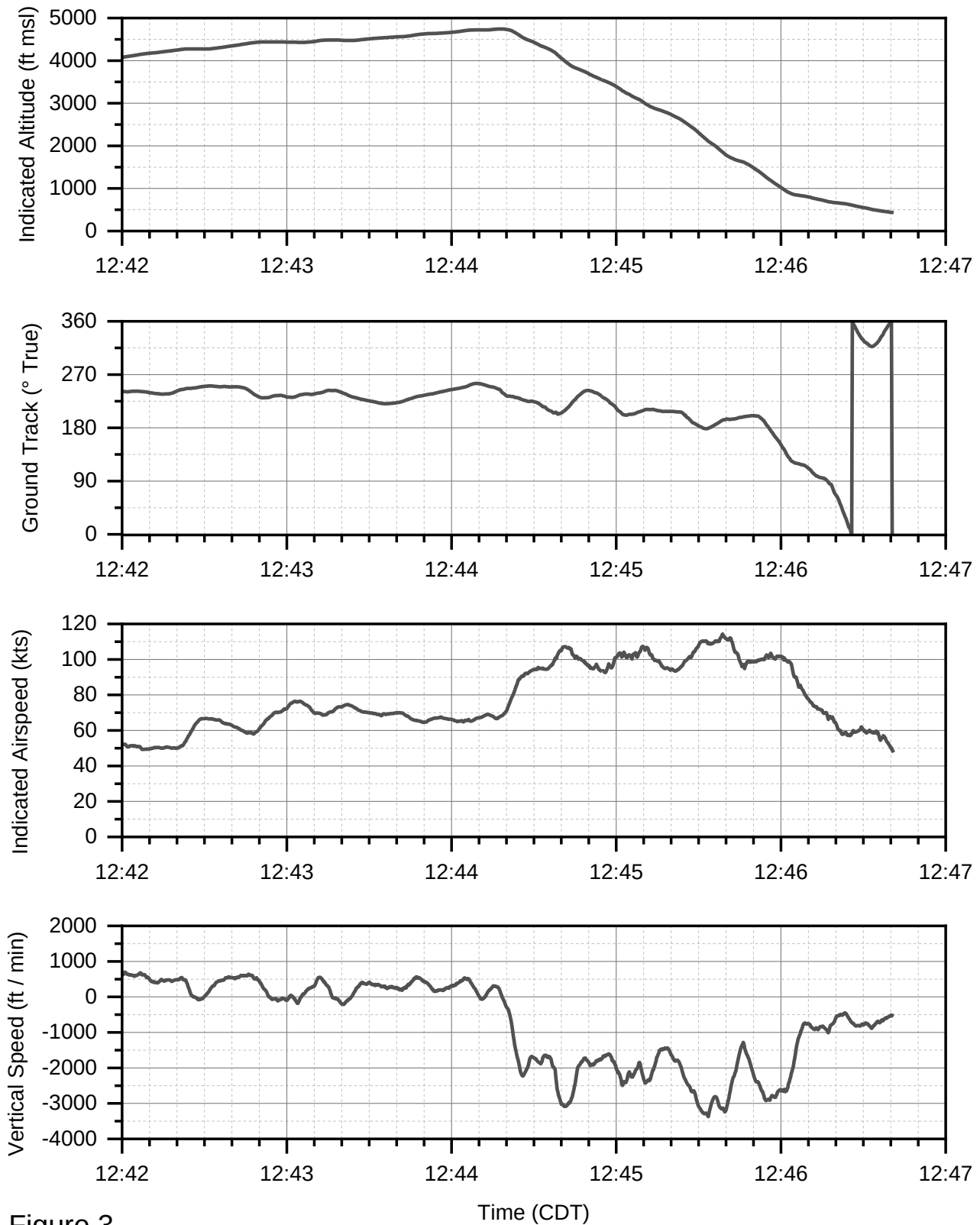


Figure 3.

CEN19LA199 -- Dynon Avionics SV-D1000T

Engine Parameters (End of Flight)

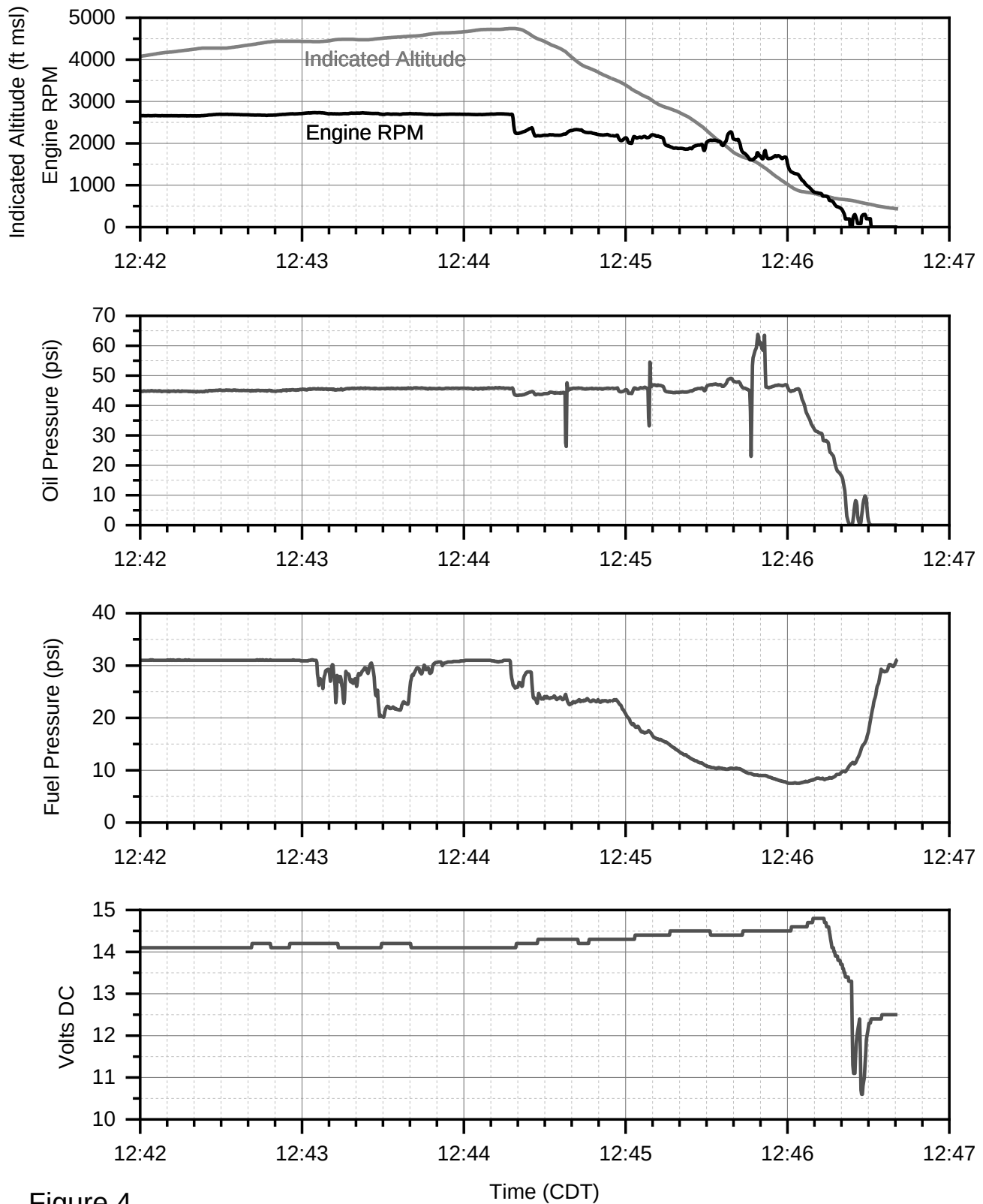


Figure 4.

CEN19LA199 -- Dynon Avionics SV-D1000T
Exhaust Gas Temperatures (End of Flight)

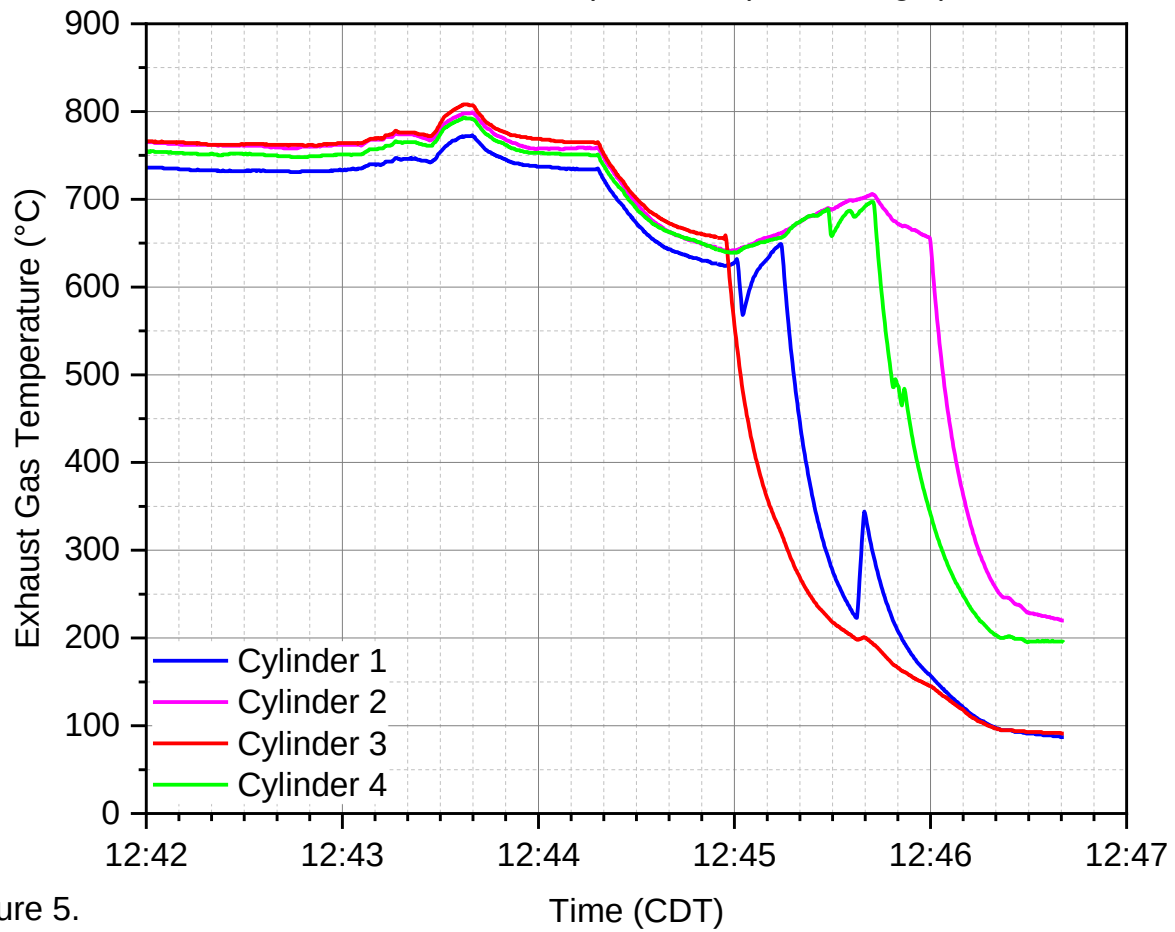


Figure 5.

CEN19LA199 -- Dynon Avionics SV-D1000T
Ground Track (Entire Flight)

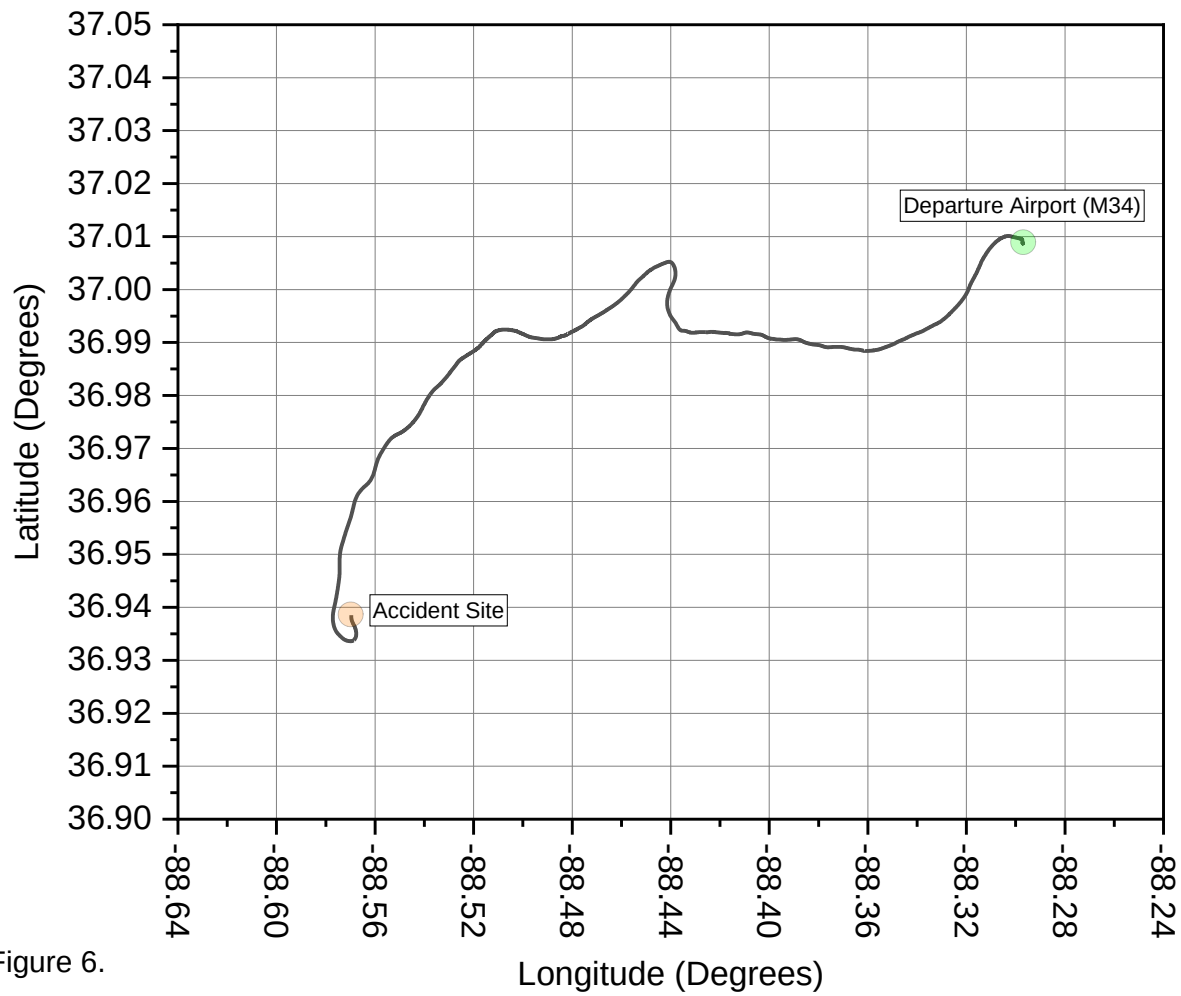


Figure 6.