

National Transportation Safety Board

Office of Research and Engineering

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CEN24LA096

COCKPIT DISPLAYS - RECORDED FLIGHT DATA

Specialist's Factual Report

March 26, 2024

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A. ACCIDENT

Location: Liberty Hill, Texas
Date: January 20, 2024
Time: 1321 central standard time (CST)
1921 coordinated universal time (UTC)
Airplane: Lockwood AirCam, private operator, N1230R

B. COCKPIT DISPLAYS - RECORDED FLIGHT DATA SPECIALIST

Specialist: Gerald Kawamoto
Recorder Specialist
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C. DETAILS OF THE INVESTIGATION

A group was not convened. The NTSB Vehicle Recorder Division received the following devices:

Recorder Manufacturer/Model: Dynon SkyView D1000
Recorder Serial Number: 21920

Recorder Manufacturer/Model: Dynon SkyView D1000
Recorder Serial Number: 21926

1.0 Dynon SkyView D1000 Description

The Dynon Skyview (SV) D1000 is a panel-mounted combination electronic flight instrumentation system (EFIS) and engine monitoring system (EMS). The device is capable of displaying both EFIS and EMS data on a 10-inch LCD display. Data are stored in non-volatile memory.¹

1.1 Dynon SkyView D1000 Data Recovery

Upon arrival at the Vehicle Recorders Laboratory, an external examination revealed the devices were in good condition, as shown in figures 1 and 2. The devices powered on normally and data were extracted using the manufacturer's procedures.

¹ Non-volatile memory (NVM) is semiconductor memory that does not require external power for data retention.



Figure 1. Dynon SkyView D1000 S/N 21920 as received.



Figure 2. Dynon SkyView D1000 S/N 21926 as received.

1.2 Dynon SkyView D1000 Data Description

Data from both devices were compared and were redundant. All plots and data included in this report were generated from S/N 21920. The final session corresponded to the accident flight and started at 18:07:32.00 UTC and ended at 19:25:08.75 UTC. Data from the device was provided in engineering units and no additional conversions were made. Data were sampled at a 4 Hertz (Hz) rate. The "Barometer Setting" was 30.52 inches of mercury (inHg) during the accident flight.

Appendix A lists the Dynon SkyView D1000 parameters verified and provided in this report.

1.3 Dynon SkyView D1000 Time Correlation

The unit records clock time, either externally or internally. The time is set by the operator for the internal clock or if the unit is connected to a GPS, the unit will use the GPS system time. The GPS time is recorded in UTC.

D. FIGURES AND TABULAR DATA

Figures 3 through 7 contain data recorded during the event on January 20, 2024. Figures 3 and 4 are graphical overlays generated in Google Earth. Weather and lighting conditions shown in Google Earth may not be representative of the weather and lighting conditions at the time of the event flight. GPS Altitude and Ground Speed are depicted in the overlays.

Figure 3 shows the entire accident flight.

Figure 4 shows approximately the final minute and a half of the accident flight and the reported wreckage location marked with a red pin.

Figure 5 is a plot of basic parameters for the entire accident flight. The time shown is 18:05:00 to 19:30:00 UTC.

Figure 6 is a plot of basic parameters at the end of the accident flight. The time shown is 19:20:45 to 19:21:20 UTC. Between 19:21:15.5 and 19:21:17.0, IAS, Magnetic Heading, Pitch, Roll, Vertical Speed, Lateral and Vertical Acceleration drop out. After 19:21:17.0, GPS Altitude and Groundspeed drop out.

Figure 7 is a plot of engine parameters for the entire accident flight. The time shown is 18:05:00 to 19:30:00 UTC.

Figure 8 is a plot of engine parameters end of the accident flight. The time shown is 19:20:45 to 19:21:20 UTC.

The corresponding tabular data used to create figures 3 through 8 are provided in electronic comma-separated value (CSV) format as attachment 1 to this report.

Submitted by:

Gerald Kawamoto
Recorder Specialist

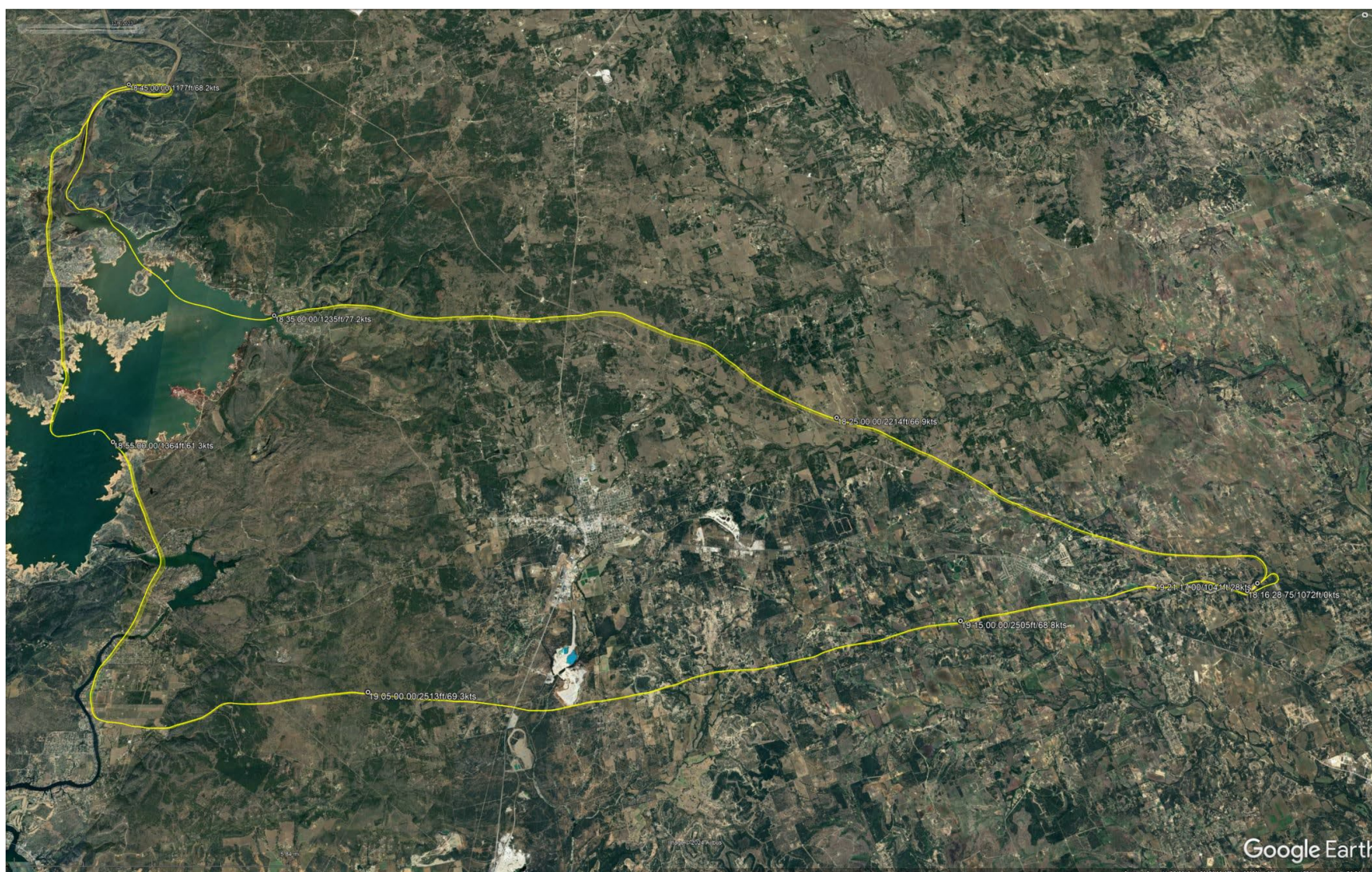


Figure 3. Google Earth overlay of the accident flight.



Figure 4. Google Earth overlay of the end of the accident flight and the reported wreckage location (red pin).

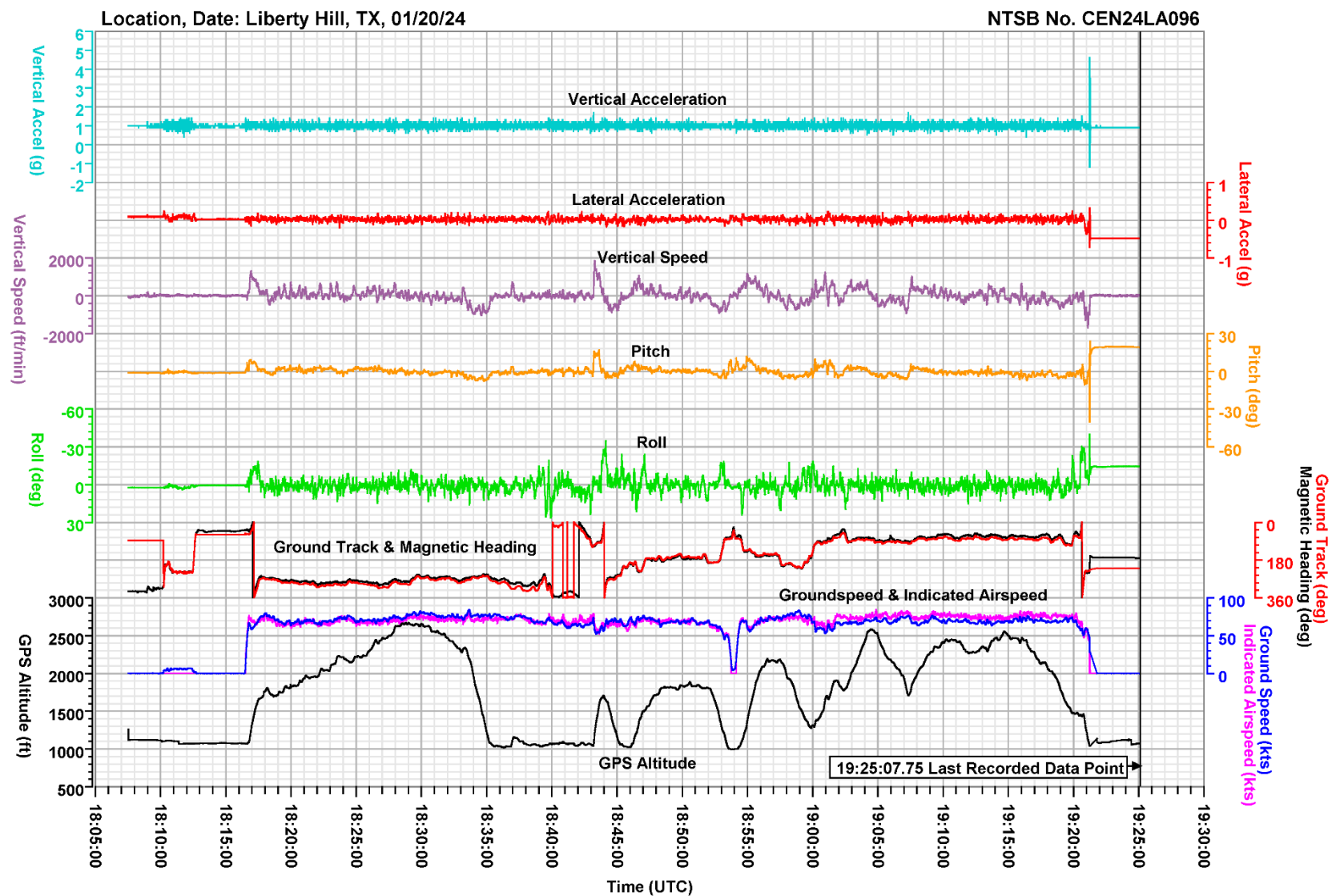


Figure 5. Plot of basic parameters for the accident flight.

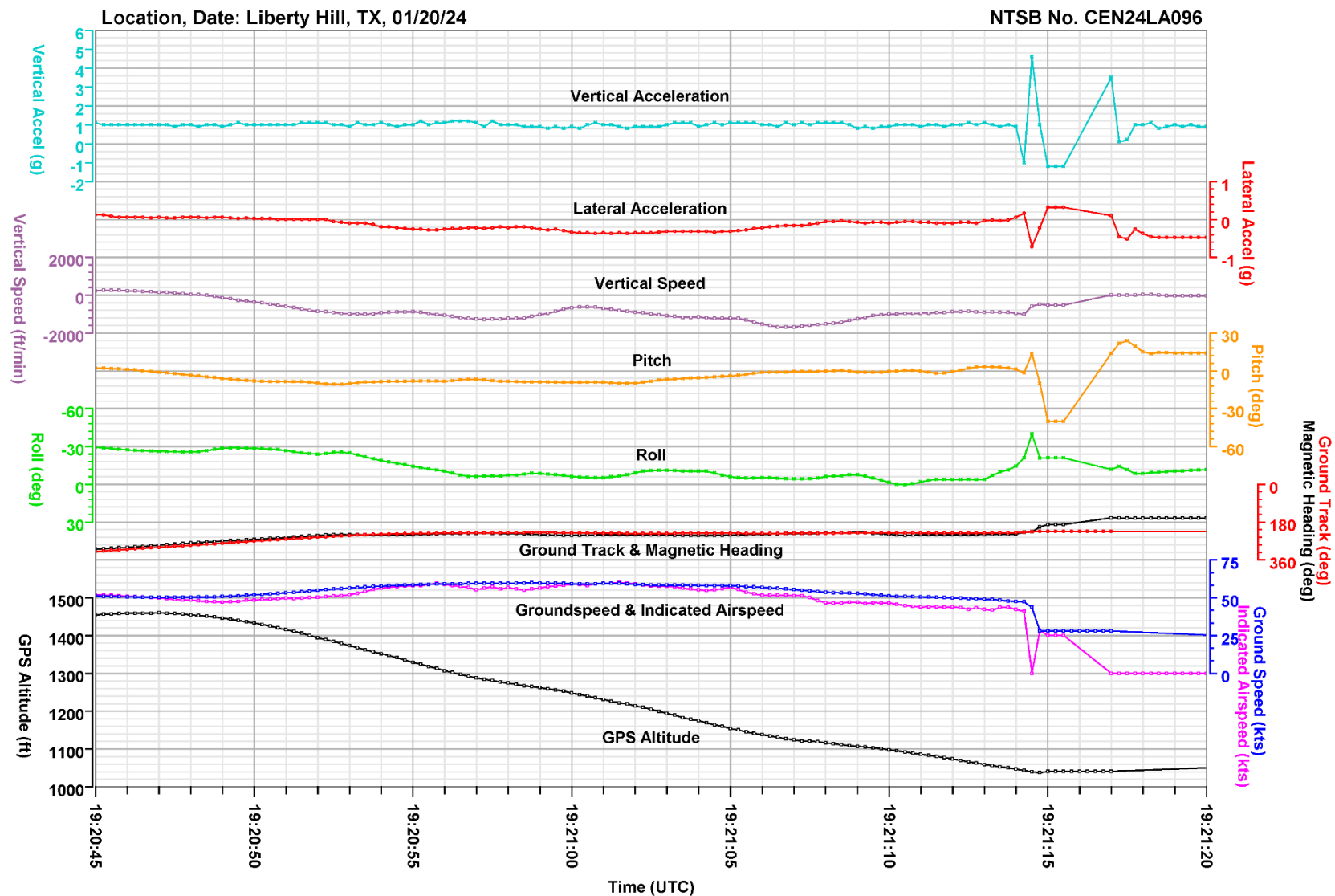


Figure 6. Plot of basic parameters at the end of the accident flight.

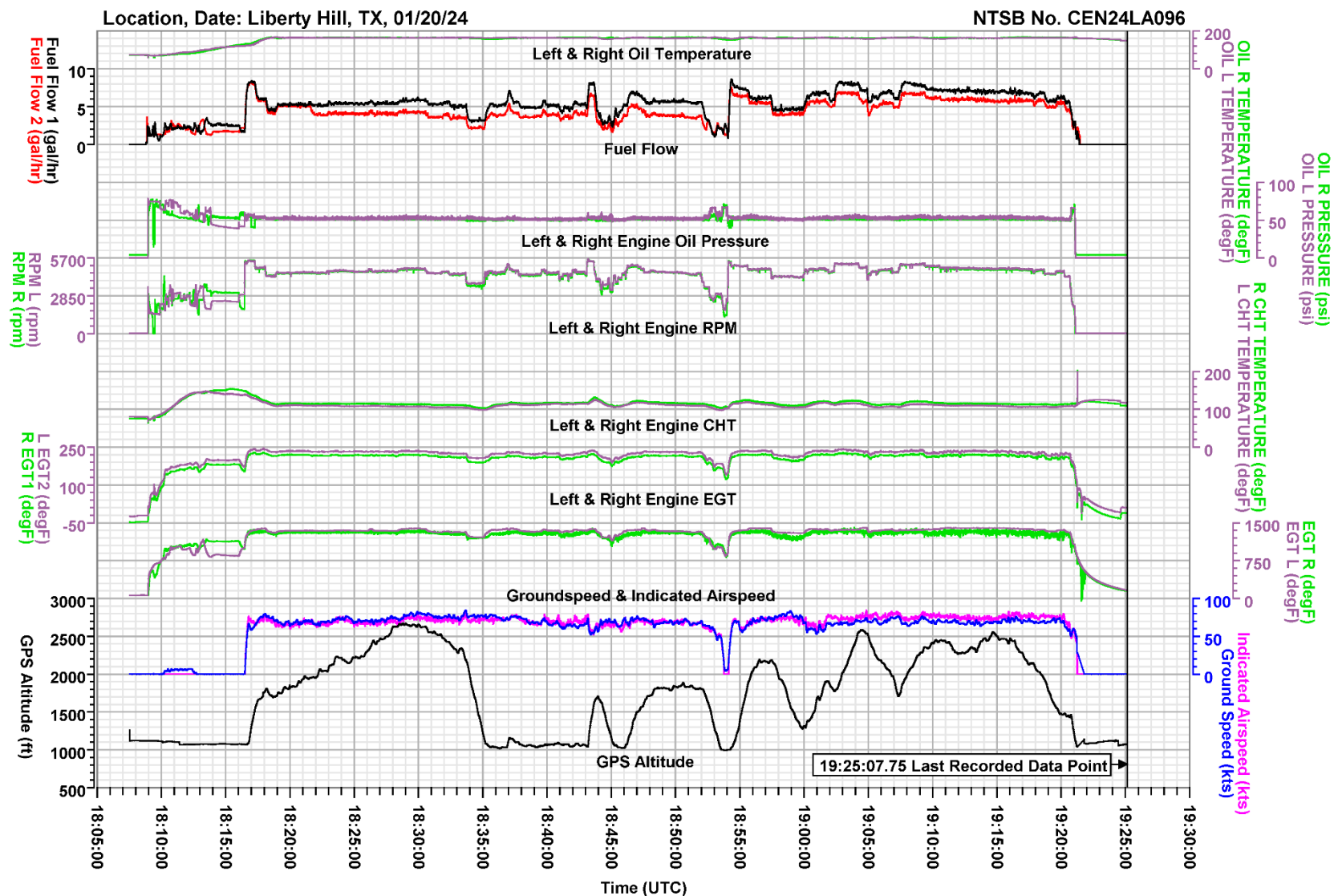


Figure 7. Plot of engine parameters for the accident flight.

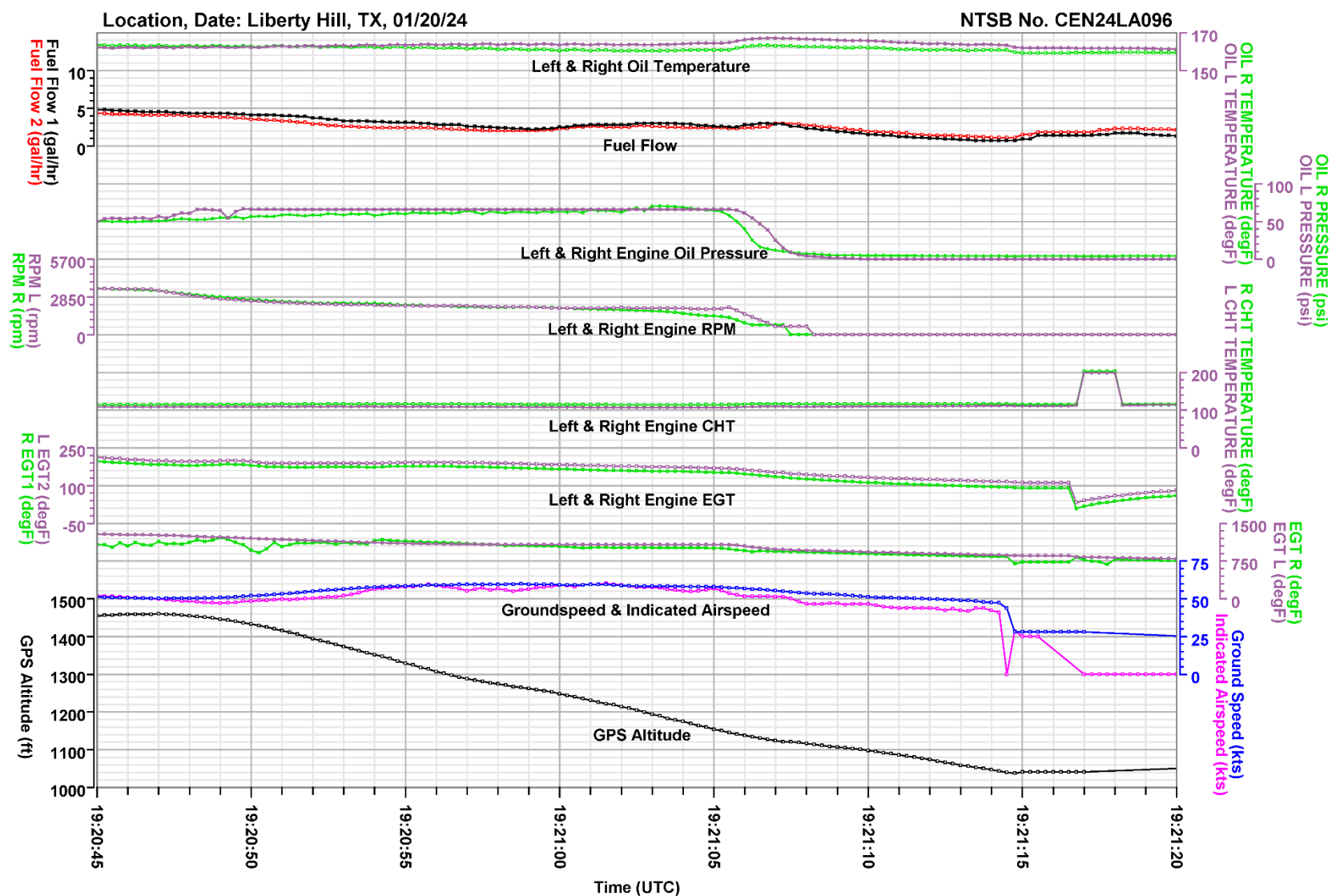


Figure 8. Plot of engine parameters at the end of the accident flight.

APPENDIX A. VERIFIED AND PROVIDED PARAMETERS

This appendix describes the parameters provided and verified in this report. Table 1 lists the parameter names and parameter descriptions from the Dynon SkyView D1000. Left engine parameters are designated with an "L" in its parameter name and right engine parameters are designated with an "R" in its parameter name. It was not determined whether the "1" and "2" in the nomenclature of the fuel flow parameters were associated with the left or right engine.

Table 1. Dynon SkyView D1000 parameters.

Parameter Name (unit)	Parameter Description (unit)
GPS Date & Time	MM/DD/YYYY HH:MM:SS UTC
Ground Track (deg)	Average Derived Ground Track (degrees)
Vertical Accel (g)	Vertical Acceleration (g)
Lateral Accel (g)	Lateral Acceleration (g)
Indicated Airspeed (kts)	Indicated Airspeed (knots)
GPS Altitude (ft)	GPS Altitude (feet)
OIL PRESSURE (psi)	Oil Pressure (pounds per square inch)
OIL TEMPERATURE (degF)	Oil Temperature (degrees Fahrenheit)
RPM (rpm)	Engine Revolutions Per Minute
EGT (degF)	Exhaust Gas Temperature (degrees Fahrenheit)
CHT (degF)	Cylinder Head Temperature (degrees Fahrenheit)
Fuel Flow (gal/hr)	Fuel Flow (gallons per hour)
Ground Speed (kts)	Ground Speed (knots)
Magnetic Heading (deg)	Magnetic Heading (degrees)
Latitude (deg)	Latitude (degrees)
Longitude (deg)	Longitude (degrees)
Pitch (deg)	Pitch Angle(degrees)
Roll (deg)	Roll Angle (degrees)
Vertical Speed (fpm)	Vertical Speed (feet per minute)