

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

November 8, 2022

Cockpit Displays

**Specialist's Factual Report
by Gerald Kawamoto**

1. EVENT

Location: White Hills, Arizona
Date: February 19, 2022
Aircraft: Vans RV7A
Registration: N787NV
Operator: Private
NTSB Number: WPR22FA100

2. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following devices:

Device 1:	Dynon SkyView D1000
Device 1 Serial Number:	7664
Device 2:	Dynon SkyView D1000
Device 2 Serial Number:	Unknown

2.1. Dynon SkyView D1000 Device Description

The Dynon Skyview (SV) D1000 is a 10.2-inch LCD panel-mounted display that can act as a Primary Flight Display (PFD), an Engine Monitoring System (EMS), and a Moving Map in a variety of customizable screen layouts. Data is sourced from various connected modules and devices. SkyView displays with software version 5.1 and later have the ability to record and store flight information in logs that can be exported by the user. Data are stored in non-volatile memory.¹

2.1.1. Dynon SkyView D1000 Data Recovery

Upon arrival at the Vehicle Recorder Division, external examinations revealed the devices had sustained significant impact damage, rendering them inoperable. The internal NVM modules, as shown in Figure 1, were removed from the main circuit boards and sent to the manufacturer for evaluation. The manufacturer successfully extracted data from one of the modules, however, the damage sustained by the second module rendered it inoperable and no data were recovered.

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

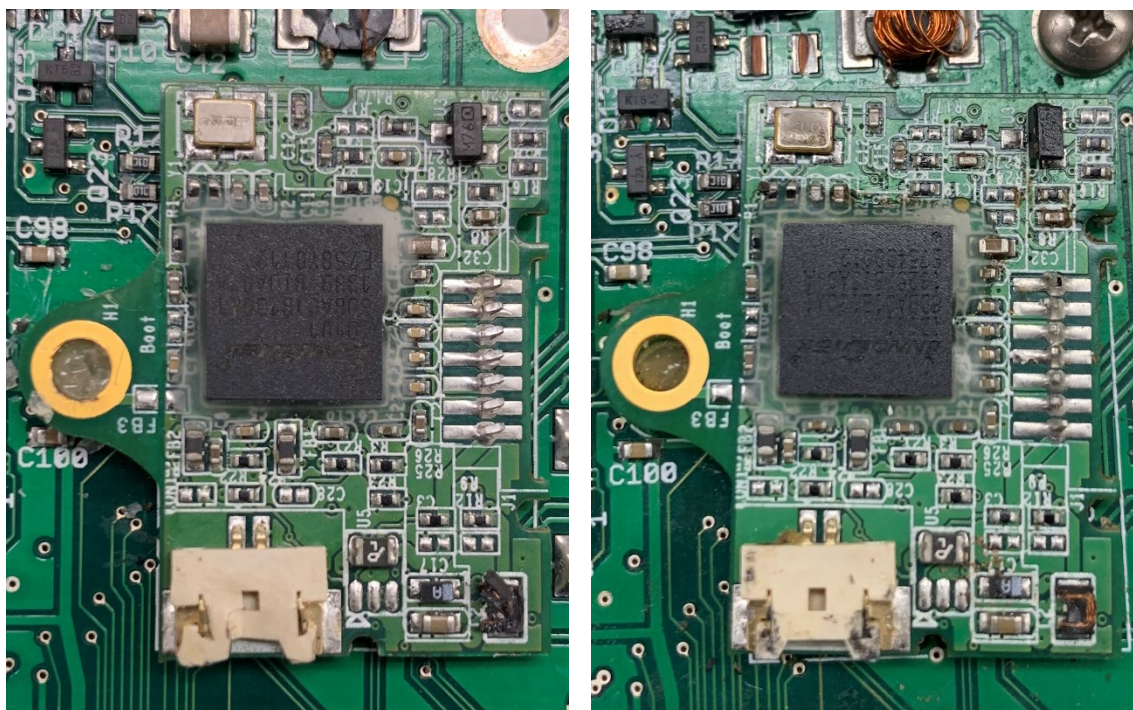


Figure 1. Dynon SkyView D1000 memory modules.

2.1.2. Dynon SkyView D1000 Data Description

The extracted data included sessions recorded from November 11, 2021, through February 19, 2022, Coordinated Universal Time (UTC). The event session started at 18:06:06.0 UTC and ended at 18:28:18.5 UTC on February 19, 2022, and is included in this report. Data were recorded at a 4 Hz rate.

2.1.3. Dynon SkyView D1000 Parameters Provided

Data were provided in engineering units and no conversions were performed. Table 1 describes data parameters provided by the device and validated by the recorder specialist.

Table 1. Dynon Data Parameters

Parameter Name (units)	Parameter Description (units)
Time	UTC Time (hh:mm:ss.00)
Date	MM/DD/YYYY
GPS Altitude (ft)	GPS Altitude (feet)
Density Altitude (ft)	Density Altitude (feet)
Pressure Altitude (ft)	Pressure Altitude (feet)
Ground Speed (kts)	Ground Speed (knots)
Indicated Airspeed (kts)	Indicated Airspeed (knots)
True Airspeed (kts)	True Airspeed (knots)
Magnetic Heading (deg)	Magnetic Heading (degrees)
Roll (deg)	Roll (degrees)
Pitch (deg)	Pitch (degrees)
Fuel Flow (gph)	Fuel Flow (gallons per hour)
Fuel Remaining (gal)	Fuel Remaining (gallons)
Fuel Pressure (psi)	Fuel Pressure (pounds per square inch)
Manifold Pressure (inHg)	Manifold Pressure (inches of Mercury)
RPM	Engine RPM (revolutions per minute)
Oil Pressure (psi)	Oil Pressure (pounds per square inch)
Oil Temperature (degC)	Oil Temperature (degrees Celsius)
OAT (degC)	Outside Air Temperature (degrees Celsius)
CHT # (degF)	Cylinder Head Temperature # (degrees Fahrenheit)
EGT # (degF)	Exhaust Gas Temperature # (degrees Fahrenheit)
Vertical Speed (fpm)	Vertical Speed (feet per minute)
Lateral Accel (g)	Lateral Acceleration (g)
Vertical Accel (g)	Vertical Acceleration (g)

3. Plots and Corresponding Tabular Data

Figures 2 through 4 are graphical overlays generated in Google Earth for the event flight. Weather and lighting conditions shown in Google Earth may not be representative of the conditions at the time of the event flight. Pressure altitude values are shown.

Figure 2 shows the entire event flight.

Figure 3 shows a portion of the middle of the event flight from approximately 20:25:36 to 20:26:00 UTC.

Figure 4 shows the end of the event flight and the reported wreckage location.

Figure 5 is a plot of basic parameters for the entire event flight. The time interval displayed is 20:05:00 to 20:30:00 UTC.

Figure 6 is a plot of basic parameters at the end of the event flight. The time interval displayed is 20:25:00 to 20:28:30 UTC.

Figure 7 is a plot of engine parameters for the entire event flight. The time interval displayed is 20:05:00 to 20:30:00 UTC.

Figure 8 is a plot of engine parameters at the end of the event flight. The time interval displayed is 20:25:00 to 20:28:30 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. Additional parameters that were not validated by the recorder specialist are included in the Attachment.



Figure 2. Google Earth overlay of the entire event flight. Pressure altitude values are shown.

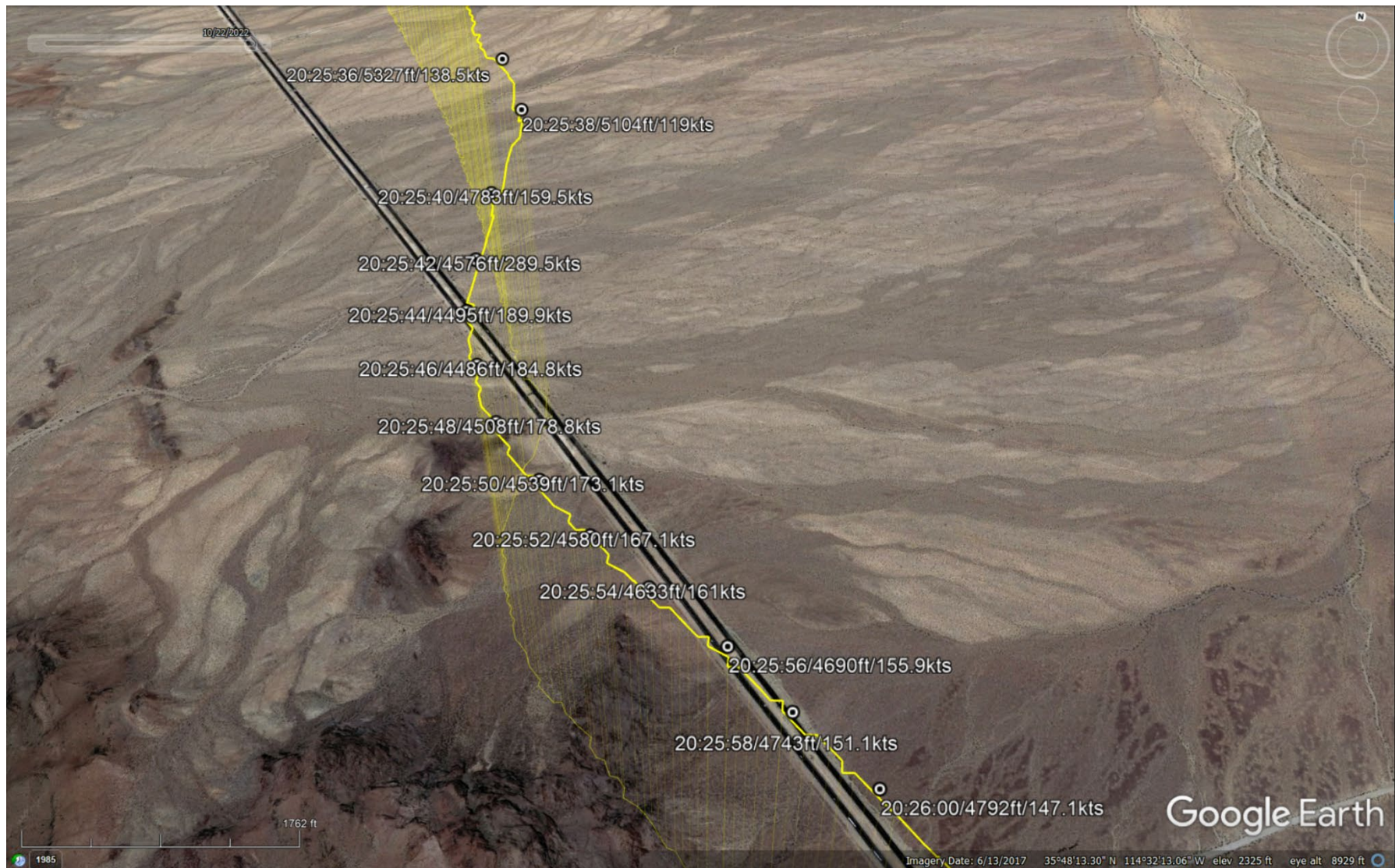


Figure 3. Google Earth overlay showing approximately 20:25:36 to 20:26:00 UTC of the event flight.



Figure 4. Google Earth overlay showing end of the event flight and reported wreckage location.

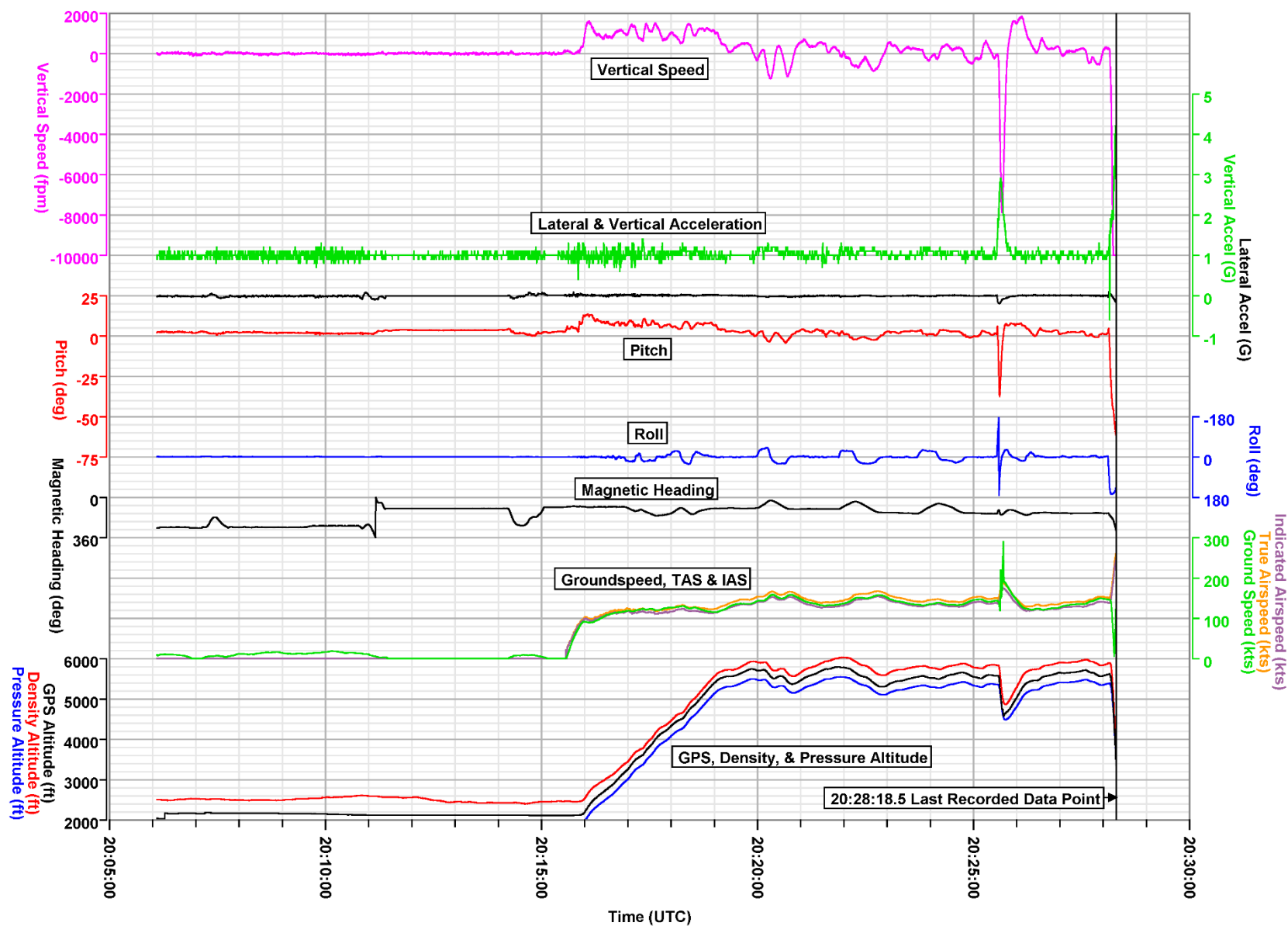


Figure 5. Plot of basic parameters for the entire event flight.

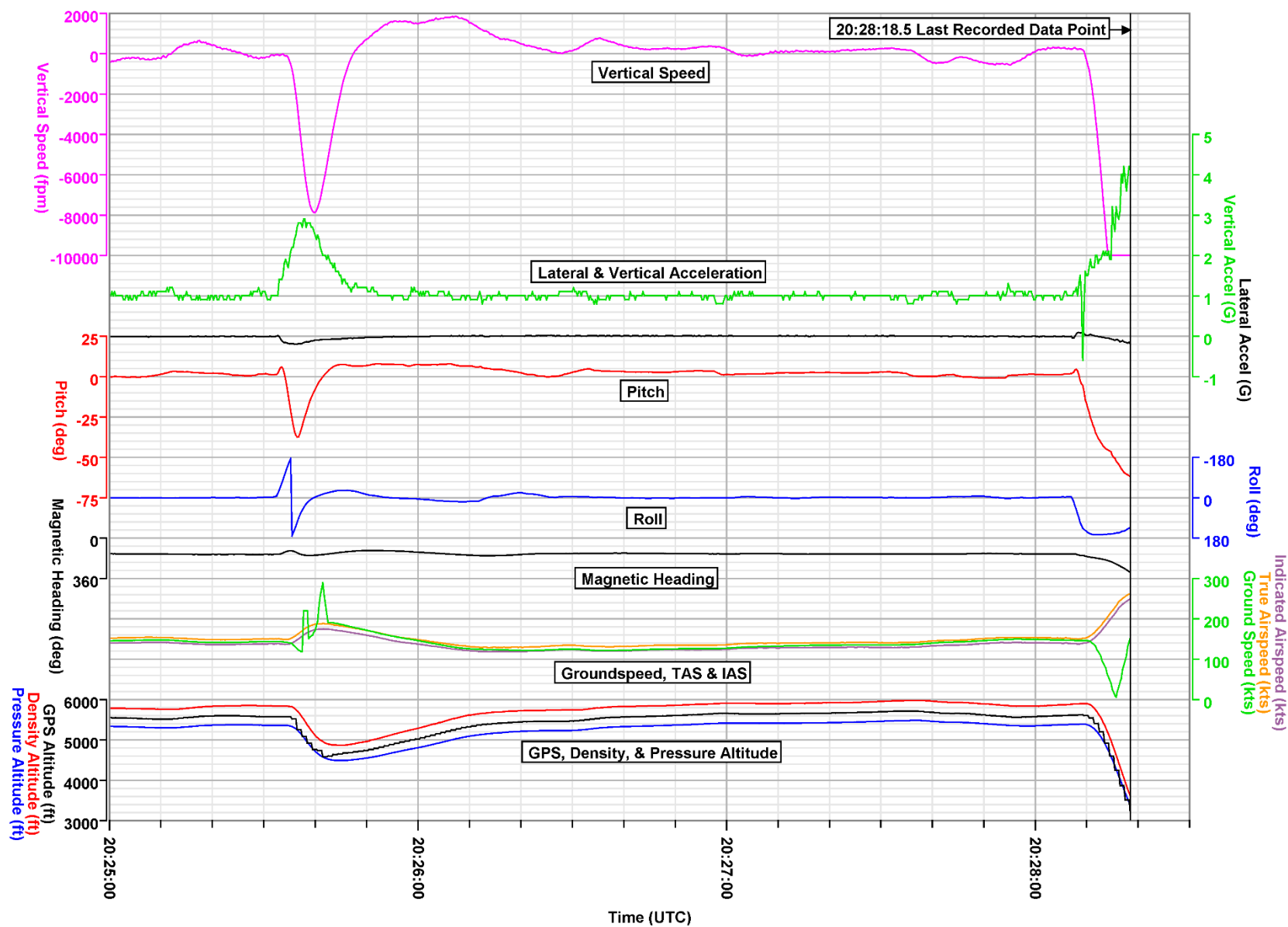


Figure 6. Plot of basic parameters at the end of the event flight.

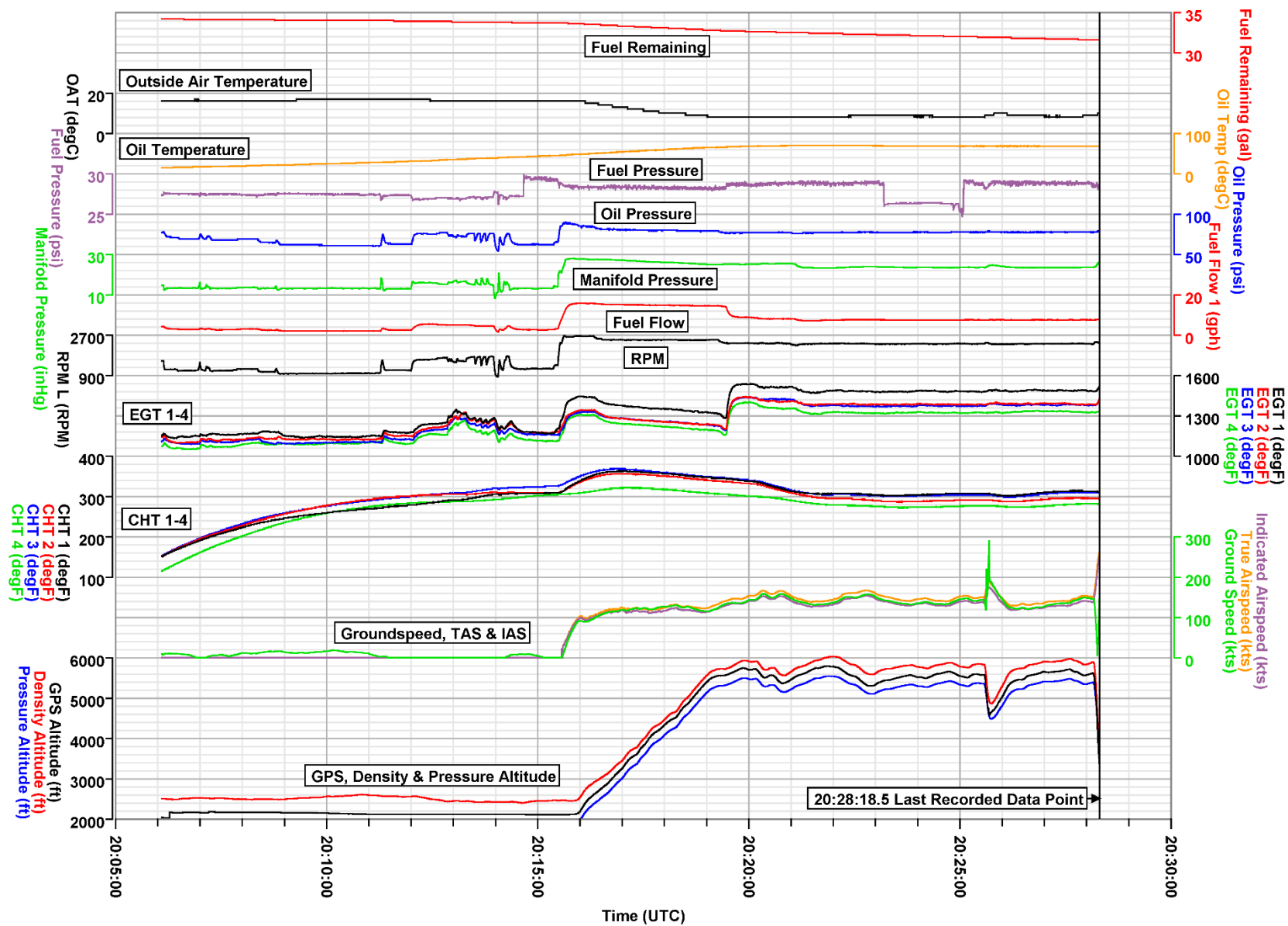


Figure 7. Plot of engine parameters for the entire event flight.

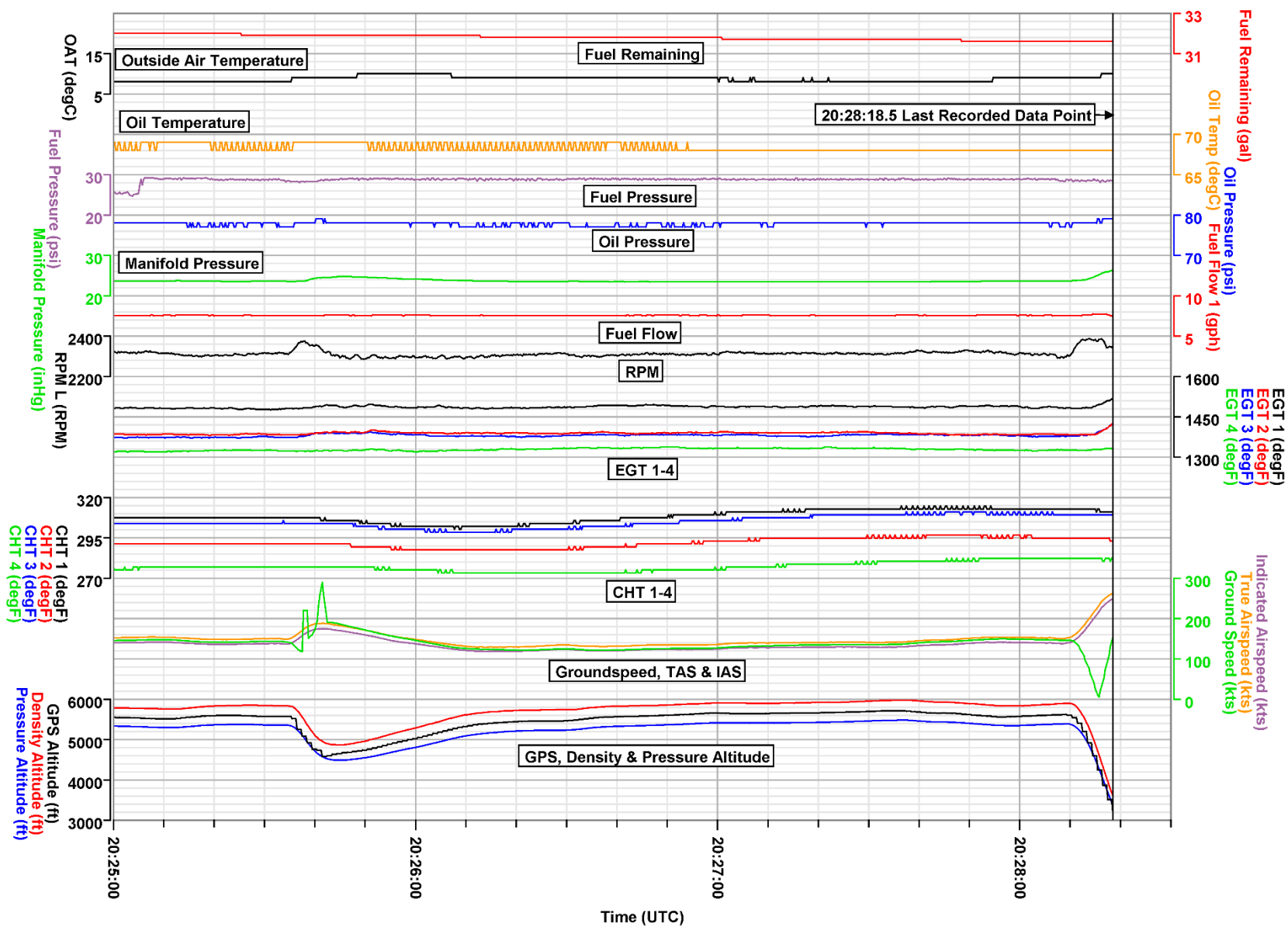


Figure 8. Plot of engine parameters at the end of the event flight.