National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594

WPR22FA312

COCKPIT DISPLAY

Specialist's Factual Report

December 02, 2022

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A.   ACCIDENT

Location: Scio, Oregon
Date: August 21, 2022
Time: 14:03 Pacific daylight time (PDT)
Airplane: Vans RV-8, private operator, N184DJ

B.   COCKPIT DISPLAY SPECIALIST

Specialist   Kyle Garner
                          Aerospace Engineer – Recorder Specialist
                          National Transportation Safety Board (NTSB)

C.   DETAILS OF THE INVESTIGATION

A cockpit display group was not convened. The NTSB Vehicle Recorder Division received the following device:

Recorder Manufacturer/Model: Dynon Avionics SkyView
Part Number: SV-D1000
Recorder Serial Number: 4140

1.0   Device Description

The Dynon Avionics SkyView, SV-D1000, is a 10" wide display for experimental and light sport aircraft. Its capabilities include engine monitoring, synthetic vision, a moving map, traffic, airport diagrams, autopilot control, and radio integration. The unit receives input from multiple aircraft systems including air data/attitude/heading (ADHARS) instrumentation, engine monitoring systems (EMS), Global Positioning System (GPS), transponders, radios, and intercoms.

The unit can log flight data to an internal SATA[1] solid-state drive. The user may configure the data logging interval between 0.1 Hz and 16 Hz. In addition to the user-generated log file, a second 'black box' log file is automatically generated that records the last 15 minutes of data sampled at 16 Hz independent of system settings. A USB port on the back of the unit is used for exporting the data logs.

1.1   Data Recovery

The unit, as received, had minor damage to one of the control knobs, however, the display was functional (see Figure 1). The unit was powered on and data were

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[1]SATA is an industry-standard disk drive protocol.

successfully downloaded via a USB drive using instructions provided by the manufacturer.

Figure 1. Dynon SkyView, as received.

1.2 Data Description

The flight data log files on the SkyView were stored in a comma-separated values (CSV) format and were in engineering units. No further conversion was necessary.

The user-configurable data log file was set to log data at a rate of 0.5 Hz. The file contained data from multiple flights beginning on 02/28/2021 and ending on the date of the accident, 08/21/2022.

The 'black box' log file contained data from the date of the accident, 08/21/2022. The data were sampled at a rate of 16 Hz. Three flight legs on the date of the accident were recorded in the 'black box' log file. The accident flight was the last flight leg recorded and was approximately eight minutes in duration.

Only data recovered from the accident flight leg are discussed in this report.

1.3 Time Correlation

Each data sample contained elapsed time recorded in seconds and hundredths of seconds since the recording began, as well as Coordinated Universal Time (UTC) recorded to the second. UTC was converted to PDT by subtracting 7 hours.

1.4   Parameters Provided

Table 1 describes the parameters provided and verified in this report. Table 2 describes the unit abbreviations used in this report.

Table 1. Verified and provided parameters.

Parameter Name	Parameter Description	Units
% Power	Engine percent power	%
Accel Lat	Lateral acceleration	g
Accel Vert	Vertical acceleration	g
Barometer Setting	Barometer setting	inHg
CHT 1/2/3/4	Cylinder head temperature 1/2/3/4	degC
EGT 1/2/3/4	Exhaust gas temperature 1/2/3/4	degC
Fuel Flow 1	Fuel flow 1	gph
Fuel Pressure	Fuel pressure	psi
GPS Altitude	GPS altitude	ft
Ground Speed	Ground speed	kts
Indicated Airspeed	Indicated airspeed	kts
Latitude	Latitude	deg
Longitude	Longitude	deg
Magnetic Heading	Magnetic heading	deg
Manifold Press	Manifold pressure	inHg
Oil Pressure	Oil pressure	psi
Oil Temp	Oil temperature	degC
Pitch	Pitch	deg
Pressure Altitude	Pressure altitude	ft
Roll	Roll	deg
RPM L	Engine speed in revolutions per minute L	rpm
Vertical Speed	Vertical speed	fpm

Table 2. Unit abbreviations.

Unit Abbreviation	Description
%	percent
deg	degrees
degC	degrees Celsius
fpm	feet per minute
ft	feet

Unit Abbreviation	Description
gph	gallons per hour
inHg	inches of Mercury
kts	knots
psi	pounds per square inch
rpm	revolutions per minute

D.   OVERLAYS AND TABULAR DATA

Figures 2 to 7 contain data recorded during the accident flight leg on August 21, 2022.

Figure 2 is a map overlay of the accident flight created using Google Earth. Note that the lighting and weather conditions depicted in Google Earth may not be representative of conditions during the accident flight.

Figure 3 is a map overlay of the end of the accident flight data created using Google Earth. Additionally, a placemark shows the reported location of the aircraft's wreckage.

Figures 4 and 5 are plots of basic and engine parameters for the full accident flight, respectively. Figures 6 and 7 are plots of basic and engine parameters for the final 90 seconds of the accident flight, respectively.

Recorded data for the accident flight leg began at 13:53:20 PDT as the aircraft accelerated for takeoff on the departure runway at Albany Municipal Airport in Albany, Oregon. After takeoff, the aircraft flew about 13 miles toward the east and began performing various maneuvers near a residence. The recorded data ended at about 14:01:31 PDT near the reported location of the aircraft's wreckage.

The corresponding tabular data used to create Figures 2 to 7 are provided in electronic CSV format as Attachment 1 to this report.

Submitted by:

Kyle Garner
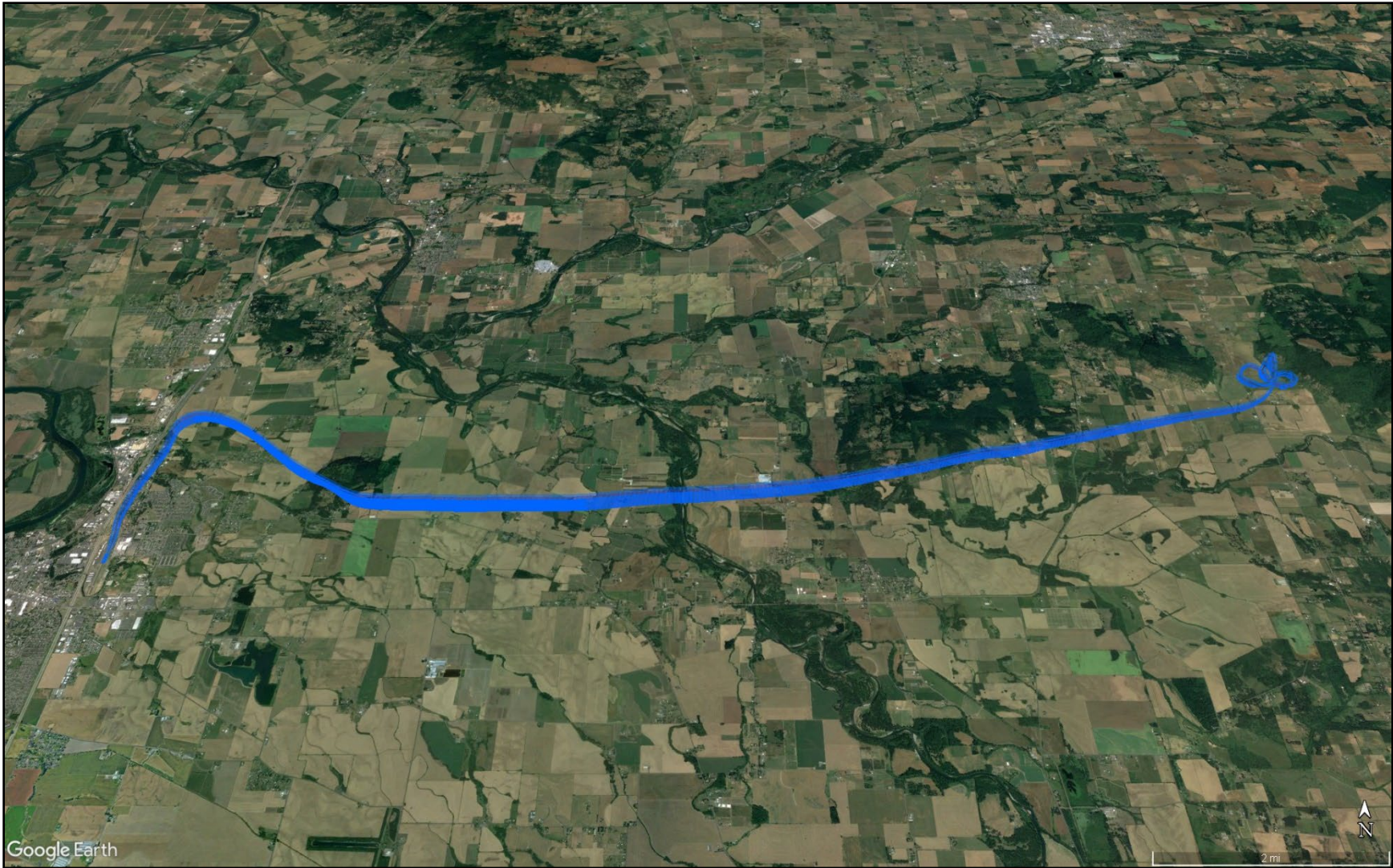Aerospace Engineer – Recorder Specialist

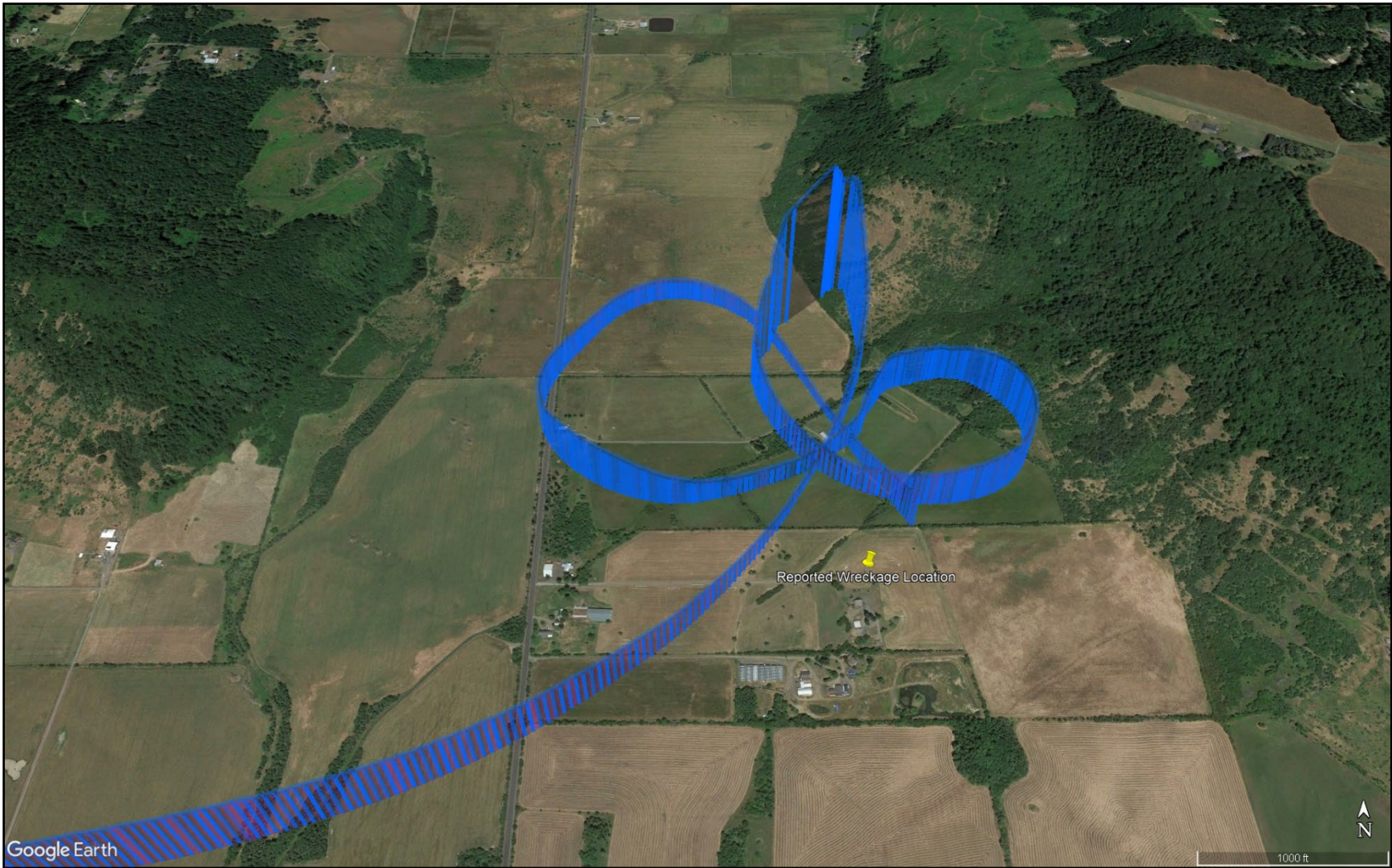**Figure 2.** Google Earth overlay of the full accident flight.

Figure 3. Google Earth overlay of the end of the accident flight. A yellow placemark shows the reported location of the aircraft's wreckage.
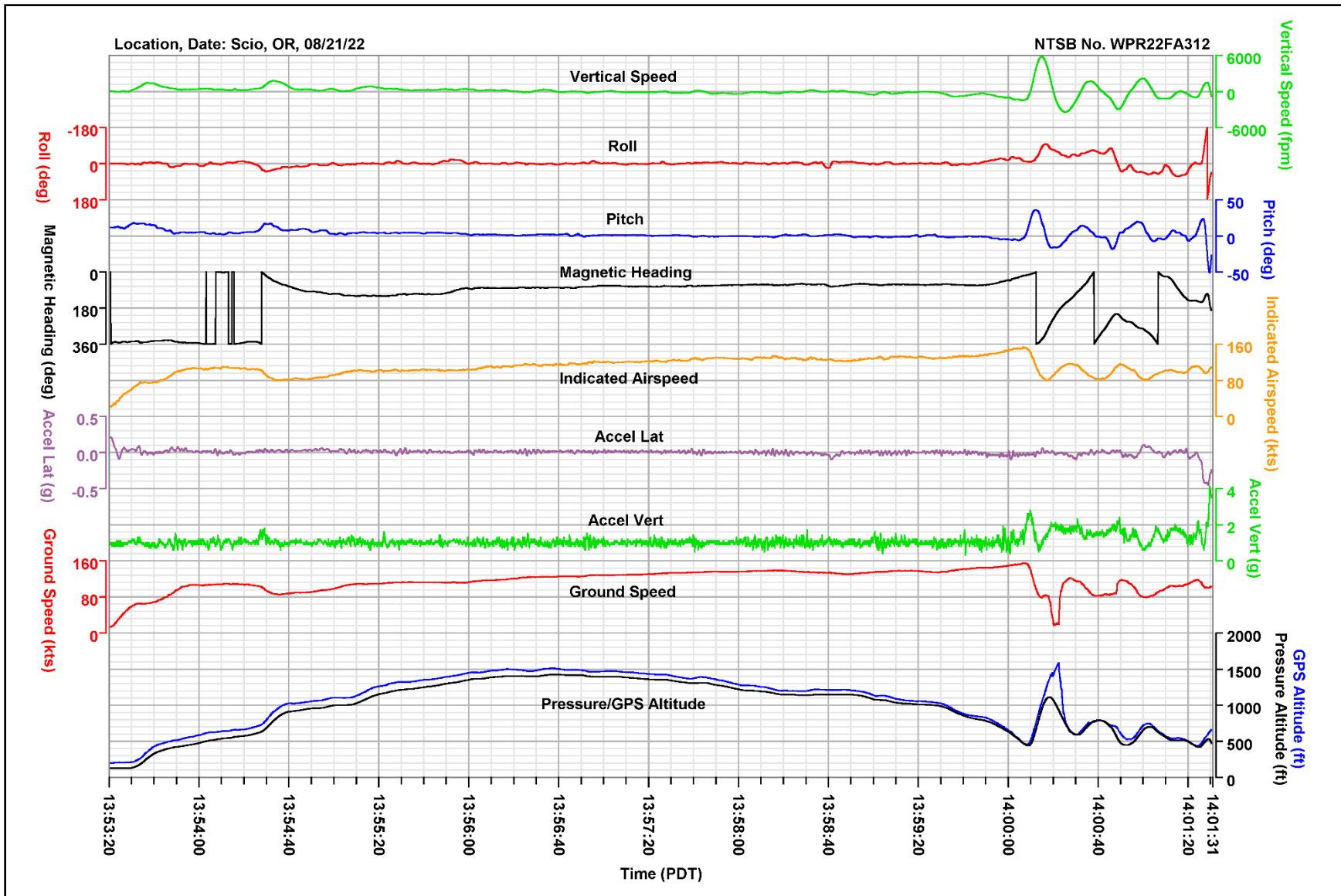
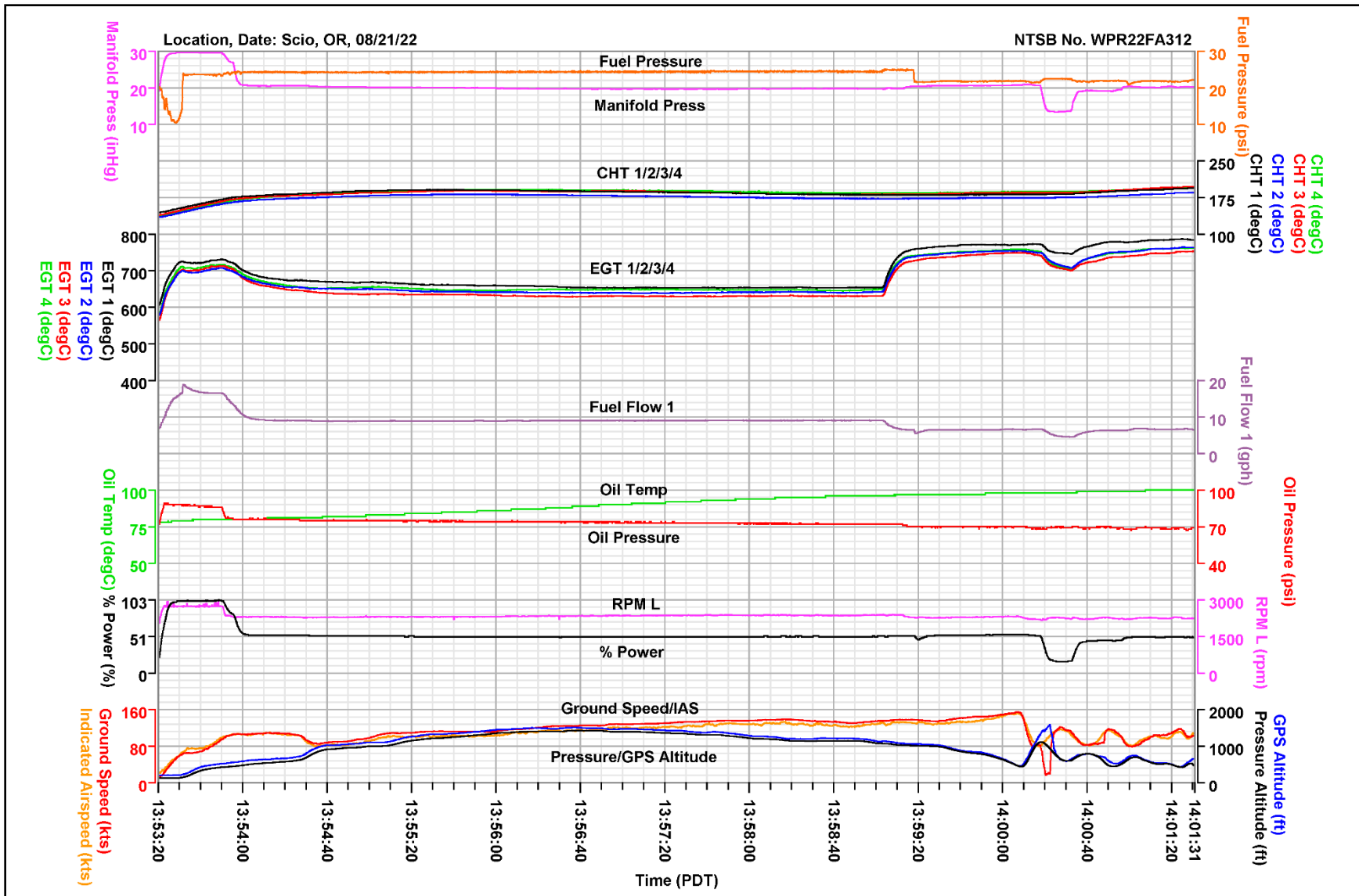**Figure 4.** Plot of basic parameters for the full accident flight.

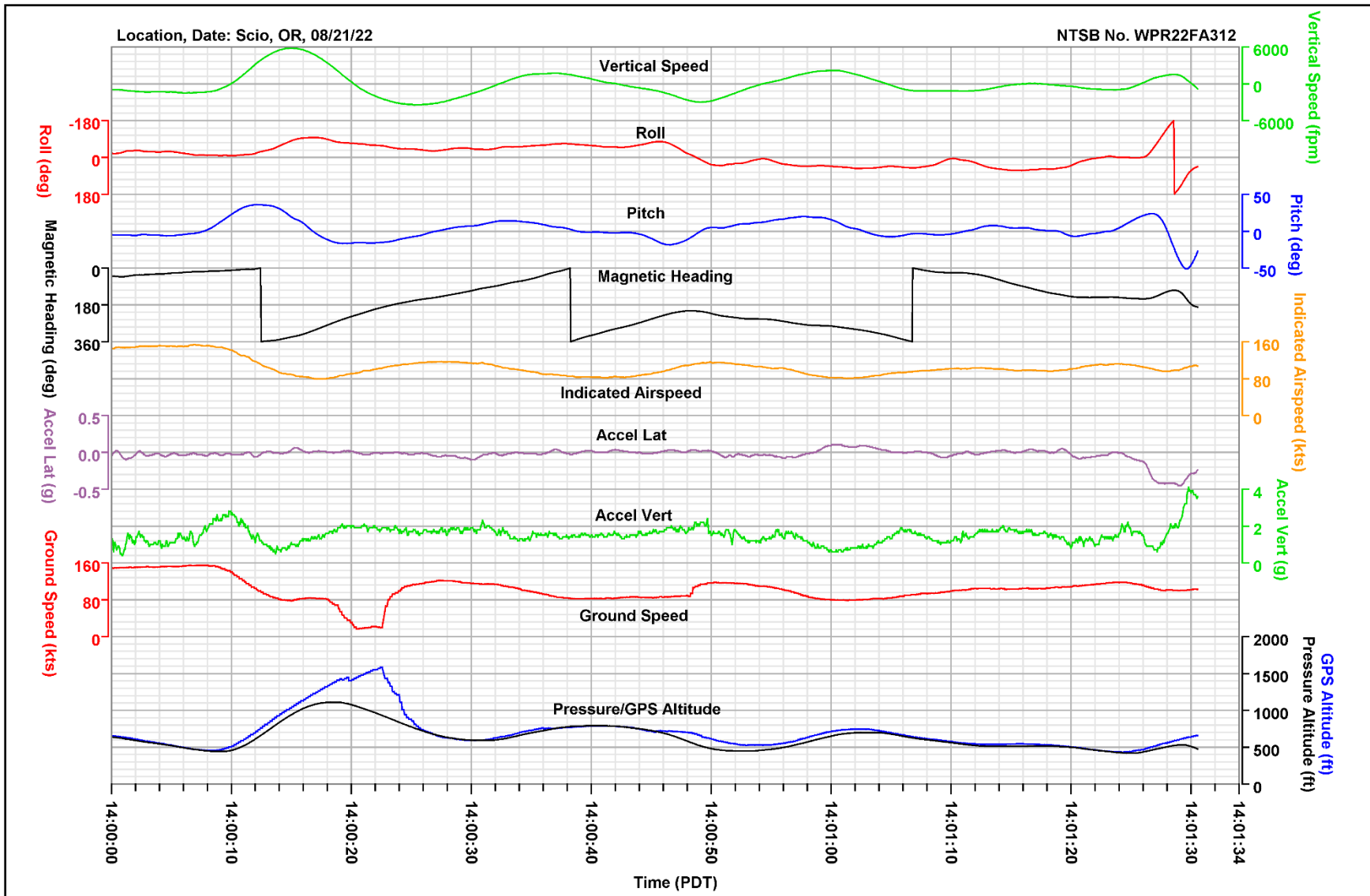**Figure 5.** Plot of engine parameters for the full accident flight.

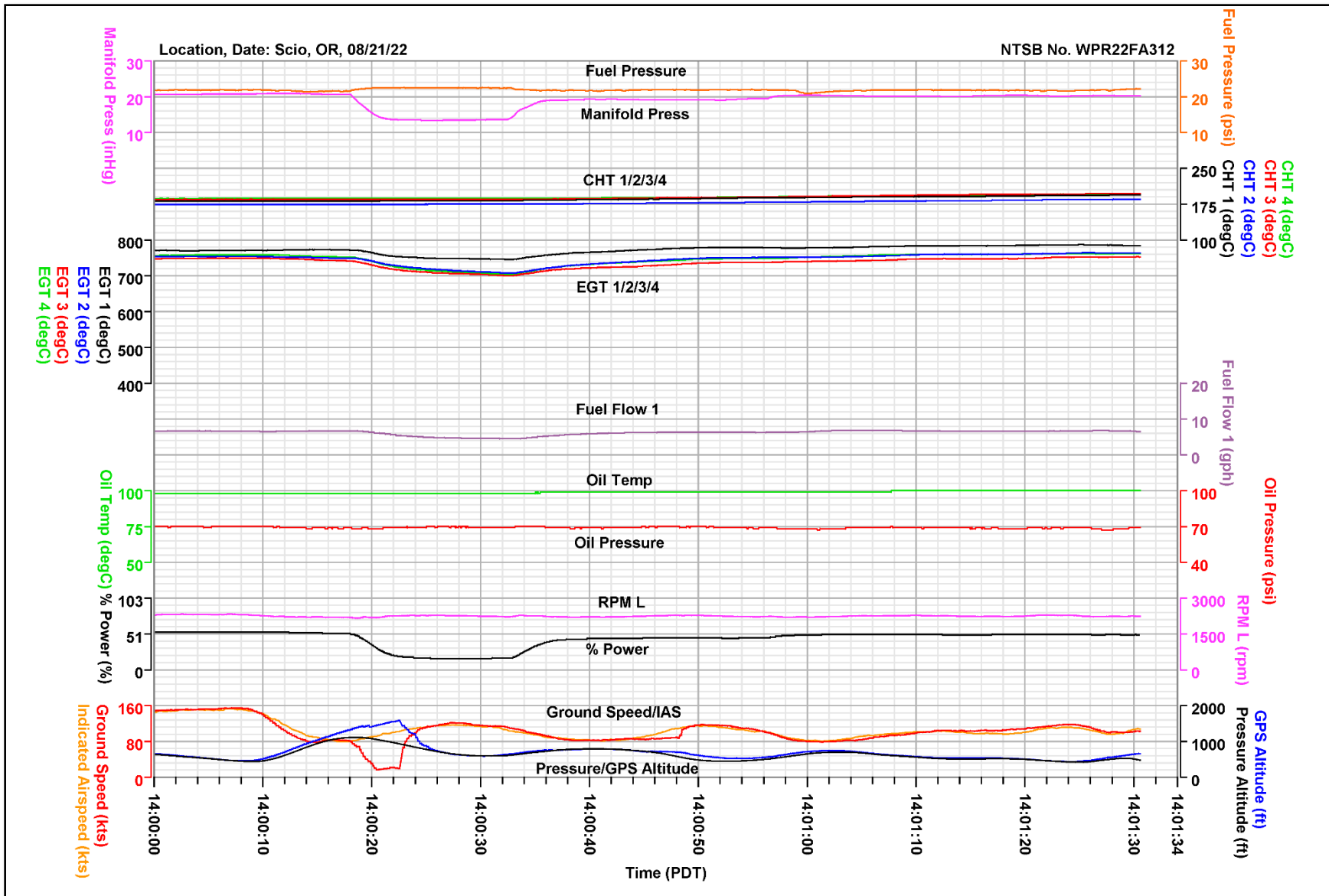**Figure 6.** Plot of basic parameters for the final 90 seconds of the accident flight.

Figure 7. Plot of engine parameters for the final 90 seconds of the accident flight.