

National Transportation Safety Board

Office of Research and Engineering

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ERA25LA003

COCKPIT DISPLAY - RECORDED FLIGHT DATA

Specialist's Factual Report

April 10, 2025

TABLE OF CONTENTS

A. ACCIDENT	3
B. COCKPIT DISPLAY - RECORDED FLIGHT DATA SPECIALIST	3
C. DETAILS OF THE INVESTIGATION	3
1.0 GARMIN GDU 460 DESCRIPTION	3
1.1 Garmin GDU 460 Data Recovery	3
1.2 Garmin GDU 460 Data Description	4
D. FIGURES AND TABULAR DATA.....	5

A. ACCIDENT

Location: Tampa Bay, Florida
Date: October 3, 2024
Time: 1142 eastern daylight time (EDT)
1542 coordinated universal time (UTC)
Airplane: Piper PA-28-181, N8575F

B. COCKPIT DISPLAY - RECORDED FLIGHT DATA SPECIALIST

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C. DETAILS OF THE INVESTIGATION

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

Recorder Manufacturer/Model: Garmin GDU 460
Recorder Serial Number: 7Y9101171

1.0 Garmin GDU 460 Description

The Garmin GDU 460 is a 10.6-inch display employing a touch-screen user interface and can be utilized as a Primary Flight Display (PFD), Multi-Function Display (MFD), Engine Monitoring Device (EDM), or a combination of all, depending on how the unit is integrated with other compatible avionics products. The unit has the ability to record data via an externally removable SD card or internally on a series of non-volatile memory (NVM) chips.¹ Historical logs may be copied to an SD card inserted into the slot provided on the front of the unit. Data is exported in engineering units, in a comma delimited value (CSV) format. Each record contains UTC date and time, as well as an integer number of milliseconds since the unit was last powered.

1.1 Garmin GDU 460 Data Recovery

The device was submerged in salt water during the accident event and was dry upon arrival at the NTSB Vehicle Recorder Laboratory. The device as shown in figure 1, and an SD card, as shown in figure 2, sustained corrosive damage rendering each inoperable. The internal NVM chip was removed and a binary image of the chip was created using laboratory tools. The image was written to a blank exemplar chip and

¹ Non-volatile memory (NVM) is semiconductor memory that doesn't require external power for data retention.

subsequently installed on a lab surrogate circuit board. Data were exported normally to a laboratory SD card using the manufacturer's procedures.



Figure 1. Front and back of the Garmin GDU 460 as received.



Figure 2. SD card as received.

1.2 Garmin GDU 460 Data Description

Data included files recorded from September 20, 2024, through October 3, 2024. All data in this report are presented in EDT, the local time of the accident. The accident session started at 11:06:45 EDT and ended at 11:41:39 EDT on October 3, 2024. Table 1 describes Garmin GDU 460 parameters provided and verified in this report.

Table 1. Verified and provided Garmin GDU parameters.

Parameter Name (unit)	Parameter Description (unit)
Baro Altitude (ft)	Barometric Altitude (feet)
GPS Altitude (ft)	GPS Altitude (feet)
GPS Ground Speed (kts)	Ground Speed (knots)
GPS Ground Track (deg)	Ground Track (degrees)
Indicated Airspeed (kts)	Indicated Airspeed (knots)
Lateral Acceleration (G)	Lateral Acceleration (gravitational acceleration)
Latitude (deg)	Latitude (degrees)
Longitudinal Acceleration (G)	Lateral Acceleration (gravitational acceleration)
Longitude (deg)	Longitude (degrees)
Magnetic Heading (deg)	Magnetic Heading (degrees)
Normal Acceleration (G)	Normal Acceleration (gravitational acceleration)
Pressure Altitude (ft)	Pressure Altitude (feet)
Pitch (deg)	Pitch Angle (degrees)
Roll (deg)	Roll Angle (degrees)
True Airspeed (kts)	True Airspeed (knots)
Vertical Speed (fpm)	Vertical Speed (feet per minute)

D. FIGURES AND TABULAR DATA

Figure 3 and figure 4 are Google Earth overlays of the accident flight recorded on the Garmin GDU 460. The appearance of the flight track may not be representative of the airplane's actual flight track and may be attributed to the update rate of GPS parameters as well as the software encoding of the GPS input to the device. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the accident flight. GPS altitude and ground speed are depicted for data points shown. Figure 3 shows the entire accident flight and figure 4 shows the end of the flight.

Figure 5 is a plot of parameters of the entire accident flight recorded on the Garmin GDU 460. The time displayed is 11:06:00 EDT to 11:42:00 EDT.

Figure 6 is a plot of parameters of the end of the accident flight recorded on the Garmin GDU 460. The time displayed is 11:41:20 EDT to 11:41:40 EDT.

Figure 7 is a plot of altitudes, speeds, and track for all flights recorded on October 3, 2024.

The corresponding tabular data used to create figures 3 through 7 are provided in electronic comma-separated value (CSV) format as attachment 1 to this report.

Submitted by:

Gerald Kawamoto
Recorder Specialist

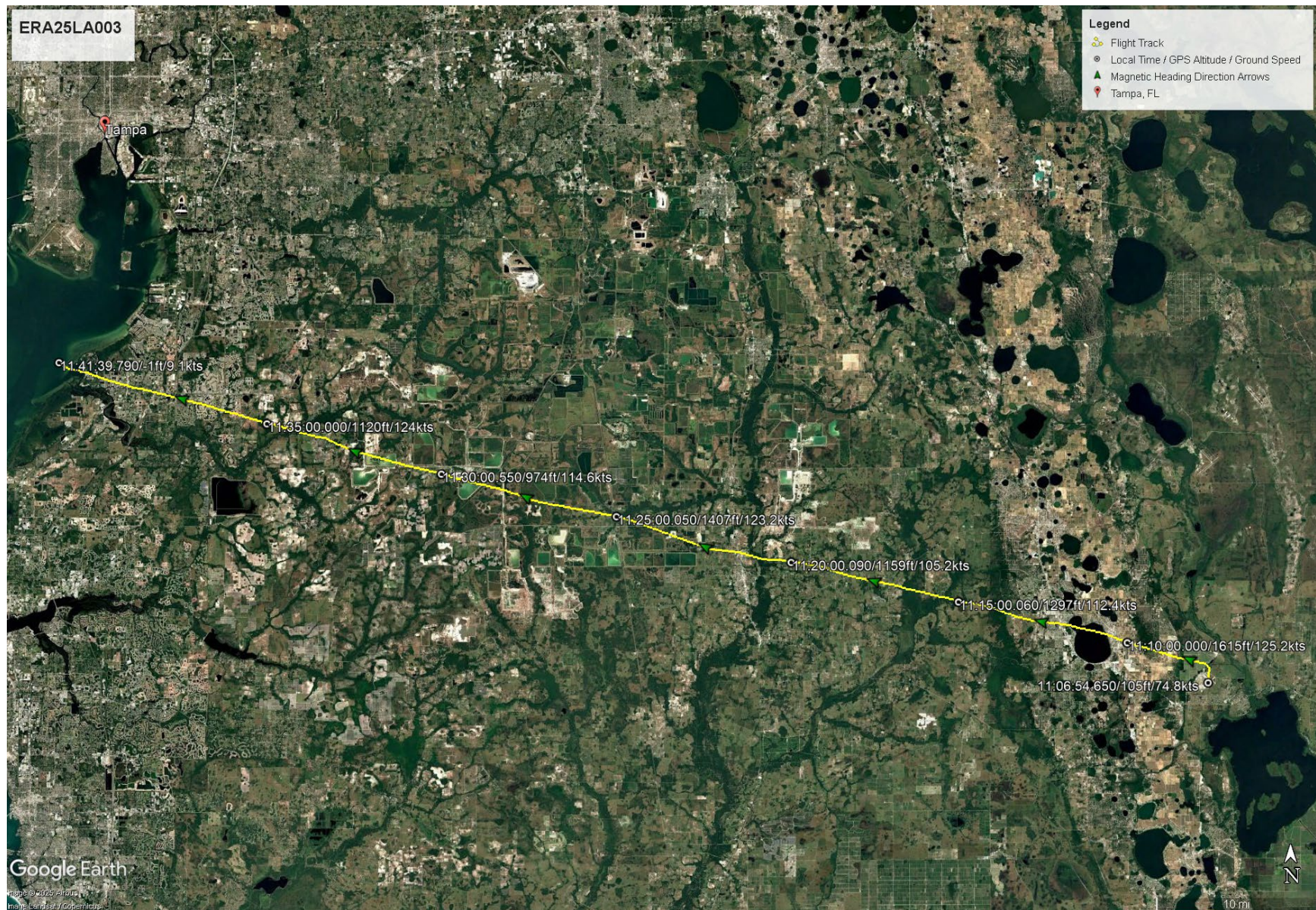


Figure 3. Google Earth overlay of the entire accident flight.

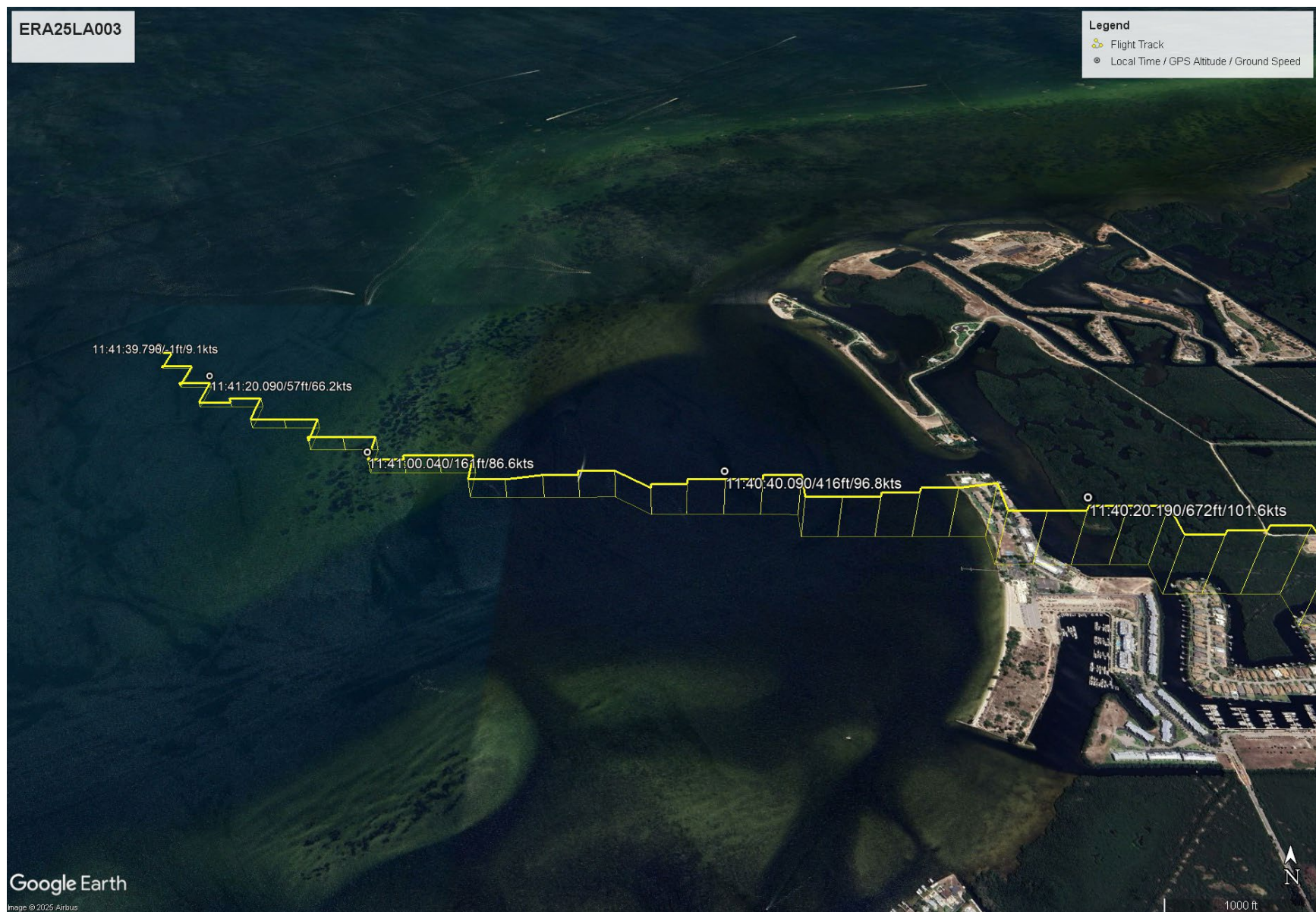


Figure 4. Google Earth overlay of the end of the accident flight.

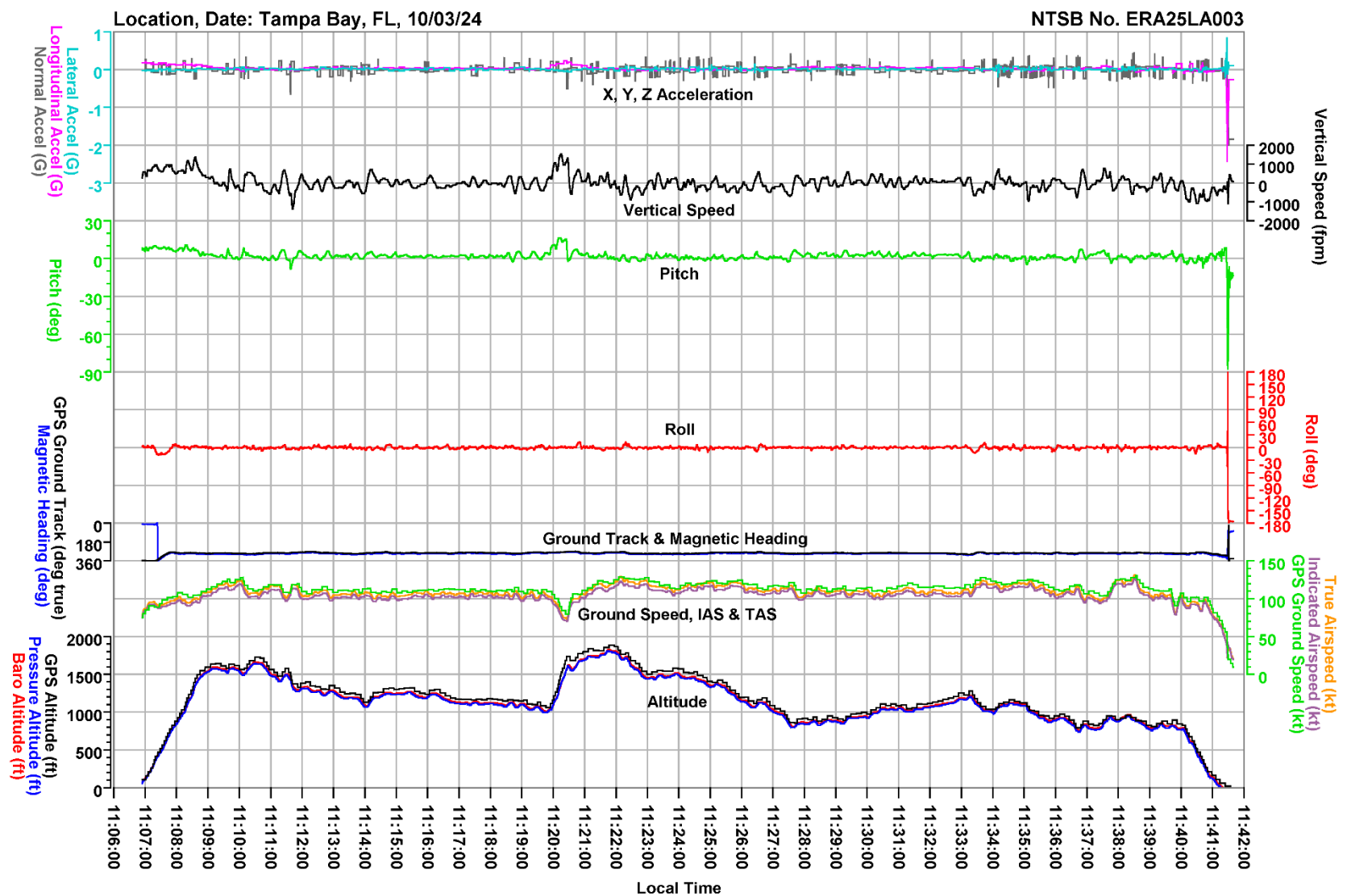


Figure 5. Plot of parameters for the entire accident flight.

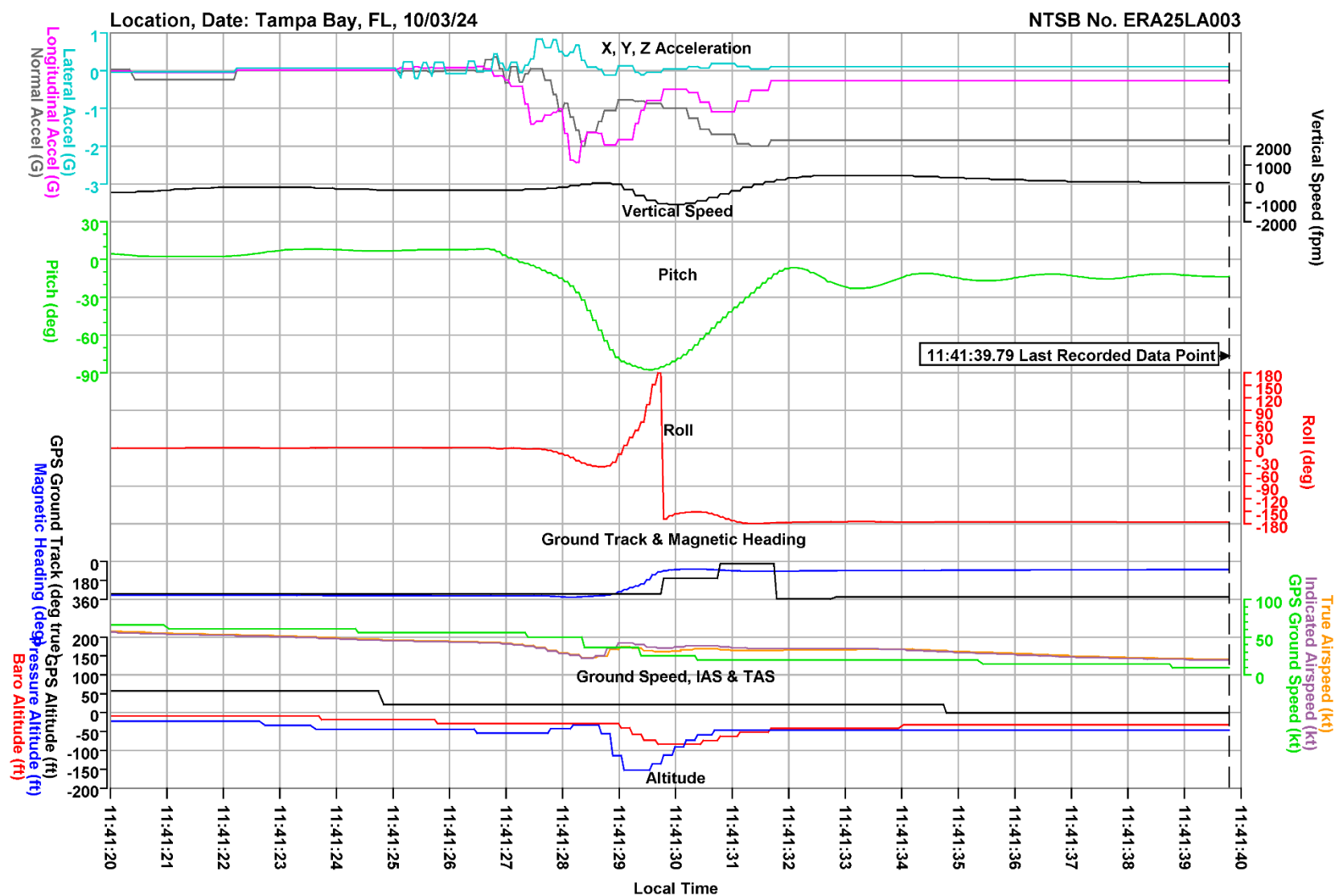


Figure 6. Plot of parameters at the end of the accident flight.

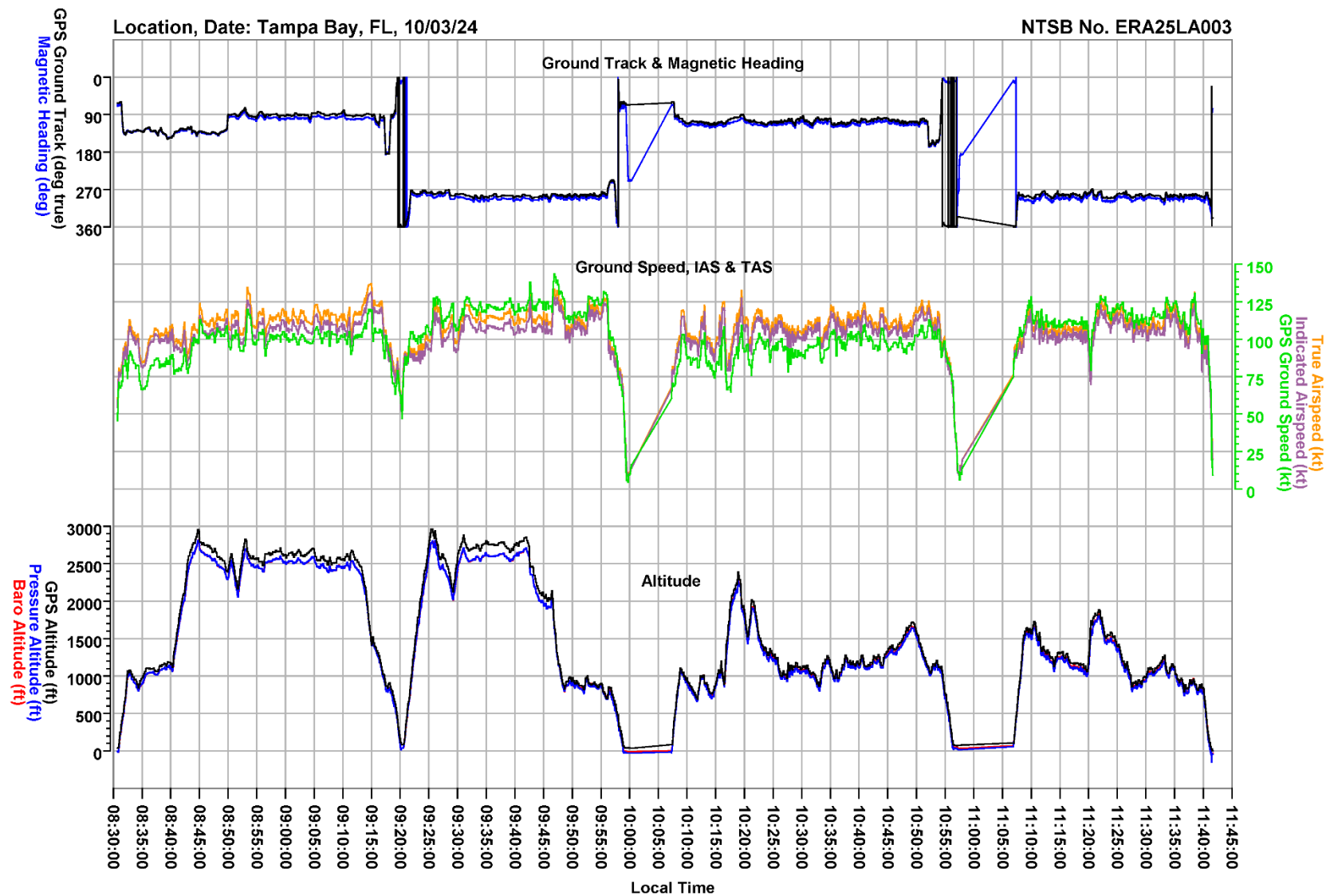


Figure 7. Plot of altitude, speed and track of all flights recorded on October 3, 2024.