

NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, D.C. 20594

**Electronic Flight Instrument System
Engine Monitoring System
Cockpit Display Electronic Device**

**Factual Report
By Adam M. Gerhardt**

1. EVENT SUMMARY

Location: Palatka, Florida
Date: March 6, 2018
Aircraft: REILLY CHARLES W., ESCAPADE
Registration: N45DC
Operator: Individual
NTSB Number: ERA18LA097

2. DETAILS OF INVESTIGATION

The following device was downloaded:

Device Manufacturer/Model: Dynon Avionics, FlightDEK-D180 Super-Bright
Model Number: 100564-001
Serial Number: 1316

2.1. Data Recovery

The device was undamaged and was downloaded normally using the manufacturer's software. Figures 1 and 2 show the front and back of the device.



Figure 1: Photo of the front of the undamaged device.



Figure 2: Photo of the back of the undamaged device.

2.2. Data Description, Plots, and Tabular Data

The FlightDEK-D180 Pilot's User Guide stated in part: "The FlightDEK-D180 has a limited amount non-volatile internal storage for the data log. With a 1-second recording interval, at least 30 minutes of cumulative data can be recorded. When the FlightDEK-D180 internal storage fills up, new records overwrite the oldest records." The accident unit was set to record data every second.

The data extracted from the accident flight began at an internal system time of 12:47:46 UTC¹ (HH:MM:SS) and ended at 13:14:59 UTC, which was about 27 minutes. The data revealed:

- After departure, the airplane climbed to about 3,000 ft indicated pressure altitude and then descended to about 2,000 ft for most of the flight, maintaining airspeeds between 45-65 knots. The engine parameters remained steady throughout the flight, with fuel flow ranging from 4.5-5.5 gallons per hour (gph), until the last few minutes.
- Between 13:13:40 – 13:14:15, the rpm, manifold pressure, oil pressure, and exhaust gas temperatures each show abrupt variations. At 13:13:48 the RPM was 0. Following the rpm drop, indicated airspeed decreases, altitude sharply decreases, and the vertical speed rate sharply decreases.
- About 13:14:10, rpm spikes from 0 to 2500 rpm momentarily, but returns to 0 about five seconds later for the remainder of the recording, where the airspeed data showed 0 and altitude levels at 99 for the remainder of the recorded data.
- Preceding the first 0 rpm reading that occurred at 13:13:48, about one minute and twenty seconds prior, at 13:12:27, fuel flow dropped to 0 momentarily, then returned to 2-GPH. About 50 seconds later, at 13:13:16, fuel flow increases rapidly through 8 GPH, then 13 seconds later shows 57 GPH, and peaks at 102 GPH at 13:13:41. The fuel flow then rapidly declines to 1.5-2.0 GPH at 13:14:10, then spikes to 20 GPH, and then drops to 0 for the remainder of the recording.

Figures 3 through 7 show plots of data recorded by the Dynon FlightDEK D180 during the last 6 minutes of the accident flight. Figure 4 shows data within the final two minutes of the flight. Tabular data used to generate the figures are included as attachment 1 in electronic comma-delimited (.CSV) format.

¹ All times are referenced to the device's recorded Coordinated Universal Time (UTC).

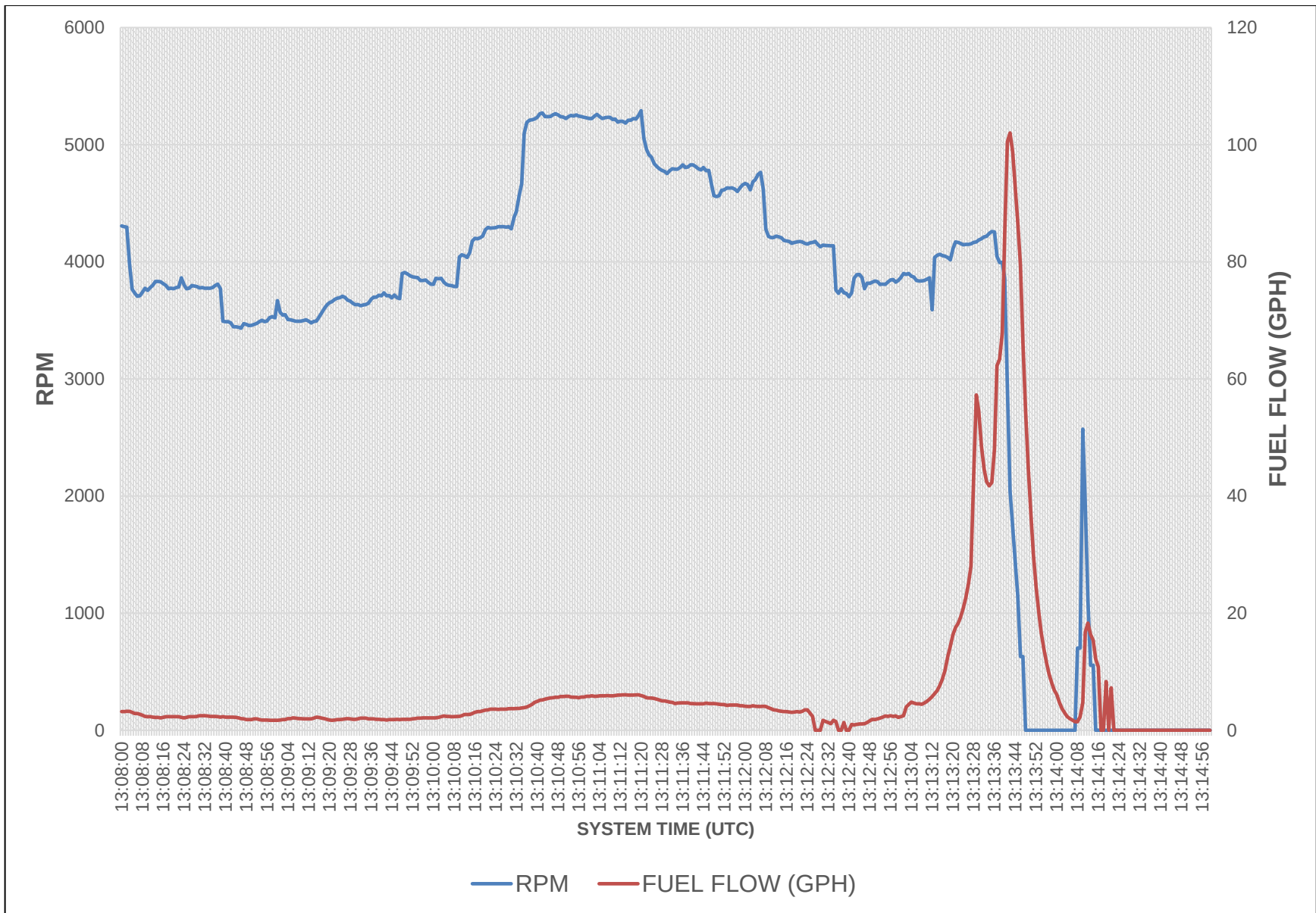


Figure 3: Fuel Flow and RPM Data

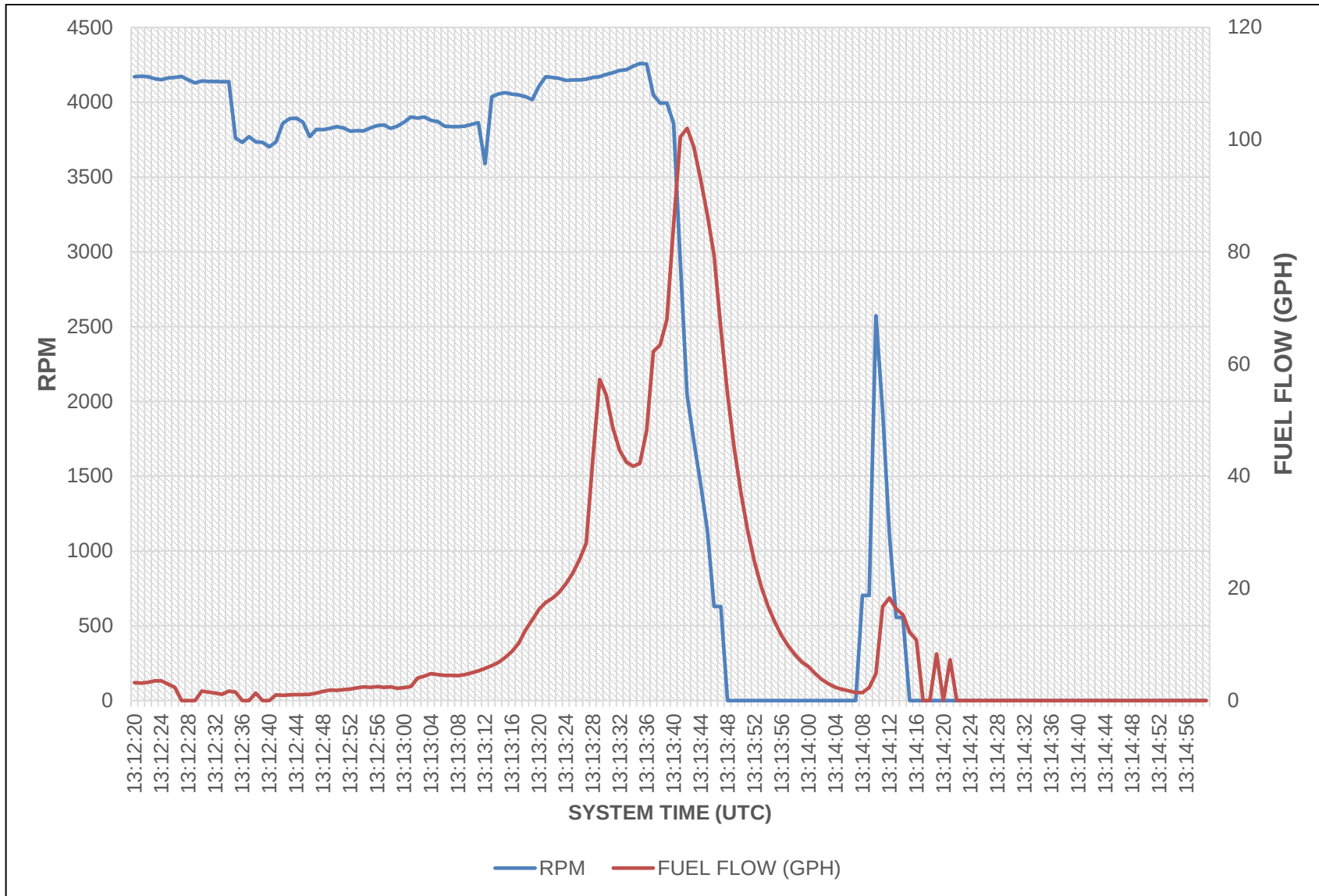


Figure 4: Fuel Flow and RPM Data, Last Two Minutes of Flight

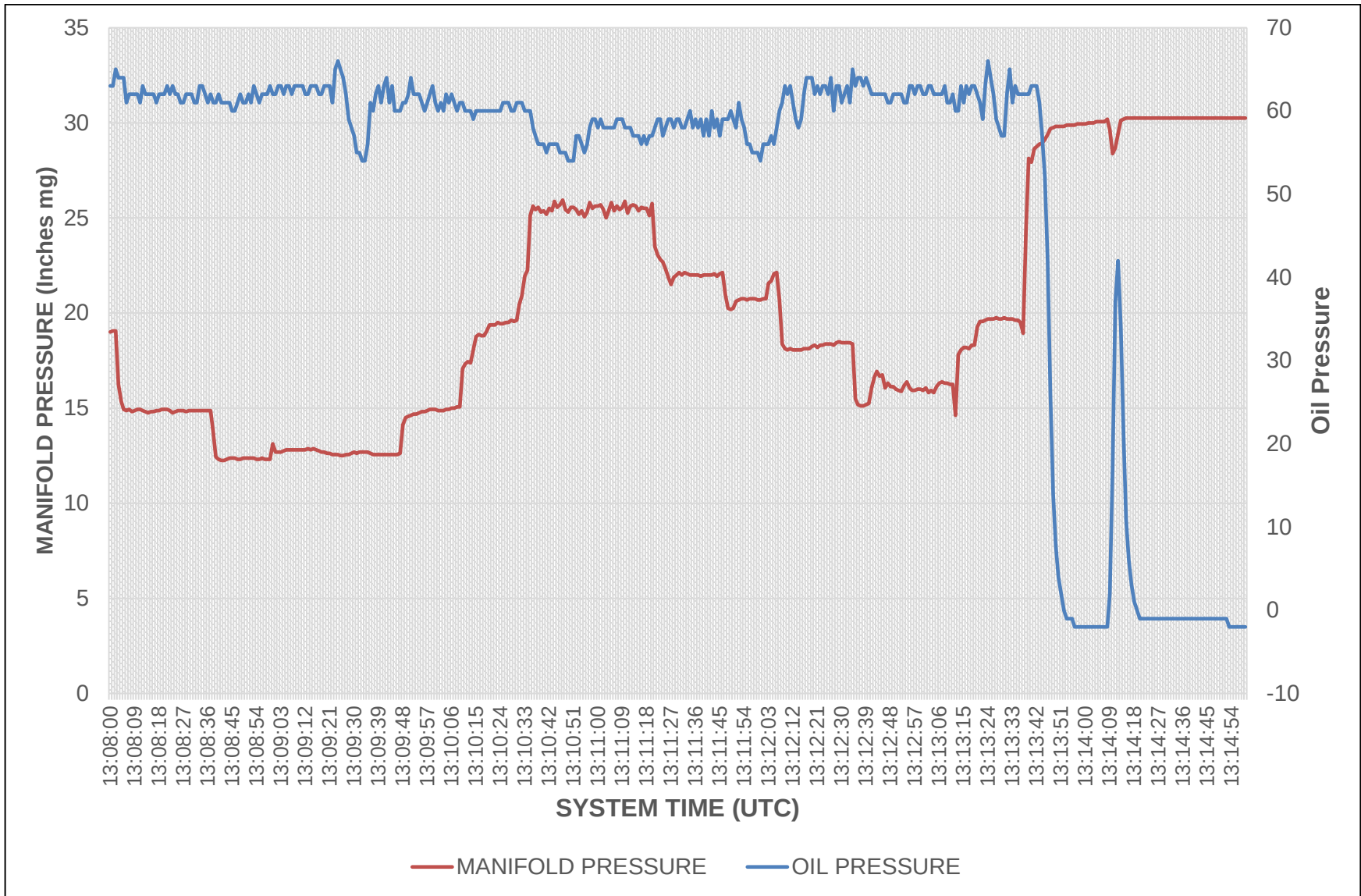


Figure 5: Manifold Pressure and Oil Pressure Data

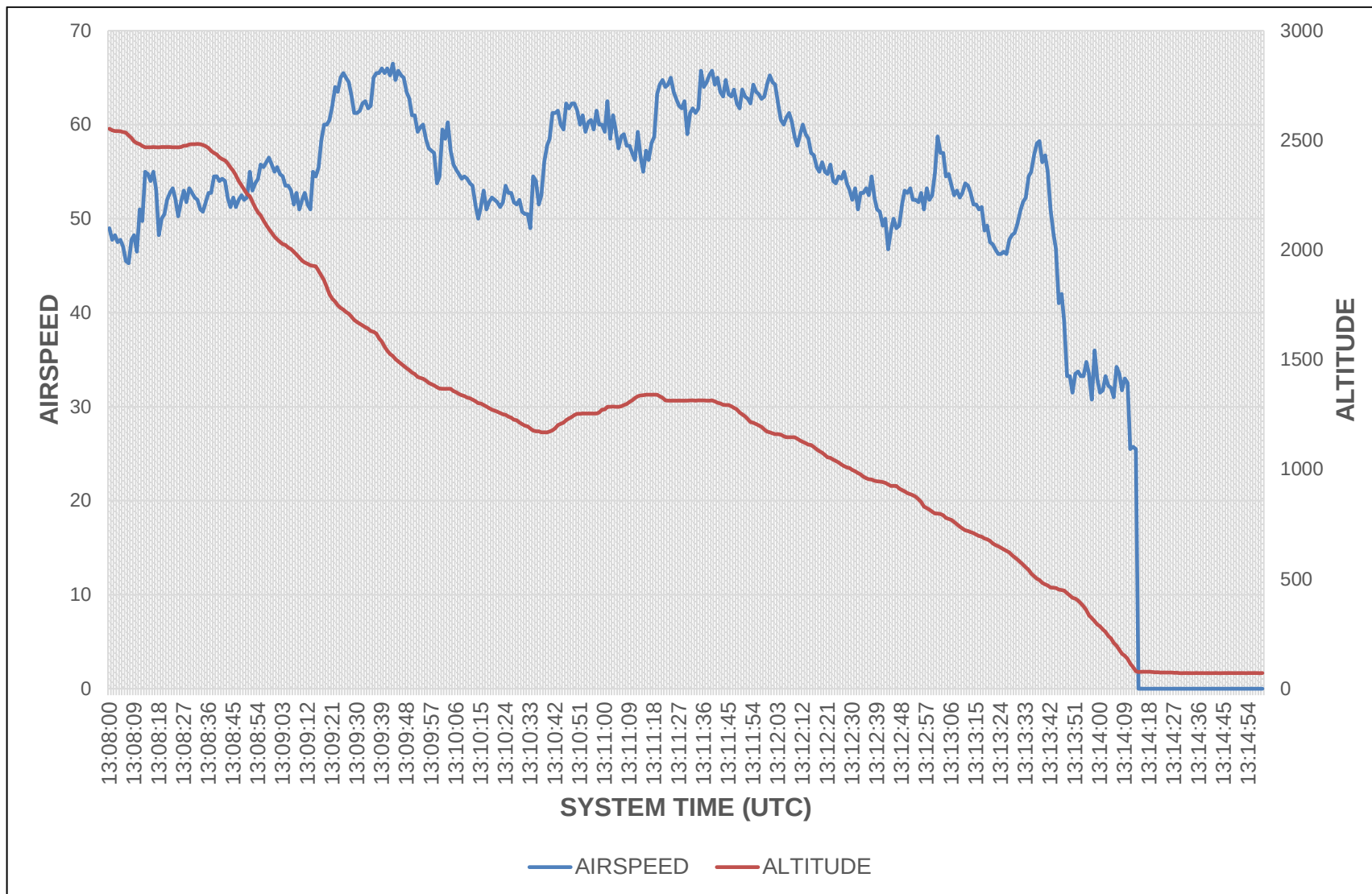


Figure 6: Airspeed and Altitude Data

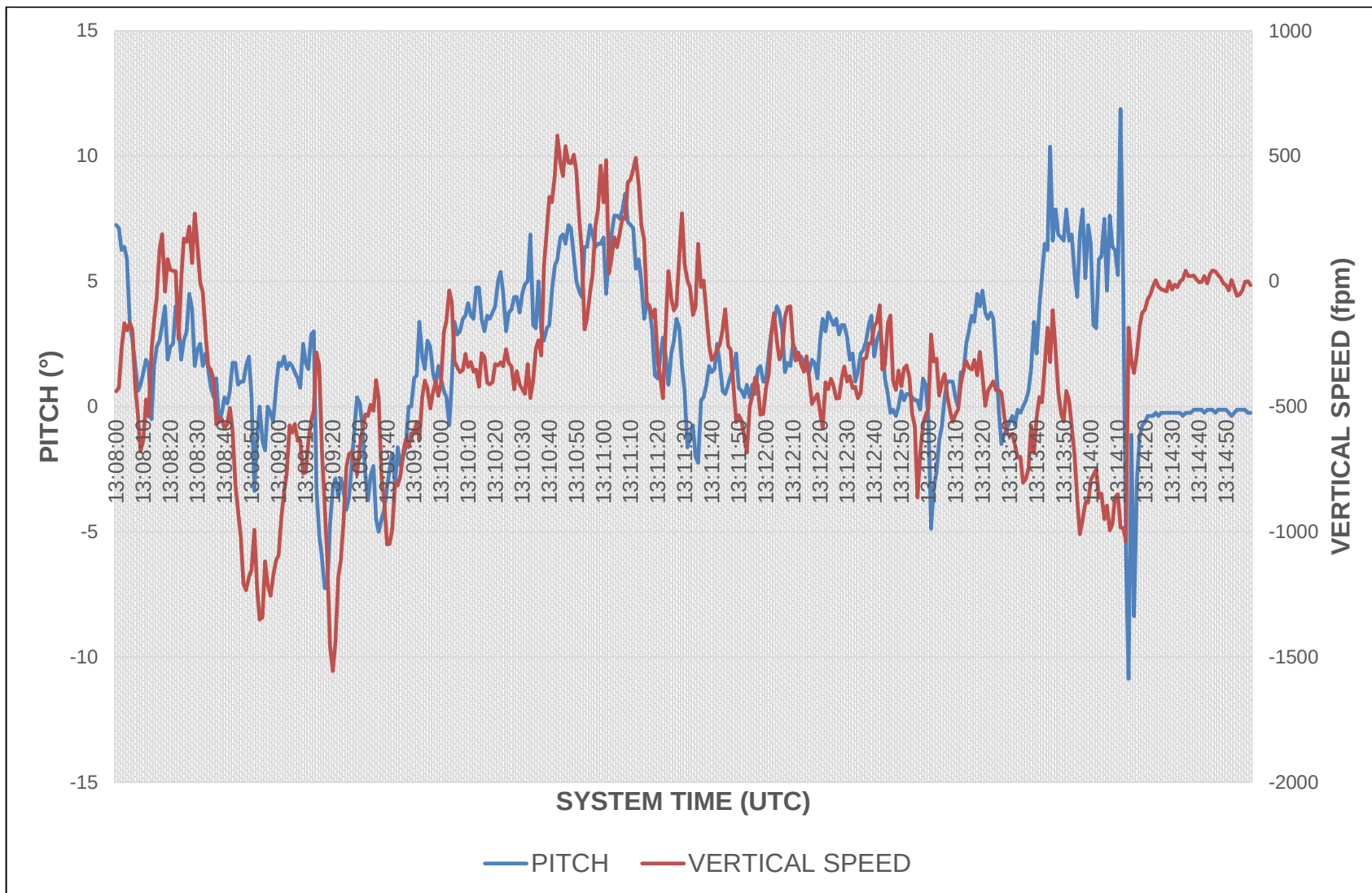


Figure 7: Pitch and Vertical Speed Data