

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

November 17, 2020

Recorded Flight Data

Specialist's Factual Report

By Kyle Garner

1. EVENT SUMMARY

Location: Woody Creek, Colorado
Date: January 27, 2020
Aircraft: Cirrus SR22
Registration: N288WT
Operator: Private
NTSB Number: CEN20LA069

On January 27, 2020, about 1524 mountain standard time (MST), a Cirrus SR22T airplane, N288WT, descended under the canopy of a Cirrus Airframe Parachute System (CAPS) and impacted trees and terrain near Woody Creek, Colorado. The airplane was registered to Noel Development LLC and was operated by the pilot as a Title 14 Code of Federal Regulations Part 91 personal flight. The flight originated from the Aspen-Pitkin County Airport/Sardy Field (ASE), near Aspen, Colorado, about 1520 and was destined for the Eagle County Regional Airport, near Eagle, Colorado.

2. RECORDED FLIGHT DATA GROUP

A recorded flight data group was not convened.

3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received an electronic file containing Heads Up Technologies Recoverable Data Module (RDM) data downloaded from the accident aircraft.

3.1. Heads Up Technologies RDM Description

The Heads Up Technologies RDM is a crash-hardened data storage unit installed in the tail of some Cirrus aircraft. The unit records flight, engine, and autopilot parameters. Data is logged once per second and stored internally on four thin small outline package (TSOP) memory devices inside the crash-hardened enclosure. When the storage limit of the memory device is reached, the oldest recording is deleted.

3.1.1. Data Description

The RDM recording contained approximately 6 hours of data, which included the event flight and the two flights before the event flight. The event flight was the last flight on the recording and was approximately 26 minutes in duration.

3.1.2. Engineering Unit Conversions

The engineering unit conversions used for the data contained in this report are based on documentation from the manufacturer of the data acquisition unit installed in the aircraft. Where applicable, the conversions have been changed to ensure that the parameters conform to the NTSB's standard sign convention that climbing right turns are positive (CRT=+).¹

Table A-1 lists the parameters verified and provided in this report. Additionally, table A-2 describes the unit and discrete abbreviations used in this report.

3.2. Time Correlation

Correlation of the event flight data to the event local time, mountain standard time (MST), was established using the recorded Coordinated Universal Time (UTC) and then subtracting 7 hours. All times in this report are MST unless otherwise specified.

3.3. Plots and Corresponding Tabular Data

Figures 1 to 5 contain RDM data recorded during the January 27th, 2020 event. All parameters listed in table A-1 are plotted except UTC Hours, UTC Minutes, and UTC Seconds.

These figures are configured such that right turns are indicated by the trace moving toward the bottom of the page, left turns towards the top of the page, and nose up attitudes towards the top of the page.

Figure 1 contains aircraft basic parameters, Figure 2 contains discrete parameters, and Figure 3 contains engine parameters. Each plot begins at 1520:30, just prior to departure at ASE, and ends at 1525:20, just prior to the aircraft impacting terrain. Altitude and heading reference system (AHRS) data stopped recording at 1525:08, the cause of which was not determined.

Figures 4 and 5 are a Google Earth presentation of the track of the event flight generated from latitude and longitude data recorded on the RDM. The weather, season, and lighting conditions in Google Earth are not representative of the conditions at the time of the event.

The corresponding tabular data used to create Figures 1 to 5 are provided in electronic comma-separated value (*.csv) format as attachment 1 to this report.

¹ CRT=+ means that for any parameter recorded that indicates a climb or a right turn, the sign for that value is positive. Also, for any parameter recorded that indicates an action or deflection, if it induces a climb or right turn, the value is positive. Examples: Right Roll = +, Pitch Up = +, Elevator Trailing Edge Up = +, Right Rudder = +.

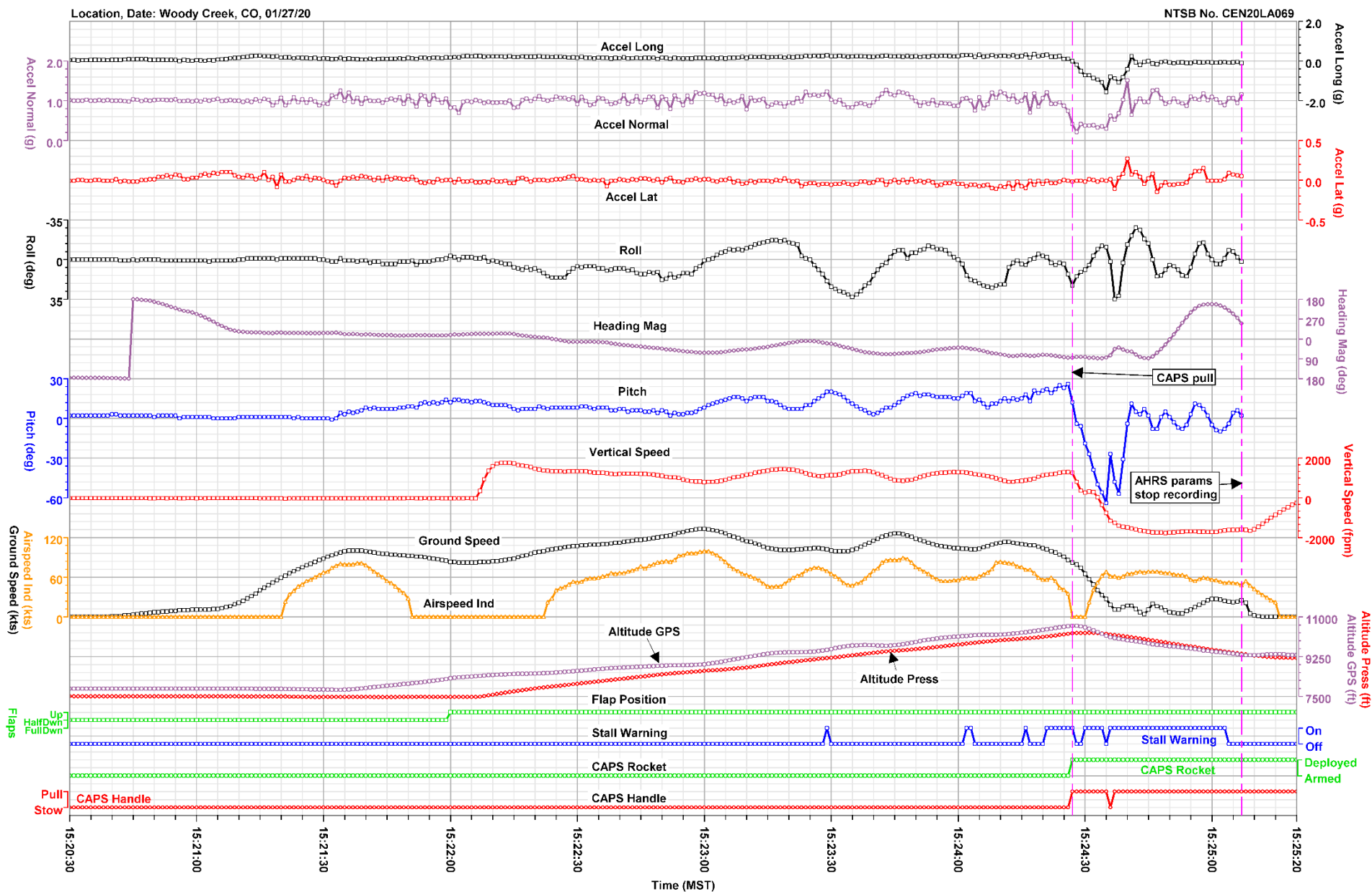


Figure 1. Basic parameters for event flight.

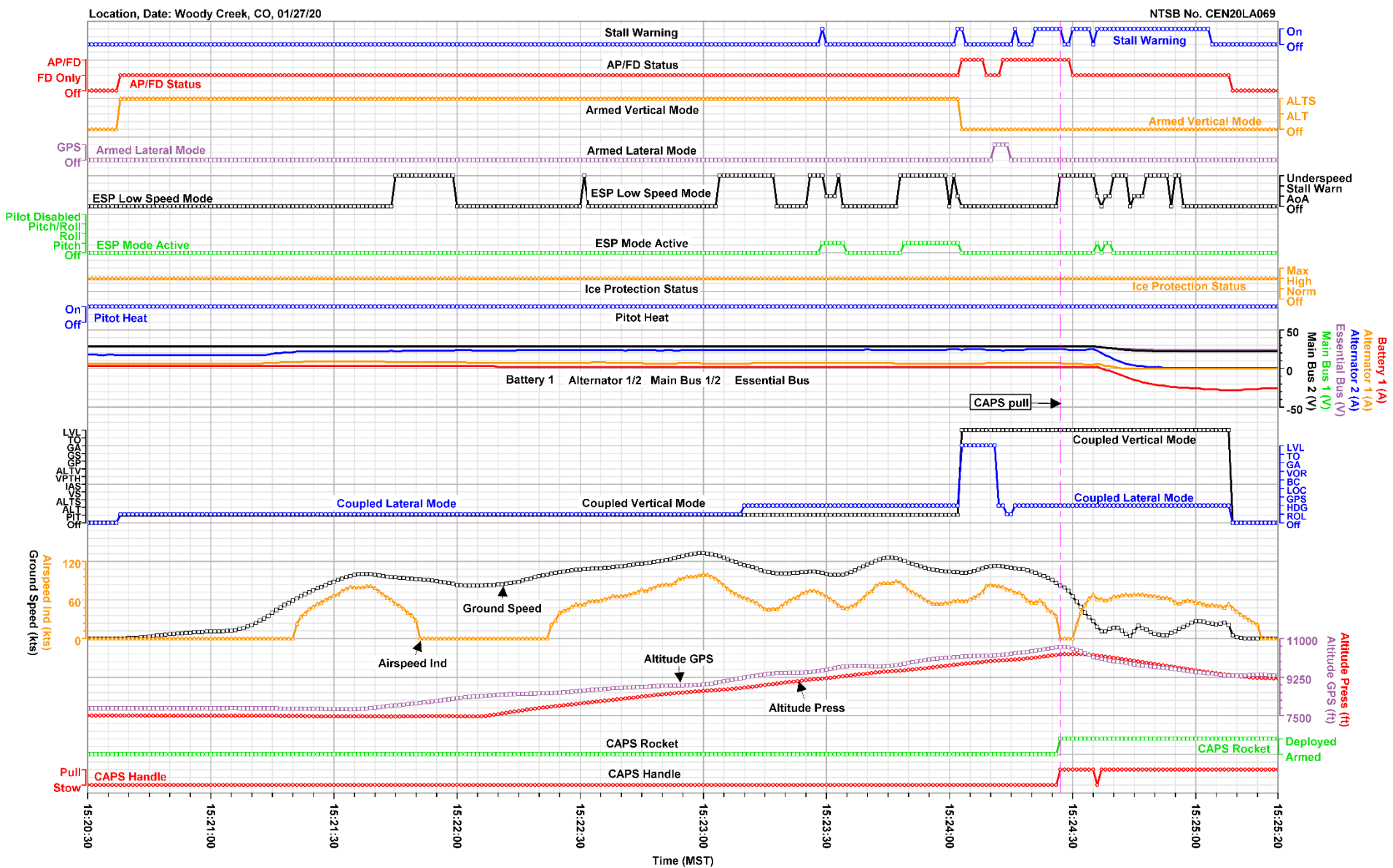


Figure 2. Discrete parameters for event flight.

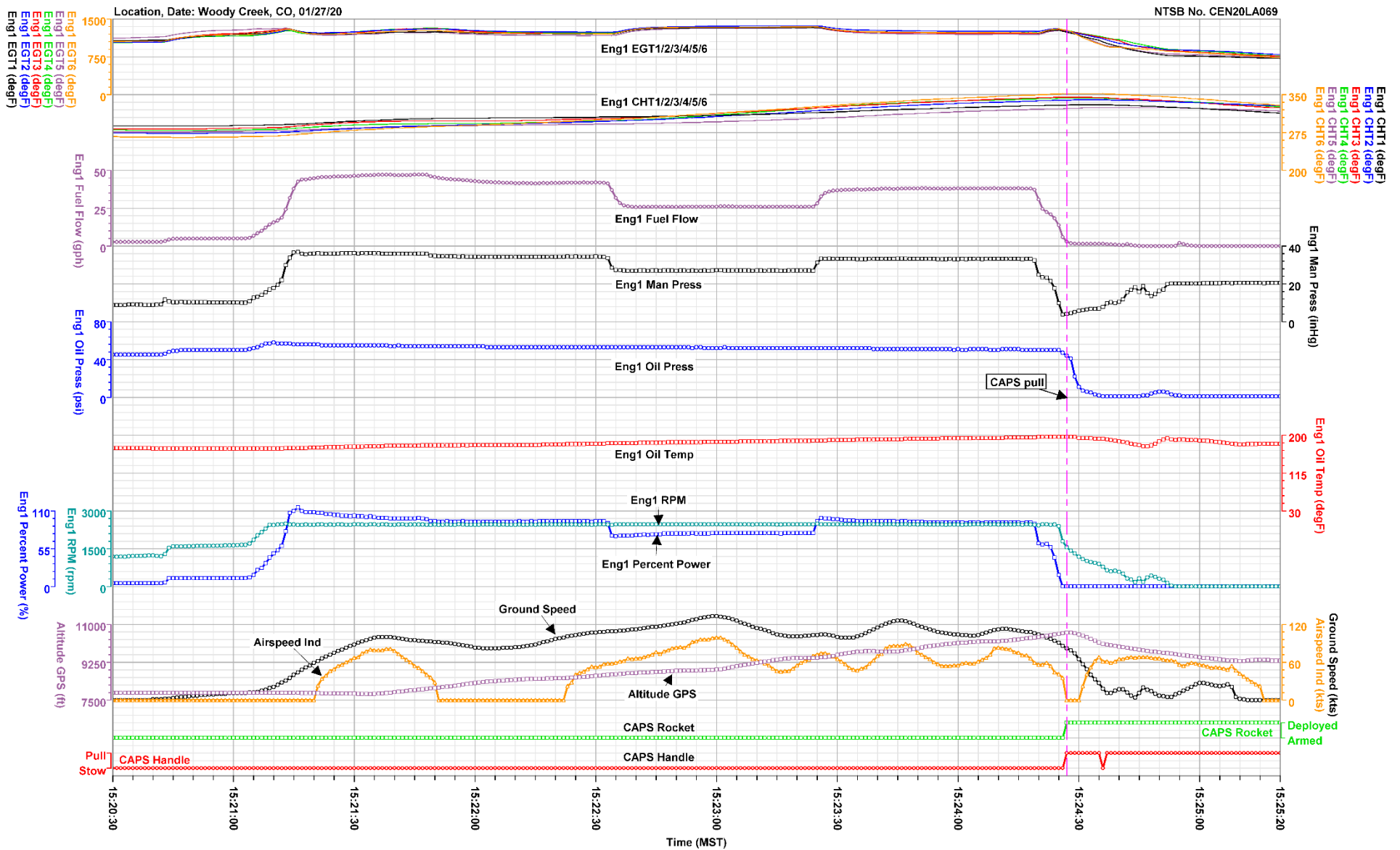


Figure 3. Engine parameters for event flight.

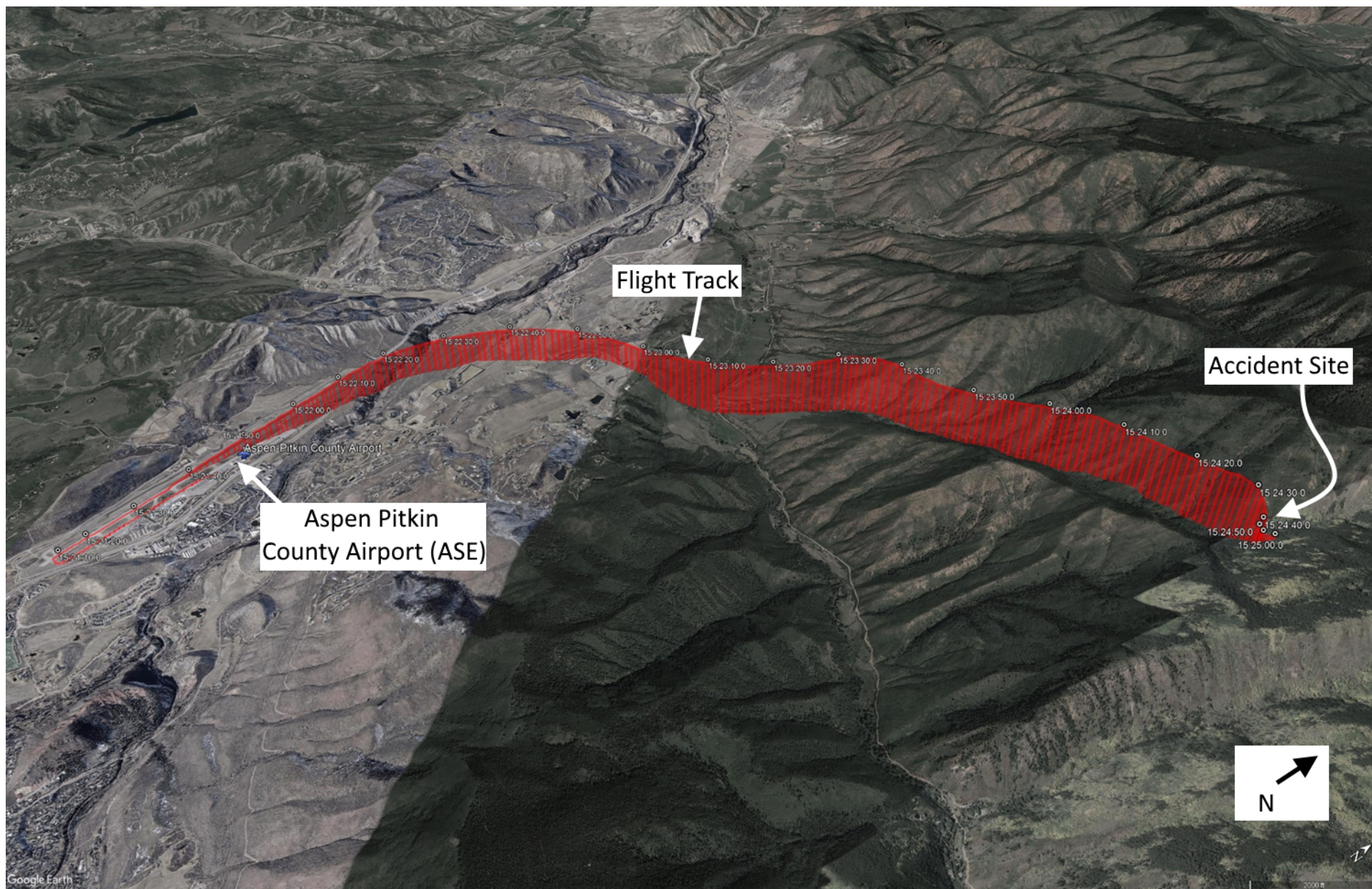


Figure 4. Google Earth overlay of event flight path – overview.

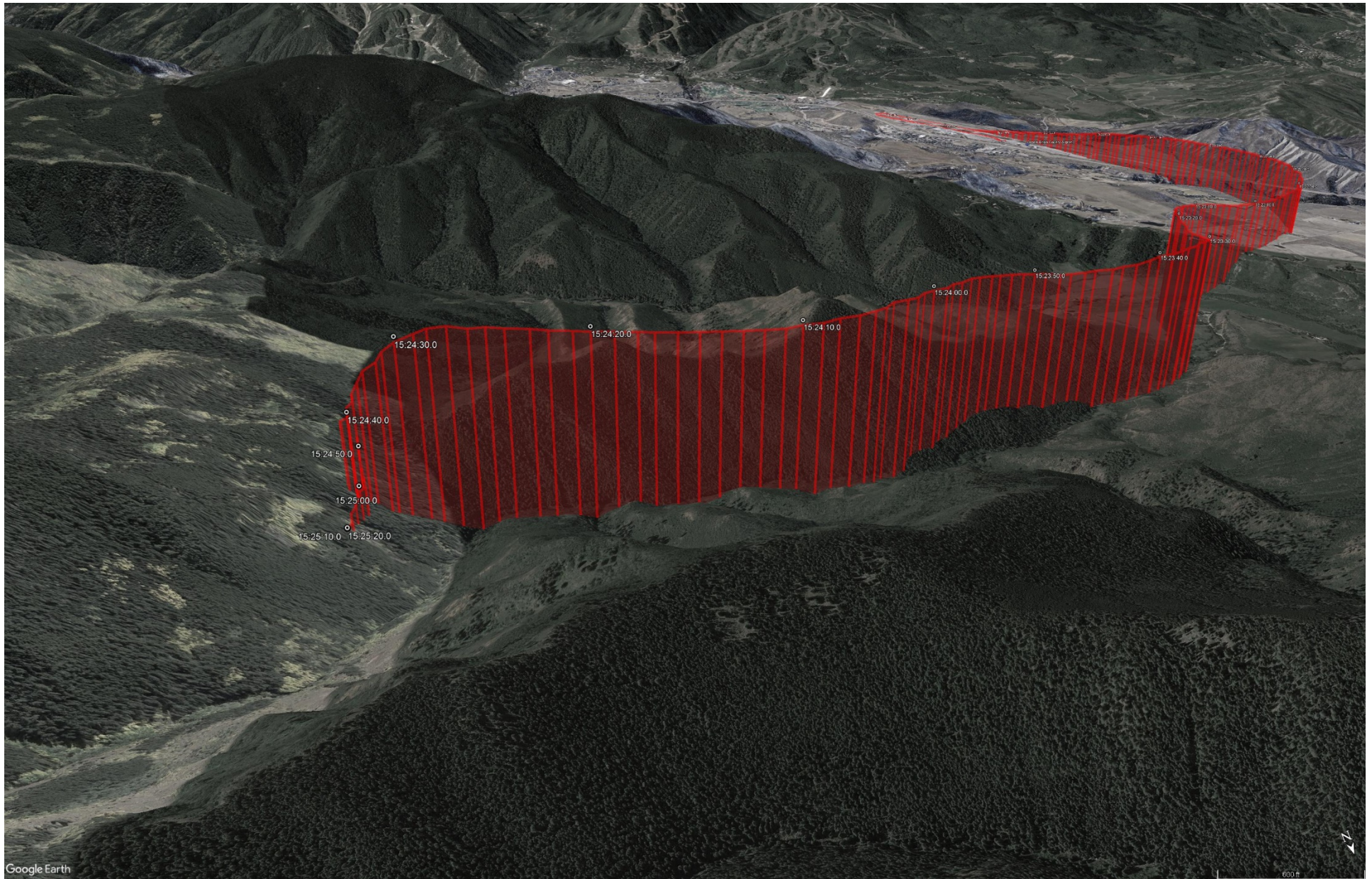


Figure 5. Google Earth overlay of event flight path – accident site.

APPENDIX A

This appendix describes the parameters provided and verified in this report. Table A-1 lists the plot/table labels, parameter names, and units. Additionally, table A-2 describes the unit and discrete abbreviations used in this report.

Table A-1. Verified and provided RDM parameters.

Plot/Table Labels	Parameter Names	Units
Accel Lat	Lateral Acceleration	g
Accel Long	Longitudinal Acceleration	g
Accel Vert	Vertical Acceleration	g
Airspeed Ind	Indicated Airspeed	kts
Alternator 1/2	Alternator 1/2	A
Altitude GPS	GPS Altitude	ft
Altitude Press	Pressure Altitude	ft
AP/FD Status	Autopilot/Flight Director Status	-
Armed Lateral Mode	Armed AP Lateral Mode	-
Armed Vertical Mode	Armed AP Vertical Mode	-
Battery 1	Battery 1	A
CAPS Handle	CAPS Handle Status	-
CAPS Rocket	CAPS Rocket Status	-
Coupled Lateral Mode	Coupled AP Lateral Mode	-
Coupled Vertical Mode	Coupled AP Vertical Mode	-
Eng1 CHT1/2/3/4/5/6	Engine 1 Cylinder Head Temperature 1/2/3/4/5/6	degF
Eng1 EGT1/2/3/4/5/6	Engine 1 Exhaust Gas Temperature 1/2/3/4/5/6	degF
Eng1 Fuel Flow	Engine 1 Fuel Flow	gph
Eng1 Man Press	Engine 1 Manifold Pressure	inHg
Eng1 Oil Press	Engine 1 Oil Pressure	psi
Eng1 Oil Temp	Engine 1 Oil Temperature	degF
Eng1 Percent Power	Engine 1 Percent Power	%
Eng1 RPM	Engine 1 RPM	rpm
ESP Low Speed Mode	Electronic Stability Protection Low Speed Mode	-
ESP Mode Active	Electronic Stability Protection Mode Active	-
Essential Bus	Essential Bus	V
Flaps	Flap Setting	deg
Ground Speed	Ground Speed	kts
Heading Mag	Magnetic Heading	deg
Ice Protection Status	Ice Protection Status	-
Latitude	Latitude	deg
Longitude	Longitude	deg
Main Bus 1/2	Main Bus 1/2	V
Pitch	Pitch Angle	deg
Pitot Heat	Pitot Heat	-
Roll	Roll Angle	deg
Stall Warning	Stall Warning	-
UTC Hours	UTC Hours	hr
UTC Min	UTC Minutes	min
UTC Sec	UTC Seconds	sec
Vertical Speed	Vertical Speed	fpm

NOTE: The RDM records pressure altitude, which is based on a standard altimeter setting of 29.92 inches of mercury (in Hg). The pressure altitude information presented in the plots and the electronic data has not been corrected for the local altimeter setting at the time of the event.

APPENDIX A

NOTE: Parameters with a blank unit description in table A-1 are discretes. A discrete is typically a 1-bit parameter that is either a 0 state or a 1 state where each state is uniquely defined for each parameter.

Table A-2. Unit and discrete abbreviations.

Unit and discrete abbreviations	Descriptions
A	amps
deg	degrees
kts	knots
g	g
degF	degrees Fahrenheit
fpm	feet per minute
gph	gallons per hour
inHg	inches of mercury
ft	feet
hrs	hours
min	minutes
psi	pounds per square inch
rpm	revolutions per minute
sec	seconds
V	volts
%	percent