

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

May 2, 2017

Cockpit Display – Recorded Flight Data

Specialist's Factual Report
By James Cash

1. EVENT SUMMARY

Location: Payson, Arizona
Date: January 02, 2017
Aircraft: Cessna T210K
Registration: N272EF
Operator: Private
NTSB Number: WPR17FA045

On January 2, 2017, about 0937 Mountain Standard Time, a Cessna T210K, N272EF, was destroyed after it collided with mountainous terrain near Payson, Arizona. The private pilot and three passengers were fatally injured. The personal flight was operated under the provisions of Title 14 Code of Federal Regulations Part 91. Instrument meteorological conditions prevailed and no flight plan was filed for the cross-country flight that departed Scottsdale Airport (SDL), Scottsdale, Arizona at 0912 and was destined for Telluride, 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 the following electronic display device capable of recording information to non-volatile memory (NVM)¹:

Recorder Manufacturer/Model: **Electronics International MVP-50P**
Recorder Serial Number: **148118**

¹ Solid-state memory retains recorded information after electrical power is removed.

3.1. Electronic International model MVP-50 Description

The Electronic International model MVP-50 unit is a panel mounted cockpit display that depicts engine data on a color LCD display. In addition to the cockpit display, the unit is also capable of recording the engine data at a user defined interval. This unit was set to record a new data snapshot record approximately three times per second.

Table 1 depicts the data parameters that were recorded on the accident aircraft.

Table 1

Parameter Name	Parameter Description
Time	Time (MST) for recorded data point (HH:MM:SS.0)
GPS Groundspeed	Groundspeed in knots
GPS Altitude	Altitude in feet
GPS Track	Ground Track in deg
AMPS	Generator charging current in amps
CHT 1-6	Cylinder head temperature in deg
EGT 1-6	Cylinder exhaust temperature in deg
Engine Hrs	Engine time in hours
Fuel Flow	Fuel Flow in gallons per hour
Fuel Left-Right	Fuel in tank in gallons
Fuel Pres	Fuel Pressure in psi
Fuel Remaining	Fuel remaining in gallons
HP	Engine power in percent
MAP	Manifold Pressure in inches of HG
Master Warning	Master warning
OAT	Outside Air Temperature in deg
Oil Pressure	Engine Oil Pressure in psi
Oil Temp	Engine Oil Temperature in deg
RPM	Engine speed in revolutions per minute
CYL Cool	Cylinder cool down in deg
TACH Time	Tachometer time in hours
TIT	Turbo Inlet Temperature deg

3.2. Data Recovery

The Electronics International MVP-50 display from the accident aircraft appeared undamaged. The unit was disassembled to check for any internal damage to the electronic components. The only discrepancy noted was that the small “keep alive” battery that is normally mounted on the main circuit board was found dislodged from its holder

and was loose in the bottom of the enclosure. The battery was reattached and the unit powered up normally. The unit was downloaded using the manufacturer's recommended procedures.

The downloaded data consisted of 468 files dating from January 23, 2015 through January 2, 2017. The accident flight was the last data file recorded on January 2, 2017.

3.3. Time Correlation

The time function of the display is set by the operator through one of the many setup screens of the device. The unit contains a small "keep alive" battery that will retain the time and other user settings even when the unit is not powered. When the unit was examined in the laboratory, the small battery was found dislodged from its normal holder and was loose inside of the device. Without the battery, the unit reverts back to an unset time setting preventing any verification of the accuracy of the time during the accident flight. Data is presented in MST for the remainder of this report.

3.4. Terrain Height Calculation

To establish how high the aircraft was above the terrain, Google Earth has an application that will report how high the terrain is at any point on the earth. The GPS position (latitude and longitude) track of the accident aircraft was fed into the Google Earth application to determine how high the ground terrain was over the accident aircraft's route of flight. The difference was calculated between the GPS altitude and the terrain elevation to derive the aircraft's height above the terrain. Figure 4 depicts the various altitude calculations.

3.5. Plots and Corresponding Tabular Data

The following four figures contain location, elevation and EDM data during the January 2, 2017 event.

Figure 1 is a Google Earth presentation of the flight track of the accident aircraft. The aircraft departed from the Scottsdale Airport, Scottsdale, Arizona at about 0933:04 MST. The last recorded data point was recorded at 0953:06.8 MST on January 2, 2017 at a GPS altitude of 6,767 feet and a groundspeed of 125 knots.

Figure 2 is a Google Earth presentation of the last several minutes of the accident flight.

Figure 3 is a graphical presentation of the engine data recovered from the accident aircraft's display.

Figure 4 is a graphical presentation of the GPS altitude, terrain elevation and the aircraft's height above the terrain for the accident flight. Additionally GPS groundspeed is also depicted on the figure for reference.

The corresponding tabular data used to create these four figures are provided in electronic (*.csv²) format as Attachment 1 to this report.

² Comma Separated Value format.

Figure 1. Google Earth presentation of the accident flight



Figure 2. Google Earth presentation of end of the accident flight

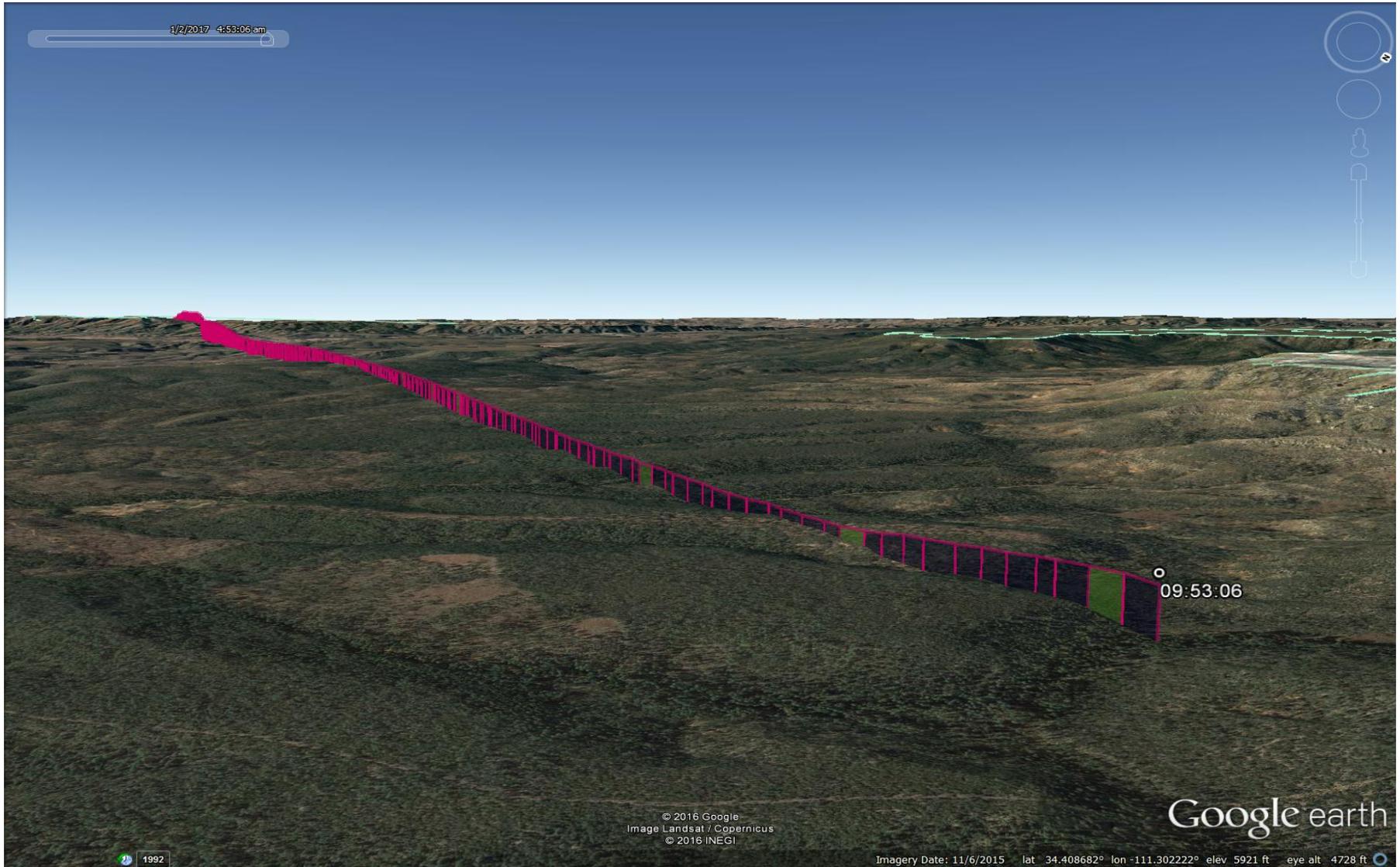
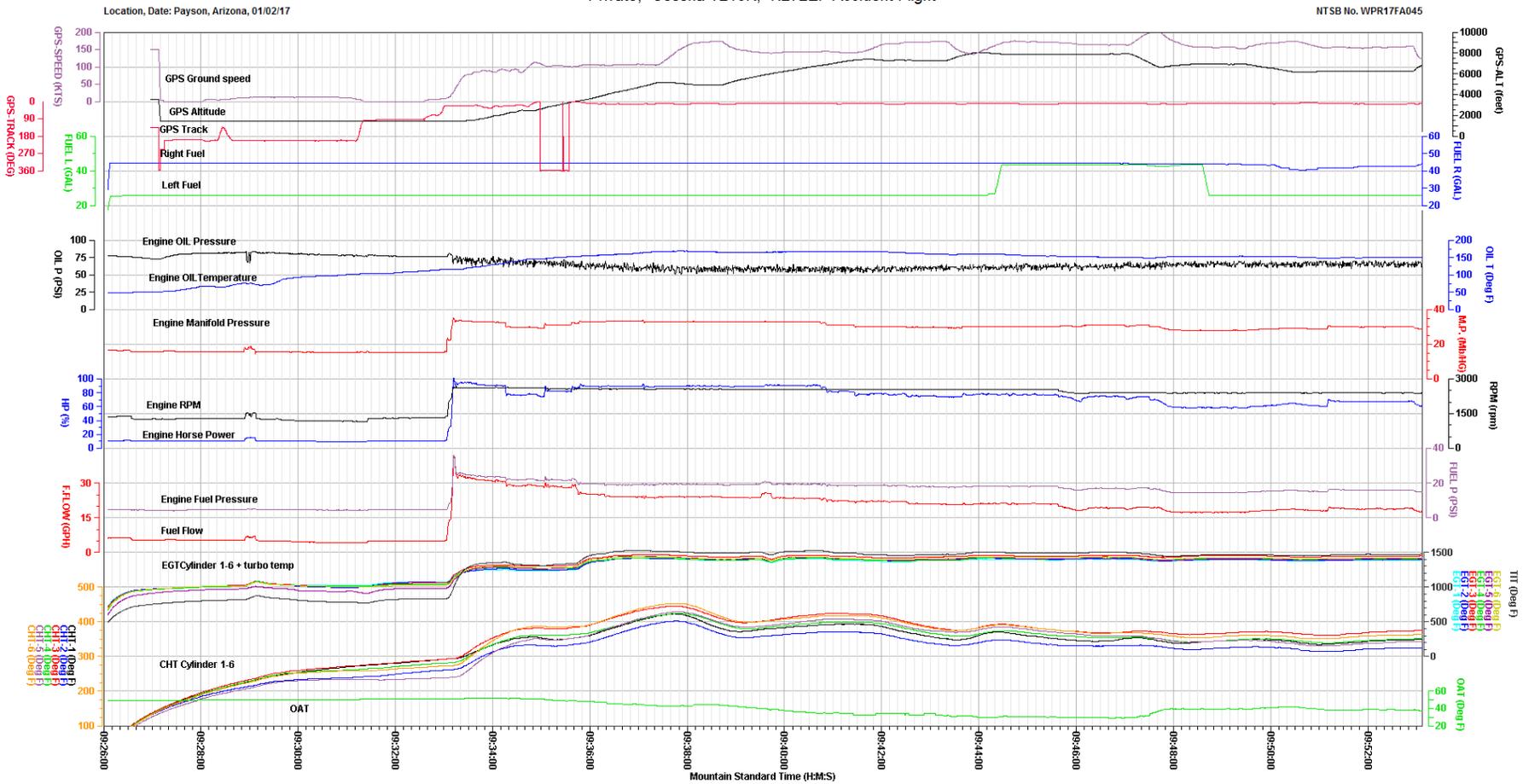


Figure 3. Graphical presentation of engine data of the accident flight

Private, Cessna T210K, N272EF Accident Flight



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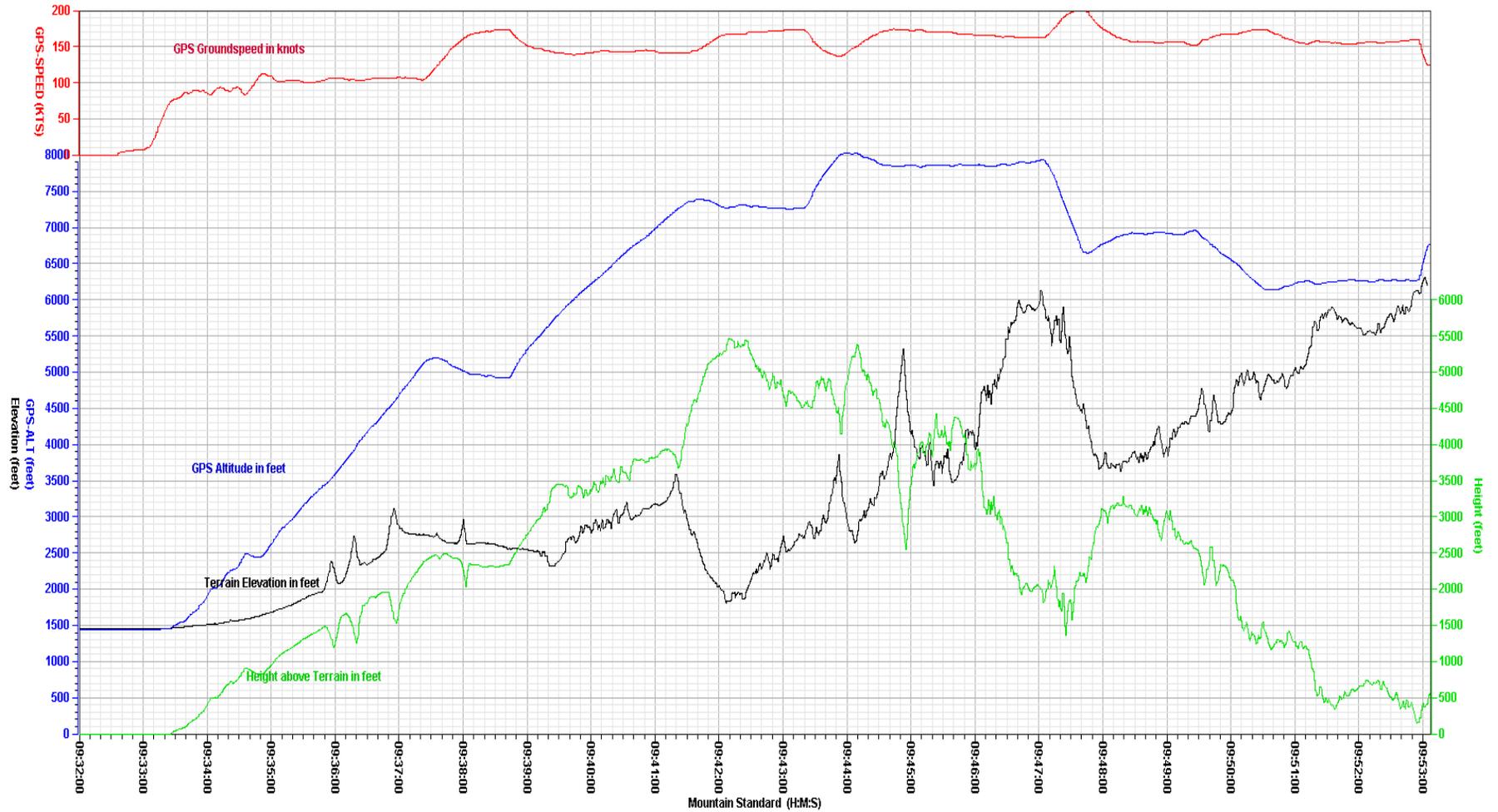
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Figure 4. Graphic presentation of the calculated height above the terrain for the accident flight track

Cessna T210K, Private, N272EF, Accident flight height above terrain

Location, Date: Payson, Arizona, 01/02/17

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