

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, D.C. 20594

October 26, 2021

Global Positioning System Devices

Specialist's Factual Report

By Gerald Kawamoto

1. EVENT SUMMARY

Location: Pine Grove, Oregon
Date: August 24, 2020
Aircraft: Kaman K1200
Registration: N314
Operator: Private
NTSB Number: WPR20LA283

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following global positioning system (GPS) device:

Device Manufacturer/Model:	Latitude Technologies SkyNode S100
Serial Number:	10203
Device Manufacturer/Model:	Latitude Technologies IONode
Serial Number:	42764

3.1. SkyNode S100 Device Description

The SkyNode S100 is a tracking and data telemetry system. The device can interface with other mapping and information management systems such as the IONode Flight Data Management System. Historical data on the device is limited to up to the last 180 seconds of background logging data.

3.1.1. Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, external examinations revealed the devices had sustained impact damage, as shown in Figures 1 and 2, rendering them inoperable. In discussions with the manufacturer and the Investigator-In-Charge (IIC), it was determined that the devices likely contained redundant data and the Skynode S100 would provide the most relevant data to the investigation. Thus, only the Skynode S100

was sent to the manufacturer for data recovery. Data were extracted at the manufacturer's facility and were provided to the investigation team.



Figure 1. S100 as received.



Figure 2. IONode as received.

3.1.2. Data Description

Data extracted included 120 data points and started at 00:45:37 UTC and ended at 00:47:36 UTC August 25, 2020. Data were sampled once every second. The manufacturer noted that the GPS Track vectors in the recovered data appeared to be off for various segments of the flight path. It was also noted that the SkyNode received was older and there may have been an inherent software bug. The Horizontal Dilution of Precision (HDOP) values did not indicate any decrease in GPS accuracy.

3.2. Plots and Tabular Data

The following three figures contain data recorded during the August 24, 2020, event.

Figure 3 is a graphical overlay generated using Google Earth showing the recorded data from the Skynode S100. Weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording.

The first data point was recorded at 00:45:37 UTC and the final data point was recorded at 00:47:36 UTC on August 25, 2020.

Figure 4 is a Google Earth overlay showing the end of the accident flight and the reported wreckage location.

Figure 5 is a Google Earth overlay showing the end of the accident flight and the reported wreckage location from an alternate angle (sideview).

The corresponding tabular data used to create these three plots are provided in electronic (*.csv) format as Attachment 1 to this report.¹

¹ Comma Separated Value format.



Figure 3. Google Earth overlay of the flight data extracted from the SkyNode S100.



Figure 4. Google Earth overlay of the end of the flight data extracted from the SkyNode S100 and the wreckage location.



Figure 5. Google Earth overlay of the end of the flight data extracted from the SkyNode S100 and the wreckage location (sideview).