

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



WPR24FA123

GLOBAL POSITIONING SYSTEM DEVICE

Specialist's Factual Report

July 29, 2024

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A. ACCIDENT

Location: Likely, California
Date: April 9, 2024
Time: 1444 Pacific daylight time (PDT)
2144 coordinated universal time (UTC)
Airplane: Ayres Corporation S2R-G10, private operator, N40261

B. GLOBAL POSITIONING SYSTEM DEVICE SPECIALIST

Specialist: Steven Smith
Mechanical Engineer (Recorder Specialist)
National Transportation Safety Board (NTSB)

C. DETAILS OF THE INVESTIGATION

A group was not convened. The NTSB Vehicle Recorder Division received the following global positioning system (GPS) device:

Recorder Manufacturer/Model: Satloc M3 Bantam
Part Number: 806-1034-000#_E
Recorder Serial Number: 1210-159511-0017

1.0 Satloc M3 Bantam Description

The Satloc M3 Bantam is part of an on-board control system designed to programmatically control agricultural, aerial spray operations based on vendor and user specified prescription maps. The Satloc device can drive a cockpit mounted lightbar guidance system and a real-time graphic moving map display providing visual guidance to the pilot. Flow rates can be pilot selected or based on mapping created using a proprietary software package called MapStar that runs on a computer. The device can record historical information to an internal, compact flash (CF) card or flash drive depending on user configuration.

1.1 Satloc M3 Bantam Recorder Condition and Data Recovery

The Satloc M3 Bantam had no visible damage upon arrival at the NTSB Vehicle Recorder Laboratory, as shown in figure 1. An internal CF card was recovered from the device, and data were extracted. The file initially was unable to be converted into engineering unit data using laboratory tools. The file identified as the accident was sent to the manufacturer. The manufacturer reported that the file was corrupt and that only a select amount of data would be extracted. Upon receipt of the cleaned file, the accident file was converted into engineering unit data using laboratory tools.



Figure 1. Top and side views of the Satloc M3 Batam as received.

1.2 Satloc M3 Bantam Recording Description

The data extracted from the CF card included 135 log files. The log files were from May 23, 2023, through April 9, 2024. The last log file recorded on April 9, 2024, was identified to be associated with the accident flight. The cleaned file contained 74 data points that began at 9:40:25 PDT and ended at 14:41:47 PDT. In addition to the accident file being corrupt, all other log files contained on the CF were also corrupt.

1.2.1 Satloc M3 Bantam Parameters Provided

Table 1 lists the recorder parameters verified and provided in this report.

Table 1. Satloc M3 Bantam data parameters provided.

Parameter Name (unit)	Parameter Description (unit)
Alt (ft)	Altitude Above Mean Sea Level (feet)
Hdg (deg)	Magnetic Heading (degrees)
Lat (deg)	Latitude (degrees)
Lon (deg)	Longitude (degrees)
Speed (mph)	Groundspeed (miles per hour)
Spray (On/Off)	Spray Status (discrete: on or off)
Time (HH:MM:SS)	Local Time (Hours:Minutes:Seconds)

1.3 Satloc M3 Bantam Time Correlation

The data were recorded in PDT, the local time of the event, and were kept for the rest of the report.

D. FIGURES AND TABULAR DATA

In agreement with the Investigator in Charge, no figures or Google Earth overlays were generated.

The GPS data indicated the following sequence of events:

- **9:40:24 PDT:** The first useable data point. Altitude and groundspeed were 4374 ft and 127 mph, respectively. The spray discrete was ON.
- **14:41:47 PDT:** The last useable data point. Altitude and groundspeed were 4317 ft and 43 mph, respectively. The spray discrete was OFF.

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

Submitted by:

Steven Smith
Mechanical Engineer (Recorder Specialist)