

National Transportation Safety Board

Office of Research and Engineering

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CEN24FA260

GLOBAL POSITIONING SYSTEM DEVICES

Specialist's Factual Report

October 30, 2024

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A. ACCIDENT

Location: Bonita, LA
Date: July 11, 2024
Time: 13:54 central daylight time (CDT)
Airplane 1: AIR TRACTOR INC AT-502B, Mcginty Flying Service LLC, N6177J
Airplane 2: AIR TRACTOR INC AT-802A, ArklaFlyers, Inc, N795LA

B. GLOBAL POSITIONING SYSTEM DEVICES SPECIALIST

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C. DETAILS OF THE INVESTIGATION

A group was not convened. The NTSB Vehicle Recorder Division received a Satloc M3 Bantam device recovered from Airplane 1. Additionally, the NTSB received a data file downloaded by the aircraft manufacturer from a Satloc G4 device installed on Airplane 2.

Airplane 1 (N6177J):

Recorder Manufacturer/Model:	Satloc M3 Bantam
Part Number:	806-1034-000#_E
Recorder Serial Number:	1314-HH05736-0043

Airplane 2 (N795LA):

Recorder Manufacturer/Model:	Satloc G4 data file
File Name:	2407110854SatlocG411139.ASC

1.0 Satloc M3 Bantam Device Description

The Satloc M3 Bantam is part of an onboard control system designed to programmatically control agricultural, and aerial spray operations based on vendor and user-specified prescription maps. The SATLOC M3 Bantam 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 desktop computer. Depending on user configuration, the Satloc M3 Bantam can record historical information to an internal compact flash (CF) card or flash drive.

1.1 Satloc M3 Bantam Data Recovery

The Satloc M3 Bantam device arrived undamaged, and the internally mounted CF card was removed. The CF card is shown as installed in Figure 1. Data were then extracted from the CF card and converted to engineering units using the manufacturer's software.



Figure 1. Satloc M3 Bantam device (left) and internal CF card (right).

1.2 Satloc M3 Bantam Recording Description

The data extracted included 90 sessions from June 8, 2024, through July 11, 2024. The data corresponding to the accident flight on July 11, 2024, began at 13:46:56 CDT and ended at 13:53:32 CDT. The data were generally recorded at a rate of 1Hz or one sample per second.

1.3 Satloc M3 Bantam Time Correlation

The device recorded data in Pacific Daylight Time (PDT) and was converted to local time, CDT, by applying a two-hour offset.

1.4 Satloc M3 Bantam Parameters Provided

Table 1 describes the Satloc M3 Bantam data parameters verified and provided in this report.

Table 1. Satloc M3 Bantam verified parameters.

Parameter Name (unit)	Parameter Description (unit description)
Alt (ft)	Altitude above mean sea level (feet)
Hdg (deg)	Aircraft heading (degrees)
Lat (deg)	Latitude (degrees)
Lon (deg)	Longitude (degrees)
Speed (mph)	Groundspeed (miles per hour)

2.0 Satloc G4 Description

The Satloc G4 operates similarly to the Satloc M3 Bantam (see description in Section 1.0), however, instead of recording to an internal CF card or flash drive, the Satloc G4 records data to an internal SATA drive.

2.1 Satloc G4 Data File Description

The file provided by the aircraft manufacturer included data from July 10 and July 11, 2024. The data corresponding to the accident flight on July 11, 2024, began at 13:52:28 CDT and ended at 14:06:11 CDT. The data were generally recorded at a rate of 1Hz or one sample per second.

2.2 Satloc G4 Time Correlation

The device recorded data in local time, CDT, thus, no further time correction or correlation was performed.

2.3 Satloc G4 Parameters Provided

Table 2 describes the Satloc G4 data parameters verified and provided in this report.

Table 2. Satloc G4 verified parameters.

Parameter Name (unit)	Parameter Description (unit description)
Alt (ft)	Altitude above mean sea level (feet)
Hdg (deg)	Aircraft heading (degrees)
Lat (deg)	Latitude (degrees)
Lon (deg)	Longitude (degrees)
Speed (mph)	Groundspeed (miles per hour)

D. OVERLAYS AND TABULAR DATA

Figures 2 and 3 are graphical overlays generated using Google Earth showing the two airplanes' flight paths at the time of the accident. The yellow line is the flight path of Airplane 1, registration N6177J, and the red line is the flight path of Airplane 2, registration N795LA. The approximate location of the wreckage of Airplane 1 is also shown for reference. Note that the weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording.

The data show that Airplane 1 departed from an airstrip northeast of the accident site at about 13:52 CDT and started to travel toward the southwest. Airplane

2 departed from an airstrip west of the accident site at about 13:53 CDT and started to travel toward the east. Airplane 1's data ended at 13:53:32 CDT in the vicinity of the wreckage location. The device manufacturer indicated that if the device abruptly loses power during an accident, up to 30 seconds of data stored in a volatile buffer may be missing from the data stored on the internal CF card. Following the accident, Airplane 2 continued to an application area to the east before returning to land on the airstrip it originated from at about 14:06 CDT.

Figure 4 is a plot of heading, groundspeed, and altitude parameters recovered from the Satloc M3 Bantam and Satloc G4 devices from 13:52 to 13:54 CDT, around the reported time of the accident.

The corresponding tabular data used to generate figures 2 to 4 for Airplane 1 and Airplane 2 are provided in comma-separated value (CSV) format as attachment 1 and attachment 2 to this report, respectively.

Submitted by:

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Figure 2. Google Earth overlay of the flight path of Airplane 1 (N6177J) and Airplane 2 (N795LA).



Figure 3. Google Earth overlay of the flight path of Airplane 1 (N6177J) and Airplane 2 (N795LA) - zoom to the accident site.

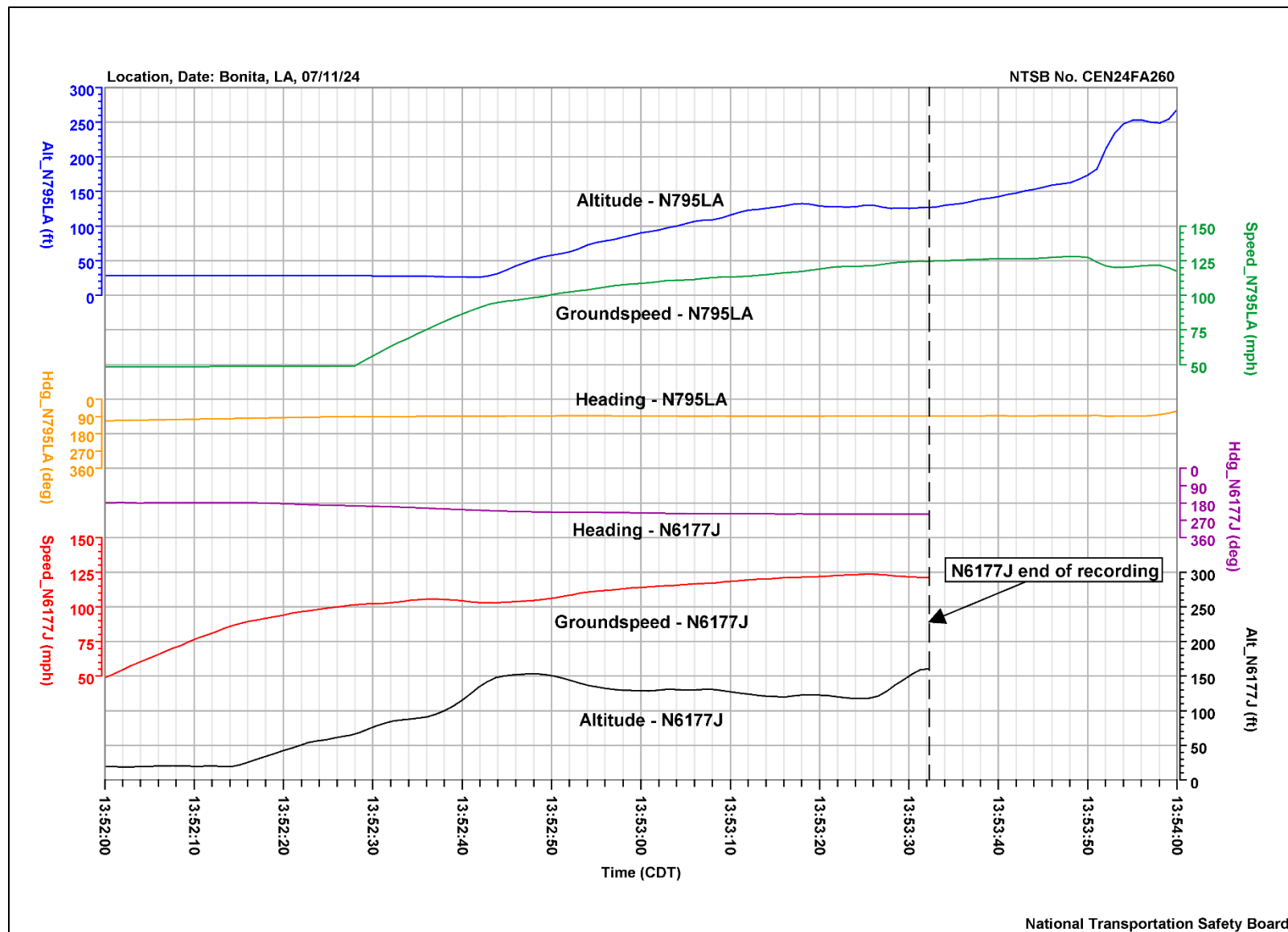


Figure 4. Plot of parameters from Airplane 1 (N6177J) and Airplane 2 (N795LA).