

National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594



ERA22FA338

ELECTRONIC DEVICES

Specialist's Factual Report

February 22, 2023

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. ELECTRONIC DEVICES SPECIALIST	3
C. DETAILS OF THE INVESTIGATION	3
1.0 SATLOC G4 DESCRIPTION	3
1.1 SATLOC G4 Data Recovery	4
1.2 SATLOC G4 Recording Description	4
2.0 AGPILOTX DESCRIPTION	4
2.1 AgPilotX Data Recovery	4
2.2 AgPilotX Recording Description	5
D. FIGURES AND TABULAR DATA.....	6

A. ACCIDENT

Location: Portland, Arkansas
Date: July 26, 2022
Time: 1702 Central Daylight Time (CDT)
Airplane #1: Air Tractor AT-802A, private operator, N749LA
Airplane #2: Air Tractor AT-802, private operator, N214RL

B. ELECTRONIC DEVICES SPECIALIST

Specialist: Gerald Kawamoto
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 electronic devices:

N749LA:

Recorder Manufacturer/Model: SATLOC G4
Part Number: 806-1052-000
Recorder Serial Number: 45748-1

N214RL:

Recorder Manufacturer/Model: Insero Solutions AgPilotX Lightbar
Part Number: ASSY-9001-003
Recorder Serial Number: APX1385L

1.0 SATLOC G4 Description

SATLOC devices are part of an onboard control system designed to programmatically control agricultural and aerial spray operations based on vendor and user-specified prescription maps. SATLOCs 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. SATLOCs are capable of recording historical information in a Windows-based operating system format to non-volatile memory (NVM). In the case of the G4, to an internal SATA drive.

1.1 SATLOC G4 Data Recovery

The SATLOC G4 was in good condition as shown in figure 1. Data were extracted normally from the internal SATA drive.



Figure 1. SATLOC G4 as received.

1.2 SATLOC G4 Recording Description

Data included files recorded from December 22, 2021, through July 26, 2022 CDT. The last session started at 15:06:34.50 CDT and ended at 17:01:09.60 CDT on July 26, 2022, and contained the accident event. Data were sampled at 5 Hz.

2.0 AgPilotX Lightbar Description

The AgPilotX Lightbar is one part of a three-part system of the AgPilotX guidance system for aerial applicators. The Lightbar provides guidance and has GPS/GNSS onboard. Historical data is stored in the Lightbar and can be exported via USB or wirelessly to a mobile device.

2.1 AgPilotX Lightbar Data Recovery

The AgPilotX Lightbar was in good condition upon arrival at the Vehicle Recorder Laboratory. The device contained an internal 8 GB microSD card. The contents of the card were examined and the historical data associated with the accident flight were extracted normally.



Figure 2. AgPilotX Lightbar as received.

2.2 AgPilotX Lightbar Recording Description

The microSD card contained historical data in plain text format. Data were sampled at 1 Hz. The final minute of recorded flight data contained the accident event and are included in this report.

D. FIGURES AND TABULAR DATA

Figures 3 through 5 are Google Earth overlays of the accident flight recorded on both the SATLOC G4 and AgPilotX. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the accident flight. The SATLOC flight track from N749LA is shown in Yellow and the AgPilotX flight track from N214RL is shown in Cyan. Recorded GPS Altitude and Ground Speed are depicted for the SATLOC and GNSS Altitude and Speed over Ground are depicted for the AgPilotX.

Figure 3 shows approximately the final minute of recorded data on both the SATLOC and the AgPilotX.

Figure 4 shows approximately the final 15 seconds of recorded data on both the SATLOC and the AgPilotX.

Figure 5 shows the approximate time of collision of the two aircraft at approximately 17:01:07 CDT. The overlay shows the point at which time and position data are aligned.

Figure 6 is a plot of SATLOC G4 basic parameters from the last session recorded. The time interval shown is 15:05:00 to 17:05:00 CDT.

The corresponding tabular data used to create figures 3 through 6 are provided in electronic comma-separated value (CSV) format as attachment 1 SATLOC data and attachment 2 for AgPilotX data to this report.

Submitted by:

Gerald Kawamoto
Recorder Specialist



Figure 3. Google Earth overlay showing approximately the final minute of recorded data from the SATLOC G4 (N749LA, in yellow) and AgPilotX (N214RL, in cyan).



Figure 4. Google Earth overlay showing approximately the final 15 seconds of recorded data from the SATLOC G4 (N749LA, in yellow) and AgPilotX (N214RL, in cyan).

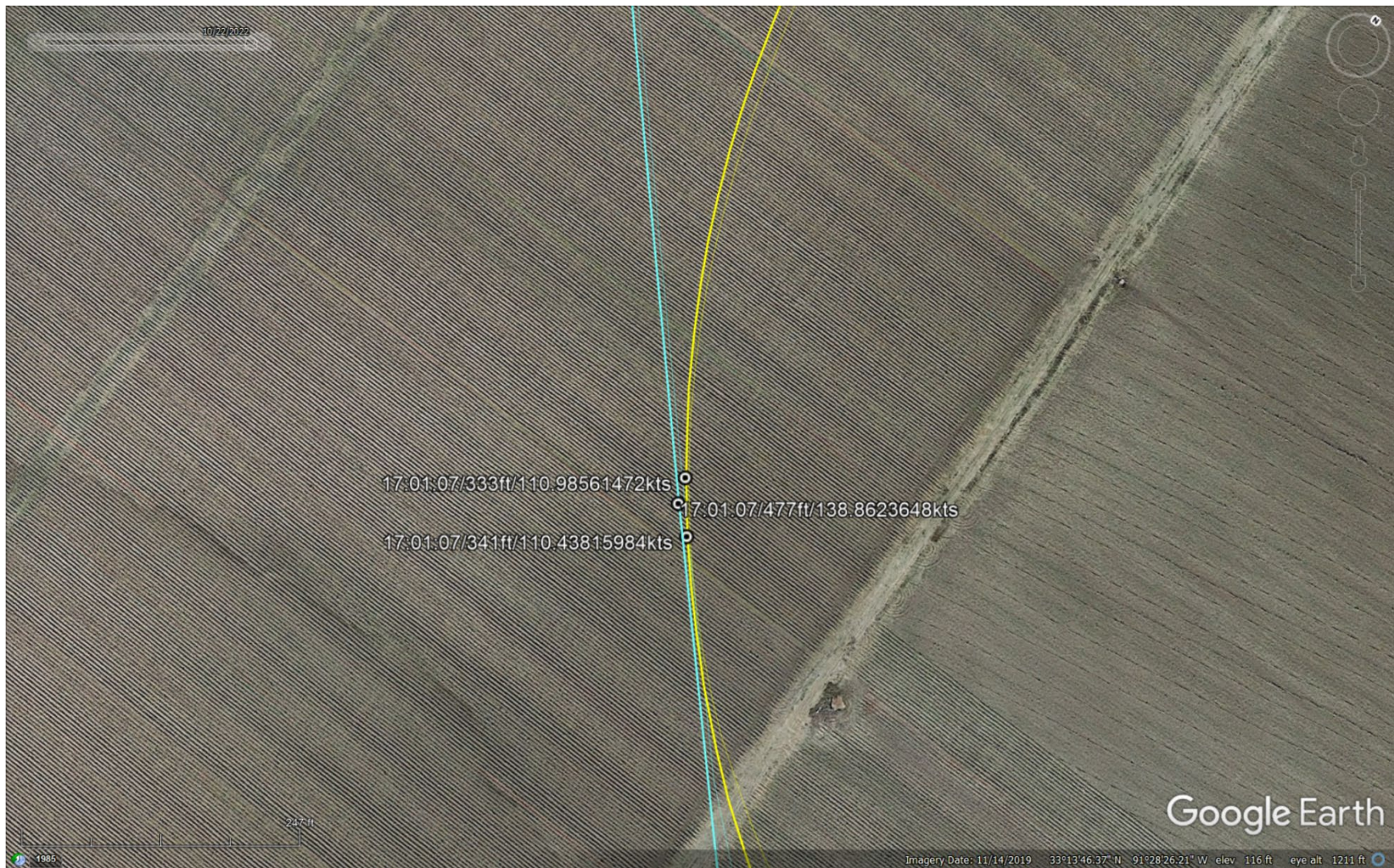


Figure 5. Google Earth overlay showing the approximate time of the collision at 17:01:07 CDT.

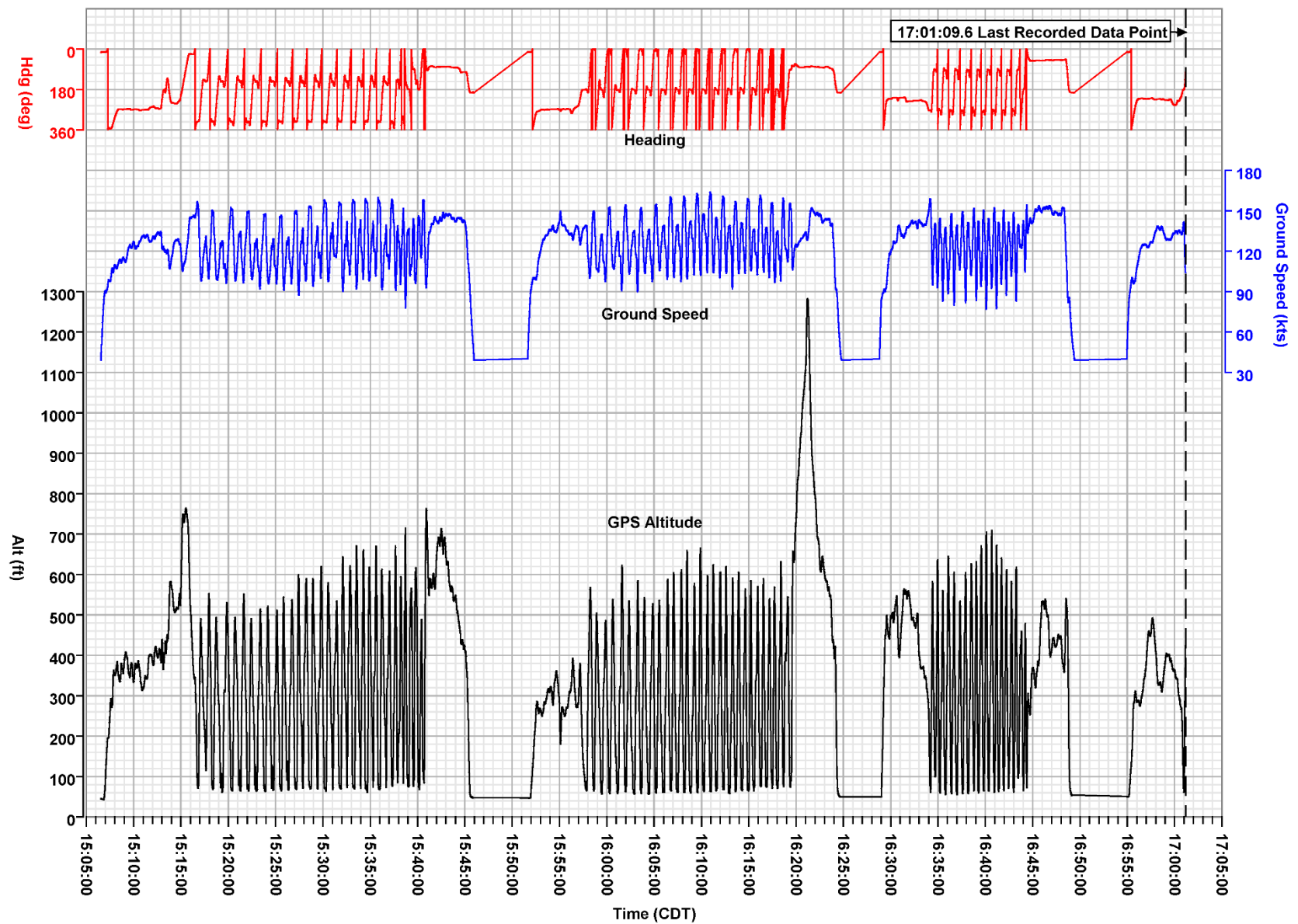


Figure 6. Plot of SATLOC G4 parameters from the last session recorded.