

National Transportation Safety Board

Office of Research and Engineering

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CEN24FA221

ELECTRONIC DEVICES REPORT

Specialist's Factual Report

May 8, 2025

TABLE OF CONTENTS

A. ACCIDENT.....	3
B. ELECTRONIC DEVICES REPORT SPECIALIST	3
C. DETAILS OF THE INVESTIGATION	3
1.0 SATLOC G4 DEVICE DESCRIPTION	3
1.1 Satloc G4 Data Recovery.....	4
1.2 Satloc G4 Recording Description	4
2.0 SATLOC FALCON DEVICE DESCRIPTION	4
2.1 Satloc Falcon Data Recovery	4
2.2 Satloc Falcon Recording Description	4
3.0 PARAMETERS PROVIDED	5
D. OVERLAYS AND TABULAR DATA.....	5

A. ACCIDENT

Location: Whiteface, Texas
Date: June 14, 2024
Time: 08:40 central daylight time (CDT)
Airplanes: Air Tractor AT502, King Ag Aviation Inc, N2032K
Air Tractor AT502, King Ag Aviation Inc, N8525V

B. ELECTRONIC DEVICES REPORT SPECIALIST

Specialist: Olivia Fowler
Mechanical Engineer – Vehicle 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 GPS devices:

Aircraft:	Air Tractor AT502, N8525V
Recorder Manufacturer/Model:	AgJunction Satloc G4
Part Number:	806-1040-000#J
Recorder Serial Number:	1451-08975-LN1-019
Aircraft:	Air Tractor AT502, N2032K
Recorder Manufacturer/Model:	SATLOC Falcon
Part Number:	806-1060-000 Rev D5
Recorder Serial Number:	52232-8

1.0 Satloc G4 Device Description

The Satloc G4 is part of a system designed to control agricultural aerial spray operations based on user specified maps. The Satloc G4 can drive a cockpit mounted lightbar guidance system and a real-time graphic moving map display providing visual guidance to the pilot. The Satloc G4 is capable of realtime wireless transmission of position and agricultural information to a cloud based data collection service in addition to recording similar information to an internal, eSata solid state disk drive. The Satloc G4 is supported by the Satloc division of AgJunction, previously named Hemisphere GPS.

1.1 Satloc G4 Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit was in good condition. Data were extracted from the internal SATA drives using laboratory tools. Data containing the track log and flight parameters were decoded using manufacturer's software.

1.2 Satloc G4 Recording Description

Data is stored in jobs that do not necessarily correspond to flights. Data from the last 2 jobs were downloaded, corresponding to 4 flights between June 13 and June 14, 2024. The job containing the accident flight started with the aircraft at Fairview Field (XA05) and included about 30 minutes of data.

2.0 Satloc Falcon Device Description

The Satloc Falcon GPS System is part of a system designed to control liquid spray for agricultural aerial application purposes. The SatLoc Falcon can connect with a lightbar guidance system and flow control devices, and the pilot can interface with the system via a touchscreen display in the cockpit. Features of the Satloc Falcon include Wi-Fi connection capability, basic patterns, log files, guidance modes, real-time background maps, Satloc Cloud connection, and ADS-B In.

The Satloc Falcon records position and spray information. The data logging rate can be set by the pilot, between 0.5 and 20 Hz. The pilot has the ability to set the minimum aircraft speed above which data is recorded. By default, the device logs data when the aircraft speed is above 45 MPH.

2.1 Satloc Falcon Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an examination revealed the unit was undamaged and able to be powered on normally. The device was downloaded using laboratory equipment and the data were accessed using the manufacturer's software.

2.2 Satloc Falcon Recording Description

Data is stored in jobs that do not necessarily correspond to flights. Data from the last 3 jobs were downloaded, corresponding to 6 flights between June 13 and June 14, 2024. The job containing the accident flight started midflight and contained about 2 minutes of data. It was combined with the previous job to provide data from the entire accident flight, about 37 minutes.

3.0 Parameters Provided

Table 1 describes data parameters provided by both Satloc devices and used in this report.

Table 1. Data Parameters.

Parameter Name	Parameter Description
GPS Altitude	GPS Altitude (feet)
Heading	Heading (degrees)
Speed	Speed (miles per hour)
Latitude	Latitude
Longitude	Longitude

D. OVERLAYS AND TABULAR DATA

Data obtained from the Satloc G4 and the Satloc Falcon were used to produce the following overlays, figures, and tabular data. Figures 2 to 4 are configured such that right turns are indicated by the trace moving toward the bottom of the page, left turns towards the top of the page, and nose up attitudes towards the top of the page.

Figure 1 displays data from the Satloc Falcon on N2032K for the last 10 minutes of the accident flight and indicates that the aircraft was flying normally and performing spray operations.

Figure 2 displays data from the Satloc G4 on N8525V for the last 10 minutes of flight and indicates that the aircraft was flying normally and performing spray operations. The data from both aircraft ends several seconds prior to impact.

Figures 3 and 4 are graphical overlays generated using Google Earth of the accident flights of each aircraft. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording. Figure 3 provides an overview of the entire flight of each aircraft, showing both aircraft departing Fairview Field (XA05). Figure 4 is a zoomed in overlay of the spray area of the flight with pins showing the final data points and wreckage location.

Tabular data from N2032K used to generate figures 1, 3 and 4 are included as Attachment 1. Tabular data from N8525V used to generate figures 2, 3 and 4 are included as Attachment 2. These attachments are provided in electronic comma-separated (CSV) format.

Submitted by:

Olivia Fowler
Mechanical Engineer - Vehicle Recorder Specialist

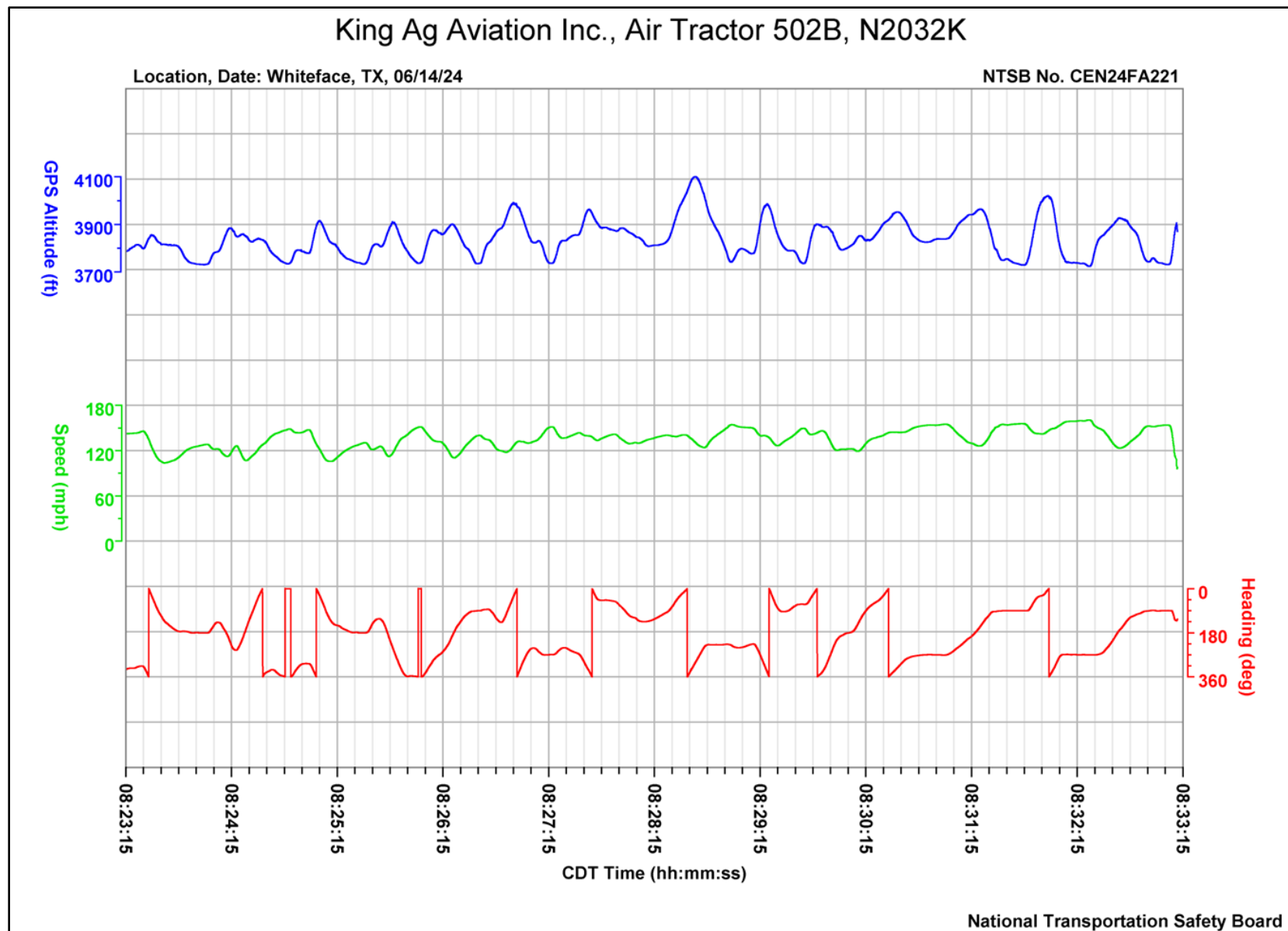


Figure 1. Plot of Satloc Falcon parameters for the last 10 minutes of the accident flight of N2032K.

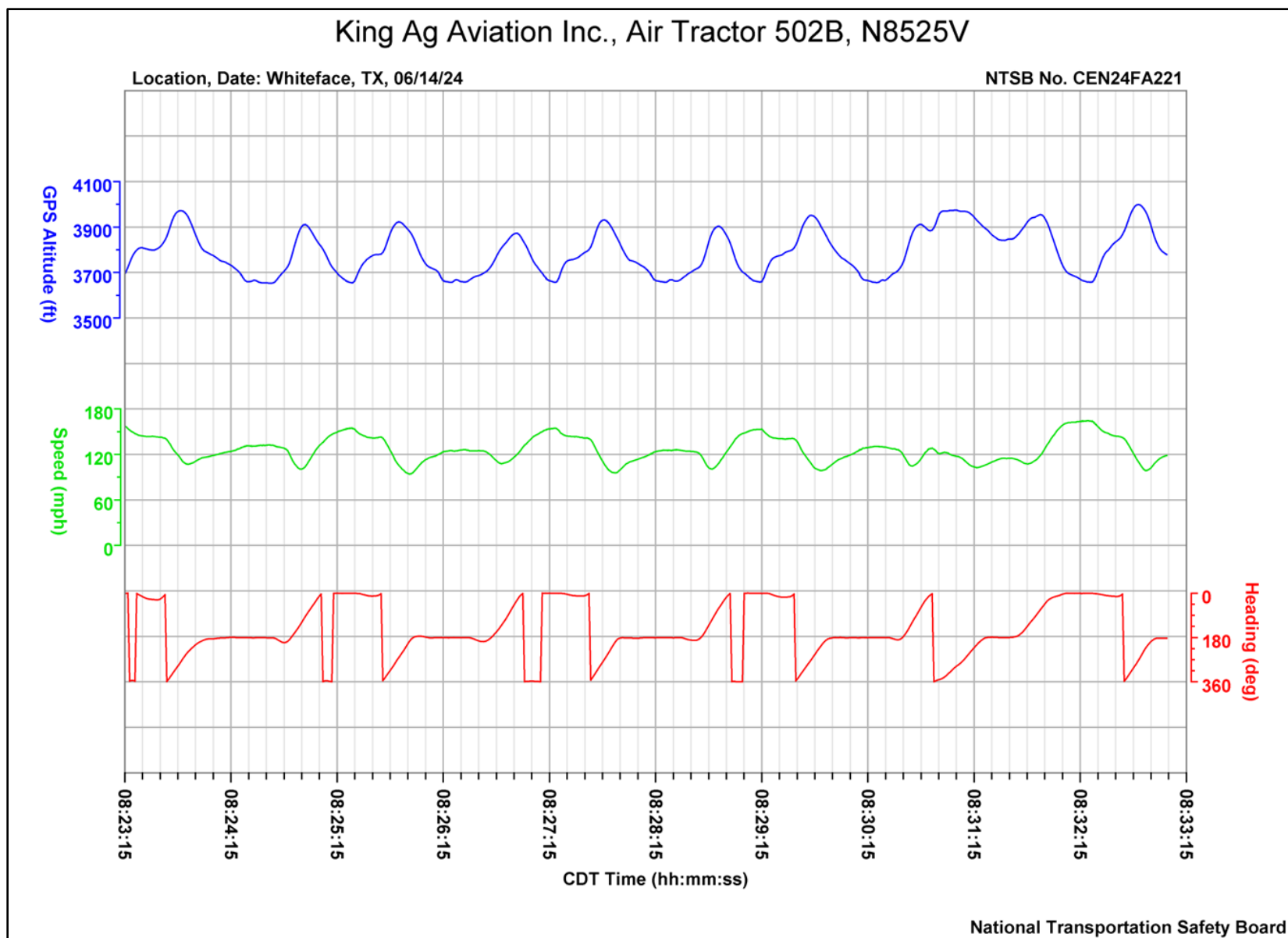


Figure 2. Plot of Satloc G4 parameters for the last 10 minutes of the accident flight of N8525V.

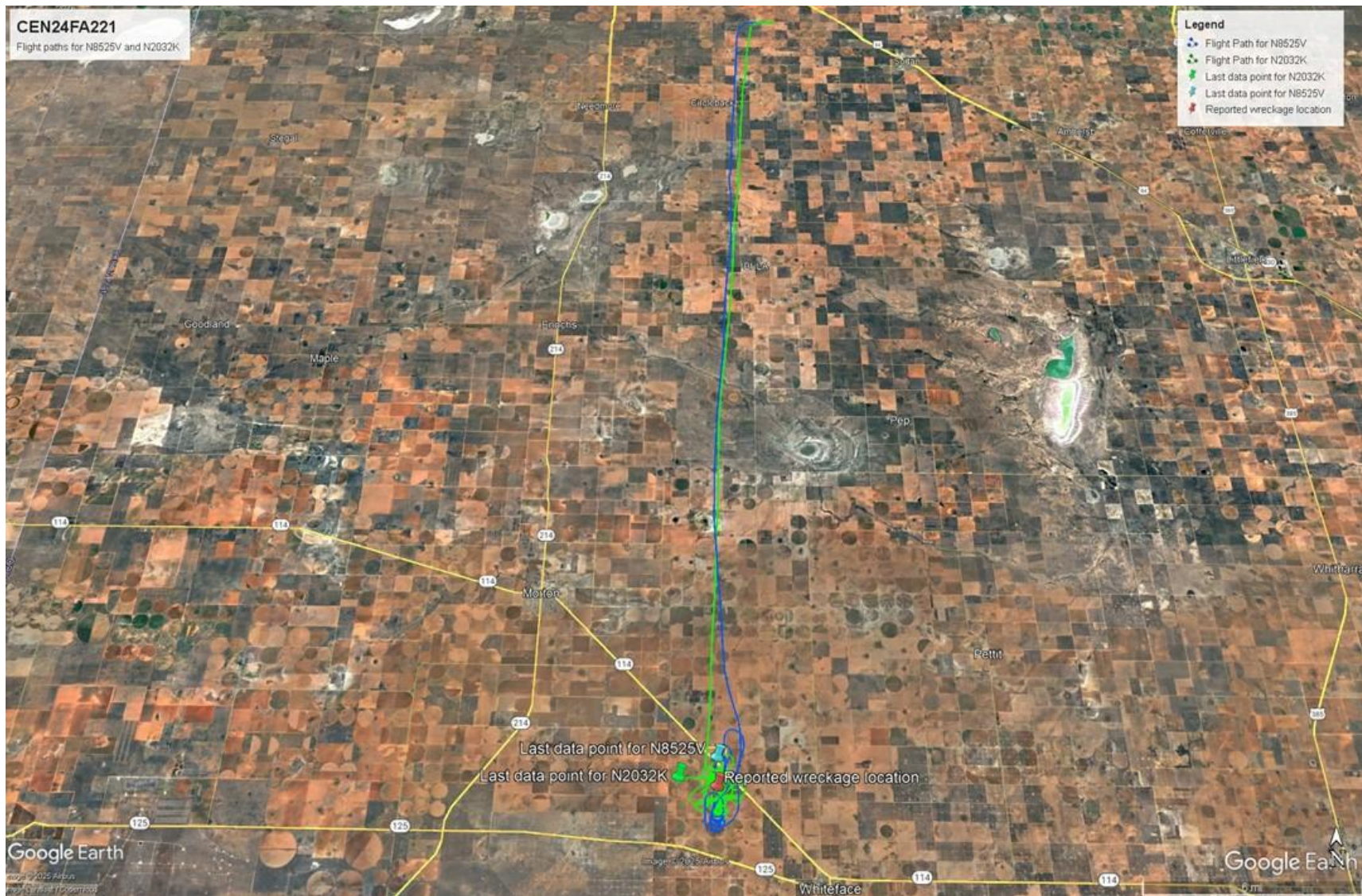


Figure 3. Google Earth overlay showing the flight paths for N8525V and N2032K for the accident flight. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording.

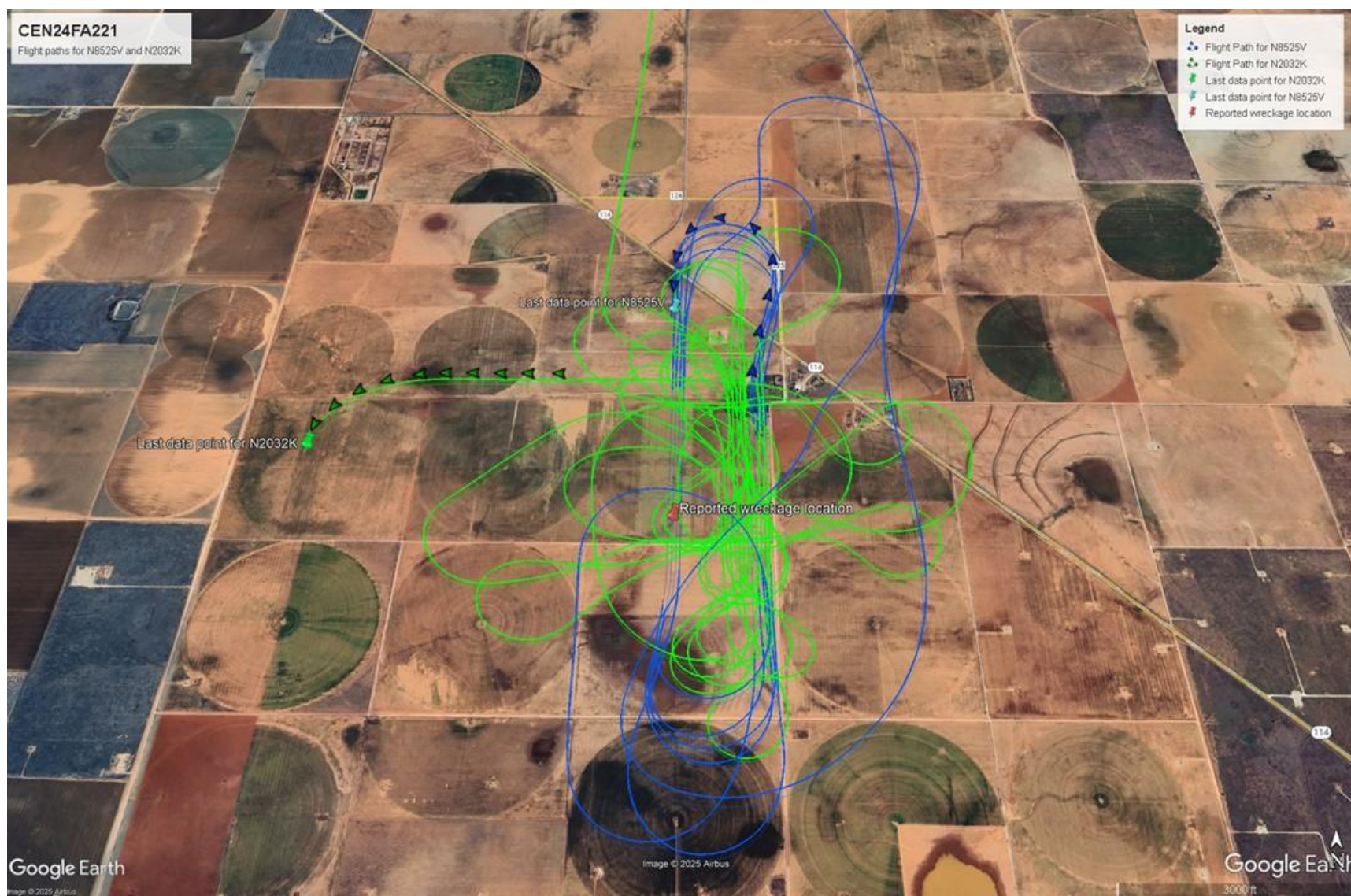


Figure 4. Google Earth overlay showing the end of the accident flight. The location of the main wreckage is marked. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording.