

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

July 27, 2021

Global Positioning System Device

Specialist's Factual Report
By W. Deven Chen

1. EVENT SUMMARY

Location: Clayton Louisiana
Date: May 18, 2021
Aircraft: Air Tractor AT-520A
Registration: N887LA
Operator: Private
NTSB Number: CEN21LA223

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

On May 27, 2021, the National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following Global Positioning System (GPS) device:

Device Manufacturer/Model:	SATLOC Bantam
Serial Number:	1739-HH12998-0024

3.1. Device Description

The SATLOC 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 desktop computer. The SATLOC device can record historical information to an internal, compact flash (CF) card or flash drive depending on user configuration.

3.2. Data Recovery

The device was undamaged upon arrival at the Vehicle Recorder Division, as shown in Figure 1. The USB thumb-drive attached on the top of the device could not be read due to damage. An internal compact flash (CF) card was recovered from the device, and data were extracted normally from the CF card using laboratory tools.



Figure 1: SATLOT Bantam as received.

3.3. Data Description

The data extracted from the Bantam CF card included 36 sessions, from May 13, 2021 to May 18, 2021. The device recorded data in central daylight time (CDT). There were three flights in the last session recorded on May 18, 2021. The third/last flight was determined to be the accident flight. The accident flight was approximately 10 minutes and 30 seconds, from 13:10:00 to 13:20:30. The sampling rate was approximately one data point per second. The other two flights were from 12:32:44 to 12:54:53 and from 12:56:00 to 13:08:58. All three flights are included in this report.

3.4. Parameters Provided

Table 1 describes data parameters provided by the device. Time, Latitude, Longitude, and Altitude are recorded by the device. Groundspeed and Heading are derived from the recorded parameters.

Table 1: SATLOC Bantam Data Parameters.

Parameter Name	Parameter Description
Time	CDT for recorded data point (HH:MM:SS.SS)
Lat (deg)	Recorded Latitude (degrees)
Lon (deg)	Recorded Longitude (degrees)
Alt (ft)	Altitude above Mean Sea Level (feet)
Speed (kts)	Average groundspeed between current and previous data point (knots)
Hdg (deg)	Aircraft Heading (degrees)

3.5. Plots and Corresponding Tabular Data

The following nine figures contain data recorded on the SATLAC Bantam on May 18, 2021. Figure 2 show the data parameters plots for all the three flights. Figures 3 and 4 show the data parameters plots for the accident flight.

Figures 5 - 9 are Google Earth overlays of the recorded flights. Figures 5 and 6 show the Google Earth overlays of the first and second flights. For those two flights, the accident aircraft returned to where it took off at the end of the flights. Figures 7 – 9 shows the Google Earth overlays of the accident flight. The aircraft took off around 13:10:00, and the last recorded data point was at 13:20:30.90 CDT. The reported wreckage location is shown with a red pin. Due to data buffering on the device, the data recording had ended before the crash occurred. According to the technical specialist from the manufacturer, the data recording could have ended as much as 30 seconds before the crash occurred. The weather and lighting conditions in Google Earth are not necessarily the weather and lighting conditions present at the time of the recording.

Figure 10 is a screen shot of the accident recording session, all three flights, shown on the manufacturer's software – MapStar. The red area indicates the area that were sprayed by the accident aircraft. The last recorded point is shown with a light blue spot, and the parameters of the last recorded point are shown on the Log Position Info window.

The corresponding tabular data used to create figures 2 through 10 are provided in electronic comma-delimited (.csv) format as Attachment 1 to this report.

Location, Date: Clayton, LA, 05/18/21

NTSB No. CEN21LA223

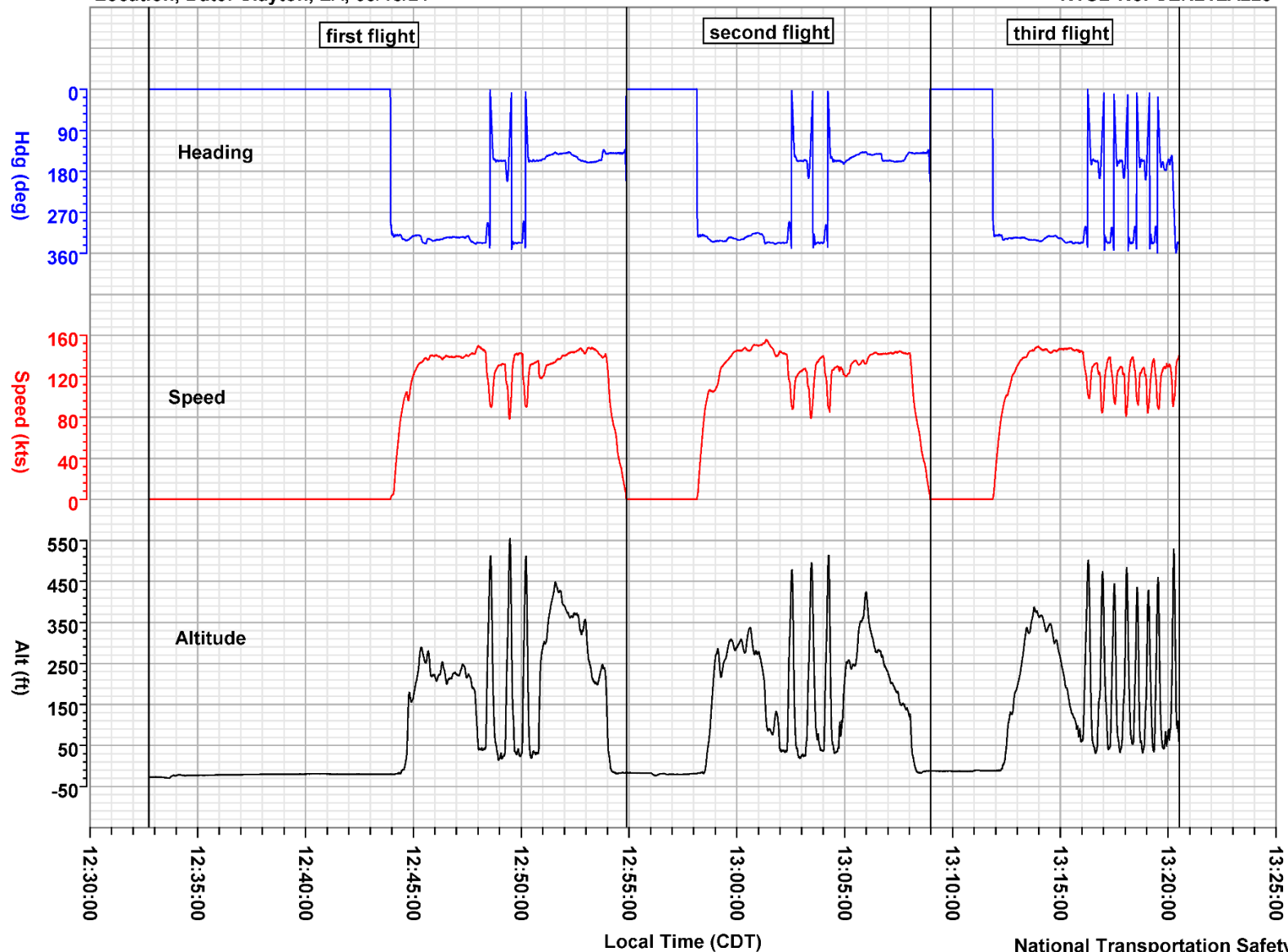


Figure 2: Plot of the data parameters of the three flights.

National Transportation Safety Board

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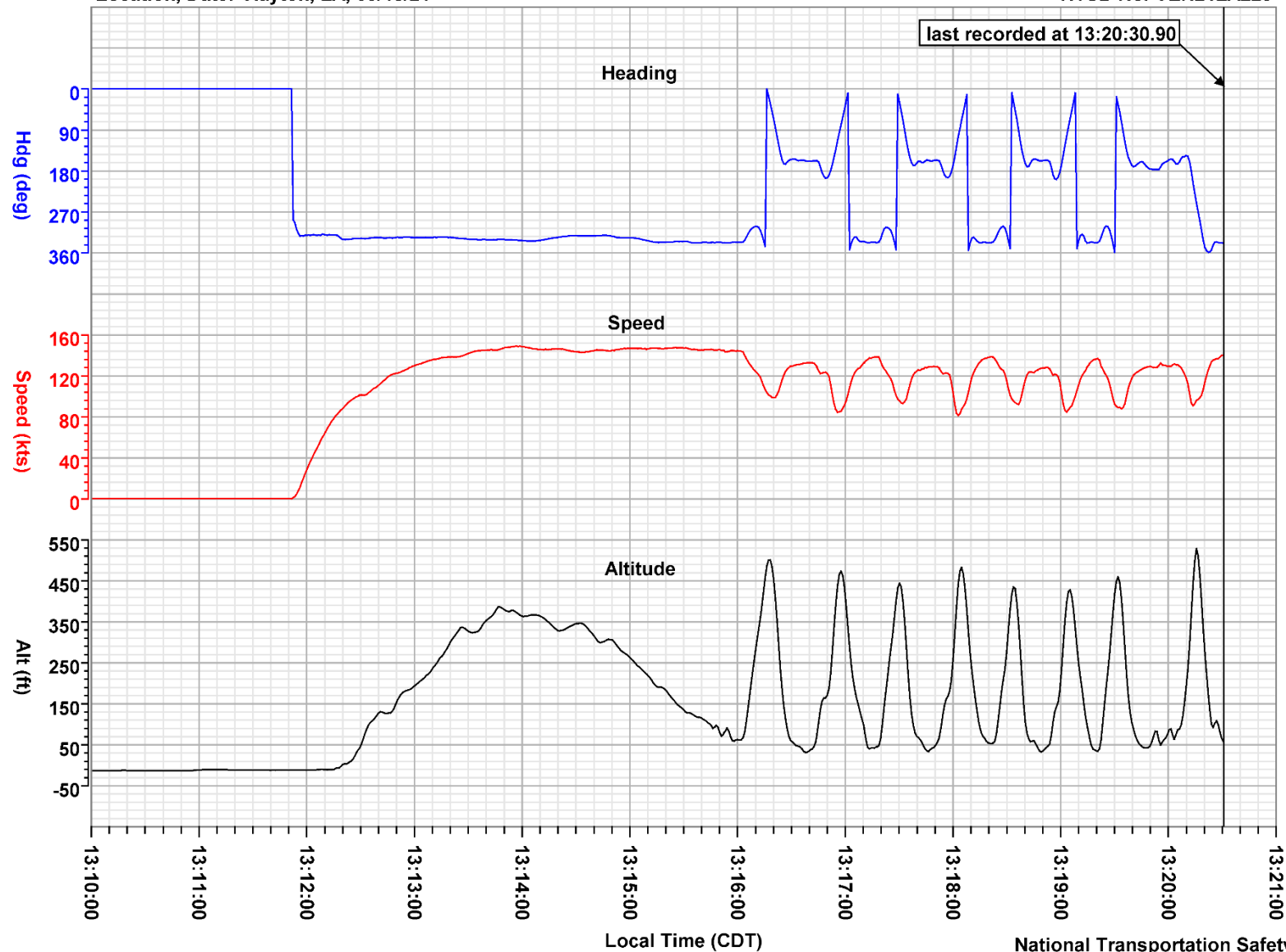


Figure 3: Plot of the data parameters of the accident flight.

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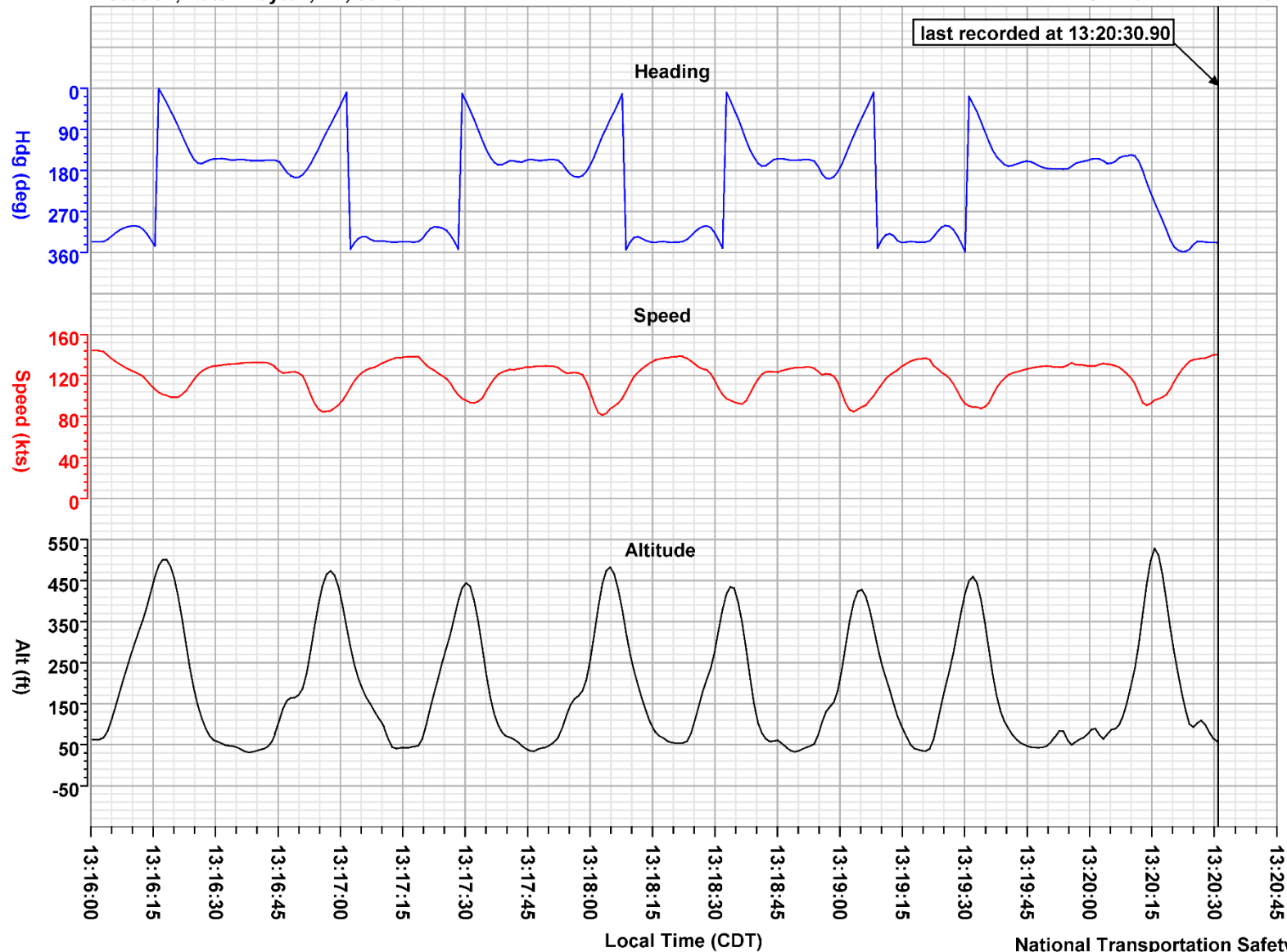


Figure 4: Plot of the data parameters of the end of the accident flight.



Figure 5: Google Earth overlay of the overview of the first flight.



Figure 6: Google Earth overlay of the overview of the second flight.

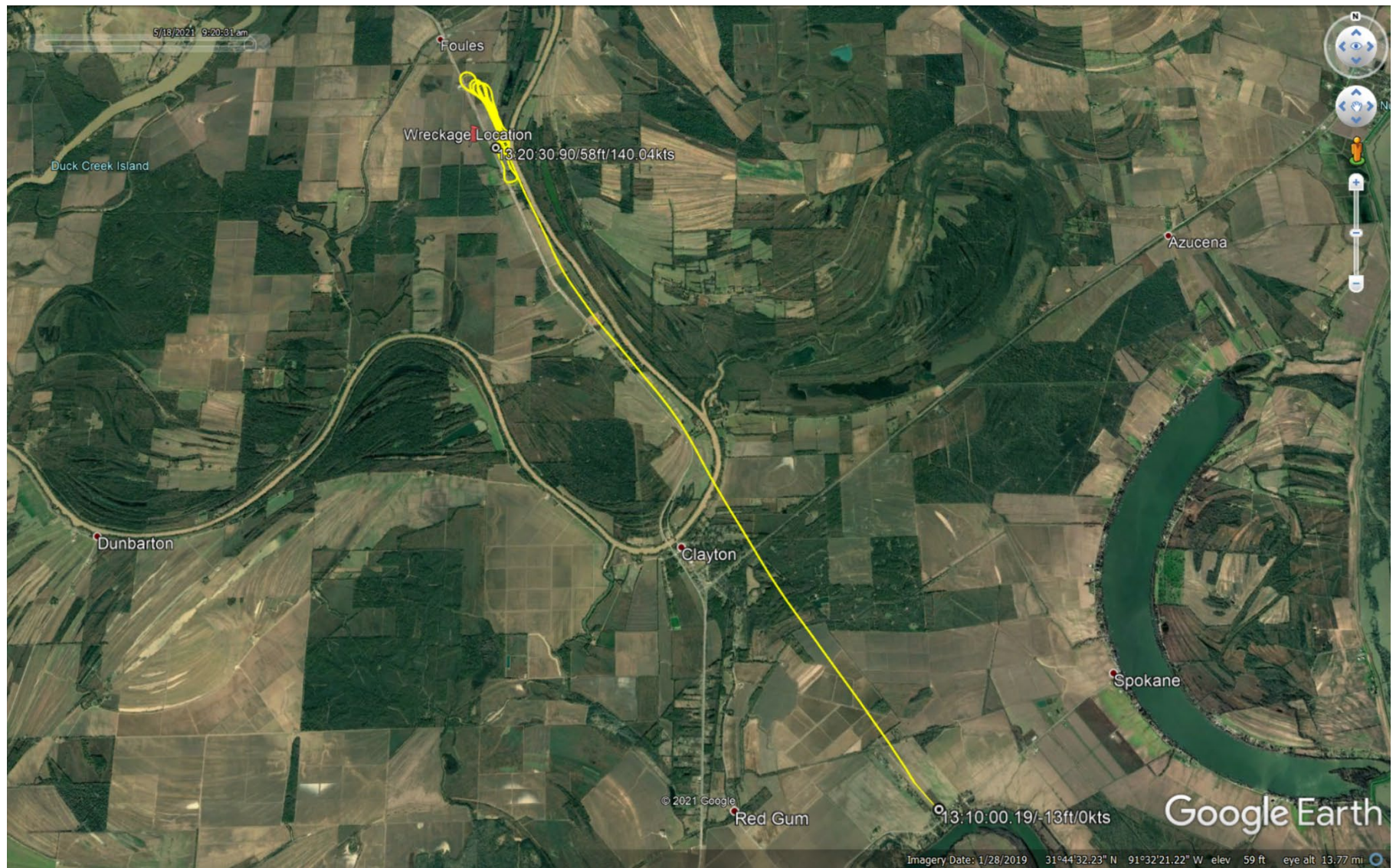


Figure 7: Google Earth overlay of the overview of the accident flight.

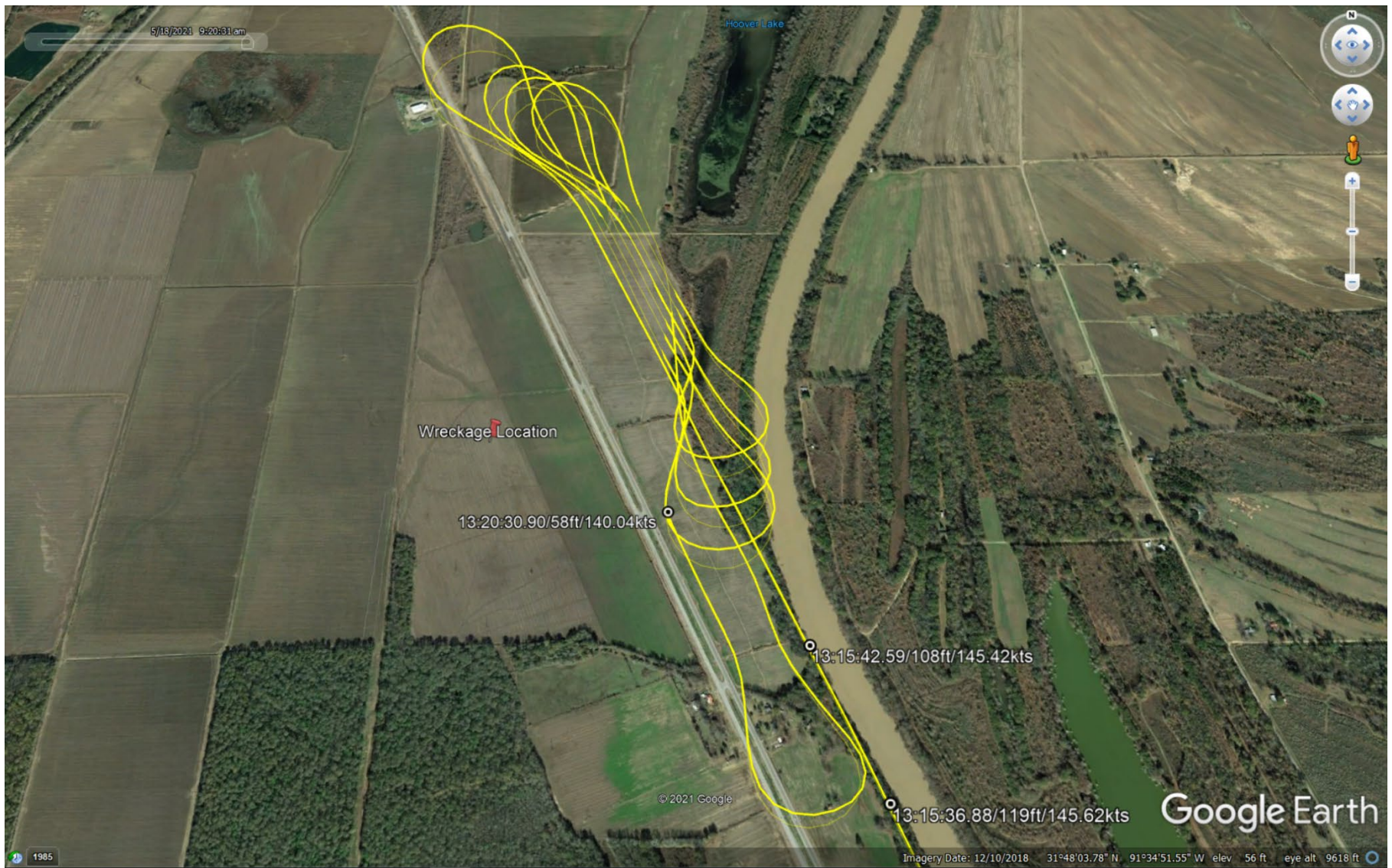


Figure 8: Google Earth overlay of the end of the accident flight.

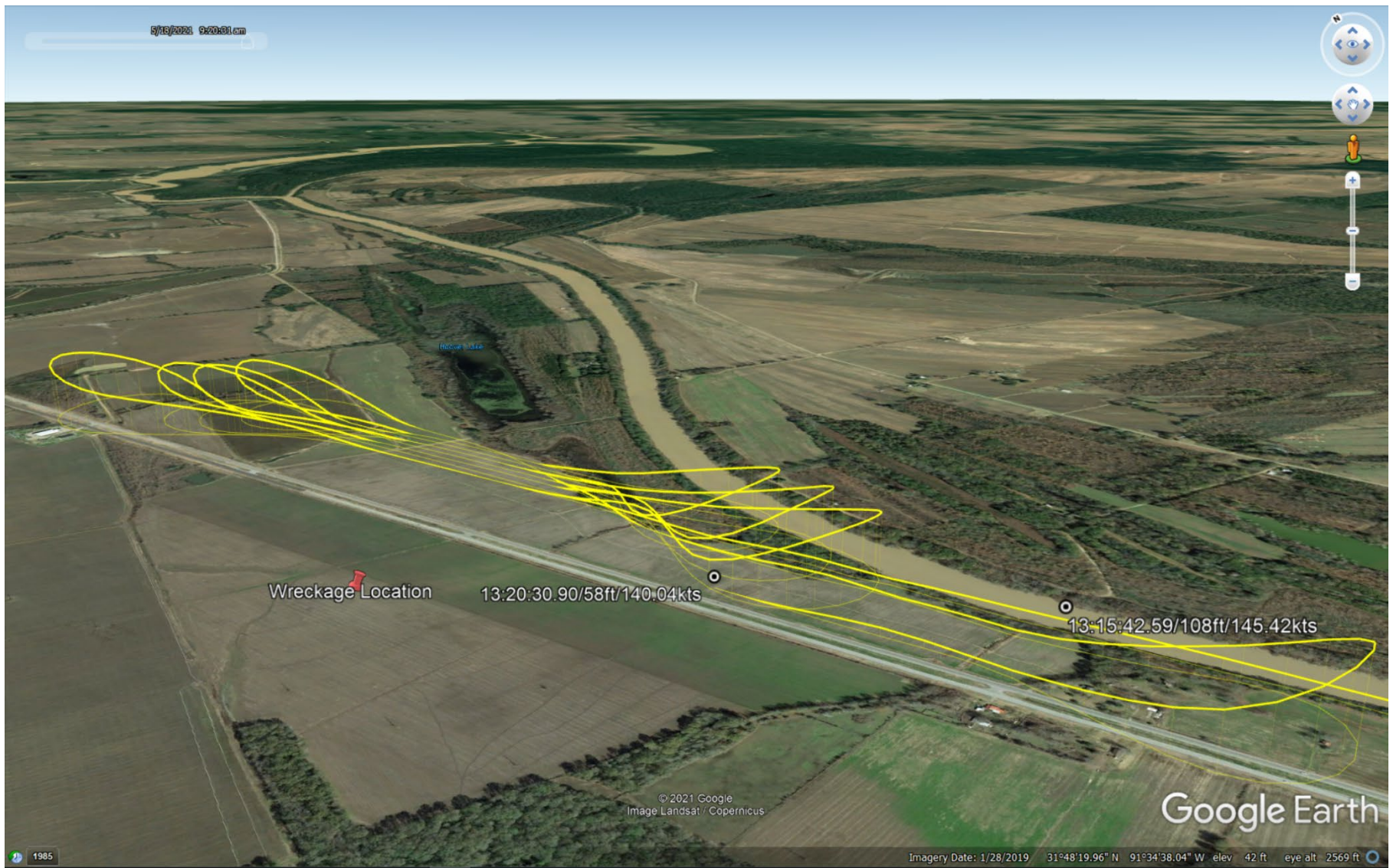


Figure 9: Google Earth overlay of the end of the accident flight from a side view.

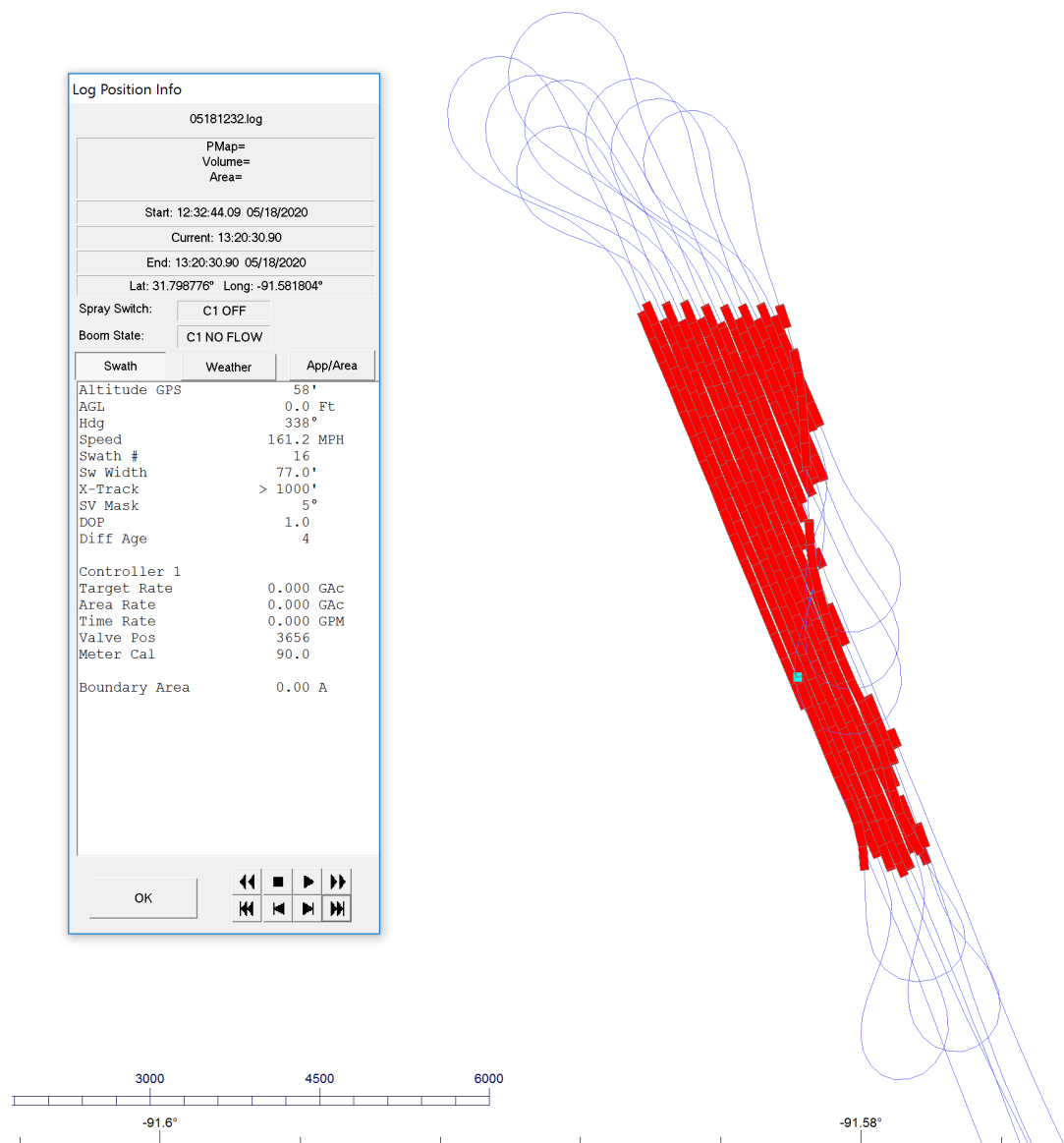


Figure 10: The three flights with spray view shown on MapStar.