

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

October 19, 2018

Global Positioning System Device

Specialist's Factual Report
By Ben Hsu

1. EVENT

Location: Olton, Texas
Date: October 24, 2017
Aircraft/ID: Air Tractor AT-502B
Registration: N502G
Operator: King Ag Aviation, Inc.
NTSB Number: CEN18LA019

2. EVENT SUMMARY

On October 24, 2017, about 0820 central daylight time, an Air Tractor AT-502B airplane, N502G, impacted a field about 5 miles west of Olton, Texas. The pilot sustained serious injuries and the airplane was destroyed by a postimpact fire. The airplane was registered to G B Aerial Applications Inc., and operated by King Ag Aviation Inc., under the provisions of 14 *Code of Federal Regulations* Part 137 as an aerial application flight. Visual meteorological conditions prevailed at the time of the accident and no flight plan had been filed. The local flight had departed Fairview Field Airport (XA05), Sudan, Texas.

3. DETAILS OF DEVICE INVESTIGATION

The National Transportation Safety Board's (NTSB) Vehicle Recorder Division received the following Global Positioning System (GPS) device:

Device: Garmin Aera 500
Device Serial Number: 1QN016412

Figures 1 and 2 show the condition of the device as it arrived in the laboratory. The device exhibited substantial damage due to impact forces. The device's internal memory component was removed, imaged, and decoded using laboratory hardware and software.

3.1. GPS Device Description

The Garmin Aera 500 is a portable GPS receiver capable of storing date, route-of-flight, and flight-time information. A detailed tracklog – including latitude, longitude, date, time, and groundspeed information – is stored within the unit whenever the receiver has a lock

on the GPS navigation signal. All recorded data is stored in non-volatile memory.¹ The unit contains hardware and software permitting the download of recorded waypoint, route, and tracklog information to a PC via a built-in USB port. An internal battery is used as back-up power to the internal memory and real-time clock during those periods when main power is removed.

3.2. GPS Data Description

The data extracted from the device included seven sessions from October 22, 2017 to October 24, 2017.² The last session was determined to be related to the accident and is included in this report.

3.3. Parameters Provided

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

Table 1. GPS Data Parameters

Parameter Name	Parameter Description
Date	Date for recorded data point (MM/DD/YYYY)
Time	Time (UTC) for recorded data point (HH:MM:SS)
Latitude	Recorded Latitude (degrees)
Longitude	Recorded Longitude (degrees)
GPS Alt	Recorded Altitude (feet)
Groundspeed	Average groundspeed between current and previous data point (knots)

4. OVERLAYS AND TABULAR DATA

Figures 3 and 4 are graphical overlays generated using Google Earth showing, respectively, an overview of and the end of the recorded session.

Attachment 1 is the tabular data corresponding to the recorded session. The attachment is provided in electronic comma-separated value (CSV) format.

¹ Non-volatile memory is semiconductor memory that does not require external power for data retention.

² All dates and times are referenced to Coordinated Universal Time (UTC) unless otherwise specified.



Figure 1. Photo of Garmin Aera 500 (Front)



Figure 2. Photo of Garmin Aera 500 (Back)

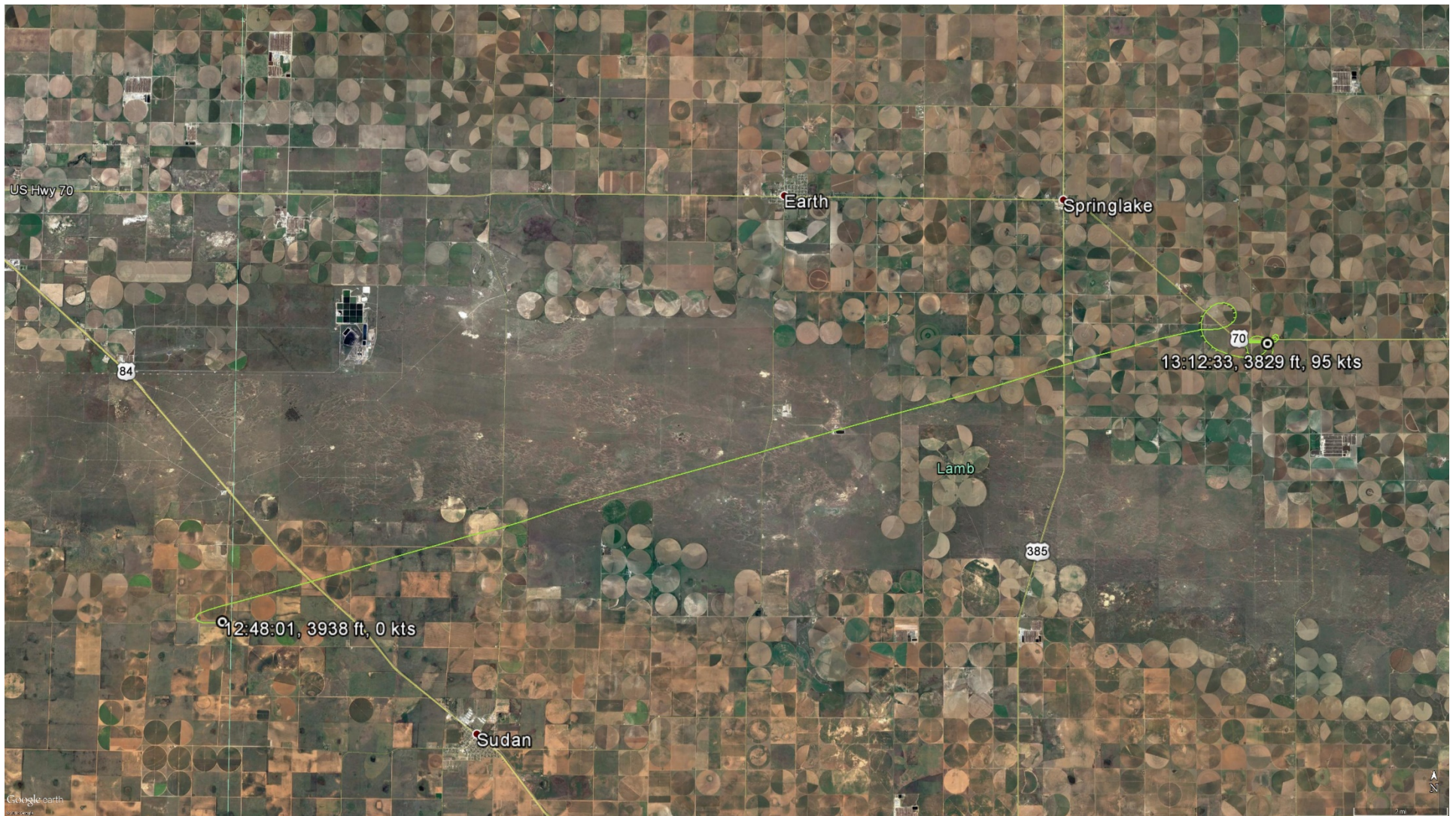


Figure 3. Overview of the last recorded session

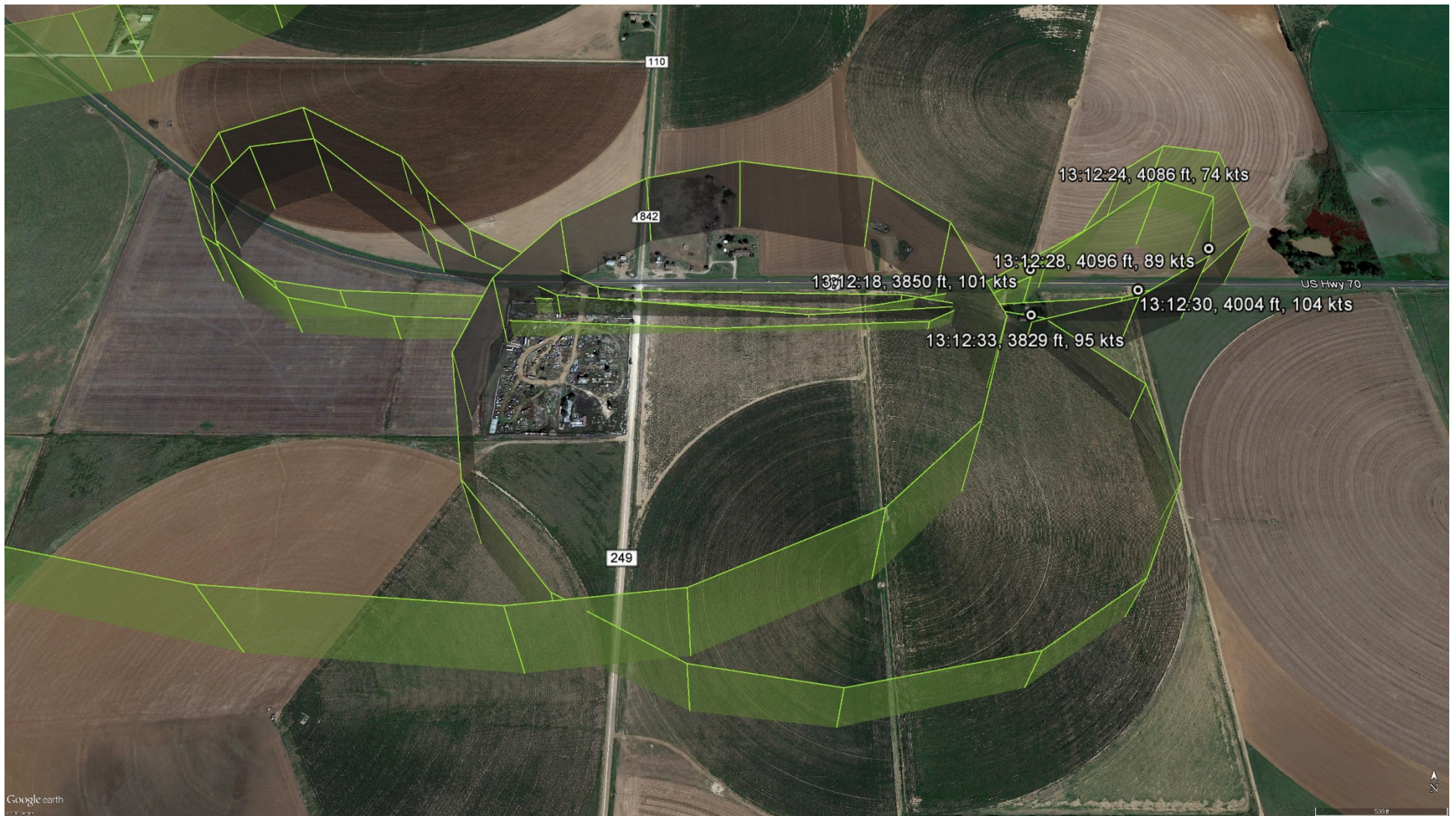


Figure 4. Detail view of the end of the last recorded session