

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, D.C. 20594

December 5, 2013

GPS Factual Report

by George Haralampopoulos

1. EVENT

Location: Huntingburg, Indiana
Date: July 19, 2013
Aircraft: Air Tractor AT-802A
Registration: N86BM
Operator: Private
NTSB Number: CEN13LA424

1. GROUP - No Group

2. SUMMARY

On July 19, 2013, about 1030 Eastern daylight time, an Air Tractor AT-802A airplane, N86BM, impacted terrain after striking a pair of suspended power lines during low altitude maneuvering near the Huntingburg Airport (KHNH), Huntingburg, Indiana. The commercial pilot sustained serious injuries and the airplane sustained substantial damage. The airplane was registered to and operated by Milhon Air, Inc under the provisions of 14 Code of Federal Regulations Part 137 as an aerial application flight. Visual meteorological conditions prevailed for the flight, which operated without a flight plan. The flight originated from KHNH at an unknown time.

3. DETAILS OF INVESTIGATION

The NTSB Vehicle Recorder Laboratory received the following device(s):

GPS Manufacturer/Model: SATLOC M3 CPU
Serial Number: 0803-5939-0014

3.1 SATLOC M3 CPU Description

The SATLOC M3 CPU is part of an on-board control system designed to programmatically control spray rates based on vendor and user specified prescription

maps. The SATLOC M3 CPU 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 selected by the pilot or based on mapping created using a proprietary software package called *MapStar* that runs on a desktop computer. The SATLOC M3 CPU is capable of recording GPS position data at one sample per second, and flow rate data to an internal hard drive. The SATLOC M3 CPU is based on a windows operating system and the internal hard drive is removable.

3.2 SATLOC M3 CPU Data Recovery

Upon arrival at the Vehicle Recorder Laboratory, an exterior examination revealed the unit sustained negligible impact damage (figure 1). An interior inspection was performed and the unit's internal hard drive was located and removed. The data was successfully obtained from the unit's hard drive.

Figure 1. Photo of the SATLOC M3 CPU



3.3 SATLOC M3 CPU Data Description

The data extracted included 170 logs from August 28, 2012¹ through July 19, 2013. The accident event was identified by the log's date and time stamp, starting from 06:30:44 and ending 07:33:18 on July 19, 2013, consisting of 6,322 data points.

3.4 SATLOC M3 CPU Time Correlation

The device's time was set by the operator three hours behind Eastern daylight time (EDT). A three hour offset was used to convert from the unit's user set time to local time, EDT.

3.5 SATLOC M3 CPU 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 and Track are 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 GPS Altitude (feet)
Groundspeed	Average groundspeed between current and previous data point (mph)
Heading	Average course between current and previous data point (degrees)

3.6 Overlays and Tabular Data

The following overlays were created using Google Earth.

Figure 2 is a top view overlay of the entire accident flight which shows the aircraft takeoff originating from Huntingburg Airport. The first and last recorded points are shown at 9:30:44 EDT and 10:33:18 EDT respectively. Three boxes shown are shown in chronological order where flow rate was activated.

Figure 3 is a top view image highlighting the blue flight path, which shows a segmented 30 second history from the last recorded point. A placed marker shows approximately where the wreckage came to rest. An orange line was drawn pointing from the last

¹ All dates and times are referenced to Coordinated Universal Time (UTC).

recorded point to the placed marker. The GPS altitude and groundspeed of the last recorded point was 604 ft and 162 miles per hour (mph) respectively.

Figure 4 is an isometric view of the impact area of the blue flight path.

Tabular data used to generate figures 2 through 4 are included as Attachment 1. This attachment is provided in electronic comma-delimited (*.CSV) format.

Figure 2. Entire recording of accident flight with areas of flow rate.

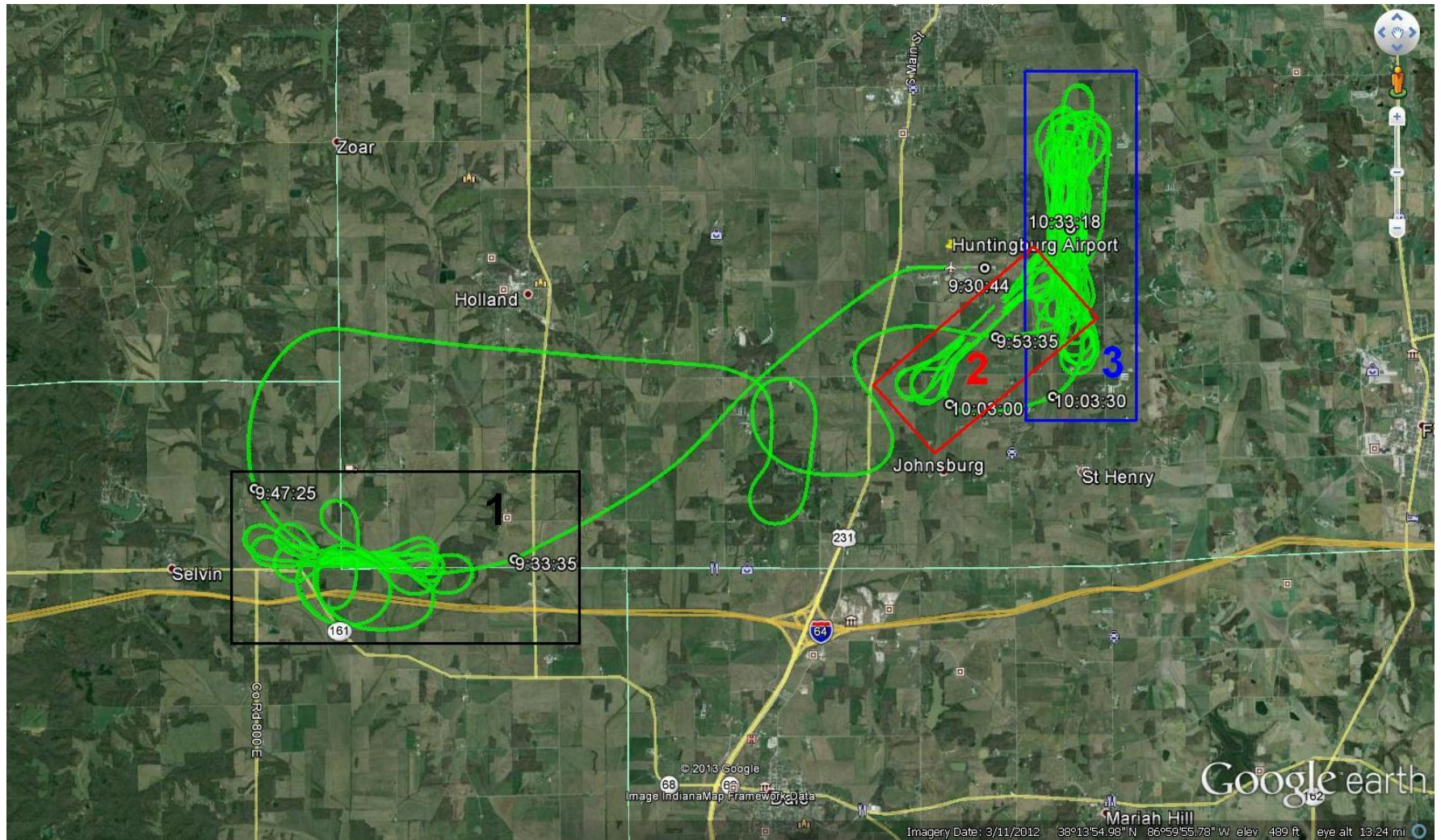


Figure 3. Aircraft track highlighting last 30 seconds of flight.

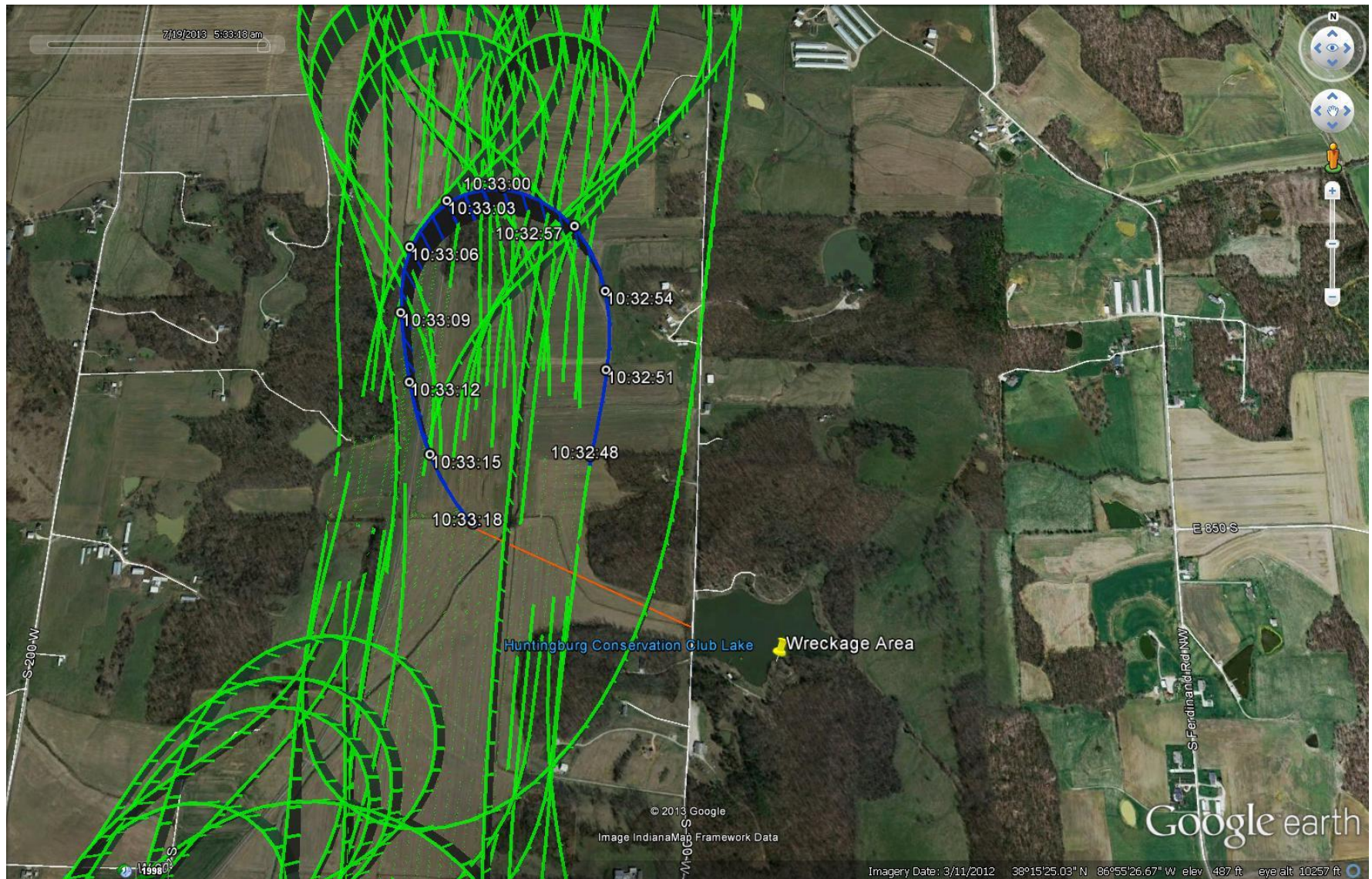


Figure 4. Isometric view highlighting last 30 seconds of flight.

