

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division
Washington, D.C. 20594

November 1, 2019

Flight Display Factual Report

Specialist's Factual Report
by Nick Swann

1. EVENT

Location: Poughkeepsie, NY
Date: July 19, 2019
Aircraft: Piper PA-46-310P
Registration: N811SK
Operator: Private
NTSB Number: ERA19LA231

On July 19, 2019, about 1440 eastern daylight time, a Piper PA46-310P, N811SK, was substantially damaged during a forced landing while on approach to Hudson Valley Regional Airport (POU), Poughkeepsie, New York. The private pilot and two passengers were seriously injured, and one passenger sustained minor injuries. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight that originated at Akron-Fulton International Airport (AKR), Akron, Ohio, about 1248. The airplane was owned and operated by the pilot under the provisions of Title 14 Code of Federal Regulations Part 91. The personal flight was originally destined for North Central State Airport (SFZ), Pawtucket, Rhode Island.

2. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following devices:

Device 1: Avidyne IFD 540
Device 1 Serial Number: M152160671

Device 2: Avidyne IFD 540
Device 2 Serial Number: M152160804

2.1. Avidyne IFD 540 Device Description (Device 1 & 2)

The Avidyne IFD 540 is a Flight Management System (FMS), GPS, and Navigator. It is capable of monitoring, displaying, and recording navigational information and records parameters including, but not limited to, heading, latitude, and longitude. Additionally, the IFD540 can be connected to external measurement devices to record other parameters such as attitude, attitude rates, body accelerations, pressure altitude, and airspeed. If configured properly, the IFD 540 can also record engine parameters as provided to the

unit by external engine monitors. The IFD 540 stores its historical logs on an internal compact flash (CF) card.

2.1.1. Avidyne IFD 540 Data Recovery (Device 1 & 2)

Upon arrival at the Vehicle Recorder Division, an exterior examination revealed the units had not sustained any significant damage and information was extracted using the manufacturer's download procedure, without difficulty. The condition of the devices is shown in Figure 1 and Figure 2 below.



Figure 1. Exterior damage to IFD 540 (device 1)



Figure 2. Exterior damage to IFD 540 (device 2)

2.1.2. Avidyne IFD 540 Data Description (Device 1 & 2)

The data extracted from device 1 included 57 sessions (1,509,636 total points) from April 13, 2018¹ through May 19, 2019 and erroneously from October 3, 1999 to January 7, 2000. The accident flight was the fifth to last session, recorded as starting at 16:35:58 UTC and ending at 18:39:58 UTC on December 3, 1999 (factually July 19, 2019) and contained 37,600 points.

The data extracted from device 2 included 52 sessions (1,504,370 total data points) from April 13, 2018 through May 19, 2019 and erroneously from October 3, 1999 to January 7, 2000. The accident flight was the second to last session, recorded as starting at 16:35:57 UTC and ending at 18:39:59 UTC on December 3, 1999 (factually July 19, 2019) and contained 37,587 points.

December 3, 1999 is exactly 1024 weeks behind July 19, 2019.

The data between the two devices was found to be redundant. Therefore, in this report only data from device 2 is plotted as it continued recording past device 1.

2.2. Time Correlation

The Avidyne IFD 540 records time in UTC and UTC will be used for the remainder of this report. No time conversion was necessary for this data.

2.3. Plots and Corresponding Tabular Data

The following figures contain data recorded during the accident flight. The fuel remaining value is dependent on proper initialization from the pilot. The fuel time remaining value is calculated based on the current fuel flow and fuel remaining. As such, when the fuel flow approaches zero towards the end of the accident flight, the fuel time remaining value climbs to non-physical values. The conditions shown in the Google Earth overlays are not indicative of the lighting or weather conditions present during the accident flight.

Figure 3 shows various parameters recorded by the IFD 540 for the entire duration of the accident flight.

Figure 3

Figure 4 shows various parameters recorded by the IFD 540 for the last ten minutes of the accident flight.

Figure 5 shows the flight path for the entire accident flight.

Figure 6 shows the flight path for the end of the accident flight.

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

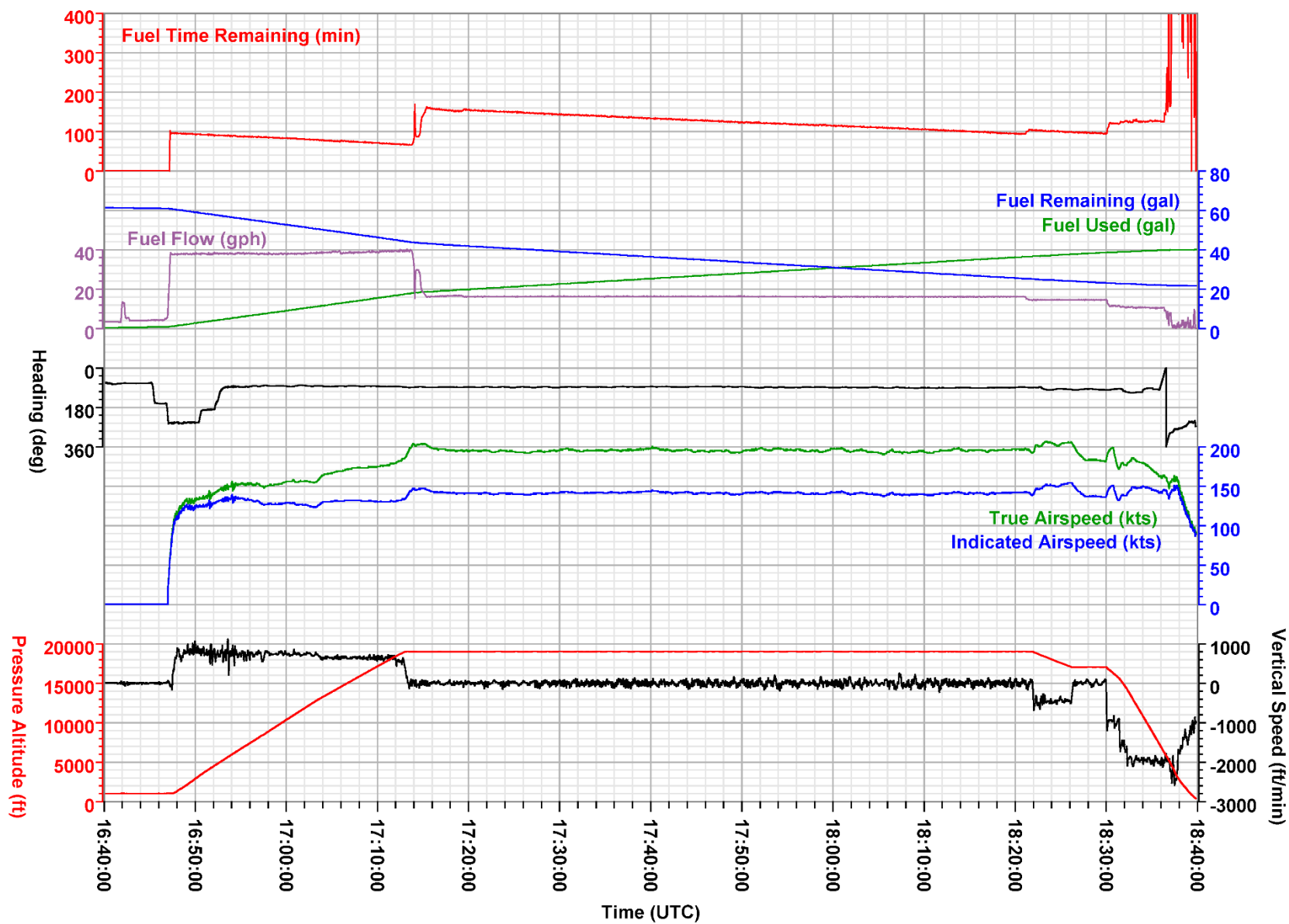


Figure 3. Data from the IFD 540 for the duration of the flight

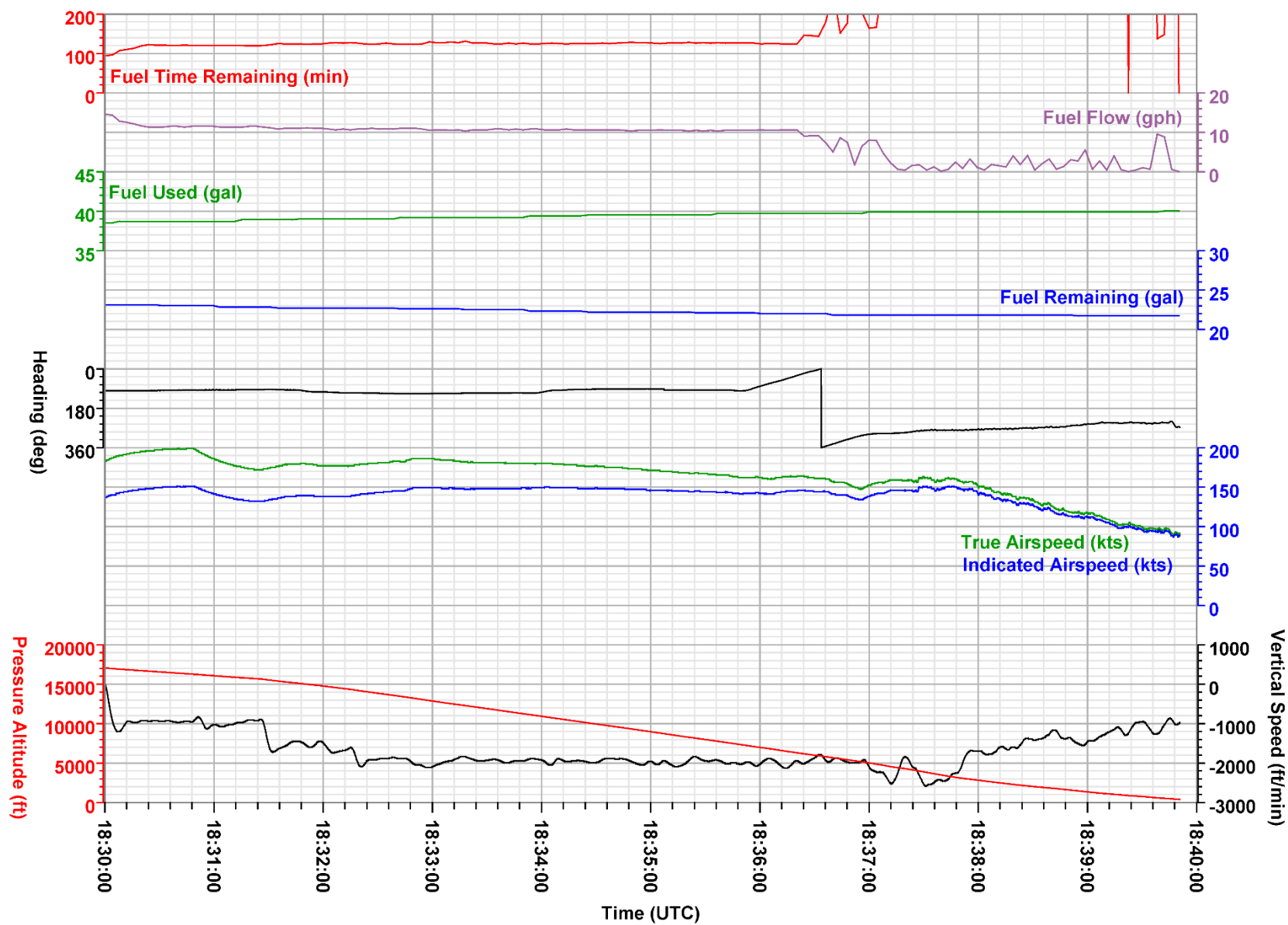


Figure 4. Data from the IFD 540 from the last 10 minutes of the accident flight

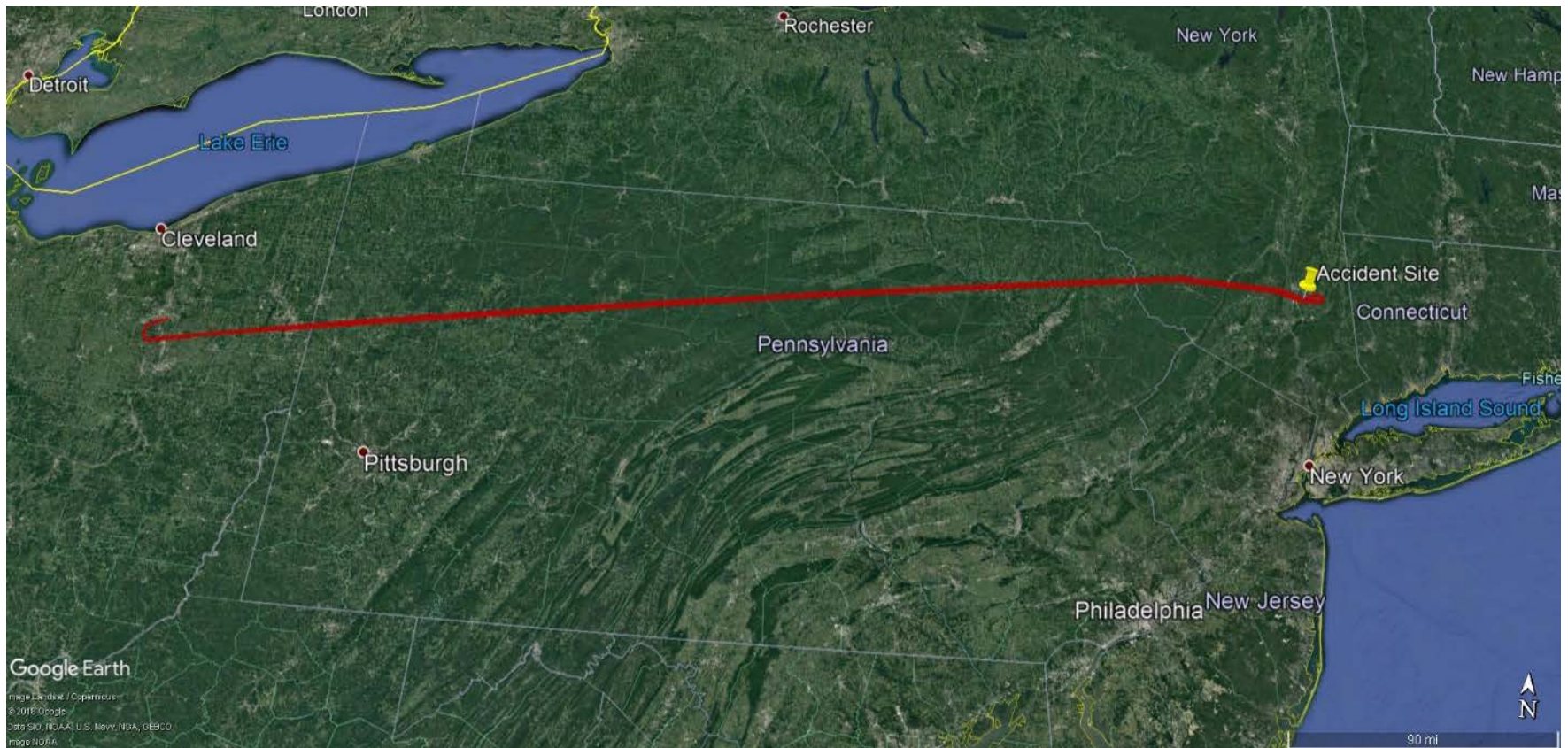


Figure 5. Flight path for the entire accident flight

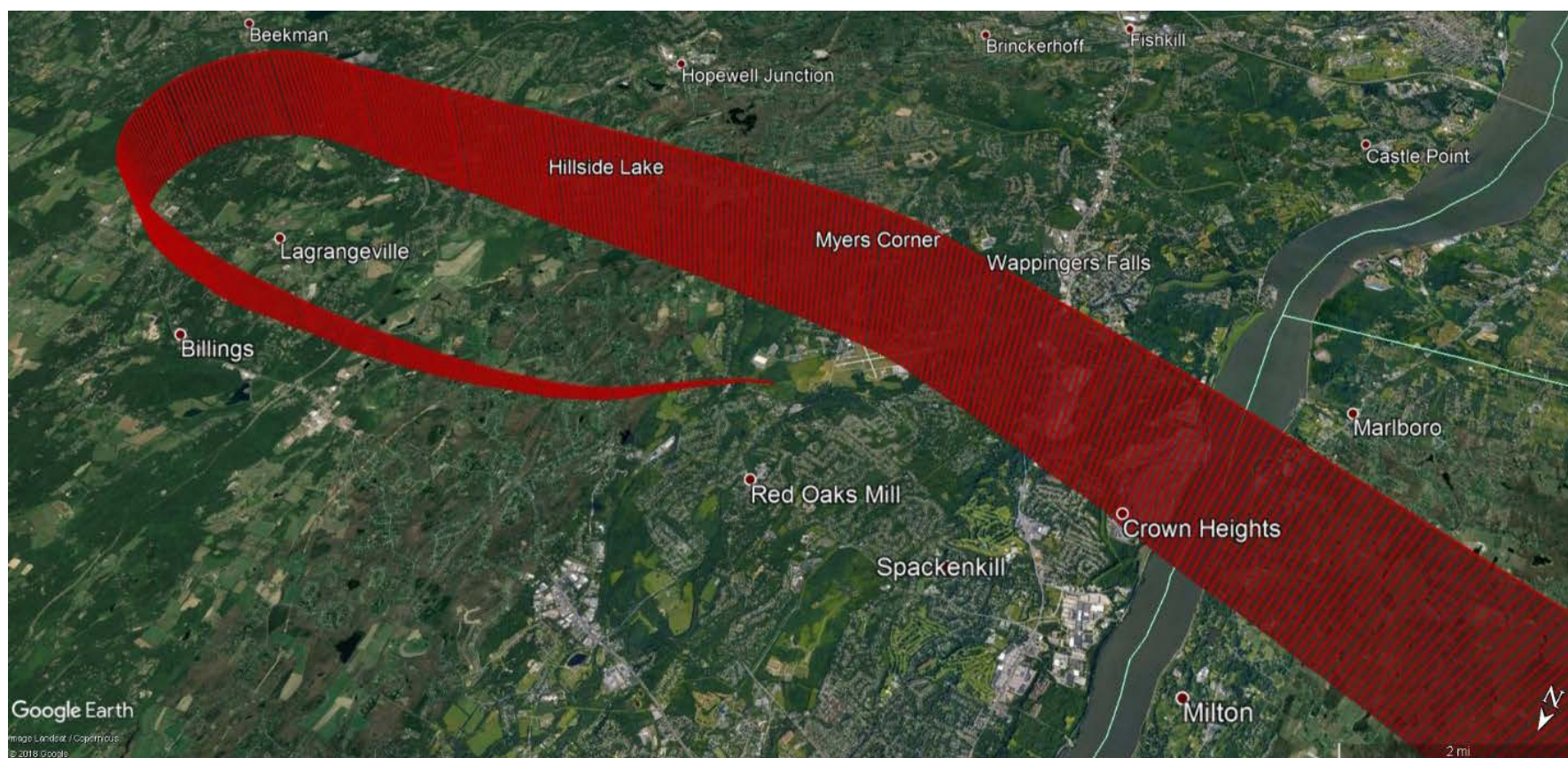


Figure 6. Flight path for the end of the accident flight

APPENDIX A

This appendix describes the parameters provided and verified in this report. Table A-1 lists the parameters and table A-2 describes the unit abbreviations used in this report.

Table A-1. Verified and provided parameters

Parameter Name	Parameter Description
1. Fuel Time Remaining (min)	Calculation performed by the unit for fuel time remaining
2. Fuel Flow (gph)	Fuel flow measurement to the engine
3. Fuel Used (gal)	Total number of gallons of fuel used
4. Fuel Remaining (gal)	Total number of gallons of fuel remaining
5. Heading (deg)	Current heading
6. True Airspeed (kts)	The true airspeed of the aircraft
7. Indicated Airspeed (kts)	The indicated airspeed of the aircraft
8. Pressure Altitude (ft)	The altitude with an assumed air pressure of 29.92 inches mercury
9. Vertical Speed (ft/min)	The vertical speed of the aircraft

Table A-2. Unit abbreviations

Units Abbreviation	Description
min	minutes
gph	gallons per hour
gal	gallons
deg	degrees compass
kts	knots
ft	feet
ft/min	feet per minute