

NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division

Washington, D.C. 20594

April 8, 2020

Electronic Device

Specialist's Factual Report

By Nick Swann

1. EVENT SUMMARY

Location: Melville, New York
Date: May 30, 2018
Aircraft: North American SNJ-2
Registration: N62382
Operator: Skytypers
NTSB Number: WPR18FA155

On May 30, 2018, about 1348 eastern daylight time, a North American SNJ-2, N62382, impacted terrain following a loss of control shortly after takeoff from Republic Airport (FRG), Farmingdale, New York. The airline transport pilot was fatally injured, and the airplane was destroyed. The airplane was registered to SNJ-2 Corp., and operated by Skytypers as a Title 14 *Code of Federal Regulations* Part 91 repositioning cross-country flight. Visual meteorological conditions prevailed, and no flight plan was filed for the flight. The airplane was one of six airplanes intended to fly in formation and destined for Patuxent River Naval Air Station (NHK), Patuxent River, Maryland.

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

The National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following global positioning system (GPS) device:

Device Manufacturer/Model:	Appareo Stratus PRX V2
Serial Number:	227427

3.1. Device Description

The Appareo Stratus PRX V2 device is a self-contained battery powered unit that contains an internal Altitude and Heading Reference System (AHRS), GPS/WAAS receiver, and Automatic Dependent Surveillance - Broadcast (ADS-B) receiver in one compact unit. The unit communicates wirelessly with compatible devices, such as an

iPad, to display all acquired information. In addition to communicating with compatible devices, the Stratus device records GPS position and AHRS information internally on a non-volatile flash memory¹ (NVM) chip at approximately 5 data records per second (5 Hz).

3.2. Data Recovery

Upon arrival at the NTSB Vehicle Recorders Division a visual inspection revealed minor impact damage and water damage. The device was disassembled and upon further inspection it was also noted that a capacitor had fallen off one of the circuit boards. The non-volatile memory chip was removed from the device and read out using lab equipment.



Figure 1. Photo of minor damage to Stratus PRX V2.

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

3.3. Data Description

The data extracted included 24 sessions from May 14, 2018,² through May 30, 2018. The accident flight was recorded starting 05:25:53 UTC and ending 05:51:54 UTC on May 30, 2018. This flight contains 7,804 data points.

3.4. Parameters Provided

Table 1 describes data parameters provided by the Stratus device and used in this report. 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
System Time (ms)	The system time of the Stratus device
GPS ITOW (ms)	The GPS interval time of week number: milliseconds since the beginning of the GPS week
GPS Week	The GPS week number in weeks since 1/1/1980
Converted GPS Date Time	A converted GPS time and date from the GPS ITOW and GPS Week
Latitude (deg)	The latitude of the aircraft
Longitude (deg)	The longitude of the aircraft
Altitude HAE (ft)	The altitude height above earth recorded in meters and converted to feet
Altitude HMSL (ft)	The altitude height above mean sea level recorded in meters and converted to feet
Ground Speed (kts)	The ground speed of the aircraft recorded in meters per second and converted to knots
Ground Track (deg)	The ground track of the aircraft
Vertical Speed (ft/min)	The vertical speed of the aircraft recorded in meters per second and converted to feet per minute
AHRS Time (s)	A timebase in the Altitude Heading Reference System that directly correlates to the system time
Heading (deg)	The heading of the aircraft
Pitch (deg)	The pitch angle of the aircraft
Roll (deg)	The roll angle of the aircraft

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

3.5. OVERLAYS AND TABULAR DATA

Figure 2 is a graphical overlay generated using Google Earth 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 accident flight.

Figure 3 is a graphical overlay generated using Google Earth for the end of the accident flight.

Figure 4 is a plot of data recorded by the Stratus during the accident flight. The aircraft can be seen taking off and, approximately 2 minutes and 45 seconds later, entering a steep descending right turn.



Figure 2. Google Earth overlay showing the accident flight.



Figure 3. Google Earth overlay showing the end of the accident flight.

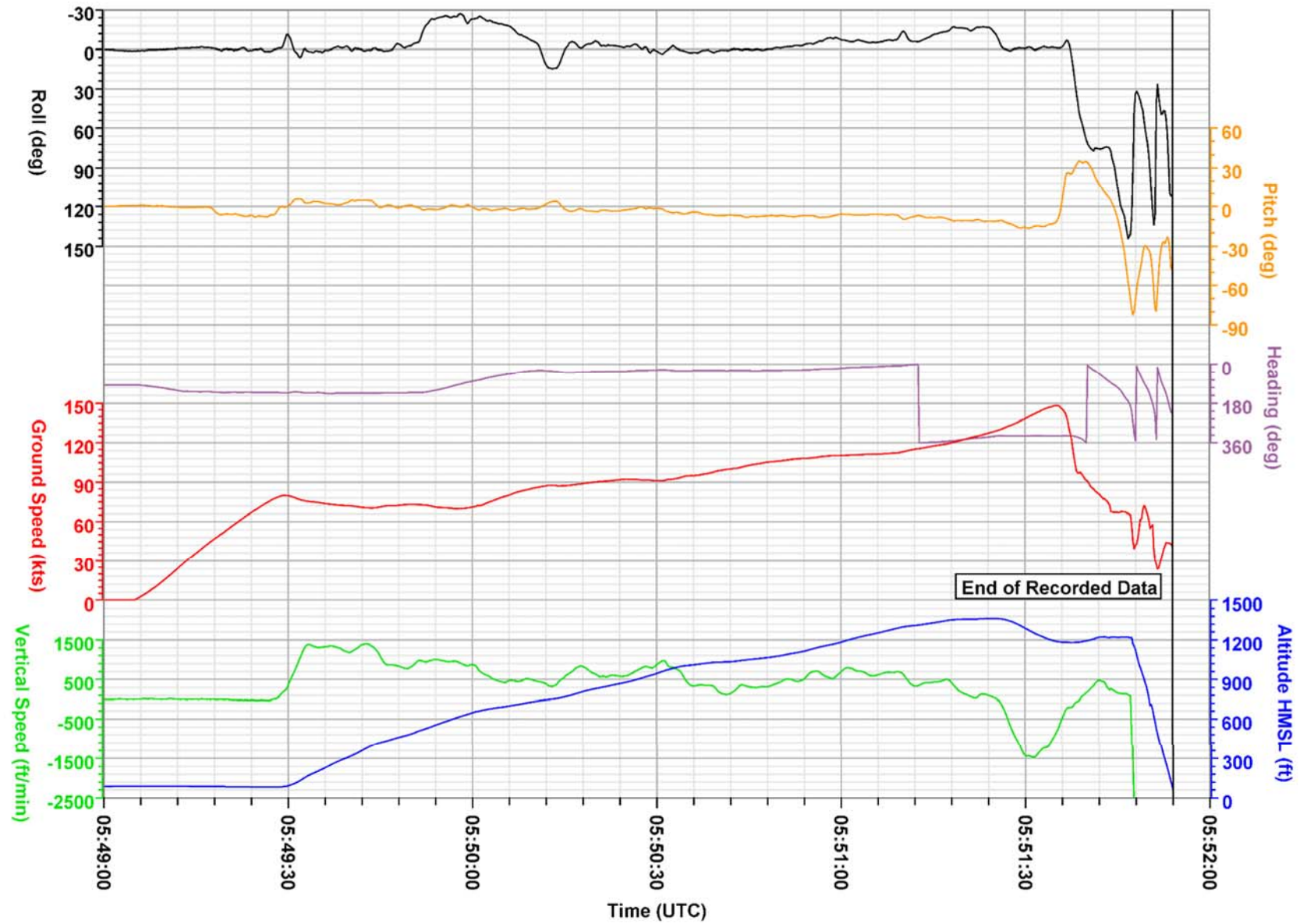


Figure 4. Plot of data from the accident flight.