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

March 13, 2017

# Data Recording Devices

**Specialist's Factual Report**
**By James Cash**

## 1. EVENT SUMMARY

Location: Skagaway, Alaska
Date: May 06, 2016
Aircraft: Airbus Helicopters AS350B2
Registration: N94TH
Operator: Temsco Helicopters
NTSB Number: ANC16FA023

On May 6, 2016, about 1855 Alaska daylight time, an Airbus AS350B2 helicopter, N94TH, collided with snow-covered terrain while enroute to Skagway, Alaska, about 4 miles southeast of Skagway. The commercial pilot sustained fatal injuries, and the helicopter sustained substantial damage. The helicopter was registered to, and operated by, Temsco Helicopters, Inc., Ketchikan, Alaska, as a day, visual flight rules (VFR) flight under the provisions of 14 Code of Federal Regulations Part 135 on-demand charter flight. Marginal visual meteorological conditions were reported on the Denver Glacier at the time of the accident, and company flight following procedures were in effect. The flight originated from the operator's heliport in Skagway, about 1840.

## 2. DATA RECORDING GROUP

A group was not convened.

## 3. DETAILS OF INVESTIGATION

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

### Device 1:
Recorder Manufacturer/Model: **AKV Inc. ETM1000**
Recorder Serial Number: 125

### Device 2:
Recorder Manufacturer/Model: **Garmin GDL 90**
Recorder Serial Number: 29100652

### 3.1. AKV ETM1000 Description

The AKV inc. ETM1000 unit is designed to monitor and record data related to the engine and rotor system operation. The unit also constantly montors engine and rotor system performance and alerts the pilot if any predertimed parameter is being exceeded. On this Airbus Helicopter AS350B2 installation the parameters that were recorded were:

- Time
- Date
- N1 speed in percent and in RPM (N1)
- Rotor Sytem Torque
- Rotor Speed in percent and in RPM (Nr)
- Measured Gas Temperature (MGT)
- N2 Speed in percent and in RPM (N2)
- Outside Air Temperature
- Pressure Altitude (BP, BA)
- Collective Run Time
- Engine Run Time
- Number of Engine Starts
- Engine running (binary)
- Airspeed above 40 knots (binary)

The unit contained a non-volatile memory SD card for data storage of the parameters recorded. The rate at which the data was stored was at approximately one data record per second.

### 3.2. Garmin GDL-90

The Garmin GDL 90 is a certified ADS-B datalink transceiver that combines GPS satellite navigation with datalink communications to deliver interactive traffic and hazard surveillance. The GDL 90 is designed to transmit, receive and decode Automatic Dependent Surveillance-Broadcast (ADS-B) messages via onboard datalink. It broadcasts the aircraft's position, velocity, projected track, altitude and flight identification to other equipped aircraft in the vicinity, as well as to ground-based transceivers maintained by the FAA. The unit is designed to interface with a cockpit mounted display to visually display other aircraft, and weather information to the pilot.

The unit contained two (2) CF non-volatile memory cards that were used to store the operating system of the unit as well as any faults and errors that the unit sensed. There are no provisions within the unit to store any track or navigation data.

### 3.3 Data Description AKV inc. ETM1000

The AKV ETM1000 data consisted of approximately 182 individual data files. A data file is created for every power cycle of the ETM1000 unit. The files are named with an RL prefix

followed by the day, month and year when it was created. The first file was created on June 15, 2014 and the last file was created on the day of the accident, May 6, 2016.

### 3.4 Plots and Corresponding Tabular Data

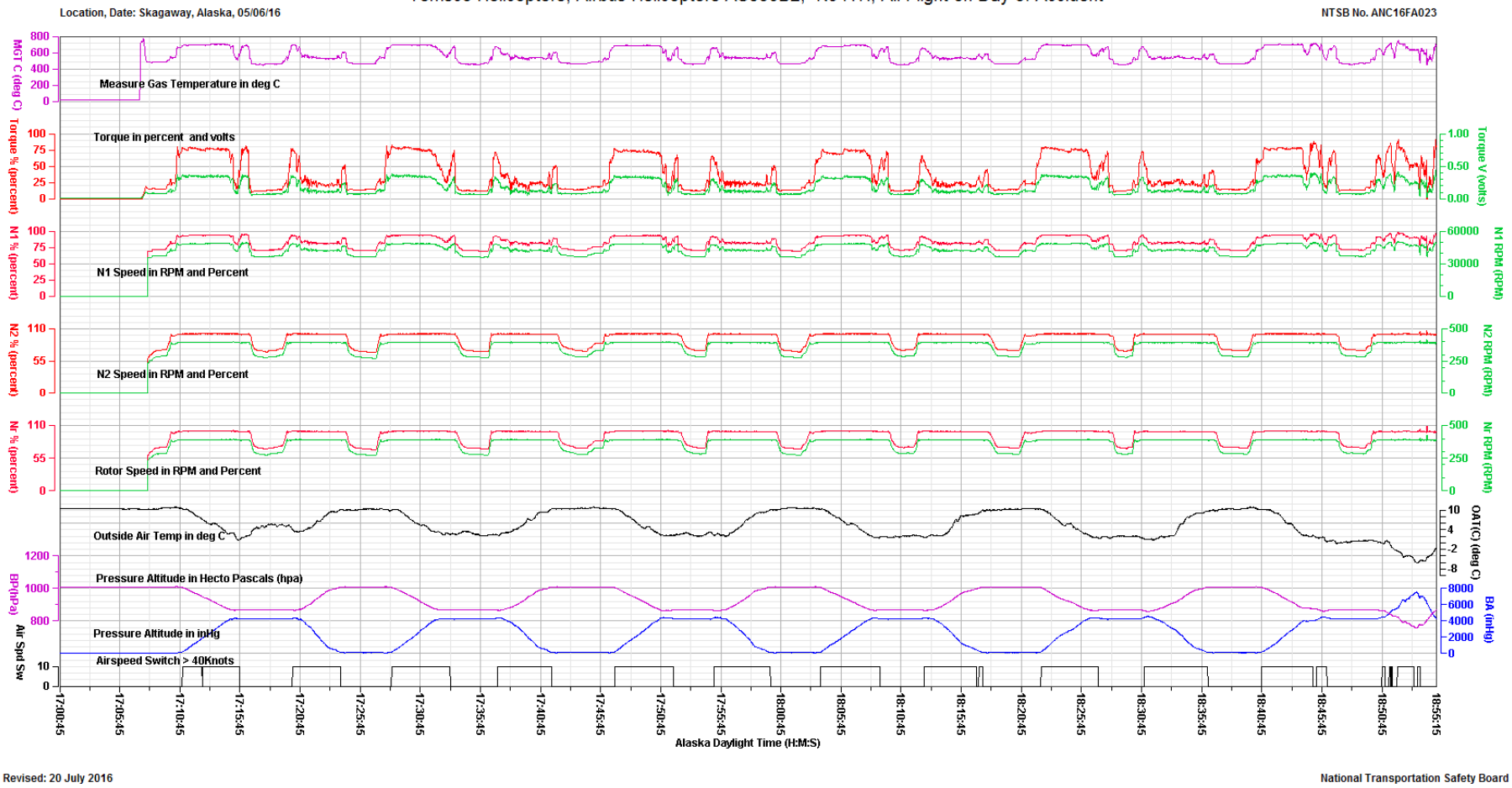
The following three figures contain ETM data recorded during the May 6, 2016 event.

Figure 1 depicts all of the data recorded on May 6, 2016, the day of the accident, including the accident flight. Figure 2 and 3 depict the data of just the accident flight. Figure 3 contains some annotations that depict the two separate flight segments that correspond to the last flight. The first segment depicts the flight from Skagway, Alaska enroute to the base camp. The second segment depicts the accident flight from the base camp to the end of the data. The data ends at 1855:15 Alaska Daylight Time.

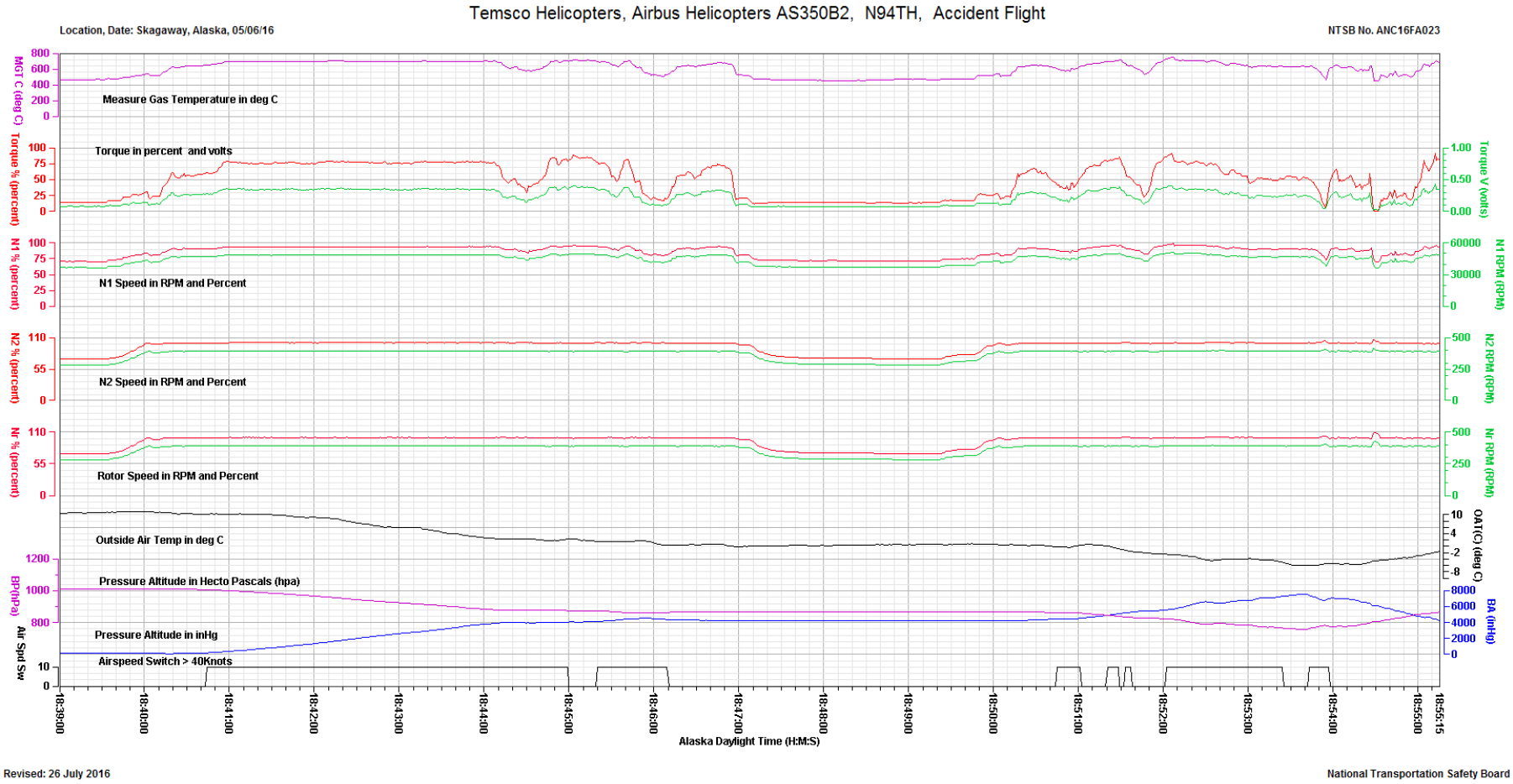
The corresponding tabular data used to create these three plots are provided in electronic (*.csv[1]) format as Attachment 1 to this report.

[1] Comma Separated Value format.

## Figure 1. Plot of Engine Data on Day of Accident



## Figure 2. Plot of data from Accident Flight



# Figure 3. Plot of data from Accident Flight