

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

October 23, 2015

Multiple Electronic Devices

**Specialist's Factual Report
by George Haralampopoulos**

1. EVENT

Location: Eufaula, Oklahoma
Date: March 12, 2015
Aircraft: Eurocopter AS350
Registration: N919EM
Operator: Eagle Med, LLC
NTSB Number: CEN15FA171

On March 12, 2015, about 2315 central daylight time, a Eurocopter AS 350 B2 helicopter, N919EM, operating as "Eagle Med 35", was destroyed after impacting trees and terrain during maneuvering flight near Eufaula, Oklahoma. The pilot was fatally injured and the two medical crewmembers sustained serious injuries. The helicopter was registered to and operated by Eagle Med, LLC; Wichita, Kansas. Dark night visual meteorological conditions (VMC) prevailed at the time of the accident and a company visual flight rules flight plan had been filed for the 14 *Code of Federal Regulations* Part 135 helicopter emergency medical service positioning flight. The helicopter departed from St. Francis Hospital Heliport (4OK3); Tulsa, Oklahoma, about 2248, and was destined for McAlester Regional Airport (MLC), McAlester, Oklahoma.

2. DETAILS OF INVESTIGATION

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

Device 1:	EMS ¹ Sky Connect GPS Transmitter
Device 1 Serial Number:	16031
Device 2:	Apple iPad
Device 2 Serial Number:	F4KKC0QRF19D
Device 3:	Samsung Galaxy S4
Device 3 Serial Number:	IMEI 99000471024792
Device 4:	Apple iPhone 6+
Device 4 Serial Number:	354381060698145

¹ EMS Technologies was acquired by Honeywell Aerospace on August 22, 2011.

2.1. Personal Electronic Devices Data Recovery

The Apple iPad (figure 1) and iPhone 6+ (figure 2) are capable of storing data in the non-volatile memory (NVM)². The extent of the damage sustained by the iPad and iPhone precluded normal recovery procedures and additional attempts using surrogate units were unsuccessful in yielding data. Therefore, no pertinent data were recovered.

The Samsung Galaxy S4 (figure 3) was identified as one of the crewmember's cell phones and successfully downloaded; however, the data downloaded did not yield any pertinent information. No further work was performed on the personal electronic devices.



Figure 1. Apple iPad as received

² Non-volatile memory is semiconductor memory that does not require external power for data retention.



Figure 2. Apple iPhone 6+ as received



Figure 3. Samsung Galaxy S4 as received

2.2. Sky Connect Device Description

The Sky Connect is part of a communication and fleet tracking system for aircraft, consisting of a transceiver and antenna line replaceable unit (LRU) and an MMU-II cockpit interface dialer. The first generation Sky Connect was manufactured by EMS aviation and does not contain internally recorded memory; however, messages are sent over a satellite network at a rate based on the customers subscription and contains tracking information such as, latitude, longitude, GPS altitude, and time.

2.2.1. Sky Connect Data Recovery and File Transfer

Upon arrival at the Vehicle Recorder Division, an exterior examination revealed the unit had not sustained any damage (figure 4). The device does not store NVM internally and no further work was performed on the device.

A file containing the data messages sent from the Sky Connect was provided by the device manufacturer. The device appeared to send messages at a rate of once every two to three seconds.

2.2.2. Sky Connect Data File Description

The data received included 39 messages on March 13, 2015³, containing location information and device power status. A recorded trip number of 3770 and 3771 was identified with the event flight. Table 1 lists the parameters provided in the file. Message Type, Message Time, Groundspeed, GPS Altitude, Course, Latitude, Longitude, and Trip are recorded within the file. The file is included in this report as Attachment 1 and provided in comma separated value (.csv) format.

Table 1: GPS Data Parameters

Parameter Name	Parameter Description
Message Type	Type of Message Received
Message Time	Date and Time of Message Received in UTC.
Latitude	Recorded Latitude (degree:minutes:seconds)
Longitude	Recorded Longitude (degree:minutes:seconds)
GPS Alt	Recorded GPS Altitude (feet)
Groundspeed	Recorded Groundspeed (mph)
Course	Recorded Track (degrees)
Trip	Trip Number

³ All dates and times are referenced to Coordinated Universal Time (UTC).