

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, DC 20594

July 2, 2013

On Board Image Recorder

Specialist's Factual Report
By James Cash

1. EVENT

Location:	Newfield, Arizona
Date:	November 12, 2013, 1410 Mountain Standard Time
Aircraft:	Eurocopter AS350, N3984A
Operator:	US Customs and Border Protection
NTSB Number:	WPR13TA051

2. GROUP

A group was not convened.

3. SUMMARY

On November 23, 2012, about 1410 Mountain Standard Time, an American Eurocopter Corporation AS350 B3 helicopter, N3984A, was substantially damaged following a loss of control while maneuvering near Newfield, Arizona. The helicopter was registered to the Customs and Border Protection (CBP), of Washington, D.C. The certified commercial pilot, the sole occupant, was not injured. Visual meteorological conditions prevailed for the routine air patrol mission, which was conducted as a Public Use flight, and a CBP flight plan was filed. The flight departed on the mission from the Davis Monthan Air Force Base (DMA), about 1210.

An Appareo Vision 1000 recorder was sent to the National Transportation Safety Board's Image Laboratory for readout.

4. DETAILS OF INVESTIGATION

On November 27, 2012 the NTSB Vehicle Recorder Division's Image Laboratory received the following device:

Recorder Manufacturer/Model:	Appareo Vision 1000
Recorder Serial Number:	VIS-FF4D

4.1. Recorder Description

The Appareo Vision 1000 recorder is a small self-contained image, audio, and data recorder. The unit is typically mounted in the overhead of an aircraft's cockpit and records a cockpit image at a rate of four times per second. In addition to the cockpit image, the device also records 2-track audio that is synchronized with the image data. The unit also contains a GPS receiver that receives GPS satellite based aircraft position, altitude and speed. In addition to the GPS position the Appareo unit also has a self-contained real-time inertial measuring unit that provides accurate 3-axis accelerations as well as aircraft pitch, roll and yaw data.

The Appareo unit records the image, audio and parametric data on a removable SD memory card that is inserted into the unit. This removable memory retains approximately the last two hours of image and audio data and about the last 100 hours of parametric data. In addition to the removable memory the Vision 1000 is also equipped with a crash and fire resistant memory module that is mounted internal to the unit. This internal memory contains an exact duplicate of the data stored on the removable card.

The Appareo unit on this aircraft is connected to the aircraft's battery through the master battery switch. Anytime the battery switch is turned on, the Appareo unit will start to record images and data. It should be noted that the Vision 1000 unit creates a new file for every electrical power application. Some of the recorded files are flights and some of the files are just short power cycles of the aircraft's battery.

4.2. Recorder Damage

Upon arrival at the audio laboratory, it was evident that the device had not sustained any heat or structural damage during the accident. The installed SD memory card was removed from the unit and the data, audio and image files downloaded normally from the memory card using the manufacturers supplied software.

4.2.1. Video Files

When the image files were examined it was determined that the most recent files were recorded approximately one month prior to the accident date. Additionally an attempt to download the internal memory of the Appareo Vision 1000 was attempted. It was noted that the recorder did not power up normally using the P-1 connector on the rear of the unit. According to the manufacturer's supplied schematic for the unit, the alternate way to power the Vision 1000 device is to use the maintenance E-1 connector. The unit did power up using the E-1 connector, but no additional data was retrieved from the device.

4.3. Summary of Recording Contents

None of the recovered data from the accident Appareo Vision 1000 recorder contained information pertaining to the accident flight on November 23, 2012. The last recording obtained from the unit was recorded on September 30, 2012 at 00:43 UTC. The accident unit, while it appeared undamaged, would not accept electrical power via the normal P-1 connector on the rear of the unit. During post-accident testing, the accident unit did operate normally when powered via the maintenance E-1 connector.

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