

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

July 21, 2022

## **Onboard Image Recorder**

### **Specialist's Factual Report** **By Kyle Garner**

#### **1. EVENT**

Location: Kalapana, Hawaii  
Date: March 5, 2020  
Aircraft: Eurocopter EC130  
Registration: N11QK  
Operator: Blue Hawaiian Helicopters  
NTSB Number: ANC20LA028

#### **2. ONBOARD IMAGE RECORDER GROUP**

An onboard image recorder group was not convened.

#### **3. DETAILS OF INVESTIGATION**

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

Recorder Manufacturer/Model: **16GB USB Flash Drive**  
Recorder Serial Number: **Unknown**

Recorder Manufacturer/Model: **16GB USB Flash Drive**  
Recorder Serial Number: **Unknown**

##### **3.1. Flash Drive Description**

The two USB flash drives contained MP4 files downloaded from the Datatoys AirKnight HD4S airborne video recorder on two helicopters: the accident helicopter and another company helicopter, referenced in this report as the witness helicopter, that was in the area performing an air tour and witnessed the accident.

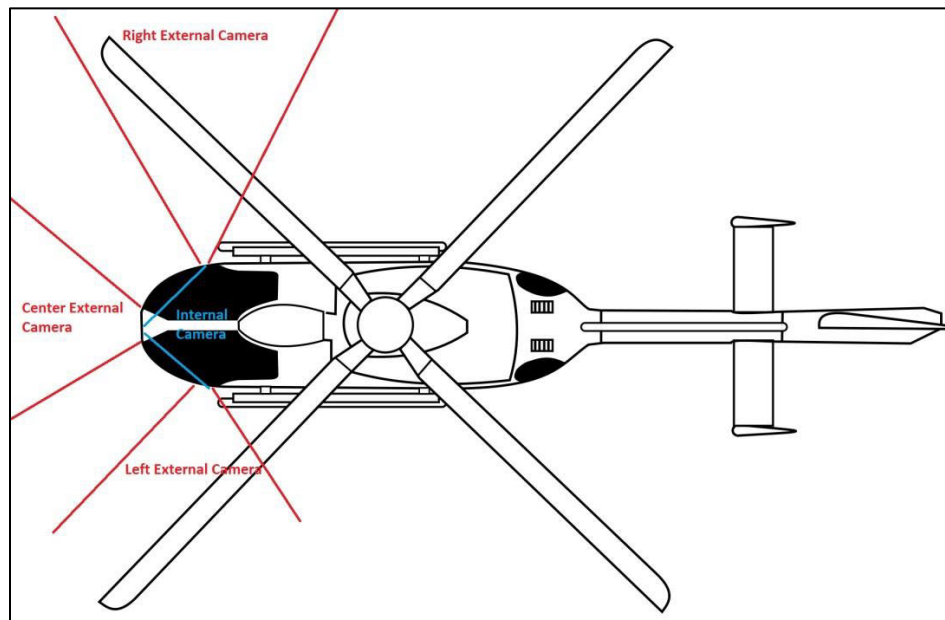
##### **3.2. Datatoys AirKnight HD4S Description**

The Datatoys AirKnight HD4S is an airborne video recorder designed for helicopter tour applications. The HD4S is a digital video recorder (DVR) that supports recording up to four streams at a resolution and frame rate of up to 1920 x 1200 pixels and 60 frames per second (fps), respectively. The unit allows the pilot or other operator to switch between the four camera streams manually or automatically. When configured, the device is capable of overlaying GPS data onto the video recording. The device records directly to a USB flash drive or SD card.

The recorded files contain an audio track that records intra-aircraft communications between the pilot and passengers<sup>1</sup>, air traffic control transmissions, the pilot's voice-operated exchange (VOX) input and overlay music. Specific audio and video information recorded was dependent upon which audio and video selections the pilot or other operator had made on the control panel.

### 3.2.1. Accident and Witness Helicopter HD4S Configuration

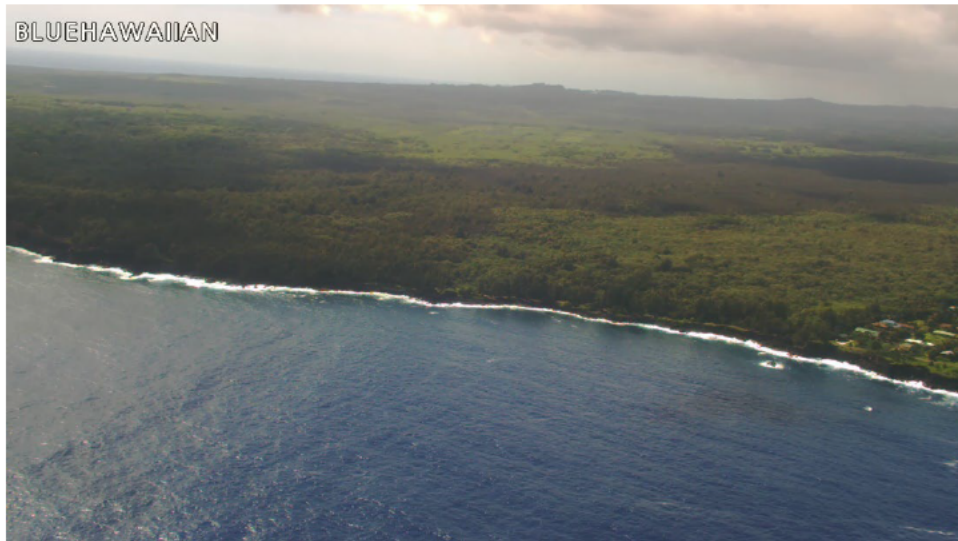
The accident and witness helicopter each had four cameras installed: three external-facing cameras and one internal-facing camera. Figure 1 is a diagram showing the location and viewing angles of the cameras installed on each helicopter. Figure 2 is a screenshot taken from the accident helicopter's right external-facing camera. Figure 3 is an illustrated image of the view from the internal-facing camera.



**Figure 1. A diagram showing the location of the cameras installed on the accident and witness helicopter.**

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<sup>1</sup>In this installation, the passengers were required to key a handheld mic to speak on the intercom. Separate boom microphones on the passenger's headsets were not present.



**Figure 2. A screenshot taken from the right external-facing camera on the accident helicopter.**



**Figure 3. An illustrated image of the view from the internal-facing camera on the accident helicopter.**

The accident and witness helicopters were both configured to carry the same number of passengers. The seating configuration of both helicopters is shown in Figure 4. In the figure, 'P' indicates the pilot's seat and each number indicates seating locations for up to six passengers.

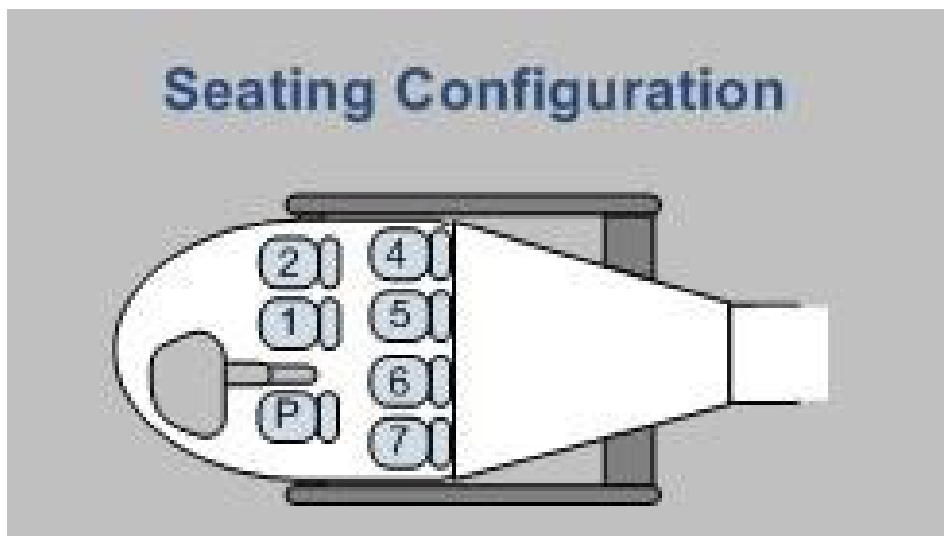


Figure 4. Seating configuration of the accident and witness helicopter.

### 3.3. Event Helicopter Data Description

The flash drive from the accident helicopter contained six MP4 files. These files were named and had a duration as shown in Table 1.

Table 1. List of files on flash drive from accident helicopter.

| File Number | File Name                | Description    | Size    | Duration (mm:ss) | Resolution & fps             |
|-------------|--------------------------|----------------|---------|------------------|------------------------------|
| 1           | 200305_105447_110434.mp4 | Takeoff & Tour | 1.02 GB | 09:46            | 1920 x 1090 pixels<br>30 fps |
| 2           | 200305_110434_111419.mp4 | Tour           | 1.02 GB | 09:44            |                              |
| 3           | 200305_111419_112409.mp4 | Tour           | 1.02 GB | 09:50            |                              |
| 4           | 200305_112409_112650.mp4 | Event          | 220 MB  | 02:06            |                              |
| 5           | 200305_112651_112651.mp4 | Post-accident  | 1.7 MB  | 00:01            |                              |
| 6           | 200305_112651_112711.mp4 | Post-accident  | 31 MB   | 00:19            |                              |

### 3.4. Witness Helicopter Data Description

The flash drive from the witness helicopter contained six MP4 files. These files were named and had a duration as shown in Table 2.

**Table 2. List of files on flash drive from witness helicopter.**

| <b>File Number</b> | <b>File Name</b>         | <b>Description</b>   | <b>Size</b> | <b>Duration (mm:ss)</b> | <b>Resolution &amp; fps</b>      |
|--------------------|--------------------------|----------------------|-------------|-------------------------|----------------------------------|
| 7                  | 200305_104231_105227.mp4 | Takeoff & Tour       | 1.02 GB     | 09:56                   | 1920 x 1090 pixels<br><br>30 fps |
| 8                  | 200305_105227_110215.mp4 | Tour                 | 1.02 GB     | 09:46                   |                                  |
| 9                  | 200305_110215_111211.mp4 | Tour                 | 1.02 GB     | 09:57                   |                                  |
| 10                 | 200305_111211_112206.mp4 | Tour & Event Witness | 1.02 GB     | 09:54                   |                                  |
| 11                 | 200305_112206_113151.mp4 | Return to Base       | 1.02 GB     | 09:45                   |                                  |
| 12                 | 200305_113151_113223.mp4 | Landing              | 57.2 MB     | 00:32                   |                                  |

### **3.5. Time Correlation**

The Datatoys AirKnight HD4S contained internal system timing information within the naming convention of each file. For example, file '200305\_105447\_110434.mp4' indicated it began recording at 10:54:47 and stopped recording at 11:04:34 on March 05, 2020. Timestamps were not coordinated across devices. Further, a correlation between HD4S internal system time and local time could not be determined. Therefore, for the remainder of this report all times referenced are HD4S system time.

### **3.6. Summary of Recording Events**

In agreement with the Investigator-in-Charge, an onboard image recorder group did not convene, and a summary report was prepared for each device.

#### **3.6.1. Event Helicopter Recording Summary**

The following events were observed on the accident helicopter at the indicated times as shown in Table 3. Only selected events deemed pertinent to the investigation are included in the table.

**Table 3. Event Helicopter Video Observations.**

| <b>HD4S System Time<br/>(HH:mm:ss)</b> | <b>Comment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:54:47                               | [Beginning of video file 1] The video began with the right external-facing camera looking at the apron at PHTO. The pilot was heard giving a safety briefing. The pilot stated, "Please ensure that the seatbelt is located low and tight on your waist and if it isn't, please tighten it now. Do not loosen the belt during the flight."                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 10:55:04                               | <p>The camera view switched to the internal-facing camera. There were six total occupants, including the pilot. The pilot was seated in position P and five passengers were seated in positions 1, 2, 4, 6, and 7 (see Figure 4 for seating locations). Position 5 was vacant.</p> <p>Occupants P, 1, and 2 appeared to have their four-point seatbelts buckled with the shoulder straps centered and the buckle mechanism slightly below the belly button. The shoulder straps of occupants 4 and 7 could be seen across their shoulders and toward their mid-section, however, the buckle was not visible due to the seating configuration. No portion of the seatbelt for occupant 6 was visible on the recording due to the view being blocked by seating position 1.</p> |
| 10:55:45                               | The camera view switched to the right external-facing camera. The pilot stated to the passengers that he had received a clearance and they were going to depart. The helicopter then lifted off and proceeded across the airport property and toward the ocean. The camera view then switched to the center external-facing camera. The pilot discussed the geographical features of the area and began giving the tour.                                                                                                                                                                                                                                                                                                                                                      |
| 11:00:47                               | The helicopter passed over the shoreline and continued the tour over open water. The shoreline was seen on the right side of the camera view. The weather was partly cloudy. The view was switching between the center and right external-facing cameras.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 11:04:34                               | [End of video file 1 & beginning of video file 2]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 11:14:19                               | [End of video file 2 & beginning of video file 3]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

| HD4S System Time<br>(HH:mm:ss) | Comment                                                                                                                                                                                                                                    |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:19:35                       | The tour continued and the helicopter was over land. The weather changed from partly cloudy to cloudy. Rain was seen falling on the center external-facing camera. The helicopter was flying below the clouds.                             |
| 11:24:09                       | [End of video file 3 & beginning of video file 4]                                                                                                                                                                                          |
| 11:24:31                       | The view was from the right external-facing camera. As the pilot was giving another portion of the tour, a loud noise obstructed his voice mid-sentence. The camera began to shake and continued to shake for the remainder of the flight. |
| 11:24:41                       | The pilot exclaimed, "uhh...". The helicopter continued to travel forward and was able to maintain altitude.                                                                                                                               |
| 11:25:26                       | The pilot stated, "Alright guys, we're gonna go ahead and make a precautionary landing. Because uhh...that uh...that noise."                                                                                                               |
| 11:25:50                       | The helicopter began to pitch up to arrest the forward movement. As the forward movement began to slow, the helicopter began to rotate counterclockwise.                                                                                   |
| 11:25:58                       | The view was from the right external-facing camera. A large clearing in the trees was visible. The helicopter began to lose altitude. The rate at which the helicopter was rotating counterclockwise began to increase.                    |
| 11:26:00                       | The pilot stated, "Oh crap." The counterclockwise rotation continued.                                                                                                                                                                      |
| 11:26:11                       | The pilot stated, "Oh # [REDACTED]." <sup>2</sup> The camera began to move erratically. The helicopter continued the counterclockwise rotation.                                                                                            |

<sup>2</sup> The '#' symbol precedes an expletive, which is redacted.

| HD4S System Time<br>(HH:mm:ss) | Comment                                                                                                                                                                                                                                                                          |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:26:50                       | The passengers could be heard screaming. The video file abruptly ended before the helicopter impacted the ground. The final view from the right external-facing camera before the video ended and the helicopter impacted the ground is shown in Figure 5. [End of video file 4] |
| 11:26:51                       | [Beginning of video file 5] The next video file started with the view from the right external-facing camera. The helicopter had impacted the ground and was laying on its right side. The video file then ended. [End of video file 5]                                           |
| 11:26:52                       | [Beginning of video file 6] The next video file started with the view from the right external-facing camera. The passengers and pilot could be heard talking about removing their seatbelts and maneuvering to get out of the helicopter. [End of video file 6]                  |

### 3.6.2. Witness Helicopter Recording Summary

The following events were observed on the witness helicopter at the indicated times as shown in Table 4. Only selected events deemed pertinent to the investigation are included in the table.

**Table 4. Witness Helicopter Video Observations.**

| HD4S System Time<br>(HH:mm:ss) | Comment                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:42:31                       | [Beginning of video file 7] The video began with the inward-facing camera. There were five total occupants, including the pilot. The pilot was seated in position P and the four passengers were seated in positions 1, 2, 4, and 7 (see Figure 4 for seating configuration).                                                                                                                                                               |
| 10:42:35                       | The pilot mentioned that the passengers already received a safety briefing. The pilot then stated, "Now let's double and triple-check everyone's buckle and make sure they are low and tight in the waist. You don't want that buckle to ride up on you." The pilot then visually checked each occupant's seatbelt for proper placement. The pilot instructed the passenger in position 4 to adjust her buckle to be centered on her waist. |
| 10:45:09                       | The pilot radioed the control tower for a takeoff clearance.                                                                                                                                                                                                                                                                                                                                                                                |

| HD4S System Time<br>(HH:mm:ss) | Comment                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:46:25                       | The helicopter lifted off and proceeded across the airport and toward the ocean. The camera switched to the left external-facing camera. The weather was partly cloudy. The pilot began to give the tour.                                                                                                                                                                            |
| 10:52:27                       | [End of video file 7 & beginning of video file 8]                                                                                                                                                                                                                                                                                                                                    |
| 11:02:15                       | [End of video file 8 & beginning of video file 9]                                                                                                                                                                                                                                                                                                                                    |
| 11:12:11                       | [End of video file 9 & beginning of video file 10]                                                                                                                                                                                                                                                                                                                                   |
| 11:13:31                       | The tour continued normally over land. The weather switched from partly cloudy to cloudy. Rain was seen falling when the camera was switched to the center external-facing camera.                                                                                                                                                                                                   |
| 11:20:18                       | The pilot stated he was coordinating with base regarding a different company helicopter. The pilot told the passengers, "Yeah, this aircraft's got a precautionary light so let me make sure he's down safe at our go-to spot there and I'm gonna radio in. Let me handle that yeah. I'm gonna handle that and radio with the base. They're good, but they need us to tend to them." |
| 11:20:46                       | The view was from the left external-facing camera. The accident helicopter was visible on the camera, as shown in Figure 6. The accident helicopter was over a clearing in the trees. The main rotor was visible and rotating. The tail rotor was not visible.                                                                                                                       |
| 11:20:51                       | The accident helicopter began to rotate counterclockwise, as shown in Figure 7. As the witness helicopter traveled closer to the clearing in the trees, the rate at which the accident helicopter was rotating began to increase.                                                                                                                                                    |
| 11:21:08                       | The accident helicopter was seen rotating rapidly counterclockwise and losing altitude. The witness helicopter pilot stated, "Oh no...oh no." The accident helicopter impacted the ground and turned over on its right side. The moment of impact is shown in Figure 8.                                                                                                              |

| HD4S System Time<br>(HH:mm:ss) | Comment                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 11:21:14                       | Smoke was seen emanating from the accident helicopter, as shown in Figure 9. The witness pilot stated, "Okay guys, hang on. I've got to handle this." The accident helicopter was no longer visible on the video.                                                                                                                                                             |
| 11:22:06                       | [End of video file 10 & beginning of video file 11]                                                                                                                                                                                                                                                                                                                           |
| 11:23:05                       | The pilot was heard communicating over the radio with base stating that a company helicopter had crashed, and they needed help.                                                                                                                                                                                                                                               |
| 11:24:29                       | The pilot told the passengers, "I'm sorry you guys had to see that. I had to try to capture that. Uh and getting down there...I don't know if that's going to help. Hang on, yeah?"                                                                                                                                                                                           |
| 11:26:53                       | The view switched to the internal-facing camera. The pilot asked the passengers if they were okay. The pilot then stated, "Uhh...so I can tell just by watching what happened and what he said, it sounded like something got into his tail rotor." The pilot then pointed his finger and moved it in a counterclockwise rotation and stated, "That's why he went like this." |
| 11:28:02                       | The passenger in position 7 asked if they were headed back to the airport. The pilot replied, "Yes, we've got to take care of that."                                                                                                                                                                                                                                          |
| 11:31:37                       | The helicopter was maneuvering to land back at PHTO. The pilot was heard talking to base, "They're gonna need help. Uh, tail rotor chip. Had a bang. Loud noise. Tail rotor chip. And he headed to [unintelligible]. But uh, when he slowed down then he spun up, meaning his tail rotor went out. Something got in his tail rotor, I think, but let's not assume anything."  |
| 11:31:51                       | [End of video file 11 & beginning of video file 12]                                                                                                                                                                                                                                                                                                                           |
| 11:32:11                       | The helicopter landed at PHTO.                                                                                                                                                                                                                                                                                                                                                |
| 11:32:23                       | [End of video file 12]                                                                                                                                                                                                                                                                                                                                                        |



**Figure 5. Event helicopter - final snapshot from the video before impact.**



**Figure 6. Witness helicopter's initial view of accident helicopter. The accident helicopter is outlined in red.**



**Figure 7. Witness helicopter's view of accident helicopter beginning to rotate counterclockwise. The accident helicopter is outlined in red.**



**Figure 8. Witness helicopter's view of accident helicopter impacting the ground. The accident helicopter is outlined in red.**



**Figure 9. Witness helicopter's view of accident helicopter with smoke. The accident helicopter is outlined in red.**