National Transportation Safety Board

Office of Research and Engineering

Washington, DC 20594

HWY23MH015

# PERSONAL ELECTRONIC DEVICE DATA

Specialist's Factual Report

March 21, 2024

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## A. CRASH

Location:     Highland, Illinois
Date:         July 12, 2023
Time:         0148 central daylight time (CDT)

## B. PERSONAL ELECTRONIC DEVICE DATA SPECIALIST

Specialist                  Deven Chen
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                            National Transportation Safety Board (NTSB)

## C. DETAILS OF THE INVESTIGATION

A recorder group was not convened. The NTSB Vehicle Recorder Division received the following personal electronic device (PED) data electronically:

> Owner:          Greyhound Motorcoach Driver
>
> Data #1:        Work Phone Cellebrite[1] Data Extraction
>
> Data #2:        Personal Phone Cellebrite Data Extraction

The Cellebrite data extractions were obtained from the Illinois State Police. The extractions obtained were logical extractions.[2] The data extractions were viewed and examined with a laboratory analysis tool for data pertinent to the crash. A month of data from the work phone and a period of 72 hours prior to the crash from the personal phone were examined. The crash occurred at approximately 0148 CDT on July 12, 2023.

### 1.0 Device Description

PEDs are a category of devices comprised primarily of portable computing devices and mobile phones. Portable computing devices are typically capable of internet access, email, messaging services, and can run user-installed applications to perform specific tasks. Depending on the model, mobile phones can perform many of the same tasks as portable computing devices, plus have voice call and text messaging capabilities. PED user and system data is typically stored on non-volatile memory (NVM) and can be accessed through manufacturer-provided interfaces. [3]

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[1] Cellebrite produces digital forensic tool set for collection, analysis, and management of digital data from predominantly personal electronic devices.

[2] Logical extraction of a mobile device is the process of pulling information by communicating with the device's operating system using an Application Programming Interface. Extracting data this way is easy and less time-consuming but cannot recover hidden or deleted information.

[3] Non-volatile memory is semiconductor memory that does not require external power for data

## 1.1    Work Phone Data Examination

All the categories of data from the work phone Cellebrite data extraction were reviewed. The following categories contained data pertinent to this investigation: "Call Log", and "Instant Messages".

### 1.1.1  Call Log

There were phone call activities under category "Call Log". Table 1 is a summary of the phone call activity. The times on the table indicate the times when the phone calls were connected.

**Table 1.** Summary of the phone call activity in the past month on the work phone. The table shows the most recent events near the top.

| # | Date/Time (CDT) | Duration (hh:mm:ss) | Direction | Status |
|---|---|---|---|---|
| 1 | 7/12/2023 7:08:57 | 00:00:00 | Incoming | Missed |
| 2 | 7/11/2023 18:49:53 | 00:00:00 | Incoming | Missed |
| 3 | 7/6/2023 11:10:19 | 00:02:10 | Outgoing | Answered |
| 4 | 7/6/2023 9:20:27 | 00:08:00 | Outgoing | Answered |
| 5 | 7/5/2023 9:37:05 | 00:00:00 | Incoming | Missed |
| 6 | 7/4/2023 2:12:29 | 00:02:01 | Incoming | Answered |
| 7 | 7/1/2023 9:12:00 | 00:03:42 | Incoming | Answered |
| 8 | 7/1/2023 8:51:32 | 00:14:35 | Incoming | Answered |
| 9 | 7/1/2023 8:50:58 | 00:00:00 | Incoming | Missed |

### 1.1.2  Instant Messages

Table 2 is a summary of the text message activity. SMS stands for short message service. The times on the table were the times when the text messages were received. From the Cellebrite logical extraction, it was not possible to determine when the messages were read.

**Table 2.** Summary of the text message activity in the past month on the work phone. The table shows the most recent events near the top.

| # | Date/Time (CDT) | Direction | Status | Message Type |
|---|---|---|---|---|
| 1 | 7/12/2023 7:28:10 | Incoming | Read | SMS |
| 2 | 7/12/2023 0:12:01 | Incoming | Read | SMS |
| 3 | 7/11/2023 22:16:01 | Incoming | Read | SMS |
| 4 | 7/11/2023 10:02:36 | Incoming | Read | SMS |
| 5 | 7/11/2023 9:27:18 | Incoming | Read | SMS |
| 6 | 7/10/2023 20:29:25 | Incoming | Read | SMS |
| 7 | 7/10/2023 20:29:23 | Incoming | Read | SMS |

retention.

## 1.2    Personal Phone Data Examination

All the categories of data from the personal phone Cellebrite data extraction were reviewed. The following categories contained data pertinent to this investigation: "Call Log", "Chats", "Device Connectivity", and "Web History".

### 1.2.1  Call Log

Table 3 is a summary of the phone call activity. The times on the table indicate the times when the phone calls were connected.

**Table 3.** Summary of the phone call activity in the 72-hours period on the personal phone. The table shows the most recent events near the top.

| # | Date/Time (CDT) | Duration (hh:mm:ss) | Direction | Status |
|---|---|---|---|---|
| 1 | 7/12/2023 6:31:18 | 00:00:00 | Incoming | Missed |
| 2 | 7/11/2023 22:09:06 | 00:06:47 | Outgoing | Answered |
| 3 | 7/11/2023 18:07:06 | 00:02:09 | Outgoing | Answered |
| 4 | 7/11/2023 12:02:34 | 00:00:00 | Outgoing | Not answered |
| 5 | 7/11/2023 11:45:55 | 00:15:01 | Outgoing | Answered |
| 6 | 7/11/2023 9:45:09 | 00:00:00 | Incoming | Rejected |
| 7 | 7/10/2023 19:32:35 | 00:11:46 | Outgoing | Answered |
| 8 | 7/10/2023 14:47:08 | 00:00:10 | Outgoing | Answered |
| 9 | 7/10/2023 14:46:17 | 00:00:12 | Outgoing | Answered |
| 10 | 7/10/2023 13:03:33 | 00:00:17 | Outgoing | Answered |
| 11 | 7/10/2023 13:03:19 | 00:00:05 | Outgoing | Answered |
| 12 | 7/10/2023 13:01:26 | 00:01:17 | Outgoing | Answered |
| 13 | 7/10/2023 12:53:59 | 00:00:25 | Incoming | Answered |
| 14 | 7/10/2023 12:38:12 | 00:00:53 | Incoming | Answered |
| 15 | 7/10/2023 10:38:36 | 00:00:10 | Outgoing | Answered |
| 16 | 7/10/2023 10:22:49 | 00:01:11 | Incoming | Answered |
| 17 | 7/10/2023 10:10:01 | 00:00:40 | Incoming | Answered |
| 18 | 7/9/2023 14:14:20 | 00:00:00 | Outgoing | Not answered |
| 19 | 7/9/2023 13:49:02 | 00:04:10 | Incoming | Answered |
| 20 | 7/9/2023 13:38:22 | 00:00:52 | Outgoing | Answered |
| 21 | 7/9/2023 13:10:56 | 00:13:12 | Outgoing | Answered |
| 22 | 7/9/2023 13:00:42 | 00:02:50 | Outgoing | Answered |
| 23 | 7/9/2023 5:45:44 | 00:07:25 | Outgoing | Answered |
| 24 | 7/9/2023 5:08:59 | 00:00:04 | Outgoing | Answered |
| 25 | 7/9/2023 4:54:57 | 00:00:02 | Outgoing | Answered |

### 1.2.2 Chats

Table 4 is a summary of the text message activity. The data regarding the direction, status, and source of the text messages were not available from the received Cellebrite logical extraction.

**Table 4.** Summary of the text message activity in the past 72-hours period on the personal phone.

| # | Date/Time (CDT) | Direction | Status | Source |
|---|---|---|---|---|
| 1 | 7/12/2023 13:24:09 | Unknown | Unknown | Unknown |
| 2 | 7/10/2023 9:44:34 | Unknown | Unknown | Unknown |
| 3 | 7/9/2023 5:10:17 | Unknown | Unknown | Unknown |
| 4 | 7/9/2023 5:09:36 | Unknown | Unknown | Unknown |
| 5 | 7/9/2023 4:55:17 | Unknown | Unknown | Unknown |
| 6 | 7/9/2023 4:55:17 | Unknown | Unknown | Unknown |

### 1.2.3 Device Connectivity

Table 5 shows that the driver's personal phone was connected to a Kia vehicle via Bluetooth at 12:41:39 on July 11, 2023, and that was the only device connectivity occurred during the 72-hours period.

**Table 5.** Summary of the device connectivity in the 72-hours period on the personal phone.

| # | Date/Time (CDT) | Device Name | Device type | Connectivity method |
|---|---|---|---|---|
| 1 | 7/11/2023 12:41:39 | Kia | Unknown | Bluetooth |

### 1.2.4 Web History

Table 6 is a summary of the web browser activity. The times on the table indicate the times when webpages were visited.

**Table 6.** Summary of the web browser history in the 72-hours period on the personal phone. The table shows the most recent events near the top.

| # | Last Visited Time (CDT) | Source |
|---|---|---|
| 1 | 7/12/2023 12:54:55 | Safari |
| 2 | 7/11/2023 12:39:11 | Safari |
| 3 | 7/11/2023 12:39:05 | Safari |
| 4 | 7/11/2023 12:39:02 | Safari |
| 5 | 7/11/2023 12:39:00 | Safari |
| 6 | 7/11/2023 12:38:30 | Safari |
| 7 | 7/11/2023 12:38:19 | Safari |
| 8 | 7/11/2023 12:38:18 | Safari |
| 9 | 7/11/2023 12:37:39 | Safari |
| 10 | 7/11/2023 12:37:33 | Safari |
| 11 | 7/11/2023 12:36:49 | Safari |
| 12 | 7/11/2023 12:36:36 | Safari |

| #  | Last Visited Time (CDT) | Source |
|----|-------------------------|--------|
| 13 | 7/11/2023 12:36:27      | Safari |
| 14 | 7/11/2023 12:36:16      | Safari |
| 15 | 7/11/2023 12:36:14      | Safari |
| 16 | 7/11/2023 12:36:01      | Safari |
| 17 | 7/11/2023 12:35:16      | Safari |
| 18 | 7/11/2023 12:35:15      | Safari |
| 19 | 7/11/2023 12:35:03      | Safari |
| 20 | 7/11/2023 12:35:02      | Safari |
| 21 | 7/11/2023 12:34:50      | Safari |
| 22 | 7/11/2023 12:34:49      | Safari |
| 23 | 7/11/2023 12:33:37      | Safari |
| 24 | 7/11/2023 12:33:32      | Safari |
| 25 | 7/11/2023 12:33:31      | Safari |
| 26 | 7/11/2023 12:33:26      | Safari |
| 27 | 7/11/2023 12:33:25      | Safari |
| 28 | 7/11/2023 12:32:51      | Safari |
| 29 | 7/11/2023 12:32:37      | Safari |
| 30 | 7/11/2023 12:32:27      | Safari |
| 31 | 7/11/2023 12:32:16      | Safari |
| 32 | 7/11/2023 12:31:55      | Safari |
| 33 | 7/11/2023 12:31:53      | Safari |
| 34 | 7/11/2023 12:31:44      | Safari |
| 35 | 7/11/2023 12:31:42      | Safari |
| 36 | 7/11/2023 12:31:37      | Safari |
| 37 | 7/11/2023 12:31:35      | Safari |
| 38 | 7/11/2023 12:31:33      | Safari |
| 39 | 7/11/2023 12:31:16      | Safari |
| 40 | 7/11/2023 12:31:02      | Safari |
| 41 | 7/11/2023 12:30:50      | Safari |
| 42 | 7/11/2023 12:30:38      | Safari |
| 43 | 7/11/2023 12:29:30      | Safari |
| 44 | 7/11/2023 12:29:19      | Safari |
| 45 | 7/11/2023 12:28:44      | Safari |
| 46 | 7/11/2023 12:28:43      | Safari |
| 47 | 7/11/2023 12:28:17      | Safari |
| 48 | 7/11/2023 12:28:16      | Safari |
| 49 | 7/11/2023 12:27:56      | Safari |
| 50 | 7/11/2023 12:27:55      | Safari |
| 51 | 7/11/2023 12:27:41      | Safari |
| 52 | 7/11/2023 12:27:40      | Safari |
| 53 | 7/11/2023 12:27:22      | Safari |
| 54 | 7/11/2023 9:39:32       | Safari |

| # | Last Visited Time (CDT) | Source |
|---|---|---|
| 55 | 7/11/2023 9:39:31 | Safari |
| 56 | 7/11/2023 9:39:10 | Safari |
| 57 | 7/11/2023 9:39:09 | Safari |
| 58 | 7/11/2023 9:39:07 | Safari |
| 59 | 7/10/2023 18:46:12 | Safari |
| 60 | 7/10/2023 18:46:11 | Safari |
| 61 | 7/10/2023 18:46:05 | Safari |
| 62 | 7/10/2023 18:45:40 | Safari |
| 63 | 7/10/2023 18:45:16 | Safari |
| 64 | 7/10/2023 18:44:16 | Safari |
| 65 | 7/10/2023 18:44:10 | Safari |
| 66 | 7/10/2023 18:44:09 | Safari |
| 67 | 7/10/2023 18:44:08 | Safari |
| 68 | 7/10/2023 18:43:19 | Safari |
| 69 | 7/10/2023 18:43:18 | Safari |
| 70 | 7/10/2023 18:43:08 | Safari |
| 71 | 7/10/2023 18:43:05 | Safari |
| 72 | 7/10/2023 17:20:37 | Safari |
| 73 | 7/10/2023 17:20:36 | Safari |
| 74 | 7/9/2023 6:48:44 | Safari |
| 75 | 7/9/2023 6:48:43 | Safari |
| 76 | 7/9/2023 6:47:58 | Safari |
| 77 | 7/9/2023 6:47:33 | Safari |
| 78 | 7/9/2023 6:47:02 | Safari |
| 79 | 7/9/2023 6:46:56 | Safari |
| 80 | 7/9/2023 6:46:42 | Safari |
| 81 | 7/9/2023 6:46:02 | Safari |
| 82 | 7/9/2023 6:45:53 | Safari |
| 83 | 7/9/2023 6:45:44 | Safari |
| 84 | 7/9/2023 6:45:19 | Safari |
| 85 | 7/9/2023 6:45:15 | Safari |
| 86 | 7/9/2023 6:44:36 | Safari |
| 87 | 7/9/2023 6:43:32 | Safari |
| 88 | 7/9/2023 6:43:31 | Safari |
| 89 | 7/9/2023 6:43:19 | Safari |
| 90 | 7/9/2023 6:43:18 | Safari |
| 91 | 7/9/2023 6:43:12 | Safari |
| 92 | 7/9/2023 6:43:11 | Safari |
| 93 | 7/9/2023 6:43:09 | Safari |

### 1.2.5 Images

There were three images saved into the Gallery of the phone between 20:00 and 21:00 on July 11, 2023. The images showed some people in a restaurant setting but without the presence of the Greyhound motorcoach driver. After a consulting with Cellebrite, it was determined that those three images were not taken by the camera of the driver's phone and that those images were saved to the phone by the driver from Facebook. Table 7 shows a summary of when the images were saved on the phone.

**Table 7.** Summary of the three images saved on the personal phone between 20:00 and 21:00 on July 11, 2023.

| # | Saved Date/Time | Image Source |
|---|---|---|
| 1 | 7/11/2023 20:21:30 | Facebook |
| 2 | 7/11/2023 20:21:13 | Facebook |
| 3 | 7/11/2023 20:21:03 | Facebook |

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