



**HUMAN PERFORMANCE FACTORS GROUP CHAIRMAN'S  
FACTUAL REPORT**

**Multiple Vehicle Fatal Collision**

**Mount Pleasant, PA**

**HWY20MH002**

(33 Pages)

**NATIONAL TRANSPORTATION SAFETY BOARD  
OFFICE OF HIGHWAY SAFETY  
WASHINGTON, D.C.**

**HUMAN PERFORMANCE FACTORS GROUP CHAIRMAN'S  
FACTUAL REPORT**

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**A. CRASH INFORMATION**

**Location:** Interstate 70/76 (I-70/76), Pennsylvania Turnpike at mile-marker 86.1 westbound, Mount Pleasant Township, in Westmoreland County, Pennsylvania

**Vehicle #1:** 2005 Van Hool 57-passenger motorcoach C2045

**Operator #1:** 58-year-old male (fatally injured)

**Occupants:** 59 passengers  
(2 fatalities, 57 various injuries)

**Carrier:** Z&D Tour Inc., Rockaway, NJ

**Vehicle #2:** 2018 Freightliner Cascadia truck-tractor towing a 2019, 53-foot Hyundai Translead semi-trailer

**Operator #2:** 35-year-old male (not injured)

**Passenger:** 35-year-old-male (minor injury)

**Carrier:** FedEx Ground, Moon Township, PA

**Vehicle #3:** 2018 Freightliner Cascadia truck-tractor towing a 2018, 53-foot Stoughton semitrailer

**Operator #3:** 53-year-old male (fatally injured)

**Passenger:** 48-year-old male (fatally injured)

**Carrier:** United Parcel Service, Harrisburg, PA

**Vehicle #4:** 2007 Mercedes Benz C280  
**Operator #4:** 46-year-old male (not injured)  
**Passenger:** 20-year-old-male (not injured)  
**Passenger:** 20-year-old male (not injured)  
**Vehicle #5:** 2018 Freightliner Cascadia truck-tractor towing a 2020, 20.5-foot Stoughton semitrailer  
**Operator #5:** 62-year-old male (not injured)  
**Passenger:** 41-year-old male (not injured)  
**Carrier:** United Parcel Service, Willow Grove, PA  
**Date:** January 5, 2020  
**Time:** Approximately 3:30 a.m. local time  
**NTSB #:** **HWY20MH002**

## **B. HUMAN PERFORMANCE FACTORS GROUP**

Kenneth Bragg, Senior Human Factors Investigator, Group Chairman  
NTSB Office of Highway Safety  
490 L'Enfant Plaza East, S.W., Washington, DC 20594

## **C. CRASH SUMMARY**

For a summary of the crash, refer to the *Crash Summary Report* in the docket for this investigation.

## **D. DETAILS OF THE HUMAN PERFORMANCE FACTORS INVESTIGATION**

The Human Performance Factors investigation focused on the behavioral, medical, operational, and environmental factors associated with the driver of the 2005 Van Hool motorcoach, hereafter referred to as the motorcoach driver, the driver of the 2018 Freightliner Cascadia truck tractor, hereafter referred to as the FedEx Driver; the driver of a second 2018 Freightliner Cascadia truck tractor, hereafter referred to as UPS Driver #1 and the driver of a third 2018 Freightliner Cascadia truck tractor, hereafter referred to as UPS Driver #2. The driver of the Mercedes Benz avoided the initial crash sequence but was stuck by UPS Truck #2 after coming to rest. The driver of the Mercedes Benz is not a focus of this investigation. The factors which were examined are discussed in the sections below.

## **1. Motorcoach Driver**

The driver of the 2005 Van Hool 57-passenger motorcoach was a 58-year-old male from Flushing, NY.

### **1.1. Licensing**

The motorcoach driver held a valid New York Class A Commercial Driver License (CDL) with a non-student passenger endorsement.<sup>1</sup> He first obtained a CDL in 2009 in California. In 2011, he transferred his California CDL to New York; knowledge and skill tests were not required.<sup>2</sup> At the time of the crash, the Motorcoach Driver's held a valid Class A license with a passenger endorsement with no restrictions. The license was issued in 2018 and expires on his birthday in 2023.

#### **1.1.1. CDL Guidance**

The New York State Commercial Driver's Manual provides the following guidance for controlling speed and operating commercial motor vehicles (CMV's) during adverse weather conditions:<sup>3</sup>

- Drive slowly and smoothly on slippery roads.
- If it is very slippery you shouldn't drive at all. Stop at the first safe place.
- Take curves at slower speeds and don't brake while in curves.
- Go slowly and watch far enough ahead to keep a steady speed.
- Most serious skids result from driving too fast for road conditions.

#### **1.1.2. License History**

A review of the motorcoach driver's New York and California license history shows one traffic violation conviction. The motorcoach driver was convicted of failure to stop at a stop sign in NY on November 20, 2015.<sup>4</sup> Pennsylvania court records show that the motorcoach driver was issued a citation on September 10, 2019 for exceeding the speed limit by 14 mph. A court hearing related to the speeding violation was held on November 21, 2019. The motorcoach driver was

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<sup>1</sup> A New York Commercial Class A Driver License permits the holder to operate, in commerce, a vehicle with a gross vehicle weight rating (GVWR) of 26,001 pounds or more in combination with a trailer with a GVWR of 10,001 pounds or more. A non-student passenger endorsement allows the holder to operate passenger vehicles designed to transport more than 15 passengers.

<sup>2</sup> To transfer an out of state CDL to New York CDL the license holder must surrender the out of state license and complete a CDL application. The applicant must successfully complete a hazardous materials (HM) knowledge test in order to maintain a HM endorsement.

<sup>3</sup> Human Performance Factors Attachment – New York State Commercial Driver's Manual, Section 2: Driving Safety.

<sup>4</sup> Human Performance Factors Attachment – Motorcoach Driver's License History.

found guilty of Improper Display of Plate; this conviction does not appear on his driving record.<sup>5</sup> There was no information listed in the National Driver Register (NDR) Problem Driver Pointer System (PDPS) for the motorcoach driver.<sup>6</sup>

## **1.2. Crash History**

Information regarding the motorcoach driver's involvement in past crashes was obtained from a comprehensive database of public records. The information indicated that the motorcoach driver had been involved in two crashes; 7/17/19 in New Jersey, and 9/14/19 in New York. A brief synopsis of each crash is described in the sections below.

### **1.2.1. 7/17/19 Crash**

Information from this crash was obtained from a crash report from the Port Authority of NY&NJ.<sup>7</sup> The motorcoach driver was operating an over-the-road motorcoach in Jersey City, NJ when he had a minor collision with a passenger car while merging. The crash resulted in no injuries and property damage was estimated to be less than \$500.

### **1.2.2. 9/14/19 Crash**

Information on this crash was obtained from an insurance industry database. The crash occurred in Lake Success, NY and resulted in minor property damage only. The motorcoach driver, who was operating a passenger car, struck the rear of a vehicle ahead. There is no police crash report or traffic violation associated with this crash and it does not appear in the motorcoach driver's license history

## **1.3. Experience**

According to the motorcoach driver's employment application in his Z&D Tour Inc driver file, he was a FMCSR regulated delivery driver in his previous job; from July 2014 until May 2019. Prior to the delivery job, he was employed as a motorcoach operator from May 2014 until July 2014. According to the motorcoach driver's wife, he drove motorcoaches for several years in China. The motorcoach driver had been employed with the accident carrier, Z&D Tour Inc., since May 2019.

## **1.4. Route Experience**

The crash trip was a dedicated passenger route which began in Flushing, NY. Passenger pickup stops were in Manhattan, NY and Hackensack, NJ. A driver exchange took place in New Stanton, PA. After being relieved, the motorcoach driver typically was scheduled to have 24 hours off duty before making a return trip to a carrier facility in Brooklyn, New York. According to the

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<sup>5</sup> See Human Performance Factors Attachment – Motorcoach Driver's Pennsylvania Traffic Citation.

<sup>6</sup> The National Driver Register Problem Driver Pointer System is computerized database, maintained by the National Highway Traffic Safety Administration, which contains information on drivers from all states who have been convicted of serious traffic violations or have had their licenses suspended or revoked.

<sup>7</sup> See Human Performance Factors Attachment – 7-17-19 Crash Report.

carrier, the motorcoach driver had driven the crash route since becoming employed in May 2019. On average, he made about 20 trips per month.

### 1.4.1. Crash Trip

The crash trip originated at a carrier facility in Brooklyn, NY on January 4, 2019, at about 8:47 p.m. After he picked up the motorcoach, the driver made his first passenger stop in Manhattan, NY. After loading passengers and luggage, the driver departed around 10:00 p.m. The driver was scheduled to arrive in New Stanton, Pennsylvania, between 3:45 – 4:15 a.m. to exchange drivers. The crash occurred about 10 miles from the driver exchange location. The relief driver was not able to be interviewed.

### 1.5. Activities Prior to the Crash

Specific information pertaining to the motorcoach driver’s activities in the days leading up to the crash were obtained from his cell phone records<sup>8</sup> and the electronic logging device aboard the motorcoach.<sup>9</sup> The motorcoach driver’s wife was interviewed about his activities but was unable to provide specific details as to when he slept or his activities while off-duty.<sup>10</sup> Generally, she stated that he only worked one job and was home during his off-duty time. She said that he did not have difficulty sleeping. The motorcoach driver activities are listed in **Table 1** below.

**Table 1:** Motorcoach driver’s activities leading up to crash.

Wednesday, January 1, 2020 <sup>11</sup>		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
Thursday, January 2, 2020 <sup>12</sup>		
<u>Time</u>	<u>Event</u>	<u>Source</u>
7:15 p.m.	Driver began working, Brooklyn, NY	Electronic Logging Device
7:51 p.m.	Driver made passenger pickup, Manhattan, NY	Electronic Logging Device
Friday, January 3, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
1:34 a.m.	Driver received cell phone call (less than 1 minute)	Cell Phone Records
2:15 a.m.	Driver went off duty, New Stanton, PA	Electronic Logging Device
8:53-8:56 p.m.	Driver received cell phone call	Cell Phone Records
9:04 p.m.	Driver received cell phone call (less than 1 minute)	Cell Phone Records
9:11 p.m.	Driver made cell phone call (less than 1 minute)	Cell Phone Records
9:15 p.m.	Driver received cell phone call (less than 1 minute)	Cell Phone Records
11:02 p.m.	Driver made cell phone call (terminates next day)	Cell Phone Records

<sup>8</sup> See Human Performance Factors Attachment – Motor Coach Driver’s Cell Phone Records

<sup>9</sup> See Human Performance Factors Attachment – Motor Coach Driver’s Electronic Logging Device Records

<sup>10</sup> The motorcoach driver’s wife would not permit the interview to be recorded; there is no transcript of the interview.

<sup>11</sup> Cellphone records were not obtained for this date.

<sup>12</sup> Cellphone records were not obtained for this date.

Saturday, January 4, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
12:15 a.m.	Driver ended cell phone call (1hr, 13 mins)	Cell Phone Records
1:48 a.m.	Driver made cell phone call (less than 1 minute)	Cell Phone Records
2:00 a.m.	Driver went on duty, New Stanton, PA	Electronic Logging Device
7:54 a.m.	Driver made passenger stop, Manhattan, NY	Electronic Logging Device
8:15 a.m.	Driver went off duty, Queens, NY	Electronic Logging Device
6:41-6:43 p.m.	Driver made (2) cell phone calls	Cell Phone Records
8:47 p.m.	Driver went on duty, Queens, NY	Electronic Logging Device
9:01 p.m.	Driver began driving in Greenpoint, NY	Electronic Logging Device
9:34-9:35 p.m.	Driver received cell phone call	Cell Phone Records
9:48 p.m.	Driver picked up passengers in Manhattan, NY	Electronic Logging Device
Sunday, January 5, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
2:09 a.m.	Driver fueled, in Chalybeate, PA	Electronic Logging Device
2:34 a.m.	Driver resumed driving in Chalybeate, PA	Electronic Logging Device
<b>3:30 a.m.</b>	<b>Crash occurs in Mount Pleasant, PA</b>	Police Records

## 1.6. Work Schedule

Information pertaining to the motorcoach driver's work schedule was obtained from ELD records the month leading up to the crash (December 2019). All of the information in this section is in reference to that time period. The records show that the driver did not work a schedule with consistent work times or days off. The driver's work shifts consisted of a dedicated route from and to a carrier facility in Queens, NY and a driver exchange point in New Stanton, PA. Each segment of the trip comprised a single shift of about 6-7 hours. The start times of consecutive shifts rotated; shifts which began in the evening were followed by shifts which began in early morning hours and vice versa. There was a break of about 24 hours between evening shifts which were followed by early morning shifts. There was break of about 12 hours (about 8 a.m. to 8 p.m.) between morning shifts that were followed by an evening shift. In the three-week period prior to the crash, the driver worked 9 consecutive shifts, had a day off, worked an additional 5 consecutive shifts and had another day off. After the day off, the driver worked three shifts until the crash occurred.

The motorcoach driver's work shifts are listed in **Table 2** below. Shifts which began and ended on consecutive days are grouped together. Shifts which began in the early morning hours are shaded in orange; shifts which began in the evening are shaded in blue. The table does not show on-duty driving times, breaks or any hours-of-service categories.

**Table 2:** Motorcoach driver's work schedule leading up to the crash.

<u>Day</u>	<u>Date</u>	<u>From</u>	<u>To</u>	<u>Hours</u>
<b>Su</b>	December 1, 2019	2:30 a.m. PA	9:30 a.m. NY	7
<b>Mo</b>	December 2, 2019	Off Duty	Off Duty	
<b>Tu</b>	December 3, 2019	Off Duty	Off Duty	
<b>We</b>	December 4, 2019	Off Duty	Off Duty	

Th	December 5, 2019	Off Duty	Off Duty	
Fri	December 6, 2019	9:00 p.m.	--	
Sat	December 7, 2019	--	3:30 a.m.	6.5
Su	December 8, 2019	2:30 a.m.	9:00 a.m.	6.5
Mo	December 9, 2019	Off Duty	Off Duty	
Tu	December 10, 2019	Off Duty	Off Duty	
We	December 11, 2019	8:47 p.m. NY	--	
Th	December 12, 2019	--	4:00 a.m. PA	7.2
Fri	December 13, 2019	8:45 p.m. NY	--	
Sa	December 14, 2019	--	3:50 a.m. PA	7.2
Su	December 15, 2019	2:25 a.m. PA	8:52 a.m. NY	6.4
Su	December 15, 2019	8:50 p.m. NY	--	
Mo	December 16, 2019	--	4:00 a.m. PA	7.16
Tu	December 17, 2019	2:40 a.m. PA	10:00 a.m. NY	7.3
We	December 18, 2019	8:40 p.m. NY		
Thu	December 19, 2019		4:00 a.m. PA	7.3
Fri	December 20, 2019	2:00 a.m. PA	9:00 a.m. NY	7
Fri	December 20, 2019	9:00 p.m. NY	--	
Sa	December 21, 2019	--	4:15 a.m. PA	7.25
Su	December 22, 2019	2:00 a.m. PA	8:30 a.m. NY	6.5
Su	December 22, 2019	8:45 p.m. NY	--	
Mo	December 23, 2019	--	4:00 a.m. PA	7.25
Tu	December 24, 2019	1:45 a.m. PA	8:15 am NY	6.5
We	December 25, 2019	Off Duty	Off Duty	
Th	December 26, 2019	8:50 p.m. NY	--	
Fr	December 27, 2019	--	3:30 a.m. PA	6.6
Sa	December 28, 2019	2:30 a.m. PA	9:00 a.m. NY	6.5
Sa	December 28, 2019	9:00 p.m. NY	--	
Su	December 29, 2019	--	4:00 a.m. PA	7
Mo	December 30, 2019	2:15 a.m. PA	12:15 p.m. NY	10
Mo	December 30, 2019	9:00 p.m. NY	--	
Tue	December 31, 2019	--	3:30 a.m. PA	6.5
We	January 1, 2020	Off Duty	Off Duty	
Th	January 2, 2020	7:15 p.m. NY		
Fr	January 3, 2020		2:15 a.m. PA	7
Sa	January 4, 2020	2:00 a.m. PA	8:15 a.m. NY	6.25
Sa	January 4, 2020	8:45 p.m. NY	--	
Su	January 5, 2020		<b>3:30 a.m.</b>	

### 1.7. Carrier Duty Policies

Z & D Tour Inc, the carrier which operated the motorcoach, issues guidance on obtaining rest in the Safety and Operations Policies and Procedures Manual, Appendix B, Hours of Service.<sup>13</sup>

<sup>13</sup> Human Performance Factors Attachment – Z & D Tours Policies and Procedures Manual, Appendix B.



The manual provides detail hours of service regulations for passenger-carrying CMV drivers. The policy also lists company-imposed penalties for violating hours of service policies:

- 1st Offense - Verbal Warning - Driver counseled
- 2nd Offense - Written Warning - Driver counseled and letter put in personnel file
- 3rd Offense - 1-day suspension without pay- Driver counseled and required to attend a log class and letter put in personnel file
- 4th Offense - 3-day suspension without pay- Driver counseled and required to attend a log class and letter put in personnel file
- 5th Offense - 5-day Suspension without pay - Driver counseled and required to attend a log class and letter put in personnel file
- 6th Offense – Termination

Violations which occur within a twelve-month period are considered cumulative. Violations found to be flagrant or willful may result in immediate termination. There were no records which indicated that the driver had violated this policy.

## **1.8. Sleep Factors**

This section of the report describes factors associated with the motorcoach driver's opportunity to obtain rest. Because the driver could not be interviewed following the crash, precise information on when he obtained sleep is limited.

### **1.8.1. Sleep Opportunity**

Cell phone records and work records were the primary source of information used to identify opportunities for rest. Periods of time were excluded as available for rest when it was determined that he was engaged in some type of activity. This information clearly establishes when the motorcoach driver could not have slept; however, there was no information obtained which identified specific times when the driver slept.

In the five-day period leading up to the crash, the motorcoach driver was off duty on January 1; there is no information available on his availability for rest. On January 2, he began the first trip of the week in Queens, NY at about 7:15 p.m. He arrived in New Stanton, PA on January 3<sup>rd</sup> at 2:15 a.m.; afterwards, he was off for about 24 hours. Cell phone records show that the driver sporadically used the phone from about 9 p.m. on January 3<sup>rd</sup> until 12:15 a.m. on January 4<sup>th</sup>. He began the return trip home to Queens, New York on January 4, 2020 at 2:00 a.m. and arrived at 8:15 a.m. Afterwards he was off duty for about 12 hours. He began using the phone at about 6:40 p.m. and began another trip to New Stanton; at about 8:45 p.m. The crash occurred at about 3:30 a.m. Although there was no specific information as to when the motorcoach driver slept, the times available for sleep are listed below in **Table 3**.

**Table 3:** Motorcoach driver's sleep opportunity

From		To		Elapsed Time
Date	Time	Date	Time	
January 2, 2020	8:00 a.m.	January 2, 2020	6:45 p.m.	10 hours 45 minutes
January 3, 2020	2:15 a.m.	January 3, 2020	8:53 p.m.	18 hours 38 minutes
January 4, 2020	8:15 a.m.	January 4, 2020	6:41 p.m.	10 hours 25 minutes

### 1.9. Psychological Factors

According to his wife of 30 years, the motorcoach driver lived in Flushing, NY with his wife and his adult son. His wife did not know of any recent life stressors and he had no history of any mental health conditions.

### 1.10. Medical Factors

Information on the motorcoach driver’s general health, driver fitness exam, sleep, health, and post-crash toxicology is documented in the *Medical Factual Report* for this investigation.

#### 1.10.1. Medical Examination Report for Commercial Motor Vehicle Driver Fitness Determination (CDL Medical Exam)

Commercial drivers in the United States are required by *Federal Motor Carrier Safety Regulations* (FMCSRs) to be medically certified as being physically qualified to drive a commercial vehicle.<sup>14</sup> These examinations may result in one of four outcomes with respect to medical qualification:

- The driver is found to meet the standards in 49 *Code of Federal Regulations* (CFR) §391.41 and is given a 2-year certificate;<sup>15</sup>
- The driver is found to meet the standards, but requires periodic evaluation for one or more conditions and is qualified for 3 months, 6 months, or 1 year;
- The driver is temporarily disqualified due to a condition or medication; or;
- The driver is found not to meet the standards.

The motorcoach driver’s most recent medical Examination for Commercial Driver Fitness Determination was on May 31, 2018. The exam was conducted by a physician at a family practice clinic in Flushing, NY. In the self-reporting health history section on the report, the motorcoach driver indicated “No” to having an illness or injury in the last 5 years and did not report taking any medications. The motorcoach driver’s vital signs, vision, and hearing were found to be within normal limits. Following the examination, the motorcoach driver was given a two-year medical certificate with no conditions or restrictions.

<sup>14</sup> 49 Code of Federal Regulations §391.41.

<sup>15</sup> For more information on who must be examined and the examination process, please see 49 CFR §391.43 and 49 CFR §391.45.

## **1.11. Driver Response to Hazard**

Information on motorcoach driver's response to the hazard which initiated the crash sequence was derived from an interview with a passenger aboard the motorcoach.<sup>16</sup> See the NTSB *Video Study* report and *Reconstruction Group Factual Report* for factual information on the movement of the motorcoach prior to and during the crash sequence.

According to the passenger, when the crash occurred he was seated behind the bus driver on the left side of the bus in the aisle seat. The passenger was about to fall asleep; when he opened his eyes, other passengers were screaming, and the bus was drifting to the left. The screaming passengers startled the driver and he made "a wide swing to the right." After going to the right, the bus hit the embankment and overturned. The passenger did not observe that the motorcoach driver appeared sleepy prior to reaching the vicinity of the crash.

## **2. FedEx Driver**

The driver of the 2018 Freightliner Cascadia was a 35-year-old male from Hemet, CA. Although he was employed by Sioux Trucking Inc. However, at the time of the crash FedEx had contracted the delivery to Sioux Trucking. Through the lease agreement the driver and combination vehicle are considered to be a FedEx driver and vehicle. The FedEx truck was operated by a two-man driving team. When the crash occurred, the co-driver was asleep in the sleeper berth. The focus of this section of the report is of the driver that was operating the FedEx truck when the crash occurred.

### **2.1. Licensing**

The FedEx driver held a valid California Class A Commercial Driver License (CDL) with the following endorsements:

- Double and triple trailers<sup>17</sup>
- Passenger transportation
- School bus; and
- Tank vehicles

According to the driver, he first obtained his CDL sometime in 2010. He attended CDL training at a truck driving school in Rialto, CA; the school is no longer in business, training curriculum was not obtained.

#### **2.1.1. CDL Guidance**

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<sup>16</sup> See Human Performance Factors Attachment – Motorcoach Passenger Interview Transcript.

<sup>17</sup> A double/triple trailer endorsement allows the holder to operate a combination vehicle coupled to two or three trailers simultaneously.

The California Commercial Driver Handbook provides the following guidance for controlling speed and operating commercial motor vehicles (CMV's) during adverse weather conditions:<sup>18</sup>

- Drive slowly and smoothly on slippery roads.
- Driving too fast is a major cause of fatal accidents.
- You must adjust your speed depending on driving conditions.
- Take curves at slower speeds and do not brake while in curves.
- Try hard to anticipate stops early and slow down gradually.
- Do not brake any harder than necessary, and do not use the engine brake or speed retarders.

### **2.1.2. License History**

The California CDL was issued in 2015 with an expiration in 2020. There was no listing of traffic violations or crashes in the FedEx Driver's California Driving Record.<sup>19</sup> In the driver's employment application he stated he had a prior crash on January 15, 2016 for a "non-preventable" crash involving a school bus in California.

## **2.2. Crash History**

Information regarding the FedEx Driver's involvement in past crashes was obtained from a comprehensive database of public records. The information indicates that he was involved in a crash on October 8, 2015. As referenced in section 2.1.2 above, according to the driver's employment application, he had a "non-preventable" crash involving a school bus on January 15, 2016 for in California. There was no further information obtained regarding either crash.

## **2.3. Experience**

According to the FedEx driver's employment records, the FedEx driver first began operating commercial motor vehicles in 2010. He has primarily operated school buses and truck tractors. He began working for his current employer on April 13, 2018. He was normally assigned to the truck involved in this crash. For more information on the FedEx driver's commercial driving employment history, see the *Motor Carrier Factors Group Chairman's Report* for this investigation.

## **2.4. Route Experience**

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<sup>18</sup> Human Performance Factors Attachment – California Commercial Driver Handbook, Section 2: Driving Safety.

<sup>19</sup> Human Performance Factors Attachment – FedEx Driver's License History.

According to the FedEx Driver, the crash trip began in Rialto, California. Although the crash trip was not a recurring route, the driver stated that he has driven on the Pennsylvania Turnpike previously and was familiar with the roadway.

## 2.5. Activities Prior to the Crash

Information about the FedEx Driver’s activities leading up to the crash was obtained through an interview with the driver, cell phone records from the cellular service provider<sup>20</sup>, and the electronic logging device aboard the FedEx Truck.<sup>21</sup> The driver was unable to provide specific details of when he drove or slept. His activities are listed in **Table 4** below. The FedEx driver’s opportunity for rest is described in a subsequent section.

**Table 4:** FedEx driver’s activities leading up to crash.

Wednesday, January 1, 2020 <sup>22</sup>		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
Thursday, January 2, 2020 <sup>23</sup>		
<u>Time</u>	<u>Event</u>	<u>Source</u>
8:51 a.m.	Off Duty (crash trip began) San Bernardino, CA	Electronic Logging Device
9:16 p.m.	On duty/driving Kingman, AZ	Electronic Logging Device
Friday, January 3, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
12:00 a.m.	Continued driving from previous day	Electronic Logging Device
8:30 a.m.	Driver went off duty in Tucumcari, NM	Electronic Logging Device
10:45-11:13 a.m.	Driver received cell phone call	Cell Phone Records
2:23-2:46 p.m.	Driver engaged in text message exchange	Cell Phone Records
3:38 p.m.	Received cell phone call (42 min duration)	Cell Phone Records
4:09-4:49 p.m.	Driver engaged in text message exchange	Cell Phone Records
8:14 p.m.	On duty/driving, Springfield, MO	Electronic Logging Device

Saturday, January 4, 2020

<sup>20</sup> See Human Performance Factors Attachment – FedEx Driver’s Cell Phone Records.

<sup>21</sup> See Human Performance Factors Attachment – FedEx Driver’s Electronic Logging Device Records.

<sup>22</sup> No cell phone records received for January 1, 2020.

<sup>23</sup> No cell phone records received for January 2, 2020.

<u>Time</u>	<u>Event</u>	<u>Source</u>
12:00 a.m.	Continued driving from previous day	Electronic Logging Device
12:21-12:39 a.m.	Driver received cell phone call	Cell Phone Records
2:40 a.m.	Driver sent two text messages <sup>24</sup>	Cell Phone Records
6:59 a.m.	Driver went off duty, Jefferson Twp., OH	Electronic Logging Device
10:45-10:48 a.m.	Driver received cell phone call	Cell Phone Records
11:54 a.m.-1:29 p.m.	Driver engaged in text message exchange	Cell Phone Records
2:46 – 4:00 p.m.	Driver engaged in text message exchange	Cell Phone Records
5:57 p.m.	Driver went on duty, South Amboy, NY	Electronic Logging Device
7:44 p.m.	Driver went off duty, Union Twp., NJ (10 min break)	Electronic Logging Device
8:32 p.m.	Driver made cell phone call (under one minute)	Cell Phone Records
10:55 p.m.	Driver made cell phone call (under one minute)	Cell Phone Records
<b>Sunday, January 5, 2020</b>		
<u>Time</u>	<u>Event</u>	<u>Source</u>
12:00 a.m.	Continued driving from previous day	Electronic Logging Device
12:01-12:15 a.m.	Driver received cell phone call	Cell Phone Records
12:31-1:25 a.m.	Driver received cell phone call	Cell Phone Records
1:26-1:31 a.m.	Driver Received cell phone call	Cell Phone Records
<b>3:30 a.m.</b>	<b>Crash occurred in Mount Pleasant, PA</b>	Police Records

## 2.6. Work Schedule

Information pertaining to the FedEx driver’s work schedule was obtained from ELD records the month leading up to the crash (December 2019). All of the information in this section is in reference to that time period. The FedEx driver was part of an over-the-road two man driving team. ELD records show that although the FedEx driver had varying days off, he most often worked during overnight hours. His shifts were about ten hours long. The days prior to the crash, the driver worked two days, had two days off, and had been working four consecutive days when the crash occurred. During the work week, the driver’s off-duty sleep occurred in the sleeper berth.

The FedEx driver’s work shifts are listed in **Table 5** below. Shifts which began and ended on consecutive days are grouped together. The state in which the shift began or ended is listed with the time; times are reported to the nearest ¼ hour. Shifts which began in the early morning hours are shaded in orange; shifts which began in the afternoon or evening are shaded in blue. The table does not show on-duty driving times, breaks, or hours-of-service categories.

**Table 5:** FedEx driver’s work schedule leading up to the crash.

	<u>Date</u>	<u>From</u>	<u>To</u>	<u>Hours</u>
<b>Su</b>	December 1, 2019	Off Duty	Off Duty	
<b>Mo</b>	December 2, 2019	Off Duty	Off Duty	
<b>Tu</b>	December 3, 2019	10:45 p.m. AZ	--	--
<b>We</b>	December 4, 2019	--	9:45 a.m. TX	11
<b>We</b>	December 4, 2019	8:45 p.m. AR	--	--

<sup>24</sup> The FedEx driver’s ELD shows that he was off duty in Brazil, IN during this cell phone use.

Th	December 5, 2019	--	9:45 a.m. TN	13
Th	December 5, 2019	9:15 p.m. VA	--	--
Fr	December 6, 2019	--	11:00 a.m. PA	13.75
Fr	December 6, 2019	10:15 p.m. IN	--	--
Sa	December 7, 2019	--	10 a.m. OK	11.75
Sa	December 7, 2019	10:30 p.m. NM	--	--
Su	December 8, 2019	--	10:00 a.m. CA	11.5
Mo	December 9, 2019	8:00 p.m. CA	--	--
Tu	December 10, 2019	--	3:35 a.m. UT	7.5
Tu	December 10, 2019	4:00 p.m. NV	--	--
We	December 11, 2019	--	4:15 a.m. NV	12.25
We	December 11, 2019	4:45 p.m.	--	--
Th	December 12, 2019	--	6:30 a.m. NV	13.75
Th	December 12, 2019	8:00 p.m. UT	--	--
Fr	December 13, 2019	--	8:15 a.m. NV	12.25
Fr	December 13, 2019	7:15 p.m. UT	--	--
Sa	December 14, 2019	--	3:15 a.m. CA	8
Su	December 15, 2019	Off Duty	Off Duty	
Mo	December 16, 2019	Off Duty	Off Duty	
Tu	December 17, 2019	6:45 p.m. AZ	--	--
We	December 18, 2019	--	5:30 a.m. NM	10.75
We	December 18, 2019	6:15 p.m. MO	--	--
Th	December 19, 2019	--	5:30 a.m. OH	11.25
Th	December 19, 2019	4:30 p.m. NJ	--	--
Fr	December 20, 2019	--	2:30 a.m. OH	10
Fr	December 20, 2019	1:30 p.m. MO	--	--
Sa	December 21, 2019	--	12:30 a.m. NM	11
Sa	December 21, 2019	11:45 a.m. AZ	5:30 p.m. CA	5.75
Su	December 22, 2019	Off Duty	Off Duty	
Mo	December 23, 2019	9:30 a.m. CA	4:30 p.m. CA	7
Tu	December 24, 2019	Off Duty	Off Duty	
We	December 25, 2019	Off Duty	Off Duty	
Th	December 26, 2019	Off Duty	Off Duty	
Fr	December 27, 2019	7:15 p.m. AZ	--	--
Sa	December 28, 2019	--	6:30 a.m. NM	11.25
Sa	December 28, 2019	7:00 p.m. CO	--	--
Su	December 29, 2019	--	5:30 a.m. NM	10.5
Su	December 29, 2019	5:30 p.m. AZ	--	
Mo	December 30, 2019	--	3:00 a.m. CA	7.5
Tu	December 31, 2019	Off Duty	Off Duty	
We	January 1, 2020	Off Duty	Off Duty	
Th	January 2, 2020	9:15 p.m. AZ	--	--
Fr	January 3, 2020	--	8:30 a.m. NM	11.25
Fr	January 3, 2020	8:15 p.m. MO	--	--
Sa	January 4, 2020	--	7:00 a.m. OH	

Sa	January 4 2020	6:00 p.m. NJ	--	--
Su	January 5, 2020	--	3:30 a.m.	7.75

### 2.6.1. Psychological Factors

According to the FedEx Driver, he had not experienced any recent life stressors and the crash did not occur as the result of an intentional act.

### 2.7. Sleep Factors

This section describes factors associated with the FedEx driver’s opportunity to obtain rest driver could not be interviewed following the crash, precise information on when he obtained sleep is limited.

The FedEx Driver stated that leading up to the crash, he generally slept well. He also stated that he routinely took an over-the-counter sleep aid to fall asleep while traveling in the truck. He preferred to drive during nighttime hours and sleep during the day. According to employee records, the FedEx Driver usually began working about 7:00 p.m. and went in the sleeper berth for rest at about 7:00 a.m. However, the FedEx Driver’s cell phone records showed that he used his phone during off duty periods, eliminating the possibility that he slept during the entire off-duty periods. The off-duty periods were generally about 10 hours in duration.

#### 2.7.1. Sleep Opportunity

When questioned in an interview with NTSB investigators, the FedEx driver was unable to determine exactly when he slept. He provided a general account of when he was in the sleeper berth; he generally slept during the day and drove at night. The driver’s cell phone records and electronic logging device were examined to identify periods in which he was using the cell phone or driving. **Table 6** below lists the hours in which he was able to obtain rest. In the two days leading up to the crash, he was able to obtain about 5 ½ - 6 hours of rest each day. However, on each of those days, he was off-duty for about 11 hours.

**Table 6:** FedEx driver’s sleep opportunity.

From		To		Elapsed Time
Date	Time	Date	Time	
January 3, 2020	8:30 a.m.	January 3, 2020	10:45 a.m.	2 hours 15 minutes
January 3, 2020	11:14 a.m.	January 3, 2020	2:23 p.m.	3 hours 15 minutes
January 3, 2020	4:50 p.m.	January 3, 2020	8:14 p.m.	3 hours 24 minutes
January 4, 2020	6:59 a.m.	January 4, 2020	10:45 a.m.	3 hours 46 minutes
January 4, 2020	4:00 p.m.	January 4, 2020	6:00p.m.	2 hours

### 2.8. Medical Factors

Information on the FedEx driver’s general health, driver fitness exam, and post-crash toxicology is documented in the *Medical Factual Report* for this investigation.



### **2.8.1. Medical Examination Report for Commercial Motor Vehicle Driver Fitness Determination (CDL Medical Exam)**

Commercial drivers in the United States are required by *Federal Motor Carrier Safety Regulations* (FMCSRs) to be medically certified as being physically qualified to drive a commercial vehicle.<sup>25</sup> These examinations may result in one of four outcomes with respect to medical qualification:

- The driver is found to meet the standards in 49 *Code of Federal Regulations* (CFR) §391.41 and is given a 2-year certificate;<sup>26</sup>
- The driver is found to meet the standards, but requires periodic evaluation for one or more conditions and is qualified for 3 months, 6 months, or 1 year;
- The driver is temporarily disqualified due to a condition or medication; or;
- The driver is found not to meet the standards.

### **2.8.2. Most Recent CDL Medical Exam**

The FedEx driver's most recent medical Examination for Commercial Driver Fitness Determination was on July 22, 2019. The exam was conducted by a chiropractor in Murrieta, CA. In the self-reporting health history section on the report, the FedEx driver indicated "No" to having an illness or injury in the last 5 years and did not report taking any medications. The FedEx driver's vital signs, vision, and hearing were found to be within normal limits. Following the examination, the FedEx driver was given a two-year medical certificate with no conditions or restrictions.

## **2.9. Driver Response to Hazard**

Information on the FedEx driver's response to the overturned motorcoach which occurred ahead of him was derived from an interview with the driver,<sup>27</sup> roadway evidence as documented in the *Reconstruction Group Factual Report*, and observations from an inward and outward facing video aboard the FedEx truck<sup>28</sup>.

### **2.9.1. Hazard Visibility**

As the FedEx truck approached the overturned motorcoach, the video shows that there was light precipitation (snow, rain mix); the windshield wipers were not on. There was no ambient lighting on the roadway. As the truck traveled through a curve, it encountered the motorcoach, which was at rest, after overturning. It was on its right side, perpendicular to the roadway, about

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<sup>25</sup> 49 Code of Federal Regulations §391.41.

<sup>26</sup> For more information on who must be examined and the examination process, please see 49 CFR §391.43 and 49 CFR §391.45.

<sup>27</sup> See Human Performance Factors Attachment – FedEx Driver Interview Transcript.

<sup>28</sup> For more information on the FedEx truck video, see the *Video Study* Report in the accident docket for this investigation.

340 feet away. The undercarriage faced the approaching truck; there were no reflective surfaces visible.

### **2.9.2. Driver Response Performance.**

The inward-facing truck cab video corresponds to the outward facing video and shows the FedEx driver's actions as he approached the crash site. Prior to reaching the overturned motorcoach, the FedEx driver was looking straight ahead while leaning forward with his forearms resting on the steering wheel. Utilizing the outward facing video, the truck's speed was measured to be 51.5 mph. When the motorcoach became visible, the driver sat upright, and he continued look straight ahead. The video system showed that the truck began reducing speed when the driver saw the overturned motorcoach. When the truck impacted the motorcoach, it was traveling about 22 miles per hour.

The FedEx driver stated in an interview with NTSB investigators that as he was driving before he reached the motorcoach, he leaned forward as he drove to be able to see deer in the roadway more quickly. As he traveled through the curve, he saw a "black wall" across the roadway but did not immediately know what it was. He applied the brakes and steered towards the center divider. He did not feel the truck slide and was able to reduce speed before colliding with the motorcoach.

## **3. UPS Driver #1**

The driver of the first 2018 Freightliner Cascadia, operated by United Parcel Service (referred to hereafter as UPS driver #1), was a 53-year-old male from Lewistown, PA. The driver was part of a two-man driving team. At the time of the crash, the co-driver was in the sleeper berth. The driver and co-driver died from injuries sustained in the crash. The focus of this section of the report is of the driver that was operating the UPS truck when the crash occurred. Factors associated with UPS driver#1 are discussed below.

### **3.1. Licensing**

UPS driver #1 first obtained a CDL in 1991. At the time of the crash, he held a valid Pennsylvania Class A CDL with the following endorsements:

- Double and triple trailers<sup>29</sup>
- Passenger transportation
- School bus; and
- Tank vehicles

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<sup>29</sup> A double/triple trailer endorsement allows the holder to operate a combination vehicle coupled to two or three trailers simultaneously.

### 3.1.1. CDL Guidance

The Pennsylvania Commercial Driver’s Manual provides the following guidance for controlling speed and operating commercial motor vehicles (CMV’s) during adverse weather conditions:<sup>30</sup>

- Driving too fast is a major cause of fatal crashes.
- You must adjust your speed depending on driving conditions; including traction, curves, visibility, traffic and hills.
- It will take longer to stop when the road is slippery.
- Wet roads can double stopping distance.
- You must drive slower to be able to stop in the same distance as on a dry road.
- Reduce speed by about one-third on a wet road.

### 3.1.2. License History

According to UPS driver#1’s Pennsylvania driver license record, there were several previous traffic violations. There is no information listed in the National Driver Register (NDR) Problem Driver Pointer System (PDPS) for the UPS #1 driver. **Table 6** lists the violation date and offense.

**Table 6:** UPS driver #1 traffic violations

Date	Violation
6/22/84	Exceeding maximum speed limit; 74 mph in a 55 mph zone
7/10/84	Exceeding maximum speed limit; 55 mph in a 35 mph zone
2/5/88	Too fast for conditions
3/26/93	Exceeding maximum speed limit; 65 mph in a 55 mph zone
10/16/95	Truck speed on downgrades
3/17/06	Exceeding maximum speed limit; 72 mph in a 55 mph zone
10/4/08	Traffic control violation

### 3.2. Crash History

UPS employment records indicate that UPS driver #1 had a crash while operating a commercial truck on May 30, 2019 on Interstate 70 in East Washington, PA. The driver struck the rear of a vehicle ahead after that vehicle came to an abrupt stop. Company management found

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<sup>30</sup> See Human Performance Factors Attachment – Pennsylvania Commercial Driver’s Manual, Section 2: Driving Safely.

that the driver's performance did not meet expected internal standards; he was given additional training and coaching.<sup>31</sup>

According to his Pennsylvania driver license record, UPS driver #1 has also had two additional crashes; February 5, 1988 in a passenger vehicle and January 5, 2012 in a commercial truck. There was no specific information which described the details of the crashes.

### 3.3. Experience

Information on UPS driver #1's commercial driving experience was obtained from his driver qualification (DQ) file which was maintained by UPS. Records indicate that UPS driver #1 first began driving a commercial vehicle in 2011. He drove truck tractors locally for UPS and a door manufacturer before beginning his current position with UPS. According to his wife, UPS driver #1 worked as a delivery driver for several local companies. This information was not reflected in his DQ file.

### 3.4. Activities Prior to the Crash

Information regarding UPS driver #1's activities leading up to the crash were obtained from the electronic logging device aboard the truck<sup>32</sup> and his cell phone records.<sup>33</sup> His activities are listed in **Table 8** below.

**Table 8:** UPS Driver #1 activities leading up to crash.

Wednesday, January 1, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
Thursday, January 2, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
Friday, January 3, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
8:30 a.m.	Driver received a cell phone call (under one minute)	Cell Phone Records
1:06 p.m.	Driver sent a text message	Cell Phone Records
2:05 p.m.	Driver received cell phone call (under one minute)	Cell Phone Records
11:59 p.m.	Driver received cell phone call (under one minute)	Cell Phone Records
Saturday, January 4, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
2:50 p.m.	Driver received cell phone call (under one minute)	Cell Phone Records
Sunday, January 5, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>

<sup>31</sup> The NTSB did not investigate or reach any conclusions on the May 30, 2019, crash.

<sup>32</sup> Human Performance Factors Attachment – UPS Driver #1's Electronic Logging Device Records.

<sup>33</sup> Human Performance Factors Attachment – UPS Driver #1's Cell Phone Records.

12:16 a.m.	Driver goes on duty in Harrisburg, PA	Electronic Logging Device
1:04 a.m.	Begins Driving in Harrisburg, PA	Electronic Logging Device
<b>3:30 a.m.</b>	<b>Crash occurs in Mount Pleasant, PA</b>	Police Records

### 3.5. Work Schedule

Information pertaining to UPS driver #1's work schedule was obtained from ELD records the month leading up to the crash (December 2019). All of the information in this section is in reference to that time period. UPS driver #1 was part of an over-the-road two man driving team. ELD records show that although he had varying days off, his shifts were most often during overnight hours; beginning from 7 p.m. to midnight, and ending from 7 – 9 a.m. His shifts were about ten hours long. During the work week, the driver's off-duty sleep occurred in the sleeper berth. Immediately prior to the crash, the driver was off duty for 6 consecutive days.

The UPS driver #1's work shifts are listed in **Table 9** below. Shifts which began and ended on consecutive days are grouped together. The state in which the shift began or ended is listed with the time; times are reported to the nearest ¼ hour. The driver worked primarily during morning hours; his co-driver worked overnight hours. The table does not show on-duty driving times, breaks, or hours-of-service categories.

**Table 9:** UPS driver #1's work schedule leading up to the crash.

<u>Day</u>	<u>Date</u>	<u>From</u>	<u>To</u>	<u>Hours</u>
Su	December 1, 2019	1:00 a.m. PA	7:50 am OH	6.83
Su	December 1, 2019	7:00 p.m. WV	11:00 p.m. PA	4
Mo	December 2, 2019	Off Duty	Off Duty	--
Tu	December 3, 2019	12:30 a.m. PA	8:30 a.m. VA	8
Tu	December 3, 2019	9:00 p.m. AR	--	--
We	December 4, 2019	--	8:00 a.m. PA	11
We	December 4, 2019	8:30 p.m. VA	--	--
Th	December 5, 2019	--	7:15 a.m.	10.75
Th	December 5, 2019	7:30 p.m. OH	11:30 p.m. PA	4--
Fr	December 6, 2019	Off Duty	Off Duty	--
Sa	December 7, 2019	Off Duty	Off Duty	--
Sa	December 8, 2019	12:00 a.m. PA	7:15 a.m. OH	7.3
Su	December 8, 2019	7:15 p.m. PA	10:00 p.m. PA	7.3
Mo	December 9, 2019	Off Duty	Off Duty	--
Tu	December 10, 2019	12:00 a.m. PA	7:00 a.m. VA	7
Tu	December 10, 2019	7:00 p.m. VA	--	
We	December 11, 2019	--	6:30 a.m. AR	11.5
We	December 11, 2019	7:00 p.m. VA	--	--
Th	December 12, 2019	--	7:20 a.m.	12.33
Th	December 12, 2019	7:00 p.m. OH	11:59 p.m. PA	5
Fr	December 13, 2019	Off Duty	Off Duty	--
Sa	December 14, 2019	Off Duty	Off Duty	--
Su	December 15, 2019	12:00 a.m. PA	7:30 a.m. OH	7.5
Su	December 15, 2019	7:30 p.m. PA	10:45 p.m. PA	3.25

<b>Mo</b>	December 16, 2019	Off Duty	Off Duty	--
<b>Tu</b>	December 17, 2019	12:15 a.m. PA	7:00 a.m. VA	6.75
<b>Tu</b>	December 17, 2019	7:00 p.m. AR	--	--
<b>We</b>	December 18, 2019	--	7:00 a.m. AR	12
<b>We</b>	December 18, 2019	6:30 p.m. VA	--	--
<b>Th</b>	December 19, 2019	--	6:00 a.m. PA	11.5
<b>Th</b>	December 19, 2019	5:15 p.m. OH	11:59 p.m. PA	6.75
<b>Fri</b>	December 20, 2019	Off Duty	Off Duty	--
<b>Sa</b>	December 21, 2019	Off Duty	Off Duty	--
<b>Su</b>	December 22, 2019	12:00 a.m. PA	8:30 a.m. OH	8.5
<b>Su</b>	December 22, 2019	9:00 p.m. NY	11:59 p.m. PA	3
<b>Mo</b>	December 23, 2019	Off Duty	Off Duty	--
<b>Tu</b>	December 24, 2019	Off Duty	Off Duty	--
<b>We</b>	December 25, 2019	Off Duty	Off Duty	--
<b>Th</b>	December 26, 2019	Off Duty	Off Duty	--
<b>Fr</b>	December 27, 2019	Off Duty	Off Duty	--
<b>Sa</b>	December 28, 2019	Off Duty	Off Duty	--
<b>Su</b>	December 29, 2019	12:00 a.m. PA	7:30 a.m. PA	7.5
<b>Su</b>	December 29, 2019	7:30 p.m. PA	11:00 p.m. PA	3.5
<b>Mo</b>	December 30, 2019	Off Duty	Off Duty	--
<b>Tue</b>	December 31, 2019	Off Duty	Off Duty	--
<b>We</b>	January 1, 2020	Off Duty	Off Duty	--
<b>Th</b>	January 2, 2020	Off Duty	Off Duty	--
<b>Fri</b>	January 3, 2020	Off Duty	Off Duty	--
<b>Sa</b>	January 4, 2020	Off Duty	Off Duty	--
<b>Su</b>	January 5, 2020	12:15 a.m.	<b>3:30 a.m.</b>	3.25

### **3.6. Medical Factors**

Information on the UPS driver #1's general health, driver fitness exam, sleep, health, and post-crash toxicology is documented in the *Medical Factual Report* for this investigation.

#### **3.6.1. Medical Examination Report for Commercial Motor Vehicle Driver Fitness Determination (CDL Medical Exam)**

Commercial drivers in the United States are required by *Federal Motor Carrier Safety Regulations* (FMCSRs) to be medically certified as being physically qualified to drive a commercial vehicle.<sup>34</sup> These examinations may result in one of four outcomes with respect to medical qualification:

- The driver is found to meet the standards in 49 *Code of Federal Regulations* (CFR) §391.41 and is given a 2-year certificate;<sup>35</sup>
- The driver is found to meet the standards, but requires periodic evaluation for one or more conditions and is qualified for 3 months, 6 months, or 1 year;
- The driver is temporarily disqualified due to a condition or medication; or;
- The driver is found not to meet the standards.

#### **3.6.2. Most Recent CDL Medical Exam**

The most recent CDL Medical Examination of UPS Driver #1 took place on October 25, 2019. Following the exam, he was issued a medical certificate which was valid for 1 year; indicating that he had a medical condition which required periodic evaluation. For more information UPS driver #1's medical condition, see the *Medical Factors Factual Report* for this investigation.

#### **3.6.3. Psychological Factors**

According to UPS driver #1's wife, they lived in their home together with their adult son. Emotionally, he seemed normal and she was not aware of any recent life stressors. He had no history of mental health disorders.

### **3.7. Sleep Factors**

According to his wife UPS driver #1's generally slept well. He did not snore, and he had not been diagnosed with any sleep disorders. Because UPS driver #1 was off duty 4 days leading up to the crash, there was insufficient information to determine what hours were available for the driver to obtain rest.

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<sup>34</sup> 49 Code of Federal Regulations §391.41.

<sup>35</sup> For more information on who must be examined and the examination process, please see 49 CFR §391.43 and 49 CFR §391.45.

## 4. UPS Driver #2

The driver of the second 2018 Freightliner Cascadia, also operated by UPS (hereafter referred to as UPS driver #2), was a 62-year-old male from East Winsor, NJ. Factors associated with UPS driver #2 are discussed in the sections below.

### 4.1. Licensing

UPS driver #2 held a valid New Jersey Class A CDL with a tanker and doubles/triples endorsement. He first obtained a CDL in 1979 after attending driver training through a former employer while in Oklahoma City, Oklahoma. He has driven for multiple carriers since then.<sup>36</sup> Due to the amount of time which has passed since the driver obtained his CDL, there was no information obtained on the content of the commercial driver training.

#### 4.1.1. CDL Guidance

The New Jersey Commercial Driver License Manual provides the following guidance for controlling speed an operating commercial motor vehicles (CMV's) during adverse weather conditions:<sup>37</sup>

- Driving too fast is a major cause of fatal crashes.
- You must adjust your speed depending on driving conditions; including traction, curves, visibility, traffic and hills.
- There are some road conditions that reduce traction and call for lower speeds.
- It will take longer to stop and it will be harder to turn without skidding, when road is slippery.
- You must drive slower and be able to stop in the same distance as on a dry road.
- Reduce speed by about one-third on a wet road.

#### 4.1.2. License History

According to UPS driver #2's New Jersey driver license record, he has had one license suspension in Oklahoma in 2004 for failure to appear in court and one conviction in Connecticut for obstruction of passage of another vehicle on December 16, 2013.

## 4.2. Crash History

According to UPS driver #2, he has had no previous crashes. There were no records of previous crashes in an insurance industry database.

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<sup>36</sup> For more information on prior commercial driving employment, see the *Motor Carrier Factors* Factual Report.

<sup>37</sup> Human Performance Factors Attachment – New Jersey Commercial Driver License Manual, Section 2: Driving Safely.



### 4.3. Experience

According to UPS driver #2, he has worked for UPS for about 15 years and driven commercial vehicles since 1979. Prior to that, he had experience driving heavy vehicles and equipment growing up on a farm.

### 4.4. Route Experience

According to UPS driver #2, the crash trip began in Harrisburg, PA. He traveled from Harrisburg to Philadelphia, PA without a trailer. He picked up a trailer in Philadelphia and was traveling to St. Louis Missouri when the crash occurred. He has been assigned this route for about 3 years.

### 4.5. Activities Prior to the Crash

UPS driver #2 stated that he was on vacation the week prior to the crash. The crash occurred on his first day back to work. During his time off, he states that he went to bed between 10:30-11:00 p.m. and got up about 8:00 a.m. each day. On the day prior to the crash, he stated that he took a nap from about 3:00 p.m. until he got ready for work at 9:00 p.m.

Information regarding UPS driver #2's activities leading up to the crash were obtained from an interview with the driver, cell phone records<sup>38</sup>, and the electronic logging device aboard UPS Truck #2.<sup>39</sup> His activities are listed in **Table 10** below.

**Table 10:** UPS driver #2 activities leading up to crash.

Wednesday, January 1, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
10:30 p.m. ~	Driver went to bed	Driver Interview
Thursday, January 2, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
8:00 a.m. ~	Driver woke up	Driver Interview
11:00 p.m. ~	Driver went to bed	Driver Interview
Friday, January 3, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
24 hrs.	Driver off duty	Electronic Logging Device
8:00 a.m. ~	Driver woke up	Driver Interview
4:01 p.m.	Driver made cell phone call (1 minute)	Cell Phone Records
11:00 p.m. ~	Driver went to bed	Driver Interview

<sup>38</sup> Human Performance Factors Attachment – UPS Driver#2's Cell Phone Records

<sup>39</sup> Human Performance Factors Attachment – UPS Driver #2's Electronic Logging Device Records

Saturday, January 4, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
7:00 a.m. ~	Driver woke up	Driver Interview
10:46-10:49 a.m.	Driver received cell phone call	Cell Phone Records
8:31-8:32 p.m.	Driver made cell phone call	Cell Phone Records
3:00-7:00 p.m. ~	Driver slept	Driver Interview
3:46 p.m.	Driver sent text message <sup>40</sup>	Cell Phone Records
8:56 p.m.	Driver made cell phone call (less than 1 minute)	Cell Phone Records
9:15 p.m. ~	Driver arrived at work	Driver Interview
9:45 p.m.	Driver went on duty in Horsham, PA	Electronic Logging Device
9:50 p.m.	Driver began driving	Electronic Logging Device
Sunday, January 5, 2020		
<u>Time</u>	<u>Event</u>	<u>Source</u>
12:24-12:57 a.m.	Driver took break in Bellaire, PA (34 mins)	Electronic Logging Device
12:57 a.m.	Driver resumed driving in Bellaire, PA	Electronic Logging Device
1:40-1:56 a.m.	Driver made cell phone call	Cell Phone Records
<b>3:30 a.m.</b>	<b>Crash occurs in Mount Pleasant, PA</b>	Police Records

#### 4.6. Work Schedule

Information pertaining to UPS driver #2's work schedule was obtained from ELD records the month leading up to the crash (December 2019). All the information in this section is in reference to that time period. UPS driver #2 was part of an over-the-road two man driving team. ELD records show that although he had varying days off, his shifts most often began during afternoon or evening hours (12-10 p.m.) and were about ten hours long. During the work week, the driver's off-duty sleep occurred in the sleeper berth. Immediately prior to the crash, the driver was off duty for 4 consecutive days.

The UPS driver #2's work shifts are listed in **Table 11** below. Shifts which began and ended on consecutive days are grouped together. The state in which the shift began or ended is listed with the time; times are reported to the nearest ¼ hour. The driver worked primarily during morning hours; his co-driver worked overnight hours. The table does not show on-duty driving times, breaks, or hours-of-service categories.

**Table 11:** UPS driver #2's work schedule leading up to the crash.

<u>Day</u>	<u>Date</u>	<u>From</u>	<u>To</u>	<u>Hours</u>
<b>Su</b>	December 1, 2019	12:00 a.m. PA	5:30 a.m. OH	5.5
<b>Su</b>	December 1, 2019	7:30 p.m. PA	--	--
<b>Mo</b>	December 2, 2019	--	2:15 a.m. PA	6.75
<b>Tu</b>	December 3, 2019	4:30 a.m. PA	--	--
<b>We</b>	December 4, 2019	--	12:00 a.m. FL	18.5 <sup>41</sup>
<b>We</b>	December 4, 2019	12:30 p.m. SC	--	--

<sup>40</sup> Because incoming text messages may occur without recipient action, only outgoing text messages were considered.

<sup>41</sup> The ELD for this day shows 11.25 hours on duty not driving, followed by 7.25 hours of driving.

Th	December 5, 2019	--	12:00 a.m. PA	11.5
Th	December 5, 2019	2:00 p.m. SC	11:45 p.m. PA	9.75
Fri	December 6, 2019	Off Duty	Off Duty	--
Sa	December 7, 2019	10:00 p.m. PA	--	--
Su	December 8, 2019	--	5:45 a.m. OH	7.75
Su	December 8, 2019	7:00 p.m. OH	--	--
Mo	December 9, 2019	--	2:00 a.m. PA	7
Tu	December 10, 2019	12:00 p.m. VA	--	--
We	December 11, 2019	--	12:00 a.m. FL	12
We	December 11, 2019	11:30 a.m. SC	11:30 p.m. PA	12
Th	December 12, 2019	1:15 p.m. SC	11:30 p.m. SC	10.25
Fr	December 13, 2019	Off Duty	Off Duty	--
Sa	December 14, 2019	10:00 p.m. PA	--	--
Su	December 15, 2019	--	6:00 a.m. OH	8
Su	December 15, 2019	7:45 p.m. WV	--	--
Mo	December 16, 2019	--	3:00 a.m. PA	7.25
Tu	December 17, 2019	12:00 p.m. VA	--	--
We	December 18, 2019	--	12:00 a.m. FL	12
We	December 18, 2019	11:30 a.m. SC	--	--
Th	December 19, 2019	--	12:00 a.m. NJ	12.5
Th	December 19, 2019	1:15 p.m. NC	--	--
Fri	December 20, 2019	--	12:30 a.m. PA	11
Sa	December 21, 2019	9:45 p.m. PA	--	--
Su	December 22, 2019	--	5:30 a.m. OH	7.75
Su	December 22, 2019	7:15 p.m. WV	--	--
Mo	December 23, 2019	--	4:00 a.m. PA	8.75
Tu	December 24, 2019	Off Duty	Off Duty	--
We	December 25, 2019	Off Duty	Off Duty	--
Th	December 26, 2019	Off Duty	Off Duty	--
Fr	December 27, 2019	Off Duty	Off Duty	--
Sa	December 28, 2019	9:45 p.m.	--	--
Su	December 29, 2019	--	6:30 a.m.	10.75
Su	December 29, 2019	8:30 p.m. WV	--	--
Mo	December 30, 2019	--	4:00 a.m.	7.5
Tu	December 31, 2019	Off Duty	Off Duty	--
We	January 1, 2020	Off Duty	Off Duty	--
Th	January 2, 2020	Off Duty	Off Duty	--
Fri	January 3, 2020	Off Duty	Off Duty	--
Sa	January 4, 2020	10:00 pm. PA <sup>42</sup>	--	--
Su	January 5, 2020	--	<b>3:30 a.m.</b>	5.5

<sup>42</sup> Information for this table entry was obtained from an interview with the driver; due to crash damage, the ELD information was not available.

## 4.7. Medical Factors

Information on the UPS driver #2's general health, driver fitness exam, sleep, health, and post-crash toxicology is documented in the *Medical Factual Report* for this investigation.

### 4.7.1. Medical Examination Report for Commercial Motor Vehicle Driver Fitness Determination (CDL Medical Exam)

Commercial drivers in the United States are required by *Federal Motor Carrier Safety Regulations* (FMCSRs) to be medically certified as being physically qualified to drive a commercial vehicle.<sup>43</sup> These examinations may result in one of four outcomes with respect to medical qualification:

- The driver is found to meet the standards in 49 *Code of Federal Regulations* (CFR) §391.41 and is given a 2-year certificate;<sup>44</sup>
- The driver is found to meet the standards, but requires periodic evaluation for one or more conditions and is qualified for 3 months, 6 months, or 1 year;
- The driver is temporarily disqualified due to a condition or medication; or;
- The driver is found not to meet the standards.

### 4.7.2. Most Recent CDL Exam

UPS driver #2's most recent CDL Medical Examination took place on September 3, 2019. Following the exam, he was issued a medical certificate which was valid for 1 year; indicating that he had a medical condition which required periodic evaluation. For more information UPS driver #2's medical condition, see the *Medical Factors Factual Report* for this investigation.

### 4.7.3. Psychological Factors

UPS driver #2 states that he lives at home with his wife; his adult children live on their own. He has not had any recent life stressors and has not had any mental health conditions.

## 4.8. Sleep Factors

UPS driver #2 stated that leading up to the crash, he generally slept well. He did not take any medications to fall asleep. He has not been diagnosed with any sleep disorders. When not working, he typically goes to bed around 11:00 p.m. and wakes up around 8:00 a.m. the next morning; he drives during nighttime hours.

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<sup>43</sup> 49 Code of Federal Regulations §391.41.

<sup>44</sup> For more information on who must be examined and the examination process, please see 49 CFR §391.43 and 49 CFR §391.45.

#### 4.8.1. Sleep Opportunity

Because UPS driver #2 was off from work in the days leading up to the crash, information used to determine his opportunities to sleep were obtained from an interview with the driver. Cell phone records were used to confirm that there was no activity during times when he stated that he was asleep. **Table 12** below lists the hours in which he was able to obtain rest. In the two days leading up to the crash, he was able to obtain about 8 hours of rest each day. Additionally, he was able to obtain about 3 hours of sleep just prior to reporting for work.

**Table 12:** UPS Driver #2’s sleep opportunity.

From		To		Elapsed Time
Date	Time	Date	Time	
January 2, 2020	11:00 p.m.	January 3, 2020	8:00 a.m.	9 hours
January 3, 2020	11:00 p.m.	January 4, 2020	7:00 p.m.	8 hours
January 4, 2020	4:00 p.m.	January 4 2020	7:00 p.m.	3 hours

#### 4.9. Driver Response to Hazard

Information on UPS driver #2’s response to the crash which occurred ahead of him was derived from an interview with the driver<sup>45</sup> and roadway evidence as documented in the *Reconstruction Group Factual Report*.

UPS driver #2 stated that as he was driving on I-70/76, he remembered seeing the motorcoach about 10 or 15 minutes before the crash occurred. At this point, he was traveling about 65 or 70 mph, the motorcoach passed him at “a pretty good speed”. He stated that the road was wet from scattered snow squalls, but not ice-covered.

When asked about the other UPS truck, he stated that he remembered seeing the truck. Because his load was lighter, he passed UPS truck #1 going up hills; it passed him going down hills. When the crash occurred, he saw UPS truck #1 crash ahead of him. Because the roadway was completely dark, he could not see any of the other vehicles that was involved in the crash. After the truck in front of him crashed, he stated that he steered his truck to the right to avoid striking the rear of UPS truck #1’s trailer. As his truck moved to the right, he saw the passenger car and tried to steer to the right to avoid striking it but was unable to.

### 5. North American Fatigue Management Program

The North American Fatigue Management Program (NAFMP) is a collaborative initiative by several regulatory jurisdictions in North America to provide a comprehensive strategy to the commercial motor carrier industry to reduce commercial motor vehicle fatigue related crashes. Members of the collaboration include: the Federal Motor Carrier Safety Administration (FMCSA), Transport Canada, Alberta Transportation, Alberta Employment and Immigration, the Commission de la santé et de la sécurité du travail du Québec, the Société de l'assurance

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<sup>45</sup> Human Performance Factors Attachment – UPS Driver #2 Interview Transcript

automobile du Québec, and the Canadian Council of Motor Transport Administrators. The program has developed best practices to mitigate driver fatigue and in doing so seeks to:

- Develop a corporate culture that facilitates reduced driver fatigue.
- Provide fatigue management education for drivers, drivers’ families, carrier executives and managers, shippers/receivers, and dispatchers.
- Provide information on sleep disorder screening and treatment.
- Provide driver and trip scheduling information.
- Provide information on Fatigue Management Technologies.

The information is made available through web-based platform. **Table 13** below lists training module topics and their intended audience.

**Table 13:** Fatigue Management Training Modules.

<b>Module</b>	<b>Topic</b>	<b>Audience</b>
1	FMP Introduction and Overview	Carrier executives and other managers
2	Safety Culture and Management Practices	Carrier executives and other managers
3	Driver Education	Drivers
4	Driver Family Education	Diver spouses and family
5	Trian-the Trainer Education and Family	Carrier safety managers and trainers
6	Shippers and Receivers	Shippers and Receivers
7	MC Sleep Disorder Management	Drivers
8	Driver Sleep Disorders Management	Drivers
9	Driver Scheduling and Tools	Dispatchers, managers, advanced drivers
10	Fatigue Monitoring and Management Technologies	Carrier Executives and other managers

## 6. Environmental Factors

Detailed weather information near the vicinity and time of the crash is documented in the NTSB *Weather Study* for this investigation. Weather observations were obtained from Arnold Palmer Regional Airport (KLBE) in Latrobe PA, 8 miles north of the crash site. KLBE reported the following weather conditions:

*Latrobe weather observation at 0335 EST, automated, wind from 280° at 7 mph gusting to 15 mph, visibility 6 miles in unknown precipitation<sup>4</sup>, broken clouds at 2,600 ft above ground level (agl), overcast at 3,000 ft, temperature 30° F, dew point temperature 25° F, altimeter 30.01 inches of mercury (Hg). Remarks: automated station with a precipitation discriminator.*

### 6.1. FMCSA Guidance

FMCSA has defined adverse driving conditions to be snow, ice, sleet, fog, or other adverse weather conditions or unusual road or traffic conditions that were not known, or could not reasonably be known, to a driver immediately prior to beginning the duty day or immediately before beginning driving after a qualifying rest break or sleeper berth period.<sup>46</sup> The FMCSA provides safe driving guidance using a web-based informational platform, CMV Driving Tips. The information relevant to adverse weather conditions is as follows:

#### TIP #1: Reduce Your Driving Speed in Adverse Road and/or Weather Conditions

Adjust your speed to safely match weather conditions, road conditions, visibility, and traffic. Excessive driving speed is a major cause of fatal crashes, and higher speeds may cause more severe crashes. The Fatality Analysis Reporting System (FARS) recently reported that 25 percent of speeding-related large-truck fatalities occurred during adverse weather conditions.

Did You Know? You should reduce your speed by 1/3 on wet roads and by 1/2 or more on snow packed roads (i.e., if you would normally be traveling at a speed of 60 mph on dry pavement, then on a wet road you should reduce your speed to 40 mph, and on a snow-packed road you should reduce your speed to 30 mph). When you come upon slick, icy roads you should drive slowly and cautiously and pull off the road if you can no longer safely control the vehicle.

Did You Know? When it first starts to rain, water mixes with oil on the road making it particularly slippery.

Did You Know? Manufacturers generally advise drivers not to use a retarder [also called a "Jake" brake] on wet or slippery roadway conditions. In fact, a Safety Board Investigation of a motor coach crash that occurred in Canon City, Colorado, in December 1999, revealed that an enabled retarder most likely triggered the loss of control and eventual crash of the motor coach on a snow-covered and mountainous roadway.

#### TIP #2: Enter a Curve Slowly

Speed limits posted on curve warning signs are intended for passenger vehicles, not large trucks. Large trucks should reduce their speed even further. Studies have shown that large trucks entering a curve, even at the posted speed limit, have lost control and rolled over due to their high center of gravity.

Did You Know? 40 percent of speeding-related fatalities occur on curves.

Did You Know? Braking in a curve can cause the wheels to lock up and the vehicle to skid.

#### TIP #3: Reduce Your Speed Before Entering an Exit/Entrance Ramp

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<sup>46</sup> CFR § 395.2

Approach an exit/entrance ramp at a safe speed. Truck rollovers are more likely to occur on exit/entrance ramps when the driver misjudges the sharpness of the ramp curve and enters the curve at an excessive speed.

Did You Know? The posted speed limit on an exit/entrance ramp generally shows the safe speed for a passenger vehicle; the safe speed for a large truck is usually significantly lower than the posted speed.

Did You Know? Even though ramps and interchanges make up less than 5 percent of all highway miles, 20 to 30 percent of all large-truck crashes occur on or near ramps.

## **E. DOCKET MATERIAL**

The following attachments and photographs are included in the docket for this investigation:

### LIST OF ATTACHEMENTS

- Human Performance Factors Attachment: New York State Commercial Driver's Manual, Section 2: Controlling Speed.
- Human Performance Factors Attachment: Motorcoach Driver License History
- Human Performance Factors Attachment: Motorcoach Driver's Pennsylvania Traffic Citation
- Human Performance Factors Attachment: 7-17-19 Crash Report
- Human Performance Factors Attachment: Motorcoach Driver's Cell Phone Records
- Human Performance Factors Attachment: Motorcoach Driver's Electronic Logging Device Records
- Human Performance Factors Attachment: FedEx Driver's License History
- Human Performance Factors Attachment: FedEx Driver's Cell Phone Records
- Human Performance Factors Attachment: FedEx Driver's Electronic Logging Device Records
- Human Performance Factors Attachment: California Commercial Driver Handbook, Section 2: Controlling Your Speed
- Human Performance Factors Attachment: FedEx Driver Interview Transcript
- Human Performance Factors Attachment; Z & D Tours Policies and Procedures Manual, Appendix B
- Human Performance Factors Attachment: Motorcoach Passenger Interview Transcript



Human Performance Factors Attachment: Pennsylvania Commercial Driver's Manual, Section 2: Controlling Speed

Human Performance Factors Attachment: UPS Driver #1's Electronic Logging Device Records

Human Performance Factors Attachment: UPS Driver #1's Cell Phone Records

Human Performance Factors Attachment: New Jersey Commercial Driver License Manual, Section 2: Driving Safely

Human Performance Factors Attachment: UPS Driver#2's Cell Phone Records

Human Performance Factors Attachment: UPS Driver#2's Electronic Logging Device Records

Human Performance Factors Attachment: UPS Driver #2 Interview Transcript

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End of Report

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