



AVIATION



HIGHWAY



MARINE



RAILROAD



PIPELINE

Report Date: May 31, 2022

HIR-22/04

Multivehicle Crash on the Don N. Holt Bridge, Interstate 526

North Charleston, South Carolina
July 1, 2020

On July 1, 2020, about 9:50 a.m., a 2018 Ford F350 pickup truck with an attached unladen trailer was traveling west in the right lane of Interstate 526 (I-526) on the Don N. Holt Bridge in North Charleston, South Carolina.¹ The pickup truck collided with the rear of a parked patrol car, which was stopped behind a disabled sport utility vehicle (SUV). The crash resulted in a subsequent collision between the SUV and a tow truck parked in front of it (figure 1). Additionally, a sheriff's deputy and a tow truck operator were also struck. The sheriff's deputy sustained serious injuries and the tow truck driver was fatally injured.



Figure 1. Pickup truck at final rest, with the patrol car and rear of tow truck. (Source: Charleston County Sheriff's Office)

¹ (a) In this report, all times are eastern standard time. (b) Visit [nts.gov](https://www.nts.gov) to find additional information in the [public docket](#) for this NTSB investigation (case no. HWY20FH007). Use the [CAROL Query](#) to search safety recommendations and investigations.

Location	I-526 westbound at mile marker 21 on the Don N. Holt Bridge, near North Charleston, South Carolina (figure 2)
Date	July 1, 2020
Time	9:50 a.m. eastern standard time
Vehicles involved	4
People involved	4
Injuries	1 fatal (tow truck operator), 1 serious (sheriff's deputy), 2 uninjured (SUV driver, pickup driver)
Weather	Dry, clear and daylight
Roadway information	Bridge with three travel lanes in each direction plus shoulders on each side



Figure 2. Area where the crash occurred, as indicated by the red circle. (Background source: Google Maps)

1. Factual Information

1.1 Background

1.1.1 Highway Information

The Don N. Holt Bridge is a 4-mile bridge span that carries I-526 traffic across the Cooper River near North Charleston, South Carolina. The bridge is located in both Charleston and Berkeley counties. At this location, I-526 consists of three westbound lanes and three eastbound lanes, divided by a concrete jersey barrier (figure 3). The crash occurred in the right westbound lane, at the beginning of the through-truss portion of the bridge.²



Figure 3. Westbound view from the right travel lane on I-526 approaching the through-truss portion of the bridge deck that spans the Cooper River. The dynamic message sign is located 1,497 feet, or about a quarter mile, east of the crash location.

On the bridge, the travel lanes are 11–12 feet wide and the right shoulder areas on both the eastbound and westbound side of the roadway are 6 feet wide. The roadway shoulders exceeded current minimum width design guidance set by the American Association of State Highway Transportation Officials (AASHTO). However, the

² A through-truss bridge is one in which the roadway passes through the truss, meaning the truss is seen both above and below the bridge deck.

shoulder was not wide enough to allow the average size vehicle to park and be completely clear of the adjacent travel lane.

The bridge parapet, a concrete barrier wall designed to prevent vehicles from traveling off the bridge span into the river below, is 32 inches, or about 2.6 feet, in height. The bridge, completed in 1993, conformed to design standards that existed at the time of the original construction, including the parapet height.

The posted speed limit is a maximum of 60 miles per hour (mph) and a minimum of 45 mph. Information provided by the South Carolina Department of Transportation (SCDOT) shows the annual average daily traffic is 74,200 vehicles and 25 percent of the vehicle traffic is classified as large trucks.

At the time of the crash, the weather was clear, and the roadway was dry. There were no environmental obstructions to the line of sight in this area.

1.1.2 Commercial Vehicle and Driver

The 2018 Ford F350 Lariat is a pickup truck configured with a crew cab and a gross vehicle weight rating (GVWR) of 14,000 lbs. An unladen 2005 custom built Heavy Haul Gooseneck flatbed trailer with a GVWR of 20,000 lbs. was attached to the hitch in the truck's bed. The truck was not equipped with collision avoidance technologies such as automatic emergency braking or forward collision warning systems. A search of the safety recall database maintained by the National Highway Traffic Safety Administration (NHTSA) revealed no recalls or ongoing defect investigations related to the circumstances of the crash. In addition, no pre-existing mechanical deficiencies were identified.

The 47-year-old pickup truck driver was engaged in a commercial interstate trip. He held a class A commercial driver's license issued by the state of Tennessee. His current license was issued in 2017 and was valid until 2025. The state of Tennessee placed two restrictions on the driver's license, precluding the driver from operating tractor-trailers and any vehicle with airbrakes. He had a current 2-year medical certificate that was valid until October 2020.

The pickup truck driver is the owner of the commercial agricultural business, Phillips Lumber and Farm Products LLC based in Mountain City, Tennessee. The driver told police that his business operates under agricultural exemptions. The relevant exemptions are enumerated in Title 49 *Code of Federal Regulations (CFR)*, specifically 49 *CFR* 390.39 and 49 *CFR* 395.1(k), which exempt drivers from certain requirements related to commercial driver's licensing, controlled substances and alcohol testing, physical qualifications and examinations, hours of service, and vehicle inspection, repair, and maintenance, when traveling within 150 air-miles (about 172.6 statute miles) of the farm. The pickup truck driver reported that he was hauling hay to an agricultural business in South Carolina. Postcrash investigation found that the crash driver had traveled more than 230 air-miles (or nearly 265 statute miles) from his place of business in Mountain

City, and thus was required to comply with applicable Federal Motor Carrier Safety Regulations (FMCSRs).

Immediately following the crash, a witness reported that he observed the pickup truck driver attempting to hide a sack in hay on the truck bed. This was later discovered by police to be alcoholic beverage containers. The pickup truck driver reported to police that he consumed 2–3 beers the previous night. Postcrash, he was administered a field sobriety test by a police trooper, which was negative. Despite the driver having a commercial driver's license and being involved in a fatal crash, which required the driver to undergo postcrash testing, no further drug and alcohol testing was performed. For many years, the NTSB has recommended postcrash alcohol and drug testing for all drivers involved in fatal crashes.³

The South Carolina State Transport Police (STP) postcrash inspection of the commercial driver and the vehicle identified several violations of the FMCSRs, including failure to display the motor carrier name and the US Department of Transportation (USDOT) number; failure to possess a current record of duty status (logbook); possession of beer and distilled spirits in the cab of the pickup truck at the time of the crash; and operating a commercial motor vehicle without proof of periodic inspections.⁴

1.2 Event Sequence

On Wednesday, July 1, 2020, about 9:44 a.m., a Charleston County sheriff's deputy stopped his 2017 Dodge Charger patrol car, with its emergency lights activated, in the far-right westbound lane of I-526 on the Don N. Holt Bridge. The sheriff's deputy positioned the patrol car behind a disabled 2005 Porsche SUV that was partially blocking the right lane and shoulder, leaving a safety gap between the patrol car and the SUV. Moments later, a 2002 International tow truck arrived, activated its warning lights, and parked in front of the disabled SUV. The tow truck driver left his vehicle and began tending to the disabled SUV. The driver of the disabled SUV got out of the car and stood in the road to speak to the tow truck driver. The deputy exited his vehicle and instructed the driver of the disabled vehicle to return to the safety of his SUV.

About 9:50 a.m., the 2018 Ford F350 pickup truck with an attached unladen trailer was traveling west in the right lane of I-526. The pickup truck struck the rear of the parked patrol car, pushing it into the deputy. The patrol car continued forward into the rear of the disabled SUV. The SUV was pushed forward and across all three travel lanes, coming to rest on the left shoulder next to the center barrier. The driver of the SUV, who had re-entered his vehicle before the collision, was uninjured. The pickup truck continued to push the patrol car forward, eventually striking the tow truck driver standing on the right shoulder, who was thrown off the bridge and into the river below. The patrol

³ Safety Recommendation H-12-35 to the state of South Carolina has recently been classified "Open—Unacceptable Response."

⁴ After the crash, the Federal Motor Carrier Safety Administration issued Phillips Lumber and Farm Products LLC the USDOT number 3572018.

car struck the rear of the parked tow truck before coming to final rest. The sheriff's deputy sustained serious injuries and the tow truck driver was fatally injured. The driver of the pickup truck was uninjured.

According to the South Carolina Highway Patrol, the pickup truck was traveling at 49 mph at the time of the collision with the patrol car. There was no evidence that the driver applied the brake. The driver told police that he observed an electronic sign that said that a lane was blocked ahead.⁵ He stated he was following a white car that suddenly swerved to the left, revealing the stopped patrol car, and he did not have time to brake. A witness stated that the pickup driver said he was looking at the ships loading and unloading and suddenly a little white car changed lanes in front of him and the patrol car was right in front of him. Figure 4 is a snapshot taken from the body-worn camera of the deputy as he walked back toward his patrol car after speaking with the driver of the disabled vehicle. The red circle highlights the image of the approaching pickup truck captured by the camera. As shown in the snapshot, there are no obstructions present that prevented the driver of the pickup truck from seeing the stopped patrol car with the warning lights activated.

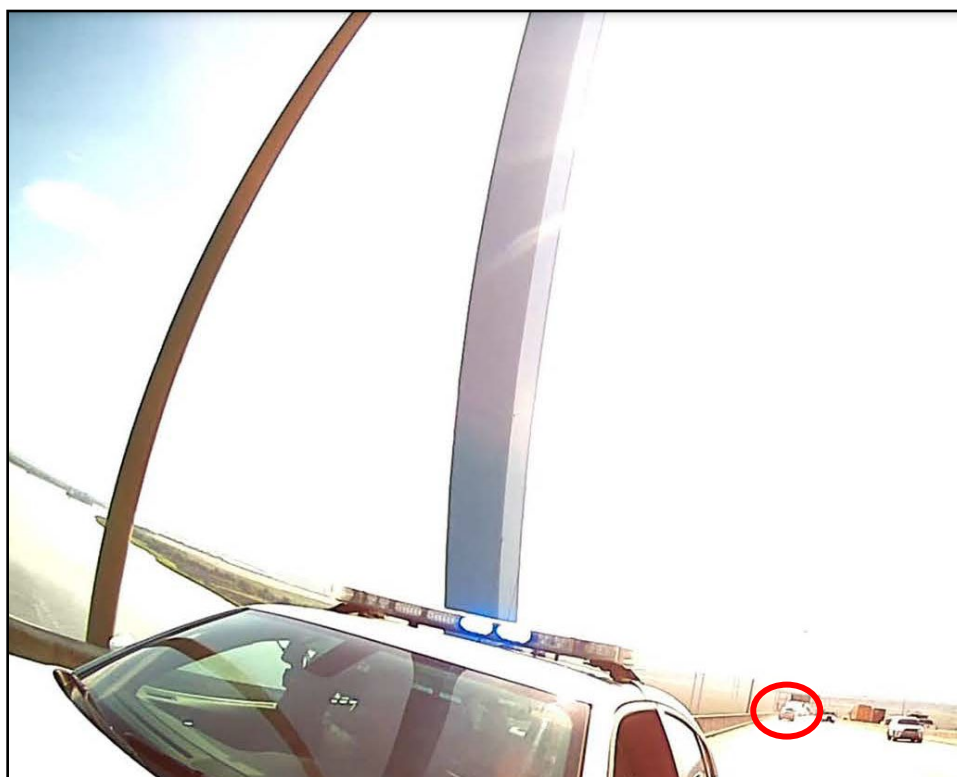


Figure 4. Image from deputy's body-worn camera shows the approaching pickup truck (indicated by the red circle) in the right lane in the background. (Source: Charleston County Sheriff's Office)

⁵ Other witnesses also said that they observed the electronic warning sign before the crash. SCDOT told the National Transportation Safety Board that the overhead message sign (shown in figure 3), located about a quarter mile east of the stopped car, was illuminated before the crash.

1.3 Additional Information

1.3.1 Precrash Activities

The National Transportation Safety Board (NTSB) documented the pickup driver's precrash activities using information from the driver's interview with South Carolina Highway Patrol and cell phone records (table 1). The pickup truck driver's interstate commercial trip started in Mountain City, Tennessee, on June 30 and he arrived in Cainhoy, South Carolina, between 10 and 11 p.m. The trip from Mountain City to various locations in South Carolina is about 330 statute miles and would have taken the truck driver about 6 hours to complete. The driver reported that he stopped to make a delivery in Cainhoy, which is located some 9 miles from the crash scene. The business was not open at that time, so the driver parked in a local gas station parking lot to await the arrival of the business owner the next morning. The driver's last cell phone use occurred at 11:26 p.m. His statement indicated that he woke the next morning about 6 a.m., allowing a potential sleep opportunity of about 6.5 hours. His cell phone was reported connected to the internet and using large amounts of data throughout the night. Specifically, a new Internet Protocol (IP) session was initiated at 3:45 a.m. The manner and nature of the internet activity could not be determined from the data available.

On the morning of the crash, the pickup driver delivered his load of hay and began the return trip back to Tennessee between 9:00 and 9:30 a.m. At the time of the crash, the phone was reported as connected to the internet, but no calls or texts were being placed.

Table 1. Pickup driver’s precrash activity

Time	Activity	Information Source
Monday, June 29, 2020		
6:58 a.m. – 6:14 p.m.	Interacting with phone (text/call/email)	Cell phone records
Tuesday, June 30, 2020		
5:17 a.m.	Interacting with phone (text)	Cell phone records
7:10 a.m. – 9:46 p.m.	Phone internet activity (type of activity unknown)	Cell phone records
8:11 a.m. – 11:16 p.m.	Interacting with phone (text/call/email)	Cell phone records
4:00 p.m. (approx.)	Leaves Mountain City, TN, to drive to SC	Cell phone records (location data)
9:46 p.m. – 3:45 a.m.	Phone internet activity (type of activity unknown)	Cell phone records
11:00 p.m. (approx.)	Arrives in SC and parks at gas station	Driver police interview
11:26 p.m.	Interacting with phone (text)	Cell phone records
11:30 p.m.	Consumed 2–3 beers but stopped drinking by 11:30	Driver police interview
Wednesday July 1, 2020		
3:45 a.m. – 8:10 a.m.	Phone internet activity (type of activity unknown)	Cell phone records
6:00 a.m. (approx.)	Awakes	Driver police interview
8:05 a.m. – 9:17 a.m.	Interacting with phone (text/call/email)	Cell phone records
9:15 a.m. (approx.)	Begins driving return trip to TN	Driver police interview
9:18 a.m. – 10:11 a.m.	Phone internet activity (type of activity unknown)	Cell phone records
9:50 a.m.	Crash occurs	Police records

2. Analysis

The weather was not a factor and the traffic control measures employed by the SCDOT and emergency responders were appropriate, including the advanced warning sign and actions of the deputy on scene. Investigators found no evidence of mechanical deficiencies in the 2018 Ford F350 Lariat pickup truck that would have caused or contributed to the crash. In addition, there was insufficient evidence to determine whether alcohol or other drugs were factors in the crash.

2.1 Commercial Driver Performance

The pickup truck driver's failure to respond to multiple visual cues concerning the stopped vehicles ahead suggests a lapse in attention. Fatigue is one factor that can lead to attention lapses. Fatigue is generally caused by insufficient sleep and can be influenced by the length of time awake and on task, time of day, quality of sleep, and medical factors.

The pickup truck driver traveled to South Carolina during the evening hours, arriving between 10 and 11 p.m. The driver's cell phone records show text messages sent through 11:26 p.m. His cell phone registered internet activity throughout the night. Although the driver stated he woke at 6 a.m., his phone registered a new IP session initiating at 3:45 a.m. (again, the type of activity is unknown).

Based on the driver's statement, he had a maximum sleep opportunity of 6.5 hours prior to the crash, while parked in the all-night gas station parking lot. It is unlikely that the driver could have obtained quality rest while parked and in his vehicle. An uncomfortable sleep environment can lead to sleep disruption and a net effect of less overall sleep. Research indicates that drivers who have slept for less than 7 hours in the past 24 hours have significantly elevated crash rates (Tefft 2016). Although the crash occurred during the day, when fatigue-related crashes are less likely to occur, given the sleep opportunity of less than 7 hours, along with poor quality of sleep, it is likely that fatigue contributed to the crash.

Other potential sources for the driver's lapse in attention were also examined. At the time of the crash, the driver of the pickup truck was not interacting with his cell phone. He had a visual sightline to the bridge deck from a distance of over a mile and no other obstacles to visibility such as lighting conditions, position of the sun, rain, fog, or roadway geometry were present. The driver admitted to seeing an advanced warning sign of the blocked lane but stated that his field of view was obstructed by another vehicle traveling in front of him. However, video images from the body-worn camera of the deputy showed no vehicle in front of the truck (figure 4). The driver told another witness that he was watching a ship in the river as the pickup truck approached the patrol car. Although the deputy's body-worn camera did not show any obstruction blocking the driver's view of the stopped vehicles in the travel lane, it cannot be determined with certainty what the driver's actions were before the collision with the patrol car. It can only be stated that he was clearly not attentive to the driving task.

2.2 Emergency Responders' Safety

Secondary crashes, defined as collisions resulting from another crash or incident, pose a significant risk to emergency responders or roadway workers conducting operations on or adjacent to an active roadway. The NTSB has, over the years, investigated numerous secondary crashes on high-speed, high-volume, multiple-lane roadways and in work zones, many involving emergency responders (NTSB 1991, 2002, 2016, and 2022; also NTSB investigation case nos. HWY20IH009 and HWY21IH004).

Methods to prevent these occurrences include traffic incident management, implementation of “Move Over” laws, and advanced driver assistance systems. Keeping responders safe is an element of the Safe System approach. A Safe System addresses all aspects of traffic safety: road users, vehicles, speeds, roads, and postcrash care, to mitigate injury risks for all road users, including emergency responders.⁶ Postcrash care enhances the survivability of crashes through expedient access to emergency medical care, while creating a safe working environment for vital first responders and preventing secondary crashes through robust traffic incident management practices.⁷

Traffic incidents involving disabled vehicles, law enforcement traffic stops, and minor roadway blockages such as debris in a roadway are handled by the controlling law enforcement agency and do not involve the dispatching or use of department of transportation resources. Training is provided to law enforcement officers detailing traffic incident management skills, such as temporary traffic control measures and scene safety, that entails the consistent evaluation and re-evaluation of the scene for hazards and the need for additional mitigation strategies. The deputy’s actions were in accordance with accepted traffic incident management practices, including providing a safety gap between his patrol car and the disabled vehicle, activating the car’s emergency lights, and instructing the SUV driver to remain in his car. In addition, SCDOT illuminated a sign warning approaching drivers of the blocked lane.

The first “Move Over” law was enacted in South Carolina in 1996 and was the first of its kind in the country.⁸ As of 2020, all 50 states and the District of Columbia have adopted some type of “Move Over” legislation (US Government Accountability Office 2020). In general, “Move Over” laws require drivers to reduce speed to a reasonable level and, when practicable, vacate the lane closest to the emergency or highway vehicle. However, each state adopted its own definition of “Move Over” and under what circumstances certain categories of road workers are included. For example, in some states, tow truck operations are included in the statute only when the services are requested or authorized by a government agency such as law enforcement. However, in other states, all tow truck operations on a roadway would be included in that state’s definition of a “Move Over” incident.

Generally, to determine if a safety initiative is effective, data are collected to document incidents and illustrate enforcement and compliance trends. Dozens of agencies independently collect data regarding exposure risks to roadway workers, but the data collected lack standardization and reporting continuity, which prevents the information from being used in a broader context such as a nationwide comparison of similar incidents in various states. No federal mandate exists for reporting certain types of incidents, and the sharing of data is left up to the discretion of the agencies involved. Thus, the full scope of the problem is not well defined. Current efforts by NHTSA and the

⁶ [The Safe System Approach \(ntsb.gov\)](https://www.nts.gov/safe-system-approach).

⁷ [Post-Crash Care | US Department of Transportation](https://www.transportation.gov/post-crash-care).

⁸ South Carolina’s “Move Over” law is codified in S.C. Code 56-5-1538.

Federal Highway Administration involve collecting data to study the frequency of responder “struck by” incidents and the efficacy of “Move Over” laws, as part of a working group that also includes various emergency responder organizations from around the country. The goal of this effort is to advance the availability, quality, and uniformity of data. NHTSA, together with law enforcement partners and state highway offices, has also implemented a safety communication campaign and developed traffic safety marketing tools to increase awareness of “Move Over” laws.⁹

Finally, the NTSB has previously investigated many rear-end crashes and secondary crashes in which collision avoidance technology, such as forward collision warning, automatic emergency braking, or connected vehicle technology could have assisted the driver in identifying and responding to a stopped hazard ahead and thus prevented or mitigated the crash.¹⁰ In the North Charleston crash, although the driver admitted he had advanced warning of the stopped vehicle, additional alert or intervention by collision avoidance technology—had the vehicle been equipped—may have helped prevent this crash.

3. Conclusions

3.1 Probable Cause

The National Transportation Safety Board determines that the probable cause of the North Charleston, South Carolina, crash was the pickup truck driver’s inattention to the driving task, likely due to fatigue, which resulted in his failure to respond to stopped vehicles in his travel lane.

⁹ [Move Over | Traffic Safety Marketing.](#)

¹⁰ See, for example, Safety Recommendations H-13-30 and -31, as well as H-22-1.

References

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NTSB investigators worked with the **Charleston County Sheriff's Office, South Carolina Highway Patrol, Multidisciplinary Accident Investigation Team, and the South Carolina Department of Transportation** throughout this investigation.

The National Transportation Safety Board (NTSB) is an independent federal agency dedicated to promoting aviation, railroad, highway, marine, and pipeline safety. Established in 1967, the agency is mandated by Congress through the Independent Safety Board Act of 1974, to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)).

For more detailed background information on this report, visit the NTSB investigations website and search for NTSB accident ID HWY20FH007. Recent publications are available in their entirety on the NTSB website. Other information about available publications also may be obtained from the website or by contacting—

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