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Special Crash Investigations: Remote Move-Over-Law Crash Investigation; Vehicle: 2018 Freightliner M2 Flatbed/Nonmotorist; Location: Washington State; Crash Date: September 2021

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16. Abstract The crash occurred in September 2021 in Washington. The roadway was a southbound three-lane divided interstate highway. Conditions were daylight, raining, and wet. The struck vehicle was a 2018 Freightliner M2 flatbed rollback tow truck. The 33-year-old male tow truck driver (nonmotorist) was standing outside the vehicle. He had stopped to load a disabled vehicle onto the tow truck's flatbed and was standing on the right shoulder near the fog line. The striking vehicle was a 2007 Kenworth T8 truck-tractor pulling a 1950 Fruehauf log trailer driven by a belted 23-year-old male. While approaching a slower moving vehicle in the middle lane, the Kenworth driver changed lanes to the right. In the right lane, a slower moving vehicle traveling ahead of the Kenworth applied its brakes. In response, the Kenworth driver braked hard and lost control of the trailer. The trailer swung to the right, crossed over the fog line and struck the Freightliner and tow truck driver. The tow truck driver sustained fatal injuries and was pronounced deceased on-scene. The Kenworth driver and a witness were not injured.			
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Special Crash Investigations
Remote Move-Over-Law Crash Investigation
Case No. DS21013
Vehicle: 2018 Freightliner M2 Flatbed/Nonmotorist
Location: Washington State
Crash Date: September 2021

Background

This report documents the remote investigation of a crash selected by the Special Crash Investigations (SCI) group of the National Highway Traffic Safety Administration to be included in its “Move-Over-Law” investigations. The investigation used data from local authorities including the police report, police photos, police video, police radio and incident logs, and medical records. The source material documented the facts of the case and reconstruct the causal factors of the crash relative to Washington State’s Move-Over Law requiring drivers to slow down, proceed with caution, and when possible, move to the far lane when passing an official emergency response vehicle on the side of the road with its emergency lights activated. The Washington State statute defines emergency response vehicles as police, fire, medical, tow trucks, and vehicles providing roadside assistance, making use of hazard lights. This investigation was initiated by SCI in response to a notification sent by the SCI team in December 2021 containing the state crash report and online news releases. The SCI team requested and received police case material in December 2021. The case was assigned as a remote investigation in the same month.

The involved vehicles were a 2018 Freightliner M2 flatbed tow truck (Figure 1) and a 2007 Kenworth T8 truck-tractor (Figure 2) pulling a 1950 Fruehauf log trailer. The crash occurred in September 2021 on a southbound three-lane divided interstate highway. Conditions at the time of the crash were daylight, raining, and wet. The posted speed limit was 97 kmh (60 mph). The struck vehicle was the 2018 Freightliner M2. Two tow truck operators (nonmotorists), a 33-year-old male (tow truck driver) and 21-year-old male (witness), had stopped to load a disabled 2003 Dodge Sprinter van parked on the right shoulder. They parked on the right shoulder and loaded the van onto the tow truck’s carrier deck. The tow truck driver was standing on the shoulder facing west along the left side of the rollback carrier deck, and the 21-year-old witness



Figure 1. Struck vehicle, 2018 Freightliner M2 tow truck (police photo)



Figure 2. Striking vehicle, 2007 Kenworth T8 truck-tractor pulling a 1950 Fruehauf log trailer (police photo)

was standing facing east along the right side of the carrier deck. The Freightliner had its roof-mounted light bar and flashing running lights activated.

The striking vehicle was a 2007 Kenworth T8 truck-tractor pulling an empty 1950 Fruehauf log trailer driven by a 23-year-old belted male. The Kenworth was initially traveling in the middle lane. While approaching a slower moving vehicle, the driver changed lanes to the right. After entering the right lane, a slower moving vehicle in that lane traveling ahead of the truck applied its brakes. In response, the Kenworth driver braked hard and lost control of the trailer, which swung to the right, crossed over the fog line, and struck the Freightliner and tow truck driver. The tow truck driver sustained fatal injuries and was declared deceased on-scene. The 21-year-old witness was not injured. The Freightliner and Fruehauf trailer sustained minor damage, and the Kenworth was not damaged. Both vehicles and the trailer were towed on orders of police.

Summary

Crash Site

The crash occurred in the southbound lanes of the physically divided north/south interstate highway (Figure 3). The roadway had three southbound asphalt lanes each measuring approximately 3.6 m (11.8 ft) wide. The lanes were separated by dashed white painted stripes and raised reflective markers located on the dashes and within the spaces between the dashes. The left roadway edge had a solid yellow painted fog line and an asphalt shoulder with a milled-in type rumble strip. The right roadway edge had a solid white painted fog line and an asphalt shoulder measuring approximately 4.5 m (14.8 ft) wide with a milled-in type rumble strip. Traveling southbound, the roadway was level with a slight left curve radius measuring approximately 1,814 m (5,951 ft) at the right fog line. Based on police photos, the pavement, markings, and reflectors were in good condition. The right roadside had a drainage ditch, ascending grass embankment, and tree line, oriented roughly parallel to the roadway. The posted speed limit was 96 kmh (60 mph). Conditions at the time of the crash were daylight, raining, and wet. The Kenworth driver told police his visibility was affected by road spray coming off other vehicles. Aside from the Freightliners emergency lighting, no supplemental warning devices were in use at the site prior to the crash.

The Freightliner had responded to a prior incident involving a 2003 Dodge Sprinter van. At the time of this crash, the Freightliner was stopped on the right shoulder and the Dodge was loaded on the carrier deck of the Freightliner. A crash diagram and crash site satellite view are included at the end of this report.



Figure 3. Crash site, looking south (police photo)

Pre-Crash

The Freightliner was stopped facing south on the right shoulder with its emergency lights activated including a rear-facing, amber-colored LED light bar located at roof level just aft of the cab, and flashing amber-colored running lights on the left and right planes of the carrier deck. The driver of the Freightliner was standing on the right shoulder between the left plane of the carrier deck and the first travel lane from the right. According to the witness, the driver was facing west near the forward aspect of the carrier deck while retrieving chains to secure the Dodge. The witness was standing on the right side of the carrier deck at its forward aspect, facing east while holding chains to secure the Dodge.

Police gave their video interview with the Kenworth driver to SCI. The Kenworth was traveling southbound at an unknown speed in the middle lane. The vehicle was approaching its intended exit, which was a right exit ramp approximately 1.6 km (1.0 mi) south of the crash site. According to the Kenworth driver, he was approaching another, slower-moving heavy truck in the middle lane and visibility was low due to road spray. When he was within a truck length of the lead vehicle, he signaled and initiated a lane change to the right. The Kenworth driver said he did not see the Freightliner ahead due to road spray. After entering the right lane, he saw a slower-moving black vehicle that applied its brakes, apparently in response to the presence of the Freightliner and tow truck operators. In response, the Kenworth driver braked hard and lost control of the trailer, which swung to the right, crossing over the right fog line and entering the right shoulder.

Crash

The Fruehauf's right-front wheel struck the Freightliner's left-rear wheel and its right upright standards struck the left edge of the Freightliner's carrier deck (Event 1). The trailer continued forward and its right-side tires and upright standards probably struck the tow truck driver (Event 2). The damage patterns to the vehicles suggested a swiping type of contact. According to the witness, he felt the Freightliner lunge at impact. Based on police photos and witness statements, the Freightliner appeared to remain in its original position on the shoulder. The witness saw the tow truck driver pitched into the air an unknown distance before landing on the roadway and sliding an estimated 17 m (55 ft). The tow truck driver came to rest approximately 50 m (164 ft) south of the area of impact in the first and second lanes from the right.

Post-Crash

The Kenworth driver regained control of the truck and trailer and brought them to a controlled stop on the right shoulder. The witness ran to the 33-year-old tow truck driver, who was lying face down. He called 911 and was told to attempt cardiopulmonary resuscitation (CPR). The witness turned the tow truck driver onto his back and attempted CPR, ceasing efforts when paramedics arrived. Following lifesaving efforts from paramedics, the tow truck driver showed no signs of life and was pronounced deceased on-scene. The Kenworth driver and witness were not injured. Both vehicles and the trailer were towed on orders of police.

Move-Over Discussion

Washington State's Move-Over Law was passed in 2007 and amended in 2010. The Washington State Patrol website states that, since 2007, the number of collisions involving emergency vehicles and workers has increased. The current law enforces an "emergency zone" defined as the adjacent lanes of the roadway 61 m (200 ft or 10 car lengths) before and after a stationary emergency vehicle with flashing lights, a tow truck using red lights (such as 4-way emergency flashers), an emergency assistance vehicle using warning lights, or any police vehicle using emergency lights. The roadway in this crash had three lanes, which made changing lanes to the left possible.

The Freightliner driver was parked facing south on the right southbound shoulder while responding to a prior incident involving the Dodge. He was standing on the right shoulder between the left plane of the Freightliner and the first travel lane from the right. The vehicle's emergency lighting was activated, including a rear-facing amber-colored LED light bar and side-mounted flashing amber running lights. The driver was wearing a black and yellow reflective

jacket, yellow reflective vest, orange long sleeve t-shirt, blue denim jeans, brown leather work boots, and brown leather gloves.

According to the State law, appropriate driver response within the emergency zone would be to change lanes to the left (if traveling in the right or center lanes), proceed with due caution, and reduce vehicle speed. Instead of staying in the center lane or moving to the left lane, slowing his speed and proceeding with caution, the Kenworth driver changed lanes to the right, attempted to pass a slower-moving vehicle, and lost control of his vehicle and trailer when a slower moving vehicle ahead of him braked. Police determined the actions of the Kenworth driver contributed to the crash in three ways: exceeding a reasonably safe speed, following too closely, and overcorrecting or oversteering. A drug recognition expert was requested and tests for alcohol and drugs revealed the Kenworth driver was not impaired. Police determined the tow truck driver's actions were non-contributory. They determined neither vehicle had pre-existing defects. It is unknown if the Kenworth driver was cited for violations. It is unknown if he was aware of the State's Move-Over law. He told police he did not see the tow truck due to low visibility caused by road spray.

2018 Freightliner M2 Flatbed Tow Truck

Description

The 2018 Freightliner M2 flatbed tow truck was identified by police using the Vehicle Identification Number (VIN) 3ALACWFC2JDxxxxxx. The manufacture date was unknown. The Freightliner was a medium duty series cab-behind-engine truck with a gross vehicle weight rating of 8,845 to 11,794 kg (19,501 to 26,000 lb). It was manufactured as an incomplete vehicle straight truck and used commercially as a tow truck with a Jerr-Dan rollback style carrier deck and various towing equipment. It had a 6-cylinder, 6.7-liter diesel Cummins engine, rear-wheel drive, air brakes, and 255/70R22.5 tires.

Emergency Lighting Discussion

The leading end of the carrier had a rear-facing LED light bar with amber lights that were activated (Figure 4). The left and right sides of the carrier deck had five round amber-colored lamps extending its length that were activated. The back edge of the carrier had red and white reflective tape. Due to the high roof profile of the Sprinter when loaded on the flatbed, it may have obscured the Kenworth driver's view of the tow truck's light bar.

Exterior Damage

Based on the police report and photos, the Freightliner sustained minor damage to the left plane. Damage to the carrier included scrape marks and a displaced running light. The left-rear wheel was bent, and the tire was de-beaded. No other damage was noted by police or visible in police photos. The estimated truck deformation classification (TDC) for the Freightliner in Event 1 was 06LBES1 (Figure 5).



Figure 4. 2018 Freightliner M2, LED light bar is activated (police photo)



Figure 5. Left plane damage, 2018 Freightliner M2 (police photo)

Nonmotorist

Tow Truck Driver Demographics

Age/sex: 33 years/male
 Height: 183 cm (72 in)
 Weight: 77 kg (169 lb)
 Clothing: Black and yellow reflective jacket, yellow reflective vest, orange long sleeve t-shirt, blue denim jeans, brown leather work boots, brown leather gloves
 Eyewear: Unknown
 Alcohol/drug data: None detected
 Transport from scene: Not transported
 Type of medical treatment: None, declared deceased on-scene

Tow Truck Driver Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Fractures, bilateral with flail left side, ribs	450211.3	Tandem IPC Exterior of other vehicle/Exterior of [driver's] vehicle	Probable Probable
2	Fractures NFS, occipital and parietal bones, vault skull	150400.2	Tandem IPC Exterior of other vehicle/Exterior of [driver's] vehicle	Probable Probable
3	Fractures, multiple, bilateral, lower mandible	250610.2	Tandem IPC Exterior of other vehicle/Exterior of [driver's] vehicle	Probable Probable
4	Fractures NFS, cervical spine	650216.2	Tandem IPC Exterior of other vehicle/Exterior of [driver's] vehicle	Probable Probable
5	Fracture, open, left clavicle	750501.2	Exterior of other vehicle	Probable
6	Fracture NFS, right scapula	750900.2	Exterior of other vehicle	Probable
7	Fractures NFS, right radius	752800.2	Exterior of other vehicle	Probable
8	Fractures NFS, multiple, right ulna (at olecranon)	752113.2	Tandem IPC Exterior of other vehicle/Exterior of occupant's vehicle	Probable Probable
9	Abrasions, left eyebrow and cheek, face	210202.1	Ground	Probable

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
10	Abrasions and contusions, chest	410202.1	Ground	Probable
11	Abrasions, contusions and superficial lacerations, bilateral arms, forearms, and right hand	710202.1	Ground	Probable
12	Abrasions and contusions, left hip and pelvic region	810202.1	Ground	Probable
13	Abrasions and contusions, bilateral thighs and legs	810202.1	Ground	Probable

Source: Autopsy

Tow Truck Driver Kinematics

The tow truck driver was standing on the right southbound shoulder between the left plane of the Freightliner's carrier deck and the first travel lane from the right. He was facing west and retrieving chains to secure the van. The tow truck driver was struck and dragged by the right plane of the trailer, and impact forces likely displaced him forward causing him to contact the carrier deck of his vehicle. Police and the witness suggested he was likely contacted by the trailer tires. He was dragged along the edge of the tow truck before being pitched into the air. After landing on the roadway, the tow truck driver slid to final rest. His more severe injuries included fractures to the vault skull, mandible, cervical spine, left clavicle, right scapula, right radius, and right ulna; these were attributed to being compressed between the two vehicles. He sustained abrasions and contusions to the face, chest, arms, hips, and legs; these were attributed to contact with the ground. He came to rest face down in the first and second lanes from the right, approximately 50 m (164 ft) south of the point of impact (Figure 6). He remained there until removed by emergency responders.



Figure 6. Lookback view looking north from tow truck driver's location at final rest to area of impact (police photo)

2007 Kenworth T8 Truck-Tractor and 1950 Fruehauf Log Trailer

Description

The 2007 Kenworth T8 truck-tractor was identified by police using the VIN 1NKDL40X07Rxxxxxx. The manufacture date was unknown. The Kenworth was a cab-behind-engine medium/heavy tractor manufactured as an incomplete vehicle. It had a 6-cylinder, 15.0-liter, diesel Cummins engine, 6x4 drive, air brakes, and 11R24.5 tires.

The 1950 Fruehauf log trailer (Figure 7) was identified by police using the VIN Cxxxxx. The trailer had two axles with 255/70R22.5 tires. The trailer was not loaded at the time of the crash. Trailer weight was unknown.

Exterior Damage

The Kenworth was not struck or damaged. In Event 1, the right plane of the Fruehauf trailer struck the left plane of the Freightliner. Damage to the trailer included a bent right-front wheel and de-beaded tire (Figure 7). The estimated TDC for the trailer in Event 1 was 12RTFSA. In Event 2, the right plane of the Fruehauf trailer struck the tow truck driver. Police photos did not document any deformation to the trailer for this event. It appears likely that one or more right-side tires, and one or both upright standards (Figure 8), struck the tow truck driver. The estimated TDC for the Kenworth in Event 2 was 12RTFUA.

Striking Vehicle Driver

The Kenworth driver was a belted 23-year-old male. He had approximately 4 years driving



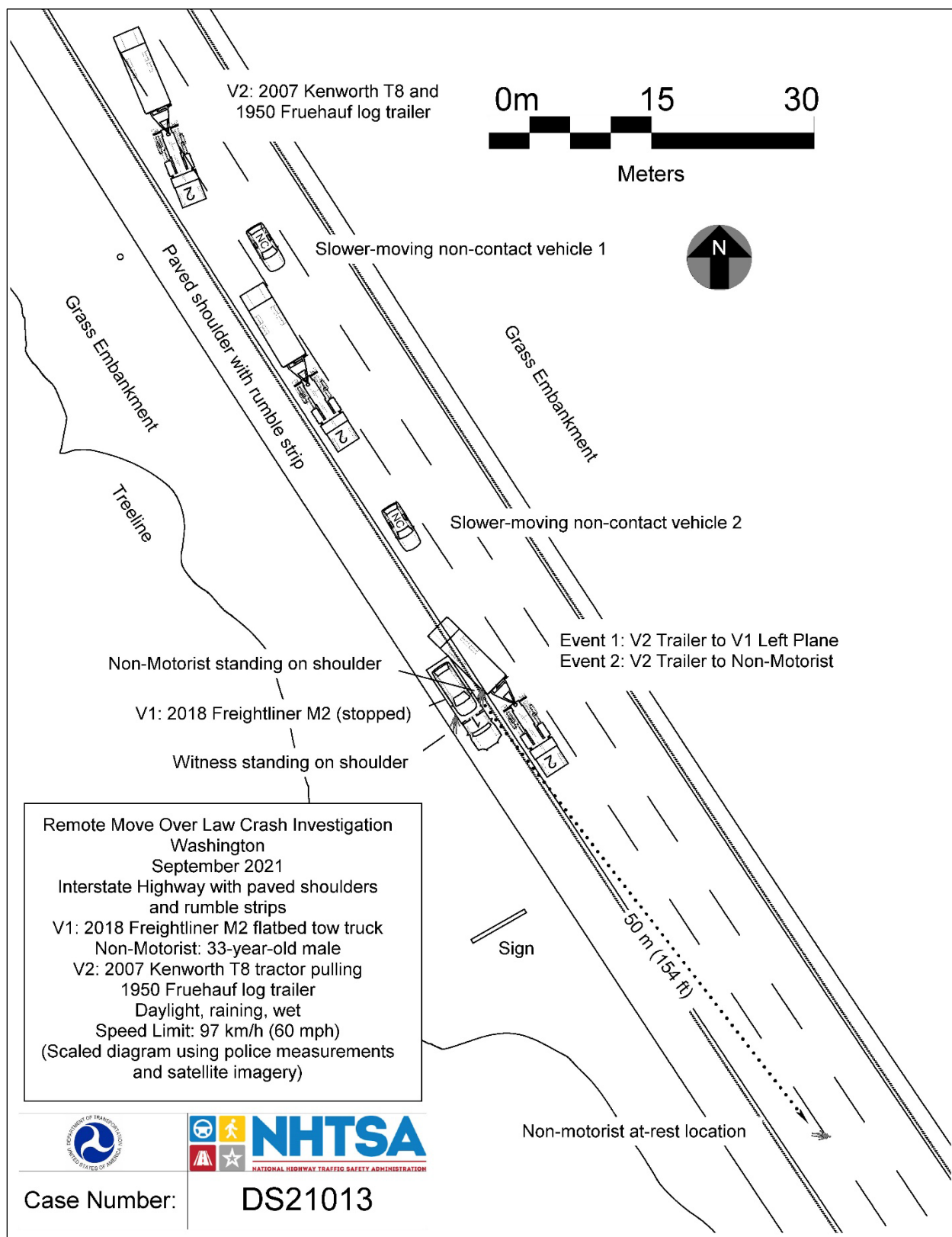
Figure 7. 1950 Fruehauf log trailer (police photo)



Figure 8. Upright stations, 1950 Fruehauf log trailer (police photo)

experience and approximately 1 year driving for the logging company. His certifications and training were unknown. The night before the crash he slept at home for approximately 8.5 to 9.0 hours. He left home for work at approximately 2:30 a.m., from a town approximately 18 km (11 mi) north of the crash site. His time and distance driving the Kenworth prior to the crash was unknown. Police determined the actions of the Kenworth driver contributed to the crash in three ways: exceeding a reasonably safe speed, following too closely, and overcorrecting or oversteering. A drug recognition expert was requested and tests for alcohol and drugs revealed the Kenworth driver was not impaired. The driver told police he was currently taking two prescription medications, which were venlafaxine (anxiety, depression) and licinopril (high blood pressure). He was not injured or transported.

Crash Diagram



Crash Site Satellite View



Image source: Google Maps ©2024 Maxar Technologies.

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