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**National Highway  
Traffic Safety  
Administration**



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DOT HS 813 637

October 2024

**Special Crash Investigations:  
Remote Move-Over-Law Crash  
Investigation;  
Vehicle: 2015 Ram  
5500/Nonmotorist;  
Location: Colorado;  
Crash Date: July 2021**

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## Technical Report Documentation Page

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<b>15. Supplementary Notes</b> Each crash represents a unique sequence of events and generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicles or their safety systems. This report and associated case data are based on information available to the Special Crash Investigation team on the date this report was published.			
<b>16. Abstract</b> This report documents the remote investigation of a crash selected by the Special Crash Investigations (SCI) group of the National Highway Traffic Safety Administration (NHTSA) to be included in its Move-Over-Law investigations. The crash occurred at night in July 2021 in Colorado. The struck vehicle was a 2015 Ram 5500 rollback tow truck; the striking vehicle was a 2019 Ram 1500 Rebel driven by a belted 30-year-old female. The Ram 5500 was parked on the left shoulder with its overhead lights activated. The 30-year-old male tow truck driver (nonmotorist) was outside of the Ram 5500 recovering a disabled Jeep. The Ram 1500 was traveling southbound in the left lane. The tow truck driver stepped into the left lane from the shoulder. The Ram 1500 then struck the tow truck driver, who was thrown forward approximately 86 m (282 ft). The tow truck driver was fatally injured. The Ram 1500 driver was not injured or transported and was cited for careless driving causing death.			
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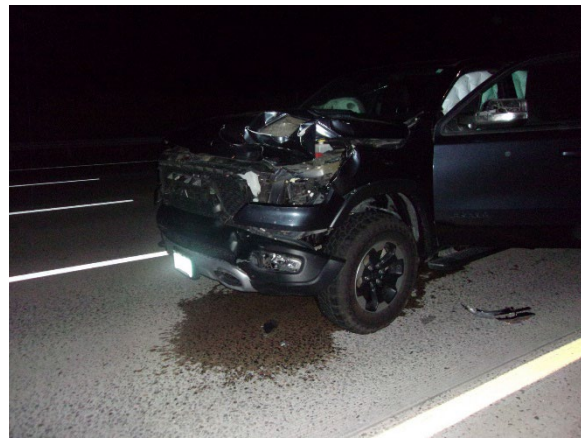
**Special Crash Investigations**  
**Remote Move-Over-Law Crash Investigation**  
**Case No. DS22001**  
**Vehicle: 2015 Ram 5500/Nonmotorist**  
**Location: Colorado**  
**Crash Date: July 2021**

## **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 crash report (PCR) and on-scene police photos. The source materials were used to document the facts of the case and reconstruct the causal factors of the crash relative to Colorado’s Move-Over Law (Revised Statute Section 42-4-705) requiring all drivers to move into the next lane over for stopped vehicles. If it is not safe or possible to move over, the driver must reduce their speed by 20 mph if the speed limit is 45 mph or more, or to under 25 mph if the speed limit is 40 mph or less. Drivers in Colorado must also immediately yield the right-of-way and move to the farthest right-hand lane available, if possible, when approached by emergency vehicles using their audible or visual emergency signals. Drivers must stop in these situations and remain halted until the emergency vehicle has passed. SCI initiated this investigation in response to a PCR notification sent by the SCI team. The case was assigned to Dynamic Science, Inc., in January 2022. A final set of on-site photos was obtained in July 2022.



*Figure 1. 2015 Ram 5500 tow truck  
(police photo)*



*Figure 2. 2019 Ram 1500 Rebel  
(police photo)*

The crash occurred at night in July 2021. The crash site was in the southbound left shoulder and left lane of a 4-lane divided interstate highway. The concrete roadway was straight and level, and the conditions were clear and dark with no streetlights. The struck vehicle was a 2015 Ram 5500 rollback tow truck (Figure 1); the striking vehicle was a 2019 Ram 1500 Rebel driven by a belted 30-year-old female (Figure 2). The Ram 5500 tow truck was parked on the left shoulder with its overhead lights activated. The 30-year-old male tow truck driver (nonmotorist) was outside the Ram 5500 recovering a disabled Jeep. The Ram 1500 was traveling southbound in the left lane. The tow truck driver stepped into the left lane from the shoulder. The Ram 1500 then struck the tow truck driver who was thrown forward approximately 86 m (282 ft) south where he came to

rest on the left shoulder, fatally injured. The Ram 1500's driver side mirror struck the Ram 5500's right mirror. The Ram 1500 came to a controlled stop in the left lane, south of the tow truck driver. It was towed due to disabling damage. The Ram 5500 did not move after the impact. It was towed, but not due to disabling damage. The Ram 1500 driver was not injured or transported.

After filing the case with the district attorney's office, police cited the Ram 1500 driver for careless driving causing death.

## Summary

### Crash Site

The crash site was in the southbound left shoulder and left lane of a 4-lane divided interstate highway (Figure 3). The concrete roadway was straight, level, and dry. The travel lanes were separated by dashed white painted lines. The roadway was bordered on the left by a solid painted yellow fog line, a concrete shoulder, and a concrete median barrier. It was bordered on the right by a solid white fog line and metal W-beam guardrail. The roadway was dark at the time of the crash with no artificial illumination. The weather according to the nearest weather station was reported as 20° C (68° F), 19 km/h (11.8 mph) winds out of the south, and 43 percent humidity. The speed limit was 120 km/h (75 mph). A crash diagram and crash site satellite view (Figure 9) are included at the end of this report.



*Figure 3. Southbound approach (police photo)*

### Pre-Crash

Prior to this crash, the disabled Jeep was parked on the southbound left shoulder. The Ram 5500 driver responded and parked the tow truck on the left shoulder with its emergency lights activated, which included a tow bed-mounted LED light bar with rear-facing red, amber, and white lamps; tow bed amber marker lights; roof mounted amber lights; and headlight/running lights. Additionally, the lights for the disabled Jeep were illuminated. The tow truck driver exited the Ram 5500 and began recovering the disabled Jeep. He was wearing a black work vest with vertical silver reflective stripes, black shirt, dark-blue jeans, and black and gray work gloves. The rollback bed was deployed and the Jeep was partially loaded (Figure 4).



*Figure 4. Loaded disabled Jeep, looking south (police photo)*

The Jeep's wheels had been secured and the tow truck driver was near the tow controls on the Ram 5500's right side. The Ram 1500 was traveling southbound in the left lane at approximately 114 km/h (70.8 mph). Given the proximity of the Ram 5500 to the left lane fog line, the tow truck driver was likely in the left travel lane just prior to impact.

### **Crash**

The Ram 1500's front plane struck the tow truck driver (Event 1). The throw distances were obtained from the police report. The tow truck driver was airborne for 26 m (85.3 ft) and then slid 60 m (196.8 ft) to final rest in the left shoulder for a total throw distance of 86 m (282.1 ft).<sup>1</sup> The Ram 1500's left mirror struck the Ram 5500's right mirror (Event 2).

### **Post-Crash**

The Ram 1500 came to a controlled stop in the left travel lane, south of the tow truck driver. It was towed due to disabling damage. The Ram 5500 did not move after the impact. It was towed but not due to disabling damage. The tow truck driver was declared deceased on scene. The Ram 1500 driver was not injured or transported.

### **Move-Over Discussion**

Colorado's Move-Over Law (Revised Statute Section 42-4-705) requires all drivers to move into the next lane over for stopped vehicles. If it is not safe or possible to move over, the driver must reduce their speed by 20 mph if the speed limit is 45 mph or more, or to under 25 mph if the speed limit is 40 mph or less. Drivers in Colorado must also immediately yield the right-of-way and move to the farthest right-hand lane available, if possible, when approached by emergency vehicles using their audible or visual emergency signals. Drivers must stop in these situations and remain halted until the emergency vehicle has passed.

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<sup>1</sup> Calculated using the Appel forward projection pedestrian formula.

It is unknown if the Ram 1500 driver was familiar with the State's Move-Over law and the actions required of drivers in such circumstances. Police said the driver's contributing action was a failure to yield the right-of-way. According to the police report, there were no apparent human contributing factors. After filing the case with the district attorney's office, the police cited the Ram 1500 driver for careless driving causing death.<sup>2</sup>

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<sup>2</sup> Colorado Revised Statutes Title 42. Vehicles and Traffic § 42-4-1402. Careless driving.

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## 2015 Ram 5500 Rollback Tow Truck

### Description

The 2015 Ram 5500 was manufactured as an incomplete vehicle with a regular cab and identified by the Vehicle Identification Number (VIN) 3C7WRMDJ5FGxxxxxx. The vehicle had a 6.4-liter, 8-cylinder gasoline engine coupled to a 6-speed automatic transmission, rear-wheel drive, dual-rear tires, and daytime running lamps. The gross vehicle weight rating was 8,845 kg (19,500 lb). The vehicle had a 40/20/40 cloth bench seat, power steering, and tilt steering wheel. It was used commercially as a rollback tow truck.

### Emergency Lighting Discussion

The tow bed's leading end had a rear-facing LED light bar with red, amber, and white lights that were activated. The black tow bed's left and right sides had two round amber colored lamps and red and white reflective tape. The white vehicle cab's left and right sides had red, white, and blue reflective tape along the lower door edges. The cab had roof mounted amber running lights. The Ram 5500's tow bed was tilted down and the rear tail/brake lights were not visible. All the Jeep's lights were illuminated.

### Exterior Damage

The Ram 5500 sustained minor damage to its right mirror from the impact with the Ram 1500's left mirror (Figures 5 and 6). The truck deformation classification was 06RPGN2.<sup>3</sup>



*Figure 5. Damage to the Ram 5500's right mirror (police photo)*



*Figure 6. Oblique view of damage to the Ram 5500's right mirror (police photo)*

<sup>3</sup> Truck deformation classification – SAE J1301 AUG94.

## **NHTSA Recalls and Investigations**

Searches in the NHTSA recall database ([www.nhtsa.gov/recalls](http://www.nhtsa.gov/recalls)) in August 2022 and August 2024 using the Ram 5500's VIN revealed one unrepaired recall that said torque specification information in the manual was incorrect and wheel studs need to be inspected.



## 2019 Ram 1500 Rebel

### Description

The 2019 Ram 1500 Rebel crew cab pickup was identified by the VIN 1C6SRFLT3KNxxxxxx. The vehicle had a 5.7-liter, 8-cylinder gasoline engine coupled to an 8-speed automatic transmission, 4-wheel drive, a 5-foot box, antilock 4-wheel disc brakes, brake assist, ready alert braking, traction control, and daytime running lights. It had a tilt and telescope steering wheel, front-row bucket seats, and a second-row 60/40 folding seat.

### Exterior Damage

The Ram 1500 sustained moderate front-plane damage from the impact with the tow truck driver (Figure 7). The damage began at the left-front bumper corner and extended to the right. There was damage to the hood that appeared to be wrapping type damage from the impact with the tow truck driver's head and torso. The collision deformation classification was 12FYEW1. (CDC)<sup>4</sup> The vehicle sustained minor damage to the left mirror and side glass from the impact with the Ram 5500's right mirror (Figure 8). The CDC was 12LPGN2.



*Figure 7. Front-plane damage to the Ram 1500 from impact with tow truck driver (police photo)*



*Figure 8. Impact damage to the Ram 1500's left mirror (police photo)*

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<sup>4</sup> Collision deformation classification – SAE J224 May 2022.

## NHTSA Recalls and Investigations

Searches in the NHTSA recall database ([www.nhtsa.gov/recalls](http://www.nhtsa.gov/recalls)) in August 2022 and August 2024 using the Ram 1500's VIN revealed that there were no unrepaired recalls for this vehicle.

### Striking Vehicle Driver (Move-Over Data From Police)

Police injury severity:	0-Not injured
Speeding related:	No
Condition (impairment) at time of crash:	None
Police reported alcohol presence:	None
Alcohol test:	None given
Alcohol test result:	None
Police reported other drug presence:	No
Method of drug determination by police:	None
Other drug test result:	None given
Physical/mental conditions:	Not reported
Driver fatigue:	Not reported
Driver's distraction/inattention to driving:	Not reported
Driver's distractions:	Not reported
Driver illness:	No illness
Driver's license type/status:	Full driver license
Graduated driver licensing status:	NA
Violations charged:	Cited for careless driving causing death, per investigating officer
Striking vehicle driver sight line to the struck vehicle clear:	Yes
Striking vehicle driver sight line to the struck vehicle obscured:	No
Driver notes:	None

### Occupant Data

The belted 30-year-old female driver of the Ram 1500 was not injured or transported.

## Nonmotorist

### Tow Truck Driver Demographics

Age/sex: 30 years/male  
 Height: 173 cm (68 in)  
 Weight: 107 kg (235 lb)  
 Clothing: Black work vest with vertical reflective strips, black shirt, dark-blue jeans, black and gray work gloves  
 Eyewear: Unknown  
 Alcohol/drug data: Positive for marijuana metabolites, per autopsy report  
 Transport from scene: None  
 Type of medical treatment: None

### Tow Truck Driver Injuries

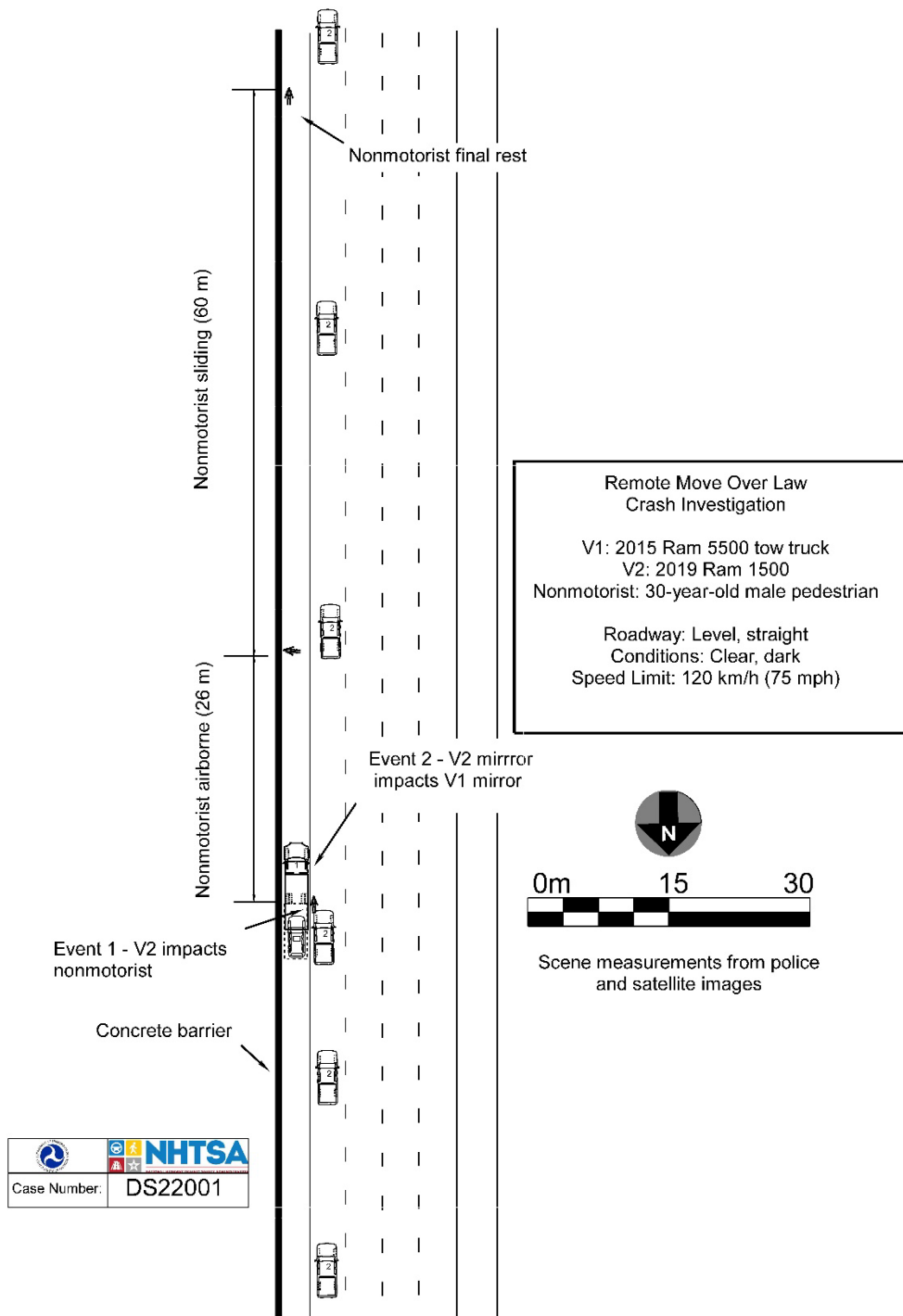
Inj. No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1 2	Atlanto-occipital dislocation with transection of upper cervical spinal cord and basilar subarachnoid and subdural hemorrhage of brain.  Fracture-dislocation, third cervical vertebra with transection of cervical spinal cord and epidural subarachnoid spinal cord hemorrhages	610236.6 140629.3	Exterior of other motor vehicle	Certain
3 4	Fracture-dislocation, first thoracic vertebra with transection of thoracic spinal cord and several hemorrhages	610400.3 650416.2	Exterior of other motor vehicle	Certain
5	Displaced fractures, right 1, 5, and 9 ribs, left 1-3 and 12 ribs	450203.3	Exterior of other motor vehicle	Certain
6	Left hemothorax (150 ml) and hemoperitoneum (300 ml).  Bilateral pulmonary hilar subpleural hemorrhages	442200.3	Exterior of other motor vehicle	Certain
7	Laceration, liver with subtotal transection	541820.2	Exterior of other motor vehicle	Certain

Inj. No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
8	Lacerations, spleen	544220.2	Exterior of other motor vehicle	Certain
9	Laceration, mesenteric root	542020.2	Exterior of other motor vehicle	Certain
10	Laceration, pancreas	542820.2	Exterior of other motor vehicle	Certain
11	Displaced fractures, anterior and right pelvic ring	856100.2	Exterior of other motor vehicle	Certain
12	Displaced fractures, bilateral tibias and fibulas	854271.2	Exterior of other motor vehicle (bumper)	Certain
13		854271.2		
14		854441.2		
15		854441.2		
16	Facial abrasions/lacerations: forehead, nose, lips, cheeks	210202.1	Ground	Probable
17		210600.1		
18	Head abrasions/lacerations	110202.1	Ground	Probable
19		110600.1		
20	Cutaneous brush and individual abrasions and contusions of chest, abdomen, and back	410202.1	Ground	Certain
21		510202.1		
22	Cutaneous brush and individual abrasions, lacerations and contusions of upper and lower extremities	710202.1	Ground	Certain
23		710202.1		
24		810202.1		
25		810202.1		
26	Lacerations, intimal surface thoracic aorta	420206.4	Exterior of other motor vehicle	Certain

### Tow Truck Driver Kinematics

The tow truck driver was standing near the right rear of the tow bed, likely near the tow controls in the left travel lane. At impact he was displaced 86 m (282 ft) to the south, according to the police report, and came to rest on the left shoulder.

# Crash Diagram



**Crash Site Satellite View**



*Figure 9. Google Maps © 2024 Maxar Technologies, U.S. Geological Survey Map data*

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