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Special Crash Investigations: Remote Move-Over-Law Crash Investigation; Vehicle: 2021 Ford Explorer; Location: Nevada; Crash Date: July 2021

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16. Abstract This report documents the remote investigation of a Move-Over-Law crash in Nevada. The crash occurred in July 2021 on a two-lane eastbound interstate highway; conditions were daylight (dawn), clear, and dry. The struck subject vehicle was a 2021 Ford Explorer Police Interceptor fully marked police vehicle. The striking vehicle was a 2018 Dodge Caravan. The Ford was stopped in the left lane with its emergency lights activated. The Ford driver was an unbelted 48-year-old male law enforcement officer who stopped to conduct a DUI investigation. It was unknown if other vehicles were stopped at the time of this crash; none were visible in the on-scene police photos or mentioned in the police report. The Dodge driver was a belted 40-year-old female. The Dodge had three additional passengers: a belted 15-year-old male in the front passenger seat, a 6-year-old of an unknown gender improperly using a high back belt-positioning booster seat in the second-row center position, and an unbelted 14-year-old of an unknown gender in the second-row right position. According to the police report, the Dodge driver failed to use due care to sufficiently slow her vehicle speed or change lanes. The front plane of the Dodge impacted the back plane of the Ford which displaced the Ford forward approximately 13.1 m (43 ft) east of the point of impact. The law enforcement officer sustained a "C" type (claimed) injury in the area of his neck but was not transported. All four occupants of the Dodge were transported with unspecified injuries. Law enforcement suspected the Dodge driver of alcohol involvement based on her own admission. Both involved vehicles were towed due to disabling damage.			
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Special Crash Investigations
Remote Move-Over-Law Crash Investigation
Case No. DS21008
Vehicle: 2021 Ford Explorer
Location: Nevada
Crash Date: July 2021

Background

This report documents the remote investigation of a crash selected by the Special Crash Investigations (SCI) team of the National Highway Traffic Safety Administration to be included in their “Move-Over-Law” investigations study. The investigation used data obtained from local authorities, the police report, on-scene police photos, and an interview. The source material was used to document and reconstruct the crash relative to Nevada’s Move Over Law requiring drivers to slow down, proceed with caution, and when possible, move to the far lane when passing an emergency response vehicle on the roadside with its emergency lights activated. This investigation was initiated by SCI in October 2021 in response to a notification sent by the SCI team containing an online news release, police report, and on-scene police photographs.



Figure 1. Struck subject vehicle, 2021 Ford Explorer Police Interceptor (police photo)



Figure 2. Striking vehicle, 2018 Dodge Grand Caravan (police photo)

The crash occurred in the early morning in July 2021 on an interstate highway in Nevada. The interstate highway numbering convention assigned the highway a north/south designation, but at the crash site its orientation was more east/west and will be referred to as such in this report. The crash occurred in the eastbound lanes of the physically divided highway. Conditions at the time of the crash were daylight (dawn) and dry with clear visibility. The roadway had two eastbound lanes and the posted speed limit was 105 km/h (65 mph). The struck subject vehicle was a 2021 Ford Explorer Police Interceptor fully marked police vehicle (Figure 1) and the striking vehicle was a 2018 Dodge Caravan (Figure 2). The Ford was stopped in the second lane from the right with its emergency lights activated, which included a roof-mounted LED light bar with rear-facing blue and amber lamps and 4-way flashers with rear-facing amber lamps. The Ford driver was an unbelted 48-year-old male law enforcement officer who stopped to conduct a DUI investigation. It was unknown if other vehicles were stopped at the time of this crash; none were visible in the on-scene police photos or mentioned in the police report. The Dodge driver was a

belted 40-year-old female. Other occupants of the Dodge included a belted 15-year-old male in the front passenger seat, a 6-year-old passenger of an unknown gender using an Evenflo Big Kid Sport high-back belt-positioning booster child seat in the second-row center position, and an unbelted 14-year-old passenger of an unknown gender in the second-row right position. The Evenflo booster seat was visible in police photos and the police report indicated it was being used improperly. Some data for the child occupants was redacted in the police report, and no additional information was available.

The police report stated that, for eastbound traffic, there was an approximate 4.8 km (3 mi) line of sight from the roadway to the area of impact. The report stated that the driver of the Dodge failed to use due care to sufficiently slow her vehicle speed or change lanes. The crash occurred when the front plane of the Dodge impacted the back plane of the Ford. Impact forces displaced the Ford forward where it came to rest facing east approximately 13.1 m (43 ft) east of the point of impact (POI). The Dodge traveled in an eastbound, post-impact trajectory for approximately 12.2 m (40 ft) and came to rest facing east in the second lane from the right.

The driver of the Ford sustained a police-reported “C” type (claimed) injury. The police report stated he was not transported, and no further injury data was available. The driver of the Dodge sustained a police-reported “C” type (claimed) injury. She was suspected of alcohol involvement based on her own admission to law enforcement and was transported by ambulance to a local hospital. The child occupants of the Dodge were not injured or transported. Both involved vehicles were towed.

Summary

Crash Site

Crash site data was obtained from the police report, on-scene photos, and satellite imagery. The crash occurred in the eastbound lanes of a physically divided east/west interstate highway. The roadway had two eastbound asphalt lanes. The left lane was approximately 4.7 m (15 ft) wide, and the right lane was approximately 3.6 m (12 ft) wide. They were separated by a combination of raised white round pavement markers and reflective pavement markers. The roadway was bordered on the left edge by a solid yellow painted fog line and on the right edge by a solid white painted fog line. Based on police photos, the pavement and pavement markings appeared to be in good condition. The left paved shoulder was approximately 2.1 m (7 ft) wide, and the right paved shoulder was approximately 2.4 m (8 ft) wide. The roadway was straight and level. No rumble strips were present. The posted speed limit was 105 km/h (65 mph). Conditions at the time of the crash were daylight (dawn) and dry with clear visibility. No supplemental warning devices were in use at the site prior to the crash and according to the police report no unusual conditions were present. The police report stated that, for eastbound traffic, a line of sight measuring approximately 4.8 km (3 mi) was present in approach to the area of impact. Presumably, the Ford's rear-facing emergency lights were visible to approaching traffic. A crash diagram and crash site satellite view are included at the end of this report.

Pre-Crash

The Ford police vehicle was stopped facing east in the left eastbound lane with its emergency lights activated. The unbelted Ford driver had stopped to conduct a DUI investigation. It was unknown if other vehicles were stopped at the time of this crash; none were visible in the on-scene police photos or mentioned in the police report. The Dodge was traveling at a police-reported estimated speed of 97–105 km/h (60-65 mph) in the left eastbound lane. According to the police report, the driver of the Dodge failed to use due care to sufficiently decrease her speed to avoid striking the Ford. It is unknown if the Dodge driver attempted evasive maneuvers. No skid marks were visible in police photos.

Crash

The crash included a single event. The front plane of the Dodge impacted the back plane of the Ford. A group of scrape marks in the left lane pavement identified the POI (Figure 3). Impact forces displaced the Ford forward where it came to rest facing east in the left lane approximately 13.1 m (43 ft) east of the POI (Figure 4). The Dodge traveled eastbound in a post-impact trajectory in the left lane where it came to rest facing east approximately 12.2 m (40 ft) east of the POI.

Based on police photos, the Ford sustained severe damage to the back plane with an estimated collision deformation classification (CDC)¹ of 06BDEW2. The Dodge sustained severe damage to the front plane with an estimated CDC of 12FDEW2.

¹ Collision Deformation Classification SAE J224 May 2022



Figure 3. View looking east from area of impact to Dodge at final rest (police photo)



Figure 4. Final rest positions of Ford with emergency lights activated, and Dodge (police photo)

Post-Crash

The driver of the Ford sustained a police-reported “C” type (claimed) injury. The police report stated he was not transported and his egress from the vehicle was unknown. The driver of the Dodge sustained a police-reported “C” type (claimed) injury. She was transported by ambulance to a local hospital. The driver of the Dodge was suspected of alcohol involvement based on her own admission. The police report did not specify any charges related to the presence of alcohol. The child occupants were not injured. They were not ejected or entrapped and their egress from the vehicle was unknown. Both involved vehicles were towed.

Move-Over Discussion

According to a State government website, since 2003 Nevada law has required drivers to slow down, proceed with caution, and when possible, move to the far lane when passing an official emergency response vehicle pulled over on the side of the road with amber lights flashing.² Beginning July 1, 2017, the Nevada law expanded to lawfully require drivers to do the same for State department of transportation (DOT) vehicles stopped on the roadside with their flashing amber or non-flashing blue lights activated. State DOT vehicles often use flashing amber or non-flashing blue lights to warn drivers of an immediate traffic hazard, as well as when employees are constructing, maintaining, or repairing highways. The law also includes the State’s freeway service patrol fleet vehicles. Drivers found guilty of violating Nevada’s Move-Over Law can be charged with a misdemeanor. Since October 2017, the move over law further applies to any traffic incident including stalled vehicles and debris on the roadway. According to an online source, Nevada’s Move-Over Law fine is \$395. If the offense occurs in a work zone, the fine is up to \$790. If the violation results in injury or death, the fine may be even higher. In addition to the fine, a violation also includes the possibility of jail time.

The Dodge driver was suspected of being impaired by alcohol based on her admission to law enforcement. It is unknown if the driver was familiar with the State’s Move-Over Law and the actions required of drivers in such circumstances. Law enforcement determined the primary driver factor in this crash was that she had been drinking which resulted in physical impairment.

² [Nevada "Move Over" Law Explained | Nevada Department of Transportation \(nv.gov\)](https://www.nv.gov/transportation/safety/move-over-law-explained)

The primary vehicle factor was driving too fast for conditions. Law enforcement determined that the driver failed to use due care to sufficiently decrease her speed to avoid striking the Ford.

2021 Ford Explorer Police Interceptor

Description

The struck subject vehicle was a 2021 Ford Explorer Police Interceptor fully marked police vehicle identified by vehicle identification number (VIN) 1FM5K8AC2MNxxxxxx. The manufacture date was unknown. The Ford was a 4-door SUV with two rows of seating for five occupants. Standard equipment included a 3-liter 6-cylinder gasoline engine, 4-wheel drive, automatic transmission, power steering, tilt and telescoping steering functionality, and power windows. The vehicle manufacturer recommended size P255/60R18 tires for the front and rear. It had Goodyear tires of an unknown model, size, and manufacture date. Exterior lighting features included rear-facing white LEDs on the rear spoiler and left and right white LED spotlights at the A-pillars. The front end was equipped with a Westin Public Safety Elite push bumper.

According to a manufacturer's website,³ the Ford was a 121 km/h (75-mph) rear-impact crash test rated vehicle. The vehicle's air bag control module was supported by the Bosch Crash Data Retrieval system, but law enforcement did not image the vehicle's crash data.

Exterior Damage

The Ford sustained direct and induced damage to the back plane, and induced damage to the left and right planes (Figures 5 and 6). Direct damage to the back plane appeared to be distributed laterally from bumper corner to bumper corner, and vertically from the bumper to the beltline. The sheet metal of the back liftgate was crushed, the back bumper fascia was displaced, and the tail lamps were displaced and hanging from electrical wiring. Based on views of the Ford shown in on-scene police photos, the tail lamps continued to flash in their post-impact state. The sheet metal of the left and right quarter-panels was crumpled, and the left rear and right rear tires appeared to be restricted. The right-side glazing in the cargo area was disintegrated. The estimated CDC for the Ford in Event 1 was 06BDEW2. A WinSMASH photo-CDC run calculated a total delta-V in the 40–55 km/h (25–34 mph) range.



Figure 5. Back-plane damage, Ford (police photo)



Figure 6. Back-plane damage, Ford (police photo)

³ <https://www.ford.com/police-vehicles/hybrid-utility/>

Interior Damage

The right-side glazing in the cargo area was disintegrated. The side doors appeared to remain closed and operational and the back liftgate appeared to be jammed shut.

Manual Restraint Systems

The Ford was equipped with manual seat belts. The driver was unbelted at the time of the crash.

Supplemental Restraint Systems

The Ford was equipped with eight air bags. No air bags deployed. According to the owner's manual, the vehicle's air bags will deploy in front, side, or rollover crashes; they are not expected to deploy in rear crashes.

NHTSA Recalls and Investigations

VIN-based recall searches queried in January 2022 and September 2023 revealed no incomplete recalls for this vehicle.

Emergency Lighting and Visibility Discussion

The vehicle was stopped facing east in the left lane with its emergency lights activated. The SCI team interviewed an on-duty law enforcement supervisor to obtain the law enforcement agency's emergency lighting protocols. On-scene police images were used to obtain emergency lighting equipment and activation specific to this crash. According to the law enforcement officer interviewed, officers stopped on the side of the roadway while working an incident or traffic stop are required to have emergency lighting activated; however, during a DUI investigation, they turn their forward-facing emergency lighting off. Activating the vehicle's 4-way traffic advisor amber emergency flashers is not a requirement by the agency while working an incident or traffic stop.

Police photos indicate the activated emergency lighting features included a roof-mounted LED light bar with rear-facing blue and amber lamps and 4-way flashers with forward and rear-facing amber lamps.

The Ford's exterior was silver in color with blue and white reflective graphics on the sides and back plane. Reflective lettering was present on the left and right front fenders, front door panels, rear quarter-panels, and above the back bumper. Reflective chevrons in a diagonal pattern were present on the left and right front door panels.

2021 Ford Explorer Police Interceptor Occupant

Driver Demographics

Age/sex:	48 years/male
Height:	Unknown
Weight:	Unknown
Eyewear:	Unknown
Seat type:	Bucket with adjustable head restraint
Seat track position:	Unknown
Manual restraint usage:	Lap and shoulder belt available; none used
Usage source:	Police report
Air bags:	Frontal, knee, outboard seat-mounted side impact and inflatable curtain air bags available; none deployed
Alcohol/drug data:	None
Egress from vehicle:	Unknown
Transport from scene:	Not transported
Type of medical treatment:	Unknown

Driver Injuries

The Ford driver sustained a police-reported “C” type (claimed) injury. According to the police report, he was not transported.

Driver Kinematics

The unbelted 48-year-old male driver was seated in an unknown posture. At impact, he was likely displaced rearward in response to the 6 o’clock direction of force. His head and neck likely contacted the head rest and his back likely contacted the seat back. He complained of neck pain following the crash. The Ford traveled forward in a straight path over an approximate distance of 13.1 m (43 ft) before coming to rest. The driver’s actions during the post-impact movement was unknown. He exited the vehicle in an unknown manner and was not transported. It is unknown if he sought medical treatment.

2018 Dodge Grand Caravan

Description

The 2018 Dodge Grand Caravan was identified by VIN 2C4RDGCG5JRxxxxxx. The manufacture date was unknown. The Dodge was a 4-door minivan with front-wheel drive and five-passenger seating. Standard equipment included a 3.6-liter 6-cylinder gasoline engine, automatic transmission, and hydraulic brakes. The vehicle manufacturer recommended size P225/65R17 tires for the front and rear and a cold pressure of 250 kPa (36 psi). Tire data was not available for this vehicle. The vehicle's air bag control module was supported by the Bosch Crash Data Retrieval system, but law enforcement did not image the vehicle's crash data.

Exterior Damage

Based on the police report and photos, the Dodge sustained moderately severe damage to the front plane. The front plane had direct and induced damage, and the left and right planes had induced damage. Direct damage to the front plane appeared to be distributed laterally from bumper corner to bumper corner, and vertically from the bumper to the beltline. The front bumper fascia was displaced and the sheet metal of the hood and left front fender was crumpled. The estimated CDC for the Dodge in Event 1 was 12FDEW2 (Figure 7). A WinSMASH photo-CDC run calculated a total delta-V in the 40–55 km/h (25–34 mph) range.



Figure 7. Front plane damage, Dodge (police photo)

NHTSA Recalls and Investigations

VIN-based recall searches queried in January 2022 and September 2023 revealed no incomplete recalls for this vehicle.

Occupant Data

Occupant restraint data was obtained from the police report. The Dodge driver was a belted 40-year-old female. Other occupants included a belted 15-year-old male in the front passenger seat, a 6-year-old passenger of an unknown gender using an Evenflo Big Kid Sport high-back belt-positioning booster seat in the second-row center position, and an unbelted 14-year-old passenger of an unknown gender in the second-row right position. The Evenflo booster seat was visible in police photos, and the police report indicated it was being used improperly. Law

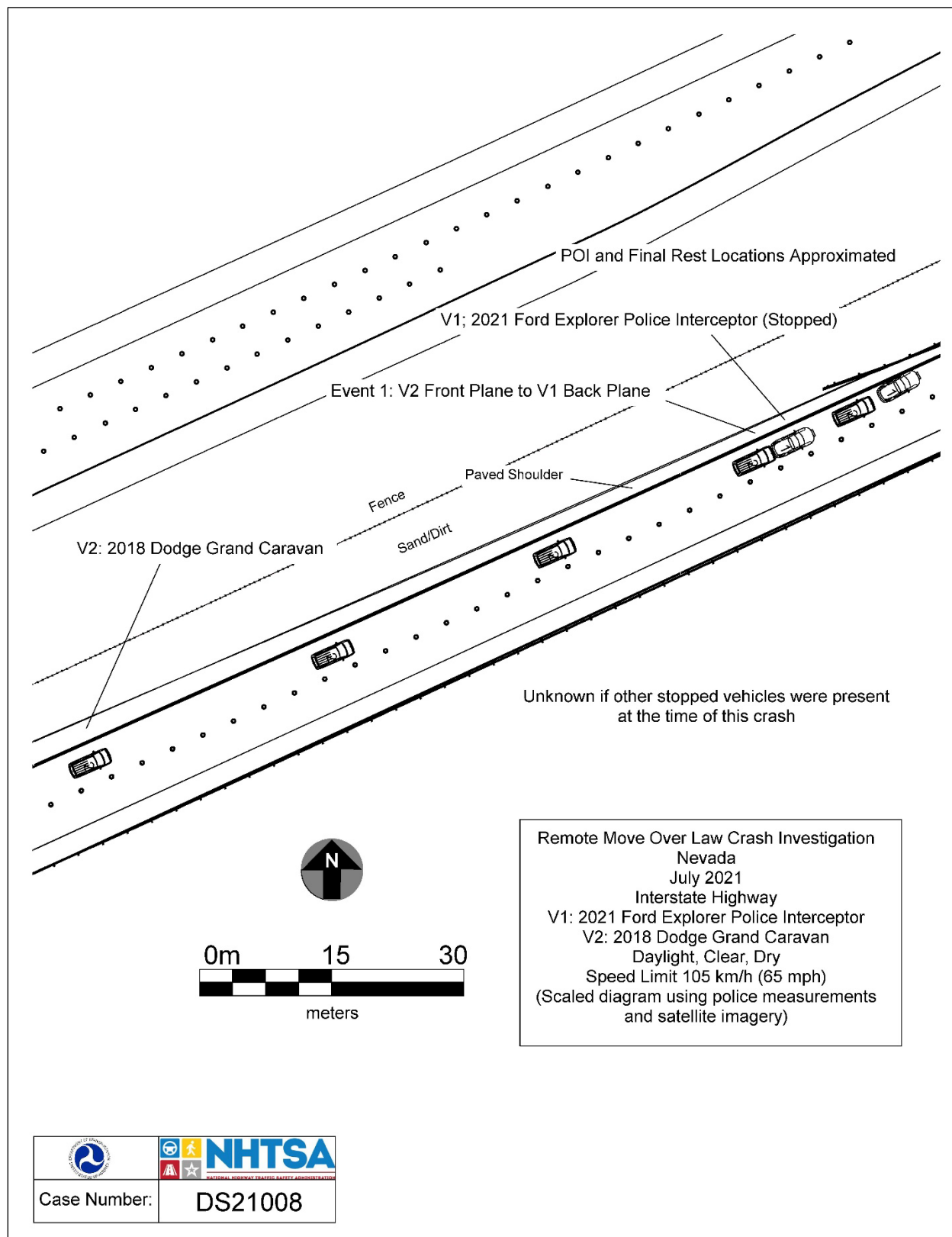
enforcement indicated the child occupants were not injured, ejected, entrapped or transported. Some data for the child occupants was redacted in the police report, and no additional information was available.

The Dodge driver was suspected of being impaired by alcohol based on her admission to police. The police report did not specify what, if any, charges were filed against her.

Driver Factors (Striking Vehicle, Police Reported)

Speeding-related:	Yes, too fast for conditions
Impairment:	Yes, physical impairment
Alcohol presence:	Positive
Alcohol test:	Unknown if given
Method of drug determination by police:	Driver admission
Police reported other drug presence:	No
Drug test:	Unknown if given
Method of drug determination by police:	Unknown
Physical/mental conditions:	None apparent
Driver fatigue:	No
Driver distraction/inattention:	No
Driver illness:	No
Driver's license type/status:	DL/valid
Obstructed view:	No; police estimated a 3-mile line of sight
Violations charged:	None specified

Crash Diagram



Crash Site Satellite View (Image Source: Google Maps ©2023 Maxar Technologies)



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