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**Special Crash Investigations:
Remote Move-Over-Law Crash
Investigation;
Vehicle: 2017 Ford Explorer;
Location: Texas;
Date: January 2020**

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16. Abstract This report documents the remote "Move-Over-Law" crash investigation involving two 2017 Ford Explorer Police Interceptors, a 2016 Ford Explorer Police Interceptor, and a 2005 Ford F-250, which were all struck by a 2017 Chevrolet Silverado. The three police vehicles were parked behind the Ford F-250 during a traffic stop and had their emergency lights on. A 34-year-old male police officer was positioned between the forward-most Explorer and the concrete traffic barrier, a second officer, a 46-year-old male, was between the F-250 and the traffic barrier, and a third officer, a 27-year-old female, was positioned at the front right corner of the Ford F-250. A fourth officer, a belted 41-year-old female, was sitting in the front right seat of the 2016 Explorer. The stopped Ford F-250 was driven by a belted 23-year-old male, with a belted 24-year-old female front passenger, and belted 29-year-old female second row right passenger. The Chevrolet Silverado struck the three Ford Explorers (Events 1, 2, and 3) and the back of the Ford F-250 (Event 6). During impact, one officer was pinned between one of the Explorers and the traffic barrier and sustained injuries. He was transported by ambulance to a hospital. The second officer was struck by the right side of the Ford F-250 and was thrown over the barrier onto the street below. He sustained fatal injuries and was pronounced deceased 21 minutes post-crash. A third officer was also struck by the Ford F-250 and sustained police reported B-level injuries (non-incapacitating). She was treated at the scene. The fourth officer, inside one of the Explorers, sustained police reported C-level (possible) injuries and sought treatment from a private source. Neither the Chevrolet driver nor any of the three occupants of the Ford F-250 were injured.			
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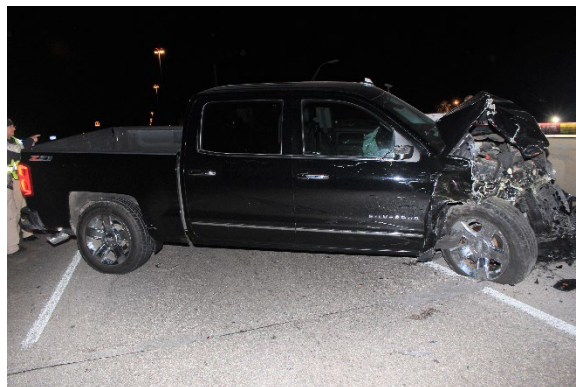
**Special Crash Investigations
Remote Move-Over-Law Crash Investigation
Case Number: CR20006
Vehicle: 2017 Ford Explorer
Location: Texas
Crash Date: January 2020**

Background

This report documents the “Move-Over-Law” crash investigation of two 2017 Ford Explorer Police Interceptors (Figure 1), a 2016 Ford Explorer Police Interceptor, and a 2005 Ford F-250, which were all struck by a 2017 Chevrolet Silverado (Figure 2). The crash resulted in fatal injuries to one police officer standing by the vehicles and injuries to three other officers, two standing in the roadway and one inside a police vehicle. The National Highway Traffic Safety Administration assigned an on-site investigation to the Special Crash Investigations (SCI) team at Crash Research & Analysis, Inc., in February 2020. COVID-19 caused the investigation into the crash to be reclassified as a “remote” investigation instead of the usual on-site investigation.



*Figure 1. Police image, the 2017 Ford Explorer
(1st vehicle struck)*



*Figure 2. Police image,
the 2017 Chevrolet Silverado*

The crash occurred on the right shoulder of an elevated State highway where three police vehicles were parked in single file behind the Ford F-250 during a traffic stop. All police vehicles had their emergency lights on. A 34-year-old male officer was positioned between the forward-most Explorer and the concrete traffic barrier. The second officer, a 46-year-old male, was positioned between the F-250 and the traffic barrier, and the third officer, a 27-year-old female, was positioned at the front right corner of the Ford F-250. The fourth officer, a belted 41-year-old female, was sitting in the front right seat of the 2016 Explorer. The vehicle that was stopped was a Ford F-250 driven by a belted 23-year-old male, with a belted 24-year-old female front passenger, and a belted 29-year-old female second row right passenger.

The Chevrolet struck the left sides of the three Ford Explorers (Events 1, 2, and 3) and the back of the Ford F-250 (Event 6). During impact, the first officer was pinned between one of the Explorers and the traffic barrier and sustained police reported A-injuries. He was transported by ambulance to a hospital. His specific injury and treatment information is unknown. The second officer was struck by the right side of the Ford F-250 and was thrown over the barrier onto the street below. He sustained fatal injuries and was pronounced deceased 21 minutes post-crash. The third officer was also struck by the Ford F-250 and sustained police reported B-level injuries (non-incapacitating). She was treated at the scene. The fourth officer inside one of the Explorers sustained police reported C-level (possible) injuries and sought treatment from a private source. Neither the Chevrolet driver nor any of the three occupants of the stopped Ford F-250 were injured.

Legal Statutes Governing Vehicle Movements Around Emergency Vehicles and Driver Responsibility

The Texas “Move-Over-Law” gave right-of-way to emergency and utility vehicles and was enhanced in September 2013. The enhancement required motorists to move one lane away from a law enforcement or other emergency vehicle that is on the side of the roadway or reduce speed to 32 km/h (20 mph) below the posted speed limit.

Summary

Crash Site

This crash occurred at night in artificially lighted conditions on the northbound shoulder of an elevated, urban, four-lane, physically divided State highway. Local weather reports indicated clear skies, no wind, and a temperature of 11 °C (51 °F). The bituminous roadway ran southeast/northwest with four northwest-bound through lanes that were separated from the three southeast-bound lanes by a concrete barrier. The travel lanes were approximately 3.7 m (12 ft) wide, and the right shoulder was approximately 3.4 m (11 ft) wide. Roadway markings consisted of a solid white edge line, dashed lane lines, and a solid yellow median line. All roadway measurements were scaled from satellite imagery. The speed limit was 97 km/h (60 mph). A crash diagram is included at the end of this report.

Pre-Crash

The three police vehicles and the Ford F-250 were all parked single file on the right shoulder facing northwest in the following order, from northwest to southeast: 2005 Ford F250 (vehicle 4), 2017 Ford Explorer (vehicle 3), 2016 Ford Explorer (vehicle 2), 2017 Ford Explorer (vehicle 1). According to the police crash report (PCR), one police officer was positioned between the 2017 Explorer (vehicle 3) and the traffic barrier, a second officer was between the Ford F-250 and the traffic barrier, a third officer was at the front right corner of the Ford F-250, and a fourth officer was seated in the right front seat of the 2016 Explorer. On-scene images obtained from the police indicate all police personnel had reflective/high-visibility vests on. It is likely that the police personnel involved in the initial traffic stop and subsequent crash were also wearing similar gear. The driver and two passengers of the Ford F-250 remained in the vehicle.

The Chevrolet Silverado (vehicle 5) was traveling northwest in the north westbound lanes (Figure 3) at an unknown speed. Court reports and witness accounts indicated that the Chevrolet driver was operating the vehicle erratically, moving over all lanes of traffic. Furthermore, the police crash report indicated the driver's blood alcohol concentration was .21 g/dL.



Figure 3. Overhead view of the crash area. Google Maps © 2022 Maxar Technologies, U.S. Geological Survey map data.

Crash

The front end of the Chevrolet struck the left side of the first 2017 Explorer (Event 1). The impact deployed the Silverado driver's frontal air bag. After the impact, the Chevrolet continued forward and its front end struck the left side of the 2016 Explorer (Event 2). The Chevrolet continued forward and probably started to rotate clockwise. The front end struck the left rear corner of the second 2017 Explorer (Event 3). This Explorer was redirected forward and to the right and the right side contacted and pinned the first officer against the traffic barrier (Event 4). The front end of the Explorer also struck the back end of the Ford F-250 (Event 5). The Chevrolet continued forward, rotating clockwise, and its front end struck the left rear corner of the Ford F-250 (Event 6). This impact projected the Ford F-250 forward and to the right and its right side struck the second officer (Event 7) positioned between the vehicle and the barrier. This impact projected him over the traffic barrier to the street below. The third officer, also standing on the right side of the Ford F250, was also struck by the right side (Event 8). Based on the police report scene sketch, the Ford F250 and police vehicles all remained on the shoulder at final rest facing northwest. The Chevrolet came to its final rest facing east between the second 2017 Explorer and the Ford F-250 straddling the white edge line, with the back end in the right lane and the front end on the shoulder.

Post-Crash

Additional police were summoned to the crash and arrived 18 minutes later. Emergency rescue and medical personnel also responded. According to the police crash report, the second officer, who was projected over the traffic barrier, was fatally injured and expired 21 minutes post-crash. The first officer, who was pinned against the traffic barrier, sustained police-reported A-level injuries and was transported by ambulance to a hospital. Non-motorist 3, who was also struck by the Ford F-250, sustained police reported B-level injuries and was treated at the scene. The officer in the 2016 Explorer sustained police-reported C-level injuries and sought private medical treatment. The Silverado driver did not sustain any police-reported injuries, nor did any occupants of the F-250. All vehicles were towed from the crash scene.

Conspicuity and Emergency Lighting

Based on police-provided images of the vehicles at the crash scene, the appearance and emergency lighting equipment appeared to be similar for each of the Ford Explorers. All had light bars across the centers of the roof with blue and amber LEDs that were still illuminated when the images were taken at the crash scene. The back of each vehicle had blue and red LEDs on either side of the license plate, and these were still illuminated on all vehicles. The 2016 Explorer and forward-most 2017 Explorer had a pair of blue and amber LEDs mounted in the grilles behind the push bars on the front ends. Only the 2017 Explorer's front LEDs remained illuminated.

2017, 2016, and 2017 Ford Explorers

Description

Each vehicle was a 4-wheel drive, 4-door SUV, equipped with a 3.7 liter 6-cylinder engine, and configured on a 287 cm (113.0 in) wheelbase. The gross vehicle weight rating was 2,877 kg (6,342 lb) with gross axle weight ratings of 1,452kg (3,200 lb) front and 1,520 kg (3,350 lb) rear for each vehicle.

2017 Ford Explorer (Vehicle 1)

Exterior Damage

This Ford sustained damage to the left side (Figure 4) from the impact from the front of the Chevrolet (Event 1). Direct damage was noted on the left quarter panel, rear wheel, and both doors. The estimated collision deformation classification (CDC) for this damage pattern was 06LZEW2.



Figure 4. Police image of the 2017 Ford Explorer (first vehicle struck by the Chevrolet)

2016 Ford Explorer (Vehicle 2)

Exterior Damage

This vehicle sustained damage to the left side from the impact with the Chevrolet (Event 2). There was direct damage to both doors, the fender, front wheel and tire, and front bumper fascia (Figure 5). The estimated CDC for this damage was 06LYES1.



Figure 5. On-scene police image, the 2016 Ford Explorer

2017 Ford Explorer (Vehicle 3)

Exterior Damage

This vehicle sustained damage to the left rear corner and left side from the impact with the Chevrolet (Event 3). There was direct damage to the rear bumper fascia, tailgate, left brake and turn lamp assembly, quarter panel, left rear tire and wheel, and the left rear door (Figure 6). The estimated CDC for this damage was 07BLEE8.

There was additional damage to the push bar mounted to the front end (Figure 7) from the impact with the back end of the F-250 (Event 5). The estimated CDC for this impact was 12FZEN1.

Damage was also noted on the right-side doors (Figure 8) from contact with the first police officer (Event 4) and the traffic barrier. The estimated CDC for this event was 03RPEN1.

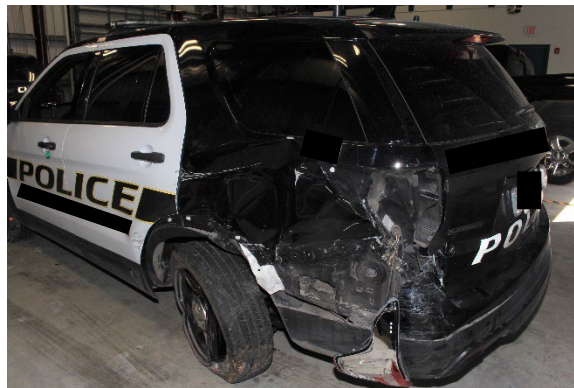


Figure 6. Police image, the back left corner of the 2017 Ford Explorer



Figure 7. Police image, push bar contact on the 2017 Ford Explorer



Figure 8. Police image, right side damage to the 2017 Ford Explorer

2005 Ford F-250 (Vehicle 4)

Description

The Ford F-250 was a 4-wheel-drive, 4-door pickup and had a 6.0 liter 8-cylinder diesel engine and configured on a 397 cm (156.3 in) wheelbase. The Ford had a gross vehicle weight rating of 4,535 kg (10,000 lb) with gross axle weight ratings of 2,721kg (6,000 lb) front and 2,766 kg (6,100 lb) rear.

Exterior Damage

The Ford sustained damage to the back plane (Figure 9) from the impact with the 2017 Explorer (Event 5). The bumper and tailgate were directly damaged and the estimated CDC for this damage pattern was 06BREN1. The back and left sides were also damaged (Figure 10) from the impact with the front end of the Chevrolet (Event 6). The back bumper, tailgate, left brake and turn lamp assembly, and left bed wall were damaged. The estimated CDC for this damage was 06BLEE4.



Figure 9. Police image, back plane, right aspect, damage from contact with the push-bar of the 2017 Explorer



Figure 10. Police image, back and left plane damage from impact with the Chevrolet

During the Ford's forward and right displacement, its right plane struck the second and third officers (Events 7 and 8, Figure 11). According to court reports, the second officer was struck by the right rear door and fell over the bridge wall. A small dent and wipe mark were evidence of the contact. The third officer was likely struck by the front right corner and fell to the pavement. The CDCs for these impacts were 03RPE91 (Event 7) and 12F9E91 (Event 8), where each "9" represents an unknown area for that position classification.



Figure 11. Police image, front right oblique view of the Ford F-250 and the probable area of non-motorist contact (Events 7 & 8)

2017 Chevrolet Silverado (Vehicle 5)

Description

This vehicle was a 4-wheel drive, 4-door, crew cab pickup and was equipped with a 5.3-liter, V-8 gasoline engine and configured on a 365 cm (143.7 in) wheelbase. The Chevrolet had a gross vehicle weight of 3,266 kg (7,200 lb) with a gross axle weight rating of 1,792 kg (3,950 lb) for both front and rear axles.

Exterior Damage

The Chevrolet sustained damage to the front end (Figure 12) from the impacts with the four vehicles. All structures of the front plane sustained direct contact damage, as well as damage to the hood and right fender. The four CDCs assigned to Events 1, 2, 3, and 6 were 12F9E999 (“9” represents unknown value). Overlapping damage prevented any separation in the coding for the four events.



Figure 12. Police image, front end damage of the Chevrolet

Occupant Data

Fourth Police Officer in 2016 Explorer Demographics

Age/sex:	41 years/female
Height:	Unknown
Weight	Unknown
Manual restraint usage:	Lap and shoulder belt
Usage source	Police crash report
Air bags	Frontal, knee, and IC available; no deployments
Alcohol/drug involvement:	Not reported
Transport from scene:	Self-transport to private doctor
Medical treatment:	Unknown

Occupant Kinematics

The 41-year-old female police officer was seated in the right front seat of the 2016 Chevrolet (vehicle 2, middle of the three police vehicles). According to the PCR, she was restrained by the lap and shoulder seat belt. Contact from the Chevrolet displaced the Explorer forward and to the right. The officer was likely displaced rearward and to the left. She sustained police-reported C-level injuries and drove to a private doctor for treatment.

Non-Motorist Data

First Police Officer Demographics

Age/sex:	34 years/male
Height:	Unknown
Weight:	Unknown
Alcohol/drug involvement:	No test given
Transport from scene:	Ambulance to hospital
Medical treatment:	Unknown

First Police Officer Kinematics

The 34-year-old male police officer was standing between the right side of the northernmost Explorer and the traffic barrier. Contact from the Chevrolet displaced the Explorer forward and to the right, pinning the officer against the traffic barrier. The officer sustained police-reported A-injuries and was transported by ambulance to a hospital. His specific injury and treatment statuses are unknown.

Second Police Officer Demographics

Age/sex:	46 years/male
Height:	Unknown
Weight:	Unknown
Alcohol/drug involvement:	No test given
Transport from scene:	Ambulance to hospital
Medical treatment:	Pronounced deceased 21 minutes after crash

Second Police Officer Kinematics

The 46-year-old male police officer was standing between the right side of the F-250 and the traffic barrier. Contact from the northernmost Explorer and Chevrolet displaced the F-250 forward and to the right. This movement caused the officer to be thrown over the traffic barrier and to the street below. He was transported by ambulance to a hospital and was pronounced deceased 21 minutes post-crash. Specific injuries are unknown.

Third Police Officer Demographics

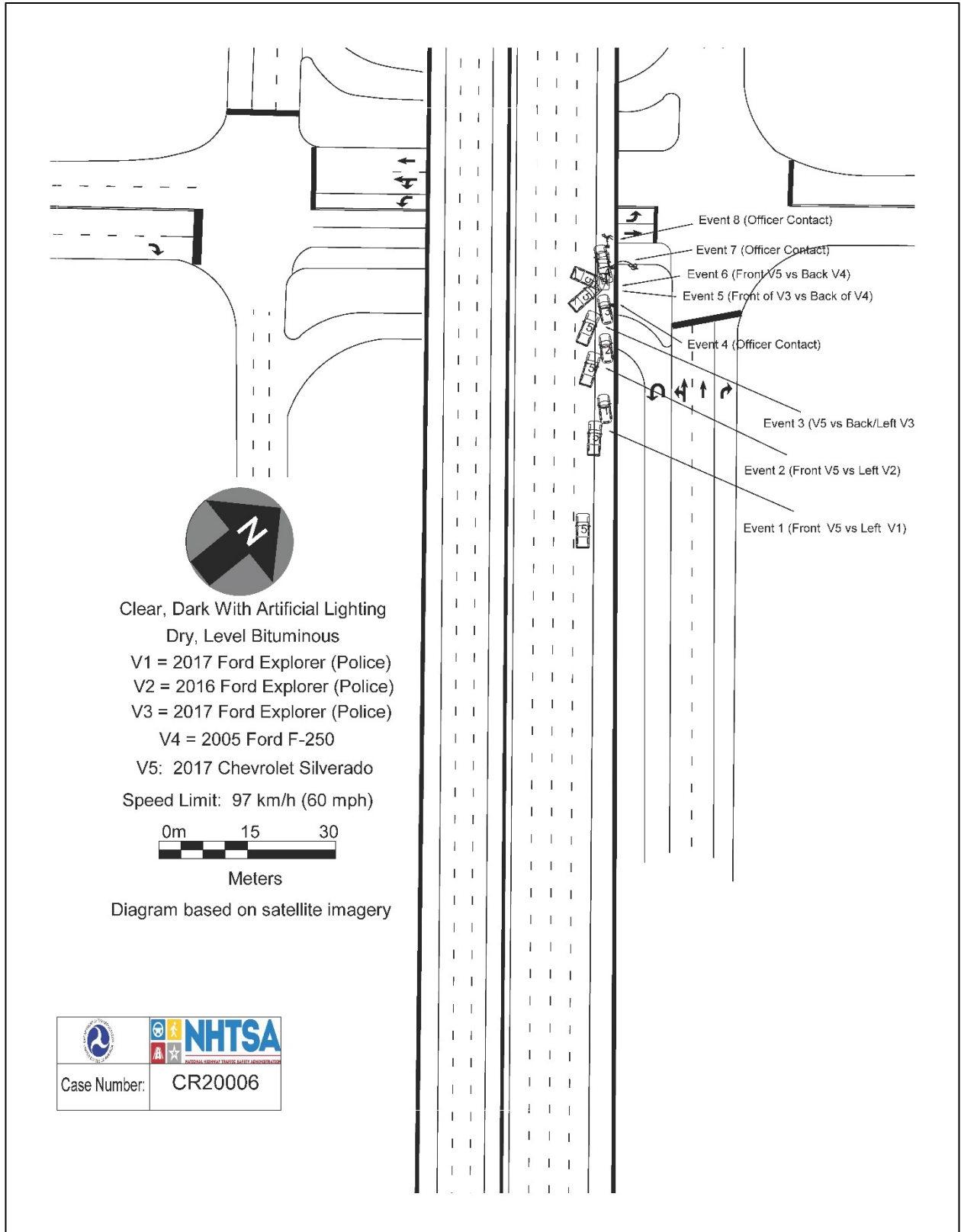
Age/sex:	27 years/female
Height:	Unknown
Weight:	Unknown
Alcohol/drug involvement:	No test given
Transport from scene:	None
Medical treatment:	Treated at scene

Third Police Officer Kinematics

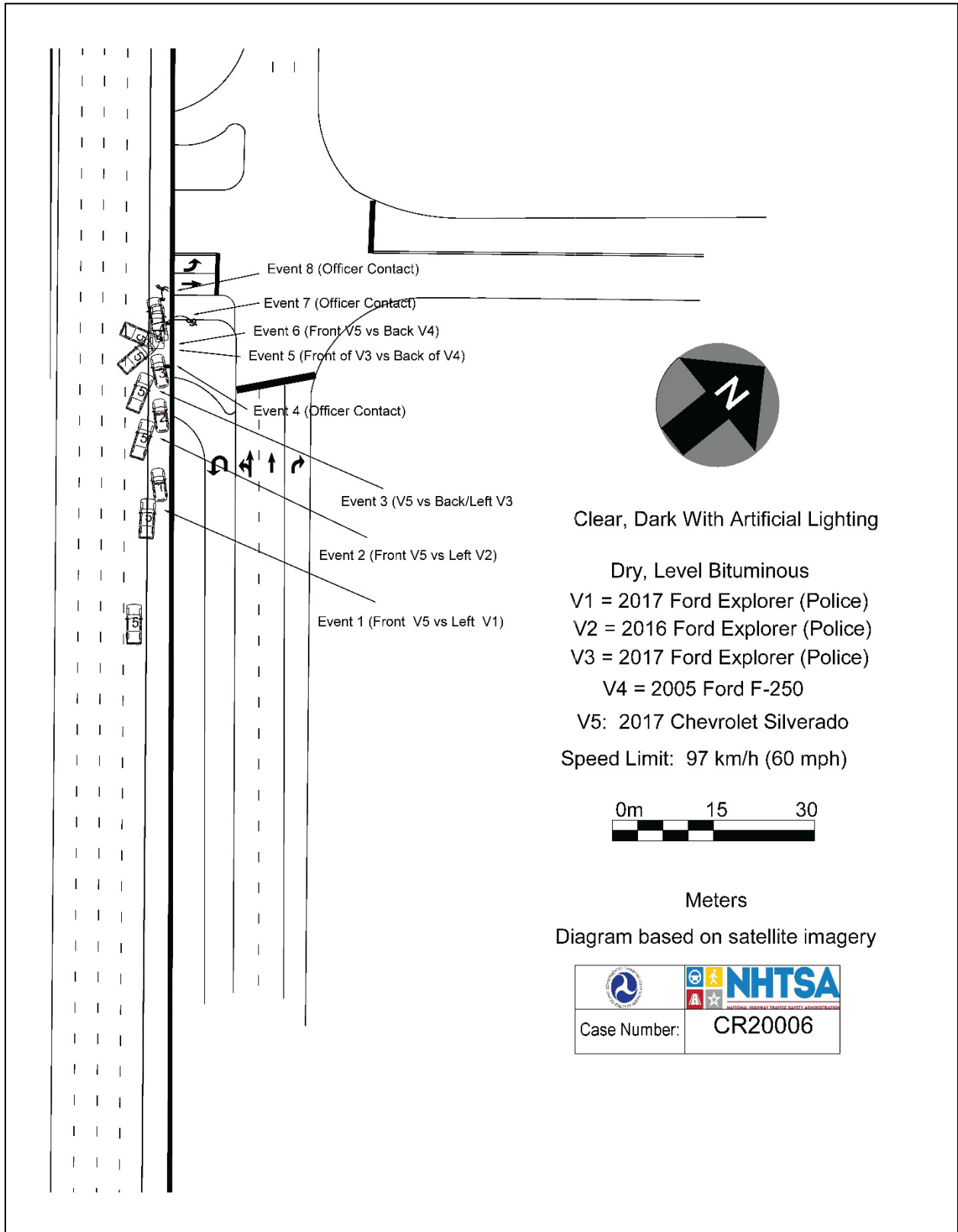
The struck 27-year-old female police officer was positioned at the right front corner of the F-250. Contact from the northernmost Explorer and the Chevrolet displaced the F-250 forward and to

the right. The officer was struck by the front of the F-250. According to the PCR, the officer sustained B-level injuries and was treated at the scene.

Crash Diagram



Crash Scene (Close View)



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