Remote Not In Traffic Surveillance Back Over Investigation
Dynamic Science, Inc. / Case Number: DS07034
2007 Dodge Durango
California
April 2007

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The crash investigation process is an inexact science which requires that physical evidence such as skid marks, vehicular damage measurements, and occupant contact points be coupled with the investigator's expert knowledge and experience of vehicle dynamics and occupant kinematics in order to determine the pre-crash, crash, and post-crash movements of involved vehicles and occupants.

Because each crash is a unique sequence of events, generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicle(s) or their safety systems.

Technical Report Documentation Page

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16. Abstract

This remote Not In Traffic Surveillance (NITS) Back Over investigation was initiated in response to an online news article reporting the death of a 3-year-old female child who was involved in a back over incident. This single vehicle incident occurred at 1842 hours in April 2007. The case vehicle was a 2007 Dodge Durango SLT 4x4 sport utility vehicle. The incident took place within the confines of an intersection of a private driveway and a north/south residential roadway that was privately owned. The subject vehicle was being driven by a 32-year-old male. The driver was in the vehicle by himself. The involved 3-year-old was the child of the driver. The Dodge Durango was initially parked in the driveway facing west. The 3-year-old was initially in the open garage with her mother and her uncle. At some point, the 3-year-old walked away from the garage in an eastbound direction toward the rear of the vehicle. The driver was going to move the vehicle into the street so the other members of the family could get in. The driver began backing in an eastbound direction and entered the roadway. The driver stated that he felt the vehicle "jump up" as he was backing out of the driveway but thought the vehicle was going over a curb so he continued backing. It is probable that the child was knocked down by the left rear bumper of the case vehicle and then run over by the left rear tire. It is possible that the child may also have been run over by the left front tire. The driver noticed his wife running down the driveway shouting something. He looked forward and saw the child lying in the street in front of his vehicle. The child sustained serious head injuries. She was transported by ambulance to a local hospital where she was treated for a brief period before being pronounced deceased.

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Dynamic Science, Inc.
Crash Investigation
Case Number: DS07034

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BACKGROUND

This remote Not In Traffic Surveillance (NITS) Back Over investigation was initiated in response to an on-line news article reporting the death of a 3-year-old female child who was involved in a back over incident. DSI was notified of the article on May 18, 2007. DSI contacted the investigating police agency and requested the police report and on-scene photographs. The case materials were received on August 1, 2007. DSI was assigned the case on August 15, 2007. The subject vehicle was located but permission to inspect the vehicle was not given. A state traffic collision report was completed by the investigating agency. According to the investigating police agency, this incident would be reported to the state because it involved a fatality and a moving vehicle. The following information was obtained from the police report and on-scene photographs.

Figure 1. Subject vehicle, 2007 Dodge Durango

This single vehicle incident occurred at 1842 hours in April 2007. The subject vehicle was a 2007 Dodge Durango SLT 4x4 sport utility vehicle (**Figure 1**). The incident took place within the confines of an intersection of a private driveway and a north/south residential roadway that was privately owned. The weather was clear and the asphalt roadway and concrete driveway were dry. The vehicle was being driven by a 32-year-old male. The driver was in the vehicle by himself. The involved 3-year-old was the child of the driver.

The Dodge Durango was initially parked in the driveway facing west. A second vehicle was parked to the right (north) of the Dodge. The 3-year-old was initially in the open garage with her mother and her uncle. She was wearing bright pink pants with cargo pockets, a pink sweater, and a pink hooded jacket. At some point, the 3-year-old walked away from the garage in an eastbound direction toward the rear of the vehicle. The driver was going to move the vehicle into the street so the other members of the family could get in. The child would not have been visible to the driver. The driver began backing in an eastbound direction and entered the roadway. The driver stated that he felt the vehicle "jump up" as he was backing out of the driveway but thought the vehicle was going over a curb so he continued backing. It is probable that the child was knocked down by the left rear bumper of the case vehicle and then run over by the left rear tire. It is possible that the child may also have been run over by the left front tire. The area of impact was approximately 2.3 m (7.5 ft) east of the west curb line. The driver noticed his wife running down the driveway shouting something. He looked forward and saw the child lying in the street in front of his vehicle. He stopped the vehicle and put it in Park. He exited the vehicle and ran to the child. The driver and his wife picked up the child and took her inside the residence where they called 911.

The child sustained serious head injuries (see page 9 for details). She was transported by ambulance to a local hospital where she was treated for a brief period before being pronounced deceased.

SUMMARY

Incident Site

This single vehicle incident occurred at 1842 hours in April 2007. The incident took place within the confines of an intersection of a private driveway and a north/south residential roadway (**Figures 2-3**). The residential roadway was a two-way roadway with single-family residences on the east and west sides of the street. The roadway curves from north to east. The roadway has 15.2 cm (6.0 in) raised curbs on both sides of the street. There were seven diagonal off-street parking spaces directly to the east of the involved residence. There were no traffic signals present at the scene. There was no posted speed limit but the prima facie speed limit was 40 km/h (25 mph). The roadway was of asphalt composition and was 7.7 m (25.1 ft) wide. The roadway was privately owned and maintained by a homeowner's association. The residence was a two-story structure. There is a two-car garage on the east side of the residence. The driveway extended from the garage to the private street. The driveway was of concrete composition and measured 4.9 m (16.3 ft) wide by 7.1 m (23.3 ft) long. Based on the police photos, there appeared to be a slight down grade (>2%) to the east. There was a second vehicle (Acura 3.2 TL) parked to the right (north) side of the driveway. There was a short hedge to the left (south) side of the driveway. The weather was clear and the driveway/roadway was dry. The temperature at the nearest reporting station was 11.7 degrees C (53 degrees F).

Figure 2. Overview of crash scene (looking north)

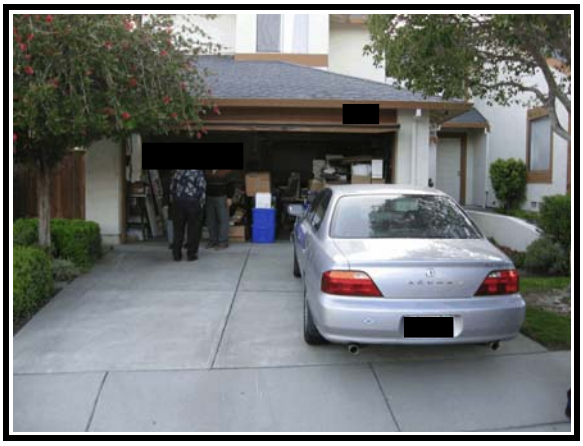


Figure 3. Back view of vehicle path from driveway (west)

Pre Crash

The subject vehicle was a 2007 Dodge Durango SLT 4x4 sport utility vehicle (VIN: 1D8HB48N17Fxxxxxx). A sound wave parking assist option called ParkSense was available as an option for this vehicle but was not present on this vehicle. The Durango was part of a rental fleet. The driver was using the vehicle while the brakes on his personal vehicle were being repaired. His personal vehicle was a Chevrolet Uplander. The Uplander was a minivan that was similar in size to the Durango. The subject vehicle was being driven by a 32-year-old male. The driver was in the vehicle by himself. The involved 3-year-old was the child of the driver. She was wearing bright pink pants with cargo pockets, a pink sweater, and a pink hooded jacket. The case vehicle was initially parked in the driveway facing west. A second vehicle was parked to the right (north) of the

case vehicle. The 3-year-old was initially in the open garage on the left side with her mother and her uncle. The driver likely saw them before entering the vehicle. Her mother left and went into the kitchen to deal with their infant child. She was gone for 1-2 minutes. During this time period, it appears that the 3-year-old left the garage and walked east along the south edge of the driveway and entered the roadway behind the subject vehicle. The driver was going to move the vehicle into the street so the other members of the family could get in. The driver began backing in an eastbound direction and entered the roadway.

Figure 4. Area of final rest. Arrow marks area of impact.

Crash

The driver stated that he felt the vehicle "jump up" as he was backing out of the driveway but thought the vehicle was going over a curb so he continued backing. It is probable that the child was knocked down by the left rear bumper of the case vehicle and then run over by the left rear tire (**Figure 4**). It is possible that the child may also have been run over by the left front tire. The area of impact was approximately 2.3 m (7.5 ft) east of the west curb line.

Post Crash

The driver noticed his wife running down the driveway and shouting. He looked forward and saw the child lying in the street in front of his vehicle. He stopped the vehicle and put it in Park. He exited the vehicle and ran to the child. The driver and his wife picked up the child and took her inside the residence where they called 911. The child sustained serious injuries that included multiple skull fractures, subarachnoid hemorrhage, heart laceration and contusion, lung contusion, liver laceration, and multiple soft tissue injuries. She was transported by ambulance to a local hospital where she was treated for a brief period before being pronounced dead at 1919 hours, 37 minutes post-crash. The Dodge Durango was found by the police in the street still running. It was towed from the scene as evidence.

Vehicle Data - 2007 Dodge Durango

The 2007 Dodge Durango was identified by the Vehicle Identification Number (VIN): 1DBHBN17Fxxxxxx. According to the police, the vehicle had 21,367 km (13,277 miles) on the odometer. The Durango was a four-wheel drive sport utility vehicle that was equipped with a 4.7 liter, eight-cylinder engine, an automatic transmission, 4-wheel anti-lock brakes, and an automatic transmission. The vehicle was part of a rental fleet. The driver was using the vehicle while the brakes on his personal vehicle were being repaired.

Vehicle Dimensions

Dimensions obtained from Canadian vehicle specifications and an exemplar vehicle.

Ground to belt line:	128 cm (50.4 in)
Ground to top of trunk/tailgate:	135 cm (53.2 in)
Ground to top of rear bumper:	76 cm (29.9 in)
Ground to bottom of rear bumper:	50 cm (19.6 in)
Driver's estimated seated eye height:	151 cm (59.5 in)
Overall vehicle height:	186 cm (73.2 in)
Overall vehicle width:	193 cm (76.0 in)
Overall vehicle length:	511 cm (201.2 in)
Rear overhang:	113 cm (44.5 in)
Track width:	163 cm (64.2 in)
Longitudinal distance between rear most projection and front door latch pillar:	243 cm (95.7 in)
Distance from estimated eye position to tailgate:	244 cm (96.1 in)

Parking Aids/Sensors

The vehicle was not equipped with any parking aids or backing up sensor/video technology.

Vehicle Sight Distances

A visibility study was conducted in order to determine the nominal blind zone behind the vehicle as well as the nominal blind zone of both side view mirrors. Measurements were taken using an exemplary 2006 Dodge Durango SLT. The standard 71 cm (28 in) high target was used to obtain the measurements. The measurements were taken on a paved level surface.

The driver's seated eye height when measured from the seat cushion was 67 cm (26.4 in) and when measured from the ground was 151 cm (59.5 in). The SCI investigator was able to duplicate the driver's seated eye height by measuring his own eye height from the seat cushion and ground.

The initial set of measurements were taken as if the driver were looking over his right shoulder through the backlight. The target was moved rearward from the rear bumper along the vehicle's centerline until it became visible to the investigator. The point at which the target became visible to the investigator measured 7.92 m (26.0 ft) rearward of the rear bumper. This measurement was used as the point of origin for two sets of lateral measurements which were then taken. Measurements taken laterally to the left and right resulted in a visibility zone that could be viewed through the backlight. The lateral measurements were taken from the vehicle's center line to the left and right sides of the backlight until the target was out of view due to the presence of the head restraints or the D-pillars. The second row head restraints partially blocked the investigator's rearward vision through the backlight (**Figure 5**). Two visibility zones were observed through the backlight: one on the left and one on the right. At 7.92 m (26.0 ft) rearward of the rear bumper, the left lateral visibility zone fell between the left rear head restraint and the left D-pillar and measured 43 cm (1.4 ft) in width. The right lateral visibility zone fell between the left rear head restraint and the right rear head restraint and measured 2.06 m (6.8 ft) in width. The blind zone created by the left rear head restraint was 1.16 m (3.8 ft) in width. The blind zone created by the right rear head restraint was of similar width and overlapped the blind zone created by the right D-pillar. The roadway surface became visible to the at 14.63 m (48.0 ft) rearward of the rear bumper.

Figure 5. View through backlight, exemplar vehicle

Another set of measurements were taken to simulate the driver using the rear view mirror to look through the backlight. The target was moved rearward from the rear bumper along the vehicle's centerline until it became visible to the investigator. The point at which the target became visible to the investigator measured 9.45 m (31.0 ft) rearward of the rear bumper. This measurement was used as the point of origin for a set of lateral measurements which were then taken. Measurements taken laterally to the left and right would result in a visibility zone that could be viewed through the backlight. The lateral measurements were taken from the vehicle's center line to the left and right sides of the backlight until the target was out of view either due to the presence of the head restraints or the D-pillars. Three visibility zones were observed through the backlight: one on the left, one in the center, and one on the right. At 9.45 m (31.0 ft) rearward of the rear bumper, the left lateral

visibility zone measured 43 cm (1.4 ft) in width. The center visibility zone measured 1.24 m (4.1 ft) in width. The right lateral visibility zone measured 50 cm (1.6 ft) in width. The blind zones created by the left and right rear head restraints each measured 96 cm (3.1 ft) in width.

From a seated posture, the side views were examined (**Figure 6**). Since the SCI investigator was using an exemplar vehicle, he adjusted the side mirrors appropriately for the driver's seated eye height. The target was placed at the left rear bumper. The target was moved laterally to the left until the target became visible through the left side view mirror. The target was then moved laterally to the left until the target was no longer visible. These measurements resulted in a visibility zone which could be viewed through the side view mirror. This process was repeated on the right side of the vehicle. The visibility zone lateral to the left bumper measured 85 cm (2.8 ft) in width. The visibility zone lateral to the right bumper measured 1.22 m (4.0 ft) in width. The area between the left and right visibility zones resulted in a blind zone which measured 1.99 m (6.5 ft) in width.

Figure 6. View through left side mirror, exemplar vehicle

The target was then placed at 7.62 m (25.0 ft) rearward of the rear bumper. Lateral measurements were taken to the left and right at the points at which the investigator could view the target through the side view mirrors. The area between the left and right visibility zones resulted in a blind zone. At 7.62 m (25.0 ft) rearward of the rear bumper, the left and right lateral visibility zones measured 2.26 m (7.4 ft) and 4.06 m (13.3 ft), respectively. The blind zone measured 1.86 m (6.1 ft) in width. The width of the nominal blind zone when using the side view mirrors diminished approximately 13 cm (5.1 in) at a distance of 7.62 (25.0 ft) rearward of the rear bumper versus at the rear bumper.

It is this investigator's opinion that the non-motorist could not have been seen by the driver prior to the incident.

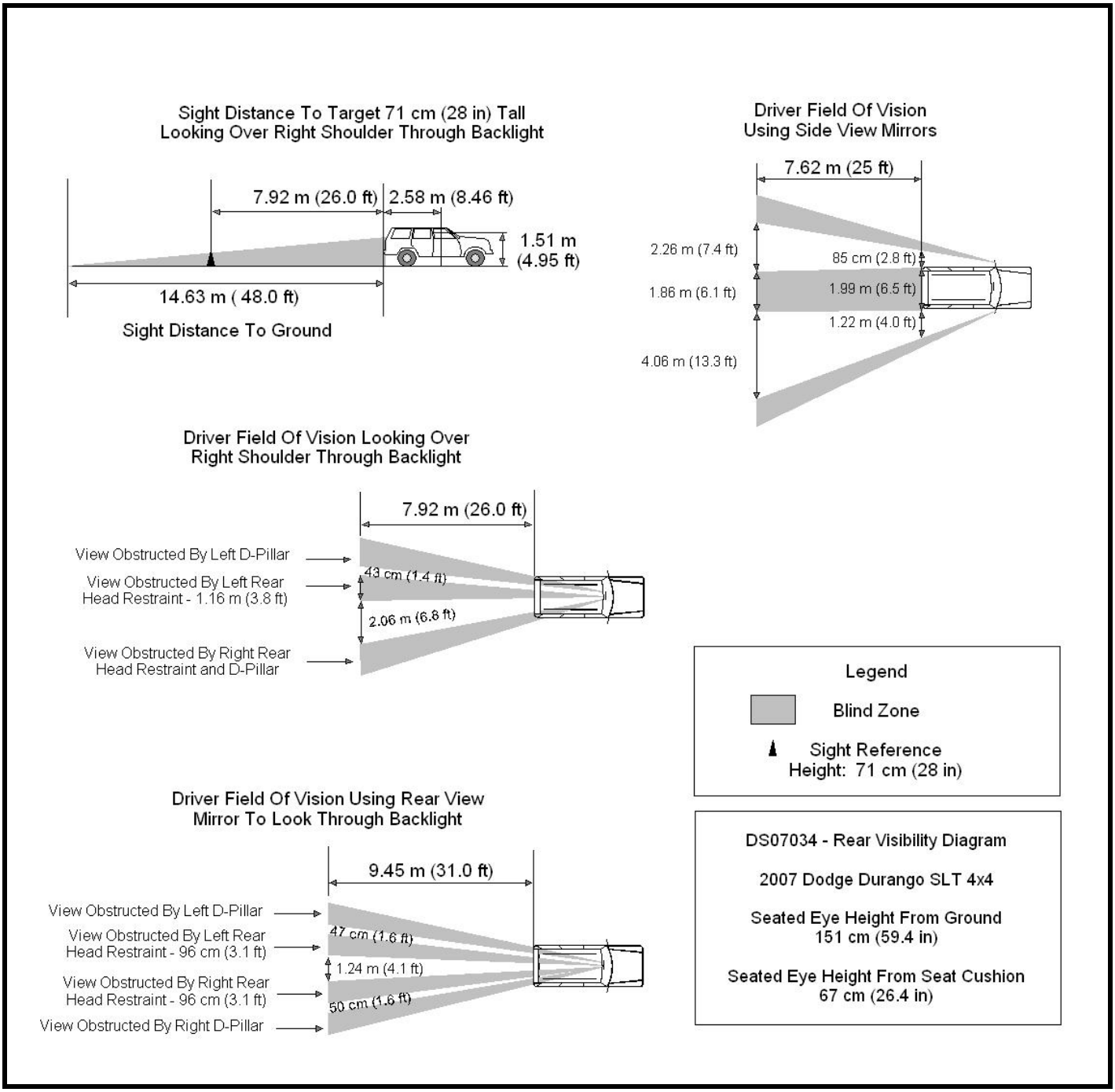


Figure 7. Nominal visibility diagram

Vehicle Damage - Dodge Durango

Exterior Damage

There was no exterior damage to the vehicle. There was blood found on the tread of the left rear tire (**Figure 8**).

Figure 8. Blood in left rear tire tread

Interior Damage

There was no interior damage.

OCCUPANT DEMOGRAPHICS - 2007 Dodge Durango

Driver Demographics

Age/Sex:	32/Male
Seated Position:	Front left
Seat Type:	Bucket
Height:	170 cm (67 in)
Weight:	66 kg (145 lbs)
Alcohol/Drug Involvement:	None
Body Posture:	Unknown
Hand Position:	Unknown
Foot Position:	Unknown
Restraint Usage:	Lap and shoulder belt available, not used

Non-Motorist Demographics

Age/Sex:	3/Female
Height:	89 cm (35 in)
Weight:	12 kg (27 lbs)
Body Posture:	Initially upright

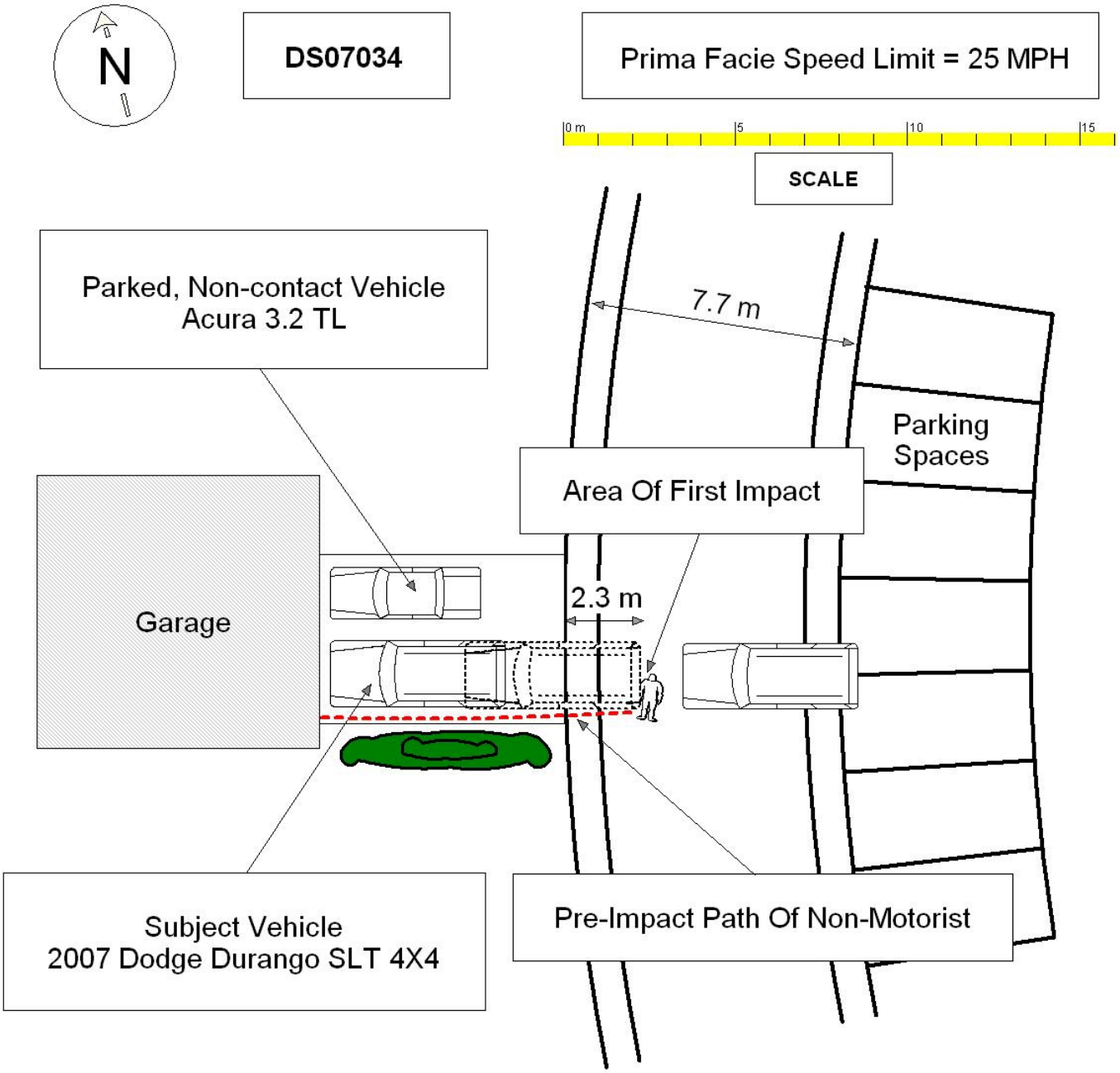
OCCUPANT INJURIES - 2007 Dodge Durango

Driver: Not injured.

Non-Motorist: Injuries obtained from autopsy report.

Injury	AIS Code	Injury Mechanism	Confidence Level
Frontal skull fracture, comminuted	150404.3,5	Tire	Certain
Left temporal skull fracture, comminuted	150404.3,2	Tire	Certain
Right parietal skull fracture	150400.2,1	Tire	Certain
Subarachnoid hemorrhage, cerebellum	140466.3,6	Tire	Certain
Laceration, left atrium	441008.3,4	Tire	Certain
Contusion, left lung	441402.3,2	Tire	Certain
Liver laceration	541820.2,1	Tire	Certain
Contusion, left atrium	441002.1,4	Tire	Certain
Abrasion, left face, scalp to jaw	290202.1,2	Ground	Probable
Contusion, right ear	290402.1,1	Ground	Probable
Contusion, left ear	290402.1,2	Ground	Probable
Contusion, right forearm	790402.1,1	Unknown	Unknown
Contusion, right foot	890402.1,1	Unknown	Unknown
Contusion, left lower leg	890402.1,2	Unknown	Unknown

Attachment 1. Scene Diagram



Attachment 2. Field Data Forms

Not Applicable ☐

Reset Values

Print Forms

U.S. Department of Transportation
National Highway Traffic Safety Administration

SCENE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

D S 0 7 0 3 4

IDENTIFICATION

2. Date of Crash 0 4 / X X / 0 8

3. Time of Crash 1 8 4 2

Code reported military time of crash.

NOTE: Midnight = 2400
Unknown = 9999

AMBIENT CONDITIONS

4. Light Conditions

- ☉ Daylight
- ☐ Dark
- ☐ Dark but lighted
- ☐ Dawn
- ☐ Dusk
- ☐ Unknown

5. Atmospheric Conditions
(*Select all that apply)*

- ☉ Clear-No adverse conditions
- ☐ Cloudy
- ☐ Rain
- ☐ Snow
- ☐ Fog, Smog, Smoke
- ☐ Sleet, Hail (freezing rain or drizzle)
- ☐ Blowing Snow
- ☐ Severe Crosswinds
- ☐ Blowing Sand, Soil, Dirt
- ☐ Other (specify):_____
- ☐ Unknown

6. Temperature

- ☐ Below 0 degrees Celsius (Below 32 F)
- ☐ 1-10 degrees Celsius (33-50 F)
- ☉ >10-24 degrees Celsius (51-75 F)
- ☐ Over 24 degrees Celsius (Over 75 F)
- ☐ Unknown

SCENE INFORMATION

7. Type of area in which crash occurred
(*Select all that apply)*

- ☉ Single family residential
- ☐ Row houses/townhouses
- ☐ Multi family housing
- ☐ Commercial
- ☐ Industrial
- ☐ Rural
- ☐ Unknown

8. Driver exterior sightline obstructions
(*Select all that apply)*

- ☉ None
- ☐ Other vehicles
- ☐ Building
- ☐ Trees
- ☐ Shrubbery
- ☐ Other (specify)_____
- ☐ Utility poles
- ☐ Signs
- ☐ Glare
- ☐ Unknown
- ☐ No driver present

9. Crash location

- ☐ Driveway
- ☐ Parking Lot
- ☐ Sidewalk
- ☐ Alley
- ☐ Intersection of driveway and sidewalk
- ☉ Road / street
- ☐ Roadside / shoulder
- ☐ Other (specify)_____
- ☐ Unknown

10. Non motorist sightline obstructions
(*Select all that apply)*

- ☉ None
- ☐ Other vehicles
- ☐ Building
- ☐ Trees
- ☐ Shrubbery
- ☐ Utility poles
- ☐ Signs
- ☐ Glare
- ☐ Other (specify) _____
- ☐ Unknown

11. Grade at parked position + / - - 0 2 %

12. Estimated distance from parked position to impact

0 0 3 . 9 m

13. Estimated speed at impact 0 0 6 kmph

14. Grade at impact +/ - 0 0 0 %

15. Estimated distance from impact to vehicle final rest

0 0 6 . 3 m

Unknown = 999 Reference Items 11,12, 13, 14, 15

Not Applicable ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

VEHICLE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number D S 0 7 0 3 4

VEHICLE IDENTIFICATION

2. VIN 1 D 8 H B 4 8 N 1 7 F X X X X X X

3. Model Year 2 0 0 7

4. Vehicle Make (specify): DODGE

5. Vehicle Model (specify): DURANGO SLT 4x4

GLAZING

Location	Presence (check)	Status (select)	Clarity (select)	Tint (check)	Glazing Obstructions (specify if present)
Windshield	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
LF	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
RF	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
2nd Left	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
2nd Right	☑	☐ Fixed / ☑ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
3rd Left	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
3rd Right	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
Backlight	☐	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	
Left Backlight	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Right Backlight	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Roof	☐	☐ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☐ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	
Other (specify)	☑	☑ Fixed / ☐ Closed / ☐ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☑	

TIRE DATA

6. Vehicle Manufacturer Recommended Tire Size P265/60R18

7. LF Tire Size UNKNOWN

8. LR Tire Size UNKNOWN

9. RF Tire Size UNKNOWN

10. RR Tire Size UNKNOWN

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	1	☑	Full Down / Mid / Full Up	POSITION UNKNOWN
Front Middle	0	☐	Full Down / Mid / Full Up	
Front Right	1	☑	Full Down / Mid / Full Up	
2nd Left	7	☑	Full Down / Mid / Full Up	
2nd Middle	7	☑	Full Down / Mid / Full Up	
2nd Right	7	☑	Full Down / Mid / Full Up	
3rd Left	7	☑	Full Down / Mid / Full Up	
3rd Middle	0	☐	Full Down / Mid / Full Up	
3rd Right	7	☑	Full Down / Mid / Full Up	

Seat Type codes:

0 = No seat or seat folded down
1 = Bucket
2 = Bucket w/ folding back
3 = Bench
4 = Bench with folding back cushions
5 = Bench w/ folding back
6 = Split bench w/ separate back cushions
7 = Split bench w/ separate folding back
8 = Pedestal (i.e. column supported)
9 = Box mounted (i.e. van type)
10= Other seat type (specify)
99= Unknown seat type

VEHICLE MEASUREMENTS

Clearance Heights		Measurements (all from ground, and in centimeters	NOTES
Beltline		128	
Top of trunk/tailgate		135	
Bottom of bumper		50	
Trailer hitch (if applicable)		N/A	
Undercarriage			
	Sway bar	N/A	
	Axle	N/A	
	Differential	N/A	
	Other (specify): _____	N/A	
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

Not Applicable ☑

Undo Not Applicable

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

D S 0 7 0 3 4

PARKING AID PRESENCE

2. Type of backing/parking aid present

- ☐ OEM camera
- ☐ OEM ultrasonic/radar sensor
- ☐ OEM combination camera-ultrasonic/radar sensor
- ☐ OEM Fresnel lens
- ☐ OEM interior mirrors
- ☐ Aftermarket camera
- ☐ Aftermarket ultrasonic/radar sensor
- ☐ Aftermarket combination camera-ultrasonic radar sensor
- ☐ Aftermarket Fresnel lens
- ☐ Aftermarket interior mirrors
- ☐ Other (specify): _____

CAMERA INFORMATION

Specify field of view measurements on diagram

3. System make/model

_____

4. Video monitor type

- ☐ None present
- ☐ LCD (color)
- ☐ CRT (black & white)
- ☐ Unknown

5. Video display size _____ cm
(Diagonal)

6. Camera location

- ☐ None present
- ☐ Bumper
- ☐ License plate
- ☐ Tailgate/Hatch/Trunk
- ☐ Other (specify): _____

7. Video image quality under scene lighting conditions

- ☐ None present
- ☐ Good
- ☐ Average
- ☐ Poor (specify): _____
- ☐ Unknown

8. Was the camera functioning properly

- ☐ None present
- ☐ Yes
- ☐ No, poor image quality due to glare
- ☐ No, poor image quality due to atmospheric conditions
- ☐ No, camera turned off
- ☐ No, camera inoperable
- ☐ Unknown

ULTRASONIC/RADAR SENSOR

Specify object detection range on diagram

9. System make/model

_____

10. Auditory warning illumination

- ☐ No sensor present
- ☐ Yes
- ☐ No
- ☐ Unknown

11. Number of sensors ____

12. Sensor locations
(Select all that apply)

- ☐ No sensor present
- ☐ Left bumper
- ☐ Center bumper
- ☐ Right bumper
- ☐ License plate area
- ☐ Tailgate/Hatch/Trunk

13. Was warning system functioning properly

- ☐ No sensor present
- ☐ Yes, system alerted driver
- ☐ No, system did not alert driver
- ☐ No, system turned off
- ☐ No, system inoperable
- ☐ Unknown

Not Applicable

14. Did driver react to warning

- ☐ No sensor present
- ☐ Yes
- ☐ No
- ☐ Unknown
- ☐ Sensor present, did not sound

15. Did driver report common false warnings

- ☐ No sensor present
- ☐ Yes
- ☐ No
- ☐ Unknown

Not Applicable

No Driver Present ☐

Reset Values

U.S. Department of Transportation
National Highway Traffic Safety Administration

DRIVER FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

D S 0 7 0 3 4

DRIVER PROFILE

2. Driver's Age: 3 2
   99 = Unknown
3. Driver's Sex
   - ☉ Male
   - ☐ Female
   - ☐ Unknown
4. Driver's Height: 1 7 0 cm
   999 = Unknown
5. Driver's Weight: 0 6 6 kg
   999 = Unknown
6. Driver eyewear worn
   (Select all that apply)
   - ☐ None
   - ☉ Eyeglasses
   - ☐ Sunglasses
   - ☐ Contacts
   - ☐ Unknown
7. Driver vision deficiency condition
   (Select all that apply)
   - ☐ None
   - ☐ Near sighted
   - ☐ Far sighted
   - ☐ Astigmatism
   - ☐ Other (specify) _____
   - ☉ Unknown
8. Non motorist's relationship to driver
   - ☐ No relationship
   - ☉ Child
   - ☐ Grandchild
   - ☐ Sibling
   - ☐ Neighbor
   - ☐ Friend
   - ☐ Other (specify): _____
   - ☐ Unknown

DRIVER ACTIONS

9. Driver approach to vehicle for entry
   - ☉ From left front
   - ☐ From left
   - ☐ From left rear
   - ☐ From right rear
   - ☐ From right front
   - ☐ Circled vehicle
   - ☐ Return trip (backing into driveway/lot)
   - ☐ Other (specify): _____
   - ☐ N/A
   - ☐ Unknown
10. Driver entry interruption
    (Select all that apply)
    - ☐ Direct trip from building to vehicle
    - ☐ Loaded items into vehicle
    - ☐ Spoke with family
    - ☐ Spoke with neighbors
    - ☐ Spoke with contacted nonmotorist
    - ☐ Return trip (backing into driveway/lot)
    - ☉ Other (specify): adjust rear seat
    - ☐ N/A
    - ☐ Unknown
11. Purpose of backing
    - ☐ Leaving parking space in parking lot
    - ☉ Backing onto roadway from driveway
    - ☐ Entering parking space in parking lot
    - ☐ Backing into driveway from roadway
    - ☐ Other (specify): _____
    - ☐ N/A
    - ☐ Unknown
12. Where was driver going
    Description:

    Moving vehicle to load passengers,

    then going out to dinner.
13. Driver in a hurry
    - ☐ Yes
    - ☐ No
    - ☐ N/A
    - ☉ Unknown
14. How did driver check behind (rear area of vehicle) after vehicle entry
    (Select all that apply)
    - ☐ Did not look
    - ☐ Checked mirrors
    - ☐ Turned right and looked back
    - ☐ Turned left and looked back
    - ☐ Viewed Camera
    - ☐ Listened for auditory/visual warning from system
    - ☐ Other (specify): _____
    - ☐ N/A
    - ☉ Unknown
15. Estimated time between vehicle entry and start of backing
    - ☉ 0-10 Seconds
    - ☐ 11-30 Seconds
    - ☐ 31-60 Seconds
    - ☐ Over 60 Seconds
    - ☐ N/A
    - ☐ Unknown

16. What direction was the driver looking during backing maneuver
(Select all that apply)

- ☐ Straight ahead
- ☐ Right
- ☐ Left
- ☐ Rearward
- ☐ At object inside the car
- ☐ At mirrors
- ☐ Other (specify): _____
- ☐ N/A
- ☉ Unknown

17. Was the driver distracted during back up maneuver
(Select all that apply)

- ☉ No non-driving activities

External

- ☐ Looking at other vehicles
- ☐ Looking at other non motorist
- ☐ Looking at intended turn destination
- ☐ External focus, not specified
- ☐ Other external focus (specify): _____

Internal

- ☐ Looking at other occupant
- ☐ Talking to passenger
- ☐ Dialing phone
- ☐ Talking on phone
- ☐ Listening to radio/cd/portable playback device
- ☐ Adjusting radio/cd player
- ☐ Adjusting climate controls
- ☐ Using a device/controls integral to vehicle (specify): _____
- ☐ Reading/adjusting navigation system
- ☐ Eating or drinking
- ☐ Smoking related
- ☐ Retrieving fallen object (specify): _____
- ☐ Internal focus, not specified
- ☐ Focused on other internal object (specify): _____
- ☐ N/A
- ☐ Unknown

18. Driver avoidance actions prior to impact
(Select all that apply)

- ☉ None
- ☐ Braking
- ☐ Steering left
- ☐ Steering right
- ☐ Accelerating
- ☐ Other (specify): _____
- ☐ N/A
- ☐ Unknown

19. Did driver see struck non motorist prior to impact
(Select all that apply)

- ☐ No, never saw non motorist
- ☉ Saw non motorist prior to entering vehicle
- ☐ Saw non motorist after entering vehicle
- ☐ Other (specify): _____
- ☐ N/A ☐ Unknown

20. Est time between start of backing and impact

- ☉ <2 or = 1 second
- ☐ 2-5 seconds
- ☐ 6-10 seconds
- ☐ > 10 seconds
- ☐ N/A ☐ Unknown

21. Driver interior sightline obstructions
(Select all that apply)

- ☉ Pillar
- ☉ Headrest
- ☐ Cargo
- ☐ Other occupant
- ☐ Other (specify) _____
- ☐ Unknown
- ☐ None

22. Recent experience driving this vehicle

- ☐ More than 10 times the last three months
- ☐ 6-10 times the last three months
- ☐ 2-5 times the last three months
- ☐ Less than 2 times the last three months
- ☐ First time driving this vehicle
- ☐ N/A
- ☉ Unknown

23. Frequency of driving in this parking lot/driveway

- ☐ Daily
- ☐ Weekly
- ☐ Several times a month
- ☐ Monthly
- ☐ Rarely
- ☐ First time in lot/driveway
- ☐ N/A ☉ Unknown

24. Driver Impairment
(Select all that apply)

- ☉ No drugs or alcohol present
- ☐ Alcohol present (specify BAC): _____
- ☐ Drugs present (specify):_____
- ☐ Unknown

25. Source of alcohol/drug results

- ☉ Police reported
- ☐ Medical record
- ☐ Other (specify)_____
- ☐ Not Tested
- ☐ Unknown if tested

Not Applicable ☐

U.S. Department of Transportation
National Highway Traffic Safety Administration

Non Motorist Form

Reset Values

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number
D S 0 7 0 3 4

NON-MOTORIST PROFILE

2. Non-motorist's Age — 0 3 ☐ Months ◉ Years
99 = Unknown

3. Non-motorist's Sex
☐ Male
◉ Female
☐ Unknown

4. Non-motorist's Height — 0 8 9 cm
999 = Unknown

5. Non-motorist's Weight — 0 1 2 kg
999 = Unknown

6. Medical outcome

☐ Not injured
☐ ER only
☐ Hospitalized 1-4 days
☐ Hospitalized 5 days or more
☐ Treatment later
◉ Fatal
☐ Unknown

7. Source of most severe injury
☐ Bumper
◉ Tire
☐ Undercarriage
☐ Other Specify:_____
☐ Ground
☐ N/A
☐ Unknown

8. Non-motorist impairment
(Select all that apply)
◉ No drugs or alcohol present
☐ Positive for alcohol (specify BAC): _____
☐ Positive for drugs (specify): _____
☐ Unknown

9. Source of alcohol/drug results
◉ Police reported
☐ Medical Report
☐ Other (specify) _____
☐ Not Tested
☐ Unknown if tested

NON-MOTORIST ACTIONS

10. Non-motorist attitude

◉ Standing
☐ Bending at waist
☐ Sitting
☐ Crouching
☐ Kneeling
☐ On skates/skateboard
☐ On bike/scooter
☐ Other (specify)_____
☐ Unknown

11. Non-motorist motion

☐ Not moving
☐ Walking slowly
☐ Walking rapidly
☐ Running or jogging
☐ Skipping/Hopping/Jumping
☐ Falling/Stumbling/Rising
☐ On skates/skateboard
☐ On bike/scooter
☐ Other (specify): _____
◉ Unknown

12. Non-motorist approach relative to rear of vehicle

☐ Stationary
◉ From left
☐ From right
☐ From behind
☐ Other (specify): _____
☐ Unknown

13. Non-motorist first avoidance action

☐ No avoidance actions
☐ Stopped
☐ Accelerated pace
☐ Ran away (along vehicle path)
☐ Jumped
☐ Turned away from vehicle
☐ Turned toward vehicle and braced
☐ Dove or fell away from vehicle
☐ Other (specify): _____
◉ Unknown

14. Non-motorist primary focus of attention

☐ Striking vehicle
☐ Play object
☐ Person
☐ Surrounding traffic
☐ Animal
☐ Handheld electronic (phone, MP3 player, etc.)
☐ Other Object (specify) _____
◉ Unknown

15. Were any other Non-motorists present?
(Select all that apply)

☐ Alone
☐ One adult present
☐ One other child present
◉ Multiple adults present
☐ Multiple children present
☐ Unknown

NON MOTORIST CLOTHING

NOTES:

- Specify Color, Fabric and Texture/Weight for outermost layer only
- Indicate "*NONE*" if applicable
- Available codes:

Colors		***Fabrics***	***Textures***	***Weights***
Black	Charcoal gray	Natural	Soft	Heavy
Lt gray/silver	Brown	Synthetic	Slick	Medium
Gold/tan	Purple	Blend	Coarse	Light
Dark blue	Light blue			
Dark green	Light green			
Maroon	Red			
Orange	Yellow			
White	Other (specify)			
Pink				

	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat				
	Helmet				
	Hood	Pink	Synthetic	Soft	Light
	Other (specify): _____				
	Unknown				
UPPER BODY	Short Sleeve				
	Long Sleeve	Pink - sweater	Natural	Coarse	Medium
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
	Unknown				
LOWER BODY	Shorts				
	Pants	Pink	Synthetic	Slick	Light
	Shoes				
	Other (specify): _____	Pink - booties	Natural	Coarse	Light
	Unknown				