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ON-SITE NOT IN TRAFFIC SURVEILLANCE BACK OVER INVESTIGATION

CASE NUMBER - IN07024
LOCATION - NEW MEXICO
VEHICLE - 2003 CHEVROLET TAHOE
INCIDENT DATE - May 2007

Submitted:

January 7, 2008
Revised: February 18, 2008

Contract Number: DTNH22-07-C-00044

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
National Center for Statistics and Analysis
Washington, D.C. 20590-0003

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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

1. *Report No.* IN07024	2. *Government Accession No.*	3. *Recipient's Catalog No.*	
4. *Title and Subtitle* On-Site Not In Traffic Surveillance Back Over Investigation Vehicle - 2003 Chevrolet Tahoe Location - New Mexico		5. *Report Date:* January 7, 2008 6. *Performing Organization Code*	
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15. *Supplementary Notes* On-site not in traffic surveillance back over investigation involving a 2003 Chevrolet Tahoe and a nonmotorist.			
16. *Abstract* This report covers an on-site not in traffic surveillance back over investigation involving a 2003 Chevrolet and a nonmotorist, who was backed over in a driveway. The Chevrolet Tahoe was parked facing north in the front yard of the driver's residence. The nonmotorist was riding a toy truck in the driveway behind and to the southwest of the Chevrolet. The driver exited the residence and walked a short distance straight to the Chevrolet. She got in the vehicle, put on her safety belt and turned on the radio. She then looked back out of the open left front window and began to back up. She did not recall checking any of her mirrors prior to or while backing up. The driver backed up clockwise into the driveway. The Chevrolet's back bumper impacted the nonmotorist and knocked him off of his toy truck. The nonmotorist's mother and some neighbors observed what was happening and yelled at the driver to stop. By the time the driver could react and stop the vehicle, the right rear tire had run over the nonmotorist's lower legs. The nonmotorist sustained police reported "A" (incapacitating) injuries and was transported from the scene by ambulance to a hospital and was treated and released. The driver indicated that she never saw the nonmotorist prior to or while baking up. It is likely that the combination of the southeast corner of her residence and a refuse container adjacent to the left rear corner of the vehicle was a vision obstruction for the driver when she looked back out of her open left front window prior to backing up. In addition, the driver's view was possibly blocked by the back left side of the Chevrolet and possibly the left "B"-pillar as the vehicle angled to the southwest as she backed. At the time of the incident, the light condition was daylight and the weather was clear and dry.			
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BACKGROUND

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This incident was brought to NHTSA's attention on or before July 9, 2007 by GES sampling activities. This incident involved a Chevrolet Tahoe and a nonmotorist. The incident occurred in May, 2007 at 6:44 p.m., in New Mexico and was investigated by the applicable city police department. A standard New Mexico crash report was completed and submitted to the state. This incident is of special interest because the Chevrolet's driver backed over a nonmotorist (17-month-old, male), who sustained police reported "A" (incapacitating) injuries. This contractor inspected the scene and Chevrolet on July 24, 2007. This contractor also interviewed the Chevrolet's driver and a witness to the incident on July 24, 2007. This report is based on the police crash report, interviews with the Chevrolet's driver and a witness, scene and vehicle inspections, and this contractor's evaluation of the evidence.

SUMMARY

The Chevrolet Tahoe was parked facing north in the front yard of the driver's residence. The nonmotorist was riding a toy truck in the driveway behind and to the southwest of the Chevrolet. The driver exited the residence and walked a short distance straight to the Chevrolet. She got in the vehicle, put on her safety belt and turned on the radio. She then looked back out of the open left front window and began to back up. She did not recall checking any of her mirrors prior to or while backing up. The driver backed up clockwise into the driveway. The Chevrolet's back bumper impacted the nonmotorist and knocked him off of his toy truck. The nonmotorist's mother and some neighbors observed what was happening and yelled at the driver to stop. By the time the driver could react and stop the vehicle, the right rear tire had run over the nonmotorist's lower legs. The nonmotorist was transported from the scene by ambulance to a hospital and was treated and released. His injuries are not known. The driver indicated that she never saw the nonmotorist prior to or while baking up. It is likely that the combination of the southeast corner of her residence and a refuse container adjacent to the left rear corner of the vehicle were a vision obstruction for the driver when she looked back out of her open left front window prior to backing up. In addition, the driver's view was possibly blocked by the back left side of the Chevrolet and possibly the left "B"-pillar as the vehicle angled to the southwest as she backed. At the time of the incident, the light condition was daylight and the weather was clear and dry.

Figure 1: View west showing overview of crash scene, arrow shows Chevrolet parked in same position as at time of incident, truck at left was not present at time of incident

CRASH CIRCUMSTANCES

Crash Environment: The Chevrolet Tahoe was initially parked facing north in the level, front yard of the driver's home (**Figure 1**). The yard was just north of a paved driveway that was the common street access for the driver's residence as well as several other nearby residences. The driveway was approximately 2.8 meters (~ 9 feet) in width. The driver had to back onto the driveway in order to exit the yard and enter the

street. The yard was level where the Chevrolet was parked, but sloped up slightly toward the driveway edge and was approximately 3 centimeters (~1 inch) lower than the driveway (**Figure 2**), which required the driver to accelerate in order to get over the edge of the driveway. The driver indicated she would routinely "punch" the accelerator to get over this rise because letting the vehicle idle rearward was insufficient to travel up the rise. The nonmotorist, who lived in the residence behind the driver's residence, was playing in the driveway riding around on a toy truck. The nonmotorist was located near the south edge of the driveway and just west of the southeast corner of the driver's residence (**Figure 3**). A refuse container was also located near this corner of the residence adjacent to the left rear corner of the Chevrolet (**Figure 3**). The nonmotorist's mother (i.e. the witness) was also outside and was located west of the nonmotorist. At the time of the incident, the light condition was daylight, the atmospheric condition was clear, and the driveway pavement was dry, level concrete. There were no other vehicles in the driveway at the time of the incident. The site of the incident was residential. See the Scene Diagram at end of this report.

Figure2: Arrow shows rise from yard to driveway edge

Figure 3: Red line shows approximate path of Chevrolet to area of impact indicated by toy truck nonmotorist was riding (truck left of toy truck was not present at time of crash), arrow shows refuse container near vehicle at time of crash

Pre-Crash: The Chevrolet's driver (42-year-old, female) exited the front door of her residence and walked directly to her vehicle, which was located approximately 2 meters (~7 feet) from her front door. The driver got in the vehicle, put on her safety belt and turned on the radio. She did not recall whether she looked at any of her mirrors, but she did remember looking out of the opened left front window before and during her backing maneuver. According to the driver, the elapsed time between entering the vehicle and backing up was a little more than one minute. As the Chevrolet's driver was preparing to back up, the nonmotorist was riding his toy truck in the driveway near the south edge of the driveway approximately 10 meters (~33 feet) southwest of the Chevrolet (**Figure 3**). The driver stated she never saw the nonmotorist at any time prior to the incident. It is likely that the combination of the southeast corner of the residence and the refuse container adjacent to the left rear corner of the vehicle was a vision obstruction for the driver when she looked back out of her open left front window prior to backing up.

Crash: As the driver looked out of the open driver's window, she began to back up the Chevrolet in a clockwise direction. The Chevrolet driver's intent was to back up into the driveway far enough so she could then turn the steering wheel back to the right and proceed forward out of the

driveway and onto the street. She stated that she may have had to "punch" the accelerator once the back wheels had contacted the raised north edge of the driveway. As the driver was backing the Chevrolet to the southwest, it was on a converging trajectory with the nonmotorist (**Figure 3** above). According to a witness, the back bumper of the Chevrolet impacted the nonmotorist. At this time the nonmotorist's mother and some neighbors yelled at the driver to stop. The impact knocked the nonmotorist off his toy truck, and he landed on his right side with his head to the south. By the time the driver could react and stop the vehicle, the right rear tire had run over the nonmotorist's lower legs.

The on-site investigation determined that the Chevrolet had traveled backward from the parked position to impact approximately 10 meters (~33 feet). The Chevrolet traveled an additional approximate 1.2 meters (~4 feet) from impact to final rest. The Chevrolet' impact speed was estimated to be approximately 4 km.p.h. (~3 m.p.h.) by considering the distance traveled from impact to final rest, a reasonable deceleration value for the Chevrolet and possible reaction times for the driver.

Post-Crash: The driver stopped the Chevrolet, which was still on the nonmotorist's legs, and exited the driver's door. At this point, the driver became overcome with emotion and a neighbor got in the vehicle and backed it off of the nonmotorist's legs. The nonmotorist was transported by ambulance to the hospital with police reported "A" (incapacitating) injuries.

Figure 4: Overview of Chevrolet Tahoe from front left corner

Figure 5: Overview of Chevrolet Tahoe from back right corner

CASE VEHICLE

The 2003 Chevrolet Tahoe (**Figures 4** and **5**) was a rear wheel drive, four-door, sport utility vehicle (VIN: 1GNEC13V23R------) equipped with a 4.8L, V8 engine and automatic transmission. The Chevrolet was equipped with tinted windows in the second seating row and in the cargo area as well as a tinted backlight. At the time of the incident, the driver had the left front and right front windows fully open and both second row windows partially open (i.e., they were open to their limit). The Chevrolet was not equipped with a backup/parking aid or any after-market equipment. The distance from the ground to the bottom of the back bumper was 54 centimeters (21.3 inches). The distance from the ground to the beltline was 126 centimeters (49.6 inches). The Chevrolet's wheelbase was measured as 295 centimeters (116 inches). The

measured rear overhang was 120 centimeters (47 inches), and the specification overall length was 505 centimeters (199 inches).

CASE VEHICLE DAMAGE

There was no evidence of damage or contact to the Chevrolet's back bumper and no evidence of contact to the right rear tire. However, based on the available information, and Collision Deformation Classification (CDC) guidelines for pedestrian impacts, a CDC was estimated to describe the contact to the nonmotorist. The CDC was determined to be **06-BRLN-1** for the back bumper impact. The Chevrolet was not damaged and remained at the scene.

CASE VEHICLE DRIVER

The Chevrolet's driver was a White (Hispanic) 42-year-old female. She was 165 centimeters (65 inches) tall and weighed 68 kilograms (150 pounds). She indicated she drove the Chevrolet daily. She did not wear eyeglasses.

CASE VEHICLE VISIBILITY STUDY

A visibility study was conducted during the Chevrolet inspection in order to determine the nominal blind zone behind the Chevrolet as well as the blind zones of the side view and rear view mirrors. The visibility measurements were made to provide general documentation of the Chevrolet's blind zones. The driver indicated she did not look out the backlight or through her mirrors as she was backing.

The Chevrolet's driver agreed to assist the SCI investigator in this study, and the assessments for the nominal blind zone behind the Chevrolet were made with her looking over her right shoulder as well as through the rear view mirror and both side view mirrors. The Chevrolet was positioned in the same parked location as at the time of the incident. The Chevrolet driver's eye height as she sat in the driver's seat was 152 centimeters (60 inches) from the ground. The standard 71 centimeters (28 inches) tall target was used for the visibility observations. Please refer to the Nominal Visibility Diagram at the end of this report when reading the following discussion.

Figure 6: View out of back light from driver's seat showing view obstruction by left "D"-pillar and back left head restraint

The target was positioned behind the Chevrolet and as the driver looked over her right shoulder (**Figure 6**), it was moved rearward until the target came into the driver's view. It was necessary to move the target rearward from the back of the Chevrolet 7.3 meters (23.9 feet) before the driver see it (**Figure 7** below). At this point, when the target was moved 4.2 meters (13.8 feet) to the right of the Chevrolet's approximate centerline, it became obstructed by

the right D-pillar (**Figure 8**). The target was then obstructed by the right rear head restraint when moved further to the right. When moved 0.8 meters (2.6 feet) to the left of the centerline, the target became obstructed by the left rear head restraint (**Figure 6** above) and did not come back into the driver's view when moved further to the left.

The driver was then asked to view behind the Chevrolet through the rear view mirror (**Figure 9**). The target was not visible to the driver until it was moved rearward 7.6 meters (24.9 feet) meters from the back of the Chevrolet (**Figure 7**). The target was then moved to the right 2.2 meters (7.2 feet) from the centerline where it became obstructed by the right rear head restraint. It was not visible when moved further to the right. When moved left of the centerline, the target was visible for 1.5 meters (4.9 feet) before being obstructed by the left rear head restraint.

In order to assess the left side view mirror blind zone, the target was placed at the left side of the vehicle and moved rearward until it came into the driver's view as she looked through the mirror. The driver could not see the target in the mirror until it was moved 0.5 meters (1.6 feet) rear of the back of the vehicle. The target was then moved to the left from the projected side of the vehicle 2.1 meters (6.9 feet) where it went out of the mirror's field of view. The target was then repositioned on the right side of the vehicle and the process was repeated with the driver looking through the right side view mirror. The target had to be moved 1.8 meters (5.9 feet) rear of the back of the vehicle before the driver could see it in the right side view mirror. The target was then moved to the right from the projected side of the vehicle 2.6 meters (8.5 feet) where it went out of the mirror's field of view.

The visibility study showed that the Chevrolet had a large blind zone behind the

Figure 7: Overview of position of target relative to back of Chevrolet (red arrow); measuring wheel shows location target could first be seen by driver looking through rear view mirror, tripod (green arrow) shows location driver could first see target looking over her right shoulder out of backlight

Figure 8: View out of backlight from driver's seat showing vision obstruction due to right "D"-pillar and back right head restraint

Figure 9: Close-up view through rear view mirror from driver's seat

vehicle as well as side view mirror blind zones down both sides of the vehicle that extended just beyond the back of the vehicle. However, since the driver reported that she was looking out of the open left front window during the backing maneuver, these blind zones were not a factor in this incident. The investigation indicated that as the driver initially looked out of the open left front window prior to backing, her view of the nonmotorist was likely blocked by the large refuse barrel near the back left corner of the Chevrolet and possibly by the southeast corner of her residence. As the driver turned the steering wheel to the left and the rear end of the vehicle angled to the southwest, her field of view out of the left front window continued to sweep to the southwest and the area where the nonmotorist was located was possibly blocked by the back left side of the Chevrolet and possibly the left "B"-pillar.

NON-MOTORIST

The nonmotorist [17-month-old, White (Hispanic) male; 79 centimeters and 11 kilograms (31 inches, 24 pounds) was reportedly wearing blue jean shorts, unknown color shirt, and brown sneakers. He was transported from the scene by ambulance to a hospital and was treated and released. Specific injury information is unknown.

IN07024

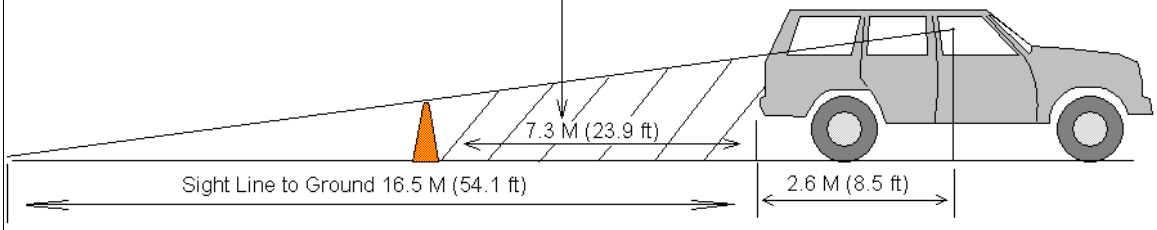
Nominal Visibility Diagram
Case Vehicle = 2003 Chevrolet Tahoe

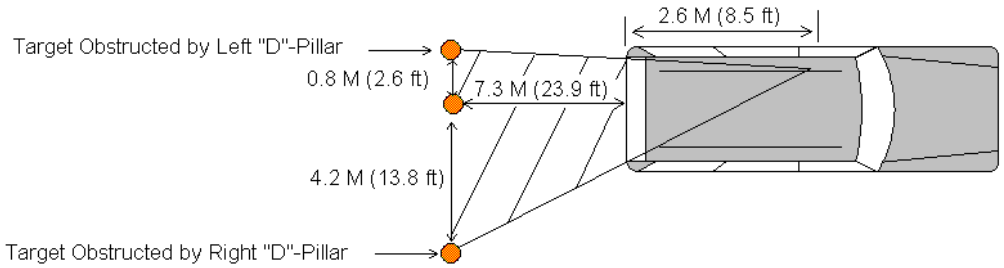
Chevrolet Driver's Eye Height From Ground = 152 cm (59.8 in)

= Chevrolet Tahoe Blind Zones

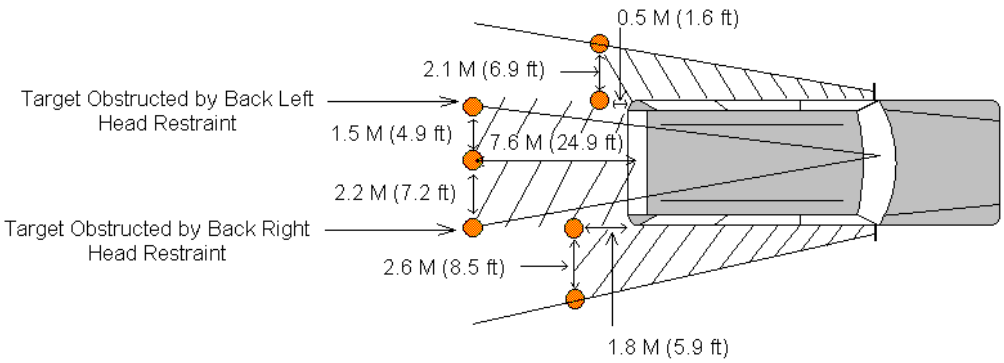
= 71 cm (28 in) High Target

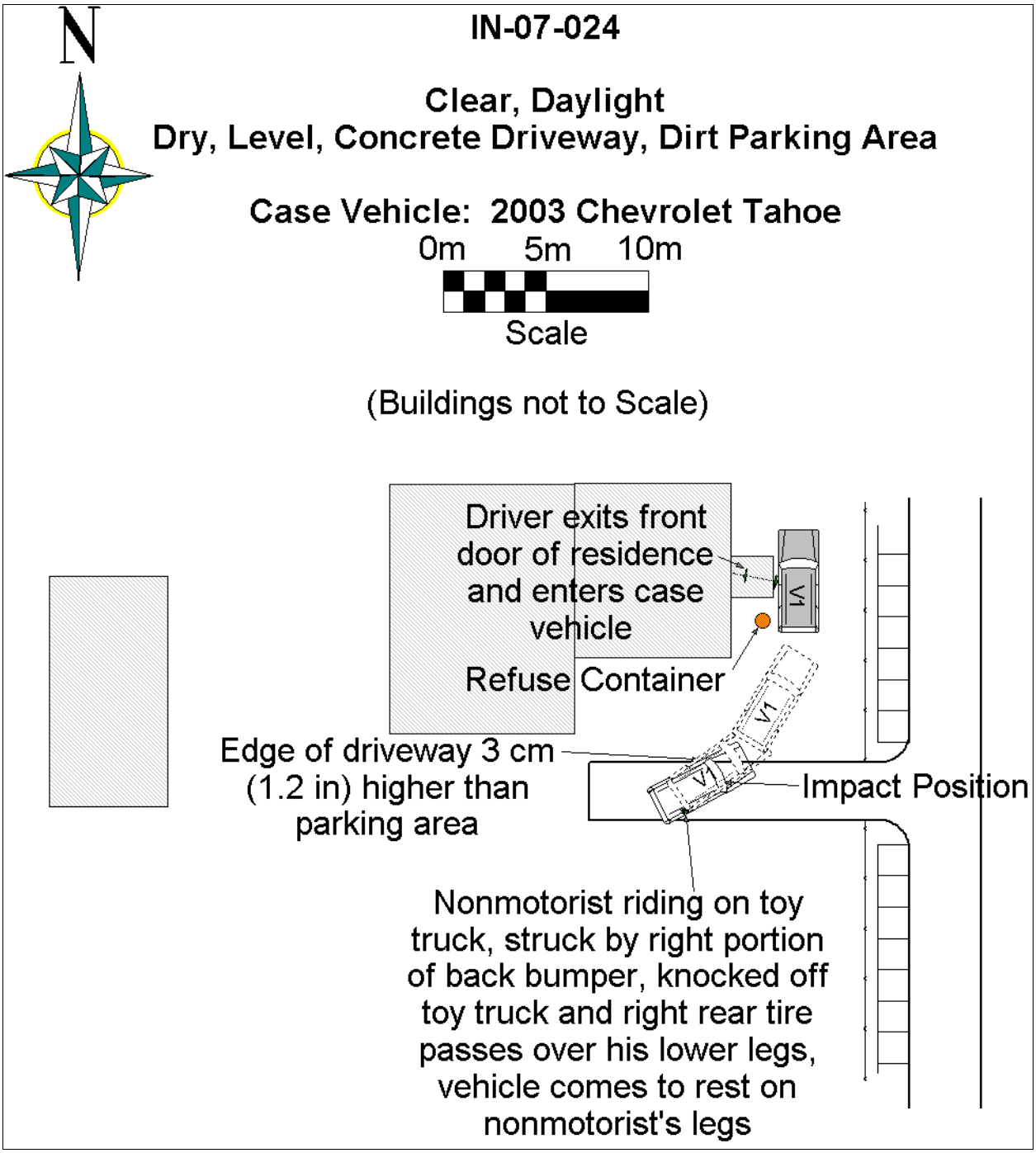
1. Distance Back of Chevrolet
To Point a 71 cm (28 in) High Reference Target
Comes Into View as Driver Looks Over Right Shoulder





2. Rear View Mirror and Side View Mirror Blind Zones




N
IN-07-024
Clear, Daylight
Dry, Level, Concrete Driveway, Dirt Parking Area
Case Vehicle: 2003 Chevrolet Tahoe
0m 5m 10m
Scale
(Buildings not to Scale)
Driver exits front door of residence and enters case vehicle
Refuse Container
V1
V1
V1
Edge of driveway 3 cm (1.2 in) higher than parking area
Impact Position
Nonmotorist riding on toy truck, struck by right portion of back bumper, knocked off toy truck and right rear tire passes over his lower legs, vehicle comes to rest on nonmotorist's legs

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

I N 0 7 0 2 4

IDENTIFICATION

2. Date of Crash 0 5 / x x / 0 7

3. Time of Crash 1 8 4 4

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
- ( ) Utility poles
- ( ) Signs
- ( ) Glare
- ( ) Unknown
- ( ) No driver present
- (•) Other (specify) Refuse container

9. Crash location

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

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 0 0 %

12. Estimated distance from parked position to impact

0 1 0 . 0 m

13. Estimated speed at impact 0 0 4 kmph

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

15. Estimated distance from impact to vehicle final rest

0 0 1 . 2 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 I N 0 7 0 2 4

VEHICLE IDENTIFICATION

2. VIN 1 G N E C 1 3 V 2 3 R X X X X X X

3. Model Year 2 0 0 3

4. Vehicle Make (specify): Chevrolet

5. Vehicle Model (specify): Tahoe

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	☐	Unknown if tinted
RF	☑	☐ Fixed / ☐ Closed / ☑ Open / ☐ Partially Open / ☐ Unknown	☑ Clear / ☐ Hazy / ☐ Very Dirty / ☐ Unknown	☐	Unknown if tinted
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 P265/70R16

7. LF Tire Size P285/50R20

8. LR Tire Size P285/50R20

9. RF Tire Size P285/50R20

10. RR Tire Size P285/50R20

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	6	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
Front Middle	6	☐	☐ Full Down / ☐ Mid / ☐ Full Up	
Front Right	6	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Left	5	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Middle	5	☑	☐ Full Down / ☐ Mid / ☑ Full Up	Middle head restraint is integral, not as tall as back left and right
2nd Right	5	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
3rd Left		☐	☐ Full Down / ☐ Mid / ☐ Full Up	No third seat
3rd Middle		☐	☐ Full Down / ☐ Mid / ☐ Full Up	
3rd Right		☐	☐ 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		126	
Top of trunk/tailgate		130	
Bottom of bumper		54	
Trailer hitch (if applicable)		42	
Undercarriage			
	Sway bar	30	
	Axle	33	
	Differential	22	
	Other (specify): tailpipe	36	Lower shock housing = 21
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

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

I N 0 7 0 2 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

14. Did driver react to warning

- ○ No sensor present
- ○ Yes
- ○ No
- ○ Unknown

15. Did driver report common false warnings

- ○ No sensor present
- ○ Yes
- ○ No
- ○ Unknown

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

I N 0 7 0 2 4

DRIVER PROFILE

2. Driver's Age 4 2
99 = Unknown

3. Driver's Sex
- ○ Male
- ◉ Female
- ○ Unknown

4. Driver's Height 1 6 5 cm
999 = Unknown

5. Driver's Weight 0 6 8 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): _____
- ○ 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): turn around and leave
- ○ N/A
- ○ Unknown

12. Where was driver going
Description:

Church

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): Out left front window
- ○ 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
I N 0 7 0 2 4

NON-MOTORIST PROFILE

2. Non-motorist's Age — 1 7 ◉ Months ○ Years
99 = Unknown

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

4. Non-motorist's Height — 0 7 9 cm
999 = Unknown

5. Non-motorist's Weight — 0 1 1 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) On toy trk
○ 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): Riding on toy truck
○ 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)			

	Clothing	Color	Fabric	Texture	Weight
HEADWEAR	Hat				
	Helmet				
	Hood				
	Other (specify): _____				
UPPER BODY	Short Sleeve	Unknown	Unknown	Unknown	Unknown
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
LOWER BODY	Shorts	Light blue	Natural	Soft	Medium
	Pants				
	Shoes	Brown	Blend	Soft	Light
	Other (specify): _____				