CRASH DATA RESEARCH CENTER

Calspan Corporation
Buffalo, NY 14225

NOT-IN-TRAFFIC SURVEILLANCE

CALSPAN ON-SITE BACK OVER INVESTIGATION

SCI CASE NO.: CA07-022

VEHICLE: 2003 JEEP LIBERTY

LOCATION: NORTH CAROLINA

CRASH DATE: JUNE 2007

Contract No. DTNH22-07-C-00043

Prepared for:

U.S. Department of Transportation
National Highway Traffic Safety Administration
Washington, D.C. 20590

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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 are 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 STANDARD TITLE PAGE

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CALSPAN ON-SITE BACK OVER INVESTIGATION
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BACKGROUND

This on-site investigation focused on the driver's rear visibility issues of a Not-In-Traffic Surveillance back over incident that injured a 19-month old male non-motorist in a private driveway. The 29-year old female driver of the 2003 Jeep Liberty **(Figure 1)** exited the front door of a private residence and approached the Jeep from the front right. She proceeded to the left side of the vehicle and placed her son in a forward facing child safety seat. The driver entered the Liberty and began a backing maneuver from the driveway. The 19-month old non-motorist exited the garage of the residence and approached the vehicle from the front, proceeding along the right side before crossing behind the Jeep. As the driver began to back, the rear bumper struck and knocked-down the male non-motorist. The driver was unaware of this event as she continued to back. The rear tires straddled the non-motorist as he contacted the undercarriage of the vehicle. The driver stated that she heard a thud under the vehicle and immediately stopped the Jeep after backing approximately 2 m (6'). She exited the vehicle and observed the child under the vehicle forward of the right rear tire. The rear tires did not run over the non-motorist. He sustained minor severity abrasions from the concrete driveway surface and 3rd degree burns from contact with the exhaust system of the Jeep. The child was removed from under the vehicle by the driver and carried into the garage of the residence. He was subsequently transported by ambulance to a local hospital where he was admitted for seven days for treatment of his injuries.

Figure 1. The involved 2003 Jeep Liberty

This incident was identified during routine sampling activities of the National Automotive Sampling System (NASS). The Police Accident Report (PAR) was forwarded to the Calspan Special Crash Investigations team. A telephone interview was conducted with the driver of the Jeep who consented to the on-site investigation. The case was assigned for on-site investigation on July 11, 2007, with the on-site segment of this investigation occurring on July 17. During the investigation, the driver was re-interviewed, the Jeep was inspected, rear site distances were established with the driver in the vehicle, the scene was inspected and documented, and the mother of the non-motorist was interviewed. This incident was documented and reported on the North Carolina State Accident Report From and reported to the State as an injury crash.

SUMMARY

Incident Site

This incident occurred on the concrete driveway of a private residence during daylight hours. The driveway was located at the east side at the end of a north/south dead-end street in a rural residential neighborhood. The conditions at the time of the incident were clear with a National

Weather Service reported temperature of 30.7 degrees C (87 degrees F) with 60 percent humidity.

The driveway was 34 m (111.5') in length that terminated at a large concrete parking area in front of a side-loading garage **(Figure 2)**. The house and the attached garage extended to the right of the driveway. The driveway curved slightly to the left when viewed from the road and had a slight super elevation due to the cross slope of the property **(Figure 3)**. The mid section of the driveway where the crash occurred was level. A sidewalk that provided access to the front door exited the right side of the driveway immediately prior to the garage. The driveway had a width of 3.7 m (12.1') while the sidewalk was 1.2 m (3.9') in width.

Figure 2. View of the driveway from the street.

Figure 3. Curvature and super elevation of the driveway.

At the time of this incident, two vehicles were parked near the crash site; one on the concrete pad and the other on the grass adjacent to the garage, similar to the vehicles positioned in **Figure 2**. A third vehicle was parked on the lawn area near the end of the driveway. Based on the positions of these vehicles, they did not obstruct the driver's view of the garage or the trajectory of the non-motorist.

Vehicle Data

The involved vehicle in this back over incident was a 2003 Jeep Liberty Sport, four-door sport utility vehicle. The Jeep was owned by the 29-year old female driver and her husband. The Liberty was identified by Vehicle Identification Number (VIN) 1J4GK48KX3W (production number deleted). At the time of the SCI inspection, the vehicle's odometer reading was 196,216 km (121,926 miles). The Jeep was powered by a 3.7 liter, 6-cylinder engine linked to a four-speed automatic transmission with a console mounted selector lever. The Jeep was a 4x2 configuration with rear-wheel drive. The vehicle was equipped with OEM six-spoke alloy wheels with aftermarket P235/70R16 Continental ContiTrac all-season radial tires. The spare tire was mounted to the center aspect of the hinged rear gate. The original manufacturer specification tire was P215/75R16 with a cold tire pressure rating of 228 kPa (33 PSI). The overall diameter of the replacement tires were 1 cm (0.4") larger that the OEM recommended tires. The measured tire data at the time of the on-site SCI inspection was as follows:

Position	Measured Pressure	Tread Depth	Damage
Left Front	221 kPa (32 PSI)	7 mm (9/32”)	None
Left Rear	234 kPa (34 PSI)	6 mm (8/32”)	None
Right Front	234 kPa (34 PSI	7 mm (9/32”)	None
Right Rear	221 kPa (32 PSI)	6 mm (8/32”)	None

The glazing on the Liberty was standard OEM with no aftermarket tinting or appliqué. The windshield and front door glazing were solar tint while the rear doors, quarter windows and backlight were AS3 deep tinted glass. The driver reported that the glazing was clean at the time of this incident. **Figures 4 and 5** are overall views of the back of the Jeep Liberty and the OEM glazing. The Liberty was not equipped with an OEM or aftermarket back up/parking aid system.

Figure 4. Back view of the involved Jeep Liberty.

Figure 5. Rear right three quarter view of the Liberty.

The interior was configured with front bucket seats with integral head restraints and manual adjustments for track and recline positions. The driver’s seat was adjusted 6 cm (2.5”) aft of the full-forward position with the seat back reclined to 15 degrees aft of vertical. The rear seat was a split bench with forward folding seat backs and adjustable head restraints for the outboard positions. The rear right head restraint was adjusted 6 cm (2.5”) above the seat back while the rear left was in the full down position. A forward facing child safety seat was secured to the rear left position.

The exterior and undercarriage of the Jeep Liberty did not exhibit evidence of non-motorist contact at the time of the SCI inspection. The vertical clearance heights of the various components for this Jeep Liberty **(Figures 6 and 7)** are identified in the following table:

Figure 6. Rear undercarriage view of the Liberty.

Figure 7. Muffler height.

Component	Clearance Height
Beltline	113 cm (44.5”)
Top of lift gate	121 cm (47.5”)
Bottom of visible backlight glazing	125 cm (49.25”)
Bottom of bumper	43 cm (17”)
Top of bumper	67 cm (26.5”)
Bottom of rear mounted spare tire	54 cm (21.125”)
Top of rear mounted spare tire	126 cm (49.75”)
Undercarriage	
Right trailing arm	23 cm (9.25”)
Tailpipe	39 cm (15.5”)
Rear differential	20 cm (8”)
Axle tube	30 cm (12”)
Lower shock mount	17 cm (6.6”)
Bottom of muffler	21 cm (8.25”)

Driver Data

The driver of the Jeep Liberty involved in this back over incident was a 29-year old female. She was seven-months pregnant at the time of the incident. The driver reported her height at 163 cm (64”) and her weight at 59 kg (130 lb). She wore prescription eyeglasses. She drove the vehicle in an upright posture with the seat back reclined to 15 degrees and the seat track adjusted to a forward track position, 6 cm (2.5”) aft of full forward. The driver’s measured eye height was 141 cm (55.5”) above the ground. Due to her pregnant condition, the driver used both the inside and outside rear view mirrors exclusively when backing the vehicle.

Non-Motorist Data

The non-motorist in this back over incident was a 19-month old male. His height was measured by his mother during this on-site investigation at 89 cm (35”) and she estimated his weight at 12 kg (26 lb). Prior to this incident, the non-motorist was napping. Upon waking, his mother changed him into dark navy color shorts and a dark green tank top. His clothing was made of polyester fabric. His footwear consisted of slip-on resin sandals.

Incident Sequence

Pre-Incident

The driver of the 2003 Jeep Liberty departed her place of employment and traveled approximately 16 km (10 miles) to the private residence of her daycare provider. The residence was located at the end of a dead-end street in a rural subdivision. The driver entered the driveway and parked her vehicle in the upper third of the driveway, approximately 9 m (30’) west of the attached garage that was located at the north end of the house **(Figure 8)**. The garage was side loading with the overhead door located on the north side of the single family residence. Refer to the Crash Schematic that is attached as **Figure 13**. The driver exited the vehicle and entered the front door of the residence to pick up her child. Following a brief conversation with the adult daycare provider, she exited the front of the residence and walked her child to the

driveway. They approached the parked Jeep Liberty from the front right and proceeded to the left side of the vehicle. The driver opened the left rear door and placed the child in a forward facing child safety seat that was secured in the rear left position of the vehicle.

Figure 8. Approximate position of the Jeep Liberty at impact and final rest.

Figure 9. Trajectory of the 19-month old child non-motorist.

As the driver of the Jeep was attending to the safety of her child, the daycare provider and the non-motorist entered the garage to play. The overhead garage door was open to the large concrete driveway that led to the parked position of the Jeep Liberty. The daycare provider re-entered her kitchen to get a glass of water and momentarily left her 19-month old child unattended in the garage.

The 19-month old non-motorist exited the garage and proceeded down the driveway, initially approaching the Liberty from the front. The non-motorist continued to proceed along the right side of the Jeep **(Figure 9)**. This travel path of the non-motorist was not witnessed by the driver or the daycare provider, therefore it is unknown if the child ran or walked toward the Jeep Liberty.

Incident

The driver entered the vehicle and began to back the Liberty from the driveway as the non-motorist crossed behind the Jeep. Due to her pregnant state (seven-months), the driver noted that she only checked the rear view mirrors as she began to back. Her pregnancy made it difficult for her to turn around and look out of the back windows. She did not detect the 19-month old child non-motorist. The right rear bumper fascia and/or the lift gate mounted spare tire contacted the male non-motorist and knocked him to the concrete driveway surface. This contact event was not detected by the driver. It should be noted that the driver had all of the vehicle windows closed, the air conditioning turned on, and the radio playing at a low volume. As she began to back, the rear bumper struck and knocked the child to the concrete driveway surface. As the driver continued to back, the rear tires straddled the child. The driver backed a total distance of approximately 2 m (6’), at a speed of less than 8 km/h (5 mph), and heard a “thud” on the rear undercarriage of the Liberty. The driver immediately stopped the vehicle and placed the transmission shifter in the Park-position and exited the vehicle with the engine running. She proceeded along the left side of the Jeep and walked behind the vehicle to the right side. At that point, she observed the head of the child non-motorist forward of the right rear tire at the level of the mid right rear door. The child was crying.

Post-Incident

The driver reached under the Jeep Liberty and picked up the non-motorist and carried him into the open garage where she met the daycare provider. The daycare provider had exited the house with her water when she encountered the driver and the child. At this point in time, the daycare provider was surprised to find that the driver was still at her residence as she thought at least five minutes had passed since the driver first departed with her child.

The driver stated to the daycare provider that she ran over the non-motorist. The driver transferred the non-motorist to his mother, the daycare provider. The women examined the non-motorist and noted burns and abrasions to his extremities. They immediately called the 9-1-1 emergency response number requesting medical assistance. The non-motorist was transported by ground ambulance to a local hospital where he was admitted for seven days for treatment of his injuries. His injuries consisted of an abrasion with a burn over his right scalp, a deep semicircular burn of the right knee, burns of the right fingers, a 3rd degree burn of the anterior right wrist, and a small abrasion of the right face.

Injury	***Injury Severity (AIS 98 update)***	***Source***
2nd to 3rd degree burns, 10-19%, multiple body regions, < 5 years old	Serious (992014.3,0)	Exhaust system
Small right face abrasion, NFS	Minor (290202.1,1)	Concrete driveway

Driver/Vehicle Rear Visibility

The driver agreed to assist and establish the rear visibility/site distances using the rear view mirrors. The standard 71 cm (28") height reflector was used as the target for this exercise. The driver's eye height was measured at 141 cm (55.5") above the paved surface of the parking lot.

The SCI investigator positioned the reflective marker until it was fully visible to the driver through the interior mounted rear view mirror **(Figure 10)**. The longitudinal distance from the back bumper to the target reflector was 5.9 m (19.4'). The driver's line of sight through the rear view mirror to the ground was an additional 6.6 m (21.7') for a total distance of 12.5 m (41'). It should be noted that the driver claimed the exterior-mounted spare tire obstructed her visibility. However, the SCI vehicle inspection determined the rear-mounted spare tire did not protrude above the base of the rear glazing to obstruct her rear visibility **(Figure 10)**.

Figure 10. Rear visibility to the reflective marker.

Figure 11. Right outside mirror visibility from the driver's position.

Lateral lines of sight were determined from the outside rear view mirrors using the referenced 5.9 m (19.4') as the baseline rear distance. The mirrors were adjusted to the same positions used at the time of this incident. Through the adjustment of the left outside mirror, the driver could see the 71 cm (28") tall reflector from a point that was 0.3 m (12") left of the centerline of the vehicle to a lateral left distance of 2.4 m (7.9'). The right outside mirror **(Figure 11)** provided the driver with a line of sight that began 0.6 m (28") right of the centerline to an outboard point that was 2.2 m (7.2') right of the longitudinal centerline. Based on these lines of site, the driver could not see the non-motorist as he crossed behind the vehicle. These sight distances are referenced in the Visibility Diagram that is attached as **Figure 12**.

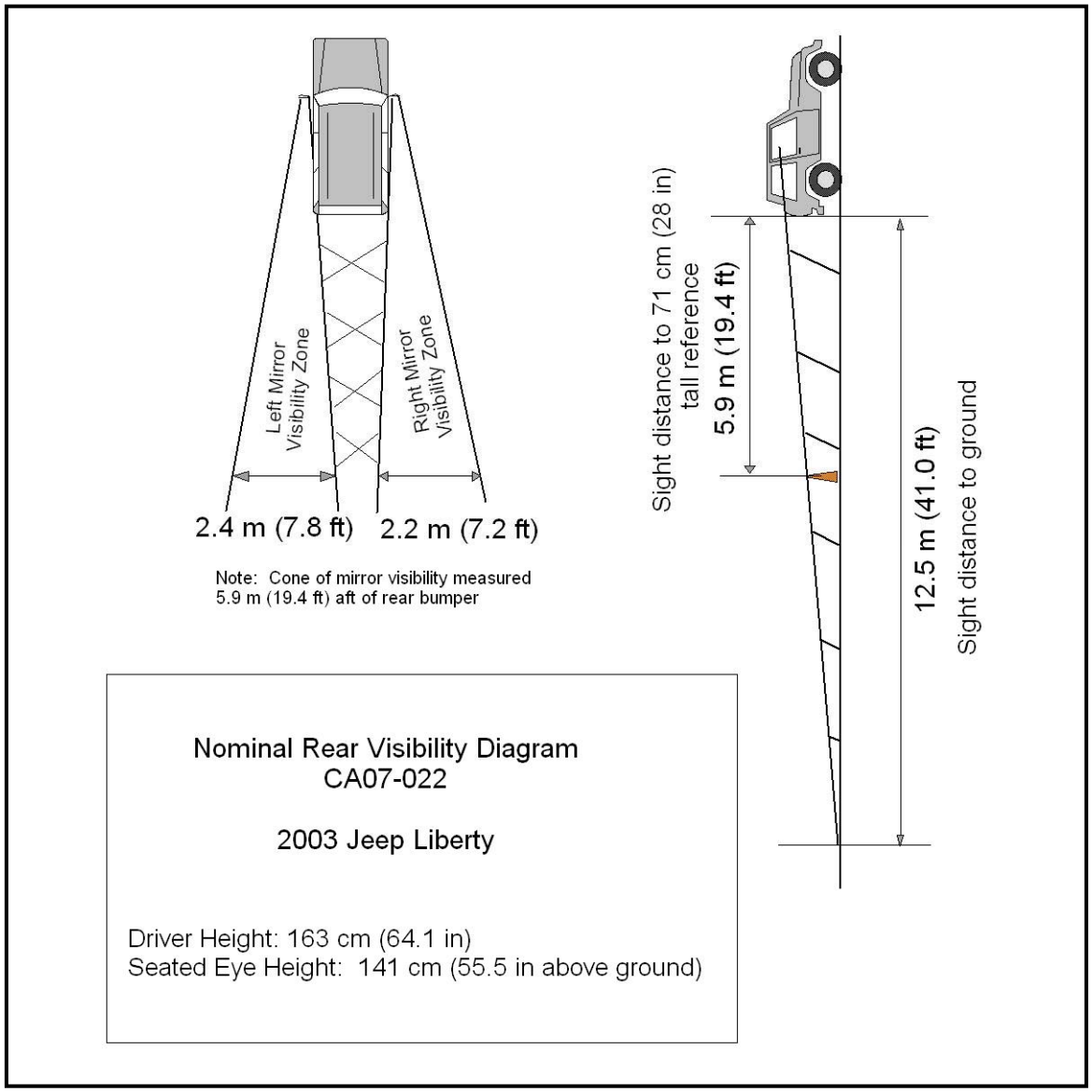

Figure 12: Rear Visibility Diagram

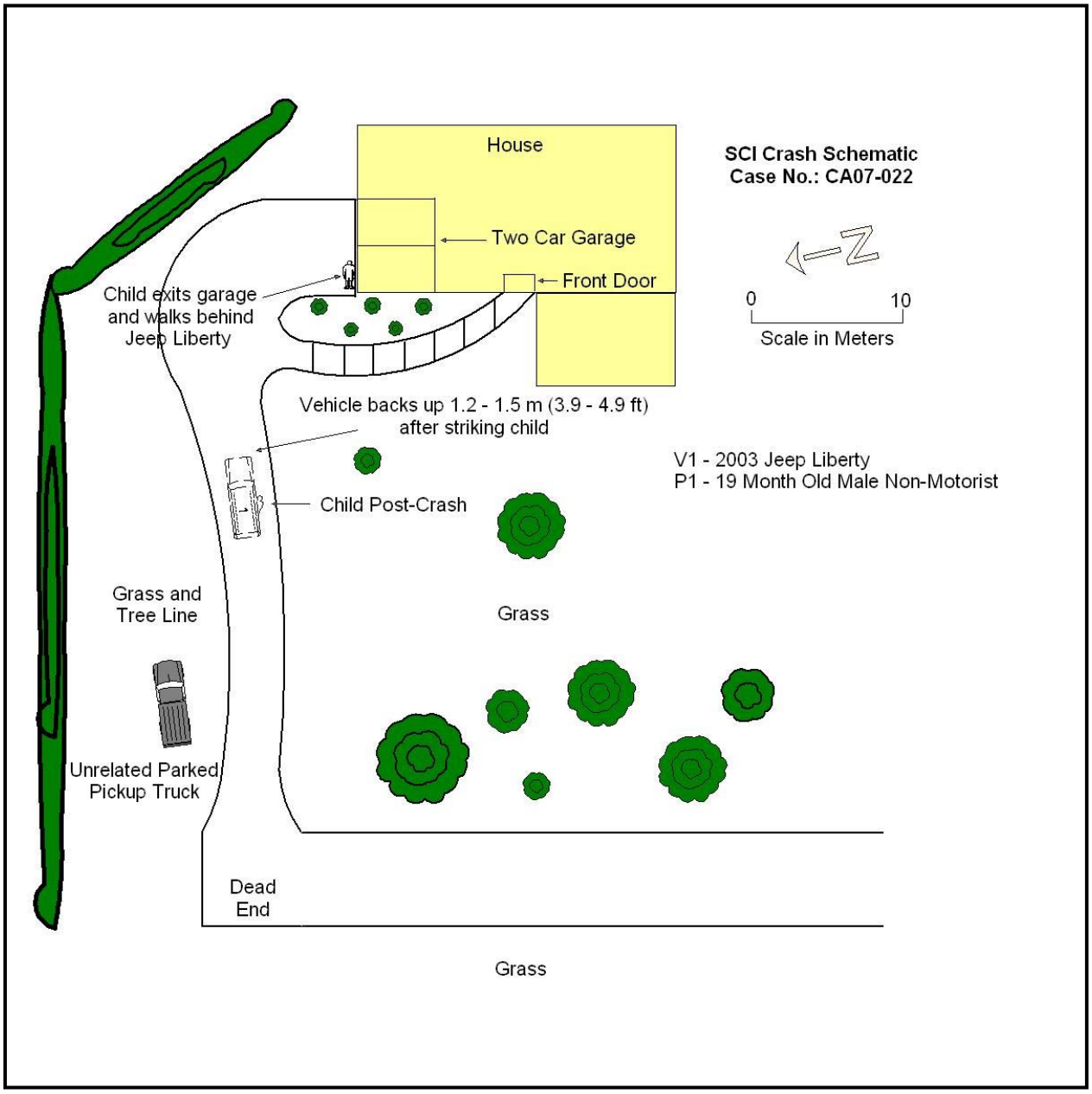

Figure 13: Crash Schematic

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

C A 0 7 0 2 2

IDENTIFICATION

2. Date of Crash 0 6 / X X / 0 7

3. Time of Crash 1 7 5 7

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 0 0 %

12. Estimated distance from parked position to impact

0 0 0 . 1 m

13. Estimated speed at impact 0 0 5 kmph

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

15. Estimated distance from impact to vehicle final rest

0 0 2 . 0 m

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

Not Applicable ☐

Reset Values

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National Highway Traffic Safety Administration

VEHICLE FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number C A 0 7 0 2 2

VEHICLE IDENTIFICATION

2. VIN 1 J 4 G K 4 8 K X 3 W X X X X X X

3. Model Year 2 0 0 3

4. Vehicle Make (specify): Jeep

5. Vehicle Model (specify): Liberty

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 P215/75R16

7. LF Tire Size P235/75R16

8. LR Tire Size P235/75R16

9. RF Tire Size P235/75R16

10. RR Tire Size P235/75R16

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)
Front Left	1	☑	☐ Full Down / ☐ Mid / ☐ Full Up
Front Middle	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up
Front Right	1	☑	☐ Full Down / ☐ Mid / ☐ Full Up
2nd Left	6	☑	☐ Full Down / ☐ Mid / ☐ Full Up
2nd Middle	6	☐	☐ Full Down / ☐ Mid / ☐ Full Up
2nd Right	6	☑	☐ Full Down / ☐ Mid / ☐ Full Up
3rd Left	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up
3rd Middle	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up
3rd Right	0	☐	☐ Full Down / ☐ Mid / ☐ Full Up

NOTES:

The front row bucket seats were equipped with integral head restraints.

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		113	132 cm to the top of the exterior mounted spare tire.
Top of trunk/tailgate		121	
Bottom of bumper		67	
Trailer hitch (if applicable)		N/A	
Undercarriage			
	Sway bar	N/A	
	Axle	30	
	Differential	20	
	Other (specify): Muffler	21	
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

Not Applicable ✔

Reset Values

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Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

C A 0 7 0 2 2

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

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National Highway Traffic Safety Administration

DRIVER FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

C A 0 7 0 2 2

DRIVER PROFILE

2. Driver's Age 2 9
   99 = Unknown

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

4. Driver's Height 1 6 3 cm
   999 = Unknown

5. Driver's Weight 0 5 9 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): Babysitter's child
   - ○ 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): Child in CSS
    - ○ 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:

    Returning to residence

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
C A 0 7 0 2 2

NON-MOTORIST PROFILE

2. Non-motorist's Age
99 = Unknown
1 9 ◉ Months ○ Years

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

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

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

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: Muffler/exhaust
○ 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	None			
	Helmet	None			
	Hood	None			
	Other (specify): _____				
UPPER BODY	Short Sleeve	Dark green	Synthetic	Slick	Light
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
LOWER BODY	Shorts	Dark blue	Synthetic	Slick	Light
	Pants				
	Shoes	Resin sandals	Synthetic		
	Other (specify): _____				