CRASH DATA RESEARCH CENTER

Calspan Corporation
Buffalo, NY 14225

NOT-IN-TRAFFIC SURVEILLANCE

CALSPAN ON-SITE BACK OVER INCIDENT INVESTIGATION

SCI CASE NO.: CA07-025

VEHICLE: 2002 CHEVROLET YUKON XL

LOCATION: NEW YORK

CRASH DATE: JULY 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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16. Abstract This on-site investigation focused on the events of the crash and the rear visibility issues of the involved 2002 GMC Yukon XL sport utility vehicle. The driver of the vehicle was a 50-year old male. He was backing the vehicle in his driveway when he struck his 19-month old son with the back right bumper area and subsequently ran him over with the right rear tire. The driver initially thought he had run over a child's toy. He stopped the vehicle within 4.5 meters (15') and exited the Yukon to find his child lying on the asphalt driveway. The child sustained a massive head injury and was pronounced deceased at the scene.			
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CALSPAN ON-SITE FATAL BACK OVER INCIDENT INVESTIGATION
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BACKGROUND

This on-site investigation focused on the events of the incident and the rear visibility issues of the involved 2002 GMC Yukon XL sport utility vehicle. The driver of the vehicle was a 50-year old male. He was backing the vehicle in his driveway when he struck his 19-month old son with the back right bumper area and subsequently ran him over with the right rear tire. The driver initially thought he had run over a child's toy. He stopped the vehicle within 4.5 meters (15') and exited the Yukon to find his child lying on the asphalt driveway. The child sustained a massive head injury and was pronounced deceased at the scene. **Figure 1** is an overall view of the crash site and the approximate final rest position of the Yukon.

Figure 1. Overall view of the scene and the final rest position of the GMC Yukon.

The Calspan Special Crash Investigations (SCI) team received notification of this back over fatality from the investigating police agency on the day following the incident. The SCI team gained cooperation from the investigating officer. This officer initially solicited cooperation from the driver for the NHTSA Not-In-Traffic Surveillance program. The driver expressed a desire to cooperate with the study, but requested time to recover from the sequence of events. The case was subsequently assigned for on-site investigation on July 19, 2007. At the convenience of the family, the on-site investigation was scheduled and conducted on August 29.

The crash was investigated by the police and reported using the New York State MV 104A State Accident Report Form. The form was filed by the police and reported to the State database as a fatal crash.

SUMMARY

Incident Site

This back over fatality crash occurred on a private residential driveway in a rural area during daylight hours with a recorded temperature of 67 degrees F (19 degrees C). The single family residence was located approximately 106 m (350') from a private road. The entire length of this driveway was surfaced with asphalt. In the immediate area of the incident, the driveway averaged 6.2 m (20.3') in width. The residence was located at the end of the driveway with an attached garage with two 2.4 m (8') wide overhead garage doors. These doors were closed at the time of the crash. A separate detached

garage was located 2.7 m (8.8') west of the residence at the north side of the driveway. This garage extended 9.8 m (32.1') to the west and was 7.4 m (24.3') in width. The 2.7 m (8.9') area between the house and the detached garage provided access to the lawn. The detached garage was configured with two 2.4 m (8') wide overhead doors on the west side. A contiguous paved parking area that measured 5.3 x 6.3 m (13.4 x 20.7') was located in front of the detached garage. The grade of the driveway averaged one percent, negative to the backing trajectory of the GMC Yukon. **Figures 2 and 3** are views of the crash site.

Figure 2. Overall view of the incident site.

Figure 3. Trajectory of the child pedestrian.

A 2.1 x 4.3 m (7 x 14') enclosed double axle trailer was parked on the south side of the driveway opposite of the detached garage at the time of the crash. A plastic play house and slide was positioned on the driveway against the mid point of the detached garage. A large boulder with surrounding landscaping was positioned on the lawn area on the opposite side of the detached garage. The driver stated that he had to back onto the lawn area between the tongue of the trailer and the boulder in order to pull forward and travel down the driveway. The Crash Schematic is included as **Figure 16** of this report.

Vehicle Data

The involved vehicle in this back over fatality incident was a 2002 GMC Yukon XL 1500 series, four-door large sport utility vehicle **(Figure 4)**. The GMC was identified by Vehicle Identification Number (VIN) 1GKFK16Z12J (production sequence omitted). The Yukon was powered by a 5.3 liter V-8 engine linked to a 4-speed automatic transmission with a column mounted transmission selector lever. The Yukon was a four-wheel drive body-on-frame configuration with OEM specification P265/70R16 Firestone Wilderness LE all-season tires mounted on six-spoke alloy wheels. The outside diameter and tread width of these tires were measured at 74 cm (29") and 22 cm (8.5") respectively. The Gross Vehicle Weight Rating for this vehicle was 3,266 kg (7,200 lb).

Figure 4. Overall view of the 2002 GMC Yukon.

The Yukon was equipped with step bars that extended the full length of the sill. A class III receiver hitch was mounted to the rear frame of the vehicle. Although the ball-mount sleeve was not installed in the hitch at the time of the SCI investigation, the driver did state that this unit was in-place at the time of this incident. The ball-mount was a drop-style that lowered the height of the ball in relation to the vehicle. The Yukon was not equipped with the Rear Ultrasonic Parking Assist (URPA) system.

The driver stated that all operational windows were closed at the time of the crash. He further noted that he seldom opened the windows and relied on the HVAC system for ventilation. The front door windows were AS2 with OEM solar tint while the remaining rear door, quarter windows, and backlight were AS3 with OEM deep tint. The driver noted that the vehicle was not recently washed and that the windows were covered with a light road film. This road film did not impair the driver's rear visibility.

The interior was configured with power-adjusted front bucket seats with a center seated position with a forward folding back rest. The center backrest was in the forward folded position which served as an armrest. The front outboard seats were equipped with adjustable head restraints that were adjusted 3 cm (1") above the seat backs. The driver's seat was adjusted to a rear track position. The second row was configured with a 60/40 three-passenger split bench seat with forward folding seat backs. The outboard rear positions were equipped with adjustable head restraints that were adjusted to the full-down positions. The Yukon was equipped with a three passenger third row seat that was removed from the vehicle at the time of this back over crash. This seat was reinstalled in the vehicle at the time of this SCI inspection. The third row seat was equipped with a forward folding back with adjustable head restraints.

The rear vehicle measurements and clearance heights were obtained from the Yukon on the driveway during this on-site investigation. **Figures 5 and 6** are back and undercarriage views. The components and measurements are detailed as follows:

Component	Measurement From Ground
Beltline at mid point of the right rear quarter window	131 cm (51.5")
Base of backlight	129 cm (50.75")
Bottom of rear bumper	50 cm (19.5")
Top of rear bumper	70 cm (27.75")
Undercarriage	
Bottom of receiver hitch (without ball mount)	37 cm (14.25")
Hitch safety chain plate	35 cm (13.75")
Spare tire	34 cm (13.375")
Tailpipe	32 cm (12.5")
Sway bar	12 cm (10.5")
Sway bar bracket	24 cm (9.5")
Differential	21.2 cm (8.375")
Axle tube	12.25 cm (12.25")

Undercarriage	
Rear shock mount	20 cm (8”)

Figure 5. Back view and bumper height of the GMC Yukon.

Figure 6. Undercarriage components and height of sway bar stabilizer mount.

Driver Data

The driver of the 2002 GMC Yukon XL was a 50-year old male with a stated height of 179 cm (70”) and a weight of 75 kg (165 lb). He does not wear prescription eyewear and was not wearing sunglasses at the time of this crash. The driver did describe himself as in a hurry as he attempted to back from his parked position and depart his residence.

Non-Motorist Data

The struck pedestrian was the driver’s 19-month old son. He was 74 cm (29”) in height with a family reported weight of 14 kg (30 lb). The child was dressed in a white cotton T-shirt, navy blue cotton shorts with white socks, and white athletic shoes with red trim and flashing lights. The child did not wear eyeglasses and was not wearing a hat at the time of the incident.

Incident Sequence

Pre-Incident

The driver of the GMC Yukon and his family were working in the yard prior to this back over incident. The driver’s wife and his 6-year old daughter were working behind the detached garage as he and his 19-month old son were riding on a garden tractor. The driver parked the tractor on the driveway between the house and the detached garage. As he assisted his son from the tractor, he assumed that his child proceeded to the area where his wife was working. The driver had a scheduled appointment and was in a hurry as he proceeded to the residence to retrieve the key for the GMC Yukon. As he exited the house, he walked along the right (south) side of the parked utility trailer and approached the Yukon from the back right side of the vehicle.

His 19-month old son proceeded up the driveway **(Figure 7)**, heading in a westerly directly toward the Yukon that was parked straddling the west edge of the driveway turnaround **(Figure 8)**. The vehicle was parked facing in as northerly directly with the right side exposed to the path of travel of the pedestrian non-motorist.

The driver entered the vehicle through the driver's door and started the Yukon. The windows were closed and the radio was off. The driver turned his head in a clockwise direction to look over his right shoulder and through the backlight as he began to back on a counterclockwise arc in a southeasterly direction. The driver was concerned not to back into the parked trailer or the large boulder that was on the lawn within his backing trajectory. The driver estimated his backing speed at 8 km/h (5 mph) which did not require throttle input to achieve this speed. The driver had a clear line of sight of the child's trajectory; however, he did not look in the child's direction.

Figure 7. Trajectory of the child pedestrian.

Figure 8. Parked position of the GMC Yukon.

Incident

As the driver backed the approximate length of the Yukon and while turning counterclockwise, the back right bumper area of the GMC struck the child and knocked him to the asphalt driveway surface **(Figure 9)**. This contact sequence was not detected by the driver as he continued on his backing trajectory. The right rear tire subsequently ran over the child resulting in fatal head injuries. The driver felt the thump associated with the run over and stopped the vehicle within 4.5 meters (15'). **Figure 10** is a view of the final rest positions of the GMC and the pedestrian (arrow).

The driver exited the vehicle thinking he had run over a child's toy. As he cleared the front of the Yukon, he observed his child lying on the driveway. The driver's wife heard the impact and proceeded to the driveway where she also observed the child. They immediately call the 9-1-1 emergency response system and requested police and ambulance assistance.

Figure 9. Backing trajectory of the Yukon to impacts with the child pedestrian.

Figure 10. Final rest positions of the Yukon and child (arrow)

Post-Incident

Members of the investigating police agency arrived on-scene and met with the emergency medical personnel. The first responders determined that the child was deceased from an obvious head injury. The coroner was called to the scene to pronounce the child deceased and removed the body. The police conducted their investigation and photographed the scene for documentation purposes. The Yukon was not towed or impounded for the police investigation.

Vehicle Contact Damage/Evidence

There was no non-motorist/pedestrian contact damage remaining on the vehicle at the time of this SCI investigation. The investigating officer did not observe distinct contact evidence such as wipe marks (i.e., road film removed) on the vehicle during his on-scene investigation.

Rear Visibility

The driver was utilized for this rear visibility procedure. He was positioned in the driver's seat and an eye height of 154 cm (60.5") was measured vertically from the driveway surface. He noted that he routinely turns his head to the right and looks directly out the backlight during all backing maneuvers. This procedure was repeated for the driver's detection of the 71 cm (28") tall red reflective target that was placed behind the vehicle. He fully observed the target 5.7 m (18.6') from the rear bumper **(Figure 11)**. The driver extended his line of sight to where it intersected the ground. This point measured 12 m (39.5') from the rear bumper. **Figure 12** is a view of the reflective target in the right outside mirror.

Figure 11. Rear visibility of the 71 cm reflective target.

Figure 12. Target visibility in the right outside mirror.

Cones of visibility were established using the outside rear view mirrors. These mirrors were mounted to the vehicle 314 cm (123.5") forward of the rear bumper. An arbitrary distance of 5.7 m (18.6') from the rear bumper was used to establish the lateral lines of sight. Again, the involved driver was utilized for this exercise. From the driver's position, the left rear view mirror provided a line of sight that extended 0.2 m (0.5') inboard of the left rear corner and extended 1.6 m (5.1') laterally outboard of the referenced corner **(Figure 13)**. The right outside rear view mirror provided the driver with a lateral line of sight that began at the corner position and extended 2.8 m (9.3')

outboard of the vehicle body line **(Figure 14)**. The Nominal Rear Visibility Diagram is included as **Figure 15** .

Figure 13. Cone of visibility from left outside mirror.

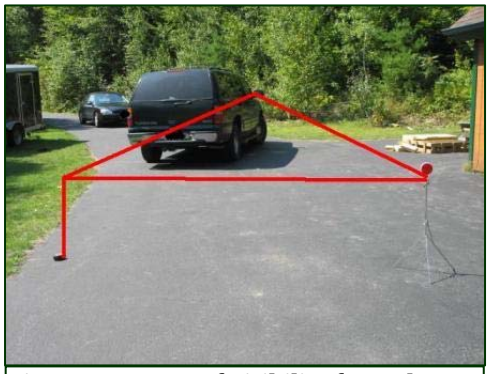

Figure 14. Cone of visibility from the right outside mirror.

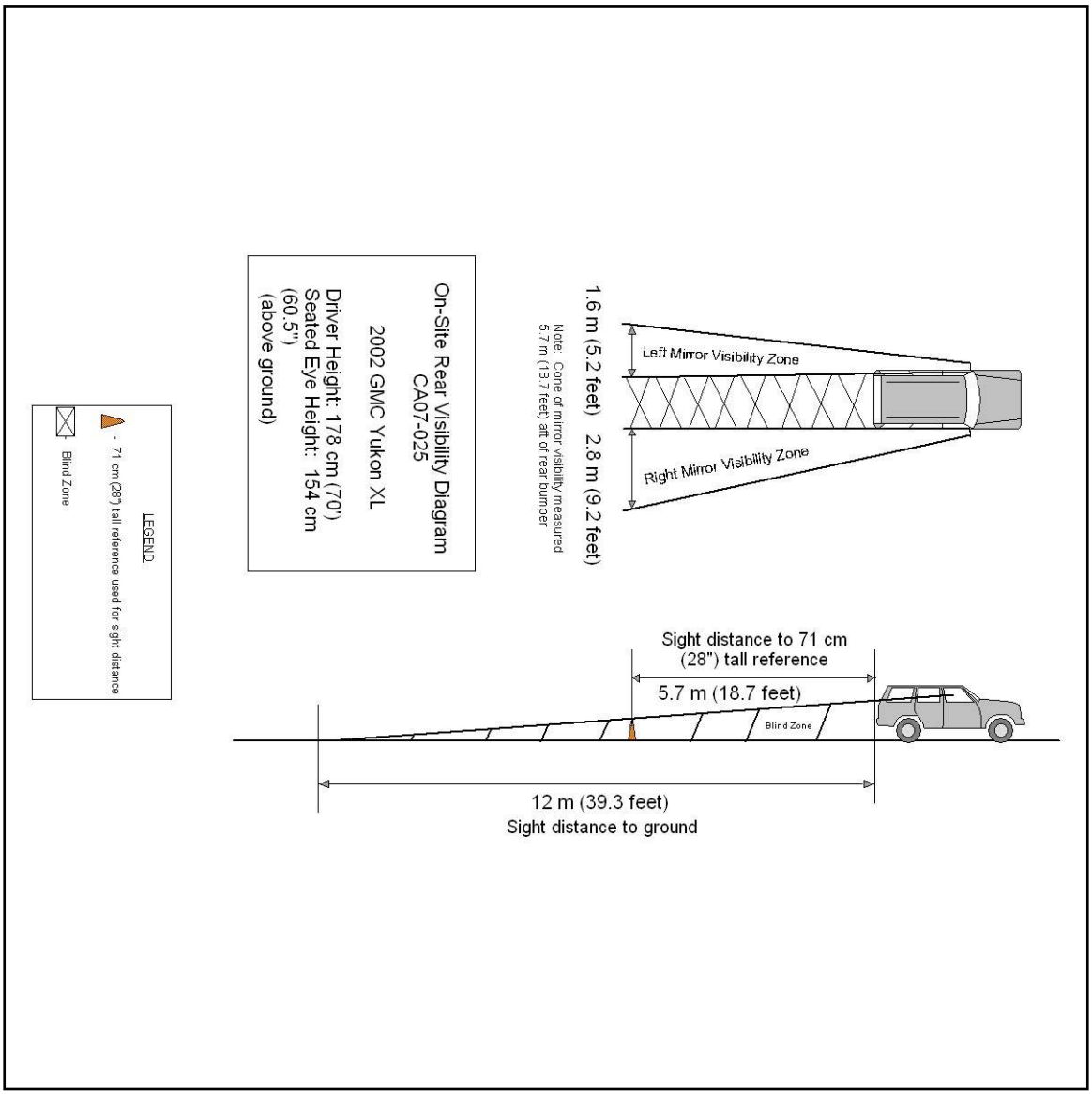

Figure 15: Rear Visibility Diagram

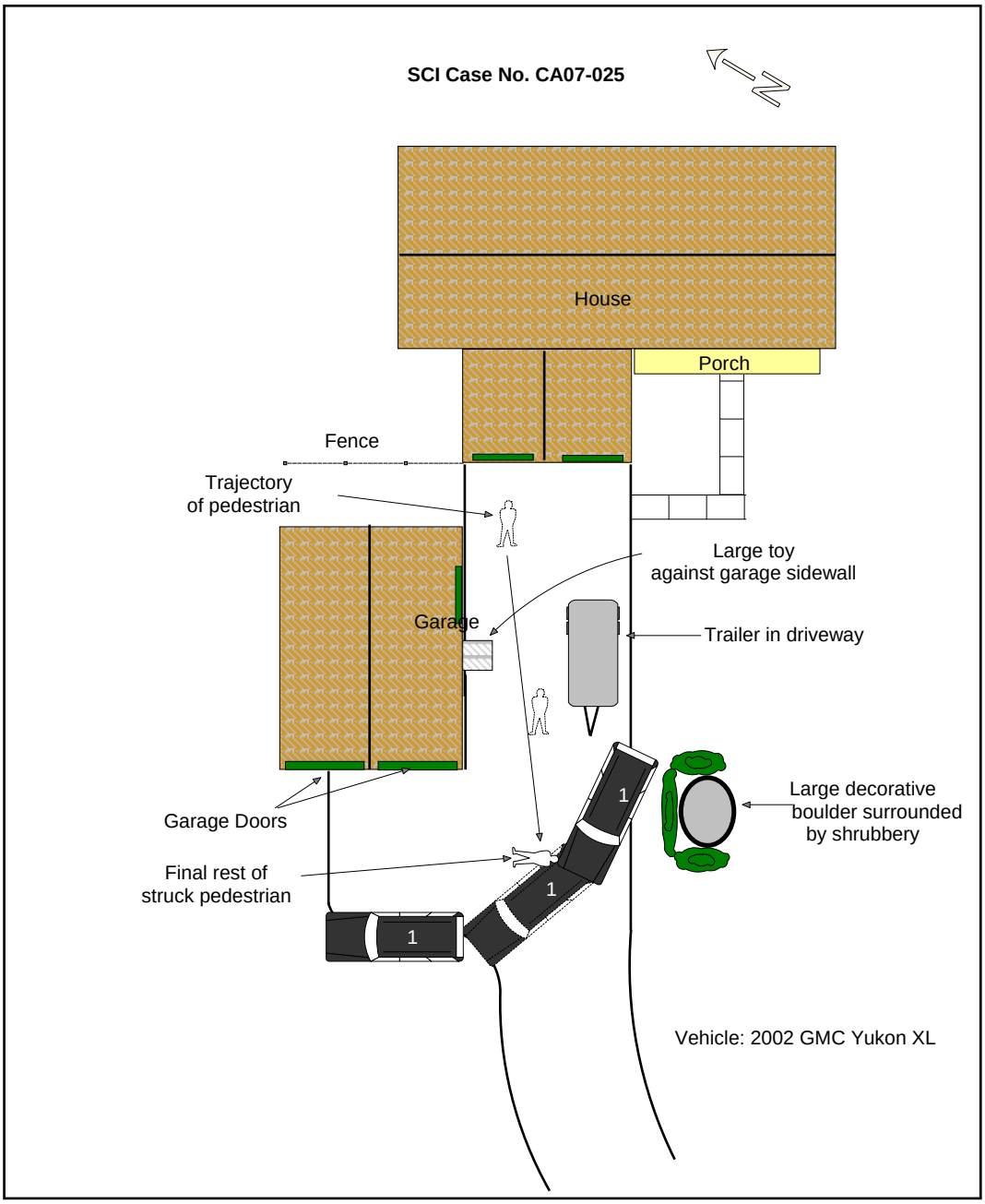

Figure 16: Crash Schematic

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 5

IDENTIFICATION

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

3. Time of Crash 1 9 3 5

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 6 . 0 m

13. Estimated speed at impact 0 0 8 kmph

14. Grade at impact (+/ -) - 0 1 %

15. Estimated distance from impact to vehicle final rest

0 0 4 . 5 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 5

VEHICLE IDENTIFICATION

2. VIN 1 G K F K 1 6 Z 1 2 J X X X X X X

3. Model Year 2 0 0 2

4. Vehicle Make (specify): GMC

5. Vehicle Model (specify): Yukon XL

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 P265/70R16

7. LF Tire Size P265/70R16

8. LR Tire Size P265/70R16

9. RF Tire Size P265/70R16

10. RR Tire Size P265/70R16

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)
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	7	☑	☑ ☐ ☐ Full Down / Mid / Full Up
2nd Middle	7	☐	☐ ☐ ☐ Full Down / Mid / Full Up
2nd Right	7	☑	☑ ☐ ☐ 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:

Front head restraints were adjusted 3 cm (1.2") above the full-down position. The third row seat was not in the vehicle at the time of the incident.

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		131	See technical report for additional measurements for components not listed.
Top of trunk/tailgate		129	
Bottom of bumper		50	
Trailer hitch (if applicable)		37	
Undercarriage			
	Sway bar	12	
	Axle	12	
	Differential	21	
	Other (specify): N/A	N/A	
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 5

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 ☐

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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 5

DRIVER PROFILE

2. Driver's Age 5 0
   99 = Unknown

3. Driver's Sex
   - (•) Male
   - ( ) Female
   - ( ) Unknown

4. Driver's Height 1 7 9 cm
   999 = Unknown

5. Driver's Weight 0 7 5 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): Backing from parking area
    - ( ) N/A
    - ( ) Unknown

12. Where was driver going
    Description:

    Appointment

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 5

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 7 4 cm

5. Non-motorist's Weight
999 = Unknown
0 1 4 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:_____
○ 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): _____	None			
UPPER BODY	Short Sleeve	White	Natural	Soft	Light
	Long Sleeve	None			
	Light Jacket	None			
	Heavy Jacket	None			
	Other (Specify): _____	None			
LOWER BODY	Shorts	Dark blue	Natural	Soft	Light
	Pants	None			
	Shoes	White	Unknown	Unknown	Unknown
	Other (specify): _____	None			