CRASH DATA RESEARCH CENTER
Calspan Corporation
Buffalo, NY 14225

NOT-IN-TRAFFIC SURVEILLANCE
CALSPAN REMOTE HYPERTHERMIA INVESTIGATION

SCI CASE NO: CA07-015

VEHICLE: 2002 BMW M5
LOCATION: TENNESSEE
INCIDENT DATE: MAY 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 remote investigation focused on the circumstances surrounding the death of a 15 month old male who was left unattended in a 2002 BMW M5. The child was restrained within a Graco infant child safety seat in the left rear position of the vehicle. The incident occurred over the length of the work day in the parking lot of the driver's (the child's father) place of employment. The child was pronounced dead at the scene of the incident by the County Medical Examiner due to systemic hyperthermia. The BMW M5 was equipped with an alarm system that utilized an interior motion detector. The police investigation revealed that alarm repeatedly activated the morning of the incident; however, the driver used his key fob remote to silence the alarm each time. He did not physically inspect the interior of the vehicle to determine the cause of the alarm's activation.

The Calspan Special Crash Investigations (SCI) Team identified this hyperthermia-related fatality through an Internet media search and provided notification of the incident to the Crash Investigation Division (CID) of the National Highway Traffic Safety Administration (NHTSA) on May 8, 2007. The CID assigned a remote level investigation of the incident to the Calspan SCI team on the same day due to the agency's interest in Not-In-Traffic fatalities. This report was based on a telephone interview with the police investigator and a review of the incident file. A timeline of the incident was developed from the police file. The local police conducted and filed a criminal investigation report regarding the fatality. This fatality would not be identified in any of the current traffic crash databases.

17. Key Words Not-In-Traffic Surveillance Hyperthermia Security Alarm Interior Motion Detector Parked Vehicle Child in Child Safety Seat		*18. Distribution Statement* General Public	
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BACKGROUND

This remote investigation focused on the circumstances surrounding the death of a 15 month old male who was left unattended in a 2002 BMW M5, **Figure 1**. The child was restrained within a Graco infant child safety seat in the left rear position of the vehicle. The incident occurred over the length of the work day in the parking lot of the driver's (the child's father) place of employment. The child was pronounced dead at the scene of the incident by the County Medical Examiner due to systemic hyperthermia. The BMW M5 was equipped with an alarm system that utilized an interior motion detector. The police investigation revealed that alarm repeatedly activated the morning of the incident; however, the driver used his key fob remote to silence the alarm each time. He did not physically inspect the interior of the vehicle to determine the cause of the alarm's activation.

Figure 1: On-scene photo of the BMW.

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SUMMARY

Vehicle Data

The subject 2002 BMW M5 was identified by the Vehicle Identification Number (VIN): WBSDE934X2C (production sequence deleted). **Figures 2 and 3** are exterior and interior views of the subject vehicle taken during the police investigation. The four-door, rear-wheel drive sedan was powered by a 5.0 liter, V8 engine linked to a six-speed manual transmission with overdrive. The brakes were a four-wheel disc system with ABS. The vehicle's mileage and date of manufacture were unknown. The exterior color of the vehicle was gray. The vehicle was designed to carry five occupants and was equipped with manual three-point safety belts in all positions. The ten-way powered driver seat, the front right passenger seat and the 60/40 split

rear bench seat were upholstered in black leather with gray accents. The carpeting and headliner were black. The BMW was equipped with a sunroof that was closed during the incident. The position of the sunroof shade was not reported. The side door windows and backlight appeared to be AS2 glazing with after-market tint. The sunroof glazing was OEM AS3 tint. The vehicle was equipped with BMW's security alarm system. This theft deterrent package was also equipped with an interior motion detector. The motion detector was mounted to the center of the vehicle's headliner. The BMW was purchased new by the driver in November 2001.

Figure 2: Left rear oblique view of the BWM at the incident site.

Figure 3: Interior view of the subject vehicle.

Incident Site

This incident occurred during the daylight hours of May, 2007. On the day of the incident, the morning sky was clear with a temperature of 14 degrees C (58 degrees F) during the 8 o'clock hour. The afternoon sky was reported as partly cloudy and a high temperature of 32 degrees C (89 degrees F) was reached during the 3 o'clock hour. The morning winds were calm. The afternoon winds were less than 13 km/h (8 mph) from the southwest.

The incident occurred in the asphalt parking lot of a commercial business that was located in a suburban office park, **Figure 4**. At the scene, the business office was located on the north side of a two lane road. A large rectangular parking lot was located immediately east of the office building. The estimated dimensions of the parking lot were 52 m x 24 m (170 ft x 80 ft). Traffic flowed from the road northward into the center of the parking lot. The parking spaces were located in two columns on opposite sides of the parking area and were oriented in an east/west direction. The subject vehicle was parked on the west side of the lot in the approximate center of the parking column. The approximate parked position of the BMW is identified by the arrow of Figure 4. Due to the configuration of the parking lot and the location of the vehicle relative to adjacent trees or buildings, no shade from the daytime sun would have been available to the vehicle. A schematic of the site is attached to the end of this report as **Figure 8**.

Figure 4: Overhead view of the incident site.

Incident

On the morning of the incident, the 43 year old driver (father) departed his residence and drove three of his children (ages 6, 10 and 12) to school. The 15 month old male also occupied the vehicle during this time and the driver intended to take the subject child to a day care facility. The subject child was restrained in a Graco rear-facing infant child safety seat in the rear left position of the BMW. In a statement recorded by the police investigators, the driver indicated that he installed the child safety seat in the vehicle and placed the subject child in the seat. After dropping the older children off at school, the driver then drove to work apparently overlooking the 15 month old male. Reportedly, the driver had a scheduled conference call with his employees at 0830 hours. The driver arrived at work at approximately 0820 hours and parked the BMW outside his place of employment. The driver locked the vehicle and entered the building; the windows were up and the sunroof was closed. The child, either asleep or quiet, was left unattended in the sedan. During these activities, the driver reported that he was not in a hurry. He had left his residence on schedule and was not running late.

The driver entered the office building and began his normal business duties. Reportedly, the scheduled conference call began on time at approximately 0830 and lasted 20 minutes. However, shortly after the driver's entry into the building, the BMW's car alarm sounded. The car alarm was triggered by the alarm's interior motion detector. The alarm reportedly activated four times within a 10 minutes time period. An employee of the business stated that the entire office staff was aware that the car alarm had activated. The driver turned the alarm off remotely with his key fob from his office window. Co-workers also reported that on one occasion, the driver exited the building and turned off the alarm after he had visually determined that no one was around the exterior of his vehicle. The driver stated that he disabled the alarm feature after the last activation. The alarm was disabled by depressing the key fob in rapid succession. The driver and office staff returned to normal business activities for the remainder of the day.

On morning of the incident, the driver's spouse (the subject child's mother) reportedly had morning appointments that prevented her from taking the children to school or the subject child to day care. The police investigation revealed the parents routinely shared the responsibility of transporting the children. It was not uncommon for the driver of the BMW to take the 15 month old to day care. The spouse co-owned the business with the driver and reportedly arrived at work around 0930 hours.

The spouse drove a Dodge Grand Caravan and parked it immediately south of the BMW (refer to Figures 1 and 8). She entered the business and began her normal work routine. At approximately 1030 hours, the subject driver spoke to the spouse and borrowed the Dodge to run some errands. He returned around 1130 hours. Around 1200 hours the driver and spouse left the premises with the Dodge for an appointment and then stopped for lunch. They returned to work around 1330 hours, parked next to the BMW and entered the building to finish the work day. During these trips with the Dodge, neither the driver nor his wife noticed anything "abnormal" with the BMW sedan parked next to them.

At approximately 1520 hours, the driver left the building intending to pick up his school age children. As the driver entered the BMW, he discovered the unresponsive child. The driver removed the child and child safety seat from the vehicle and ran into his place of employment.

Emergency response was called; however, medical efforts to revive the child were unsuccessful. The child was pronounced deceased at the scene. The Medical Examiner reported that the cause of death was from over-exposure to high temperature (systemic hyperthermia). The child was locked in the vehicle for approximately 7 hours.

Thermal imaging conducted by the responding fire officials determined the temperature inside the BMW was 58 degrees C (137 degrees F). It should be noted that the thermal imaging was conducted after the vehicle's doors had been opened and the vehicle had vented an unknown period of time. The maximum interior temperature of the BMW at the time of the incident was not determined.

Child Occupant Data

The 15 month old subject child had a reported height and weight of 76 cm (30 in) and 11 kg (24 lb), respectively. An autopsy conducted by the County Medical Examiner concluded the cause of death was systemic hyperthermia. The hyperthermia was evidenced by the following:

Injury	***Injury Severity (AIS 98 Update)***	***Injury Source***
Petechial hemorrhages of the lungs; Pulmonary edema and acute intra-alveolar hemorrhages	Severe (441410.4,3)	Hyperthermia
Cerebral edema, NFS	Serious (140660.3,9)	Hyperthermia
Petechial hemorrhages of the heart	Minor (441002.1,4)	Hyperthermia
Perimortem and postmortem heat injury to the skin, corneae, and lips	Not coded in AIS	Hyperthermia
Generalized dehydration	Not coded in AIS	Hyperthermia

Post-Incident Police Investigation

The police investigators interviewed the driver and his co-workers regarding the incident. The lead investigator also contacted the local BMW dealership regarding the design and operation of the security system. The security system was designed as a theft deterrent and incorporated an interior motion detector. A police evidence technician verified the operation of the interior motion detector. The technician was locked inside the vehicle, remained motionless for several minutes and then moved inside the interior. The technician's motion activated the security alarm.

The vehicle was then transported to the BMW dealership. A BMW technician was able to download data from the security system's computer. The downloaded data indicated the alarm had been activated a total of five times. Although the alarm times were not time-stamped, it was concluded that the alarm was activated four times by the subject child during the morning hours and once by the police evidence technician.

BMW Alarm System and Interior Motion Sensor

Figures 5 through 7 are views of the interior motion sensor that was incorporated in the design of the BMW's alarm system. The photographs of an exemplar BMW M5 were taken during the SCI investigation. The ultra-sonic sensor was mounted to the center aspect of the roof and provided 360 degrees of coverage. The alarm feature set automatically with the key was removed from the ignition and when the doors of the vehicle were locked. The vehicle's side windows and sunroof could be either open or closed. The alarm activated in response to movement either within the interior or through a side plane. The activated alarm could be turned off by depressing a button on the key fob. The alarm feature could also be disabled by repeatedly depressing the key fob button in sequence.

Figure 5: Center roof mounted interior motion sensor in an exemplar BMW M5.

Figure 6: Center roof mounted senor (exemplar BMW).

Figure 7: Exemplar ultra-sonic senor.

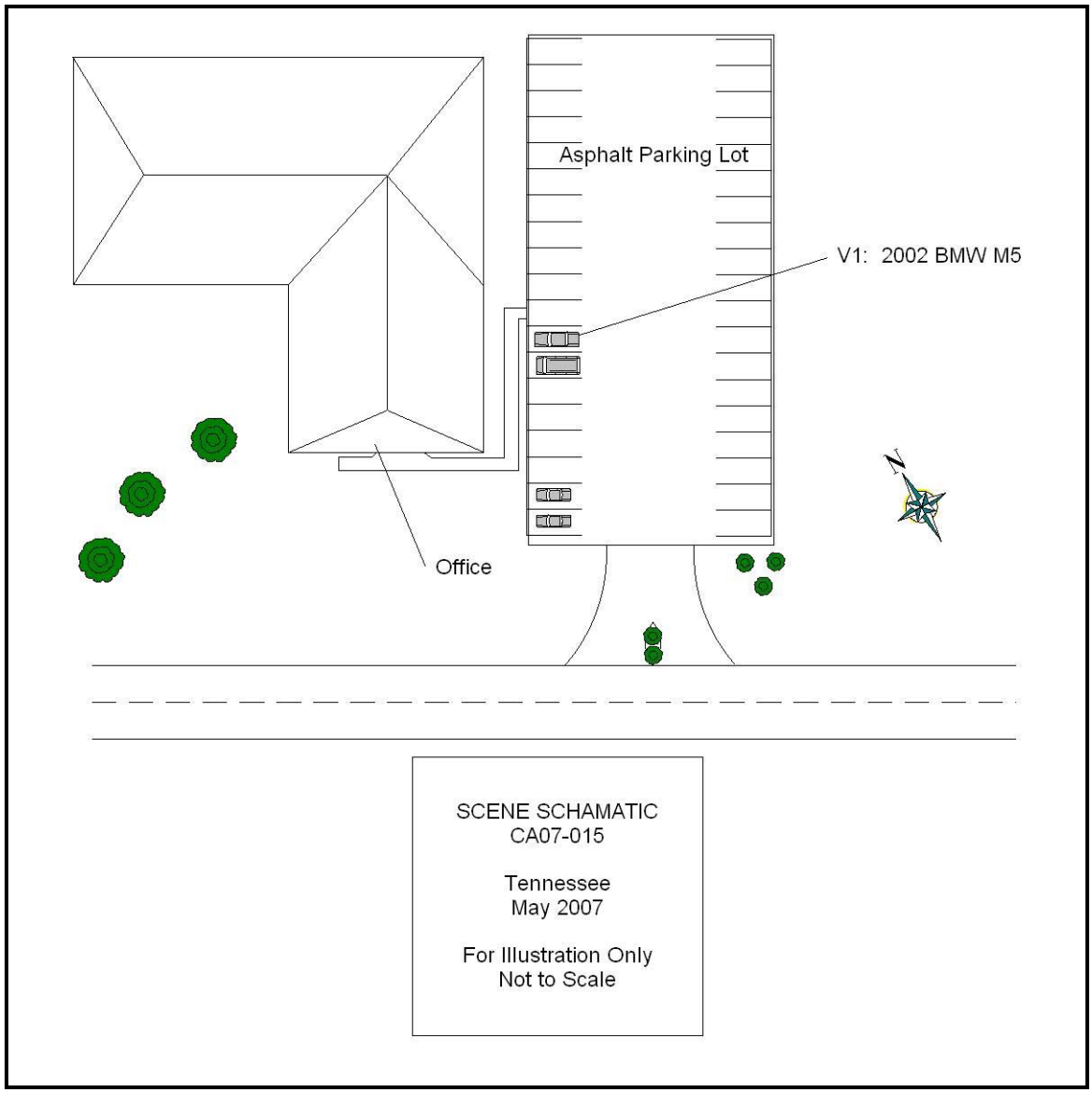

Figure 8: Scene Schematic.

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 1 5 ____

IDENTIFICATION

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

3. Time of Crash 9 9 9 9

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 . 0 m

13. Estimated speed at impact 0 0 0 kmph

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

15. Estimated distance from impact to vehicle final rest

0 0 0 . 0 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 C A 0 7 1 5 ____

VEHICLE IDENTIFICATION

2. VIN W B S D E 9 3 4 X C F X X X X X X

3. Model Year 2 0 0 2

4. Vehicle Make (specify): BMW

5. Vehicle Model (specify): M5

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 245/40-18(F) 275/35-18(R)

7. LF Tire Size UNKNOWN

8. LR Tire Size UNKNOWN

9. RF Tire Size UNKNOWN

10. RR Tire Size UNKNOWN

Seats / Head Restraint Data

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	1	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
Front Middle		☐	☐ Full Down / ☐ Mid / ☐ Full Up	
Front Right	1	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Left	7	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Middle	7	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
2nd Right	7	☑	☑ Full Down / ☐ Mid / ☐ Full Up	
3rd Left		☐	☐ Full Down / ☐ Mid / ☐ Full Up	
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		N/A	
Top of trunk/tailgate		N/A	
Bottom of bumper		N/A	
Trailer hitch (if applicable)		N/A	
Undercarriage			
	Sway bar	N/A	
	Axle	N/A	
	Differential	N/A	
	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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National Highway Traffic Safety Administration

Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

C A 0 7 1 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 ✔

Reset Values

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

DRIVER FORM

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

C A 0 7 1 5 ____

DRIVER PROFILE

2. Driver's Age ____ ____
   99 = Unknown
3. Driver's Sex
   - ○ Male
   - ○ Female
   - ○ Unknown
4. Driver's Height ____ ____ ____ cm
   999 = Unknown
5. Driver's Weight ____ ____ ____ 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): _____
    - ○ N/A
    - ○ Unknown
12. Where was driver going
    Description:

    _____

    _____
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 1 5 ____

NON-MOTORIST PROFILE

2. Non-motorist's Age
99 = Unknown
1 5 ◉ Months ○ Years

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

4. Non-motorist's Height
999 = Unknown
0 7 6 cm

5. Non-motorist's Weight
999 = Unknown
0 1 1 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: Hyperthermia
○ 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) FFCSS
○ 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): Inside vehicle
○ 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): Inside vehicle
○ 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) Inside veh.
○ Unknown

15. Were any other Non-motorists present?
(Select all that apply)
◉ Alone
○ One adult present
○ One other child present
○ Multiple adults present
○ Multiple children present
○ Unknown

NON MOTORIST CLOTHING

NOTES:

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

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

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