



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



DOT HS 812 533

May 2018

Special Crash Investigations Remote Non-Traffic Surveillance Hyperthermia Investigation Vehicle: 2011 Ford Fiesta Location: Idaho Incident Date: June 2015

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

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

This report and associated case data are based on information available to the Special Crash Investigation team on the date this report was published.

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Technical Report Documentation Page

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15. Supplemental Notes The interest of this Remote Non-Traffic Surveillance Hyperthermia Investigation is the heat-related death of an unattended 3-year-old child who died while occupying a 2011 Ford Fiesta.					
16. Abstract This incident occurred in June 2015 at approximately 1245 hours at a private residence in Idaho. The 23-year-old female owner of the vehicle was the child's mother. On the day of the incident, an adult male of an unknown age who lived in the residence came home and went to sleep at approximately 0430 hours. Later that morning after returning home from her work on a night shift, the mother turned on the television for the child to watch. She then went to sleep at approximately 0830 hours, intending only to take a 1-hour nap. While the two adults slept, the child exited the residence and entered the vehicle on his own, along with two dogs belonging to the family. The dogs historically accompanied the child when he went to play outdoors. The adult male woke up at 1030 hours and discovered the child and the two dogs were missing. He observed an exterior door of the residence was open. He began to look for the child and then woke up the mother at approximately 1200 hours. The mother then began looking and found the child in the vehicle where he and both dogs were unresponsive at approximately 1245 hours. The mother called 911 and attempted to revive the child. Responders arrived at 1257 hours and were unable to revive the child. He was declared deceased at 1300 hours. The vehicle was locked prior to the child entering it. Police found the car keys on the front seat during their investigation and the mother insisted the vehicle had been locked.					
17. Key Words hyperthermia, fatality, vehicle			18. Distribution Statement This document is available to the public through the National Technical Information Service, www.ntis.gov .		
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Special Crash Investigations
Remote Non-Traffic Surveillance Hyperthermia Investigation
Case Number: DS16022
Vehicle: 2011 Ford Fiesta
Location: Idaho
Incident Date: June 2015

BACKGROUND

The interest of this Remote Non-Traffic Surveillance Hyperthermia Investigation is the heat-related death of an unattended 3-year-old child who died while occupying a 2011 Ford Fiesta (**Figure 1**). The incident was identified during a review of a web page that tracks hyperthermia-related child fatalities. The web page includes incidents where children enter vehicle and remain inside the vehicles because they cannot self-extricate. The web page does not include incidents where a child is forgotten and left alone in a child safety seat in a vehicle by a parent or caregiver. The Special Crash Investigations (SCI) team obtained the police report and images for the case and it was initiated by the SCI group of the National Highway Traffic Safety Administration on November 21, 2016.



Figure 1. 2011 Ford Fiesta, looking southwest (police image)

This incident occurred during June 2015 at approximately 1245 hours at a private residence in Idaho. The 23-year-old female owner of the vehicle was the child's mother. On the day of the incident, an adult male of an unknown age who lived in the residence came home and went to sleep at approximately 0430 hours. Later that morning after returning home from her work on a night shift, the mother turned on the television for the child to watch. She then went to sleep at approximately 0830 hours, intending only to take a 1-hour nap. While the two adults slept, the child exited the residence and entered the vehicle on his own, along with two dogs belonging to the family. The dogs historically accompanied the child when he went to play outdoors.

The adult male woke up at 1030 hours and discovered the child and the two dogs were missing. He observed an exterior door of the residence was open. He began to look for the child and then woke up the mother at approximately 1200 hours. The mother then began looking and found the child in the vehicle where he and both dogs were unresponsive at approximately 1245 hours. The child was found lying on the console between the front row seats with his head on the center instrument panel and his feet in the second row. The mother called 911 and attempted to revive the child. Responders arrived at 1257 hours and were unable to revive the child. He was declared deceased at 1300 hours. It is unknown whether the vehicle was locked prior to the child entering it. Police found the car keys on the front seat during their investigation and the mother insisted the vehicle had been locked. The Ford was configured with either integrated keyhead transmitters (IKTs) or intelligent access

(IA) keys. The vehicle had power door locks and either key configuration had remote locking/unlocking capability. The type of key used by the child to unlock the vehicle on the day of the incident is unknown.

SUMMARY

Incident Site

The incident occurred in the driveway of a private residence located near an unpaved county road in a rural area in Idaho (**Figure 2**). The driveway was unpaved, hard-packed ground and scattered grass with a mostly level profile. It was generally oval in shape originating and ending at the roadway that fronted the south edge of the residential property. The Ford was parked in close proximity and south of the residence. The child had a clear path from the residence to the vehicle. The vehicle was visible from a doorway and three windows on the south side of the residence. Mature trees were present on the property and particularly within the area of the driveway but a high midday sun precluded shading directly on the vehicle. During the time the child was inside the vehicle, the sun was high above the horizon and passed directly overhead.¹ A detached garage was located on the property and west of the residence. Another vehicle identified only as a white, full-size pickup was parked facing east on the east side of the garage.



Figure 2. Incident site looking west with subject vehicle in center and residence on right (police image)

The incident ended at approximately 1245 hours when the child was discovered in the vehicle by his mother. Conditions at that time according to a weather history site were 26.0 degrees C (78.8 degrees F), 32 percent humidity, 16.0 km (10.0 mi) visibility, winds west/southwest 14.8 km/h (9.2 mph), dry, and clear.

Pre-Incident

Prior to the incident all three residents -- the 23-year-old mother, the 3-year-old male child, and an adult male of an unknown age who lived in the residence -- came home during early morning hours. The adult male came home and went to sleep at approximately 0430 hours. Later that morning after leaving from her work on a night shift, the mother picked up the child from a sitter and they both returned to the residence. The mother made the child a snack and turned on the television for the child to watch. She then went to sleep at approximately 0830 hours, intending only to take a 1-hour nap. While the two adults slept, the child presumably took the keys to the vehicle and exited the residence through the back exterior door located on the north side of the residence. Two family dogs historically accompanied the child when he went to play outdoors and they did so on this day prior to the incident. An investigation conducted by the county concluded the child used the keys

¹ Source: suncalc.net

to unlock to the doors prior to entering the vehicle. Following the incident, the mother found the keys in the front seat near the child.

The adult male woke up at 1030 hours and discovered the child and the two dogs were missing. He observed the exterior door of the residence was open. He began to look for the child and then woke up the mother at approximately 1200 hours.

Incident

The mother began looking and found the child in the vehicle where he and both dogs were unresponsive at approximately 1245 hours (**Figure 3**). The child was found lying on the console between the front row seats with his head on the center instrument panel and his feet in the second row.



Figure 3. Interior front row, 2011 Ford Fiesta (police image)

Post-Incident

The mother opened the front row right side door and removed the child from the vehicle, laid him on the ground, and called 911. She attempted to revive the child using what she thought to be cardiopulmonary resuscitation (CPR) techniques until responders arrived. Police were dispatched at 1245 and responders arrived at 1257 hours. They stated to the dispatcher the child's skin was blue in color and he was not responding to CPR efforts. A medic stated the child's clothing was soaking wet, so much so that he first thought the child had fallen into water. The child was immediately moved from the ground to the patient compartment of an ambulance, which was a shaded and cooler environment. The ambulance had an internal set temperature of 18.3 degrees C (65.0 degrees F). In the ambulance, responders observed the child's eyes were open, dried, and cracked. Approximately 10 to 13 minutes after their arrival, responders obtained an ear tympanic temperature from the child of 41.1 degrees C (106.0 degrees F). The child exhibited no pulse and efforts to revive him were unsuccessful. The child was declared deceased at 1300 hours. He was transported by ambulance to the county coroner's office. An autopsy was performed by a neighboring county agency and the report was obtained.

Vehicle Data

The 2011 Ford Fiesta four-door sedan was identified by the police incident report and photos. The Vehicle Identification Number, date of manufacture and odometer reading were unknown. The vehicle exterior color was black and the interior color was dark gray and black. The interior was configured with cloth upholstery seating for five occupants. The front row was configured with bucket seats separated by a center console. The second row was configured with a bench seat. A child restraint system (CRS) was located in the second row right position. The CRS was not in use at the time of this incident. Police images indicate all the windows in the vehicle were closed. Police images show the side glazing to be lightly tinted and the windshield and backlight to be clear. The doors were closed and unlocked prior to the child being discovered inside.

Hyperthermia Discussion

The term hyperthermia describes a state in which core temperature is increased above normal limits. Two factors make children more prone to hyperthermia than adults. Children have a greater surface

area to body mass ratio than adults and a child's thermoregulation is less efficient than an adult's.² Consequently, a child's body warms at a rate 3 to 5 times faster than an adult's.³ Heat stroke occurs when a person's temperature exceeds 104 degrees F (41.4 degrees C) and the thermoregulatory system is overwhelmed.⁴ Heat stroke symptoms include dizziness, disorientation, agitation, confusion, sluggishness, seizure, hot dry skin that is flushed but not sweaty, loss of consciousness, rapid heartbeat, and hallucinations. A core body temperature of 107 degrees F (41.7 degrees C) is considered lethal as cells are damaged and internal organs shut down.

The 3-year-old male decedent in this incident had an ear tympanic temperature of 41.1 degrees C (106 degrees F) taken 10 to 13 minutes after the arrival of medical responders. Core temperature measurement via the ear is considered by some to be subject to error and inaccuracy unless the sensor is inserted deeply enough into the ear canal as to measure the temperature of the eardrum, which is representative of core temperature. The specific method used to measure the child's temperature following the incident is unknown at the time of this report.

The length of time the child spent inside the vehicle on the day of the incident is unknown. His mother was last aware of his presence in the home at 0830 hours and the adult male was discovered the child and dogs absent from the home at 1030 hours. This suggests the child was possibly inside the vehicle from at least 1030 to 1245 hours. At 1030 hours, the ambient air temperature at the incident site was 22.0 degrees C (71.6 degrees F). At this moderate temperature, on average interior vehicle temperatures will increase 1.7 to 1.9 degrees C per 5 minutes (**Figure 4**). Within 30 minutes 80 percent of the temperature increase is accounted for and within 60 minutes the vehicle has reached peak temperature.

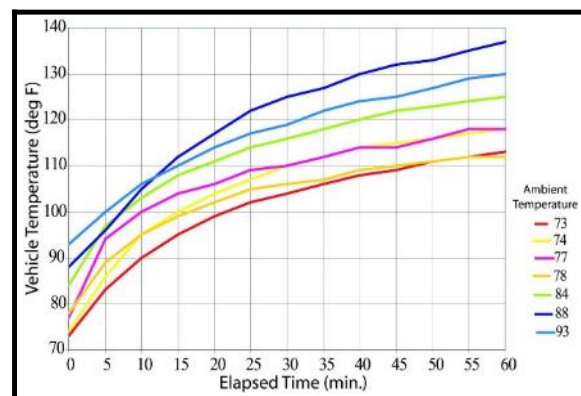


Figure 4. Representative vehicle temperature rise over time²

The data suggests that at 1130 hours the vehicle's interior temperature had reached at or above 45.0 degrees C (113.0 degrees F). At 1130 hours, the ambient temperature at the incident site was 24.0 degrees C (75.2 degrees F). The data suggests the vehicle's interior temperature at 1230 hours was at or above 47.8 degrees C (118.0 degrees F). The vehicle's interior color is a significant factor in intensifying interior temperatures. The interior color of the Ford was

² McLaren, C., Null, J., & Quinn, J. (2005). Heat stress from enclosed vehicles: moderate ambient temperatures cause significant temperature rise in enclosed vehicles. *Pediatrics*, 116:109- 12/

³ Null, J. (n.a.) Hyperthermia Deaths of Children in Vehicles (Web site of the Department of Meteorology & Climate Science, San Jose State University). San Jose, CA: San Jose State University. Retrieved from www.noheatstroke.org

⁴ Doerr, S. (n.a.) Hyperthermia and Heat-Related Illness (Web site). Retrieved from a subsidiary of WebMD at www.medicinenet.com/hyperthermia/article.htm#1DS16022

dark gray and black, suggesting the interior temperatures increased to a peak greater than average.

During the vehicle inspection detectives took a series of temperature measurements. The outside temperature in direct sunshine near the vehicle was 30.5 degrees C (87.0 degrees F). After opening the front door several temperatures were taken in various locations. The temperature on the front passenger floorboard was 50.0 degrees C (122.0 degrees F). The temperature of the center console and front passenger seat was 68.8 degrees C (156.0 degrees F). These were surface temperatures and would be higher than ambient temperatures. The temperature in the back seat was 55.0 degrees C (131.0 degrees F).

Non-Motorist Data

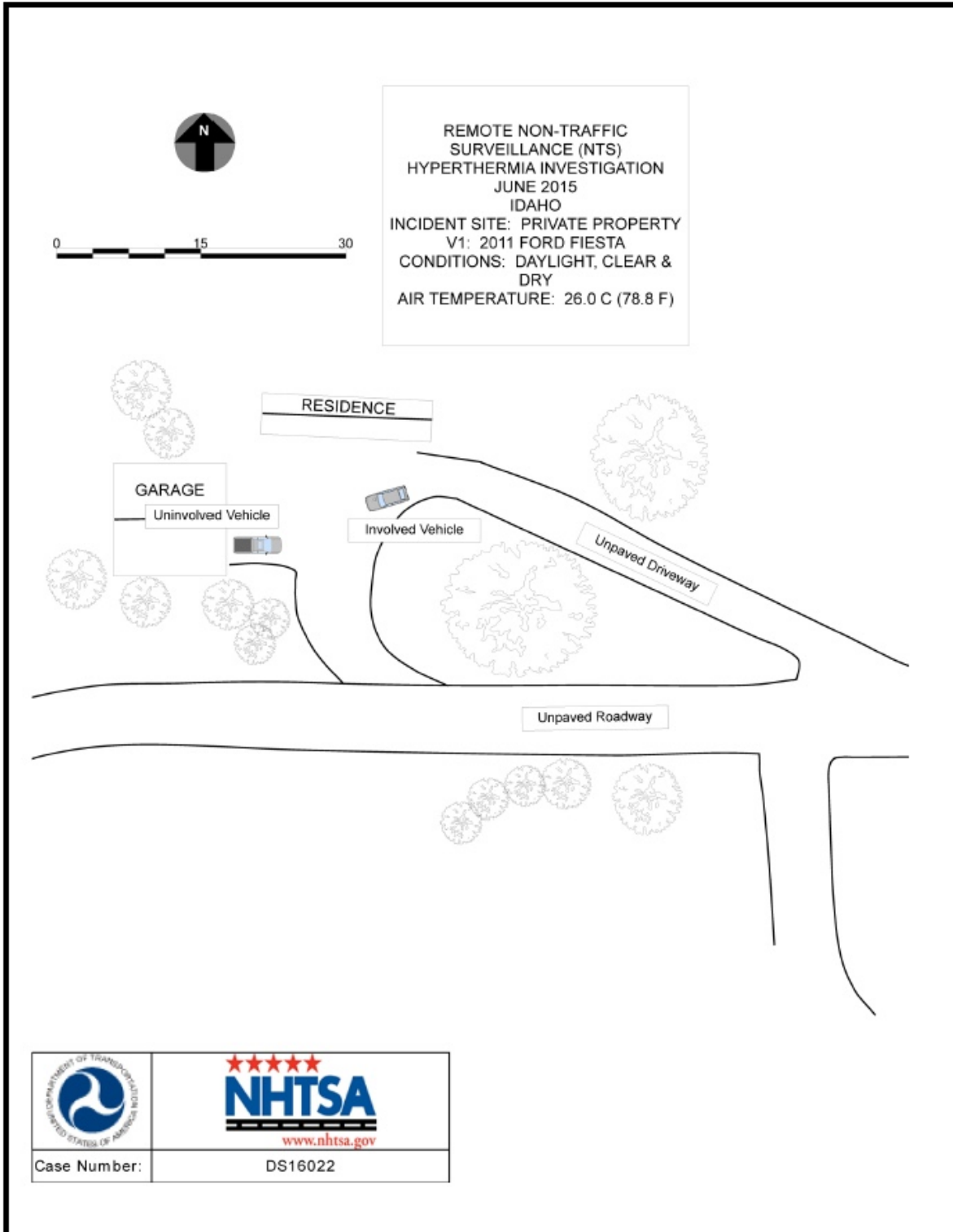
The 3-year-old male child (89 cm/35 in, 13.6 kg/30 lbs) was located in the vehicle lying supine on the center console between the front row seats. The child was wearing a cotton, short-sleeved T-shirt, short pants, leather sandals, and a diaper. He was pronounced deceased at the incident site at 1300 hours, approximately 15 minutes after being found in the vehicle. An autopsy was conducted and indicated that the cause of death was hyperpyrexia.

Non-Motorist Injuries

Inj. No.	Injury	Injury Severity AIS 2015	Involved Physical Component	IPC Confidence Level
1	Hyperpyrexia \geq 41 degrees C (105 degrees F)	010206.5	NA/Hyperthermia	Certain

Source: Autopsy report

Incident Site Schematic



Incident Site Satellite View



Appendix A. NTS Data Forms

Not Applicable

Reset Values

Print Forms

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

SCENE FORM

Special Crash Investigations
Non-Traffic Surveillance

1. Case Number

IDENTIFICATION

2. Date of Crash / /

3. Time of Crash

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)

<input type="checkbox"/> None	<input type="checkbox"/> Utility poles
<input type="checkbox"/> Other vehicles	<input type="checkbox"/> Signs
<input type="checkbox"/> Building	<input type="checkbox"/> Glare
<input type="checkbox"/> Trees	<input type="checkbox"/> Unknown
<input type="checkbox"/> Shrubbery	<input checked="" type="checkbox"/> No driver present
<input type="checkbox"/> Other (specify) _____	

9. Crash location

<input checked="" type="checkbox"/> Driveway	<input type="checkbox"/> Road / street
<input type="checkbox"/> Parking Lot	<input type="checkbox"/> Roadside / shoulder
<input type="checkbox"/> Sidewalk	<input type="checkbox"/> Other (specify) _____
<input type="checkbox"/> Alley	<input type="checkbox"/> Unknown
<input type="checkbox"/> Intersection of driveway and sidewalk	

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

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

11. Grade at parked position + / - %

12. Estimated distance from parked position to impact

m

13. Estimated speed at impact kmph

+ / -

14. Grade at impact %

15. Estimated distance from impact to vehicle final rest

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
Non-Traffic Surveillance

1. Case Number D S 1 6 0 2 2

VEHICLE IDENTIFICATION

2. VIN 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9

3. Model Year 2 0 1 1

4. Vehicle Make (specify): FORD

5. Vehicle Model (specify): FIESTA

GLAZING

Location	Presence (check)	Status (select)	Clarity (select)	Tint (check)	Glazing Obstructions (specify if present)
Windshield	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> Fixed <input type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
LF	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
RF	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
2 nd Left	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
2 nd Right	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
3 rd Left	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
3 rd Right	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input checked="" type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
Backlight	<input checked="" type="checkbox"/>	<input type="checkbox"/> Fixed <input checked="" type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
Left Backlight	<input type="checkbox"/>	<input type="checkbox"/> Fixed <input type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
Right Backlight	<input type="checkbox"/>	<input type="checkbox"/> Fixed <input type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
Roof	<input type="checkbox"/>	<input type="checkbox"/> Fixed <input type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	
Other (specify)	<input type="checkbox"/>	<input type="checkbox"/> Fixed <input type="checkbox"/> Closed <input type="checkbox"/> Open <input type="checkbox"/> Partially Open / Unknown	<input type="checkbox"/> Clear <input type="checkbox"/> Hazy <input type="checkbox"/> Very Dirty / Unknown	<input type="checkbox"/>	

TIRE DATA

6. Vehicle Manufacturer Recommended Tire Size UNKNOWN

7. LF Tire Size UNKNOWN 9. RF Tire Size UNKNOWN

8. LR Tire Size UNKNOWN 10. RR Tire Size UNKNOWN

Revised January 2018

Seats / Head Restraint Data				
Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left	1	<input checked="" type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input checked="" type="checkbox"/> Full Up	
Front Middle	0	<input type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input type="checkbox"/> Full Up	
Front Right	1	<input checked="" type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input checked="" type="checkbox"/> Full Up	
2 nd Left	5	<input checked="" type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input checked="" type="checkbox"/> Full Up	
2 nd Middle	5	<input type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input type="checkbox"/> Full Up	
2 nd Right	5	<input checked="" type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input checked="" type="checkbox"/> Full Up	
3 rd Left		<input type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input type="checkbox"/> Full Up	
3 rd Middle		<input type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input type="checkbox"/> Full Up	
3 rd Right		<input type="checkbox"/>	<input type="checkbox"/> Full Down / <input type="checkbox"/> Mid / <input type="checkbox"/> Full Up	

Seat Type codes:

- | | |
|---|--------------------------------------|
| 0 = No seat or seat folded down | 8 = Pedestal (i.e. column supported) |
| 1 = Bucket | 9 = Box mounted (i.e. van type) |
| 2 = Bucket w/ folding back | 10= Other seat type (specify) |
| 3 = Bench | 99= Unknown seat type |
| 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 | |

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

Back Up / Parking Aid Form

1. Case Number D S 1 6 0 2 2	
PARKING AID PRESENCE	
2. Type of backing/parking aid present <input type="checkbox"/> OEM camera <input type="checkbox"/> OEM ultrasonic/radar sensor <input type="checkbox"/> OEM combination camera-ultrasonic/radar sensor <input type="checkbox"/> OEM Fresnel lens <input type="checkbox"/> OEM interior mirrors <input type="checkbox"/> Aftermarket camera <input type="checkbox"/> Aftermarket ultrasonic/radar sensor <input type="checkbox"/> Aftermarket combination camera-ultrasonic radar sensor <input type="checkbox"/> Aftermarket Fresnel lens <input type="checkbox"/> Aftermarket interior mirrors <input type="checkbox"/> Other (specify): _____	
CAMERA INFORMATION	
<i>Specify field of view measurements on diagram</i>	
3. System make/model _____	
4. Video monitor type <input type="checkbox"/> None present <input type="checkbox"/> LCD (color) <input type="checkbox"/> CRT (black & white) <input type="checkbox"/> Unknown	
5. Video display size _____ cm (Diagonal)	
6. Camera location <input type="checkbox"/> None present <input type="checkbox"/> Bumper <input type="checkbox"/> License plate <input type="checkbox"/> Tailgate/Hatch/Trunk <input type="checkbox"/> Other (specify): _____	
7. Video image quality under scene lighting conditions <input type="checkbox"/> None present <input type="checkbox"/> Good <input type="checkbox"/> Average <input type="checkbox"/> Poor (specify): _____ <input type="checkbox"/> Unknown	
8. Was the camera functioning properly <input type="checkbox"/> None present <input type="checkbox"/> Yes <input type="checkbox"/> No, poor image quality due to glare <input type="checkbox"/> No, poor image quality due to atmospheric conditions <input type="checkbox"/> No, camera turned off <input type="checkbox"/> No, camera inoperable <input type="checkbox"/> Unknown	
ULTRASONIC/RADAR SENSOR	
<i>Specify object detection range on diagram</i>	
9. System make/model _____	
10. Auditory warning illumination <input type="checkbox"/> No sensor present <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	
11. Number of sensors _____	
12. Sensor locations (Select all that apply) <input type="checkbox"/> No sensor present <input type="checkbox"/> Left bumper <input type="checkbox"/> Center bumper <input type="checkbox"/> Right bumper <input type="checkbox"/> License plate area <input type="checkbox"/> Tailgate/Hatch/Trunk	
13. Was warning system functioning properly <input type="checkbox"/> No sensor present <input type="checkbox"/> Yes, system alerted driver <input type="checkbox"/> No, system did not alert driver <input type="checkbox"/> No, system turned off <input type="checkbox"/> No, system inoperable <input type="checkbox"/> Unknown	

Not Applicable

14. Did driver react to warning

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

15. Did driver report common false warnings

- No sensor present
- Yes
- No
- Unknown

Not Applicable

No Driver Present

Undo Not Applicable

Reset Values



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

DRIVER FORM

Special Crash Investigations
Non-Traffic Surveillance

1. Case Number
D S 1 6 0 2 2

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 Over 60 Seconds
 11-30 Seconds N/A
 31-60 Seconds Unknown

Not Applicable

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 and/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 Other occupant
- Headrest Other (specify) _____
- Cargo 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

Non Motorist Form

Reset Values

1. Case Number
 D S 1 6 0 2 2

NON-MOTORIST PROFILE

2. Non-motorist's Age 03 Months Years
 99 = Unknown

3. Non-motorist's Sex Male Female Unknown

4. Non-motorist's Height 089 cm
 999 = Unknown

5. Non-motorist's Weight 014 kg
 999 = Unknown

6. Medical outcome
 Not injured
 ER only
 Hospitalized 1-4 days
 Hospitalized 5 days or more
 Treatment later
 Fatal
 Unknown

7. Source of most severe injury
 Bumper
 Tire
 Undercarriage
 Other Specify: Heat related
 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 On skates/skateboard
 Bending at waist On bike/scooter
 Sitting Other (specify) supine
 Crouching Unknown
 Kneeling

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): _____
 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:

<u>Colors</u>	<u>Fabrics</u>	<u>Textures</u>	<u>Weights</u>
Black	Natural	Soft	Heavy
Lt gray/silver	Synthetic	Slick	Medium
Gold/tan	Blend	Coarse	Light
Dark blue			
Dark green			
Maroon			
Orange			
White			
Pink			

	Clothing	Color	Fabric	Texture	Weight
H E A D W E A R	Hat				
	Helmet				
	Hood				
	Other (specify): _____				
	Unknown				
U P P E R B O D Y	Short Sleeve				
	Long Sleeve	Yellow	Natural	Soft	Light
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
	Unknown				
L O W E R B O D Y	Shorts	Plaid	Blend	Soft	Medium
	Pants				
	Shoes				
	Other (specify): sandals	Brown	Natural	Soft	Medium
	Unknown				

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

