CRASH DATA RESEARCH CENTER
Calspan Corporation
Buffalo, NY 14225

NOT-IN-TRAFFIC SURVEILLANCE
CALSPAN REMOTE CARBON MONOXIDE POISONING
KEYLESS IGNITION INVESTIGATION

SCI CASE NO.: CA12013

VEHICLE: 2006 LEXUS IS250
LOCATION: FLORIDA
DATE: AUGUST 2010

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 carbon monoxide (CO) poisoning fatality of a 29-year-old female and CO-related sickness of a 39-year-old male. A 2006 Lexus IS250 equipped with a keyless ignition was identified as the source of the carbon monoxide. A concerned family member of the 39-year-old male notified the police on Thursday at 2354 hours after a series of unusual events happened over a 30 hour time period. The male victim did not answer multiple cellular telephone calls, did not pick up his daughter from school or meet his scheduled business appointments during that time period, which was out of character for the male victim. This concerned individual searched for and then located the male victim's vehicle at the residence of his girlfriend. After he was unable to get anyone to answer at the front door of the dwelling, he called the authorities. Upon entering the building, the police investigators smelled a strong odor of vehicle exhaust. The 29-year-old female was found deceased within the third floor master bathroom. The 39-year old male was found in the third floor master bedroom very lethargic and nearly unconscious. Subsequent investigation located the 2006 Lexus IS250, equipped with a keyless ignition, parked in the garage. The engine was cold and the fuel tank was empty.			
17. Key Words Not-In-Traffic Surveillance Carbon Monoxide Poisoning Fatal Keyless Ignition		*18. Distribution Statement* General Public	
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CALSPAN REMOTE CARBON MONOXIDE POISONING
KEYLESS IGNITION INVESTIGATION
SCI CASE NO: CA12013
VEHICLE: 2006 LEXUS IS250
LOCATION: FLORIDA
INCIDENT DATE: AUGUST 2010

BACKGROUND

This remote investigation focused on the circumstances surrounding the carbon monoxide (CO) poisoning fatality of a 29-year-old female and CO-related sickness of a 39-year-old male. A 2006 Lexus IS250 equipped with a keyless ignition was identified as the source of the carbon monoxide. **Figure 1** is a right front oblique view of an exemplar Lexus (police images of the subject vehicle were not available). The Lexus was left unattended and idling in an enclosed garage for an extended time period. This incident was identified by the Crash Investigation Division (CID) of the National Highway Traffic Safety Administration (NHTSA) through an Internet news article and subsequently assigned as a remote investigation to the Calspan Special Crash Investigations (SCI) team on April 4, 2012. This case was assigned in support of the Not-in-Traffic Surveillance (NITS) data collection that is being conducted by the Agency. Calspan SCI initiated a follow-up investigation and established cooperation with the investigating police agency. The police agency's incident report was obtained and provided the basis of this remote investigation.

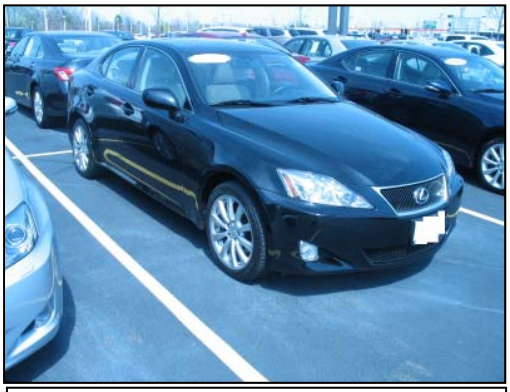

Figure 1: Right front oblique view of an exemplar Lexus IS250.

SUMMARY

A concerned family member of the 39-year-old male notified the police on Thursday at 2354 hours after a series of unusual events happened over a 30 hour time period. The male victim did not answer multiple cellular telephone calls and did not pick up his daughter from school or meet his scheduled business appointments during that time period, which was out of character him. This concerned individual searched for and then located the male victim's vehicle at the residence of his girlfriend. After he was unable to get anyone to answer at the front door of the dwelling, he called the authorities. Upon entering the building, the police investigators smelled a strong odor of vehicle exhaust. The 29-year-old female was found deceased within the third floor master bathroom. The 39-year old male was found in the third floor master bedroom very lethargic and nearly unconscious. Subsequent investigation located the keyless ignition-equipped Lexus parked in the garage. Its engine was cold, and its fuel tank was empty.

Residence

This incident occurred in a three-story townhouse complex that consisted of two- and three-bedroom units. The townhouses were constructed of brick and stucco and all had ground a floor garage. Some of the units had a two-car garage, while some units offered a single car garage. The victim's residence was a two-bedroom unit, located centrally within the structure, and had a single car garage. The front door to the dwelling was immediately to the left of the garage. Inside the front door, to the right within the entryway, there was a second door that opened into the garage. Directly forward of the front door there was a staircase that led to the second floor living space. A kitchen, bath, dining room and living room comprised the second floor. A second staircase led to the third floor which consisted of the master bedroom, a guest bedroom and a bathroom. The presence of carbon monoxide/smoke detectors within the residence was not reported by the police incident report.

Vehicle Data

The victim's vehicle was a 2006 Lexus IS250. The Vehicle Identification Number was redacted in the police incident report and is unknown. Research conducted by the SCI team at a local Lexus dealership determined that this vehicle was manufactured with a single trim level and was equipped with 2.5-liter V6 engine. The Lexus was equipped with an OEM keyless ignition (**Figure 2**). Police images of the vehicle were not available.

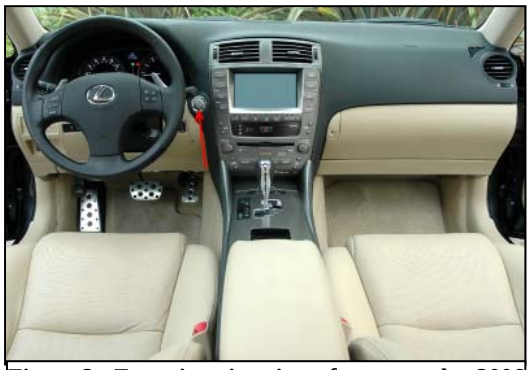

Figure 2: Front interior view of an exemplar 2006 Lexus IS250.

Victim Data

The fatally injured victim was a 29-year-old female with a police-reported height and weight of 160 cm (63 in) and 50 kg (110 lb). This victim owned the townhouse and the subject vehicle. The time period of these ownerships is unknown, as is her familiarity with the vehicle. It was determined by the police that the Lexus had been driven into the single car garage by the victim at the initiation of the incident.

The 39-year-old male was the victim's boyfriend. His height and weight were not reported. This individual owned a 2007 GMC pickup (model unknown). The pickup had been backed into the driveway by the male upon his arrival at the residence. He was a small business owner and he had a daughter from a previous relationship. The police investigation determined that these two individuals had been engaged in a relationship for two years, which the male described as "up and down." At the time of the incident, he described the relationship as "up." Neither individual had contemplated suicide or had suicidal tendencies.

Incident and Timeline

A reconstruction of the timeline determined that this incident developed over an approximate 30 hour time period that began during the evening hours of Wednesday and extended to Thursday evening of the following day. The police investigation revealed that the female victim had asked the male victim over for dinner via a text message. The male responded that he was running late and would be over at the conclusion of his business. In a text message from the male to the female, he asked the female victim to place the Lexus in the garage at 1727 hours. The male reported that she responded via text with something to the effect of "yes" at 1748 hours. He subsequently arrived at the townhouse between 1800 and 1900 hours and parked his own vehicle in front of the garage. The couple had dinner, engaged in a few telephone calls, watched television and went to bed at approximately 2230 hours.

The male victim recalled awaking to a loud noise coming from the bathroom. It sounded like the female victim falling. He had no recollection of the time that this occurred. He did not see a clock. He got out of bed and tried to help female victim because she was getting sick. He remembers holding her. The female was vomiting and was incoherent. He speculated that he helped her back into bed but he was unsure. The male was eventually overcome by the effects of carbon monoxide and began to display symptoms similar to the female. He also began vomiting; however, he had no recollection of when this happened in the timeline.

Post-Incident Police Investigation

The police entered the dwelling at the request of the concerned family member at 2354 hours on the following day (approximately 30 hours after the movement of the Lexus into the garage). A strong odor of vehicle exhaust was immediately identified. Fire department personnel responded to the incident site to assess and ventilate the residence. The fire company measured a CO concentration in the third floor master bedroom of 217 parts per million.

The female victim was found deceased in the master bathroom on the third floor of the townhouse. The male victim was found on the floor of the master bedroom very lethargic and unable to speak. He was subsequently hospitalized in critical condition within the Intensive Care Unit of a regional trauma center.

The Lexus was found parked within the garage. It was noted that the temperature of the engine was cold and that the vehicle had run out of gas. It was observed that the Lexus was equipped with a keyless ignition. The battery was depleted of its electrical charge. The key fob was not with the vehicle. The police searched the townhouse and located the key fob next to the female victim's purse on an end table within the second floor living room, nearly directly above the parked Lexus. The vehicle was subsequently towed to the police impound for further investigation.

The following day, the police inspected and examined the Lexus. Jumper cables and auxiliary 12-volt power were placed on the vehicle's battery to assess the condition of the Lexus' electrical system and the status of its fuel gauge. The key fob was depressed and all of the vehicle's electrical components engaged. The interior and exterior lights illuminated. Depressing the "Start" button engaged the starter, but the engine would not fire. The fuel gauge reading was "empty". The police determined that the vehicle was pulled into the garage by the female victim and was left unattended and idling in the garage. The vehicle ran at idle until all the fuel was consumed.

Exemplar Lexus IS250

The SCI team located an exemplar Lexus (**Figure 3**) in order to document the warnings associated with the removal of the key fob and to measure the sound decibel levels of idling vehicle. Although the exemplar

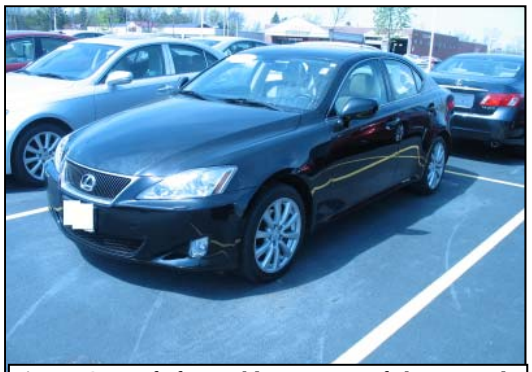

Figure 3: Left front oblique view of the exemplar Lexus.

Lexus was a 2007 model year vehicle, the sales manager of the dealership reported that the Lexus IS250 model was unchanged from model years 2005 to 2008. Decibel readings were measured by a calibrated standard sound level meter. During the measurements, the Lexus remained parked in the dealership parking lot. The environmental conditions during the testing were clear skies, 24 degree Celsius (75 degree F) temperatures and light winds estimated at 1.6 km/h (10 mph). The ambient noise level measured 55 - 56 decibels in the parking lot.

The engine of the Lexus was started. The sound level at the exhaust (on the back plane) measured 70 - 71 decibels at high idle (approximately 1200 RPM) and 65 decibels at the 700 RPM low idle. The sound level of the low idle operation attenuated to 58 decibels approximately 2 m (6 ft) away from the exhaust pipe. Standing adjacent to the engine compartment, the sound level at the low engine idle setting measured 62 – 63 decibels.

With the engine running, the key fob was removed from the vehicle. The door chime sounded three times and a warning illuminated on the message center within the instrument cluster. The message read "Key Is Not Detected" (**Figure 4**). The sound level of the active door chime did not register above the sound level produced by the idling engine.

Figure 4: Warning message displayed by the Lexus when the key fob is removed from the running vehicle.

Carbon Monoxide Literature Review

A colorless, odorless, and tasteless gas, CO is virtually undetectable by the human sensory organs. With a molecular mass of 28.0 CO is slightly lighter than air, which has an average molecular mass of 28.8. In blood chemistry, CO tightly binds to hemoglobin, the molecule in the blood responsible for transporting oxygen throughout the body. The binding of CO and hemoglobin form carboxyhemoglobin, which does not perform oxygen transport. CO's affinity for hemoglobin is approximately 240 times greater than that of oxygen.

Over time, carboxyhemoglobin gradually builds up in the bloodstream and degrades the oxygen transport in the body. The brain and vital organs of the oxygen-starved body slowly shut down, ultimately leading to death if the symptoms of CO poisoning are not detected. The toxic effect of CO exposure is related to both the length of the exposure and concentration of CO, in addition to the physical condition of involved individual. On average, exposure to levels greater than 100 ppm has adverse affects on human health. Research has determined that exposure to CO levels above 300 ppm (0.03%) for more than 1 to 2 hours can lead to death, while exposure to 800 ppm (0.08%) can be fatal after one hour. Only trace levels of carbon monoxide are present under normal atmospheric conditions.

ATTACHMENT A

Not-In-Traffic Surveillance Forms

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 1 2 0 1 3

IDENTIFICATION

2. Date of Crash 0 8 / x x / 1 0

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) GARAGE
- ☐ 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 1 2 0 1 3

VEHICLE IDENTIFICATION

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

3. Model Year 2 0 0 6

4. Vehicle Make (specify): LEXUS

5. Vehicle Model (specify): IS250

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 P225/45R17

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	0	☐	☐ ☐ ☐ 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	0	☐	☐ ☐ ☐ Full Down / Mid / Full Up	
3rd Middle	0	☐	☐ ☐ ☐ Full Down / Mid / Full Up	
3rd Right	0	☐	☐ ☐ ☐ 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	NOT APPLICABLE
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	
Sensor Height (if equipped)		N/A	
Camera Height (if equipped)		N/A	

Not Applicable ☑

Undo Not Applicable

Reset Values

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

Back Up / Parking Aid Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number

C A 1 2 0 1 3

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
- ☐ 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
Not In Traffic Surveillance

1. Case Number

C A 1 2 0 1 3

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
   - ☐ Nea sighted
   - ☐ Far ighted
   - ☐ stigmatism
   - ☐ O r (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 ☐ N/A
    - ☐ No ☐ Unknown

Not Applicable

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 1 2 0 1 3

NON-MOTORIST PROFILE

2. Non-motorist's Age 3 9 ☐ Months ☉ Years
99 = Unknown

3. Non-motorist's Sex
☉ Male
☐ Female
☐ Unknown

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

5. Non-motorist's Weight 9 9 9 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: CARBON MONOXIDE
☐ 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				
	Helmet				
	Hood				
	Other (specify): _____				
	Unknown	Unknown	Unknown	Unknown	Unknown
UPPER BODY	Short Sleeve				
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
	Unknown	Unknown	Unknown	Unknown	Unknown
LOWER BODY	Shorts				
	Pants				
	Shoes				
	Other (specify): _____	Unknown	Unknown	Unknown	Unknown
	Unknown				

Not Applicable ☐

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

Non Motorist Form

Special Crash Investigations
Not In Traffic Surveillance

1. Case Number
C A 1 2 0 1 3

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	Hood				
	Other (specify): _____				
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UPPER BODY	Short Sleeve				
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify): _____				
	Unknown	Unknown	Unknown	Unknown	Unknown
LOWER BODY	Shorts				
	Pants				
	Shoes				
	Other (specify): _____	Unknown	Unknown	Unknown	Unknown
	Unknown				