Remote Not In Traffic Surveillance Trunk Entrapment Investigation
Dynamic Science, Inc. (DSI), Case Number (DS07039)
1999 Oldsmobile Intrigue
South Dakota
July 2007

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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 vehicle(s) or their safety systems.

Technical Report Documentation Page 1. Report No. 2. Government Accession No. 3. Recipient Catalog No. DS07039 4 Title and Subtitle 5 Report Date April 1, 2008 Remote Not In Traffic Surveillance Trunk Entrapment 6. Performing Organization Report No. Investigation 8. Performing Organization Report No. Dynamic Science, Inc. 9. Performing Organization name and Address 10. Work Unit No. (TRAIS) Dynamic Science, Inc. 299 West Cerritos Avenue 11. Contract or Grant no. Anaheim, CA 92805 DTNH22-07-C-00045 12. Sponsoring Agency Name and Address 13. Type of report and period Covered [Report Month, Year] U.S. Dept. of Transportation National Highway Traffic Safety Administration 14. Sponsoring Agency Code 1200 New Jersey Ave, SE Washington, DC 20590 15. Supplemental Notes 16. Abstract This remote investigation focused on the circumstances surrounding the death of a 5-year-old male who was found locked in the trunk of 1999 Oldsmobile Intrigue. The incident occurred between 1200 and 1500 hours. The Oldsmobile had been parked on the street in front of the vehicle owner's residence. The child's mother located the child in the trunk at approximately 1500 hours. He was sweating heavily and was not moving. The child was removed from the trunk and taken inside. CPR was administered. The child was transported from the scene and arrived at the hospital with no electrical activity and a body temperature of 42 degrees C (108 degrees F). The child died shortly after his arrival. There was initially some concern that this incident may not have been accidental. The police later determined that the death was accidental. This fatality was not reported as a traffic related death by the involved police jurisdiction. 17. Key Words 18. Distribution Statement Not in Traffic Surveillance (NITS), non-

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BACKGROUND

This remote investigation focused on the circumstances surrounding the death of a 5-year-old male who was found locked in the trunk of 1999 Oldsmobile Intrigue (see Figure 1). The incident occurred between 1200 and 1500 hours. The Oldsmobile had been parked on the street in front of the vehicle owner's residence. The child's mother located the child in the trunk at approximately 1500 hours. He was sweating heavily and was not moving. The child was removed from the trunk and taken inside. CPR was administered. The child was transported from the scene and arrived at the hospital with no electrical activity and a body temperature of 42 degrees C (108 degrees F). The child died shortly after his arrival.

This remote Not In Traffic Surveillance (NITS) trunk entrapment investigation was initiated in response to an on-line news article reporting the death of a 5-year-old male child found in the trunk of a vehicle. DSI was notified of the article on August 16, 2007. There was initially some concern that this incident may not have been accidental. On September 6, 2007 the child's mother was cleared of any possible charges. The police determined that the death was accidental. On October 16, 2007 DSI obtained a copy of the suspicious death incident report. This fatality was not reported as a traffic related death. DSI was assigned the case on October 17, 2007. The on-scene photographs were requested at that time and were received on February 26, 2008.

SUMMARY

Vehicle Data

The 1999 Oldsmobile Intrigue was identified by the Vehicle Identification Number (VIN): 1G3WH52H2XFxxxxxx. The four-door, front wheel drive sedan was powered by a 3.5 liter, V6 engine linked to an automatic transmission. The brakes were a four-wheel disc system with ABS. The exterior color of the vehicle was black. The vehicle was designed to carry five occupants and was equipped with three-point lap manual and shoulder belts for the outboard positions and a lap belt for the second row center seat position. There were bucket seats in the front and a bench seat in the rear. The vehicle was equipped with an electric remote trunk/hatch release. According to the police report, the trunk can be opened using



Figure 1. On scene view of Oldsmobile Intrigue

the trunk release (see Figure 2) or by pressing the door lock release twice. The trunk lid was hinged at the forward aspect and was supported in the open position by piston-configured trunk struts on either side of the trunk (see Figure 3). According to investigating officers, the trunk would close and lock with a minimum of downward pressure. In experimenting with the trunk lid, the officer found that if the lid was positioned at the nearly open position, shaking or

bumping the vehicle would cause the lid to return to the fully opened position. He also found that if the lid was positioned below that level, shaking or bumping the vehicle would cause the trunk struts to compress downward. When the struts reached a point of 3.8 cm (1.5 in) on the rods, the struts would no longer hold the weight of the trunk lid and the lid would drop and close. The trunk lid would not close violently, but would drop with sufficient speed that it would latch every time. The vehicle was not equipped with an internal trunk release¹. The family had been fishing the day before and there was fishing gear still in the trunk. The gear included a tackle box, a container of oil, two fishing reels, an oil jug, a bag of wood, two buckets, and a fishing net (see Figure 4).



Figure 2. Trunk release button



Figure 3. Trunk struts



Figure 4. Trunk contents



Figure 5. Interior view of subject vehicle

¹According to on-line GM sources, beginning in 2001, all GM passenger cars were equipped with interior trunk release handles as standard equipment.

Incident Site

This incident occurred on a public road between 1200 and 1500 hours in July 2007. The black 1999 Oldsmobile Intrigue was parked in front of the driver's trailer home facing north (see Figure 5). The vehicle was parked in direct sunlight and there were no overhanging trees or structures to provide any shade. According to the nearest weather reporting station, the sky was clear and temperature ranged from 26.7 degrees C (80 degrees F) at 1153 hours to 27.8 degrees C (82 degrees F) at 1453 hours. The relative humidity was 13% and there were winds gusting between 29-34 km/h (18-21 mph).



Figure 6. Location of vehicle relative to residence



Figure 7. Right front oblique view of Buick at the incident site

Incident

The involved child was 5-years-old. He was wearing long blue jeans and a red tee shirt. The case vehicle was a black 1999 Oldsmobile Intrigue four-door sedan that belongs to the child's mother. The vehicle was parked in front of the driver's home facing north (see Figure 6-7).

The child was outside playing. Several witnesses recall him playing on and near the Oldsmobile Intrigue. One witness stated that she saw the child at approximately 1200 hours; he was sitting on the edge of the opened trunk with his feet on the bumper. According to the child's mother, the child sometimes played around the vehicle. He knew how to open the trunk and had been in the trunk before.

The child's mother indicated that the child had last checked in with her at approximately 1300 hours. At approximately 1500 hours, the child's mother went outside to look for the child. She was looking around the yard when she noticed that the driver's door of the Intrigue was partially open. She indicated that she knew that she left the doors unlocked the previous night and went to the vehicle to shut the door. At this time she noticed that the trunk was ajar. She attempted to shut it, but it would not close. She thought something was in the way. She then opened the trunk and saw the child inside. He was sweating heavily and was not moving. She indicated that his position in the trunk was as if he had crawled in and went to sleep.

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She removed the child from the vehicle. At some point, the child's mother was joined by a female neighbor. The mother stated that the child was burning up and that she was going to run cold water over him. She placed the child in the tub. The neighbor told her to not run the water over the child. The mother climbed in the tub and began administering CPR. After a few moments, she removed the child from the tub, took him to the living room, and resumed CPR. The neighbor went outside to wait for help.

The first responding police officer was dispatched at 1519 hours. The child's mother had called 911 at some point after taking the child into the home. The first responding police officer entered the home shortly after his arrival. He took over the CPR effort. He noted that after each breath, the child made a gurgling sound. He also noted that the child's skin was warm to the touch and that his eyes were partly open with the pupils dilated. After a short period of time, paramedics arrived. The child was placed on a stretcher and taken to the ambulance. The child arrived at the hospital with no electrical activity and a body temperature of 42 degrees C (108 degrees F). Hyperthermia is defined as the elevation of core body temperature to above 37.2 degrees C (99 degree F). The child died shortly after his arrival. The only available pathologist was from out of town. The body was placed in cold storage. The autopsy took place three days later.

Child Occupant Data

The 5-year-old male child had a reported height of 112 cm (44 in) and a weight of 25 kg (56 lbs). An autopsy conducted by a forensic pathologist indicated that the cause of death was found to be compatible with hyperthermia. The final anatomic diagnosis was generalized visceral congestion with severe cerebral edema. The edema was not coded due to its non traumatic cause. An external examination revealed a number of minor injuries, including the following: a left thumb abrasion, a left small finger abrasion, a right small finger abrasion, a contusion to the left mid back, an abrasion to the right buttock, abrasion to the mid forehead, an abrasion near the left ear, and a contusion above the right eyebrow. It is believed that these occurred while the child was in the trunk. These were not coded because of their non trauma nature. The hyperthermia was evidenced by the following:

<u>Injury</u>	OIC Code	Injury Mechanism	Confidence Level
Petechial hemorrhages over pleural surfaces of both lungs	441410.4,3	Hyperthermia	Certain
Hemorrhage, posterior esophagael area	440899.2,4	Hyperthermia	Certain

Attachment 1. Field Data Forms

SCENE FORM

			SCENE INFORMATION
1. Case	Number	7. 7	Type of area in which crash occurred (Select all that apply) O Single family residential
	IDENTIFICATION		O Row houses/townhouses O Multi family housing
2. Date	of Crash //		O Commercial O Industrial O Rural O Unknown
3. Time	of Crash	8.	Driver exterior sightline obstructions
C	Code reported military time of crash.	0.	(Select all that apply)
	NOTE: Midnight = 2400 Jnknown = 9999		O None O Utility poles O Other vehicles O Signs O Building O Glare O Trees O Unknown
	AMBIENT CONDITIONS		O Shrubbery O No driver present O Other (specify)
4. Light (Conditions		· · · · · · · · · · · · · · · · · · ·
	Paylight	9.	Crash location
	Park but lighted		O Driveway O Road / street O Parking Lot O Roadside / shoulder
0 0	O Dawn O Dusk		O Sidewalk O Other (specify)O Alley O Unknown
0 L	Jnknown		O Intersection of driveway and sidewalk
	ospheric Conditions Select all that apply)	10.	Non motorist sightline obstructions (Select all that apply)
O G S S O S S O O O	Clear-No adverse conditions Cloudy Rain Gnow Fog, Smog, Smoke Sleet, Hail (freezing rain or drizzle) Blowing Snow Severe Crosswinds Blowing Sand, Soil, Dirt Other (specify): Unknown		O None O Other vehicles O Building O Trees O Shrubbery O Utility poles O Signs O Glare O Other (specify) O Unknown
	perature	11.	Grade at parked position %
		12.	Estimated distance from parked position to impact
0 1	O Unknown		m
0 0		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

VEHICLE FORM

1. Case Number						
		VEHICLE IDEN	ITIFICATION			
2. VIN	·					
3. Model Ye	ear					
4. Vehicle N	Make (specify	y):	· · · · · · · · · · · · · · · · · · ·		_	
5. Vehicle N	Model (specif	ý):			_	
		GLAZ	ING			
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			
2 nd Left		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown			
2 nd Right		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown			
3 rd Left		Fixed / Closed / Open / Partially Open / Unknown	Clear / Hazy / Very Dirty / Unknown			
3 rd 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 D	ATA			
6. Vehicle	Manufactu	urer Recommended Tire Size _				
7. LF Tire	Size	9.	RF Tire Size			
8. LR Tire Size 10. RR Tire Size						

Seat Position	Seat Type (Select from below)	Head Restraint (Check if available)	Head Restraint Adjustment (select)	NOTES:
Front Left			Full Down / Mid / Full Up	
Front Middle			Full Down / Mid / Full Up	
Front Right			Full Down / Mid / Full Up	
2 nd Left			Full Down / Mid / Full Up	
2 nd Middle			Full Down / Mid / Full Up	
2 nd Right			Full Down / Mid / Full Up	
3 rd Left			Full Down / Mid / Full Up	
3 rd Middle			Full Down / Mid / Full Up	
3 rd 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				
Top of trunk/tailgate				
Bottom of bumper				
Trailer hitch (if applicable)				
Undercarriage				
Sway bar				
Axle				
Differential				
Other (specify):				
Sensor Height (if equipped)				
Camera Height (if equipped)				

Back Up / Parking Aid Form

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

Spe	ecial Crash Investigations – Not In Traf	fic Surveillanc	e:	Back Up / Parking Ai	d Form	Page 2
14.	Did driver react to warning					
	O No sensor present O Yes O No O Unknown					
15.	Did driver report common false warnings	3				
	O No sensor present O Yes O No O Unknown					

DRIVER FORM

Case Number	10. Driver entry interruption (Select all that apply)
DRIVER PROFILE	O Direct trip from building to vehicle O Loaded items into vehicle
2. Driver's Age 99 = Unknown 3. Driver's Sex O Male O Female O Unknown	O Spoke with family O Spoke with neighbors O Spoke with contacted nonmotorist O Return trip (backing into driveway/lot) O Other (specify): O N/A Unknown
4. Driver's Height cm 999 = Unknown	11. Purpose of backing
5. Driver's Weight 999 = Unknown 6. Driver eyewear worn (Select all that apply) O None O Eyeglasses O Sunglasses O Contacts O Unknown	O Leaving parking space in parking lot O Backing onto roadway from driveway O Entering parking space in parking lot O Backing into driveway from roadway O Other (specify): O N/A Unknown 12. Where was driver going Description:
7. Driver vision deficiency condition (Select all that apply) O None O Near sighted O Far sighted O Astigmatism O Other (specify) O Unknown	13. Driver in a hurry O Yes N/A O No Unknown O Unknown 14. How did driver check behind (rear area of vehicle)
8. Non motorist's relationship to driver O No relationship O Child O Grandchild O Sibling O Neighbor O Friend O Other (specify): O Unknown DRIVER ACTIONS	after vehicle entry (Select all that apply) O Did not look O Checked mirrors O Turned right and looked back O Turned left and looked back Viewed Camera Listened for auditory/visual warning from system
9. Driver approach to vehicle for entry From left front O From left O From left rear O From right rear O From right front O Circled vehicle O Return trip (backing into driveway/lot)	O Other (specify): N/A Unknown 15. Estimated time between vehicle entry and start of backing O 0-10 Seconds O Over 60 Seconds
O Other (specify): O N/A O Unknown	O 11-30 Seconds O N/A O 31-60 Seconds Unknown

16.	What direction was the driver looking during backing maneuver	19.	Did driver see struck non motorist prior to impact (Select all that apply)
	(Select all that apply) O Straight ahead O Right O Left O Rearward		O No, never saw non motorist O Saw non motorist prior to entering vehicle O Saw non motorist after entering vehicle O Other (specify): O N/A Unknown
	O At object inside the car O At mirrors	20.	Est time between start of backing and impact
17.	O Other (specify):O N/A Unknown Was the driver distracted during back up maneuver (Select all that apply)		O <2 or = 1 second O 2-5 seconds O 6-10 seconds O > 10 seconds O N/A Unknown
	O No non-driving activities External	21.	Driver interior sightline obstructions (Select all that apply)
	O Looking at other vehicles O Looking at other non motorist O Looking at intended turn destination O External focus, not specified O Other external focus (specify):		O Pillar O Other occupant O Headrest O Other (specify) O Cargo O Unknown None
	Internal	22.	Recent experience driving this vehicle
	D Looking at other occupant D Talking to passenger D Dialing phone D Talking on phone D Listening to radio/cd/portable playback device D Adjusting radio/cd player D Adjusting climate controls D Using a device/controls integral to vehicle	23.	O More than 10 times the last three months O 6-10 times the last three months O 2-5 times the last three months O Less than 2 times the last three months O First time driving this vehicle O N/A Unknown Frequency of driving in this parking lot/driveway
	(specify): O Reading/adjusting navigation system O Eating or drinking O Smoking related O Retrieving fallen object (specify): O Internal focus, not specified O Focused on other internal object		O Daily O Weekly O Several times a month O Monthly O Rarely O First time in lot/driveway O N/A Unknown
	(specify): O N/A Unknown	24.	Driver Impairment (Select all that apply)
18.	Driver avoidance actions prior to impact (Select all that apply) O None O Braking		O No drugs or alcohol present O Alcohol present (specify BAC): O Drugs present (specify): O Unknown
	O Steering left O Steering right	25.	Source of alcohol/drug results
	O Accelerating O Other (specify): O N/A Unknown		O Police reported O Medical record O Other (specify) O Not Tested Unknown if tested

Non Motorist Form

1. Case Number	11. Non-motorist motion
NON-MOTORIST PROFILE	O Not moving O Walking slowly O Walking rapidly
2. Non-motorist's Age Years 99 = Unknown	S O Running or joggingO Skipping/Hopping/JumpingO Falling/Stumbling/Rising
3. Non-motorist's Sex O Male O Female O Unknown	O On skates/skateboard O On bike/scooter O Other (specify): O Unknown
4. Non-motorist's Height cm 999 = Unknown	12. Non-motorist approach relative to rear of vehicle
5. Non-motorist's Weight kg999 = Unknown6. Medical outcome	O Stationary O From left O From right O From behind O Other (specify):
O Not injured O ER only O Hospitalized 1-4 days	O Unknown 13. Non-motorist first avoidance action
O Hospitalized 5 days or moreO Treatment laterO FatalO Unknown	O No avoidance actions O Stopped O Accelerated pace O Ran away (along vehicle path)
7. Source of most severe injury Bumper O Tire O Undercarriage O Other Specify: O Ground	O Jumped O Turned away from vehicle O Turned toward vehicle and braced O Dove or fell away from vehicle O Other (specify): O Unknown
O N/A Unknown	14. Non-motorist primary focus of attention
8. Non-motorist impairment (Select all that apply) O No drugs or alcohol present O Positive for alcohol (specify BAC): O Positive for drugs (specify): O Unknown	O Striking vehicle O Play object O Person O Surrounding traffic O Animal O Handheld electronic (phone, MP3 player, etc.)
Source of alcohol/drug results Police reported Medical Report	O Other Object (specify) O Unknown 15. Were any other Non-motorists present?
O Other (specify) O Not Tested O Unknown if tested	(Select all that apply) O Alone
NON-MOTORIST ACTIONS	O One adult present O One other child present
10. Non-motorist attitude	O Multiple adults present O Multiple children present O Unknown
O Standing O On skates/skateboard O Bending at waist O On bike/scooter O Sitting O Other (specify) O Crouching O Unknown O Kneeling	O Ulikilowii

NON MOTORIST CLOTHING

NOTES:

White

• Specify Color, Fabric and Texture/Weight for outermost layer only

Other (specify)

- Indicate "NONE" if applicable
- Available codes:

<u>Colors</u>		<u>Fabrics</u>	<u>Textures</u>	<u>Weights</u>
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			

	Clothing	Color	Fabric	Texture	Weight
H E A D W E A R	Hat				
	Helmet				
	Hood				
	Other (specify):				
K					
UPPER BODY	Short Sleeve				
	Long Sleeve				
	Light Jacket				
	Heavy Jacket				
	Other (Specify):				
L O W E R B O	Shorts				
	Pants				
	Shoes				
	Other (specify):				
D Y					