

Remote Not In Traffic Surveillance Hyperthermia Investigation
Dynamic Science, Inc. / Case Number: DS07033
2004 Honda Civic
California
May 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.

1. Report No. DS07033	2. Government Accession No.	3. Recipient Catalog No.	
4. Title and Subtitle Remote Not In Traffic Hyperthermia Investigation		5. Report Date April 29, 2008	
		6. Performing Organization Report No.	
7. Author(s) Dynamic Science, Inc.		8. Performing Organization Report No.	
9. Performing Organization name and Address Dynamic Science, Inc. 299 West Cerritos Avenue Anaheim, CA 92805		10. Work Unit No. (TRAVIS)	
		11. Contract or Grant no. DTNH22-07-00045	
12. Sponsoring Agency Name and Address U.S. Dept. of Transportation (NRD-111) National Highway Traffic Safety Administration 1200 New Jersey Ave, SE Washington, DC 20590		13. Type of report and period Covered [Report Month, Year]	
		14. Sponsoring Agency Code	
15. Supplemental Notes			
16. Abstract <p>This remote investigation focused on the circumstances surrounding the death of a 10-month-old female who was left unattended in a 2004 Honda Civic. The 27-year-old female driver had placed the child in a Graco child safety seat that was anchored in the second row right seat of the Honda Civic. The incident occurred over the length of the work day in the parking lot of the driver's (the child's mother) place of employment. The driver found the child in the vehicle after she had returned to her residence. Emergency personnel were called and the child was transported to a local hospital. She was pronounced dead at 1631 hours. This fatality was not reported as a traffic related death.</p>			
17. Key Words Not In Traffic Surveillance (NITS), hyperthermia, fatality, parked vehicle		18. Distribution Statement	
19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No of pages	22. Price

**Dynamic Science, Inc.
Crash Investigation
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BACKGROUND

This remote investigation focused on the circumstances surrounding the death of a 10-month-old female who was left unattended in a 2004 Honda Civic (**Figures 1-2**). The 27-year-old female driver had placed the child in a Graco child safety seat that was anchored in the second row right seat of the Honda Civic. The incident occurred over the length of the work day in the parking lot of the driver's (the child's mother) place of employment. The driver found the child in the vehicle after she had returned to her residence. Emergency personnel were called and the child was transported to a local hospital. She was pronounced dead at 1631 hours. This fatality was not reported as a traffic related death.



Figure 1. Subject vehicle, 2004 Honda Civic

This Remote Not In Traffic Surveillance (NITS) Hyperthermia Investigation was initiated by NHTSA in response to an on-line news article reporting the death of a 10-month-old female left in a vehicle. DSI was notified of the article on May 29, 2007. The investigating police agency was contacted. An Incident/Investigation Report was requested. On July 31, 2007, DSI obtained a copy of the report. DSI was assigned the case on August 1, 2007. The on-scene photographs were requested after obtaining the incident report. They were received on April 22, 2008. This report was based on the incident report and the on scene photographs.



Figure 2. Front, 2004 Honda Civic.

SUMMARY

Vehicle Data

The subject vehicle was identified by the Vehicle Identification Number (VIN): 2HGES16504Hxxxxxx. The four-door, front wheel drive sedan was powered by a 1.7 liter, 4-cylinder engine linked to an automatic transmission. The Honda was black in color.

Incident Site

The incident occurred between 0900 and 1500 hours in May 2007. According to the nearest weather reporting station, the sky was clear and the temperature ranged from 11 degrees C (52 degrees F) at 0900 to 24 degrees C (76 degrees F) at 1500 hours.

The incident occurred in an asphalt parking lot on a college campus in California. The driver's place of work was located on the west side of the parking lot. Traffic enters the parking lot from the south. Parking is set up as a diagonal relative to the buildings. The 2004 Honda Civic was parked near the north end of the parking lot and was facing west (**Figures 3-4**). Due to the configuration of the parking lot and the location of the vehicle relative to adjacent trees or buildings, no shade from the daytime sun would have been available to the vehicle.



Figure 3. Incident site (vehicle in photo is not the subject vehicle).



Figure 4. Overhead view of the incident site.

Incident

On the morning of the incident, the 27-year-old female driver placed the child in a Graco child safety seat that was anchored in the second row right seat of the Honda Civic (**Figure 5**). The child seat was rear facing. A mirror was placed on the right rear seat back that would allow the driver to see the child's face (**Figure 6**). The driver had placed the child in the seat at approximately 0800 hours.

The driver's normal practice is that she leaves her residence at 0630-0700 hours to drop the child off at daycare before going to work. The director of the daycare facility indicated that it was not uncommon for there to be absences without calls from the parents. She did state that the parents of the involved child would usually contact the center when the child was not going to be present. She indicated that she thought about calling the parents that day but never got around to it.

The driver normally drives a pickup. Both the Civic and pickup have a child safety seat installed in the right rear seat position. On this occasion, however, the driver was going to drop off a CD to her former employer. The former employer's place of business is a longer journey than her normal journey, so she took the Civic because it had better gas mileage. After driving to her former employer's place of business, she took the child inside to show the child to the driver's former co-workers. The child was then placed back into the child seat and apparently fell asleep. The driver stopped at a drive-through coffee shop, where she picked up a coffee drink and a snack. The driver indicated that she last noticed the child at this time (approximately 0820 hours). Because she could not tell if the sun was in the child's eyes, she put the hood over the child seat.



Figure 5. Graco rear-facing child seat in right rear seat position.



Figure 6. Rear facing child seat with mirror visible.

The driver had planned to drop the child off at daycare on her way to work. The daycare facility is located on campus near her place of work. The driver forgot to drop the child off and went straight to work. The driver worked from 0900 hours to approximately 1500 hours. She then drove from work back to her residence. She indicated that she thought she had about an hour-and-a-half to clean the house before picking up the child from day care.

An overview of the time and distances involved is shown below:

	Estimated distance	Estimated travel time
Travel between residence and former employer	43.5 km (27.0 miles)	40 minutes
Travel between former employer and drive through coffee shop	2.7 km (1.7 miles)	4 minutes
Travel drive through coffee shop and driver's place of work	38.6 km (24.0 miles)	37 minutes
Travel from place of work to residence	0.8 km (0.5 miles)	1 minute

When the driver arrived at her residence, she exited the vehicle, went to the front right passenger door to remove some items from the front seat. She saw the child in the vehicle and was initially excited to see her. She then realized what had happened, that she had left the child in the vehicle.

The driver removed the child from the Civic. The child was not breathing. The driver took her into the residence. She called 911 and the dispatcher walked her through CPR. She stated that the child had been in the car for six hours, ten feet away from where she was working, all day, and she did not know it. Emergency personnel arrived at her residence and took over the CPR effort. A

neighbor noted that the driver was crying at this point and not saying anything. The child was transported by ambulance with her mother to a second location where the child was transferred to a different ambulance for transport to a local hospital.

The child arrived at the hospital in cardiac arrest. CPR was continued for approximately one hour in which the child received fluids and medications. At 1631 hours, the child was pronounced dead.

Child Occupant Data

The 10-month-old subject child was 64 cm (25 in) tall and weighed 7 kg (15 lbs). At the time of the incident, the child was wearing green print denim shorts, a blue and white sleeveless shirt, pink socks, white tennis shoes, and a disposable diaper. Upon arrival at the emergency room, the attending physician indicated that the child's rectal core temperature was 42.0 C (107.7 F) degrees. The investigating police officer examined the child's body and noted the following: purple discoloration to the thighs, calves and feet; an abrasion over the mid-sternal area, and an area of peeled skin on the child's forehead (possibly due to sun exposure). An autopsy conducted by the county medical examiner concluded that the cause of death was heat stroke and severe dehydration. He also indicated that there were no obvious signs of recent or healed trauma from abuse. The following injuries were indicated in the report.

<u>Injury</u>	<u>OIC Code</u>	<u>Injury Mechanism</u>	<u>Confidence Level</u>
2 nd degree burns to head, face, chest and upper extremities (< 10% of Total Body Surface (TBS))	992006.1,0	Severe exposure to solar heat	Certain
Contusion, scalp	190402.1,9	Unknown	Unknown

Attachment 1. Data Forms



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)

- None
- Other vehicles
- Building
- Trees
- Shrubby
- Other (specify) _____
- Utility poles
- Signs
- Glare
- Unknown
- No driver present

9. Crash location

- Driveway
- Parking Lot
- Sidewalk
- Alley
- Intersection of driveway and sidewalk
- Road / street
- Roadside / shoulder
- Other (specify) _____
- Unknown

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

- None
- Other vehicles
- Building
- Trees
- Shrubby
- 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



1. Case Number _____

VEHICLE IDENTIFICATION

2. VIN _____

3. Model Year _____

4. Vehicle Make (specify): _____

5. Vehicle Model (specify): _____

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		
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 DATA

6. Vehicle Manufacturer Recommended Tire Size _____

7. LF Tire Size _____

9. RF Tire Size _____

8. LR Tire Size _____

10. RR Tire Size _____

Seats / Head Restraint Data

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 | 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		
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)		



1. Case Number

PARKING AID PRESENCE

2. Type of backing/parking aid present

- OEM camera
- OEM ultrasonic/radar sensor
- OEM combination camera-ultrasonic/radar sensor
- OEM Fresnel lens
- OEM interior mirrors
- Aftermarket camera
- Aftermarket ultrasonic/radar sensor
- Aftermarket combination camera-ultrasonic radar sensor
- Aftermarket Fresnel lens
- Aftermarket interior mirrors
- Other (specify): _____

CAMERA INFORMATION

Specify field of view measurements on diagram

3. System make/model

4. Video monitor type

- None present
- LCD (color)
- CRT (black & white)
- Unknown

5. Video display size _____ cm
(Diagonal)

6. Camera location

- None present
- Bumper
- License plate
- Tailgate/Hatch/Trunk
- Other (specify): _____

7. Video image quality under scene lighting conditions

- None present
- Good
- Average
- Poor (specify): _____
- Unknown

8. Was the camera functioning properly

- None present
- Yes
- No, poor image quality due to glare
- No, poor image quality due to atmospheric conditions
- No, camera turned off
- No, camera inoperable
- Unknown

ULTRASONIC/RADAR SENSOR

Specify object detection range on diagram

9. System make/model

10. Auditory warning illumination

- No sensor present
- Yes
- No
- Unknown

11. Number of sensors _____

12. Sensor locations
(Select all that apply)

- No sensor present
- Left bumper
- Center bumper
- Right bumper
- License plate area
- Tailgate/Hatch/Trunk

13. Was warning system functioning properly

- No sensor present
- Yes, system alerted driver
- No, system did not alert driver
- No, system turned off
- No, system inoperable
- Unknown

14. Did driver react to warning

- No sensor present
- Yes
- No
- Unknown

15. Did driver report common false warnings

- No sensor present
- Yes
- No
- Unknown



DRIVER FORM

1. Case Number

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 N/A
 No Unknown
 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

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



Non Motorist Form

1. Case Number

NON-MOTORIST PROFILE

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

3. Non-motorist's Sex
 Male
 Female
 Unknown

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

5. Non-motorist's Weight _____ 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: _____
 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:

	<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						
White	Other (specify)						

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