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

NHTSA

DOT HS 813 138

July 2021

Special Crash Investigations: Remote Vehicle Fire/Child Restraint System Crash Investigation; Vehicle: 2007 Dodge Magnum; Location: Minnesota; Crash Date: April 2016

DISCLAIMER

This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings, and conclusions expressed in this publication are those of the authors and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Suggested APA Format Citation:

Dynamic Science, Inc. (2021, July). *Special crash investigations: Remote vehicle fire/child restraint system crash investigation; Vehicle: 2007 Dodge Magnum; Location: Minnesota; Crash date: April 2016 (*Report No. DOT HS 813 138). National Highway Traffic Safety Administration.

Technical Report Documentation Page

1. Report No. DOT HS 813 138	**2. Government Accession No.**	**3. Recipient's Catalog No.**
4. Title and Subtitle Special Crash Investigations: Remote Vehicle Fire/Child Restraint System Crash Investigation; Vehicle: 2007 Dodge Magnum; Location: Minnesota; Crash Date: April 2016		**5. Report Date** July 2021 **6. Performing Organization Code**
7. Author Dynamic Science, Inc.		**8. Performing Organization Report No.** DS19024
9. Performing Organization Name and Address Dynamic Science, Inc. 26141 Marguerite Parkway, Suite C Mission Viejo, CA 92692		**10. Work Unit No. (TRAIS)** **11. Contract or Grant No.** 693JJ918C000012
12. Sponsoring Agency Name and Address National Highway Traffic Safety Administration 1200 New Jersey Avenue SE Washington, DC 20590		**13. Type of Report and Period Covered** Technical Report Crash Date: April 2016 **14. Sponsoring Agency Code**

15. Supplementary Notes
Each crash represents a unique sequence of events, and 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.

16. Abstract
This report documents the remote vehicle fire and child restraint system (CRS) investigation of a post-crash fire in a 2007 Dodge Magnum station wagon involved in a two-vehicle crash and the child occupants of the Magnum seated in CRSs. The Magnum was driven westbound by a belted 35-year-old male with three passengers. A belted 36-year-old female was seated in the front right position. A 7-year-old male was seated in a booster CRS in the second-row left position. A 3-year-old female was seated in a forward-facing CRS in the second-row right position. A 2014 Dodge Charger driven by a 28-year-old female was traveling southbound. The front right seat was occupied by a 20-year-old female. The Charger did not stop at the stop sign controlling the intersection. The front plane of the Charger struck the right plane of the Magnum. Both vehicles were displaced toward the southwest corner of the intersection and departed the roadway. The Magnum rolled four quarter-turns, came to rest in an upright orientation, and caught fire. The driver and second-row passengers were able to safely exit the vehicle. The driver sustained "A" (serious) injuries and was transported by helicopter to an area trauma center. The second-row left occupant sustained "A" (serious) injuries and was transported by ambulance to a local emergency room and then by helicopter to an area trauma center. The second-row right occupant sustained "B" (suspected minor) injuries and was transported by ambulance to a local hospital. The front-right passenger sustained a transected aorta and died at the scene. The two occupants of the Charger sustained "A" (serious) injuries and were transported by ambulance to a local hospital.

17. Key Words fire, child restraint system, CRS, crash, fatality, injury, rollover	**18. Distribution Statement** The document is available to the public from the National Technical Information Service, www.ntis.gov.

19 Security Classif. (of this report) Unclassified	**20. Security Classif. (of this page)** Unclassified	**21 No. of Pages** 46	**22. Price**

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

Table of Contents

Special Crash Investigations
Remote Vehicle Fire/Child Restraint System Crash Investigation
Case Number: DS19024
Vehicle: 2007 Dodge Magnum
Location: Minnesota
Crash Date: April 2016

Background

This report documents the remote investigation of a post-crash vehicle fire and the performance of a child restraint system (CRS) in a 2007 Dodge Magnum station wagon involved in a two-vehicle crash and the two children in the Magnum (Figure 1) seated in CRSs. The investigation was intended to determine the events leading to the fire, how quickly the fire spread to the occupant compartment, the magnitude of the fire, how quickly EMS and other responders arrived on-scene, occupant restraint usage, demographics, injury data, and CRS data. The crash was identified during a review of Fatality Analysis Reporting System (FARS) crash reports. The criteria for the crash type included an impact not involving the rear plane, fire that spreads to the occupant compartment, and at least one occupant seated in a CRS. The Special Crash Investigations (SCI) team obtained the on-scene images and the case was initiated by the SCI group of the National Highway Traffic Safety Administration in August 2019.

Figure 1. 2007 Dodge Magnum (police photo)

This two-vehicle crash occurred at night in April 2016 in Minnesota. The crash site was the intersection of an east/west State highway and a north/south county road. The Magnum was being driven westbound by a belted 35-year-old male who had three passengers: a belted 36-year-old female in the front right position, a 7-year-old male in a booster CRS in the second-row left position, and a 3-year-old female in a forward-facing CRS in the second-row right position. A 2014 Dodge Charger driven by a 28-year-old female was traveling southbound. The front right seat was occupied by a 20-year-old female. The Charger did not stop at the stop sign controlling the intersection. The front of the Charger struck the right side of the Magnum. Both vehicles were displaced toward the southwest corner of the intersection and departed the roadway. The Magnum rolled four quarter-turns, came to rest in an upright orientation, and caught fire. The driver and second-row passengers were able to safely exit the vehicle. The driver sustained "A"

(serious) injuries and was transported by helicopter to an area trauma center. The second-row left occupant sustained “A” (serious) injuries and was transported by ambulance to a local emergency room and then by helicopter to an area trauma center. The second-row right occupant sustained “B” (suspected minor) injuries and was transported by ambulance to a local hospital. The front right passenger sustained a transected aorta and died at the scene. The two occupants of the Charger sustained “A” (serious) injuries and were transported by ambulance to a local hospital.

Summary

Crash Site

The crash occurred at night and the intersection was lit by streetlights. Both roadways were undivided, straight, and intersected at a 45-degree angle. The westbound roadway had a right-turn lane, a westbound through lane, and an eastbound through lane. The travel lanes were separated by painted, dashed yellow lines. The roadway was bordered on the right by a solid white fog line and a concrete shoulder/curb. The posted speed limit for the westbound roadway was 72 km/h (45 mph). The southbound roadway had a southbound through lane and a northbound through lane controlled by stop signs. The posted speed limit for the southbound roadway was 48 km/h (30 mph). The weather at the nearest reporting station was 20 degrees C (68 degrees F), 46 percent humidity, fair, and winds were out of the southeast at 9 km/h (6 mph). A crash diagram is included at the end of this report.

Pre-Crash

The Magnum was traveling westbound at police-estimated speed of 67 km/h (42 mph) approaching the intersection (Figure 2). The Charger was traveling southbound approaching the intersection at an EDR-reported speed of 104 km/h (64 mph) at 5 seconds prior to impact. At 0.3 seconds the service brake was applied. The Charger failed to stop at the stop sign and entered the intersection (Figure 3). The EDR-reported speed just prior to impact was 96 km/h (60 mph). The Charger's pre-crash speeds and distances covered are shown in the table on the next page.

Figure 2. Westbound approach (police photo)

Figure 3. Southbound approach (police photo)

Time	Vehicle Speed		Distance Traveled			
			Incremental		Cumulative	
-sec	km/h	mph	m	ft	m	ft
5	103	64	NA	NA	NA	NA
4.5	103	64	14.3	46.9	14.3	46.9
4	103	64	14.3	46.9	28.6	93.8
3.5	103	64	14.3	46.9	42.9	140.7
3	103	64	14.3	46.9	57.2	187.6
2.5	103	64	14.3	46.9	71.5	234.5
2	103	64	14.3	46.9	85.8	281.4
1.5	101	63	14.2	46.6	100	328
1	101	63	14.1	46.2	114.1	374.2
0.5	101	63	14.1	46.2	128.1	420.4
0	97	60	13.7	45.1	141.9	465.5

Crash

The front of the Charger struck the right side of the Magnum (Event 1). The Charger sustained an EDR-reported maximum longitudinal delta V of -77 km/h (-47.8 mph) and a maximum lateral delta V of 58 km/h (36.0 mph) at 238 ms. The calculated total delta V for the Charger was 96.2 km/h (59.8 mph). The Charger rotated clockwise, and the Magnum rotated counterclockwise. There was a secondary impact between the left plane of the Charger and the right plane of the Magnum (Event 2). The Charger sustained an EDR-reported maximum longitudinal delta V of -23 km/h (-14.3 mph) at 280 ms and a maximum lateral delta V of 6 km/h (3.7 mph) at 254 ms. Both vehicles were displaced toward the southwest corner of the intersection and departed the roadway (Figure 4). The Magnum struck the curb with the left tire (Event 3). The Magnum then tripped on the curb and rolled four quarter-turns (Event 4). It landed on its wheels and rolled backward approximately 3.6 m (12 ft). It came to rest upright and facing northeast and caught fire (Figure 5). The Charger came to rest facing west.

Figure 4. Final rest area, looking north (police photo), the 2007 Dodge Magnum (yellow arrow), the 2014 Dodge Charger (green arrow)

Figure 5. The 2007 Dodge Magnum (police photo)

Post-Crash

A local resident heard the crash and was the first to respond. He reported that the driver of the Charger was already out of her vehicle and that the front passenger was injured. He then went to the Magnum. All occupants were still in the vehicle, and the fire had not yet begun. He went back to his house to make sure emergency services had been contacted. By the time he returned to the vehicle, the passengers were just getting out. The driver apparently exited the vehicle under his own power. The second-row 7-year-old boy reported that he was able to unbuckle his seat belt and then unbuckled the 3-year-old girl from her second-row right CRS harness. While exiting the vehicle, he attempted to wake up his mother, the front-row passenger. The passerby and a deputy checked on her and believed her to be already deceased, restrained by her seat belt. They were cutting her seat belt when they heard a "pop," and the fire began. The vehicle was fully engulfed by fire by the time a local fire department arrived and extinguished the fire. The driver sustained "A" (serious) injuries and was transported by helicopter to an area trauma center. The second-row left 7-year-old sustained "A" (serious) injuries and was transported by ambulance to a local emergency room and then by helicopter to an area trauma center. The second-row right 3-year-old sustained "B" (suspected minor) injuries and was transported by ambulance to a local hospital. The mother sustained a transected aorta and died at the scene. The two occupants of the Charger sustained "A" (serious) injuries and were transported by ambulance to a local hospital.

2007 Dodge Magnum

Description

The 2007 Dodge Magnum station wagon was identified by the Vehicle Identification Number (VIN) 2D8FV47T87Hxxxxxx with a build date of September 2006. It was equipped with a 2.7-liter, 6-cylinder, gasoline engine; a 4-speed automatic transmission; a rear-wheel drive; 4-wheel disc brakes with ABS; an 18.5-gallon fuel tank; and daytime running lamps. The manufacturer recommended tire size was P215/65R17. The vehicle had front-row bucket seats and a second-row 60/40 split bench seat with folding back.

Exterior Damage

The Magnum sustained severe right plane damage from the impact with the Charger (Figure 6). The direct damage began at the front-right wheel and extended rearward to the B-pillar and second-row right door. The estimated Collision Deformation Classification (CDC) was 01RYEW5.

Figure 6. The 2007 Dodge Magnum, right plane damage (police photo)

There was secondary contact between the two vehicles during rotation that caused some minor damage to the right rear of the Magnum and the left rear of the Charger. The estimated CDC was 99RB9999. The left rear tire struck the curb as the vehicle departed the roadway. The estimated CDC for the curb impact was 09LBWN2. The Magnum sustained damage to the roof area during the four-quarter rollover. The damage was masked by the initial impact and the fire. The estimated CDC was 00TDYO2.

It appears that the fuel tank was ruptured during the crash and that the vehicle caught fire after it came to rest. The fire fully involved the entire vehicle, and there was damage to the entire exterior and interior.

NHTSA Recalls and Investigations

There were two unrepaired recalls associated with this vehicle: NHTSA Recall Number 15V-313 and NHTSA Recall Number16V-352. Both recalls were related to the potential for driver and

passenger air bag inflator ruptures. The remedy for both would have been the replacement of the inflators. The most recent search of the database was in April 2021.

Interior Damage

The Magnum sustained severe damage from vehicle intrusion and fire. There was lateral intrusion to the right A-pillar, right-front door, right second-row door, and right B-pillar. The passenger compartment was entirely consumed by fire with seating positions burned down to their metal structure.

Manual Restraint Systems

The front row was equipped with driver and front-right passenger lap and shoulder seat belts. The driver's belt was equipped with continuous loop belt webbing, a sliding latch plate, an emergency locking retractor (ELR), and an adjustable upper anchor. The front-row seat belts were equipped with retractor pretensioners. The three second-row seating positions were configured with lap and shoulder seat belts.

Supplemental Restraint Systems

The Magnum was equipped with dual-stage driver's and passenger's frontal air bags. The driver's frontal air bag is mounted in the center of the steering wheel. The passenger's frontal air bag is mounted in the instrument panel, above the glove compartment. Side-impact inflatable curtain (IC) air bags were available as an option and were present in this vehicle. It is unknown if there were any air bag deployments.

Rollover Mitigation

NHTSA gave this vehicle model a 4-star rating on a 5-star scale with a risk of rollover of 10.5 percent for the rear-wheel drive model. The Magnum's mitigation features consisted of ABS and traction control. The control loss was the result of impact from the front of the Charger and the right side of the Magnum. The Magnum crossed the intersection, tripped on the curb, rolled four quarter-turns, and came to rest in an upright manner. The distance from trip to final rest was approximately 19 m (62 ft).

Child Restraint System

The second-row left 7-year-old was seated in a booster CRS, make/model unknown. The second-row right 3-year-old was seated in a forward-facing CRS, make/model unknown.

2007 Dodge Magnum Occupants

Driver Demographics

Age/sex:	35 years/male
Height:	178 cm (70 in)
Weight:	91 kg (200 lbs)
Eyewear:	Unknown
Seat type:	Bucket
Seat track position:	Unknown
Manual restraint usage:	Lap and shoulder belts available and used
Usage source:	Passerby, police
Air bags:	Driver's frontal and IC air bags, unknown if deployed
Alcohol/drug data:	None
Egress from vehicle:	Exited under own power
Transport from scene:	Helicopter
Type of medical treatment:	Hospitalized, unknown length of time

Driver Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Multiple rib fractures	450210.2	Front right occupant	Possible
2 3	Multiple lacerations and contusions	910600.1 910400.1	Unknown	Unknown
4	Concussion with traumatic brain injury	100099.9	Unknown	Unknown

Source: police reports.

Driver Kinematics

The 35-year-old male driver of the Magnum was belted and was seated in an unknown posture. At impact with the Charger, he was displaced to the right and likely contacted the front-right occupant and the intruding front-right door. As the vehicle struck the curb with its left tires and overturned, the driver was displaced in multiple directions. He remained belted throughout the crash sequence and remained in his seat. The first person who responded said that the driver was confused and initially refused to open his door but did eventually exit under his own power. The driver sustained "A" (serious) injuries and was transported by helicopter to an area trauma center, where he was hospitalized for an unknown number of days.

Front-Row Right Passenger Demographics

Age/sex:	36 years/female
Height:	163 cm (64 in)
Weight:	127 kg/280 lbs
Eyewear:	Unknown
Seat type:	Bucket
Seat track position:	Unknown
Manual restraint usage:	Lap and shoulder belt used
Usage source:	Police
Air bags:	Passenger frontal and IC air bags, unknown if deployed
Egress from vehicle:	Deceased prior to being removed
Transport from scene:	None
Type of medical treatment:	Fatal at scene

Front-Row Right Passenger Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Completely transected aorta with bilateral hemothoraces	420216.5	Door side panel	Probable
2	Burn, head and upper body	912030.5	Fire	Certain
3	Right pulmonary contusions	441402.3	Door side panel	Probable
4	Multiple lacerations, left lobe of liver	541820.2	Door side panel	Probable
5	Right, 6th non-displaced lateral rib fracture	450201.1	Door side panel	Probable

Source: medical examiner's autopsy report.

Front-Row Right Passenger Kinematics

The 36-year-old female passenger was seated in an unknown posture and was belted. At impact with the Charger, she was displaced to the right and contacted the intruding front-right door. As the vehicle struck the curb with its left tires and overturned, she was displaced in multiple directions. She remained belted throughout the crash sequence and remained in her seat. The first person who responded said she was pulseless upon his arrival. The medical examiner reported extensive thermal damage to the body that appeared to be post-mortem.

Second-Row Left Passenger Demographics

Age/sex:	7 years/male
Height:	122 cm (48 in)
Weight:	25 kg (55 lbs)
Eyewear:	None
Seat type:	60/40 split bench seat with folding back
Manual restraint usage:	Lap and shoulder belt used with booster CRS
Usage source:	Police and medical reports
Egress from vehicle:	Under own power
Transport from scene:	Ambulance to ER, helicopter to a trauma center
Type of medical treatment:	Hospitalized for 2 days

Second-Row Left Passenger Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Pulmonary contusion, right lower lobe	441406.2	Shoulder portion of seat belt, seat back	Probable Possible
2	Closed liver laceration	541822.2	Lap portion of seat belt	Certain
3	Pneumothorax, right, < 1 milliliter	442202.2	Shoulder portion of seat belt	Certain
4	Fracture, 12th rib on right	450201.1	Shoulder portion of seat belt	Certain
5 6	Contusions/abrasions chest	410202.1 410402.1	Shoulder portion of seat belt	Certain
7 8	Contusions/abrasions abdomen	510202.1 510402.1	Lap portion of seat belt	Certain

Source: discharge summary, radiology, trauma exam.

Second-Row Left Passenger Kinematics

The second-row left 7-year-old was belted and seated in a booster CRS. At impact with the Charger, he was displaced to the front and right, loading the shoulder and lap portions of his seat belt, and causing multiple internal injuries. He reported that he was able to unbuckle his seat belt and then unbuckled the second-row right child's CRS harness. He sustained "A" (serious) injuries and was transported by ambulance to a local emergency room and then by helicopter to an area trauma center, where he was hospitalized for two days.

Second-Row Right Passenger Demographics

Age/sex:	3 years/female
Height:	Unknown
Weight:	Unknown
Eyewear:	None
Seat type:	60/40 split bench seat with folding back
Manual restraint usage:	Seated in forward-facing CRS
Usage source:	Police, passersby
Egress from vehicle:	Assisted by other passenger
Transport from scene:	Ambulance
Type of medical treatment:	Transported, released after 2 hours of observation

Second-Row Right Passenger Injuries

The 3-year-old female second-row right passenger was seated in a forward-facing CRS of unknown make and model. At impact with the Charger, she was displaced to the front and right, loading the CRS harness, and suffered minor bilateral neck abrasions. The second-row left 7-year-old reported that he was able to unbuckle his seat belt and then unbuckled his sister's CRS harness. She was assisted from the vehicle by her brother and was transported by ambulance to a local hospital, where she was released after two hours of observation.

Second-Row Right Passenger Kinematics

The 3-year-old female second-row right passenger was seated in a forward-facing CRS. At impact with the Charger, she was displaced to the front and right, loading the CRS harness, and suffered minor bilateral neck abrasions. She was assisted from the vehicle by her brother. She was then transported by ambulance to a local hospital, where she was released after two hours of observation.

2014 Dodge Charger

Description

The 2014 Dodge Charger 4-door, 5-passenger sedan, identified by its VIN 2C3CDXBG2EHxxxxx, was manufactured in June 2014. The mileage was 74,473 km (46,275 miles). It was equipped with a 3.6-liter, 6-cylinder gasoline engine coupled to a 5-speed automatic transmission; a rear-wheel drive; antilock; 4-wheel disc brakes; and a 19.5-gallon fuel tank, daytime running lamps, and a tilt/telescope steering column. It had front-row bucket seats and a second-row 60/40 split bench seat with folding back.

Damage

The Charger sustained moderate front plane damage from the impact to the right plane of the Magnum (Figure 7). The direct damage extended from bumper corner to bumper corner. The calculated principal direction of force (PDOF) was 320 degrees, and the estimated CDC was 11FDEW2. There was a secondary impact between the left plane of the Charger and the right plane of the Magnum. The calculated PDOF was 340 degrees, and the estimated CDC was 11LBGW2.

Figure 7. The 2014 Dodge Charger, front plane damage (police photo)

Event Data Recorder

The Dodge Charger was equipped with an airbag control module that had EDR capability to store deployment and non-deployment events. The two stored events can both contain pre-crash and crash data. For the pre-crash data, there is a 5-second buffer that records vehicle speed, accelerator pedal position, engine throttle, service brake, engine rpm, ABS activity, stability control, and steering input.

The data from the Charger's EDR were imaged using the Bosch Crash Data Retrieval Tool version 16.5 by the investigating police agency and reported using the same version. SCI obtained a PDF copy of the report. Two events were recovered. The ignition cycle at the time of the crash was 3,638 and at the time of imaging was 3,639.

The first prior event (Event 1) resulted from the impact to the right side of the Magnum. The maximum delta V was -77 km/h (-47.8 mph) 22 milliseconds (ms). The maximum lateral delta V was 61 km/h (37.9 mph) at 142 ms. The driver's frontal air bag deployed at 11 ms, and the second stage deployed at 31 ms. The driver's knee air bag deployed, and the buckle/retractor seat belt pretensioner actuated. The passenger's frontal air bag deployed at 11 ms, and the second stage deployed at 31 ms. The passenger's buckle/retractor seat belt pretensioner actuated. The seat belt status for the driver and passenger was "buckled."

The pre-crash data for this event were as follows:

Time Stamp (sec)	Vehicle Speed km/h (mph)	Accelerator Pedal Position, %	Engine Throttle	Service Brake	Engine rpm	Steering Input (deg)*
-5.0	104 (64)	10	9	Off	1,763	0
-4.5	104 (64)	11	9	Off	1,751	0
-4.0	104 (64)	11	9	Off	1,752	0
-3.5	104 (64)	12	11	Off	1,756	-2
-3.0	103 (64)	12	11	Off	1,747	-2
-2.5	103 (64)	7	6	Off	1,722	-2
-2.0	103 (64)	8	7	Off	1,770	0
-1.5	102 (63)	8	7	Off	1,760	0
-1.0	102 (63)	8	8	Off	1,748	0
-0.5	102 (63)	0	3	Off	1,685	-6
-0.1	96 (60)	0	3	Off	1,566	-56

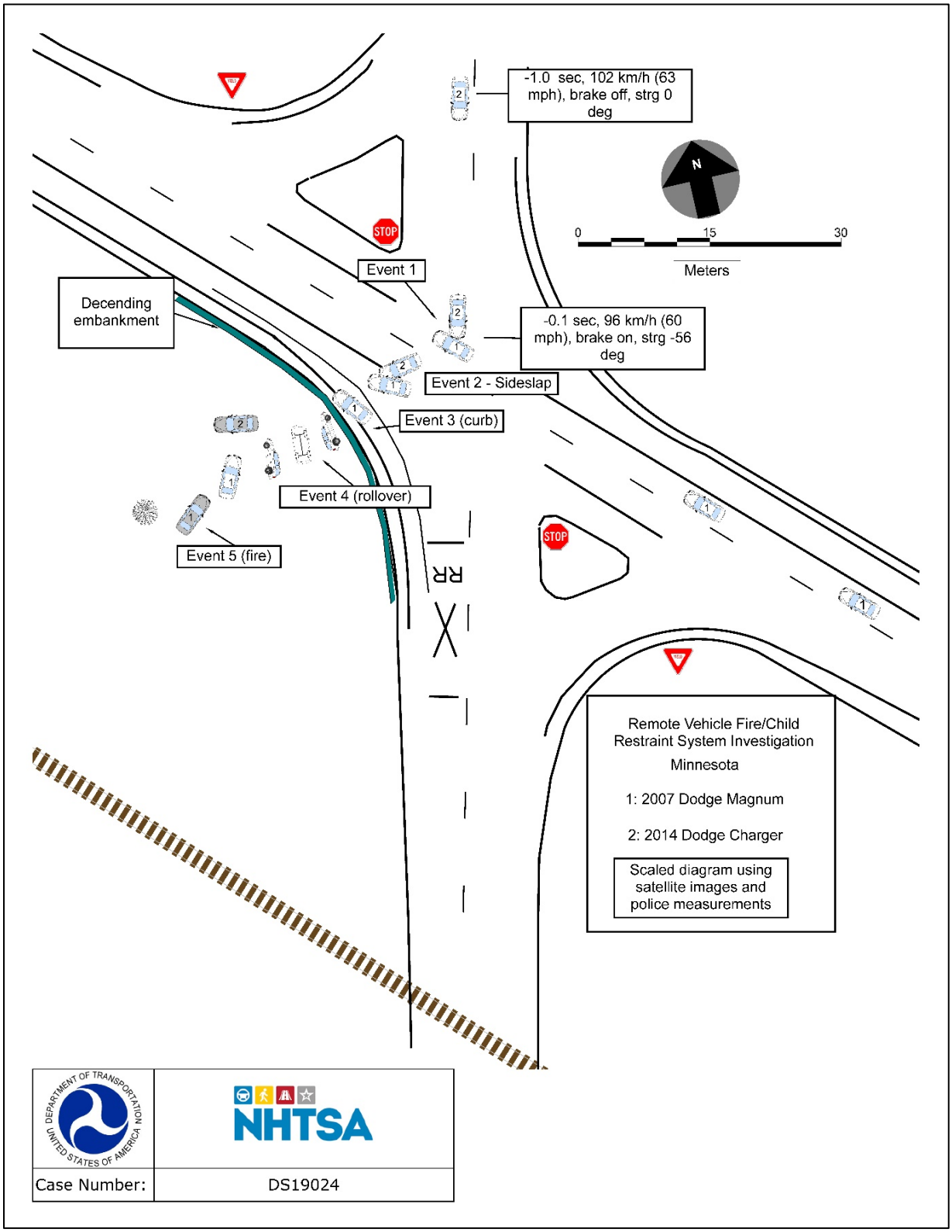
**Positive indicates steering wheel turned counterclockwise*.

The most recent event occurred 0.2 seconds after the first prior event and was likely related to the secondary impact with the Magnum. The maximum longitudinal delta V was -23 km/h (-14.3 mph) at 280 ms. The maximum lateral delta V was 6 km/h (3.7 mph) at 254 ms. There were no deployments or actuations. The pre-crash data were identical to the previous event with a 0.2 second offset.

Occupant Data

The police report stated that the 28-year-old female driver of the Charger was belted and exited the vehicle under her own power. The report also stated she tested positive for THC and benzoylecgonine (a metabolite of cocaine). The report stated that the 20-year-old female front-row right occupant exited with some assistance and reported her belt status as unknown. Both sustained police-reported "A" (serious) injuries and were transported by ambulance to a local hospital.

Crash Diagram



Appendix A: Event Data Recorder Report for 2014 Dodge Charger[1]

[1] The Bosch CDR Report contained in this technical report was imaged by the police department. Only a PDF copy of the Bosch CDR Report was provided by the investigating police agency and the hexadecimal data contained in the report have been deleted due to the potential personal identifiable information contained (Vehicle Identification Number) in the report.

BOSCH

CDR CRASH DATA RETRIEVAL

IMPORTANT NOTICE: Robert Bosch LLC and the manufacturers whose vehicles are accessible using the CDR System urge end users to use the latest production release of the Crash Data Retrieval system software when viewing, printing or exporting any retrieved data from within the CDR program. Using the latest version of the CDR software is the best way to ensure that retrieved data has been translated using the most current information provided by the manufacturers of the vehicles supported by this product.

CDR File Information

User Entered VIN	[redacted]
User	
Case Number	
EDR Data Imaging Date	04/21/2016
Crash Date	[redacted]
Filename	2C3CDXBG2[redacted]M1-2.CDRX
Saved on	Thursday, April 21 2016 at 10:27:41
Collected with CDR version	Crash Data Retrieval Tool 16.5
Reported with CDR version	Crash Data Retrieval Tool 16.5
EDR Device Type	Airbag Control Module
Event(s) recovered	Most Recent Event, Non-Deployment 1st Prior Event, Deployment

Comments

2014 Dodge Charger

direct to module image attempt

assist toxxxx

t-bone type crash

this vehicle front end impact into passenger side of Dodge Magnum

image completed at iss
Power via Fook387
cable Fook598 in use

Data Limitations

AIRBAG CONTROL MODULE (ACM) DATA LIMITATIONS:

GENERAL INFORMATION:
CAUTION: During direct-to-module imaging where the Airbag Control Module (ACM) is disconnected and removed from a vehicle, make sure the ACM is not moved, tilted or turned over while connected to and powered by the CDR Interface Module (with appropriate adaptors in place, where required). Also, after a CDR imaging process, wait 2 minutes after power is removed from the ACM before attempting to move the module. Not following these general ACM guidelines direct-to-module imaging could cause new events to be recorded in the ACM.

- For additional definitions, please refer to the CDR Help File Glossary.
- As the VIN may be used to determine the configuration of the restraint system, it is imperative that the correct VIN be entered into the CDR Tool during the imaging process.
- For Fiat vehicles, the "Read VIN from Vehicle" feature in the CDR Tool will not work. The VIN will have to be manually entered.
- Delta-V is first available starting with some 2010 MY vehicles. On vehicles not equipped with side impact sensing, Lateral Delta-V will not be available. Lateral Delta-V is also not available for the 2010 MY Dodge Journey and Fiat Freemont even when equipped with side impact sensing. Longitudinal and Lateral Delta-V are not available for the 2010-2012 MY Chrysler Town and Country/Dodge Caravan/Dodge Grand Caravan/Lancia Voyager.
- The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. All directional references to sign notation are from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

Data Element Name	Positive Sign Notation Indicates
Longitudinal Acceleration	Forward
Delta-V, Longitudinal	Forward
Maximum Delta-V, Longitudinal	Forward
Lateral Acceleration	Left to Right
Delta-V, Lateral	Left to Right
Maximum Delta-V, Lateral	Left to Right
Steering Input*	Steering wheel turned counter clockwise
Angular Rate	Left to Right RotationClockwise rotation around the longitudinal axis
Yaw Rate**	Counter clockwise rotation

* The Steering Input for the following vehicles has a positive sign notation for the steering wheel turned clockwise:
    - o 2006 - 2007 Grand Cherokee
    - o 2006 - 2007 Commander
    - o 2005 - 2010 300, Magnum, and Charger
    - o 2008 - 2010 Challenger

**The Yaw Rate for the 2011-2012 MY RAM has a positive sign notation for clockwise rotation.

CDR FILE INFORMATION:

- For ACMs that store non-deployment events, an event will be stored when the delta V is approximately 5 mph (8 km/h) or greater within a 150 ms interval.
- For non-NAFTA ACMs that control pedestrian protection devices, a non-deployment event will be stored when the pedestrian protection devices are activated.

Event(s) Recovered definitions:
- None - There are no stored events in the ACM
- Not Retrievable - Event Data may be stored in the ACM but is not retrievable by the CDR tool.
- For Continental ACMs:
    - Event Record 1 - Data from an event is stored in the ACM (not necessarily in chronological order)
    - Event Record 2 - Data from another event is stored in the ACM (not necessarily in chronological order)
    - Event Record 3 - Data from another event is stored in the ACM (not necessarily in chronological order) (for modules with 3 stored events)
- For all other ACMs:
    - Most Recent Event - Data of the most recent event is displayed in the report
    - 1st Prior Event - Two events are stored in the ACM, Data displayed is of the first prior event.
    - 2nd Prior Event - Three events are stored in the ACM. Data displayed is of the second prior event.
    - Etc., (for modules with 3 to 5 stored events)
- For TRW modules:
    - If there is a side impact, two EDR events may be stored for the one side impact event. The second event may be recorded due to the Lateral Delta V exceeding 5 mph (8 km/h) within a 150 ms interval after the side deployment occurred.
- For some Fiat vehicles:
    - Two EDR events may be stored for one impact event. The second event may be recorded due to the deployment of the frontal airbag, 3rd stage passenger.
- During an event, if power to the ACM is lost, all or part of the event data record may not be recorded. An indication may be observed in the recorded data under this condition:
    - "None" may be displayed in the "Event(s) Recovered" section of the report indicating no pre-crash vehicle data.
    - An event may be displayed in the "Event(s) Recovered" section of the report and "Interrupted" will be displayed for Vehicle Event /Pre-Crash Recorder Status.
- For 2010-2012 MY Dodge Journey and 2010-2012 MY Chrysler Town and Country, a non-deployment event will also display "Interrupted" for the Vehicle Event/Pre-Crash Recorder Status. This non-deployment event can be distinguished from a power loss by:
    - In the System Status at Event and Deployment Command Data section, Event/Deployment Recorder Status will display "Interrupted".
    - In the Deployment Command Data section, a value of "No" will be displayed for each deployment data element.

SYSTEM STATUS AT RETRIEVAL:

- Original VIN - The VIN is captured by the ACM and then recorded as the Original VIN after 10 consecutive ignition cycles of capturing the same number. Once it has been recorded, this number cannot be changed.

SYSTEM CONFIGURATION AT RETRIEVAL:

- The System Configuration data tables indicate the components that the ACM for a particular vehicle monitors and/or controls.
- Active Head Restraint (AHR) - This refers to the active head restraint systems that are electronically controlled by the ACM. AHRs may activate but not store an EDR Record if the delta V does not exceed the minimum delta V threshold. Activation of only the AHRs, if stored, will be a non-deployment event.

SYSTEM STATUS AT EVENT (if applicable):

- Event Number -
    - Indicates the event number per vehicle ignition cycle for 2010-2012 Sebring, Avenger, Caliber, Nitro, Compass, Liberty, Patriot, Wrangler, and Ram
    - Indicates the overall order of the events for all other applicable vehicles.
- Event Signal Transmission, Complete - "Yes" indicates that the ACM has sent the automatic collision notification (ACN) message.
- Odometer at Event - Vehicle odometer at the time of the event
- Operation via Energy Reserve Only -"Yes" indicates that the ACM had lost power at or before T0 and was only operating on energy reserve at T0.
- Side Fuel Cutoff, Activated - Applicable to the Fiat 500, "Yes" indicates that the ACM has sent the automatic collision notification (ACN)

message.
- System Voltage at Event, ECU - Voltage at the ACM as measured by the ACM.
- System Voltage at Event, Bussed - Voltage of the vehicle system, communicated on the communication bus to other electronic modules in the vehicle.
- Temperature, Outside - Ambient Air Temperature.
- Time, Airbag Warning Lamp On - This is a cumulative time. It indicates the total amount of time that the ACM has requested the Airbag Warning Lamp be turned on.
    - This time does not include the warning lamp bulb check time, which occurs at every ignition cycle
- Time from event 1 to 2 -
    - If only one event is stored, either a value of 0 or >5 may be displayed for this data element.
    - If multiple events exist in the EDR, the time from event 1 to event 2 is defined as:
        - For Bosch and TRW modules, the time from the prior recorded event (even if it has been overwritten) to the current recorded event.
        - For Continental modules, the time from the prior existing recorded event (as long as it is still displayed in the CDR report) to the current recorded event. If the prior event in a multi-event condition is overwritten by a subsequent event, the multi-event status will no longer be displayed.
- Time, Operation System Time - This is a cumulative lifetime timer for the ACM. It indicates the total amount of time the ACM has been powered up.
- Total Number of Events -
    - Stops incrementing when each event record is recorded by the ACM for 2010 - 2012 Sebring, Avenger, Caliber, Nitro, Compass, Liberty, Patriot, Wrangler, and Ram
    - Indicates the total number of events that the ACM has recorded, including those non-deployment events that have been overwritten by a subsequent event, for all other applicable vehicles.
- VIN at Event, Last 8 Digits- Last 8 digits of the VIN of the vehicle at the time the ACM records the event.

STATUS OF THE DATA IN THE MOST RECENT EVENT (if applicable):

Definitions for Data Blocks 1 - 7 and Overall Data Record Complete:

1. Crash Record (system status and DTCs)
2. NHTSA Table #1 Vehicle System data
3. NHTSA Table #1 Longitudinal delta-V
4. NHTSA Table #2 Vehicle System Data
5. NHTSA Table #2 Lateral delta-V - will be a NO if vehicle is not equipped with side sensing
6. ACM angular rate data - will be a NO if vehicle is not equipped with roll-over sensing
7. Other Vehicle System Data - Chrysler Specific Data

Overall Data Record Complete - Yes, No is defined based on the specific vehicle configuration. For example, a NO may be present for a non-applicable data block but a YES may be present for overall data record complete as all of the applicable data is complete.

DEPLOYMENT COMMAND DATA (if applicable):

- A "Yes" for a particular item in the Deployment Command Data section of the report indicates that the ACM commanded the deployment /activation of the associated device.

DTCs PRESENT AT START OF EVENT (if applicable):

- If any DTCs (diagnostic trouble codes) are present in the ACM at the start of the event, these will be listed in this section. A dealership service manual can be used to decode the DTCs.

PRE-CRASH DATA:

- The recorded Event may contain Pre-Crash data. Pre-Crash data from the various electronic control modules in the vehicle is transmitted to the Airbag Control Module via the vehicle's communication bus.
- If a recorded event has Engine RPM equal to SNA and Speed, Vehicle Indicated equals SNA for each time stamp, then the data is default data and the event stored in the ACM is not valid.
- (if equip.) - If a parameter name is followed by the words (if equip.), then the parameter is only valid for vehicles equipped with the associated parameter/vehicle system.
- The MIL (Malfunction Indicator Lamp) Status for the various recorded systems indicates the requested state of the applicable malfunction indicator lamp at the time that the data was captured. Note: Some fault codes could be stored due to component/system damage from the accident. The appropriate diagnostic tool should be used to read any stored Diagnostic Trouble Codes (DTC's) in the various electronic modules (ACM, PCM, ABS, TCM, etc., where applicable) for use in interpretation of some vehicle specific recorded data.
- ABS Activity - "Yes" indicates an active ABS event in which the ABS is actively controlling the brakes.
- ABS MIL- This indicates the ABS fault indicator lamp status. It will only be "On" when there is a fault in the ABS system. The Electronic brake module DTC's should be read and recorded for final system interpretation.
- Accelerator Pedal, % Full - This indicates the actual position of the accelerator pedal.
- Brakes:
    - Brake Lamps On - "On" indicates that the brake lamps/CHMSL are illuminated.
    - Brake Switch #2 Status - "On" indicates that the brake pedal is depressed.

- Braking System, Intervention by ESP - "Yes" indicates that the stability control system has engaged the brakes.
- Braking System, Intervention Enabled "Yes" indicates that the ESC system is functional.
- Braking System, Emergency Braking - "Yes" indicates that panic brake assist is active.
- Braking System, Maximum Braking -- "Yes" indicates that ABS is active on all 4 wheels.
- Panic Brake Assist Active - "Yes" indicates that all four of the brake circuits are undergoing ABS control.
- Service Brake - "On" indicates that the brake pedal is depressed.

- Cruise Control:
  - Cruise Control System/Status -"On" indicates that the Cruise Control system is turned on.
  - Cruise Control Engaged/Active - "Engaged"/"Yes" indicates the Cruise Control system is actively controlling vehicle speed. "Not Engaged"/"No" indicates the system is NOT controlling vehicle speed.
- Electronic Brake/Stability Control information:
  - ESC/ESP MIL - This indicates the ESC/ESP fault indication lamp status. It will only be "On" when there is a fault or thermal mode shutdown in the ESC/ESP system. The ESC/ESP module DTC's should be read and recorded for final system interpretation.
  - ESP Lamp - This is the status of the ESP symbol - "car with squiggly lines" indicator lamp. "On" indicates ESP has been turned off by the driver or has reduced performance and is not an indication of a fault in the system.
  - ESP Lamp Flashing Requested - If "Yes", then an ESP, Traction Control or Trailer Sway Control (if equipped) event was active at the time of data capture.
  - ESP Disabled - "Yes" indicates that ABS & ESP have been disabled by the driver or due to system performance.
  - ESP/ESC Functional/Active - "YES" indicates that the ESP system is functional and has no faults.
  - ESC System Status - "OK" indicates no faults in the ABS or ESC system that affect the system functionality; "ABS Fault" indicates a fault in the ABS system and "ESC Fault" indicates a fault in the ESC system.
  - Engine Torque Applied - "No" indicates no engine torque output was applied (as in Park/Neutral for Automatic transmissions or clutch depressed on manual or during an ESP/Traction Control event). If "Yes", then engine torque output was applied.
  - Stability Control - This is the status of the ESC symbol - "car with squiggly lines" indicator lamp. "On" indicates that the ESC system is functional. "Off" indicates that the ESC system was turned off either by the driver or due to a fault or thermal mode shutdown. "Engaged" indicates an active ESC/TCS event.
  - Traction Control Intervention Active - "Yes" indicates that the traction control system is actively controlling the vehicle's wheels.
- Engine RPM - On 2006-2009 Ram 2500/3500, the Engine RPM recorded is limited to a maximum of 4080 RPM. On the 2008 - 2010 Dodge Grand Caravan, 2008-2010 Chrysler Town and Country and 2009-2010 Dodge Journey, the engine RPM resolution is 256 rpm. On all other vehicles, the resolution is 32 rpm.
- Engine Throttle, % Full - This indicates the actual position of the Engine Throttle blade.
- ETC -
  - On vehicles equipped with ETC, "Accelerator Pedal, % Full" and "Engine Throttle, % Full" are relative values - relative pedal position and relative engine throttle. These parameters may record values of less than 100% when the pedal/throttle is actually at its maximum. (Max. ~ 77%)
  - ETC Lamp - Lamp "ON "indicates there is an active Electronic Throttle DTC.
  - ETC Lamp Flashing - "Yes" indicates that the ETC is in the limp-in mode.
- PCM MIL - This indicates the PCM fault indicator lamp status. It will only be "On" when there is a fault in the PCM. The Powertrain Control Module DTC's should be read and recorded for final system interpretation.
- Raw Manifold Pressure - This indicates engine load in kPa.
- Speed, Vehicle Indicated - This indicates the average of the drive wheels. The accuracy of the recorded Speed, Vehicle Indicated will be affected if the vehicle had the tire size or the final drive axle ratio changed from the factory build specifications. On the 2008 - 2009 Dodge Grand Caravan, 2008-2009 Chrysler Town and Country and 2009 Dodge Journey, the speed resolution is 2 kph. On all other vehicles, the resolution is 1 kph.
- Tire Information:
  - XX where LF = Left Front Tire, RF = Right Front Tire, LR = Left Rear Tire, and RR = Right Rear Tire.
  - Tire X Location - This indicates the location of the tire pressure sensor data being displayed for that time stamp. Default is used to indicate that the location of the tire pressure sensor is unknown or there is no tire pressure sensor in that wheel. Vehicles with Base Tire Pressure Monitoring systems will display SNA for both Tire Locations as these vehicles do not send actual pressure values across the communication bus.
  - Tire X Pressure/Tire Pressure Status, XX -This indicates the actual pressure status of the Tire Location defined in the previous column (Tire X Location) or by the values for XX. Possible values are LOW, NORMAL, HIGH, or SNA for this parameter. Vehicles with Base Tire Pressure Monitoring systems may display NORMAL even though these vehicles do not send actual pressure values across the communication bus.
  - Tire X Pressure/Tire Pressure, XX (psi) - This indicates the actual tire pressure value of the Tire Location defined in the previous column (Tire X Location) or by the values for XX. Vehicles with Base Tire Pressure Monitoring systems will display N/A for this parameter as these vehicles do not send actual pressure values across the communication bus.
  - Wheel Speed, XX - This indicates the speed value (in revolutions per minute) of a particular tire as denoted by XX.
  - For the following vehicles, the tire location, if displayed, may not be accurate if the tires have been rotated:
    - 2011-2012 MY Jeep Wrangler
    - 2010-2012 MY Jeep Patriot
    - 2010-2012 MY Chrysler 200
    - 2010-2012 MY Jeep Compass
  - Tire pressure is not stored in the EDR for the following vehicles. If a value is displayed, it may not be accurate:
    - 2011-2012 MY Jeep Grand Cherokee
    - 2011-2012 MY Dodge Durango
    - 2010-2012 MY Dodge Challenger
    - 2011-2012 MY Chrysler Town and Country
    - 2011-2012 MY Dodge Grand Caravan

- 2010-2012 MY Ram
- Tire Pressure Monitor Indicator Lamp - "On" indicates a fault in the tire pressure monitoring system. The TPM module DTC's should be read and recorded for final system interpretation.
- "T0" ("Time zero" where '0' is seen as subscript) is defined as "beginning of the crash event". T0 is the time at which the ACM algorithm is activated, a specific Delta-V is exceeded, or a non-reversible restraint device is deployed. T0 may be defined differently for front, side, rear and roll-over events.
    - If multiple algorithm decisions (i.e.: frontal, side, rear and/or rollover) are made before the first recorded event ends, all of those events are part of the same event record and "T0" is defined as the "T0" from the first recorded event.
    - In the Pre-Crash data tables, the relative time marker "-0.1s" represents the last set of data captured in the buffer prior to "T0."
- Transmission/Shifter Position -
    - Gear Status - This indicates the current transmission gear.
    - PRND/PRNDL Status - This indicates the status of the Shifter Position.
    - Reverse Gear - For manual transmission vehicles only, "Yes" indicates the transmission is in the reverse gear.
    - Shift Gear Position - This indicates the current transmission gear/Shifter Position.
- Vehicle Data Recorder Complete - Due to the interruption of data recording in one section, this data element may display "Interrupted" for all sections when some data sections are actually complete.

APPLICATION INFORMATION:

- 2005 - 2009 Durango's equipped with side airbags have EDR data that can be imaged by the CDR tool. Durango's not equipped with side airbags have EDR Data that might be imaged by the CDR tool and may be imaged by the supplier.
- For 2005 & 2006 MY, some Chrysler 300, Dodge Magnum, Dodge Charger, Jeep Grand Cherokee, and Jeep Commander models may contain EDR data that cannot be imaged by the CDR tool,but may be imaged by the supplier.
- For 2006 & 2007 MY, some PT Cruiser models may contain EDR data that cannot be imaged by the CDR tool, but may be imaged by the supplier
- EDR Data is only recorded for frontal deployments in the following vehicles:
    - 2005-2007 Durango
    - 2006-2007 Ram 1500
    - 2006-2009 Ram 2500/3500 Heavy Duty
    - 2007 Aspen, Caliber, Compass, Patriot, Nitro, Sebring, Wrangler

03001_Chrysler_r021

System Status at Retrieval

Original VIN	2C3C DXBG2EHxxxxxx
Ignition Cycle, Download	3639
ACM Part Number	56054077AK
ECU Serial Number	T52MD140401793
ACM Supplier	Bosch
ECU Supply Voltage at Time of Retrieval	12.0

System Configuration at Retrieval

Configured for Driver Frontal Airbag	Yes
Configured for Driver Knee Airbag	Yes
Configured for Driver Buckle Pretensioner	Yes
Configured for Driver Retractor Pretensioner	Yes
Configured for Driver Seat Seatbelt Switch	Yes
Configured for Driver Seat Track Position Switch	Yes
Configured for Left Side Curtain Airbag	Yes
Configured for Left Side Seat Airbag	Yes
Configured for Passenger Frontal Airbag	Yes
Configured for Passenger Buckle Pretensioner	Yes
Configured for Passenger Retractor Pretensioner	Yes
Configured for Passenger Seat Seatbelt Switch	Yes
Configured for Right Side Curtain Airbag	Yes
Configured for Right Side Seat Airbag	Yes
Configured for Pedestrian Protection Hood Actuators	No

System Status at Event (Most Recent Event)

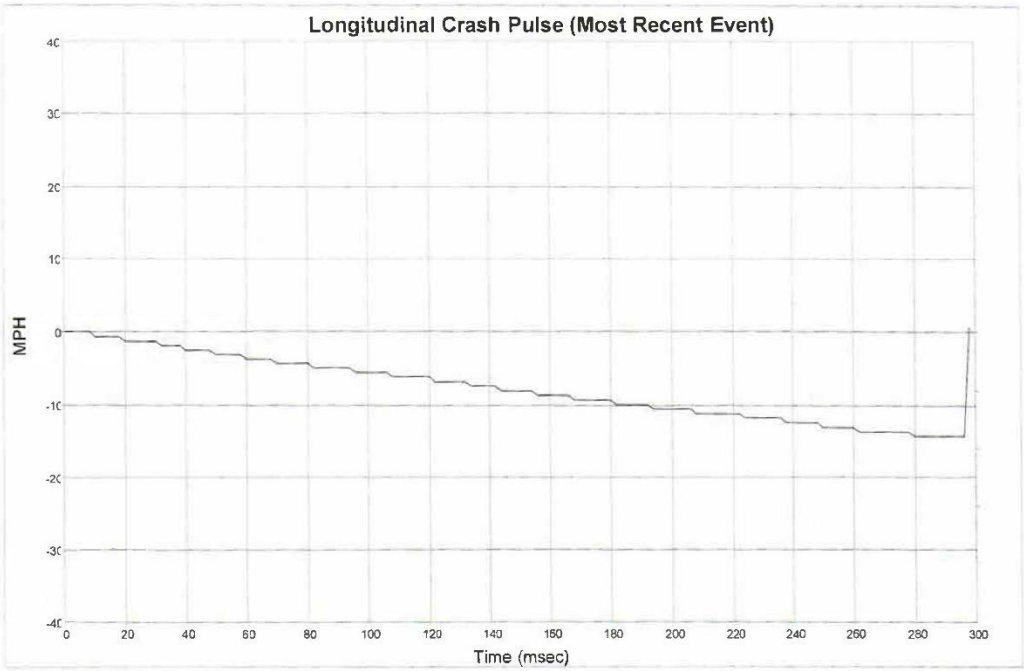
Complete File Recorded	Yes
Safety Belt Status, Driver	Buckled
Safety Belt Status, Outboard Front Passenger	Buckled
Airbag Warning Lamp, On/Off	Off
Seat Track Position Switch, Foremost, Status, Driver	No
Seat Track Position Switch, Foremost, Status, Outboard Front Passenger	Not Present
Maximum Delta-V Longitudinal (MPH [km/h])	-14.3 [-23]
Time, Maximum Delta-V, Longitudinal (msec)	280
Maximum Delta-V Lateral (MPH [km/h])	3.7 [6]
Time, Maximum Delta-V, Lateral (msec)	254
Time, Operation System Time (sec)	5465833
Time, Airbag Warning Lamp On (min)	0
Event Number	2
Total Number of Events Recorded	2
Multi-Event, Number of Events (1,2)	2
Time from Event 1 to 2 (sec)	0.2
Operation Via Energy Reserve Only (Yes, No)	No
Supply Voltage at Event, ECU (V)	14.3
Temperature, Outside (deg C)	18
Event Signal Transmission, Complete (Yes, No)	Yes
Odometer at Event (km)	74473.9
Ignition Cycle, Crash	
VIN, Original	3638
VIN Recorded at Event (last 8 characters)	2C3CDXBG2EHxxxx EH324644

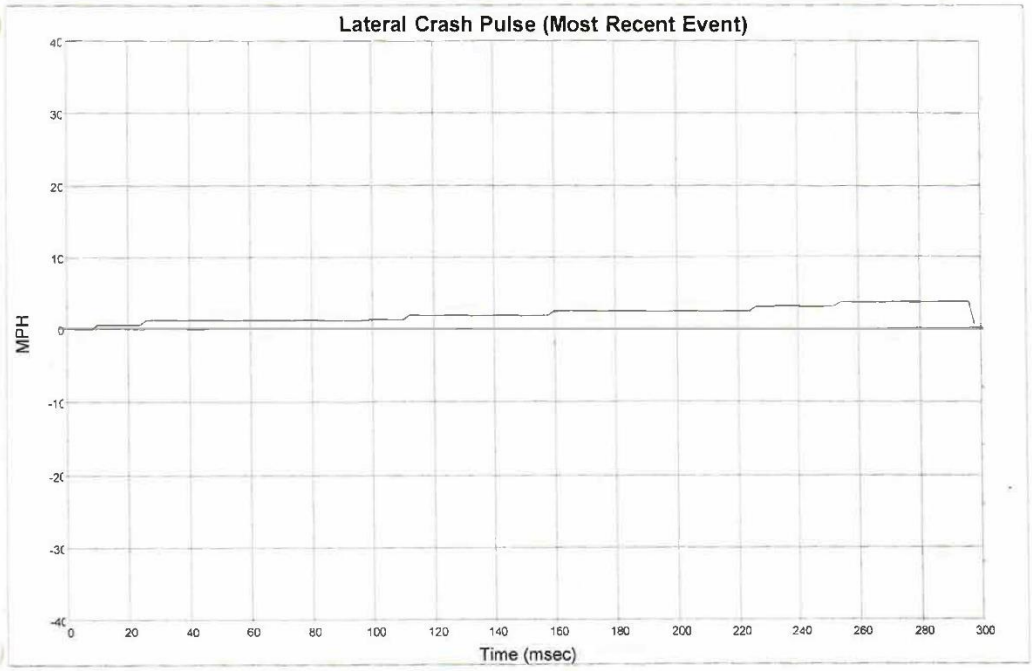
Deployment Command Data (Most Recent Event)

Frontal Airbag Deployment, 1st Stage, Driver	No
Frontal Airbag Deployment, 2nd Stage, Driver	No
Frontal Airbag Deployment, Time to First Stage Deployment, Driver (msec)	0
Frontal Airbag Deployment, Time from T0 to 2nd Stage Deployment, Driver (msec)	0
Frontal Airbag Deployment, 1st Stage, Passenger	No
Frontal Airbag Deployment, 2nd Stage, Passenger	No
Frontal Airbag Deployment, Time to First Stage Deployment, Passenger (msec)	0
Frontal Airbag Deployment, Time from T0 to 2nd Stage Deployment, Passenger (msec)	0
Knee Airbag Deployment, Driver	No
Buckle Pretensio.. ner, Driver	No
Retractor Pretensioner, Driver	No
Buckle Pretensioner, Passenger	No
Retractor Pretensioner, Passenger	No
Side Seat Airbag Deployment, Left	No
Side Curtain Airbag Deplo men Left	No
Side Seat Airbag Deployment, Ri..ht	No
Side Curtain Airbag Deployment, Right	No

DTCs Present at Start of Event (Most Recent Event)

No DTCs Present


Longitudinal Crash Pulse (Most Recent Event)
MPH
40
30
20
10
0
-10
-20
-30
-40
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
Time (msec)


Lateral Crash Pulse (Most Recent Event)
MPH
40
30
20
10
0
-10
-20
-30
-40
0
20
40
60
80
100
120
140
160
180
200
220
240
260
280
300
Time (msec)

Longitudinal Crash Pulse (Most Recent Event)

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.0 [0]
6	0.0 [0]
8	0.0 [0]
10	-0.6 [-1]
12	-0.6 [-1]
14	-0.6 [-1]
16	-0.6 [-1]
18	-0.6 [-1]
20	-1.2 [-2]
22	-1.2 [-2]
24	-1.2 [-2]
26	-1.2 [-2]
28	-1.2 [-2]
30	-1.2 [-2]
32	-1.9 [-3]
34	-1.9 [-3]
36	-1.9 [-3]
38	-1.9 [-3]
40	-2.5 [-4]
42	-2.5 [-4]
44	-2.5 [-4]
46	-2.5 [-4]
48	-2.5 [-4]
50	-3.1 [-5]
52	-3.1 [-5]
54	-3.1 [-5]
56	-3.1 [-5]
58	-3.1 [-5]
60	-3.7 [-6]
62	-3.7 [-6]
64	-3.7 [-6]
66	-3.7 [-6]
68	-3.7 [-6]
70	-4.3 [-7]
72	-4.3 [-7]
74	-4.3 [-7]
76	-4.3 [-7]
78	-4.3 [-7]
80	-4.3 [-7]
82	-5.0 [-8]
84	-5.0 [-8]
86	-5.0 [-8]
88	-5.0 [-8]
90	-5.0 [-8]
92	-5.0 [-8]
94	-5.0 [-8]
96	-5.6 [-9]
98	-5.6 [-9]
100	-5.6 [-9]
102	-5.6 [-9]
104	-5.6 [-9]
106	-5.6 [-9]
108	-6.2 [-10]
110	-6.2 [-10]
112	-6.2 [-10]
114	-6.2 [-10]
116	-6.2 [-10]
118	-6.2 [-10]
120	-6.2 [-10]
122	-6.8 [-11]
124	-6.8 [-11]
126	-6.8 [-11]
128	-6.8 [-11]
130	-6.8 [-11]
132	-6.8 [-11]
134	-7.5 [-12]
136	-7.5 [-12]
138	-7.5 [-12]
140	-7.5 [-12]
142	-7.5 [-12]
144	-8.1 [-13]
146	-8.1 [-13]
148	-8.1 [-13]
150	-8.1 [-13]
152	-8.1 [-13]
154	-8.1 [-13]
156	-8.7 [-14]
158	-8.7 [-14]
160	-8.7 [-14]
162	-8.7 [-14]
164	-8.7 [-14]
166	-8.7 [-14]
168	-9.3 [-15]
170	-9.3 [-15]
172	-9.3 [-15]
174	-9.3 [-15]
176	-9.3 [-15]
178	-9.3 [-15]
180	-9.3 [-15]
182	-9.9 [-16]
184	-9.9 [-16]
186	-9.9 [-16]
188	-9.9 [-16]
190	-9.9 [-16]
192	-9.9 [-16]
194	-10.6 [-17]
196	-10.6 [-17]
198	-10.6 [-17]
200	-10.6 [-17]
202	-10.6 [-17]
204	-10.6 [-17]
206	-10.6 [-17]
208	-11.2 [-18]
210	-11.2 [-18]
212	-11.2 [-18]
214	-11.2 [-18]
216	-11.2 [-18]
218	-11.2 [-18]
220	-11.2 [-18]
222	-11.2 [-18]
224	-11.8 [-19]
226	-11.8 [-19]
228	-11.8 [-19]
230	-11.8 [-19]
232	-11.8 [-19]
234	-11.8 [-19]
236	-11.8 [-19]
238	-12.4 [-20]
240	-12.4 [-20]
242	-12.4 [-20]
244	-12.4 [-20]
246	-12.4 [-20]
248	-12.4 [-20]
250	-13.0 [-21]
252	-13.0 [-21]
254	-13.0 [-21]
256	-13.0 [-21]
258	-13.0 [-21]
260	-13.0 [-21]
262	-13.7 [-22]
264	-13.7 [-22]
266	-13.7 [-22]
268	-13.7 [-22]
270	-13.7 [-22]
272	-13.7 [-22]
274	-13.7 [-22]
276	-13.7 [-22]
278	-13.7 [-22]
280	-14.3 [-23]
282	-14.3 [-23]
284	-14.3 [-23]
286	-14.3 [-23]
288	-14.3 [-23]
290	-14.3 [-23]
292	-14.3 [-23]
294	-14.3 [-23]
296	-14.3 [-23]
298	0.6 [1]

Lateral Crash Pulse (Most Recent Event)

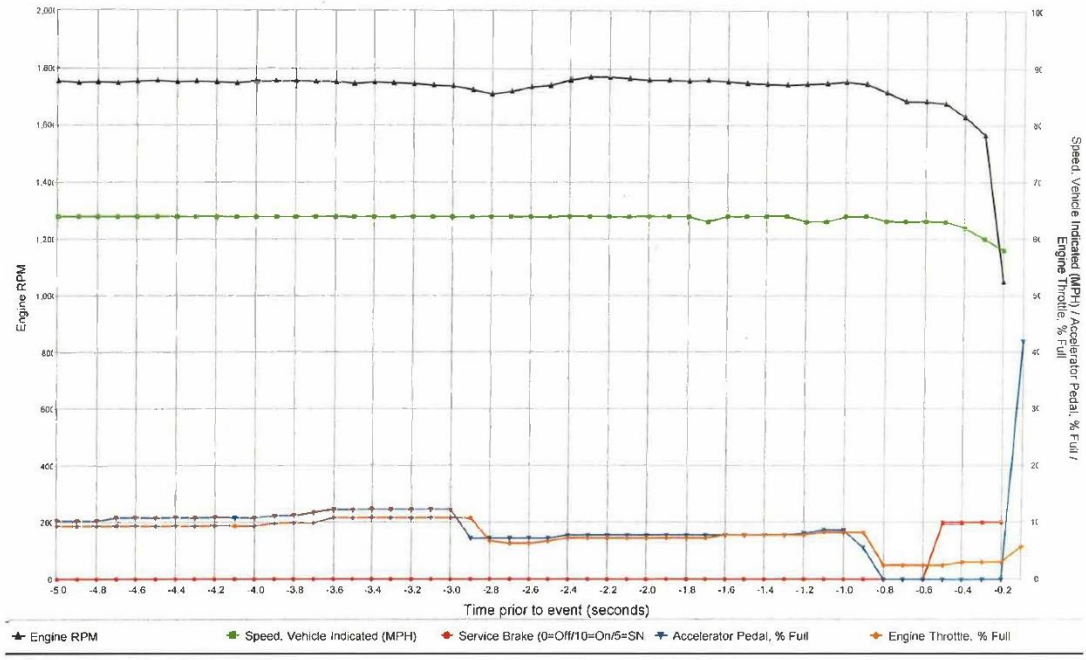
Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.0 [0]
6	0.0 [0]
8	0.0 [0]
10	0.6 [1]
12	0.6 [1]
14	0.6 [1]
16	0.6 [1]
18	0.6 [1]
20	0.6 [1]
22	0.6 [1]
24	0.6 [1]
26	1.2 [2]
28	1.2 [2]
30	1.2 [2]
32	1.2 [2]
34	1.2 [2]
36	1.2 [2]
38	1.2 [2]
40	1.2 [2]
42	1.2 [2]
44	1.2 [2]
46	1.2 [2]
48	1.2 [2]
50	1.2 [2]
52	1.2 [2]
54	1.2 [2]
56	1.2 [2]
58	1.2 [2]
60	1.2 [2]
62	1.2 [2]
64	1.2 [2]
66	1.2 [2]
68	1.2 [2]
70	1.2 [2]
72	1.2 [2]
74	1.2 [2]
76	1.2 [2]
78	1.2 [2]
80	1.2 [2]
82	1.2 [2]
84	1.2 [2]
86	1.2 [2]
88	1.2 [2]
90	1.2 [2]
92	1.2 [2]
94	1.2 [2]
96	1.2 [2]
98	1.2 [2]

Time (msec)	Delta-V, Lateral (MPH [km/h])
100	1.2 [2]
102	1.2 [2]
104	1.2 [2]
106	1.2 [2]
108	1.2 [2]
110	1.2 [2]
112	1.9 [3]
114	1.9 [3]
116	1.9 [3]
118	1.9 [3]
120	1.9 [3]
122	1.9 [3]
124	1.9 [3]
126	1.9 [3]
128	1.9 [3]
130	1.9 [3]
132	1.9 [3]
134	1.9 [3]
136	1.9 [3]
138	1.9 [3]
140	1.9 [3]
142	1.9 [3]
144	1.9 [3]
146	1.9 [3]
148	1.9 [3]
150	1.9 [3]
152	1.9 [3]
154	1.9 [3]
156	1.9 [3]
158	1.9 [3]
160	2.5 [4]
162	2.5 [4]
164	2.5 [4]
166	2.5 [4]
168	2.5 [4]
170	2.5 [4]
172	2.5 [4]
174	2.5 [4]
176	2.5 [4]
178	2.5 [4]
180	2.5 [4]
182	2.5 [4]
184	2.5 [4]
186	2.5 [4]
188	2.5 [4]
190	2.5 [4]
192	2.5 [4]
194	2.5 [4]
196	2.5 [4]
198	2.5 [4]

Time (msec)	Delta-V, Lateral (MPH [km/h])
200	2.5 [4]
202	2.5 [4]
204	2.5 [4]
206	2.5 [4]
208	2.5 [4]
210	2.5 [4]
212	2.5 [4]
214	2.5 [4]
216	2.5 [4]
218	2.5 [4]
220	2.5 [4]
222	2.5 [4]
224	2.5 [4]
226	3.1 [5]
228	3.1 [5]
230	3.1 [5]
232	3.1 [5]
234	3.1 [5]
236	3.1 [5]
238	3.1 [5]
240	3.1 [5]
242	3.1 [5]
244	3.1 [5]
246	3.1 [5]
248	3.1 [5]
250	3.1 [5]
252	3.1 [5]
254	3.7 [6]
256	3.7 [6]
258	3.7 [6]
260	3.7 [6]
262	3.7 [6]
264	3.7 [6]
266	3.7 [6]
268	3.7 [6]
270	3.7 [6]
272	3.7 [6]
274	3.7 [6]
276	3.7 [6]
278	3.7 [6]
280	3.7 [6]
282	3.7 [6]
284	3.7 [6]
286	3.7 [6]
288	3.7 [6]
290	3.7 [6]
292	3.7 [6]
294	3.7 [6]
296	3.7 [6]
298	0.6 [1]

BOSCH

Pre-Crash Data (Most Recent Event)



SNA values will not be plotted on the graph

Pre-Crash Data (Most Recent Event - table 1 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Pre-Crash Recorder Status	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % Full	Engine Throttle, % Full	Service Brake	Engine RPM	ABS Activity	Stability Control	Steering Input (deg)
-5.0	Complete	64 [104]	10	9	Off	1,755	No	On	0
-4.9	Complete	64 [104]	10	9	Off	1,750	No	On	0
-4.8	Complete	64 [104]	10	9	Off	1,752	No	On	0
-4.7	Complete	64 [104]	11	9	Off	1,751	No	On	0
-4.6	Complete	64 [103]	11	9	Off	1,756	No	On	0
-4.5	Complete	64 [104]	11	9	Off	1,758	No	On	0
-4.4	Complete	64 [103]	11	9	Off	1,753	No	On	0
-4.3	Complete	64 [104]	11	9	Off	1,754	No	On	0
-4.2	Complete	64 [104]	11	9	Off	1,752	No	On	0
-4.1	Complete	64 [103]	11	9	Off	1,749	No	On	-1
-4.0	Complete	64 [103]	11	9	Off	1,754	No	On	-1
-3.9	Complete	64 [103]	11	10	Off	1,756	No	On	-1
-3.8	Complete	64 [103]	11	10	Off	1,757	No	On	-1
-3.7	Complete	64 [104]	12	10	Off	1,756	No	On	-2
-3.6	Complete	64 [103]	12	11	Off	1,754	No	On	-3
-3.5	Complete	64 [103]	12	11	Off	1,747	No	On	-3
-3.4	Complete	64 [103]	12	11	Off	1,753	No	On	-3
-3.3	Complete	64 [103]	12	11	Off	1,750	No	On	-2
-3.2	Complete	64 [103]	12	11	Off	1,747	No	On	-2
-3.1	Complete	64 [103]	12	11	Off	1,741	No	On	-2
-3.0	Complete	64 [103]	12	11	Off	1,739	No	On	-2
-2.9	Complete	64 [103]	7	11	Off	1,725	No	On	-2
-2.8	Complete	64 [103]	7	7	Off	1,709	No	On	-2
-2.7	Complete	64 [103]	7	6	Off	1,722	No	On	-2
-2.6	Complete	64 [103]	7	6	Off	1,737	No	On	-1
-2.5	Complete	64 [103]	7	7	Off	1,742	No	On	-1
-2.4	Complete	64 [103]	8	7	Off	1,761	No	On	0
-2.3	Complete	64 [103]	8	7	Off	1,772	No	On	0
-2.2	Complete	64 [103]	8	7	Off	1,770	No	On	0
-2.1	Complete	64 [103]	8	7	Off	1,767	No	On	0
-2.0	Complete	64 [103]	8	7	Off	1,760	No	On	0
-1.9	Complete	64 [103]	8	7	Off	1,760	No	On	0
-1.8	Complete	64 [102]	8	7	Off	1,759	No	On	0
-1.7	Complete	63 [102]	8	7	Off	1,760	No	On	0
-1.6	Complete	64 [102]	8	8	Off	1,754	No	On	0
-1.5	Complete	64 [102]	8	8	Off	1,751	No	On	0
-1.4	Complete	64 [102]	8	8	Off	1,748	No	On	0
-1.3	Complete	64 [102]	8	8	Off	1,745	No	On	0
-1.2	Complete	63 [102]	8	8	Off	1,748	No	On	0
-1.1	Complete	63 [102]	9	8	Off	1,750	No	On	0
-1.0	Complete	64 [102]	9	8	Off	1,755	No	On	0
-0.9	Complete	64 [102]	6	8	Off	1,748	No	On	-1
-0.8	Complete	63 [102]	0	3	Off	1,718	No	On	-5
-0.7	Complete	63 [102]	0	3	Off	1,685	No	On	-6
-0.6	Complete	63 [102]	0	3	Off	1,685	No	On	-17
-0.5	Complete	63 [102]	0	3	On	1,679	No	On	-34
-0.4	Complete	62 [99]	0	3	On	1,629	No	On	-48
-0.3	Complete	60 [96]	0	3	On	1,566	Yes	On	-56
-0.2	Complete	58 [94]	0	3	On	1,048	Yes	On	-11
-0.1	Complete	SNA	42	6	SNA	SNA	Yes	On	2047

Pre-Crash Data (Most Recent Event - table 2 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Raw Manifold Pressure (kPa)	PCM MIL	Yaw Rate (deg/sec)	Wheel Speed LF (RPM)	Wheel Speed RF (RPM)	Wheel Speed LR (RPM)	Wheel Speed RR (RPM)	ETC Lamp	ETC Lamp Flashing
-5.0	62	Off	0	779	781	782	781	No	No
-4.9	62	Off	0	780	781	782	780	No	No
-4.8	62	Off	0	779	780	780	781	No	No
-4.7	62	Off	0	779	780	780	780	No	No
-4.6	62	Off	0	780	781	780	779	No	No
-4.5	62	Off	0	779	780	780	780	No	No
-4.4	62	Off	0	778	779	780	783	No	No
-4.3	63	Off	0	777	779	781	780	No	No
-4.2	62	Off	0	778	780	781	780	No	No
-4.1	63	Off	0	778	781	779	780	No	No
-4.0	63	Off	0	778	780	780	779	No	No
-3.9	64	Off	0	778	780	780	777	No	No
-3.8	65	Off	0	782	778	777	779	No	No
-3.7	65	Off	0	773	778	774	779	No	No
-3.6	67	Off	0	777	777	777	777	No	No
-3.5	68	Off	0	776	778	781	779	No	No
-3.4	70	Off	0	777	779	780	780	No	No
-3.3	70	Off	0	777	779	780	779	No	No
-3.2	70	Off	0	777	779	779	778	No	No
-3.1	70	Off	0	776	778	778	779	No	No
-3.0	70	Off	0	776	777	778	778	No	No
-2.9	69	Off	0	776	776	779	776	No	No
-2.8	61	Off	0	776	776	777	777	No	No
-2.7	54	Off	0	776	776	777	777	No	No
-2.6	49	Off	0	774	776	778	776	No	No
-2.5	46	Off	0	776	777	777	778	No	No
-2.4	44	Off	0	774	776	775	777	No	No
-2.3	43	Off	0	773	776	775	775	No	No
-2.2	43	Off	0	774	776	774	774	No	No
-2.1	44	Off	0	773	774	773	773	No	No
-2.0	44	Off	0	771	772	773	773	No	No
-1.9	44	Off	0	770	772	774	771	No	No
-1.8	44	Off	0	768	772	773	772	No	No
-1.7	45	Off	0	770	770	768	774	No	No
-1.6	45	Off	0	769	771	773	771	No	No
-1.5	46	Off	0	769	771	770	769	No	No
-1.4	46	Off	0	769	771	769	770	No	No
-1.3	46	Off	0	772	773	772	771	No	No
-1.2	46	Off	0	770	773	770	767	No	No
-1.1	47	Off	0	769	771	772	772	No	No
-1.0	49	Off	0	765	766	773	774	No	No
-0.9	50	Off	0	766	769	772	771	No	No
-0.8	44	Off	0	769	771	769	769	No	No
-0.7	35	Off	0	770	768	765	766	No	No
-0.6	29	Off	-1	768	767	769	767	No	No
-0.5	25	Off	-4	756	760	765	760	No	No
-0.4	22	Off	-11	751	732	750	740	No	No
-0.3	22	Off	-15	715	661	730	700	No	No
-0.2	22	Off	-16	697	597	707	654	No	No
-0.1	97	Off	SNA	8,192	8,192	8,192	8,192	No	No

Pre-Crash Data (Most Recent Event - table 3 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	PRNDL Status	Reverse Gear (Manual Only)	Tire Pressure Monitor Indicator Lamp	Tire Pressure Status, LF	Tire Pressure Status, RF	Tire Pressure Status, LR	Tire Pressure Status, RR
- 5.0	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.9	Drive	No	Off	Normal	Normal	Normal	Normal
-4.8	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.7	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.6	Drive	No	Off	Normal	Normal	Normal	Normal
-4.5	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.4	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.3	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.2	Drive	No	Off	Normal	Normal	Normal	Normal
-4.1	Drive	No	Off	Normal	Normal	Normal	Normal
- 4.0	Drive	No	Off	Normal	Normal	Normal	Normal
-3.9	Drive	No	Off	Normal	Normal	Normal	Normal
- 3.8	Drive	No	Off	Normal	Normal	Normal	Normal
- 37	Drive	No	Off	Normal	Normal	Normal	Normal
- 3.6	Drive	No	Off	Normal	Normal	Normal	Normal
-3.5	Drive	No	Off	Normal	Normal	Normal	Normal
-3.4	Drive	No	Off	Normal	Normal	Normal	Normal
-3.3	Drive	No	Off	Normal	Normal	Normal	Normal
-3.2	Drive	No	Off	Normal	Normal	Normal	Normal
- 3.1	Drive	No	Off	Normal	Normal	Normal	Normal
- 30	Drive	No	Off	Normal	Normal	Normal	Normal
-2.9	Drive	No	Off	Normal	Normal	Normal	Normal
-2.8	Drive	No	Off	Normal	Normal	Normal	Normal
-2.7	Drive	No	Off	Normal	Normal	Normal	Normal
- 26	Drive	No	Off	Normal	Normal	Normal	Normal
- 2.5	Drive	No	Off	Normal	Normal	Normal	Normal
- 2.4	Drive	No	Off	Normal	Normal	Normal	Normal
- 2.3	Drive	No	Off	Normal	Normal	Normal	Normal
- 2.2	Drive	No	Off	Normal	Normal	Normal	Normal
- 2.1	Drive	No	Off	Normal	Normal	Normal	Normal
- 2.0	Drive	No	Off	Normal	Normal	Normal	Normal
-1.9	Drive	No	Off	Normal	Normal	Normal	Normal
- 1.8	Drive	No	Off	Normal	Normal	Normal	Normal
-1.7	Drive	No	Off	Normal	Normal	Normal	Normal
- 1.6	Drive	No	Off	Normal	Normal	Normal	Normal
- 1.5	Drive	No	Off	Normal	Normal	Normal	Normal
- 1.4	Drive	No	Off	Normal	Normal	Normal	Normal
- 1.3	Drive	No	Off	Normal	Normal	Normal	Normal
-1.2	Drive	No	Off	Normal	Normal	Normal	Normal
- 1.1	Drive	No	Off	Normal	Normal	Normal	Normal
-1.0	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.9	Drive	No	Off	Normal	Normal	Normal	Normal
-0.8	Drive	No	Off	Normal	Normal	Normal	Normal
- 07	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.6	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.5	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.4	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.3	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.2	Drive	No	Off	Normal	Normal	Normal	Normal
- 0.1	SNA	No	Off	Normal	Normal	Normal	Normal

Pre-Crash Data (Most Recent Event - table 4 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Tire Pressure, LF	Tire Pressure, RF	Tire Pressure, LR	Tire Pressure, RR	Cruise Control System (if equip.)	Cruise Control Active (if equip.)
-5.0	40	36	37	40	Off	No
-4.9	40	36	37	40	Off	No
-4.8	40	36	37	40	Off	No
-4.7	40	36	37	40	Off	No
-4.6	40	36	37	40	Off	No
-4.5	40	36	37	40	Off	No
-4.4	40	36	37	40	Off	No
-4.3	40	36	37	40	Off	No
-4.2	40	36	37	40	Off	No
-4.1	40	36	37	40	Off	No
-4.0	40	36	37	40	Off	No
-3.9	40	36	37	40	Off	No
-3.8	40	36	37	40	Off	No
-3.7	40	36	37	40	Off	No
-3.6	40	36	37	40	Off	No
-3.5	40	36	37	40	Off	No
-3.4	40	36	37	40	Off	No
-3.3	40	36	37	40	Off	No
-3.2	40	36	37	40	Off	No
-3.1	40	36	37	40	Off	No
-3.0	40	36	37	40	Off	No
-2.9	40	36	37	40	Off	No
-2.8	40	36	37	40	Off	No
-2.7	40	36	37	40	Off	No
-2.6	40	36	37	40	Off	No
-2.5	40	36	37	40	Off	No
-2.4	40	36	37	40	Off	No
-2.3	40	36	37	40	Off	No
-2.2	40	36	37	40	Off	No
-2.1	40	36	37	40	Off	No
-2.0	40	36	37	40	Off	No
-1.9	40	36	37	40	Off	No
-1.8	40	36	37	40	Off	No
-1.7	40	36	37	40	Off	No
-1.6	40	36	37	40	Off	No
-1.5	40	36	37	40	Off	No
-1.4	40	36	37	40	Off	No
-1.3	40	36	37	40	Off	No
-1.2	40	36	37	40	Off	No
-1.1	40	36	37	40	Off	No
-1.0	40	36	37	40	Off	No
-0.9	40	36	37	40	Off	No
-0.8	40	36	37	40	Off	No
-0.7	40	36	37	40	Off	No
-0.6	40	36	37	40	Off	No
-0.5	40	36	37	40	Off	No
-0.4	40	36	37	40	Off	No
-0.3	40	36	37	40	Off	No
-0.2	40	36	37	40	Off	No
-0.1	40	36	37	40	Off	No

System Status at Event (1st Prior Event)

Complete File Recorded	Yes
Safety Belt Status, Driver	Buckled
Safety Belt Status, Outboard Front Passenger	Buckled
Airbag Warning Lamp, On/Off	Off
Seat Track Position Switch, Foremost, Status, Driver	No
Seat Track Position Switch, Foremost, Status, Outboard Front Passenger	Not Present
Maximum Delta-V Longitudinal (MPH [km/h])	-47.8 [-77]
Time, Maximum Delta-V, Longitudinal (msec)	224
Maximum Delta-V Lateral (MPH [km/h])	37.9 [61]
Time, Maximum Delta-V, Lateral (msec)	142
Time, Operation System Time (sec)	5465833
Time, Airbag Warning Lamp On (min)	0
Event Number	1
Total Number of Events Recorded	2
Multi-Event, Number of Events (1,2)	1
Time from Event 1 to 2 (sec)	> 5
Operation Via Energy Reserve Only (Yes, No)	No
Supply Voltage at Event, ECU (V)	14.3
Temperature, Outside (deg C)	18
Event Signal Transmission Complete (Yes, No)	Yes
Odometer at Event (km)	74473.9
Ignition Cycle, Crash	3638
VIN, Original	2C3CDXBG2EH324644
VIN Recorded at Event (last 8 characters)	EH324644

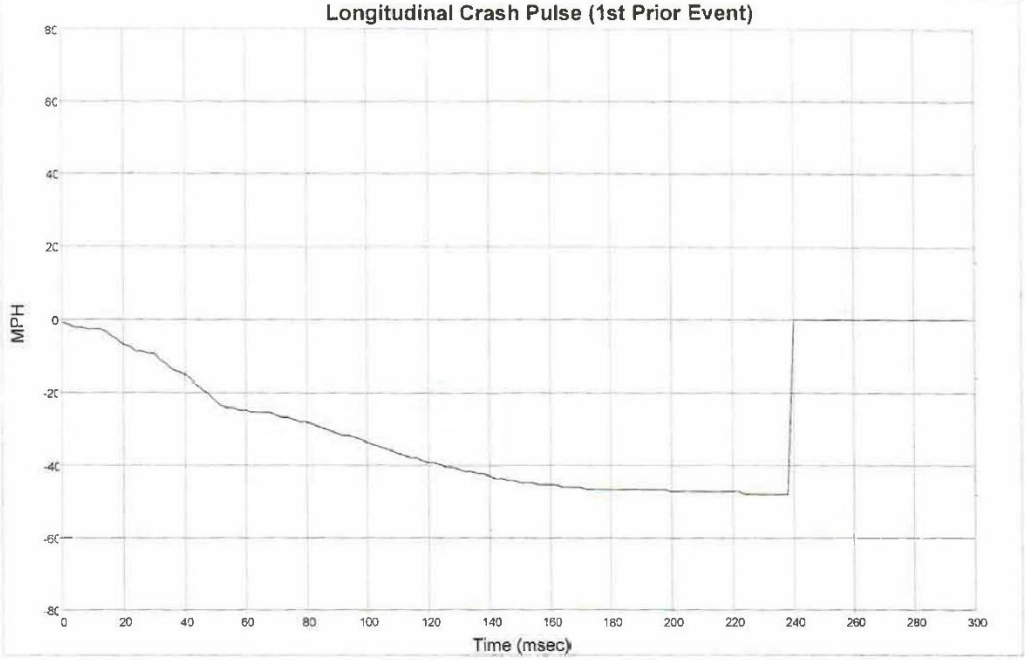
Deployment Command Data (1st Prior Event)

Frontal Airbag Deployment, 1st Stage, Driver	Yes
Frontal Airbag Deployment, 2nd Stage, Driver	Yes
Frontal Airbag Deployment, Time to First Stage Deployment, Driver (msec)	11
Frontal Airbag Deployment, Time from T0 to 2nd Stage Deployment, Driver (msec)	41
Frontal Airbag Deployment, 1st Stage, Passenger	Yes
Frontal Airbag Deployment, 2nd Stage, Passenger	Yes
Frontal Airbag Deployment, Time to First Stage Deployment, Passenger (msec)	11
Frontal Airbag Deployment, Time from T0 to 2nd Stage Deployment, Passenger (msec)	31
Knee Airbag Deployment, Driver	Yes
Buckle Pretensioner, Driver	Yes
Retractor Pretensioner, Driver	Yes
Buckle Pretensioner, Passenger	Yes
Retractor Pretensioner, Passenger	Yes
Side Seat Airbag Deployment, Left	Yes
Side Curtain Airbag Deployment, Left	Yes
Side Seat Airbag Deployment, Right	No
Side Curtain Airbag Deployment, Right	No

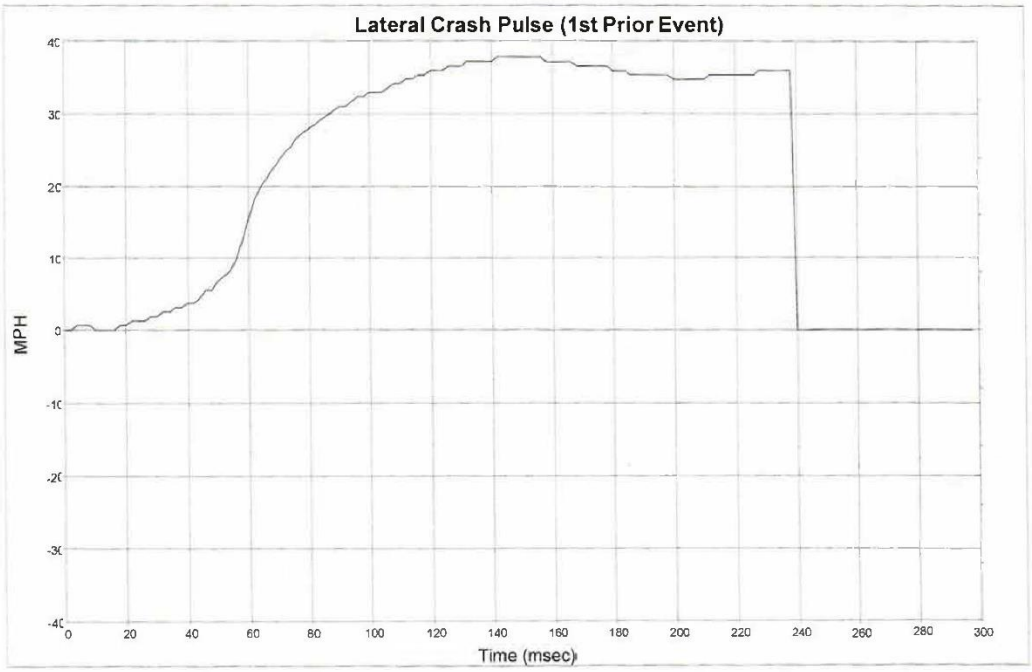
DTCs Present at Start of Event (1st Prior Event)

No DTCs Present

Longitudinal Crash Pulse (1st Prior Event)



Lateral Crash Pulse (1st Prior Event)



Longitudinal Crash Pulse (1st Prior Event)

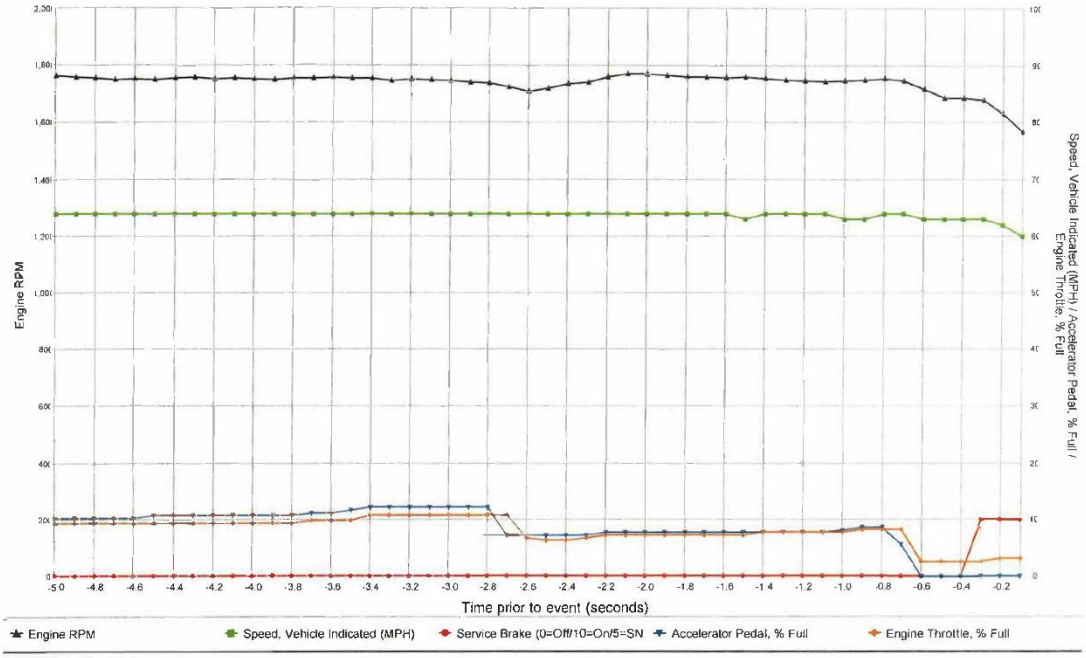
Time (msec)	Delta-V, Longitudinal (MPH [km/h])	Time (msec)	Delta-V, Longitudinal (MPH [km/h])	Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	-0.6 [-1]	100	-33.6 [-54]	200	-47.2 [-76]
2	-1.2 [-2]	102	-34.2 [-55]	202	-47.2 [-76]
4	-1.9 [-3]	104	-34.8 [-56]	204	-47.2 [-76]
6	-1.9 [-3]	106	-35.4 [-57]	206	-47.2 [-76]
8	-2.5 [-4]	108	-36.0 [-58]	208	-47.2 [-76]
10	-2.5 [-4]	110	-36.7 [-59]	210	-47.2 [-76]
12	-2.5 [-4]	112	-37.3 [-60]	212	-47.2 [-76]
14	-3.1 [-5]	114	-37.9 [-61]	214	-47.2 [-76]
16	-4.3 [-7]	116	-37.9 [-61]	216	-47.2 [-76]
18	-5.6 [-9]	118	-38.5 [-62]	218	-47.2 [-76]
20	-6.8 [-11]	120	-39.1 [-63]	220	-47.2 [-76]
22	-7.5 [-12]	122	-39.1 [-63]	222	-47.2 [-76]
24	-8.7 [-14]	124	-39.8 [-64]	224	-47.8 [-77]
26	-8.7 [-14]	126	-40.4 [-65]	226	-47.8 [-77]
28	-9.3 [-15]	128	-40.4 [-65]	228	-47.8 [-77]
30	-9.3 [-15]	130	-41.0 [-66]	230	-47.8 [-77]
32	-11.2 [-18]	132	-41.6 [-67]	232	-47.8 [-77]
34	-12.4 [-20]	134	-41.6 [-67]	234	-47.8 [-77]
36	-13.7 [-22]	136	-42.3 [-68]	236	-47.8 [-77]
38	-14.3 [-23]	138	-42.3 [-68]	238	-47.8 [-77]
40	-14.9 [-24]	140	-42.9 [-69]	240	0.0 [0]
42	-16.2 [-26]	142	-43.5 [-70]	242	0.0 [0]
44	-18.0 [-29]	144	-43.5 [-70]	244	0.0 [0]
46	-19.3 [-31]	146	-44.1 [-71]	246	0.0 [0]
48	-20.5 [-33]	148	-44.1 [-71]	248	0.0 [0]
50	-22.4 [-36]	150	-44.7 [-72]	250	0.0 [0]
52	-23.6 [-38]	152	-44.7 [-72]	252	0.0 [0]
54	-24.2 [-39]	154	-44.7 [-72]	254	0.0 [0]
56	-24.2 [-39]	156	-45.4 [-73]	256	0.0 [0]
58	-24.9 [-40]	158	-45.4 [-73]	258	0.0 [0]
60	-24.9 [-40]	160	-45.4 [-73]	260	0.0 [0]
62	-25.5 [-41]	162	-45.4 [-73]	262	0.0 [0]
64	-25.5 [-41]	164	-46.0 [-74]	264	0.0 [0]
66	-25.5 [-41]	166	-46.0 [-74]	266	0.0 [0]
68	-25.5 [-41]	168	-46.0 [-74]	268	0.0 [0]
70	-26.1 [-42]	170	-46.0 [-74]	270	0.0 [0]
72	-26.7 [-43]	172	-46.6 [-75]	272	0.0 [0]
74	-26.7 [-43]	174	-46.6 [-75]	274	0.0 [0]
76	-27.3 [-44]	176	-46.6 [-75]	276	0.0 [0]
78	-28.0 [-45]	178	-46.6 [-75]	278	0.0 [0]
80	-28.0 [-45]	180	-46.6 [-75]	280	0.0 [0]
82	-28.6 [-46]	182	-46.6 [-75]	282	0.0 [0]
84	-29.2 [-47]	184	-46.6 [-75]	284	0.0 [0]
86	-29.8 [-48]	186	-46.6 [-75]	286	0.0 [0]
88	-30.4 [-49]	188	-46.6 [-75]	288	0.0 [0]
90	-31.1 [-50]	190	-46.6 [-75]	290	0.0 [0]
92	-31.7 [-51]	192	-46.6 [-75]	292	0.0 [0]
94	-31.7 [-51]	194	-46.6 [-75]	294	0.0 [0]
96	-32.3 [-52]	196	-46.6 [-75]	296	0.0 [0]
98	-32.9 [-53]	198	-46.6 [-75]	298	0.0 [0]

Lateral Crash Pulse (1st Prior Event)

Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.6 [1]
6	0.6 [1]
8	0.6 [1]
10	0.0 [0]
12	0.0 [0]
14	0.0 [0]
16	0.0 [0]
18	0.6 [1]
20	0.6 [1]
22	1.2 [2]
24	1.2 [2]
26	1.2 [2]
28	1.9 [3]
30	1.9 [3]
32	2.5 [4]
34	2.5 [4]
36	3.1 [5]
38	3.1 [5]
40	3.7 [6]
42	3.7 [6]
44	4.3 [7]
46	5.6 [9]
48	5.6 [9]
50	6.8 [11]
52	7.5 [12]
54	8.1 [13]
56	9.9 [16]
58	12.4 [20]
60	15.5 [25]
62	18.0 [29]
64	19.9 [32]
66	21.1 [34]
68	22.4 [36]
70	23.6 [38]
72	24.9 [40]
74	25.5 [41]
76	26.7 [43]
78	27.3 [44]
80	28.0 [45]
82	28.6 [46]
84	29.2 [47]
86	29.8 [48]
88	30.4 [49]
90	31.1 [50]
92	31.1 [50]
94	31.7 [51]
96	32.3 [52]
98	32.3 [52]
100	32.9 [53]
102	32.9 [53]
104	32.9 [53]
106	33.6 [54]
108	34.2 [55]
110	34.2 [55]
112	34.8 [56]
114	34.8 [56]
116	35.4 [57]
118	35.4 [57]
120	36.0 [58]
122	36.0 [58]
124	36.0 [58]
126	36.7 [59]
128	36.7 [59]
130	36.7 [59]
132	37.3 [60]
134	37.3 [60]
136	37.3 [60]
138	37.3 [60]
140	37.3 [60]
142	37.9 [61]
144	37.9 [61]
146	37.9 [61]
148	37.9 [61]
150	37.9 [61]
152	37.9 [61]
154	37.9 [61]
156	37.9 [61]
158	37.3 [60]
160	37.3 [60]
162	37.3 [60]
164	37.3 [60]
166	37.3 [60]
168	36.7 [59]
170	36.7 [59]
172	36.7 [59]
174	36.7 [59]
176	36.7 [59]
178	36.7 [59]
180	36.0 [58]
182	36.0 [58]
184	36.0 [58]
186	35.4 [57]
188	35.4 [57]
190	35.4 [57]
192	35.4 [57]
194	35.4 [57]
196	35.4 [57]
198	35.4 [57]
200	34.8 [56]
202	34.8 [56]
204	34.8 [56]
206	34.8 [56]
208	34.8 [56]
210	34.8 [56]
212	35.4 [57]
214	35.4 [57]
216	35.4 [57]
218	35.4 [57]
220	35.4 [57]
222	35.4 [57]
224	35.4 [57]
226	35.4 [57]
228	36.0 [58]
230	36.0 [58]
232	36.0 [58]
234	36.0 [58]
236	36.0 [58]
238	36.0 [58]
240	0.0 [0]
242	0.0 [0]
244	0.0 [0]
246	0.0 [0]
248	0.0 [0]
250	0.0 [0]
252	0.0 [0]
254	0.0 [0]
256	0.0 [0]
258	0.0 [0]
260	0.0 [0]
262	0.0 [0]
264	0.0 [0]
266	0.0 [0]
268	0.0 [0]
270	0.0 [0]
272	0.0 [0]
274	0.0 [0]
276	0.0 [0]
278	0.0 [0]
280	0.0 [0]
282	0.0 [0]
284	0.0 [0]
286	0.0 [0]
288	0.0 [0]
290	0.0 [0]
292	0.0 [0]
294	0.0 [0]
296	0.0 [0]
298	0.0 [0]

BOSCH

Pre-Crash Data (1st Prior Event)



SNA values will not be plotted on the graph

Pre-Crash Data (1st Prior Event - table 1 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Pre-Crash Recorder Status	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % Full	Engine Throttle, % Full	Service Brake	Engine RPM	ABS Activity	Stability Control	Steering Input (deg)
-5.0	Complete	64 [104]	10	9	Off	1,763	No	On	0
-4.9	Complete	64 [104]	10	9	Off	1,757	No	On	0
-4.8	Complete	64 [104]	10	9	Off	1,755	No	On	0
-4.7	Complete	64 [104]	10	9	Off	1,750	No	On	0
-4.6	Complete	64 [104]	10	9	Off	1,752	No	On	0
-4.5	Complete	64 [104]	11	9	Off	1,751	No	On	0
-4.4	Complete	64 [103]	11	9	Off	1,756	No	On	0
-4.3	Complete	64 [104]	11	9	Off	1,758	No	On	0
-4.2	Complete	64 [103]	11	9	Off	1,753	No	On	0
-4.1	Complete	64 [104]	11	9	Off	1,754	No	On	0
-4.0	Complete	64 [104]	11	9	Off	1,752	No	On	0
-3.9	Complete	64 [103]	11	9	Off	1,749	No	On	-1
-3.8	Complete	64 [103]	11	9	Off	1,754	No	On	-1
-3.7	Complete	64 [103]	11	10	Off	1,756	No	On	-1
-3.6	Complete	64 [103]	11	10	Off	1,757	No	On	-1
-3.5	Complete	64 [104]	12	10	Off	1,756	No	On	-2
-3.4	Complete	64 [103]	12	11	Off	1,754	No	On	-3
-3.3	Complete	64 [103]	12	11	Off	1,747	No	On	-3
-3.2	Complete	64 [103]	12	11	Off	1,753	No	On	-3
-3.1	Complete	64 [103]	12	11	Off	1,750	No	On	-2
-3.0	Complete	64 [103]	12	11	Off	1,747	No	On	-2
-2.9	Complete	64 [103]	12	11	Off	1,741	No	On	-2
-2.8	Complete	64 [103]	12	11	Off	1,739	No	On	-2
-2.7	Complete	64 [103]	7	11	Off	1,725	No	On	-2
-2.6	Complete	64 [103]	7	7	Off	1,709	No	On	-2
-2.5	Complete	64 [103]	7	6	Off	1,722	No	On	-2
-2.4	Complete	64 [103]	7	6	Off	1,737	No	On	-1
-2.3	Complete	64 [103]	7	7	Off	1,742	No	On	-1
-2.2	Complete	64 [103]	8	7	Off	1,761	No	On	0
-2.1	Complete	64 [103]	8	7	Off	1,772	No	On	0
-2.0	Complete	64 [103]	8	7	Off	1,770	No	On	0
-1.9	Complete	64 [103]	8	7	Off	1,767	No	On	0
-1.8	Complete	64 [103]	8	7	Off	1,760	No	On	0
-1.7	Complete	64 [103]	8	7	Off	1,760	No	On	0
-1.6	Complete	64 [102]	8	7	Off	1,759	No	On	0
-1.5	Complete	63 [102]	8	7	Off	1,760	No	On	0
-1.4	Complete	64 [102]	8	8	Off	1,754	No	On	0
-1.3	Complete	64 [102]	8	8	Off	1,751	No	On	0
-1.2	Complete	64 [102]	8	8	Off	1,748	No	On	0
-1.1	Complete	64 [102]	8	8	Off	1,745	No	On	0
-1.0	Complete	63 [102]	8	8	Off	1,748	No	On	0
-0.9	Complete	63 [102]	9	8	Off	1,750	No	On	0
-0.8	Complete	64 [102]	9	8	Off	1,755	No	On	0
-0.7	Complete	64 [102]	6	8	Off	1,748	No	On	-1
-0.6	Complete	63 [102]	0	3	Off	1,718	No	On	-5
-0.5	Complete	63 [102]	0	3	Off	1,685	No	On	-6
-0.4	Complete	63 [102]	0	3	Off	1,685	No	On	-17
-0.3	Complete	63 [102]	0	3	On	1,679	No	On	-34
-0.2	Complete	62 [99]	0	3	On	1,629	No	On	-48
-0.1	Complete	60 [96]	0	3	On	1,566	Yes	On	-56

Pre-Crash Data (1st Prior Event - table 2 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Raw Manifold Pressure (kPa)	PCM MIL	Yaw Rate (deg/sec)	Wheel Speed LF (RPM)	Wheel Speed RF (RPM)	Wheel Speed LR (RPM)	Wheel Speed RR (RPM)	ETC Lamp	ETC Lamp Flashing
-5.0	62	Off	0	780	783	782	781	No	No
-4.9	62	Off	0	779	781	781	783	No	No
-4.8	62	Off	0	779	781	782	781	No	No
-4.7	62	Off	0	780	781	782	780	No	No
-4.6	62	Off	0	779	780	780	781	No	No
-4.5	62	Off	0	779	780	780	780	No	No
-4.4	62	Off	0	780	781	780	779	No	No
-4.3	62	Off	0	779	780	780	780	No	No
-4.2	62	Off	0	778	779	780	783	No	No
-4.1	63	Off	0	777	779	781	780	No	No
-4.0	62	Off	0	778	780	781	780	No	No
-3.9	63	Off	0	778	781	779	780	No	No
-3.8	63	Off	0	778	780	780	779	No	No
-3.7	64	Off	0	778	780	780	777	No	No
-3.6	65	Off	0	782	778	777	779	No	No
-3.5	65	Off	0	773	778	774	779	No	No
-3.4	67	Off	0	777	777	777	777	No	No
-3.3	68	Off	0	776	778	781	779	No	No
-3.2	70	Off	0	777	779	780	780	No	No
-3.1	70	Off	0	777	779	780	779	No	No
-3.0	70	Off	0	777	779	779	778	No	No
-2.9	70	Off	0	776	778	778	779	No	No
-2.8	70	Off	0	776	777	778	778	No	No
-2.7	69	Off	0	776	776	779	776	No	No
-2.6	61	Off	0	776	776	777	777	No	No
-2.5	54	Off	0	776	776	777	777	No	No
-2.4	49	Off	0	774	776	778	776	No	No
-2.3	46	Off	0	776	777	777	778	No	No
-2.2	44	Off	0	774	776	775	777	No	No
-2.1	43	Off	0	773	776	775	775	No	No
-2.0	43	Off	0	774	776	774	774	No	No
-1.9	44	Off	0	773	774	773	773	No	No
-1.8	44	Off	0	771	772	773	773	No	No
-1.7	44	Off	0	770	772	774	771	No	No
-1.6	44	Off	0	768	772	773	772	No	No
-1.5	45	Off	0	770	770	768	774	No	No
-1.4	45	Off	0	769	771	773	771	No	No
-1.3	46	Off	0	769	771	770	769	No	No
-1.2	46	Off	0	769	771	769	770	No	No
-1.1	46	Off	0	772	773	772	771	No	No
-1.0	46	Off	0	770	773	770	767	No	No
-0.9	47	Off	0	769	771	772	772	No	No
-0.8	49	Off	0	765	766	773	774	No	No
-0.7	50	Off	0	766	769	772	771	No	No
-0.6	44	Off	0	769	771	769	769	No	No
-0.5	35	Off	0	770	768	765	766	No	No
-0.4	29	Off	-1	768	767	769	767	No	No
-0.3	25	Off	-4	756	760	765	760	No	No
-0.2	22	Off	-11	751	732	750	740	No	No
-0.1	22	Off	-15	715	661	730	700	No	No

Pre-Crash Data (1st Prior Event - table 3 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	PRNDL Status	Reverse Gear (Manual Only)	Tire Pressure Monitor Indicator Lamp	Tire Pressure Status, LF	Tire Pressure Status, RF	Tire Pressure Status, LR	Tire Pressure Status, RR
-5.0	Drive	No	Off	Normal	Normal	Normal	Normal
-4.9	Drive	No	Off	Normal	Normal	Normal	Normal
-4.8	Drive	No	Off	Normal	Normal	Normal	Normal
-4.7	Drive	No	Off	Normal	Normal	Normal	Normal
-4.6	Drive	No	Off	Normal	Normal	Normal	Normal
-4.5	Drive	No	Off	Normal	Normal	Normal	Normal
-4.4	Drive	No	Off	Normal	Normal	Normal	Normal
-4.3	Drive	No	Off	Normal	Normal	Normal	Normal
-4.2	Drive	No	Off	Normal	Normal	Normal	Normal
-4.1	Drive	No	Off	Normal	Normal	Normal	Normal
-4.0	Drive	No	Off	Normal	Normal	Normal	Normal
-3.9	Drive	No	Off	Normal	Normal	Normal	Normal
-3.8	Drive	No	Off	Normal	Normal	Normal	Normal
-3.7	Drive	No	Off	Normal	Normal	Normal	Normal
-3.6	Drive	No	Off	Normal	Normal	Normal	Normal
-3.5	Drive	No	Off	Normal	Normal	Normal	Normal
-3.4	Drive	No	Off	Normal	Normal	Normal	Normal
-3.3	Drive	No	Off	Normal	Normal	Normal	Normal
-3.2	Drive	No	Off	Normal	Normal	Normal	Normal
-3.1	Drive	No	Off	Normal	Normal	Normal	Normal
-3.0	Drive	No	Off	Normal	Normal	Normal	Normal
-2.9	Drive	No	Off	Normal	Normal	Normal	Normal
-2.8	Drive	No	Off	Normal	Normal	Normal	Normal
-2.7	Drive	No	Off	Normal	Normal	Normal	Normal
-2.6	Drive	No	Off	Normal	Normal	Normal	Normal
-2.5	Drive	No	Off	Normal	Normal	Normal	Normal
-2.4	Drive	No	Off	Normal	Normal	Normal	Normal
-2.3	Drive	No	Off	Normal	Normal	Normal	Normal
-2.2	Drive	No	Off	Normal	Normal	Normal	Normal
-2.1	Drive	No	Off	Normal	Normal	Normal	Normal
-2.0	Drive	No	Off	Normal	Normal	Normal	Normal
-1.9	Drive	No	Off	Normal	Normal	Normal	Normal
-1.8	Drive	No	Off	Normal	Normal	Normal	Normal
-1.7	Drive	No	Off	Normal	Normal	Normal	Normal
-1.6	Drive	No	Off	Normal	Normal	Normal	Normal
-1.5	Drive	No	Off	Normal	Normal	Normal	Normal
-1.4	Drive	No	Off	Normal	Normal	Normal	Normal
-1.3	Drive	No	Off	Normal	Normal	Normal	Normal
-1.2	Drive	No	Off	Normal	Normal	Normal	Normal
-1.1	Drive	No	Off	Normal	Normal	Normal	Normal
-1.0	Drive	No	Off	Normal	Normal	Normal	Normal
-0.9	Drive	No	Off	Normal	Normal	Normal	Normal
-0.8	Drive	No	Off	Normal	Normal	Normal	Normal
-0.7	Drive	No	Off	Normal	Normal	Normal	Normal
-0.6	Drive	No	Off	Normal	Normal	Normal	Normal
-0.5	Drive	No	Off	Normal	Normal	Normal	Normal
-0.4	Drive	No	Off	Normal	Normal	Normal	Normal
-0.3	Drive	No	Off	Normal	Normal	Normal	Normal
-0.2	Drive	No	Off	Normal	Normal	Normal	Normal
-0.1	Drive	No	Off	Normal	Normal	Normal	Normal

Pre-Crash Data (1st Prior Event - table 4 of 4)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Tire Pressure, LF	Tire Pressure, RF	Tire Pressure, LR	Tire Pressure, RR	Cruise Control System (if equip.)	Cruise Control Active (if equip.)
-5.0	40	36	37	40	Off	No
-4.9	40	36	37	40	Off	No
-4.8	40	36	37	40	Off	No
-4.7	40	36	37	40	Off	No
-4.6	40	36	37	40	Off	No
-4.5	40	36	37	40	Off	No
-4.4	40	36	37	40	Off	No
-4.3	40	36	37	40	Off	No
-4.2	40	36	37	40	Off	No
-4.1	40	36	37	40	Off	No
-4.0	40	36	37	40	Off	No
-3.9	40	36	37	40	Off	No
-3.8	40	36	37	40	Off	No
-3.7	40	36	37	40	Off	No
-3.6	40	36	37	40	Off	No
-3.5	40	36	37	40	Off	No
-3.4	40	36	37	40	Off	No
-3.3	40	36	37	40	Off	No
-3.2	40	36	37	40	Off	No
-3.1	40	36	37	40	Off	No
-3.0	40	36	37	40	Off	No
-2.9	40	36	37	40	Off	No
-2.8	40	36	37	40	Off	No
-2.7	40	36	37	40	Off	No
-2.6	40	36	37	40	Off	No
-2.5	40	36	37	40	Off	No
-2.4	40	36	37		Off	No
-2.3	40	36	37	40	Off	No
-2.2	40	36	37	40	Off	No
-2.1	40	36	37	40	Off	No
-2.0	40	36	37	40	Off	No
-1.9	40	36	37	40	Off	No
-1.8	40	36	37	40	Off	No
-1.7	40	36	37	40	Off	No
-1.6	40	36	37	40	Off	No
-1.5	40	36	37	40	Off	No
-1.4	40	36	37	40	Off	No
-1.3	40	36	37	40	Off	No
-1.2	40	36	37	40	Off	No
-1.1	40	36	37	40	Off	No
-1.0	40	36	37	40	Off	No
-0.9	40	36	37	40	Off	No
-0.8	40	36	37	40	Off	No
-0.7	40	36	37	40	Off	No
-0.6	40	36	37	40	Off	No
-0.5	40	36	37	40	Off	No
-0.4	40	36	37	40	Off	No
-0.3	40	36	37	40	Off	No
-0.2	40	36	37	40	Off	No
-0.1	40	36	37	40	Off	No

DOT HS 813 138
July 2021

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

15271-062821-v4