On-Site Side Air Bag Investigation
Dynamic Science, Inc. (DSI), Case Number DS09029
2007 Dodge Nitro
Arizona
July 2009

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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.

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16. Abstract

This on-site investigation focused on the deployed side air bag and the injuries sustained by the occupants in a 2007 Dodge Nitro sport utility vehicle that was involved in a vehicle-to-vehicle crash. The crash occurred in a four-leg intersection in July 2009 in the state of Arizona. The Dodge was traveling northbound and was being driven by a 50-year-old female. The front right seat position was occupied by a 54-year-old male. The other vehicle was a 1996 Buick Regal that was traveling eastbound and was being driven by a 21-year-old male. The Dodge was crossing through the intersection and the Buick entered the intersection against a stop sign. The front end of the Buick impacted the left side of the Dodge and the Dodge then departed the roadway and impacted a utility pole. The Dodge was equipped with combination rollover/side impact inflatable curtain (IC) air bags, a Certified Advanced 208-Compliant (CAC) frontal air bag system, and dual buckle/retractor safety belt pretensioners for the front row. During the crash, the Dodge's left side IC air bag deployed, the left frontal air bag deployed, and the driver's safety belt pretensioner actuated. The driver of the Dodge sustained minor injuries and was transported to a local hospital where she was treated and released. The front right occupant sustained moderate injuries and was transported to a local hospital where he was admitted for one day. Both vehicles were towed due to damage and the Dodge was later declared a total loss by the insurance company. The Buick was not inspected.

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Background

This on-site investigation focused on the deployed side air bag and the injuries sustained by the occupants in a 2007 Dodge Nitro sport utility vehicle that was involved in a vehicle-to-vehicle crash. The crash occurred in a four-leg intersection in July 2009 in the state of Arizona. The Dodge (**Figure 1**) was traveling northbound and was being driven by a 50-year-old female. The front right seat position was occupied by a 54-year-old male. The other vehicle was a 1996 Buick Regal that was traveling eastbound and was being driven by a 21-year-old male.

Figure 1. Subject vehicle, 2007 Dodge Nitro

The Dodge was crossing through the intersection and the Buick entered the intersection against a stop sign. The front end of the Buick impacted the left side of the Dodge and the Dodge then departed the roadway and impacted a utility pole. The Dodge was equipped with combination rollover/side impact inflatable curtain (IC) air bags, a Certified Advanced 208-Compliant (CAC) frontal air bag system, and dual buckle/retractor safety belt pretensioners for the front row. A CAC vehicle is certified by the manufacturer to be compliant with the Advanced Air Bag portion of Federal Motor Vehicle Safety Standard (FMVSS) No. 208. During the crash, the Dodge's left side IC air bag deployed, the left frontal air bag deployed, and the driver's safety belt pretensioner actuated.

The driver of the Dodge sustained minor injuries and was transported to a local hospital where she was treated and released. The front right occupant sustained moderate injuries and was transported to a local hospital where he was admitted for one day. Both vehicles were towed due to damage and the Dodge was later declared a total loss by the insurance company. The Buick was not inspected.

This side air bag investigation was initiated by the National Highway Traffic Safety Administration (NHTSA) from a review of General Estimates System (GES) police reports. On August 31, 2009, DSI was forwarded the police report with instructions to locate the subject vehicle and obtain cooperation. The subject vehicle was located, permission to inspect the vehicle was obtained, and the case was assigned on September 2, 2009. The vehicle inspection was completed on September 9, 2009. The Dodge's Event Data Recorder (EDR) was supported by the Bosch Crash Data Retrieval (CDR) system and the vehicle's crash data was imaged during the vehicle inspection. A summary of the crash data is incorporated in this report and a truncated version of the Bosch CDR Report with the hexidecimal data omitted is included at the end of this report as Attachment 2.

Summary

Crash Site

The crash site was a four-leg intersection including a north/south roadway and an east/west roadway.

The Dodge was traveling northbound (**Figure 2**) and the Buick was traveling eastbound. The northbound roadway configuration was as follows: a right turn lane measuring 5.0 m (16.5 ft) in width, a bike lane measuring 1.8 m (6.0 ft), two through lanes measuring 3.7 m (12.0 ft) and 4.3 m (14.0 ft), respectively, a left turn lane measuring 3.9 m (12.8 ft), and a raised median strip measuring 3.5 m (11.6 ft).

Figure 2. Subject vehicle northbound approach view

The southbound roadway was configured similarly. The through lanes were separated by single dashed white stripes, the turn lanes and bike lanes were delineated by solid white stripes, the outboard roadway edges were marked by solid white fog lines and the inboard roadway edges were marked by solid yellow stripes. The roadway was straight and level. The east roadway edge was bordered by the raised curb followed by paved sidewalks and level ground. All curbs in the area measured 20.0 cm (7.8 in) in height.

The northeast corner of the intersection consisted of a raised curb and a paved concrete section of pavement that measured 5.2 x 2.7 m (17.0 x 9.0 ft). To the right of the concrete surface was a wooden utility pole and a posted stop sign.

The west leg of the intersection was undivided and consisted of one eastbound lane and two westbound lanes. The eastbound and westbound lanes were delineated by double solid yellow stripes and the westbound lanes were delineated by a solid white stripe. Solid white fog lines bordered the outboard roadway edges. The roadway was straight with a slight positive grade approaching the intersection. Outboard of the roadway were raised concrete curbs and gravel shoulders.

The intersection was controlled by a posted stop sign for eastbound traffic. The stop sign at the intersection's southwest corner was located 8.0 m (26.2 ft) west of the curb apex and 3.1 m (10.3 ft) south of the roadway edge. A stop line was located 3.7 m (12.0 ft) west of the curb apex and 3.7 m (12.2 ft) east of the stop sign.

The roadway composition for all lanes was asphalt. The posted speed limit for the north/south roadway was 72 km/h (45 mph) and for the east/west roadway was 40 km/h (25 mph).

Pre-Crash

At the time of the crash the weather was clear, conditions were dark without street lamps illuminated, and the roadway was dry. The Dodge was traveling northbound in the outboard lane at an EDR-reported speed of 51.0 km/h (32 mph) at 1.8 seconds prior to Algorithm Enable (AE). The vehicle's cruise control was on but not activated. The Buick was traveling eastbound at a police-estimated speed of 72 km/h (45 mph). The Buick crossed the southbound lanes and the first two northbound lanes, then crossed into the path of the Dodge.

Crash

The crash sequence included four events: Events 1 and 2 were vehicle-to-vehicle impacts and Events 3 and 4 were vehicle-to-object impacts. Initially, the front plane of the Buick impacted the left side of the Dodge (Event 1). The point of impact in the northbound outboard lane was identified by a patch of scrape marks on the roadway measuring 1.2 m (4.0 ft) in length and 0.3 m (1.0 ft) in width (**Figure 3**).

Figure 3. Point of impact, Event 1

Following the first impact, the right side of the Buick impacted the left side of the Dodge in a secondary, side slap impact (Event 2).

Following the second impact, the Dodge traveled to the northeast corner of the intersection and its front plane impacted a wooden utility pole (Event 3). The Buick then departed the northbound roadway on the right side and impacted a barbed wire fence with its front end (Event 4).

Figure 4. Point if impact, Event 4, and final rest location of subject vehicle

Prior to the pole impact, the Dodge's left front tire deposited a skid mark measuring 3.3 m (10.8 ft) in length on the concrete gutter and sidewalk. The vehicle came to rest with its front tires off the roadway and its rear tires on the roadway (**Figure 4**). The distance traveled from the first vehicle-to-vehicle impact (Event 1) to final rest was 17.4 m (57.1 ft).

The impacted utility pole measured 35.0 cm (14.0 in) in diameter. It was scarred from the impact but was not fractured or displaced. The damage to the pole began 26.0 cm (10.2 in) above the ground and extended upward 94.0 cm (37.0 in); the damage to the pole measured 60.0 cm (23.6 in) in width.

Following the side slap impact, the Buick's right rear tire deposited a yaw mark measuring 8.1 m (26.6 ft) in length. The Buick then departed the northbound roadway on the right side and traveled off the roadway for 9.2 m (30.2 ft) where it then impacted the barbed wire fence and came to rest at the area of impact. The distance from the initial impact to final rest for the Buick measured 30.7 m (100.7 ft).

The WinSMASH program was used to calculate Delta-V results for the Events 1, 2 and 3. For the Dodge in Event 1, the Missing Vehicle algorithm of the WinSMASH program computed a Total Delta-V of 17.0 km/h (10.6 mph); the longitudinal and lateral components were -10.9 km/h (-6.8

mph) and 13.0 km/h (8.1 mph), respectively. The results appear reasonable based on the crush profile and moderate left side damage. For the Buick in Event 1, the program computed a Total Delta-V of 22.0 km/h (13.7 mph); the longitudinal and lateral components were -16.9 km/h (-10.5 mph) and -14.1 km/h (-8.8 mph), respectively. The results were based on a borderline reconstruction.

For the Dodge in Event 2, the Missing Vehicle algorithm of the WinSMASH program computed a Total Delta-V of 16.0 km/h (9.9 mph); the longitudinal and lateral components were 0 km/h and 16.0 km/h (-9.9 mph), respectively. The results appear reasonable based on the left side crush profile. For the Buick in Event 2, the program computed a Total Delta-V of 19.0 km/h (11.8 mph); the longitudinal and lateral components were 0 km/h and -19.0 km/h (-11.8 mph), respectively. The results should be considered borderline.

For the Dodge in Event 3, the Barrier algorithm of the WinSMASH program computed a Total Delta-V of 33.0 km/h (20.5 mph); the longitudinal and lateral components were -33.0 km/h (-20.5 mph) and 0 km/h, respectively. The results appear reasonable based on the vehicle's moderate front end damage. The EDR reports a maximum Longitudinal Crash Pulse Acceleration of -19.61 (g)[1] at 21 milliseconds (ms).

Post-Crash

After the Dodge came to rest, the driver unbuckled her safety belt and waited until on-scene responders arrived. The driver's side door was jammed shut so she moved to the second row and exited through the right side door under her own power. While awaiting transport the driver was alert and ambulatory. She was treated on-scene by EMS and then was ground transported to a local hospital. The driver arrived at the emergency room at 0241 hours, 1 hour and 12 minutes post-crash, with a Glasgow Coma Score (GCS) of 15. She was treated for minor injuries to the head, chest, and extremities, and was discharged at 0815 hours. The driver reported that she missed three weeks of work due to her injuries.

Upon their arrival, on-scene responders found the front right occupant seated in the vehicle. According to the EMS records, he was unconscious and unresponsive with fewer than 6 respirations per minute. He was moved from his seat while unconscious through the front right side door and was placed on the ground. While undergoing treatment at the scene he regained consciousness and his respirations increased to 14-16 per minute. The EMS record stated that his GCS was 15. The occupant was treated at the scene for 12 minutes and was then ground transported for 17 minutes to a local hospital. He was admitted to the hospital's Trauma Center at 0210 hours at which time his respirations had increased to 21 per minute. The occupant was treated for head injuries including a subarachnoid hemorrhage, scalp laceration, and scalp contusion. He was hospitalized overnight and discharged at 1327 hours the following day. This occupant missed four weeks of work due to his injuries.

[1] Unit of measurement designation for acceleration

Vehicle Data - 2007 Dodge Nitro

The Dodge was identified by the Vehicle Identification Number (VIN): 1D8GT28K97Wxxxxxx and the vehicle's date of manufacture was March 2007. The odometer reading was not obtained due to the inoperable electronic dash. The vehicle was equipped with a 3.7-liter, 6-cylinder engine, automatic transmission, rear wheel drive, Occupant Classification System[2], Electronic Stability Program (ESP) featuring anti-lock brakes (ABS), all-speed Traction Control, Brake Assist, Electronic Roll Mitigation, variable power steering with tilt and telescoping steering functionality, and a tire pressure monitoring system.

The vehicle manufacturer recommended P225/75R16 tires for the front and the rear with a cold tire pressure of 228 kPa (33 psi) for the front and the rear. The vehicle was equipped with Kumho Road Venture tires of the recommended size that were manufactured in February 2007. The specific tire information was as follows:

Position	Measured Pressure	Measured Tread Depth	Restricted	Damage
LF	186 kPa (27 psi)	8 mm (10/32 in)	Yes	None
LR	228 kPa (33 psi)	7 mm (9/32 in)	No	None
RR	214 kPa (31 psi)	7 mm (9/32 in)	No	None
RF	186 kPa (27 psi)	8 mm (10/32 in)	No	None

The Dodge's interior was configured with fabric-covered five-passenger seating. The front bucket seats were separated by a center console and equipped with adjustable head restraints. After-market seat covers were installed on the front row seats. The second row seating consisted of a 60/40 split bench seat with folding backs. The outboard seats had adjustable head restraints and the center seat had no head restraint.

Vehicle Damage

Exterior Damage

The Dodge sustained direct damage to the front end and left side, and it sustained induced damage to the right side and top plane. The left front rim was deformed to an inboard cant and the left rear rim was fractured. The vehicle's the front bumper fascia was detached and not present at the time of the inspection. The bumper backing bar was used to locate frontal damage and to determine crush measurement values.

[2] "The front right air bag switch is controlled by a weight-sensing suppression system," Safety and Security Features Stand Out on All-new 2007 Dodge Nitro, Oct.1, 2006, http://www.media.chrysler.com

For Event 1, direct damage was located on the left side beginning at the front axle and extending 109.0 cm (42.9 in) rearward. The Field L began at the front left bumper corner and extended 188.0 cm (74.0 in) rearward (**Figure 5**). Six crush measurements were taken at mid-door level as follows: C_1 = 0 cm, C_2 = 8.0 cm (3.1), C_3 = 20.0 cm (7.8 in), C_4 = 16.0 cm (6.3 in), C_5 = 13.0 cm (5.1 in), C_6 = 19.0 (7.5 in). Maximum crush was located 99.0 cm (39.0 in) aft of the front left bumper corner between C_3 and C_4 and measured 23.0 cm (9.1 in). The Collision Deformation Classification (CDC) for the first impact was 10LYEW2.

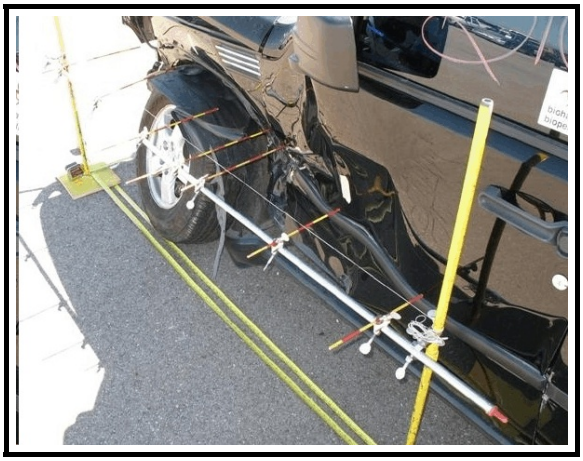

Figure 5. Dodge Nitro crush measurements, Event 1

For Event 2, direct damage was located on the left side beginning 103.0 cm (40.6 in) forward of the rear axle and extending 186.0 cm (73.2 in) rearward. The Field L began 129.0 cm (50.8 in) forward of the rear axle, extended 220.0 cm (86.6 in) rearward, and ended at the left rear bumper corner. Six crush measurements were taken at mid-door level as follows: C_1 = 4.0 cm (1.6 in), C_2 = 6.0 cm (2.4 in), C_3 = 8.0 cm (3.2 in), C_4 = 3.0 cm (1.2 in), C_5 = 1.0 cm (0.4 in), C_6 = 0 cm. Maximum lateral crush was located 8.0 cm (3.2 in) aft of the rear axle at C_3 and measured 8.0 cm (3.2 in). The Collision Deformation Classification (CDC) for the second impact was 09LZEW1.

Figure 6. Dodge Nitro crush measurements, Event 3

For Event 3, direct damage was located on the front end beginning 71.0 cm (28.0 in) right of the left edge of the bumper bar and extending 24.0 cm (9.5 in) to the right. The Field L measured 140.0 cm (55.1 in) and was distributed across the entire front end (**Figure 6**). Six crush measurements were taken at bumper level as follows: C_1 = 1.0 cm (0.4 in), C_2 = 0 cm, C_3 = 16.0 cm (6.3 in), C_4 = 35.0 cm (13.8 in), C_5 = 0 cm, C_6 = 0 cm. Maximum lateral crush was located at C_4. The Collision Deformation Classification (CDC) for the pole impact was 12FCEN2.

Interior Damage

The Dodge sustained minor interior damage as a result of intrusions, occupant loading, and occupant contacts. The windshield was cracked as a result of occupant contact and the remaining glazing was intact. The doors and rear hatch remained closed and operational. Evidence of occupant loading was located on the deployed left frontal air bag and IC air bag. Evidence of occupant contact was located on the instrument panel (IP), glove compartment door, and center console. The vehicle's occupant compartment was reduced in size due to intrusion of the front left door panel and left B-pillar. The

front left door panel was fractured in the upper forward quadrant. The front left safety belt pretensioners were actuated and the safety belt components revealed load marks.

Manual Restraints

The two seating positions of the front row were equipped with 3-point manual lap and shoulder safety belts using continuous loop webbing with sliding latch plates and adjustable D-rings. The safety belts were configured with dual buckle/retractor pretensioners. The driver's safety belt had an Emergency Locking Retractor (ELR) and the front right passenger's safety belt had a switchable ELR/Automatic Locking Retractor (ELR/ALR).

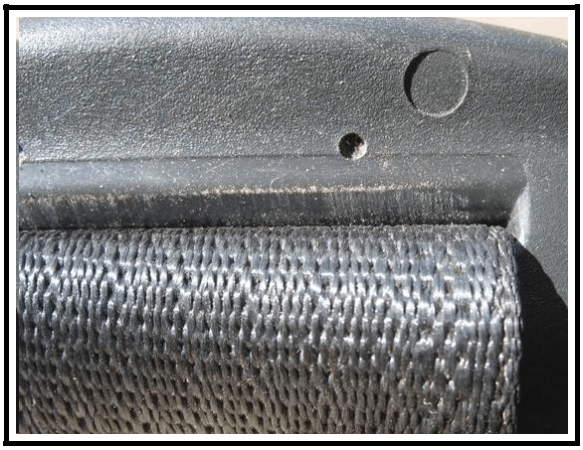

Figure 7. Evidence of occupant loading, driver's safety belt latch plate

The driver's safety belt D-ring was in the full-up position and the latch plate exhibited scratches indicating historical usage. The pretensioners had actuated during the crash and the belt was locked in the used position. The buckle stalk was compressed 3.0 cm (1.2 in) from its original length. The latch plate cover was scuffed on the plastic cover where the belt webbing was routed through (**Figure 7**) and the safety belt webbing was stretched beginning at the stop button and extending upward 25.0 cm (9.8 in). The safety belt webbing was frayed at 115.0 cm (45.3 in) above the stop button where it was routed through the D-ring. Based on the inspection it was determined that the safety belt was used to restrain the driver during the crash.

The front row passenger's seat was set to the mid-track position and the seat back was slightly reclined. The D-ring was set to the full-up position and the latch plate was scratched indicating historical usage. The pretensioners did not actuate during the crash and the belt was found in the stowed position. The safety belt webbing, latch plate and anchorage showed no evidence of occupant loading. Based on the inspection, it was determined that the safety belt was not used to restrain the front right occupant during the crash.

Supplemental Restraint System

The Dodge's Supplemental Restraint System (SRS) included an air bag control module (ACM), driver and passenger frontal air bags, combination side impact/rollover IC air bags, and safety belt pretensioners for the front row. The advanced dual-stage frontal air bags were designed to deploy according to impact severity. During the crash sequence, the left IC air bag and the driver's frontal air bag deployed (**Figure 8**). The left IC air bag deployed at impact during Event 1 and the left frontal air bag deployed during Event 3. The air bag deployment sequence was supported by the

CDR crash data for the subject vehicle which reported the most recent event.[3] During the frontal impact with the utility pole, the right passenger's frontal air bag did not deploy because the unrestrained occupant was displaced from his seated position during Event 1 and the Occupant Classification System suppressed the air bag based on weight recognition during Event 3.[4]

Figure 8. Deployed left frontal and IC air bags

The left IC air bag deployed from the roof side rail and extended from the A-pillar to the C-pillar. It measured 180.0 cm (70.9 in) in width and 45.0 cm (17.7 in) in height and covered the front and second row windows. A 20.0 cm (7.9 in) tether connected the leading edge of the air bag to the A-pillar. The inboard panel revealed a make-up and skin oil transfer deposited by the driver at impact. The transfers each measured 1.0 cm (0.4 in) in size and were 6.0 cm (2.3 in) apart. They were located 14.0 cm (5.5 in) below the top of the air bag and began 26.0 cm (10.2 in) from its leading edge.

The driver's frontal air bag deployed through two I-configured cover flaps in the steering wheel hub. The flaps opened at their tear points and were not damaged. The air bag was circular in shape and measured 50.0 cm (19.7 in) in diameter. It had two internal tethers that terminated at the center of the front panel. Two vent ports measuring 3.0 cm (1.2 in) in diameter were located at the 11 and 1 o'clock positions on the back panel.

The frontal air bag deployed at impact with the utility pole and the driver loaded the air bag as she was displaced forward. The air bag revealed a make-up transfer measuring 3.0 x 3.0 cm (1.2 x 1.2 in) in size that was located 10.0 cm (3.9 in) from the center of the front panel in the upper right quadrant. The lower left and right quadrants and the upper right quadrant of the front panel showed dried blood deposits. During the interview the driver did not clarify the source of the blood deposits. The driver and front right occupant each sustained scalp lacerations and the blood was possibly deposited by both occupants.

Event Data Recorder

The Dodge's Event Data Recorder (EDR) was imaged using the Bosch CDR Tool version 3.3 through the Data Link Connector (DLC) in the lower IP and was reported using verison 3.5.1. The ACM Configuration included the vehicle's air bags, safety belt pretensioners, front and side sensors,

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[3] Crash data is recorded for frontal deployments only on these vehicles; Bosch CDR Help/Chrysler Vehicle Coverage Note 4.

[4] "Occupant Classification System measures the conditions for activation or deactivation of the front passenger-side air bag based upon the weight of the occupant," Safety and Security Features Stand Out on All-new 2007 Dodge Nitro, Oct.1, 2006, http://www.media.chrysler.com

and Occupant Classification System. The Pre-Crash data was complete relative to the Most Recent Event, which was the pole impact (Event 3). The EDR recorded 5 seconds of Pre-Crash data that included Engine RPM, Vehicle Speed, Relative Throttle (%), Relative Accelerator Pedal (%), Raw Manifold Pressure (Volts), Brake Switch #1 Status (brake pedal), Brake Switch #2 Status (cruise control), ABS MIL (malfunction indicator lamp) Status, ESP[5] MIL Status, ESP Lamp Steady State Requested, ESP Lamp Flashing Requested, ESP Disabled, Traction Control Status, ETC (electronic throttle control) Lamp Status, Engine Torque Applied, and Cruise Control System Status. The Pre-Crash data was summarized as follows:

- At -5.0 seconds prior to Algorithm Enable (AE) vehicle speed was 52 km/h (32 mph).
- At -1.7 seconds prior to AE vehicle speed was 51 km/h (31 mph) and the Brake Switch #1 Status changed from Open to Closed.
- At -0.1 seconds prior to AE vehicle speed was 30 km/h (19 mph) and engine RPM speed was 0.
- At -1.5 seconds prior to AE the Electronic Stability Program Malfunction Indicator Lamp (ESP MIL) switched from Off to On.
- At -1.5 seconds prior to AE the ESP Lamp Steady State Requested switched from No to Yes. This was an indication that the ESP had reduced performance.
- The Traction Control On/Off Button Status was Enabled throughout the 5.0 seconds of recorded data.
- The ESP was Functional throughout the 5.0 seconds of recorded data.
- Cruise Control System Status was ON, and Cruise Control System Active was No throughout the 5.0 seconds of recorded data. This indicates that the system was not controlling vehicle speed.

The EDR recorded 250 ms of Longitudinal Crash Pulse data indicating the vehicle's longitudinal acceleration. The maximum recorded longitudinal acceleration was -19.61 (g) at 21 ms.

Vehicle Data - 1996 Buick Regal

The Buick was identified by VIN: 2G4WB52K8T1xxxxxx. The vehicle was a 4-door sedan equipped with a 6-cylinder, 3.8-liter engine, 4-wheel standard anti-lock brakes, and front wheel drive. The vehicle manufacturer recommended P205/R15 tires for the front and rear.

[5] Acronym for Electronic Stability Program. ESP data is transmitted to the ACM from the electronic brake module.

Occupant Demographics

	Driver
Age/Sex:	50 years / Female
Height:	160 cm (63 in)
Weight:	73 kg (161 lb)
Seat Type:	Bucket with adjustable head restraint
Seat Track Position:	Between forward and mid-track
Manual Restraint Usage:	Lap and shoulder belt used
Restraint Usage Source:	Vehicle inspection
Air Bag:	Frontal air bag and IC air bag deployed
Eyewear:	None
Alcohol/Drug Involvement:	None
Type of Medical Treatment	Transported, treated, and released

	Front Right Occupant
Age/Sex:	54 years / Male
Height:	180 cm (71 in)
Weight:	75 kg (165 lb)
Seat Type:	Bucket with adjustable head restraint
Seat Track Position:	Between mid- and rear-track
Manual Restraint Usage:	Lap and shoulder belt not used
Restraint Usage Source:	Vehicle inspection
Air Bag:	Frontal air bag and IC air bag not deployed
Eyewear:	None
Type of Medical Treatment	Transported, admitted for one day, and released

Occupant Kinematics

Driver

The 50-year-old female driver was seated in an upright posture and was restrained by the vehicle's lap and shoulder belt. The vehicle was traveling in the northbound lane at an EDR-reported speed of speed of 52 km/h (32 mph). At impact with the other vehicle, the left IC air bag deployed and the driver was displaced left and forward in response to the 10 o'clock direction of force. Following the first impact, the vehicles engaged in a secondary side slap impact and the driver was further displaced to the left in response to the direction of force.

During the two impacts, the driver contacted the left IC air bag with her face and head depositing make-up and skin oil transfers. Her left forearm loaded the armrest depositing an 8.0 cm (3.2 in) scuff to the component and contusing the arm. The driver compartment was reduced in size laterally from left side intrusion of the door panel and B-pillar.

At impact with the pole, the driver's frontal air bag deployed and her safety belt pretensioners actuated. She was displaced forward, her chest loaded the safety belt, and her face loaded the deployed frontal air bag. The safety belt components showed load marks and she sustained contusions to her left neck and chest from the safety belt webbing. The frontal air bag showed a make-up transfer and blood deposits. The driver's left hand probably contacted the left windshield resulting in a fracture of the glazing. The fracture was in a spider-web pattern and its center was located 10.0 cm (3.9 in) right of the left edge and 13.0 cm (5.1 in) from the windshield header. The driver's left lower leg contacted the lower left IP fracturing and displacing the cover panel. Her left lower leg sustained a contusion. Additionally, the driver sustained a minor right scalp laceration, possibly as a result of inter-occupant contact. Throughout the crash sequence, the driver was held in place in her seat by the vehicle's safety belt and actuated pretensioners.

Front Right Occupant

The 54-year-old male occupant was seated in an upright posture and was unrestrained. The occupant's safety belt pretensioner did not actuate during the crash and the safety belt did not show any sign of occupant loading. At impact with the other vehicle he was displaced left and forward from his seated position in response to the direction of force. His left hip and flank contacted the center console deforming the console top to the left and displacing the console base 3.0 cm (1.2 in) to the left. The occupant's left and right knees contacted the lower right IP depositing two scuff marks on the glove compartment door. The occupant's head possibly contacted the driver resulting in a minor laceration to his left posterior scalp. During the secondary side slap impact the occupant was again displaced to the right.

At impact with the utility pole, the front right occupant was not seated in a normal posture due to his being displaced from his seated position during the previous side impact. In response to the direction of force the occupant was displaced forward and his head contacted the middle IP depositing a 1.0 x 4.0 cm (0.4 x 1.6 in) scuff mark. He sustained a contusion to his left frontal scalp and a right cerebral subarachnoid hemorrhage. The right frontal air bag did not deploy during the pole impact because the occupant was out of position and the Occupant Classification System (OCS) suppressed the air bag based on weight recognition. The OCS in an exemplar vehicle was tested to determine

the time lapse between suppression and restoration of the passenger air bag. If the air bag is suppressed due to an occupant being out of position, approximately 3 seconds must pass before it can be restored after the occupant places sufficient weight on the seat cushion. If the air bag is suppressed due to insufficient occupant weight or an out of position occupant, the air bag remains suppressed for approximately 7 seconds after the occupant is completely displaced from the seat cushion. If the occupant is out of position and then returns to the seat and places sufficient weight on the cushion, the air bag remains suppressed for approximately 3 seconds before restoring the air bag switch to "On". In this crash, Events 1 and 3 occurred less than 2 seconds apart, which was insufficient time for the system to suppress the bag and then restore the switch to "On". After the vehicle came to rest, the front right occupant was removed from the vehicle by on-scene responders.

Occupant Injuries

Driver

The injury data was obtained from the driver's medical records and the interview.

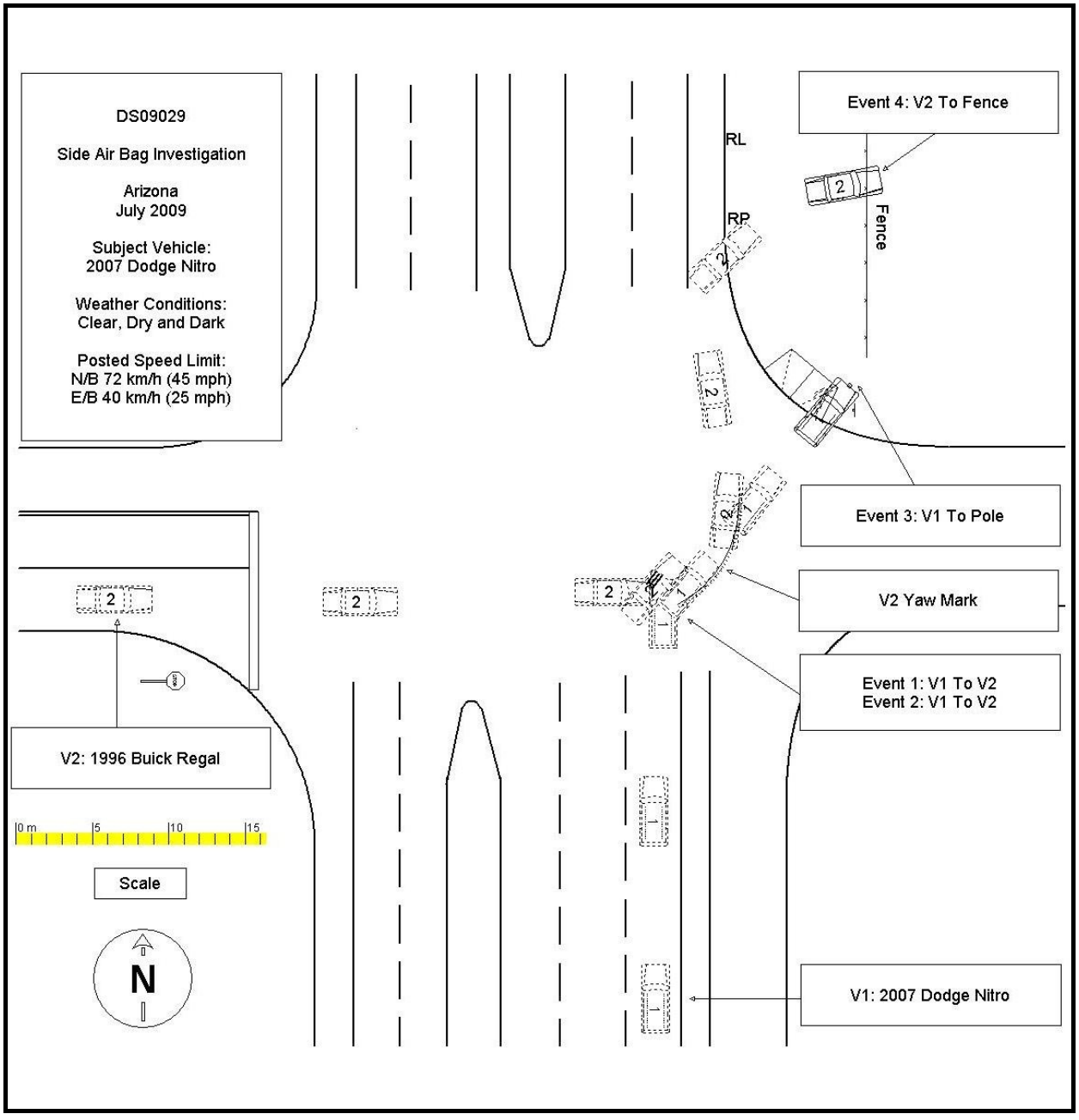
Injury	OIC Code	Injury Mechanism	Confidence Level
Laceration, minor, right scalp	190602.1,1	Front right occupant	Possible
Contusion, left neck	390402.1,2	Safety belt webbing	Certain
Contusion, left forearm	790402.1,2	Left door panel/armrest, forward upper quadrant	Probable
Contusion, left lower leg (shin)	890402.1,2	Lower left IP	Certain
Contusion, chest	490402.1,4	Safety belt webbing	Certain

Front Right Occupant

The injury data was obtained from the driver's medical records and the interview.

Injury	OIC Code	Injury Mechanism	Confidence Level
Laceration, 3.0 cm (1.2 in), minor, left posterior scalp (temporal/occiput)	190602.1,2	Driver	Possible
Subarachnoid hemorrhage NFS, cerebrum, right	140684.3,1	Right IP	Probable
Contusion, 2.0 x 3.0 cm (0.8 x 1.2 in) left frontal scalp	190402.1,2	Right IP	Probable
Contusion, back	690402.1,9	Unknown	Unknown

Attachment 1. Scene Diagram



Attachment 2. Bosch CDR Report

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	1D8GT28K97W******
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	
Saved on	
Collected with CDR version	Crash Data Retrieval Tool 3.3
Reported with CDR version	Crash Data Retrieval Tool 3.5.1
EDR Device Type	airbag control module
Event(s) recovered	Most Recent Event

Comments

No comments entered.

Data Limitations

AIRBAG CONTROL MODULE (ACM) DATA LIMITATIONS:

GENERAL INFORMATION:

CAUTION: During Bench top imaging, make sure the ACM is not moved, tilted or turned over while connected to and powered by the CDR Interface Module. 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 for bench top imaging could cause new events to be recorded in the ACM.

The ACM current fault status will be altered if the ACM is powered-up without having all of the other vehicle inputs connected (e.g., bench top imaging). This situation will occur when the CDR tool is connected directly to the ACM. This will not affect the stored fault data information in any of the Event Records. Always make a note in the CDR case comments section when an ACM bench top imaging process is being performed.

The recorded Deployment Event will contain Pre-Crash data.

- T0 (where '0' is subscript) (-.01 sec.) is defined as the last sample point in the vehicle data buffer when the ACM commanded a deployment for all vehicles except the 2008 - 2010 Dodge Grand Caravan, 2008-2010 Chrysler Town and Country and 2009-2010 Dodge Journey. In these vehicles, T0 (where '0' is subscript) is defined as the algorithm wakeup. Please note that the algorithm wakeup may be different for front, side, and roll-over events and their associated parameters.
- 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 can not be modified.

CDR FILE INFORMATION:

Event(s) Recovered definitions:

- None - There are no stored events in the Airbag Control Module (ACM)
- Not Retrievable - Event Data is 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 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)

CDR RECORD INFORMATION:

- If power to the ACM is lost during a deployment event, all or part of the event data record may not be recorded. Two scenarios may be recorded 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 Recorder Status.
- The Airbag Control Module Configuration indicates the inputs and outputs that the ACM for a particular vehicle monitors and/or controls.
- "Event Number" in the System Status at Event section of the report:
  - Indicates the event number per vehicle ignition cycle for:
    - 2010 - 2011 Sebring, Avenger, Caliber, Nitro, Compass, Liberty, Patriot, Wrangler, and Ram
  - Indicates the overall order of the events for all other applicable vehicles.
- "Total Number of Events Recorded" in the System Status at Event section of the report:
  - Stops incrementing when each event record is recorded by the ACM for:
    - 2010 - 2011 Sebring, Avenger, Caliber, Nitro, Compass, Liberty, Patriot, Wrangler, and Ram
  - Indicates the total number of events that the ACM has recorded for all other applicable vehicles.
- Active Head Restraint (AHR) - This refers to the active head restraint systems that are electronically controlled by the ACM.
- For applicable vehicles, a "Yes" for a particular item in the Deployment Command Data section of the report indicates that the ACM commanded the deployment of the associated device. Note: For 2010 MY vehicles equipped with AHR, the AHR deployment will not be recorded in the EDR.
- Vehicle Data (Pre-Crash) is transmitted to the Airbag Control Module, by various vehicle control modules, via the vehicle's communication network.
- 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.
- 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.
  - 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.
  - Speed, Vehicle Indicated is reported as an average of the drive wheels.
- On the 2008 - 2010 Dodge Grand Caravan, 2008-2010 Chrysler Town and Country and 2009-2010 Dodge Journey, the vehicle speed resolution is 2 kph. On all other vehicles, the resolution is 1 kph.
- The MIL (Malfunction Indicator Lamp) Status for the various recorded systems indicates the 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.

NOTE: A StarScan 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.

VEHICLE DATA DEFINITIONS:

Vehicle Event Recorder Status definitions:

- For additional definitions, please refer to the CDR Help File Glossary
- ABS MIL (if equip.) - 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.
- ESP MIL (if equip.) - This indicates the ESP/BAS fault indicator lamp status. It will only be "On" when there is a fault or thermal model shutdown in the ESP system. The ESP module DTC's should be read and recorded for final system interpretation.
- ESP Lamp (if equip.) - 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 equip.) - If "Yes", then an ESP, Traction Control or Trailer Sway Control (if equipped) event was active at the time of data capture.
- ESP Disabled (if equip.)- "Yes" indicates that ABS & ESP have been disabled by the driver or due to system performance.
- Traction Control Button (if equip.)- When the button is "ON", (driver has pushed the button), the Traction Control system is "Disabled". When the button is "OFF", the Traction Control system is "Enabled".
- ESP Functional/Active (if equip.)- "YES" indicates that the ESP system is functional and has no faults.
- Panic Brake Assist Active (if equip.)- "Yes" indicates that all four of the brake circuits are under going ABS control.
- Steering Input (deg) (if equip.):
  - Steering Input polarity is positive for right turns on:
    - 2005 - 2007 Grand Cherokee
    - 2006 - 2007 Commander
    - 2005 - 2010 300, Magnum, and Charger
    - 2008 - 2010 Challenger
  - Steering Input polarity is negative for right turns on:
    - All other vehicles and model years not specified above
- Yaw Rate (deg/sec) (if equip.): All vehicles have negative yaw rate when making a right turn.
- ETC Lamp - Lamp "ON "indicates there is an active Electronic Throttle DTC.
- ETC Lamp Flashing - If "Yes", then the ETC is in the limp-in mode.
- Engine Torque Applied - If "No", then 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.

- Tire 1 (2) Location (if equip.)- This indicates the location of the tire pressure sensor data. Default is used to indicate that the location of the tire pressure sensor is unknown or there is no tire pressure sensor in the 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 1 (2) Pressure Status (if equip.)- This indicates the actual pressure status of the Tire Location defined in the previous column. Possible values are LOW, NORMAL, HIGH, or SNA for this parameter. Vehicles with Base Tire Pressure Monitoring systems will display NORMAL even though these vehicles do not send actual pressure values across the communication bus.
- Tire 1 (2) Pressure (psi) (if equip.)- This indicates the actual tire pressure value of the Tire Location defined. 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.
- Cruise Control System - "On" indicates that the Cruise Control system is turned on.
  Cruise Control Active - "Yes" indicates the Cruise Control system is actively controlling vehicle speed. "No" indicates the system is NOT controlling vehicle speed.
- (if equip.) - If a parameter name is followed by the words (if equip.), then the parameter is only valid for vehicles equipped the associated parameter/vehicle system.

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 can always 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 can not be imaged by the CDR tool.
- For 2006 & 2007 MY, some PT Cruiser models may contain EDR data that can not be imaged by the CDR tool.
- 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

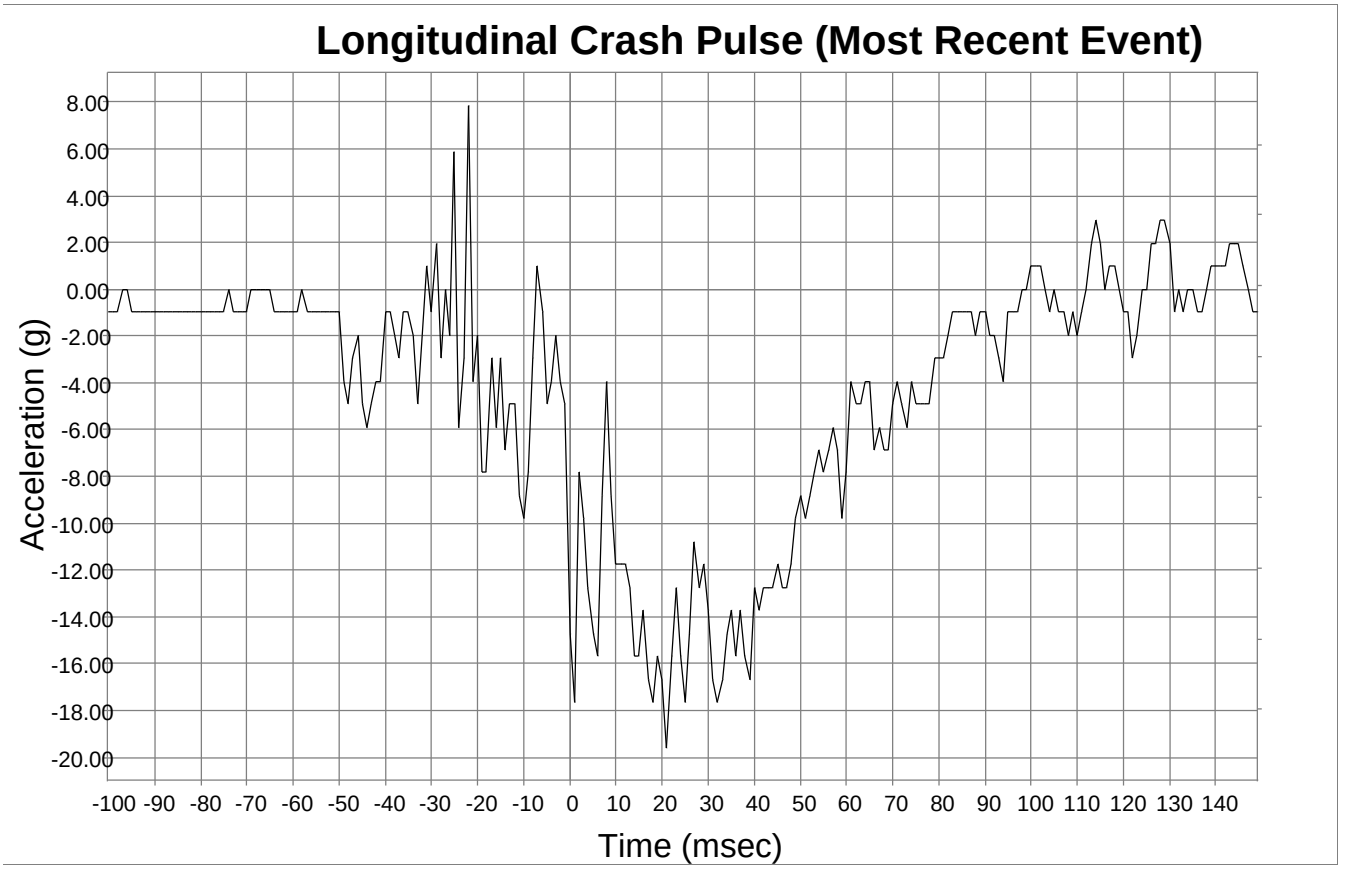
03001_Chrysler_r005

System Status at Retrieval

Original VIN	1D8GT28K97W******
Airbag Control Module Part Number	04896129AG
Airbag Control Module Serial Number	TL1ME056710430
Airbag Control Module Supplier	TRW

System Configuration at Retrieval

Configured for Driver Seatbelt Switch	No
Configured for Front Center Seatbelt Switch	No
Configured for Front Passenger Seatbelt Switch	No
Configured for 2nd Row Left Seatbelt Switch	No
Configured for 2nd Row Center Seatbelt Switch	No
Configured for 2nd Row Right Seatbelt Switch	No
Configured for 3rd Row Left Seatbelt Switch	No
Configured for 3rd Row Center Seatbelt Switch	No
Configured for 3rd Row Right Seatbelt Switch	No
Configured for Driver Knee Airbag	No
Configured for Left Curtain #1	Yes
Configured for Right Curtain #1	Yes
Configured for Left Curtain #2	No
Configured for Right Curtain #2	No
Configured for Front Driver Seatbelt Pretensioner	Yes
Configured for Front Center Seatbelt Pretensioner	No
Configured for Front Passenger Seatbelt Pretensioner	Yes
Configured for 2nd Row Left Seatbelt Pretensioner	No
Configured for 2nd Row Center Seatbelt Pretensioner	No
Configured for 2nd Row Right Seatbelt Pretensioner	No
Configured for 3rd Row Left Seatbelt Pretensioner	No
Configured for 3rd Row Center Seatbelt Pretensioner	No
Configured for 3rd Row Right Seatbelt Pretensioner	No
Configured for Left Side Sensor #1	Yes
Configured for Left Side Sensor #2	Yes
Configured for Left Side Sensor #3	No
Configured for Right Side Sensor #1	Yes
Configured for Right Side Sensor #2	Yes
Configured for Right Side Sensor #3	No
Configured for Left Up Front Sensor	Yes
Configured for Right Up Front Sensor	Yes
Configured for Front Driver Digressive Load Limiter	No
Configured for Front Passenger Digressive Load Limiter	No
Configured for Driver Seat Track Position Sensor	No
Configured for Front Passenger Seat Track Position Sensor	No
Configured for Passenger Airbag Disable Switch	No
Configured for Front Passenger Occupant Classification System	Yes
Configured for Right Side Thorax	No
Configured for Left Side Thorax	No
Configured for Passenger Knee Airbag	No
Configured for Passenger Belt Tension Sensor	No
Configured for Driver Belt Tension Sensor	No
Configured for Occupant Detection Sensor	No
Configured for DOC Disable Switch	No

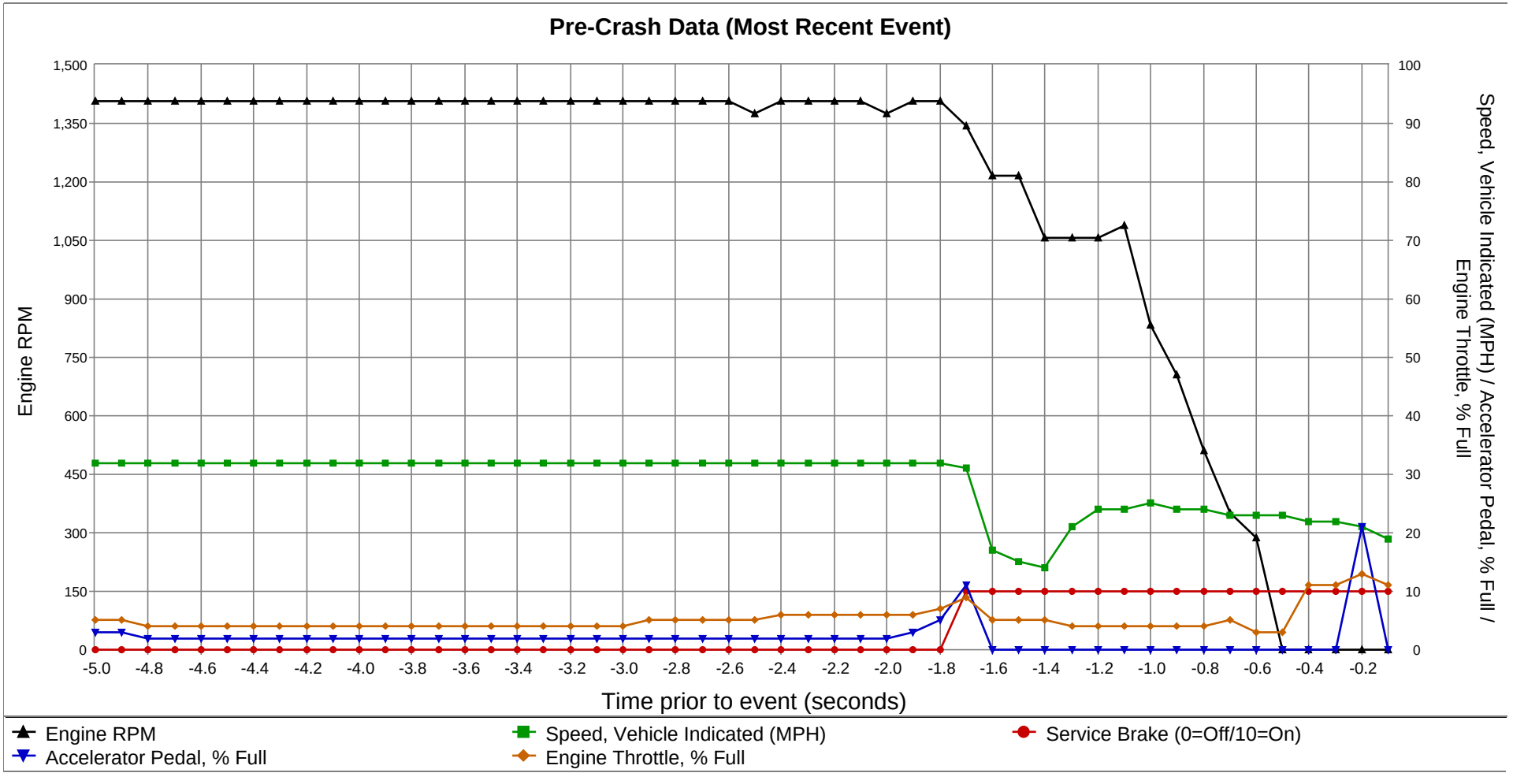

Longitudinal Crash Pulse (Most Recent Event)
Acceleration (g)
8.00
6.00
4.00
2.00
0.00
-2.00
-4.00
-6.00
-8.00
-10.00
-12.00
-14.00
-16.00
-18.00
-20.00
-100 -90 -80 -70 -60 -50 -40 -30 -20 -10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140
Time (msec)

Longitudinal Crash Pulse (Most Recent Event)

Time (msec)	Longitudinal Acceleration (g)	Time (msec)	Longitudinal Acceleration (g)	Time (msec)	Longitudinal Acceleration (g)
-100	-0.98	-50	-0.98	0	-14.71
-99	-0.98	-49	-3.92	1	-17.65
-98	-0.98	-48	-4.90	2	-7.84
-97	0.00	-47	-2.94	3	-9.80
-96	0.00	-46	-1.96	4	-12.75
-95	-0.98	-45	-4.90	5	-14.71
-94	-0.98	-44	-5.88	6	-15.69
-93	-0.98	-43	-4.90	7	-8.82
-92	-0.98	-42	-3.92	8	-3.92
-91	-0.98	-41	-3.92	9	-8.82
-90	-0.98	-40	-0.98	10	-11.76
-89	-0.98	-39	-0.98	11	-11.76
-88	-0.98	-38	-1.96	12	-11.76
-87	-0.98	-37	-2.94	13	-12.75
-86	-0.98	-36	-0.98	14	-15.69
-85	-0.98	-35	-0.98	15	-15.69
-84	-0.98	-34	-1.96	16	-13.73
-83	-0.98	-33	-4.90	17	-16.67
-82	-0.98	-32	-1.96	18	-17.65
-81	-0.98	-31	0.98	19	-15.69
-80	-0.98	-30	-0.98	20	-16.67
-79	-0.98	-29	1.96	21	-19.61
-78	-0.98	-28	-2.94	22	-15.69
-77	-0.98	-27	0.00	23	-12.75
-76	-0.98	-26	-1.96	24	-15.69
-75	-0.98	-25	5.88	25	-17.65
-74	0.00	-24	-5.88	26	-14.71
-73	-0.98	-23	-2.94	27	-10.78
-72	-0.98	-22	7.84	28	-12.75
-71	-0.98	-21	-3.92	29	-11.76
-70	-0.98	-20	-1.96	30	-13.73
-69	0.00	-19	-7.84	31	-16.67
-68	0.00	-18	-7.84	32	-17.65
-67	0.00	-17	-2.94	33	-16.67
-66	0.00	-16	-5.88	34	-14.71
-65	0.00	-15	-2.94	35	-13.73
-64	-0.98	-14	-6.86	36	-15.69
-63	-0.98	-13	-4.90	37	-13.73
-62	-0.98	-12	-4.90	38	-15.69
-61	-0.98	-11	-8.82	39	-16.67
-60	-0.98	-10	-9.80	40	-12.75
-59	-0.98	-9	-7.84	41	-13.73
-58	0.00	-8	-2.94	42	-12.75
-57	-0.98	-7	0.98	43	-12.75
-56	-0.98	-6	-0.98	44	-12.75
-55	-0.98	-5	-4.90	45	-11.76
-54	-0.98	-4	-3.92	46	-12.75
-53	-0.98	-3	-1.96	47	-12.75
-52	-0.98	-2	-3.92	48	-11.76
-51	-0.98	-1	-4.90	49	-9.80

Longitudinal Crash Pulse (Most Recent Event)

Time (msec)	Longitudinal Acceleration (g)	Time (msec)	Longitudinal Acceleration (g)
50	-8.82	100	0.98
51	-9.80	101	0.98
52	-8.82	102	0.98
53	-7.84	103	0.00
54	-6.86	104	-0.98
55	-7.84	105	0.00
56	-6.86	106	-0.98
57	-5.88	107	-0.98
58	-6.86	108	-1.96
59	-9.80	109	-0.98
60	-7.84	110	-1.96
61	-3.92	111	-0.98
62	-4.90	112	0.00
63	-4.90	113	1.96
64	-3.92	114	2.94
65	-3.92	115	1.96
66	-6.86	116	0.00
67	-5.88	117	0.98
68	-6.86	118	0.98
69	-6.86	119	0.00
70	-4.90	120	-0.98
71	-3.92	121	-0.98
72	-4.90	122	-2.94
73	-5.88	123	-1.96
74	-3.92	124	0.00
75	-4.90	125	0.00
76	-4.90	126	1.96
77	-4.90	127	1.96
78	-4.90	128	2.94
79	-2.94	129	2.94
80	-2.94	130	1.96
81	-2.94	131	-0.98
82	-1.96	132	0.00
83	-0.98	133	-0.98
84	-0.98	134	0.00
85	-0.98	135	0.00
86	-0.98	136	-0.98
87	-0.98	137	-0.98
88	-1.96	138	0.00
89	-0.98	139	0.98
90	-0.98	140	0.98
91	-1.96	141	0.98
92	-1.96	142	0.98
93	-2.94	143	1.96
94	-3.92	144	1.96
95	-0.98	145	1.96
96	-0.98	146	0.98
97	-0.98	147	0.00
98	0.00	148	-0.98
99	0.00	149	-0.98


Pre-Crash Data (Most Recent Event)
Engine RPM
Speed, Vehicle Indicated (MPH) / Accelerator Pedal, % Full / Engine Throttle, % Full
Time prior to event (seconds)
1,500
1,350
1,200
1,050
900
750
600
450
300
150
0
100
90
80
70
60
50
40
30
20
10
0
-5.0 -4.8 -4.6 -4.4 -4.2 -4.0 -3.8 -3.6 -3.4 -3.2 -3.0 -2.8 -2.6 -2.4 -2.2 -2.0 -1.8 -1.6 -1.4 -1.2 -1.0 -0.8 -0.6 -0.4 -0.2
Engine RPM
Accelerator Pedal, % Full
Speed, Vehicle Indicated (MPH)
Engine Throttle, % Full
Service Brake (0=Off/10=On)

Pre-Crash Data (Most Recent Event - table 1 of 3)

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

Time Stamp (sec)	Vehicle Event Recorder Status	Engine RPM	Speed, Vehicle Indicated (MPH [km/h])	Engine Throttle, % Full	Accelerator Pedal, % Full	Raw Manifold Pressure (kPa)	Service Brake	Brake Switch #2 Status
-5.0	Complete	1,408	32 [52]	4.7	2.8	34	Off	Open
-4.9	Complete	1,408	32 [52]	4.7	2.8	33	Off	Open
-4.8	Complete	1,408	32 [52]	4.3	2.4	33	Off	Open
-4.7	Complete	1,408	32 [52]	4.3	2.4	32	Off	Open
-4.6	Complete	1,408	32 [52]	4.3	2.4	32	Off	Open
-4.5	Complete	1,408	32 [52]	4.3	2.4	31	Off	Open
-4.4	Complete	1,408	32 [52]	4.3	2.4	31	Off	Open
-4.3	Complete	1,408	32 [52]	4.3	2.4	31	Off	Open
-4.2	Complete	1,408	32 [52]	4.3	2.4	31	Off	Open
-4.1	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-4.0	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.9	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.8	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.7	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.6	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.5	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.4	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.3	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.2	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.1	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-3.0	Complete	1,408	32 [52]	4.3	2.4	30	Off	Open
-2.9	Complete	1,408	32 [52]	4.7	2.4	30	Off	Open
-2.8	Complete	1,408	32 [52]	4.7	2.4	30	Off	Open
-2.7	Complete	1,408	32 [52]	4.7	2.4	31	Off	Open
-2.6	Complete	1,408	32 [52]	4.7	2.4	31	Off	Open
-2.5	Complete	1,376	32 [52]	4.7	2.4	31	Off	Open
-2.4	Complete	1,408	32 [52]	5.5	2.4	32	Off	Open
-2.3	Complete	1,408	32 [52]	5.5	2.4	34	Off	Open
-2.2	Complete	1,408	32 [52]	5.5	2.4	34	Off	Open
-2.1	Complete	1,408	32 [52]	5.5	2.4	35	Off	Open
-2.0	Complete	1,376	32 [51]	5.9	2.4	36	Off	Open
-1.9	Complete	1,408	32 [51]	5.9	2.8	37	Off	Open
-1.8	Complete	1,408	32 [51]	7.5	5.1	38	Off	Open
-1.7	Complete	1,344	31 [50]	8.7	11.4	42	On	Closed
-1.6	Complete	1,216	17 [27]	4.7	0.0	43	On	Closed
-1.5	Complete	1,216	15 [24]	4.7	0.0	39	On	Open
-1.4	Complete	1,056	14 [23]	4.7	0.0	38	On	Open
-1.3	Complete	1,056	21 [34]	4.3	0.0	38	On	Open
-1.2	Complete	1,056	24 [38]	4.3	0.0	37	On	Open
-1.1	Complete	1,088	24 [39]	4.3	0.0	35	On	Open
-1.0	Complete	832	25 [40]	4.3	0.0	34	On	Open
-0.9	Complete	704	24 [39]	3.9	0.0	37	On	Open
-0.8	Complete	512	24 [38]	4.3	0.0	38	On	Open
-0.7	Complete	352	23 [37]	4.7	0.0	42	On	Open
-0.6	Complete	288	23 [37]	3.1	0.0	47	On	Open
-0.5	Complete	0	23 [37]	3.1	0.0	47	On	Open
-0.4	Complete	0	22 [36]	10.6	0.0	73	On	Open
-0.3	Complete	0	22 [36]	10.6	0.0	88	On	Open
-0.2	Complete	0	21 [34]	13.4	20.9	92	On	Closed
-0.1	Complete	0	19 [30]	11.4	0.0	92	On	Open

Pre-Crash Data (Most Recent Event - table 2 of 3)

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

Time Stamp (sec)	ABS MIL (if equip.)	ESP MIL (if equip.)	ESP Lamp (if equip.)	ESP Lamp Flashing Requested (if equip.)	ESP Disabled (if equip.)	ESP Functional (if equip.)
-5.0	Off	Off	Off	No	No	Yes
-4.9	Off	Off	Off	No	No	Yes
-4.8	Off	Off	Off	No	No	Yes
-4.7	Off	Off	Off	No	No	Yes
-4.6	Off	Off	Off	No	No	Yes
-4.5	Off	Off	Off	No	No	Yes
-4.4	Off	Off	Off	No	No	Yes
-4.3	Off	Off	Off	No	No	Yes
-4.2	Off	Off	Off	No	No	Yes
-4.1	Off	Off	Off	No	No	Yes
-4.0	Off	Off	Off	No	No	Yes
-3.9	Off	Off	Off	No	No	Yes
-3.8	Off	Off	Off	No	No	Yes
-3.7	Off	Off	Off	No	No	Yes
-3.6	Off	Off	Off	No	No	Yes
-3.5	Off	Off	Off	No	No	Yes
-3.4	Off	Off	Off	No	No	Yes
-3.3	Off	Off	Off	No	No	Yes
-3.2	Off	Off	Off	No	No	Yes
-3.1	Off	Off	Off	No	No	Yes
-3.0	Off	Off	Off	No	No	Yes
-2.9	Off	Off	Off	No	No	Yes
-2.8	Off	Off	Off	No	No	Yes
-2.7	Off	Off	Off	No	No	Yes
-2.6	Off	Off	Off	No	No	Yes
-2.5	Off	Off	Off	No	No	Yes
-2.4	Off	Off	Off	No	No	Yes
-2.3	Off	Off	Off	No	No	Yes
-2.2	Off	Off	Off	No	No	Yes
-2.1	Off	Off	Off	No	No	Yes
-2.0	Off	Off	Off	No	No	Yes
-1.9	Off	Off	Off	No	No	Yes
-1.8	Off	Off	Off	No	No	Yes
-1.7	Off	Off	Off	No	No	Yes
-1.6	Off	Off	Off	No	No	Yes
-1.5	Off	On	On	No	No	Yes
-1.4	Off	On	On	No	No	Yes
-1.3	Off	On	On	No	No	Yes
-1.2	Off	On	On	No	No	Yes
-1.1	Off	On	On	No	No	Yes
-1.0	Off	On	On	No	No	Yes
-0.9	Off	On	On	No	No	Yes
-0.8	Off	On	On	No	No	Yes
-0.7	Off	On	On	No	No	Yes
-0.6	Off	On	On	No	No	Yes
-0.5	Off	On	On	No	No	Yes
-0.4	Off	On	On	No	No	Yes
-0.3	Off	On	On	No	No	Yes
-0.2	Off	On	On	No	No	Yes
-0.1	Off	On	On	No	No	Yes

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

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

Time Stamp (sec)	ETC Lamp (if equip.)	ETC Lamp Flashing (if equip.)	Engine Torque Applied	Cruise Control System	Cruise Control Active
-5.0	Off	No	Yes	On	No
-4.9	Off	No	Yes	On	No
-4.8	Off	No	Yes	On	No
-4.7	Off	No	Yes	On	No
-4.6	Off	No	Yes	On	No
-4.5	Off	No	Yes	On	No
-4.4	Off	No	Yes	On	No
-4.3	Off	No	Yes	On	No
-4.2	Off	No	Yes	On	No
-4.1	Off	No	Yes	On	No
-4.0	Off	No	Yes	On	No
-3.9	Off	No	Yes	On	No
-3.8	Off	No	Yes	On	No
-3.7	Off	No	Yes	On	No
-3.6	Off	No	Yes	On	No
-3.5	Off	No	Yes	On	No
-3.4	Off	No	Yes	On	No
-3.3	Off	No	Yes	On	No
-3.2	Off	No	Yes	On	No
-3.1	Off	No	Yes	On	No
-3.0	Off	No	Yes	On	No
-2.9	Off	No	Yes	On	No
-2.8	Off	No	Yes	On	No
-2.7	Off	No	Yes	On	No
-2.6	Off	No	Yes	On	No
-2.5	Off	No	Yes	On	No
-2.4	Off	No	Yes	On	No
-2.3	Off	No	Yes	On	No
-2.2	Off	No	Yes	On	No
-2.1	Off	No	Yes	On	No
-2.0	Off	No	Yes	On	No
-1.9	Off	No	Yes	On	No
-1.8	Off	No	Yes	On	No
-1.7	Off	No	Yes	On	No
-1.6	Off	No	Yes	On	No
-1.5	Off	No	Yes	On	No
-1.4	Off	No	Yes	On	No
-1.3	Off	No	Yes	On	No
-1.2	Off	No	Yes	On	No
-1.1	Off	No	Yes	On	No
-1.0	Off	No	Yes	On	No
-0.9	Off	No	Yes	On	No
-0.8	Off	No	Yes	On	No
-0.7	Off	No	Yes	On	No
-0.6	Off	No	Yes	On	No
-0.5	Off	No	Yes	On	No
-0.4	Off	No	Yes	On	No
-0.3	Off	No	Yes	On	No
-0.2	Off	No	Yes	On	No
-0.1	Off	No	Yes	On	No