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**Special Crash Investigations:
On-Site Move-Over-Law Crash
Investigation;
Vehicle: 2019 Dodge Charger;
Location: New York;
Crash Date: September 2020**

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16. Abstract This report documents the Move-Over-Law crash investigation involving a 2019 Dodge Charger Police Interceptor rear-ended by a 2020 Chevrolet Tahoe. The Dodge, driven by an unbelted 42-year-old female trooper of the State Police, was parked with the engine running near the right shoulder of a limited-access roadway straddling the fog line. It had its rear-facing emergency warning lights illuminated to warn oncoming traffic. The trooper had responded to the single-vehicle crash of a medium/heavy truck disabled on the right roadside and was on-site during its tow operations at the time of the crash. The rear-end impact displaced the Dodge forward into a secondary impact with the truck and the concrete retaining wall at the right side of the roadway. This deployed the driver frontal and knee air bags. The trooper sustained police-reported possible (C-level) injuries and was transported by ambulance to a trauma center. The Chevrolet Tahoe's unbelted 25-year-old male driver was also transported by ambulance to a trauma center with police-reported possible (C-level) injuries. The Chevrolet's belted 19-year-old female passenger was not injured or transported.			
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Special Crash Investigations
On-Site Move-Over-Law Crash Investigation
Case No.: CR20031
Vehicle: 2019 Dodge Charger Police Interceptor
Location: New York
Crash Date: September 2020

Background

This report documents the Move-Over-Law crash investigation involving a 2019 Dodge Charger Police Interceptor belonging to the New York State Police (Figure 1) rear-ended by a 2020 Chevrolet Tahoe (Figure 2). The Dodge, driven by an unbelted 42-year-old female trooper, was parked with the engine running near the right shoulder of a limited-access roadway straddling the fog line. Its rear-facing emergency warning lights were illuminated to warn oncoming traffic. The trooper had responded to the single-vehicle crash of a medium/heavy straight truck that became disabled on the right roadside and was on-site during its tow operations at the time of the crash.

The impact displaced the Dodge forward into a secondary impact with the truck and the concrete retaining wall at the right side of the roadway, resulting in deployment of the driver's front and knee air bags. The trooper sustained police-reported possible (C-level) injuries and was transported by ambulance to a trauma center. The Chevrolet's unbelted 25-year-old male driver was also transported by ambulance to a trauma center with police-reported possible (C-level) injuries. The Chevrolet's belted 19-year-old female passenger was not injured or transported.



Figure 1. Left rear oblique of struck Dodge Charger Police Interceptor after post-crash movement (online police image)

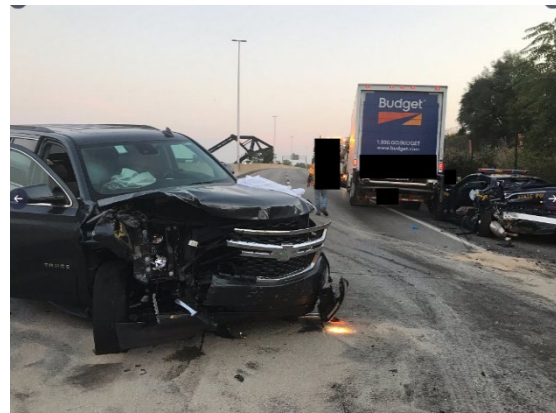


Figure 2. Right front oblique view of the damaged Chevrolet Tahoe (online police image)

The National Highway Traffic Safety Administration identified the crash through a search of the internet news media and assigned an on-site investigation to the Special Crash Investigations team at Crash Research & Analysis, Inc., in September 2020. The investigation was conducted for NHTSA's Enforcement and Justice Services Division for its research into Move-Over-Law crashes. The SCI team contacted the investigating police department's Crash Reconstruction Unit and established cooperation for an inspection of the vehicles. The on-site portion of this investigation was conducted in October 2020.

On-site investigation included exterior inspections of the Dodge and Chevrolet to document the collision damage. The Dodge's interior was also inspected to determine intrusion and occupant contact evidence, and to document the vehicle's manual and supplemental restraint systems. Data were imaged from the event data recorders (EDR) of both the Dodge and the Chevrolet using the Bosch Crash Data Retrieval (CDR) tool and software. The SCI investigator also documented the crash site using digital photographs. The narrow and below-grade road configuration was not measured by total station due to safety concerns.

Legal Statutes Governing Vehicle Movements Around Emergency Vehicles and Driver Responsibility

New York's Move-Over Law, VTL 1144-A (a), was enacted in November 2016 and requires motorists, if they can safely do so, to move one lane away from any law enforcement or other emergency vehicle on the side of the roadway. The law includes utility vehicles that are on the side of the road restoring electrical service during an unplanned event such as a hurricane or ice storm. Motorists are required to move over to another lane on a multi-lane highway or slow down on a two-lane roadway and do so safely, while maintaining a safe speed.

Summary

Crash Site

This crash occurred during the morning in dark but lighted conditions. The limited-access roadway was artificially lighted by overhead luminaires mounted on the median barrier. At the time of the crash, the National Weather Service reported the conditions as clear skies, a temperature of 15 °C (59 °F), 81 percent relative humidity, and south winds at 4 km/h (6 mph).

This multi-vehicle crash occurred in the northbound travel lanes of the roadway (Figure 3). The roadway consisted of two lanes in both the north and south directions that were physically separated by a concrete jersey-style median barrier. The bituminous northbound travel lanes were approximately 3.6 m (12 ft) in width and were bordered by paved shoulders. The approximate widths of the east and west shoulder were 2.7 m (9 ft) and 1 m (3 ft), respectively. The lane and shoulder widths were scaled from satellite imagery. The east shoulder terminated at a concrete retaining wall that supported an earth embankment. The two northbound travel lanes were separated by broken white lines. Pavement edge markings consisted of a solid white line at the right shoulder and a solid yellow line at the left shoulder. In the vicinity of the crash, the travel lanes were straight and level with a posted speed limit of 89 km/h (55 mph). A crash diagram is included at the end of this report.

Pre-Crash

Earlier on the morning of the crash, a truck had a single-vehicle crash and became disabled on the right side of the roadway. In response, the Dodge police vehicle arrived on-scene and parked behind the disabled truck, straddling the white edge line with its engine running and its emergency lights illuminated to warn approaching traffic. The 42-year-old female trooper was in the driver seat and was not belted. A tow truck was on-site, forward of the truck, and in the process of hooking up to the truck to tow it away. As these activities were occurring, the Chevrolet approached in the left lane. It was driven by the belted 25-year-old male with a belted 19-year-old female front passenger. The police investigation determined the driver fell asleep and the Chevrolet drifted into the right lane. The EDR-reported travel speed of the Chevrolet 5.0 seconds prior to algorithm enable was 87 km/h (54 mph). No pre-crash avoidance actions were recorded by the EDR.



Figure 3. Northbound trajectory view at the crash site

Crash

The front plane/right aspect of the Chevrolet struck the back plane/left aspect of the Dodge (Event 1). The force of the impact and its offset location at the back left aspect displaced the Dodge forward with a counterclockwise rotation. The Dodge slid forward approximately 7.6 m (25 ft) and the front plane/center aspect of the Dodge struck and fractured the right rear wheel assembly of the truck (Event 2). The right plane/back aspect of the Dodge struck the barrier wall (Event 3) and the vehicle came to rest facing northwest. Figure 4 is an on-scene image of the final rest positions of the truck and Dodge taken by the tow truck operator.

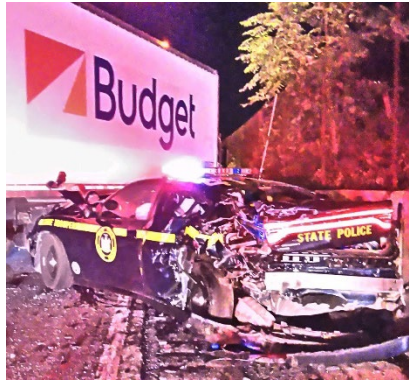


Figure 4. On-scene image supplied by the tow operator of the truck and Dodge at final rest

The Chevrolet separated from the Event 1 impact with a clockwise rotation and northeast trajectory. The Chevrolet slid approximately 13.1 m (43 ft) and rotated approximately 120 degrees across the left northbound lane. The right back corner of the Chevrolet struck the center barrier (Event 4). At final rest, the Chevrolet was blocking the left northbound lane facing southeast.

Post-Crash

Additional police units and ambulances responded to the scene. The northbound lanes of the roadway were entirely blocked by the three vehicles. The tow truck driver completed his hook-up to the disabled truck and towed that vehicle forward. As the truck was moved forward toward the shoulder, its right plane and bed frame engaged the left plane/forward aspect of the Dodge. This engagement resulted in post-collision damage to the left fender of the Dodge as the truck was pulled northward. During the displacement of the truck, the Dodge rotated clockwise and was displaced onto the shoulder as shown in Figure 1 above.

The first responders removed the left front door of the Dodge and attended to the trooper. She was removed from the vehicle and transported to a nearby trauma center with police-reported possible (C-level) injuries. The Chevrolet driver was transported by ambulance with police-reported possible (C-level) injuries. The Chevrolet passenger was not injured.

2019 Dodge Charger

Description

The Dodge police vehicle (Figure 5) was an all-wheel-drive, 5-passenger, 4-door sedan with the VIN 2C3CDXKT2KHxxxxxx. The State Police patrol vehicle was outfitted with the police interceptor package. The powertrain was a 5.7-liter, 8-cylinder engine linked to a shifttable 8-speed automatic transmission. The wheelbase measured 305 cm (120.2 in). The Dodge's curb weight was 1,886 kg (4,158 lb) and had a gross vehicle weight rating (GVWR) of 2,495 kg (5,500 lb). The Dodge had 4-wheel antilock brakes, emergency braking assist, electronic stability control, electronic brakeforce distribution, traction control, and an aftermarket push bar mounted on the front of the vehicle. The vehicle had Goodyear Eagle RS-A tires, all size 245/55R18 and all in good condition with tread 6 mm (8/32 in) or greater. The EDR-reported odometer reading was 18,984 km (11,796 miles).

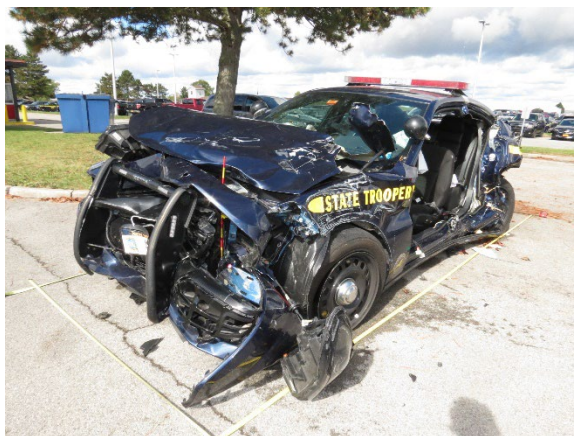


Figure 5. Front left oblique view of the Dodge

Conspicuity and Emergency Vehicle Lighting

The Dodge was completed as a law enforcement patrol vehicle outfitted with a complement of emergency vehicle warning lights, high-decibel siren, and communications equipment. The exterior was painted with the blue and yellow scheme that identified the State Police. Its logo was affixed to the panel of the left and right front doors. The unit number of the vehicle was painted on the roof and affixed to the front and rear license plates.

Emergency lighting equipment was installed on the vehicle and provided 360-degree visibility. Primary warning lighting was achieved by LED light bars mounted to the roof and on the interior package shelf forward of the backlight. The roof bar was identified as a 112 cm (44 in) Whelen Liberty II¹ and was populated with eight forward-facing and eight rear-facing light modules. The modules were red, amber, and blue. The interior light bar was the Whelen Dominator Traffic Advisor TIR3 populated with eight amber lights. The light system was controlled by a switch-panel mounted in the center console. The flash pattern was variable, dependent on the transmission position (park versus drive) and application of the brake pedal. The taillights were also incorporated into a warning mode.

¹ Whelen Engineering Company, Inc., Chester, CT

In the parked position with the brakes off, the roof light bar flashed an alternating sequence of the outer and inner light pairs. The interior traffic advisor flashed an alternating sequence randomized over time and the two taillights alternately off and on. Figures 6 and 7 show the flash pattern at two instances in the sequence.



Figure 6. Rear view showing the emergency warning light pattern on a parked exemplar Dodge



Figure 7. Rear view of an exemplar Dodge showing the alternating pattern

Exterior Damage

The Dodge sustained damage to the back and left planes during the impact with the Chevrolet (Event 1). The direct contact damage began on the left aspect of the back plane and wrapped onto the left plane due to the offset impact configuration. The components involved in the collision involved the rear bumper, the trunk and trunk lid, the left quarter panel, the left rear wheel assembly, both left rear doors, and left B-pillar (Figure 8). The direct damage began 30 cm (11.8 in) left of center and extended 46 cm (18.1 in) to the back left corner. Crush measurements were documented along the bumper beam with a field L measuring 120 cm (47.2 in). The residual crush values were: C1 = 71 cm (28.0 in), C2 = 61 cm (24.0 in), C3 = 46 cm (18.1 in), C4 = 31 cm (12.2 in), C5 = 15 cm (5.9 in), C6 = 0 cm. The maximum crush was 71 cm (28.0 in) occurring at the left rear corner. The left wheelbase was reduced 29 cm (11.4 in). The collision deformation classification (CDC) assigned to this damage pattern was 06BLEW5. The damage algorithm of the WinSMASH program was used to calculate the severity of the crash. The Dodge's total delta V was 33 km/h (20.5 mph). The longitudinal and lateral velocity ranges were 32 km/h (19.9 mph) and 6 km/h (3.7 mph). Analysis of the crash fit the collision model and the results were considered reasonable.



Figure 8. Back left oblique view of the Dodge

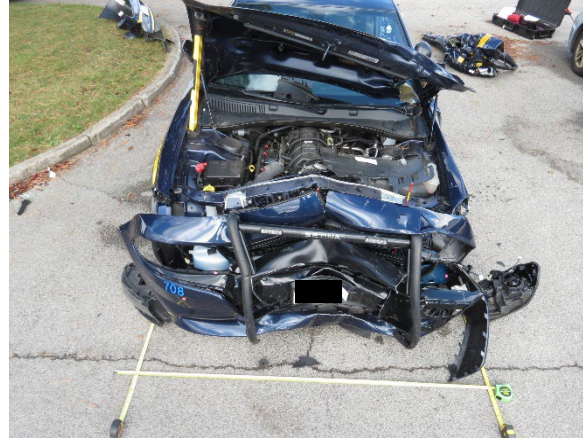


Figure 9. Front view of the Dodge showing the Event 2 damage

The front plane/center aspect of the Dodge (Figure 9) struck the right rear wheel assembly and axle of the truck. The damaged components included the aftermarket front push-bumper, the OEM bumper fascia and reinforcement, grille, hood, and left headlamp assembly. The direct contact damage began 15 cm (5.9 in) right of center and extended 91 cm (35.8 in) to the left front corner. Crush measurements were documented along the bumper reinforcement with a field L measuring 142 cm (55.9 in). The residual crush values were: C1 = 15 cm (5.9 in), C2 = 21 cm (8.3 in), C3 = 27 cm (10.6 in), C4 = 23 cm (9.1 in), C5 = 5 cm (2.0 in), C6 = 0 cm. The maximum crush was located at the centerline of the vehicle and measured 27 cm (10.6 in). The CDC assigned to the damage pattern was 12FYEW2. Abrasions to the top surfaces of the hood and fender were attributed to contact with the underside of the truck frame. Analysis of this impact was out of scope for the WinSMASH program due to the addition of the aftermarket push-bumper to the front of the vehicle which altered its stiffness properties. For reference, the barrier algorithm of the WinSMASH program calculated a barrier equivalent speed (BES) of 27 km/h (17 mph). These results were considered borderline.

The right plane/back aspect sustained an isolated area of contact adjacent to the right taillight due to the vehicle's rotation into the barrier wall. The severity of the damage was minor. The damage pattern measured approximately 30 cm x 8 cm (12 in x 3 in), width by height, and had a maximum estimated depth of 3 cm (1 in). The assigned CDC was 03RBEN1.

Event Data Recorder

The Dodge had an air bag control module on the center tunnel of the vehicle under the center instrument stack that provided diagnostic, sensing, and deployment/actuation of the vehicle's supplemental safety systems. The module also had EDR capabilities.

The data recorded by the EDR component was imaged at the time of the SCI inspection using the Bosch Crash Data Retrieval tool and a direct to module connection. Twelve-volt electrical power was supplied externally via a portable supply box. The data were imaged with software version 19.5 at the time of the SCI inspection and are reported with software version 21.5.1. The imaged data are included at the end of this report as Appendix A.

The module was capable of sensing and recording bi-directional (planar) acceleration and angular rate data during crash events. Acceleration data (ΔV) were recorded for 300

milliseconds after algorithm enable (AE). Angular rate data were recorded for 2,400 milliseconds before AE to 2,400 milliseconds after AE. An event was stored when the severity (delta V) was approximately 8 km/h (5 mph) or greater within a 150-millisecond interval. An event could be designated a non-deployment or a deployment depending upon its severity. Non-deployment events reached the 8 km/h (5 mph)/150-millisecond threshold to warrant recording, but were not considered severe enough to require the deployment of a safety system. Non-deployment events could be overwritten by a subsequent event. Deployment events resulted in the actuation or deployment of a supplemental system. Deployment events were locked and could not be overwritten. The EDR had the capacity to record several events. These events, in chronological order, were termed the Second Prior Event, First Prior Event, and the Most Recent Event. The EDR was configured with an Event Counter field that counted the total number of cumulative recorded events and also incorporated an Operation System Timer that measured the cumulative time the module was powered at the time of each recorded event. Each recorded event also included an associated 5-second buffer of pre-crash vehicle systems data that included elements such as vehicle speed, engine rpm, throttle percentage, brake switch status, ABS activity, and steering wheel angle. The pre-crash data were recorded in 0.1-second intervals.

Two deployment events were recorded by the EDR on ignition cycle 328. The ignition cycle count at the time of the SCI inspection was 331. The two events were termed Most Recent and First Prior and both events were completely recorded. Both events recorded that the driver seat belt status was “not buckled.” The time between the events was 0.8 seconds.

First Prior Event

This deployment event consisted of the actuation of the front seat belt retractor pretensioners and was attributed to Event 1 of the SCI reconstruction, the rear impact of the Dodge by the Chevrolet. The maximum longitudinal delta -V was 44 km/h (27.3 mph) at 162 milliseconds. The maximum lateral delta -V was 11 km/h (6.8 mph) at 108 milliseconds. The pre-crash data indicated the vehicle was stopped with the transmission shifted to park. The steering wheel angle was reported as -1 degree (approximately straight forward).

Most Recent Event

This deployment event consisted of the deployment of the frontal air bags in the Dodge. This recording was the second event in the crash sequence and was attributed to Event 2 of the SCI crash reconstruction. Stages one and two deployments of the driver’s frontal air bag occurred at 26 milliseconds and 56 milliseconds after AE. Stages one and two of the passenger’s frontal air bag and the driver’s frontal air bag occurred at 26 milliseconds and 46 milliseconds. The maximum longitudinal delta -V was -35 km/h (-21.7 mph) at 204 milliseconds. The maximum lateral delta -V was -6 km/h (-3.7 mph) at 216 milliseconds.

Interior Damage

The Dodge's interior is shown in Figure 10. The damage consisted of the deployment of the driver's frontal and knee air bags, occupant contact to the steering assembly, intrusion into the second row, and post-crash extrication damage.

The driver seat was positioned in a full-rear track position at the time of the SCI inspection. The seatback was slightly reclined and the recline mechanism was not damaged. The adjustable head restraint had been removed post-crash and was missing. The tilt steering wheel was in the center position and the telescopic column was full rear (toward the driver). At inspection, the steering wheel was rotated approximately 160 clockwise. The lower half sector of the rotated steering wheel had been loaded and deformed by the unbelted driver. Probable contacts from the trooper's lower extremities were inferred to the lower knee bolster which was protected by the deployed knee air bag.



Figure 10. Left view of the Dodge's interior

Intrusion was observed at the second row left position. The longitudinal intrusion of the seat cushion and seatback measured 26 cm (10.2 in) and 29 cm (11.4 in). The longitudinal C-pillar intrusion measured 32 cm (12.6 in).

The first responders removed the left doors and B-pillar during their rescue efforts to assist the driver. The medical record reported that the extrication took 20 minutes.

Manual Restraint Systems

The Dodge's manual restraint systems were continuous-loop 3-point lap and shoulder seat belts for the five designated positions. All had sliding latch plates. The driver's seat belt retracted onto a B-pillar-mounted emergency locking retractor (ELR) with an integrated pretensioner. The D-ring was adjustable and was set to the full-up position. Although the driver was seated in the parked vehicle at the time of the crash, she was not using the manual seat belt system. The initial back plane crash (Event 1) caused actuation of the retractor pretensioner, locking the webbing in the stowed position. Firefighters used hydraulic cutting tools to cut the left doors and B-pillar from the vehicle during the driver's extrication. Her seat belt webbing was cut in that process and the damaged retractor was removed from the pillar.

The front right seat belt and the three second row seat belts used switchable ELR/auto locking retractors. None of these seat positions were occupied at the time of the crash. The front right seat belt webbing was stowed against the B-pillar and was taut due to the actuation of the retractor pretensioner.

Supplemental Restraint Systems

The Dodge had certified advanced 208-compliant (CAC) frontal air bags that consisted of dual-stage driver and passenger frontal air bags, a driver knee air bag, front seat-mounted side impact air bags, and roof rail-mounted combination (side impact and rollover) inflatable curtain air bags. Both frontal air bags and the driver knee air bag deployed as a result of Event 2 (front impact) in the crash sequence.

The driver's frontal air bag was housed in a module in the center hub of the steering wheel. The deployed air bag measured 64 cm (25.2 in) in diameter. The bag was tethered and vented. There was no residual evidence of driver contact to the air bag.

The knee air bag deployed from its module housed in the left lower instrument panel. The air bag was trapezoidal and measured 66 cm (26.0 in) by 38 cm (15.0 in). There was no residual evidence of driver contact.

The passenger frontal air bag was a top-mount design located in the right top aspect of the instrument panel. The deployed air bag measured 60 cm x 30 cm (23.6 in x 11.8 in). The rearward excursion measured 50 cm (19.7 in) from the face of the instrument panel. The air bag was tethered and vented, and was devoid of contact evidence.

2019 Dodge Charger Occupant

Driver Demographics

Age/sex: 42 years/female
 Height: Unknown
 Weight: Unknown
 Eyewear: None
 Seat type: Forward-facing bucket seat with reclining seatback
 Seat track position: Full rear track
 Manual restraint usage: None, 3-point lap and shoulder belt available
 Usage source: Vehicle inspection, EDR
 Air bags: Frontal, knee, seat-mounted side impact, and IC air bags available; frontal and knee air bags deployed
 Alcohol/drug involvement: None
 Egress from vehicle: Assisted due to perceived injury
 Transport from scene: Ambulance
 Type of medical treatment: Treated and released

Driver Injuries

Inj No.	Injury Description	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Tiny focal disc protrusion at C4/C5 with mild impression upon the ventral thecal sac	650202.2	Isolated Front - Steering wheel (combination of rim and hub/spoke)	Probable

Source – Hospital records

Driver Kinematics

The 42-year-old female trooper was in the driver’s seat with the power adjustable seat set to a rear-track position and the seatback adjusted to a normal recline. She was not wearing the manual seat belt system. The vehicle was parked and she was conducting official police business. The engine was running and the emergency lights were activated.

The trooper was displaced rearward and slightly left as she responded to the back plane crash (Event 1). Her back loaded the seatback that remained in its pre-crash adjusted position. Her head probably engaged the head restraint, which limited the rearward extension of her head and neck. The adjustable head restraint was likely removed from the seat during the post-crash treatment of the trooper and was not in the vehicle at the time of the SCI inspection.

As the Dodge was displaced forward, the front plane struck the right rear wheel assembly of the truck (Event 2). This crash deployed the driver frontal air bag and the driver knee air bag. The EDR recorded a Stage 2 deployment of the frontal air bag. The unbelted trooper was probably rebounding from the Event 1 impact as the frontal impact occurred. She then continued to move forward in response to the frontal crash forces. She loaded the deployed frontal air bag with her

torso. Her loading forces were transmitted through the bag and she loaded the steering wheel rim, deforming the rim forward. At the time of the SCI inspection, the steering wheel was rotated approximately 160-degrees clockwise. As the trooper's torso decelerated, her head and neck flexed forward over the steering wheel, resulting in the cervical injury. The knee air bag deployed from the lower left instrument panel and the driver lower extremities contacted the deployed air bag. There was no damage or contact evidence to the knee air bag. She then rebounded back into her seat.

Following the crash, the first responders removed the left doors and B-pillar to render aid. The trooper was assisted from the vehicle and transported by ambulance to a local trauma center. She was examined in the emergency department, treated for her injuries, and released.

2020 Chevrolet Tahoe

Description

The 2020 Chevrolet Tahoe LT (Figure 11) was owned by a rental company and was operated by the driver under a rental agreement at the time of the crash. It was manufactured in December 2019 and identified by the VIN 1GNSKBKC5LRxxxxxx. The vehicle had a 295 cm (116.1 in) wheelbase with a 5.3-liter, V8 engine, automatic transmission, and 4-wheel drive. The gross vehicle weight rating was 3,311 kg (7,300 lb) with gross axle weight ratings of 1,633 kg (3,600 lb) front and 1,860 kg (4,100 lb) rear. Its curb weight was 2,515 kg (5,545 lb). The Chevrolet was equipped with crash avoidance features that included lane keeping, lane departure warning, blind spot detection, forward collision alert and rear cross traffic alert. The on/off and warning status of the crash avoidance features was unknown. The service brakes were power-assisted 4-wheel disc with ABS and dynamic brake support. The vehicle had Michelin Energy Saver all-season tires of the vehicle manufacturer recommended size of P265/65R18 mounted on multi-spoke OEM alloy wheels. The tread depth of the tires measured 6 mm (8/32 in).

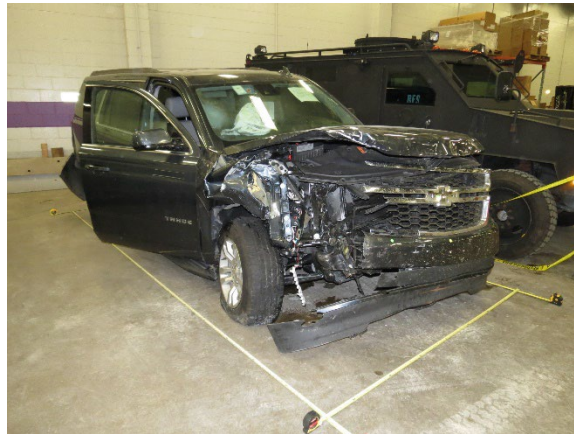


Figure 11. Right front oblique view of the Chevrolet

The interior had three rows of seats for seating of eight (2/3/3). All seating surfaces were leather. The front row bucket seats were power-adjustable. All seat positions were equipped with adjustable head restraints. Safety systems consisted of 3-point lap and shoulder seat belts for all seat positions and air bags.

Exterior Damage

The Chevrolet's front and right planes were damaged in the event crash sequence. The Event 1 damage was located along the front plane and began 42 cm (16.5 in) right of center. The damage pattern extended 38 cm (15.0 in) to the right and wrapped around the corner, extending 117 cm (46.1 in) along the right plane. The damaged components included: the front bumper fascia, bumper reinforcement, right headlamp, right fender, and right front wheel assembly. The front crush profile was measured along the bumper reinforcement with a 116 cm (45.7 in) field L. The residual crush was as follows: C1 = 0, C2 = 1 cm (0.4 in), C3 = 3 cm (1.2 in), C4 = 6 cm (2.4 in), C5 = 13 cm (5.1 in), C6 = 15 cm (5.9 in). The right wheelbase was reduced 29 cm (11.4 in). All doors remained operational post-crash. The CDC assigned to this damage pattern was 12FREE3. The total delta -V calculated by the WinSMASH program was 27 km/h (17 mph), with

longitudinal and lateral components of -27 km/h (-17 mph) and -5 km/h (3 mph). Analysis of the crash fit the collision model and the results were considered low.

The right corner of the back plane sustained an isolated area of minor body panel damage during the contact with the center barrier. The damaged region was located 63 cm (24.8 in) right of center, extended 27 cm (10.6 in) to the corner, and wrapped 32 cm (12.6 in) onto the right plane. The maximum crush was an estimated 5 cm (2.0 in). The assigned CDC was 05BREE1.

Event Data Recorder

The Chevrolet had an air bag sensing and diagnostic module (SDM) mounted on the center tunnel between the front seats. The SDM had EDR capabilities to record crash data. The SCI investigator imaged the EDR using the Bosch CDR tool with software version 19.5 via a connection to the diagnostic link connector. The imaged data are reported with software version 21.5.1 and are included as Appendix B of this document.

The SDM monitored and measured tri-axial acceleration and roll-rate data. A frontal (longitudinal), side (lateral), and/or rollover (vertical) crash pulse could trigger the recording of a distinct crash event. The minimum threshold to trigger the recording of an event was a calculated vehicle velocity change of 8 km/h (5 mph). The EDR could record two different event types and store a combination of up to three events. Recognized events were termed “non-deployment” or “deployment,” and up to two different deployment events and one locked non-deployment event could be stored. Non-deployment events could be overwritten after approximately 250 ignition cycles, whereas deployment events became locked and could not be overwritten.

The imaged data contained one record, which was designated a deployment event. The ignition cycle counter at the time of the recording was 2,003 and 2,006 at the time of the SCI inspection. The disparity in the counter was attributed to the post-crash movement and activity of the police investigation. At the time of the event the driver seat belt was not buckled; the front passenger seat belt was buckled. The air bag warning lamp was off and there were no diagnostic trouble codes. The maximum recorded longitudinal delta -V was -44 km/h (-27 mph) at 208 milliseconds. The maximum lateral delta -V was -8 km/h (-5 mph) at 194 msec. The crash severity was considered to be a pretensioner/stage 1/stage 2 event with the following deployment times:

Device	Driver	Passenger
Pretensioner loop 1	44 milliseconds	44 milliseconds
Air bag stage 1	44 milliseconds	44 milliseconds
Pretensioner loop 2	50 milliseconds	50 milliseconds
Air bag stage 2	165 milliseconds	165 milliseconds

A 5.0-second pre-crash buffer that described various vehicle performance parameters (including vehicle speed, accelerator pedal position, brake status, throttle position, and engine rpm) was recorded for each crash event. These performance parameters were recorded asynchronously in 0.5-second intervals. The data trends indicated that the Chevrolet approached the stopped police vehicle at a steady speed with the cruise control off. The recorded speed 5.0 seconds prior to AE was 87 km/h (54.1 mph). The speed 0.5 seconds prior to AE had reduced to 85 km/h (53 mph)

through rolling resistance. The applied accelerator pedal position remained steady at 17 percent over the recorded range. There was no recorded application of the brakes.

Occupant Data

The police report stated the Chevrolet driver was an unbelted 25-year-old male with a belted 19-year-old female in the front right seat. The police investigation determined they had been traveling across the continental United States from Colorado for approximately the last 36 hours when the crash occurred. The police indicated that fatigue likely contributed to the crash circumstances. The driver was transported by ambulance to a local hospital with police-reported possible (C-level) injuries. The passenger was not injured or transported.

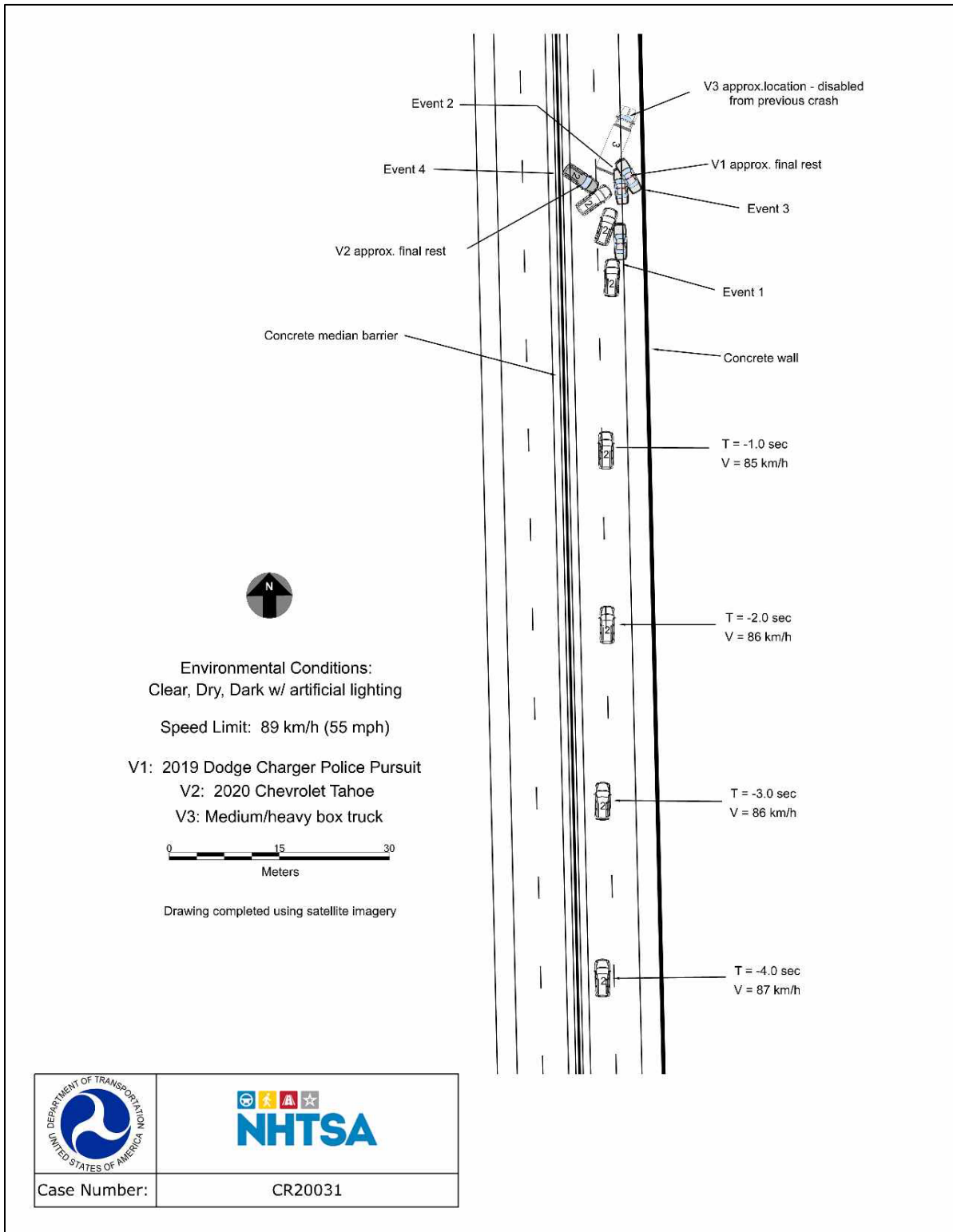
2020 International Medium/Heavy Straight Truck

The International² medium/heavy straight truck was identified by the identification number: 3HAEUMMM3LLxxxxxx. The 2-axle/6-wheel box truck was owned by a local affiliate of a rental company and had become disabled on the roadway during a previous crash. The truck was not occupied.

The Event 2 impact with the front plane of the Dodge caused disabling damage to the right rear wheel assembly of the vehicle. According to the rental company, the truck was in the final state of repair at the time of the SCI investigation and was not inspected.

² Navistar International Corporation of Lisle, IL,, formerly International Harvester, owns the International brand of trucks.

Crash Diagram



Appendix A: 2019 Dodge Charger Event Data Recorder Report³

³ The EDR report contained in this technical report was imaged using the current version of the Bosch CDR software at the time of the vehicle inspection. The CDR report contained in the associated Crash Viewer application may differ relative to this 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	2C3CDXKT2KH*****
User	
Case Number	
EDR Data Imaging Date	10/01/2020
Crash Date	
Filename	CR20031_V1_ACM.CDRX
Saved on	Thursday, October 1 2020 at 10:43:41
Imaged with CDR version	Crash Data Retrieval Tool 19.5
Imaged with Software Licensed to (Company Name)	NHTSA
Reported with CDR version	Crash Data Retrieval Tool 21.5.1
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	Most Recent Event, Deployment 1st Prior Event, Deployment

Comments

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 for direct-to-module imaging may 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.
- If a DLC adapter has to be used with the CDR Tool, the "Read VIN from Vehicle" feature in the CDR Tool will not work. The VIN will have to be manually entered.
- If a 2021 or later MY Dodge Durango was imaged with a CDR Tool version 19.4 or older, the ACM will need to be reimaged as not all the peripheral sensor data will have been retrieved.
- The 2019 MY RAM 1500 may take up to 30 minutes to retrieve the EDR data. The ignition will time out within 20 minutes so the vehicle flashers must be turned on within 20 minutes to keep the ignition and communication bus active.
- Lateral Delta V will not be displayed for the 2013 MY Jeep Compass and Patriot.
- Ignition Cycle, download/crash
 - For RAMs and Dodge Vipers, there are 2 internal ignition counters in the ACM. It is possible for the ignition cycles at download to be different than the ignition cycles at event due to the 2 different counters.
 - Note that the ignition cycle count in an ACM may differ from the ignition cycle count in a Pedestrian Protection Module (PPM) in the same vehicle due to the fact that the ACM has an energy reserve while the PPM does not.

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
Delta-V, Longitudinal	Forward
Maximum Delta-V, Longitudinal	Forward
Delta-V, Lateral	Left to Right
Maximum Delta-V, Lateral	Left to Right
Angular Rate	Clockwise rotation around the longitudinal axis

Peripheral Sensors, X and Y	Outside to Inside
Pressure Sensors	Compression of air
Internal Y Acceleration	Left to Right
Low-g Z Acceleration	Downward
Steering Input	Steering wheel turned counter clockwise
Yaw Rate	Counter clockwise rotation

CDR FILE INFORMATION:

- 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.
- A non-deployment event may be stored with activation of the Active Head Restraints. See AHR explanation under System Configuration at Retrieval/Event section.
- A deployment event may be stored in a 2019 MY+ Ram 3500 as the result of a rear impact, even though the Ram 3500 does not deploy any restraint system devices in a rear impact.

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.
- 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.
- For 2013 and 2014 MY Dodge Journey and Fiat Freemont:
 - 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)
- 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: The restraint data is recorded first and then the vehicle data.
 - "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 Pre-Crash Recorder Status.
- For the 2021MY Jeep Grand Cherokee L, an event may be displayed in the "Event(s) Recovered" section of the report as "End of Line Test event - See Data Limitations". This event is an End of Line test event from the module manufacturing process which will be included in the count for the total number of events, but no data will be displayed in the CDR Report.

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/EVENT:

- 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 some 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. It is possible that the AHRs may activate after the EDR record has been stored and written, based on achieving the minimum delta V. This condition will result in an EDR but no record of the AHR activation in the CDR report. Activation of only the AHRs, if stored, will be a non-deployment event.

SYSTEM STATUS AT EVENT:

- Frontal Airbag Warning Lamp - In Veoneer modules, the airbag warning lamp may indicate ON at the time of a most recent event without any DTCs present if a deployment event has already occurred in the same ignition cycle. The ABWL will come on due to the deployment but, as there are still algorithms processing data, the actual faults will not be qualified yet and will not show up as DTCs.
- Number, Total Events - Cumulative number of events that the ACM has recorded, including those non-deployment events that have been

overwritten by a subsequent event.

- For the 2021MY Jeep Grand Cherokee L, the module will contain one, two, or three End of Line test events from the module manufacturing process which will be included in the count for the total number of events. However, the data from these End of Line test events will not be displayed in the CDR Report.
- Occupant Size Classification, Outboard Front Passenger - "Child" status may be used to indicate anything weighing less than a 5th percentile female adult crash dummy, including an empty seat; "Not Child" indicates anything weighing the same as or more than a 5th percentile female adult crash dummy. "SNA" indicates undetermined;
 - For some non-North American applications, "Empty" indicates an empty seat;
- Odometer at Event - Vehicle odometer at the time of the event
 - For 2014-2016 MY Fiat 500L, the odometer value in miles may be shown in the brackets, labeled as kilometers. If this is the case, the non-bracketed value is not valid.
- 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.
- Safety Belt Status, Outboard Front Passenger - For vehicles sold outside of North America which do not contain a buckle switch for the outboard front passenger, the safety belt status, outboard front passenger will default to "not buckled/unbuckled".
- System Voltage at Event, ACM - Voltage at the ACM as measured by the ACM. This voltage may be approximately 0.7V (one diode drop) below the bused voltage.
- System Voltage at Event, Bused - 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
 - For 2013 MY Minivans and new 2017+ MY Jeep Compass, this time is only cumulative for the past 10 ignition cycles.
- 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.
 - For the 2018+ MY Promaster and 2019+ MY RAM 1500, a value of 0 may be displayed for the first event or for events >5 seconds apart.
 - 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.
 - For the 2019+ MY RAM 1500, the time from event 1 to 2 may utilize a non-stored event as event 1. In this case, the total number of events and multi-event data elements will not include the non-stored event in the number of events. However, the time from event 1 to 2 will be shown as time from that non-stored event.
- 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.
 - For 2019 and later MY RAMs, this time is only cumulative for the current ignition cycle.
- Tire Pressure Indicator Lamp at Event- "On" indicates a tire with low pressure or a fault in the tire pressure monitoring system at the time of the event. The TPM module DTC's should be read and recorded for final system interpretation. "Flashing" indicates a recent fault in the tire pressure monitoring system.
- Tire Pressure at Event, LF, RF, RR - See "Tire Information" under Pre-Crash Data section for details.
- VIN at Event, Last 8 Digits- Last 8 digits of the VIN of the vehicle at the time the ACM records the event.

DEPLOYMENT COMMAND DATA:

- A "Yes" for a particular item indicates that the ACM commanded the deployment /activation of the associated device.
- The phrase "Exceeded Storage Range" for a particular time to deploy indicates that the deployment time is equal to or greater than the 255 milliseconds that can be stored.
- If a device is not deployed, the "time to deploy" for that device will N/A.
- A time to deploy value of 0 is valid and indicates that the deployment of the device triggered the EDR t0.
- In vehicles with Bosch and Veoneer ACMs, once a device has been deployed in an ignition cycle, it is possible that the ACM will not attempt to re-deploy any already deployed device during subsequent events in that same ignition cycle.

DTCs PRESENT AT START OF EVENT:

- 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.
 - DTCs Present at Start of Event are not present in the Alfa Romeo Giulia, Fiat 500X, and the Jeep Renegade.
- For the 2021 MY+ Jeep Grand Cherokee L, the DTCs will not be updated for the subsequent events within the same ignition cycle.

SENSOR DATA:

- The design range for the angular rate data is:
 - +/- 240 deg/sec for Bosch ACMs unless specifically called out below
 - +/- 300 deg/sec for TRW ACMs, the 2019 MY RAM 1500, and the 2018+ MY Dodge Journey
 - +/- 290 deg/sec for 2008+ MY minivans and 2009-2017 MY Dodge Journey
 - +/- 340 deg/sec for 2017+ MY Chrysler Pacifica and new 2017+ MY Jeep Compass
 - - 416.67 deg/sec to +413.41 deg/sec for 2014+ MY Jeep Cherokee
 - +/- 300 deg/sec for vehicles with Veoneer ACMs
- For vehicles that store peripheral sensor data, t0 for the peripheral sensors is the same as the t0 for the delta V.
- Internal y acceleration is stored prior to t0 so the internal y acceleration data will usually be zero unless the rollover sensing algorithm has triggered storage of the EDR event.
- The words "Sensor Design Range Exceeded" and a vertical line will be displayed on the Longitudinal and Lateral Delta-V graphs the first time the applicable sensor range is exceeded.
- For the 2010-2012 MY Chrysler Town and Country, Dodge Caravan, Dodge Grand Caravan, and Dodge Journey and the 2010-2011 MY Grand Voyager, the angular rate will only be displayed if it is non-zero.

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.
- In the Pre-Crash Data graph, data transmitted at a rate other than 0.1 seconds will be shown as dots for each available data point. Only data transmitted at a rate of 0.1 seconds will have the dots connected by a line.
- (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. It will be "SNA" if the vehicle is in the power free mode which limits acceleration.
- Accelerator Pedal (Derived), % Full - This indicates the calculated value of the accelerator pedal for battery electric vehicles only.
- Accelerator Pedal/Engine Throttle, % Full - This indicates the actual position of the accelerator pedal unless the cruise control is engaged. If the cruise control is engaged, this indicates the actual position of the engine throttle blade.
- Brake Pedal Position - This indicates the percentage of brake pedal depression by the driver.
- Brake Torque - This indicates the calculated amount of brake torque the system is producing at the wheels.
- Brake Torque Driver - This indicates the calculated amount of brake torque that the driver is requesting.
- Braking System, Maximum Braking -- "Yes" indicates that ABS is active on all 4 wheels at the same time.
- Cruise Control:
 - Note that the following two Cruise Control data elements are only valid for vehicles not equipped with Adaptive Cruise Control (ACC). For vehicles equipped with ACC, the ACC data elements are used for both regular Cruise Control and ACC.
 - Cruise Control System/Lamp Status - "On" indicates that the Cruise Control system is turned on.
 - Cruise Control Status - "Off" indicates that all cruise control functionality is disabled; "NCC_On" indicates that the Normal Cruise Control system is turned on; "NCC_Engaged" indicates the Normal Cruise Control is actively controlling vehicle speed; "ACC_On" indicates that ACC is turned on; "ACC_Engaged" indicates that the ACC is actively controlling vehicle speed.
 - Cruise Control Engaged Status/Active - "Engaged"/"Yes" indicates the Cruise Control system is actively controlling vehicle speed. "Not Engaged"/"No" indicates the system is NOT controlling vehicle speed.
 - Cruise Control Override - "Active" indicates that the driver has overridden the set speed. "Not Active" indicates that the cruise control is either not turned on or is not being overridden.
 - Adaptive Cruise Control (ACC) Status (if equip.)- "Off" indicates that all cruise control functionality is disabled; "NCC_On" indicates that the Normal Cruise Control system is turned on; "NCC_Set" indicates the Normal Cruise Control is actively controlling vehicle speed; "ACC_On" indicates that ACC is turned on; "ACC_Set" indicates that the ACC is actively controlling vehicle speed. If the value is SNA for all time stamps, then the vehicle is not equipped with ACC.
 - Set Speed (if equip.)- This indicates the desired speed in mph that was input by the driver for the cruise control system.
 - ACC Faulted - "Yes" indicates that the ACC system will not function and the ACC warning lamp is lit; "No" indicates that the ACC system is functional and the ACC warning lamp is off;
 - For new 2017+MY Jeep Compass, cruise control data elements are only available for vehicles NOT equipped with ACC.
- Drive Mode - This indicates the driver selected mode of operation (e.g. normal, sport, track, ...)
- Electronic Brake/Stability Control information:
 - 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. "Partial Off" indicates that engine management has been turned off but brake traction control is still functional.
 - For the Jeep Renegade, if the Stability Control is "Off", the ESC Button Status is "Disabled", and the vehicle speed exceeds 40 mph, the stability control system will operate in a reduced functionality mode with traction control turned off ("partial off" mode) even though the user disabled it. For all other conditions, when the Stability Control is "Off", the stability control system will be off.

- ESC Button Status - This indicates the driver selected mode for the ESC system. "Disabled" indicates that the driver pressed the ESC Button to disable engine management. "Enabled" is the default state for the ESC system.
 - SRT and some Fiat products have the ability to fully disable the ESC system if the ESC button has been pressed and held for a specific amount of time. Additional system analysis is required.
- ESP Feature is Completely Disabled - This indicates that the stability control system has turned off engine management, traction control, and stability control.
- 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.
- Brake Intervention by ESP - "Yes" indicates that the stability control system has engaged the brakes.
- 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.
- Traction Control Active - "Yes" indicates that the traction control system is actively controlling the vehicle's wheels.
- Electronic Park Brake (EPB):
 - Park Brake Engaged - "Yes" indicates that the park brake is applied.
 - EPB MIL - "On" indicates that there is a fault in the Electronic Park Brake System.
- Engine RPM - For the RAM ProMaster City, the minimum resolution for Engine RPM is 32 rpm.
- Engine Throttle, % Full - This indicates the actual position of the Engine Throttle blade. This data element is not supported by vehicles with diesel engines. Thus a value of "SNA" will be displayed if the vehicle has a diesel engine.
- 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.
- Forward Collision Warning (FCW) (if equip.):
 - Object of Interest Distance - If the FCW system is acting on the object, this indicates the actual forward distance to the main object being tracked by the FCW system. "No Object" indicates that the FCW system is not currently acting on an object. If the value is SNA for all time stamps, then the vehicle is not equipped with FCW.
 - FCW System Operating State - "Off" indicates that the FCW system is off and the FCW Warning Lamp will be "On"; "On" indicates that the FCW system is on with the audible and visual warnings enabled.
 - FCW System Status - "Off" indicates that the FCW system is off and the FCW Warning Lamp will be "On". "On-warning" indicates that the FCW system is on but active braking is disabled. In an FCW event, the driver will only receive FCW audible and visual warnings. "On-full" indicates that the FCW system is fully on with active braking enabled as well as the audible and visual warnings enabled. SNA indicates that the vehicle is not equipped with FCW.
 - FCW Braking Enabled - "Yes" indicates that the FCW system has active braking enabled; "No" indicates that the FCW system does not have active braking enabled.
- Gear Position/Current Gear - For all vehicles except the RAM ProMaster City, this indicates the current transmission gear.
For the RAM ProMaster City, this indicates the status of the gear shift lever.
- Estimate Regenerative Braking Axle Torque - (HEV only) This indicates the calculated braking torque applied by the HEV system to the drive axles in Nm.
- Driver Intended Axle Torque - (HEV only) This indicates the calculated value of torque in Nm being applied to the drive axles based on accelerator pedal position.
- Trans torque request - (HEV only) "Yes" indicates that the transmission controller has requested a torque reduction when shifting from one gear to another.
- Static Axle Torque - (HEV only) This indicates the torque in Nm at the axle when the speed of the axle is constant.
- HEV Battery Pack Contactor State - (HEV only) "Closed" indicates that the HEV battery pack is connected to the vehicle's electrical system. "Open" indicates that the HEV battery pack is disconnected from the vehicle's electrical system. "Pre-Charging" indicates that the inverter internal capacitor is charging. "Pre-Charge Failed" indicates that the attempt to charge an internal capacitor failed. "Pre-Charge Inhibited" indicates that an attempt to charge an internal capacitor was not made.
- HEV Lamp Request - (HEV only) This indicates the HEV indicator lamp status. It will only be "On" when there is a fault in the HEV system. The vehicle DTC's should be read and recorded for final system interpretation.
- Master Cylinder Pressure - This indicates the brake pressure applied to the brakes through the brake pedal.
- PCM MIL - This indicates the PCM fault indicator lamp status. It will only be "On" when there is a fault in the PCM. "Flashing" indicates misfire detection. The Powertrain Control Module DTC's should be read and recorded for final system interpretation.
- Pre-Crash 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.
 - For the 2014 MY Jeep Grand Cherokee and Dodge Durango, if recording of angular rate data is interrupted, the entire EDR record will display "Interrupted" even though the rest of the data may be complete.
- PRND/PRNDL/PRNDS Status - This indicates the status of the Shifter Position.
- Raw Manifold Pressure - This indicates engine load in kPa.
- Reverse Gear - For manual transmission vehicles only, "Yes" indicates the transmission is in the reverse gear.
- Service Brake - "On" indicates that the brake pedal is physically depressed. Braking from the ABS or FCW systems will not be reported in this data element.
- Shift Selector Position - This indicates the status of the gear shift selector.
- Speed, Vehicle Indicated - This indicates the average of the wheel speeds of the drive wheels.
 - The reporting resolution for Speed, Vehicle Indicated is 1 km/h.
 - To display this data element in mph, the CDR Tool converts the km/h to mph and reports a rounded value in mph.
 - The accuracy of the recorded Speed, Vehicle Indicated may be affected by a significant change of the tire size for the drive wheels or the final drive axle ratio of the transmission from the factory build specifications, wheel lockup, wheel slip, or wheel spin.
 - On some vehicles capable of speeds in excess of 255km/h (about 158mph), the actual vehicle speed may have exceeded the reporting range. It is always prudent to check the reported wheel speeds and other parameters to confirm the Speed, Vehicle

Indicated value(s).

- 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 Significantly Under Inflated (TPM lamp will be on), LOW/Under/Under Inflated, NORMAL, HIGH/Over/Over Inflated, 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 Value, 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.
- For the following vehicles, the tire location, if displayed, may not be accurate if the tires have been rotated:
 - 2013 MY Ram
 - 2013-2017 MY Jeep Patriot
 - 2013-2014 MY Chrysler 200
 - 2013-2017 MY Jeep Compass
 - 2013-2016 MY Dodge Dart
- For the 2013 MY Ram, if the values for tire pressure status and the tire pressure are SNA, the EDR does not store tire pressure monitoring data.
- Tire pressure is not stored in the EDR for the following vehicles:
 - 2014-2018 MY RAM 1500
 - 2014+ MY RAM (all but 1500)
 - 2013+ MY Jeep Wrangler
 - 2013 MY Jeep Grand Cherokee
 - 2013 MY Dodge Durango
 - 2013-2014 MY Dodge Challenger
 - 2013-2016 MY Chrysler Town and Country
 - 2013+ MY Dodge Grand Caravan
 - 2015+ MY Fiat 500

- Wheel Speed, XX - This indicates the speed value of a particular tire as denoted by XX.

- Tire Pressure Monitor Indicator Lamp/Faults - "On" indicates a tire with low pressure or a fault in the tire pressure monitoring system. The TPM module DTC's should be read and recorded for final system interpretation. "Flashing" indicates a recent fault in the tire pressure monitoring system.
- "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" or "-0.25s" respectively represents the last set of data captured in the buffer prior to "T0."
- Torque Information:
 - Axle Torque - This indicates the E-Motor Torque multiplied by the gear ratio for battery electric vehicles only.
 - E-Motor Torque - This indicates the calculated torque from the output shaft of the electric motor in battery electric vehicles only.
- Traction Control Intervention Active - "Active" indicates wheel slippage was occurring during vehicle acceleration.

APPLICATION INFORMATION:

- Alfa Romeo Giulia, Alfa Romeo Stelvio, Fiat 500L, Fiat 500X, and Jeep Renegade are only CDR supported in the United States, Canada, and Saudi Arabia markets.
- Fiat 500/500e is only CDR supported in the United States, Canada, Mexico, and Brazil markets.

03002_Chrysler_r046

System Status at Retrieval

Original VIN	2C3CDXKT2KH*****
Ignition Cycle, Download	331
ACM Part Number	68371749AA
ECU Serial Number	T52MD328801858
ACM Supplier	Bosch
ECU Supply Voltage at Time of Retrieval	13.9

System Configuration at Retrieval

Configured for Driver Frontal Airbag	Yes
Configured for Driver Knee Airbag	Yes
Configured for Driver Buckle Pretensioner	No
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	No
Configured for Passenger Retractor Pretensioner	Yes
Configured for Passenger Seat Seatbelt Switch	Yes
Configured for Passenger Seat Track Position Switch	No
Configured for Right Side Curtain Airbag	Yes
Configured for Right Side Seat Airbag	Yes
Configured for Rollover Sensing	Yes

System Status at Event (Most Recent Event)

Complete File Recorded	Yes
Safety Belt Status, Driver	Not Buckled
Safety Belt Status, Outboard Front Passenger	Not 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])	-21.7 [-35]
Time, Maximum Delta-V, Longitudinal (msec)	204
Maximum Delta-V Lateral (MPH [km/h])	-3.7 [-6]
Time, Maximum Delta-V, Lateral (msec)	216
Clipping Flag Status	Not Set
Time, Operation System Time (sec)	2687287
Time, Airbag Warning Lamp On (min)	0
Event Number	2
Multi-Event, Number of Events (1,2)	2
Time from Event 1 to 2 (sec)	0.8
Operation Via Energy Reserve Only (Yes, No)	No
Supply Voltage at Event, ECU (V)	14.5
Temperature, Outside (deg C)	47
Event Signal Transmission, Complete (Yes, No)	Yes
Odometer at Event (Miles[km])	11795.9 [18984]
Ignition Cycle, Crash	328
VIN, Original	2C3CDXKT2KH*****
VIN Recorded at Event (last 8 characters)	KH*****

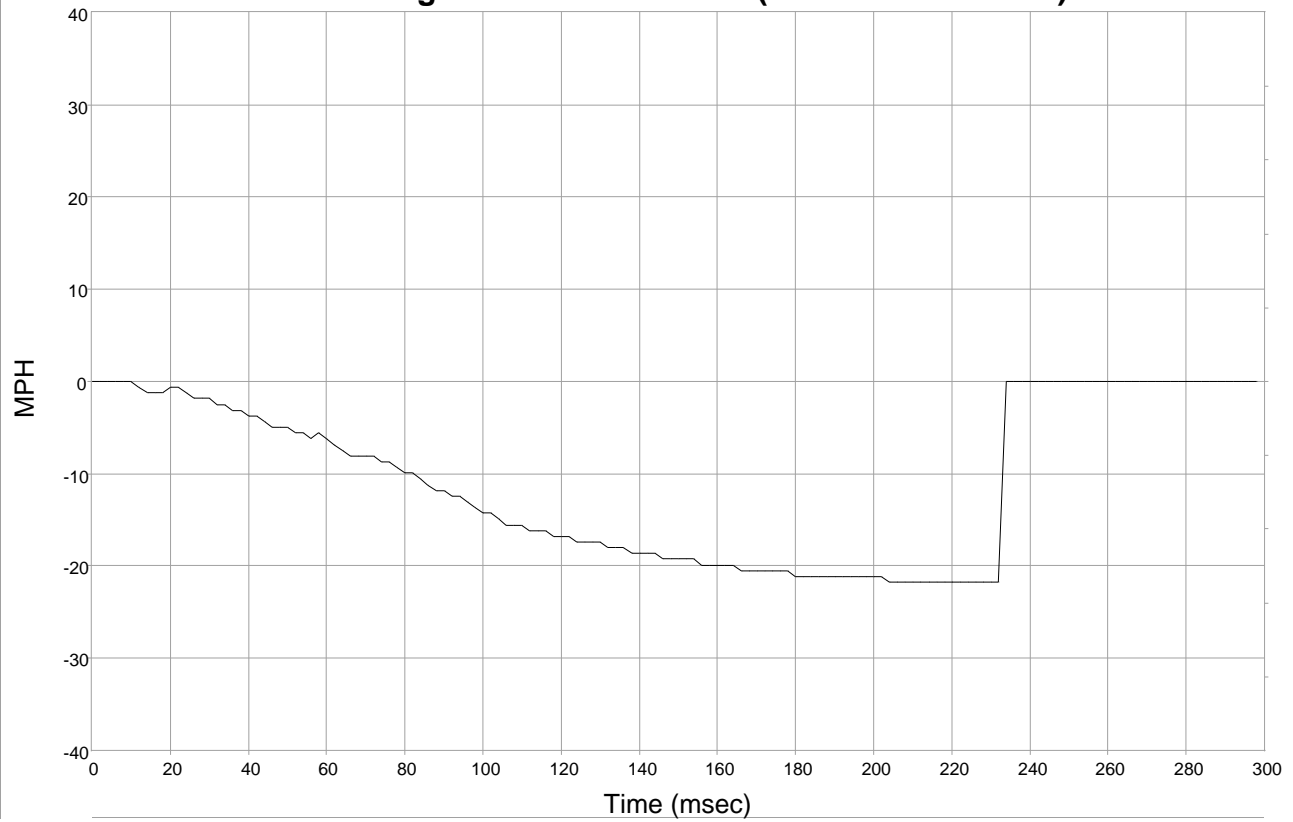
Deployment Command Data (Most Recent Event)

Frontal Airbag Deployment, Time to Deploy 1st Stage, Driver (msec)	26
Frontal Airbag Deployment, 1st Stage, Driver	Yes
Frontal Airbag Deployment, Time to Deploy 2nd Stage, Driver (msec)	56
Frontal Airbag Deployment, 2nd Stage, Driver	Yes
Frontal Airbag, Time to Deploy 1st Stage, Passenger (msec)	26
Frontal Airbag, Deployment 1st Stage, Passenger	Yes
Front Airbag, Time to Deploy 2nd Stage, Passenger (msec)	46
Front Airbag, Deployment 2nd Stage, Passenger	Yes
Buckle Pretensioner Deployment, Driver	No
Retractor Pretensioner Deployment, Driver	No
Buckle Pretensioner Deployment, Passenger	No
Retractor Pretensioner Deployment, Passenger	No
Side Seat Airbag Deployment, Front Left	No
Side Curtain Airbag Deployment, Left	No
Side Seat Airbag Deployment, Front Right	No
Side Curtain Airbag Deployment, Right	No

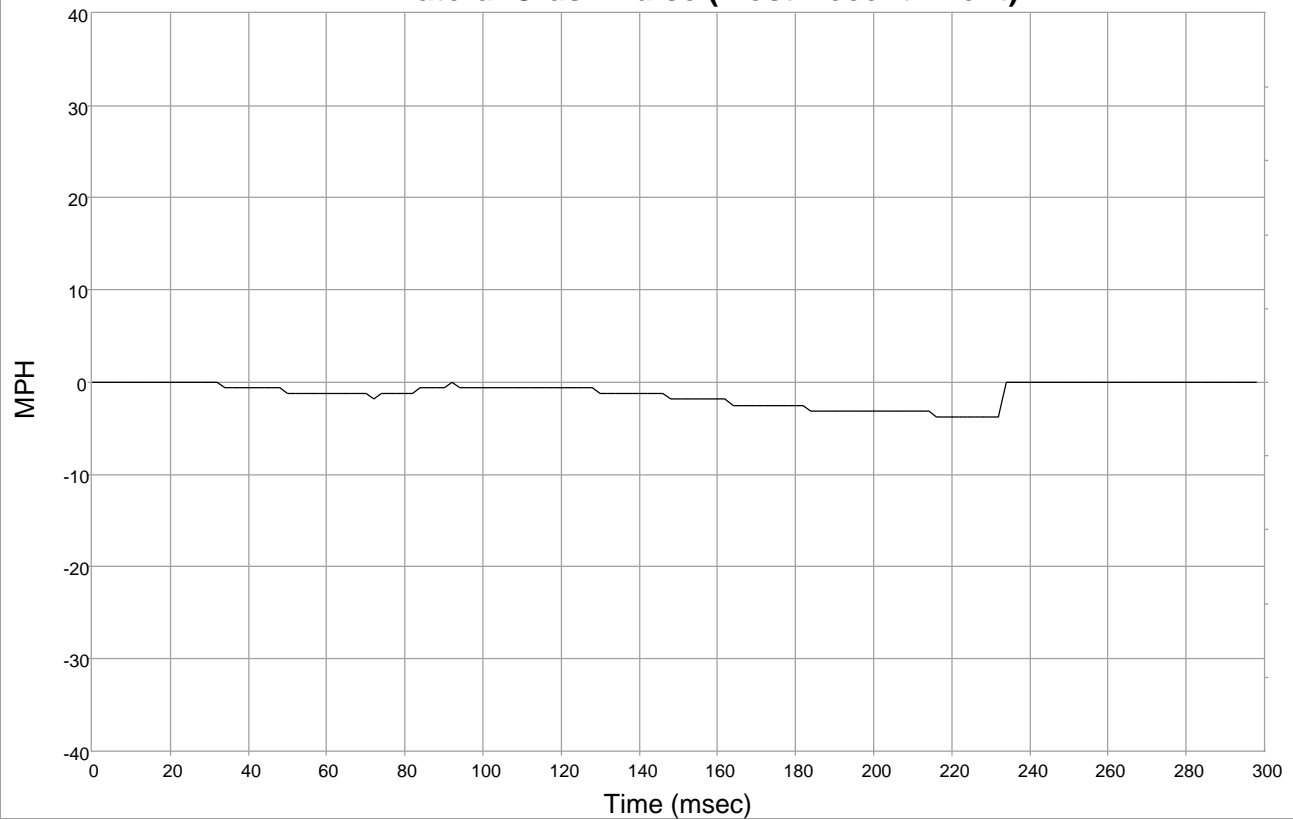
DTCs Present at Start of Event (Most Recent Event)

No DTCs Present

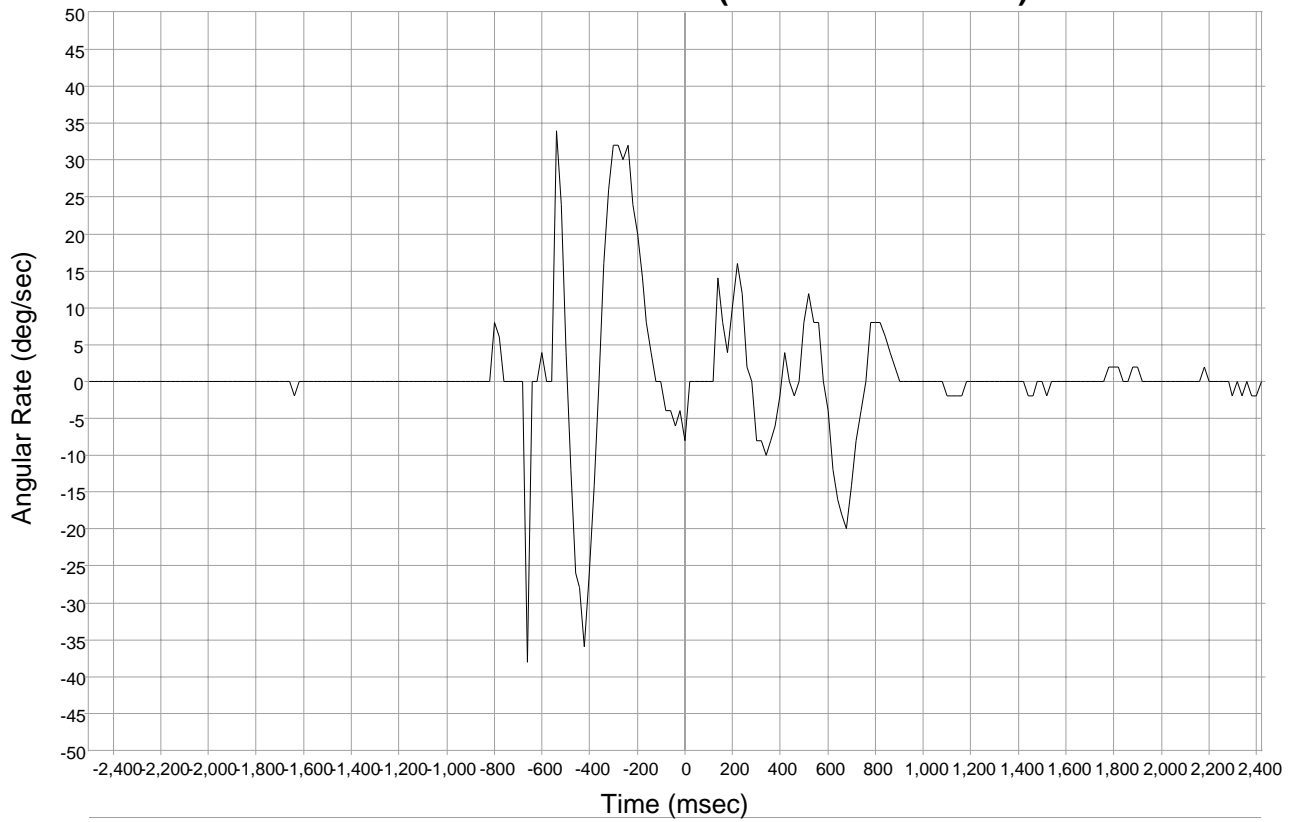
Longitudinal Crash Pulse (Most Recent Event)



Lateral Crash Pulse (Most Recent Event)



Rollover Crash Pulse (Most Recent Event)



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	0.0 [0]
12	-0.6 [-1]
14	-1.2 [-2]
16	-1.2 [-2]
18	-1.2 [-2]
20	-0.6 [-1]
22	-0.6 [-1]
24	-1.2 [-2]
26	-1.9 [-3]
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	-5.0 [-8]
48	-5.0 [-8]
50	-5.0 [-8]
52	-5.6 [-9]
54	-5.6 [-9]
56	-6.2 [-10]
58	-5.6 [-9]
60	-6.2 [-10]
62	-6.8 [-11]
64	-7.5 [-12]
66	-8.1 [-13]
68	-8.1 [-13]
70	-8.1 [-13]
72	-8.1 [-13]
74	-8.7 [-14]
76	-8.7 [-14]
78	-9.3 [-15]
80	-9.9 [-16]
82	-9.9 [-16]
84	-10.6 [-17]
86	-11.2 [-18]
88	-11.8 [-19]
90	-11.8 [-19]
92	-12.4 [-20]
94	-12.4 [-20]
96	-13.0 [-21]
98	-13.7 [-22]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
100	-14.3 [-23]
102	-14.3 [-23]
104	-14.9 [-24]
106	-15.5 [-25]
108	-15.5 [-25]
110	-15.5 [-25]
112	-16.2 [-26]
114	-16.2 [-26]
116	-16.2 [-26]
118	-16.8 [-27]
120	-16.8 [-27]
122	-16.8 [-27]
124	-17.4 [-28]
126	-17.4 [-28]
128	-17.4 [-28]
130	-17.4 [-28]
132	-18.0 [-29]
134	-18.0 [-29]
136	-18.0 [-29]
138	-18.6 [-30]
140	-18.6 [-30]
142	-18.6 [-30]
144	-18.6 [-30]
146	-19.3 [-31]
148	-19.3 [-31]
150	-19.3 [-31]
152	-19.3 [-31]
154	-19.3 [-31]
156	-19.9 [-32]
158	-19.9 [-32]
160	-19.9 [-32]
162	-19.9 [-32]
164	-19.9 [-32]
166	-20.5 [-33]
168	-20.5 [-33]
170	-20.5 [-33]
172	-20.5 [-33]
174	-20.5 [-33]
176	-20.5 [-33]
178	-20.5 [-33]
180	-21.1 [-34]
182	-21.1 [-34]
184	-21.1 [-34]
186	-21.1 [-34]
188	-21.1 [-34]
190	-21.1 [-34]
192	-21.1 [-34]
194	-21.1 [-34]
196	-21.1 [-34]
198	-21.1 [-34]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
200	-21.1 [-34]
202	-21.1 [-34]
204	-21.7 [-35]
206	-21.7 [-35]
208	-21.7 [-35]
210	-21.7 [-35]
212	-21.7 [-35]
214	-21.7 [-35]
216	-21.7 [-35]
218	-21.7 [-35]
220	-21.7 [-35]
222	-21.7 [-35]
224	-21.7 [-35]
226	-21.7 [-35]
228	-21.7 [-35]
230	-21.7 [-35]
232	-21.7 [-35]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
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]

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	0.0 [0]
12	0.0 [0]
14	0.0 [0]
16	0.0 [0]
18	0.0 [0]
20	0.0 [0]
22	0.0 [0]
24	0.0 [0]
26	0.0 [0]
28	0.0 [0]
30	0.0 [0]
32	0.0 [0]
34	-0.6 [-1]
36	-0.6 [-1]
38	-0.6 [-1]
40	-0.6 [-1]
42	-0.6 [-1]
44	-0.6 [-1]
46	-0.6 [-1]
48	-0.6 [-1]
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	-1.9 [-3]
74	-1.2 [-2]
76	-1.2 [-2]
78	-1.2 [-2]
80	-1.2 [-2]
82	-1.2 [-2]
84	-0.6 [-1]
86	-0.6 [-1]
88	-0.6 [-1]
90	-0.6 [-1]
92	0.0 [0]
94	-0.6 [-1]
96	-0.6 [-1]
98	-0.6 [-1]

Time (msec)	Delta-V, Lateral (MPH [km/h])
100	-0.6 [-1]
102	-0.6 [-1]
104	-0.6 [-1]
106	-0.6 [-1]
108	-0.6 [-1]
110	-0.6 [-1]
112	-0.6 [-1]
114	-0.6 [-1]
116	-0.6 [-1]
118	-0.6 [-1]
120	-0.6 [-1]
122	-0.6 [-1]
124	-0.6 [-1]
126	-0.6 [-1]
128	-0.6 [-1]
130	-1.2 [-2]
132	-1.2 [-2]
134	-1.2 [-2]
136	-1.2 [-2]
138	-1.2 [-2]
140	-1.2 [-2]
142	-1.2 [-2]
144	-1.2 [-2]
146	-1.2 [-2]
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	-1.9 [-3]
162	-1.9 [-3]
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	-3.1 [-5]
186	-3.1 [-5]
188	-3.1 [-5]
190	-3.1 [-5]
192	-3.1 [-5]
194	-3.1 [-5]
196	-3.1 [-5]
198	-3.1 [-5]

Time (msec)	Delta-V, Lateral (MPH [km/h])
200	-3.1 [-5]
202	-3.1 [-5]
204	-3.1 [-5]
206	-3.1 [-5]
208	-3.1 [-5]
210	-3.1 [-5]
212	-3.1 [-5]
214	-3.1 [-5]
216	-3.7 [-6]
218	-3.7 [-6]
220	-3.7 [-6]
222	-3.7 [-6]
224	-3.7 [-6]
226	-3.7 [-6]
228	-3.7 [-6]
230	-3.7 [-6]
232	-3.7 [-6]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
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]

Rollover Crash Pulse (Most Recent Event) (if equipped)

Time (msec)	Angular Rate (deg/sec)
-2500	0.00
-2480	0.00
-2460	0.00
-2440	0.00
-2420	0.00
-2400	0.00
-2380	0.00
-2360	0.00
-2340	0.00
-2320	0.00
-2300	0.00
-2280	0.00
-2260	0.00
-2240	0.00
-2220	0.00
-2200	0.00
-2180	0.00
-2160	0.00
-2140	0.00
-2120	0.00
-2100	0.00
-2080	0.00
-2060	0.00
-2040	0.00
-2020	0.00
-2000	0.00
-1980	0.00
-1960	0.00
-1940	0.00
-1920	0.00
-1900	0.00
-1880	0.00
-1860	0.00
-1840	0.00
-1820	0.00
-1800	0.00
-1780	0.00
-1760	0.00
-1740	0.00
-1720	0.00
-1700	0.00
-1680	0.00
-1660	0.00
-1640	-2.00
-1620	0.00
-1600	0.00
-1580	0.00
-1560	0.00
-1540	0.00
-1520	0.00

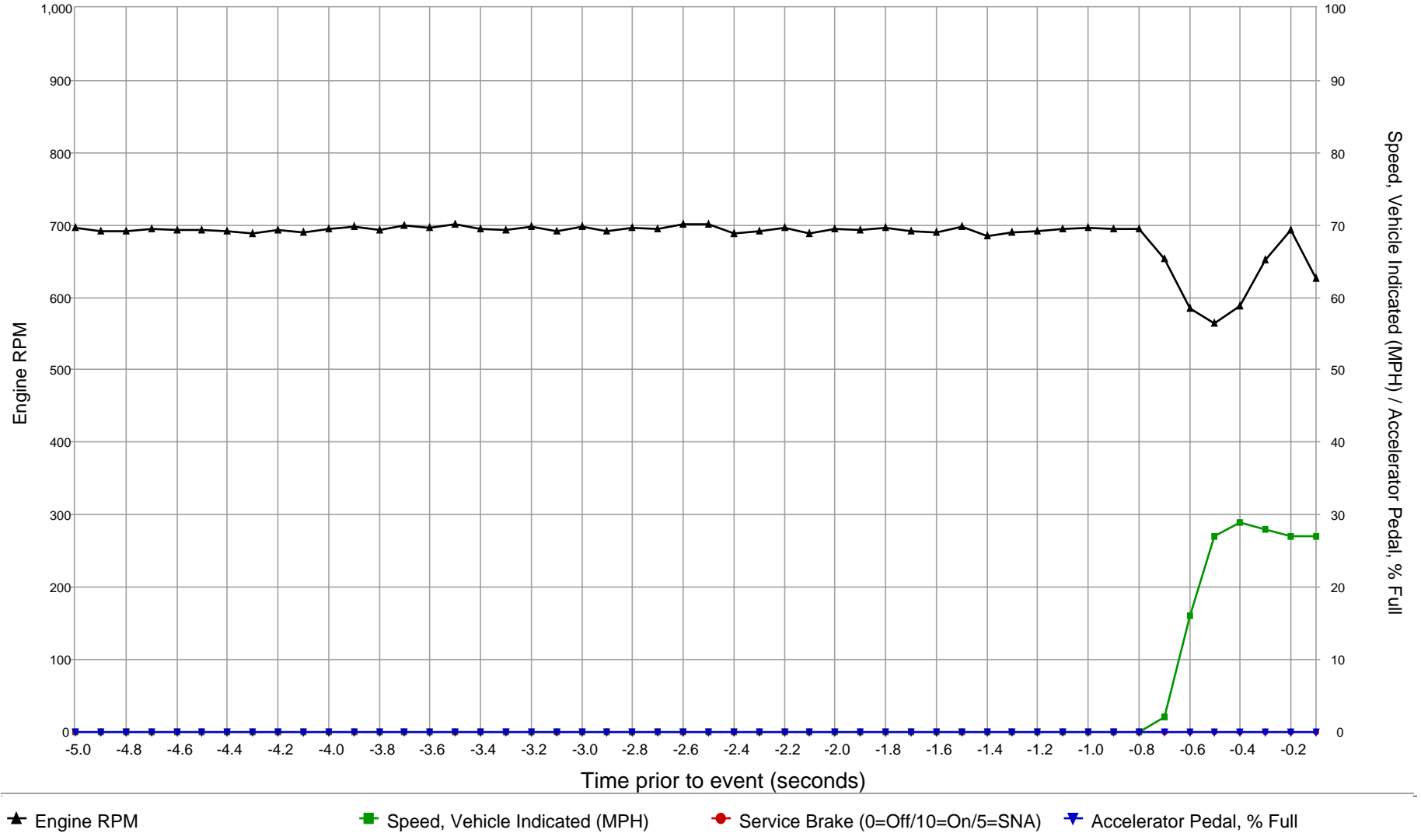
Time (msec)	Angular Rate (deg/sec)
-1500	0.00
-1480	0.00
-1460	0.00
-1440	0.00
-1420	0.00
-1400	0.00
-1380	0.00
-1360	0.00
-1340	0.00
-1320	0.00
-1300	0.00
-1280	0.00
-1260	0.00
-1240	0.00
-1220	0.00
-1200	0.00
-1180	0.00
-1160	0.00
-1140	0.00
-1120	0.00
-1100	0.00
-1080	0.00
-1060	0.00
-1040	0.00
-1020	0.00
-1000	0.00
-980	0.00
-960	0.00
-940	0.00
-920	0.00
-900	0.00
-880	0.00
-860	0.00
-840	0.00
-820	0.00
-800	8.00
-780	6.00
-760	0.00
-740	0.00
-720	0.00
-700	0.00
-680	0.00
-660	-38.00
-640	0.00
-620	0.00
-600	4.00
-580	0.00
-560	0.00
-540	34.00
-520	24.00

Time (msec)	Angular Rate (deg/sec)
-500	4.00
-480	-12.00
-460	-26.00
-440	-28.00
-420	-36.00
-400	-26.00
-380	-14.00
-360	0.00
-340	16.00
-320	26.00
-300	32.00
-280	32.00
-260	30.00
-240	32.00
-220	24.00
-200	20.00
-180	14.00
-160	8.00
-140	4.00
-120	0.00
-100	0.00
-80	-4.00
-60	-4.00
-40	-6.00
-20	-4.00
0	-8.00
20	0.00
40	0.00
60	0.00
80	0.00
100	0.00
120	0.00
140	14.00
160	8.00
180	4.00
200	10.00
220	16.00
240	12.00
260	2.00
280	0.00
300	-8.00
320	-8.00
340	-10.00
360	-8.00
380	-6.00
400	-2.00
420	4.00
440	0.00
460	-2.00
480	0.00

Rollover Crash Pulse (Most Recent Event) (if equipped)

Time (msec)	Angular Rate (deg/sec)	Time (msec)	Angular Rate (deg/sec)
500	8.00	1500	0.00
520	12.00	1520	-2.00
540	8.00	1540	0.00
560	8.00	1560	0.00
580	0.00	1580	0.00
600	-4.00	1600	0.00
620	-12.00	1620	0.00
640	-16.00	1640	0.00
660	-18.00	1660	0.00
680	-20.00	1680	0.00
700	-14.00	1700	0.00
720	-8.00	1720	0.00
740	-4.00	1740	0.00
760	0.00	1760	0.00
780	8.00	1780	2.00
800	8.00	1800	2.00
820	8.00	1820	2.00
840	6.00	1840	0.00
860	4.00	1860	0.00
880	2.00	1880	2.00
900	0.00	1900	2.00
920	0.00	1920	0.00
940	0.00	1940	0.00
960	0.00	1960	0.00
980	0.00	1980	0.00
1000	0.00	2000	0.00
1020	0.00	2020	0.00
1040	0.00	2040	0.00
1060	0.00	2060	0.00
1080	0.00	2080	0.00
1100	-2.00	2100	0.00
1120	-2.00	2120	0.00
1140	-2.00	2140	0.00
1160	-2.00	2160	0.00
1180	0.00	2180	2.00
1200	0.00	2200	0.00
1220	0.00	2220	0.00
1240	0.00	2240	0.00
1260	0.00	2260	0.00
1280	0.00	2280	0.00
1300	0.00	2300	-2.00
1320	0.00	2320	0.00
1340	0.00	2340	-2.00
1360	0.00	2360	0.00
1380	0.00	2380	-2.00
1400	0.00	2400	-2.00
1420	0.00	2420	0.00
1440	-2.00		
1460	-2.00		
1480	0.00		

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	0 [0]	0	4	Off	697	No	On	-1
-4.9	Complete	0 [0]	0	4	Off	692	No	On	-1
-4.8	Complete	0 [0]	0	3	Off	691	No	On	-1
-4.7	Complete	0 [0]	0	3	Off	694	No	On	-1
-4.6	Complete	0 [0]	0	3	Off	693	No	On	-1
-4.5	Complete	0 [0]	0	3	Off	693	No	On	-1
-4.4	Complete	0 [0]	0	3	Off	691	No	On	-1
-4.3	Complete	0 [0]	0	3	Off	688	No	On	-1
-4.2	Complete	0 [0]	0	3	Off	693	No	On	-1
-4.1	Complete	0 [0]	0	3	Off	690	No	On	-1
-4.0	Complete	0 [0]	0	3	Off	694	No	On	-1
-3.9	Complete	0 [0]	0	3	Off	698	No	On	-1
-3.8	Complete	0 [0]	0	3	Off	693	No	On	-1
-3.7	Complete	0 [0]	0	3	Off	700	No	On	-1
-3.6	Complete	0 [0]	0	3	Off	696	No	On	-1
-3.5	Complete	0 [0]	0	3	Off	701	No	On	-1
-3.4	Complete	0 [0]	0	3	Off	695	No	On	-1
-3.3	Complete	0 [0]	0	3	Off	693	No	On	-1
-3.2	Complete	0 [0]	0	3	Off	698	No	On	-1
-3.1	Complete	0 [0]	0	3	Off	692	No	On	-1
-3.0	Complete	0 [0]	0	3	Off	698	No	On	-1
-2.9	Complete	0 [0]	0	3	Off	692	No	On	-1
-2.8	Complete	0 [0]	0	3	Off	697	No	On	-1
-2.7	Complete	0 [0]	0	3	Off	695	No	On	-1
-2.6	Complete	0 [0]	0	3	Off	701	No	On	-1
-2.5	Complete	0 [0]	0	3	Off	701	No	On	-1
-2.4	Complete	0 [0]	0	3	Off	689	No	On	-1
-2.3	Complete	0 [0]	0	3	Off	691	No	On	-1
-2.2	Complete	0 [0]	0	3	Off	696	No	On	-1
-2.1	Complete	0 [0]	0	4	Off	689	No	On	-1
-2.0	Complete	0 [0]	0	4	Off	694	No	On	-1
-1.9	Complete	0 [0]	0	4	Off	693	No	On	-1
-1.8	Complete	0 [0]	0	3	Off	696	No	On	-1
-1.7	Complete	0 [0]	0	4	Off	692	No	On	-1
-1.6	Complete	0 [0]	0	3	Off	690	No	On	-1
-1.5	Complete	0 [0]	0	3	Off	698	No	On	-1
-1.4	Complete	0 [0]	0	3	Off	686	No	On	-1
-1.3	Complete	0 [0]	0	3	Off	690	No	On	-1
-1.2	Complete	0 [0]	0	3	Off	691	No	On	-1
-1.1	Complete	0 [0]	0	4	Off	695	No	On	-1
-1.0	Complete	0 [0]	0	4	Off	696	No	On	-1
-0.9	Complete	0 [0]	0	3	Off	695	No	On	-1
-0.8	Complete	0 [0]	0	3	Off	695	No	On	-1
-0.7	Complete	2 [3]	0	3	Off	654	No	On	-24
-0.6	Complete	16 [26]	0	3	Off	585	No	SNA	-59
-0.5	Complete	27 [43]	0	5	Off	564	No	SNA	-139
-0.4	Complete	29 [46]	0	4	Off	588	No	SNA	-145
-0.3	Complete	28 [46]	0	4	Off	652	No	SNA	-137
-0.2	Complete	27 [44]	0	4	Off	693	No	SNA	-143
-0.1	Complete	27 [44]	0	4	Off	626	No	SNA	-142

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	26	Off	0	0	0	0	0	No	No
-4.9	26	Off	0	0	0	0	0	No	No
-4.8	26	Off	0	0	0	0	0	No	No
-4.7	26	Off	0	0	0	0	0	No	No
-4.6	26	Off	0	0	0	0	0	No	No
-4.5	26	Off	0	0	0	0	0	No	No
-4.4	26	Off	0	0	0	0	0	No	No
-4.3	26	Off	0	0	0	0	0	No	No
-4.2	26	Off	0	0	0	0	0	No	No
-4.1	26	Off	0	0	0	0	0	No	No
-4.0	26	Off	0	0	0	0	0	No	No
-3.9	26	Off	0	0	0	0	0	No	No
-3.8	26	Off	0	0	0	0	0	No	No
-3.7	26	Off	0	0	0	0	0	No	No
-3.6	26	Off	0	0	0	0	0	No	No
-3.5	26	Off	0	0	0	0	0	No	No
-3.4	26	Off	0	0	0	0	0	No	No
-3.3	26	Off	0	0	0	0	0	No	No
-3.2	26	Off	0	0	0	0	0	No	No
-3.1	26	Off	0	0	0	0	0	No	No
-3.0	26	Off	0	0	0	0	0	No	No
-2.9	26	Off	0	0	0	0	0	No	No
-2.8	26	Off	0	0	0	0	0	No	No
-2.7	26	Off	0	0	0	0	0	No	No
-2.6	26	Off	0	0	0	0	0	No	No
-2.5	26	Off	0	0	0	0	0	No	No
-2.4	26	Off	0	0	0	0	0	No	No
-2.3	26	Off	0	0	0	0	0	No	No
-2.2	26	Off	0	0	0	0	0	No	No
-2.1	26	Off	0	0	0	0	0	No	No
-2.0	26	Off	0	0	0	0	0	No	No
-1.9	26	Off	0	0	0	0	0	No	No
-1.8	26	Off	0	0	0	0	0	No	No
-1.7	26	Off	0	0	0	0	0	No	No
-1.6	26	Off	0	0	0	0	0	No	No
-1.5	26	Off	0	0	0	0	0	No	No
-1.4	26	Off	0	0	0	0	0	No	No
-1.3	26	Off	0	0	0	0	0	No	No
-1.2	26	Off	0	0	0	0	0	No	No
-1.1	26	Off	0	0	0	0	0	No	No
-1.0	26	Off	0	0	0	0	0	No	No
-0.9	26	Off	0	0	0	0	0	No	No
-0.8	26	Off	1	0	0	0	0	No	No
-0.7	26	Off	7	225	227	19	214	No	No
-0.6	26	Off	SNA	359	351	SNA	332	No	No
-0.5	27	Off	SNA	319	330	SNA	339	No	No
-0.4	29	Off	SNA	303	334	SNA	353	No	No
-0.3	30	Off	SNA	311	328	SNA	329	No	No
-0.2	30	Off	SNA	304	327	SNA	333	No	No
-0.1	30	Off	SNA	304	308	SNA	331	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)	Gear Position (ATX)	Reverse Gear (MTX)	Tire Pressure Monitor Indicator Lamp	Tire Pressure Status, LF	Tire Pressure Status, RF	Tire Pressure Status, LR	Tire Pressure Status, RR	Tire Pressure, LF (psi)	Tire Pressure, RF (psi)
-5.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38

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, LR (psi)	Tire Pressure, RR (psi)	Cruise Control Status	Cruise Control Engaged	Adaptive Cruise Control Status (if equip.)	ACC Speed Set (MPH) (if equip.)	Object of Interest Distance (if equip.)	Forward Collision Warning Lamp Status (if equip.)
-5.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off

System Status at Event (1st Prior Event)

Complete File Recorded	Yes
Safety Belt Status, Driver	Not Buckled
Safety Belt Status, Outboard Front Passenger	Not 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])	27.3 [44]
Time, Maximum Delta-V, Longitudinal (msec)	162
Maximum Delta-V Lateral (MPH [km/h])	6.8 [11]
Time, Maximum Delta-V, Lateral (msec)	108
Clipping Flag Status	Not Set
Time, Operation System Time (sec)	2687287
Time, Airbag Warning Lamp On (min)	0
Event Number	1
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)	14.5
Temperature, Outside (deg C)	47
Event Signal Transmission, Complete (Yes, No)	Yes
Odometer at Event (Miles[km])	11795.9 [18984]
Ignition Cycle, Crash	328
VIN, Original	2C3CDXKT2KH*****
VIN Recorded at Event (last 8 characters)	KH*****

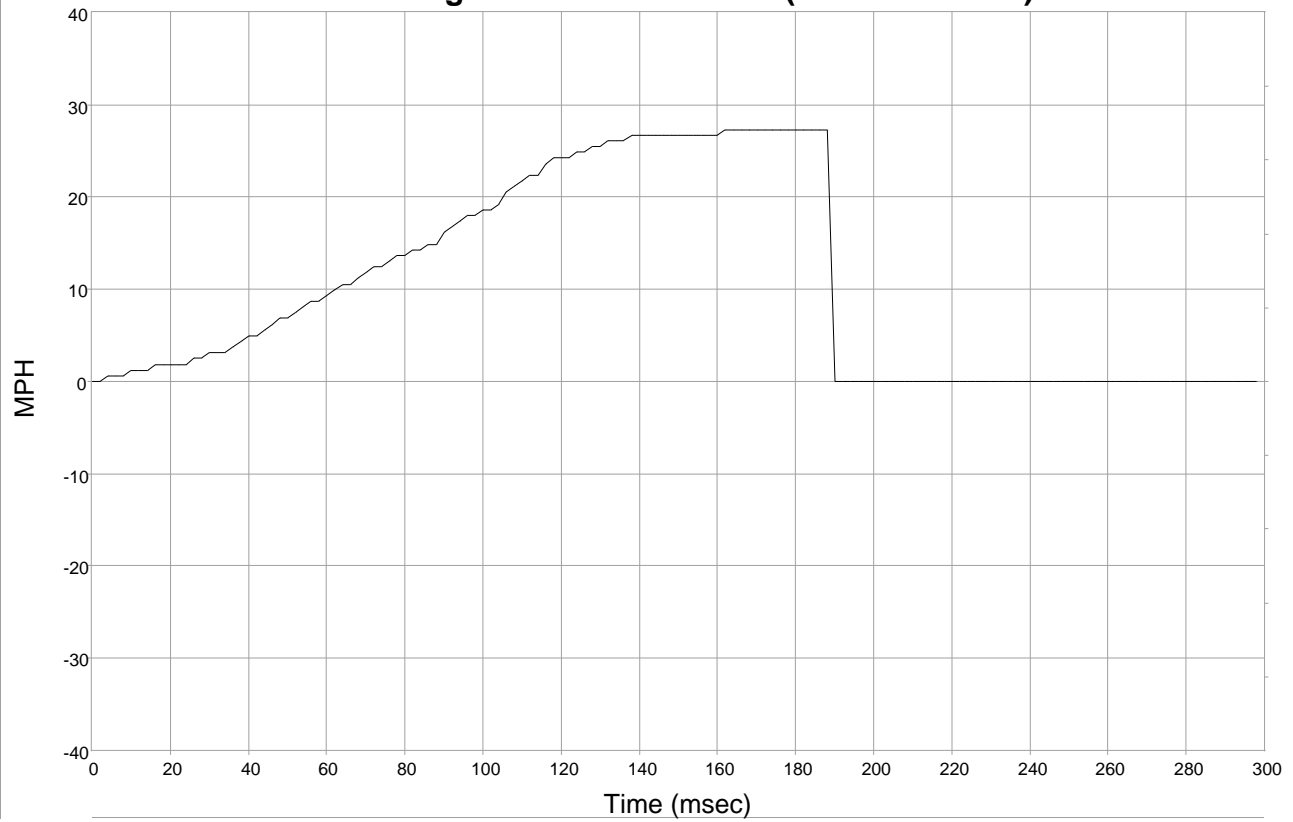
Deployment Command Data (1st Prior Event)

Frontal Airbag Deployment, Time to Deploy 1st Stage, Driver (msec)	N/A
Frontal Airbag Deployment, 1st Stage, Driver	No
Frontal Airbag Deployment, Time to Deploy 2nd Stage, Driver (msec)	N/A
Frontal Airbag Deployment, 2nd Stage, Driver	No
Frontal Airbag, Time to Deploy 1st Stage, Passenger (msec)	N/A
Frontal Airbag, Deployment 1st Stage, Passenger	No
Front Airbag, Time to Deploy 2nd Stage, Passenger (msec)	N/A
Front Airbag, Deployment 2nd Stage, Passenger	No
Buckle Pretensioner Deployment, Driver	No
Retractor Pretensioner Deployment, Driver	Yes
Buckle Pretensioner Deployment, Passenger	No
Retractor Pretensioner Deployment, Passenger	Yes
Side Seat Airbag Deployment, Front Left	No
Side Curtain Airbag Deployment, Left	No
Side Seat Airbag Deployment, Front Right	No
Side Curtain Airbag Deployment, Right	No

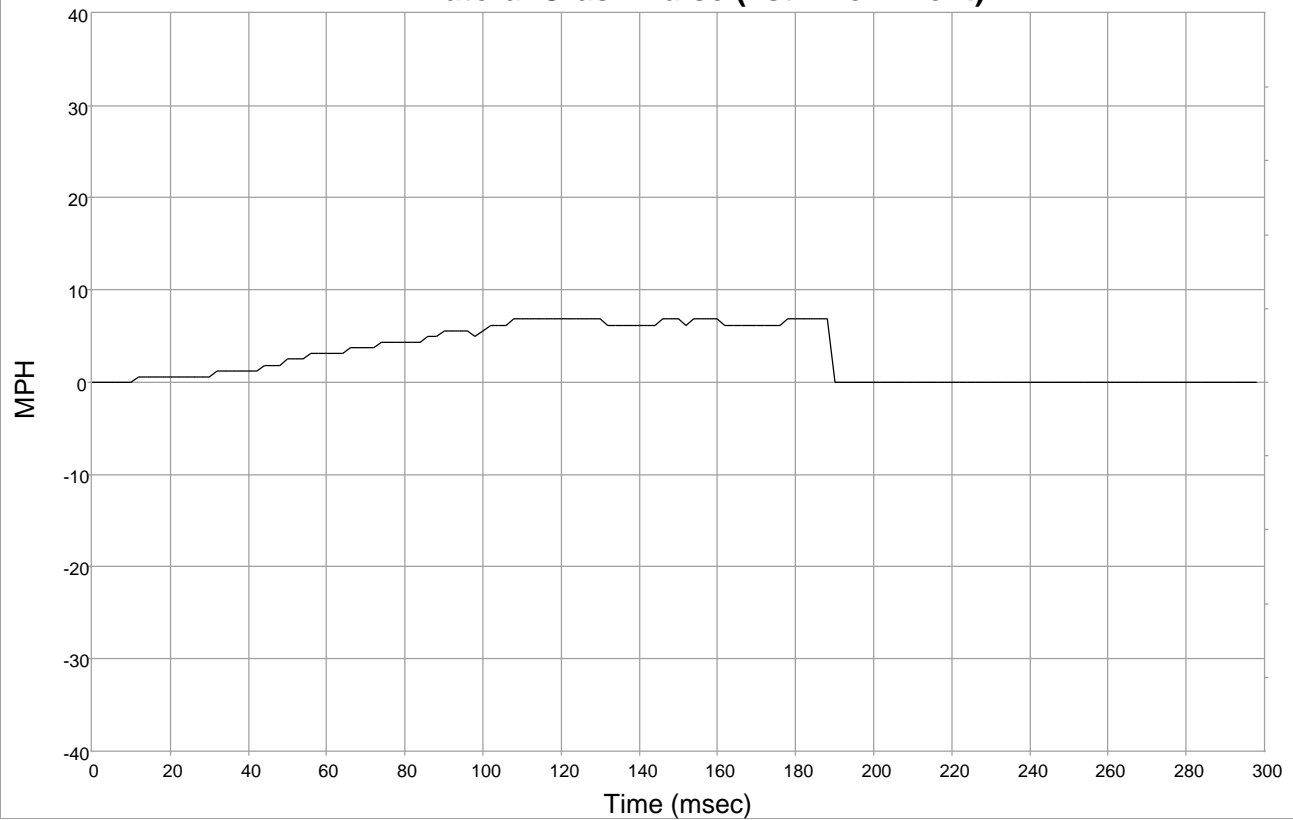
DTCs Present at Start of Event (1st Prior Event)

No DTCs Present

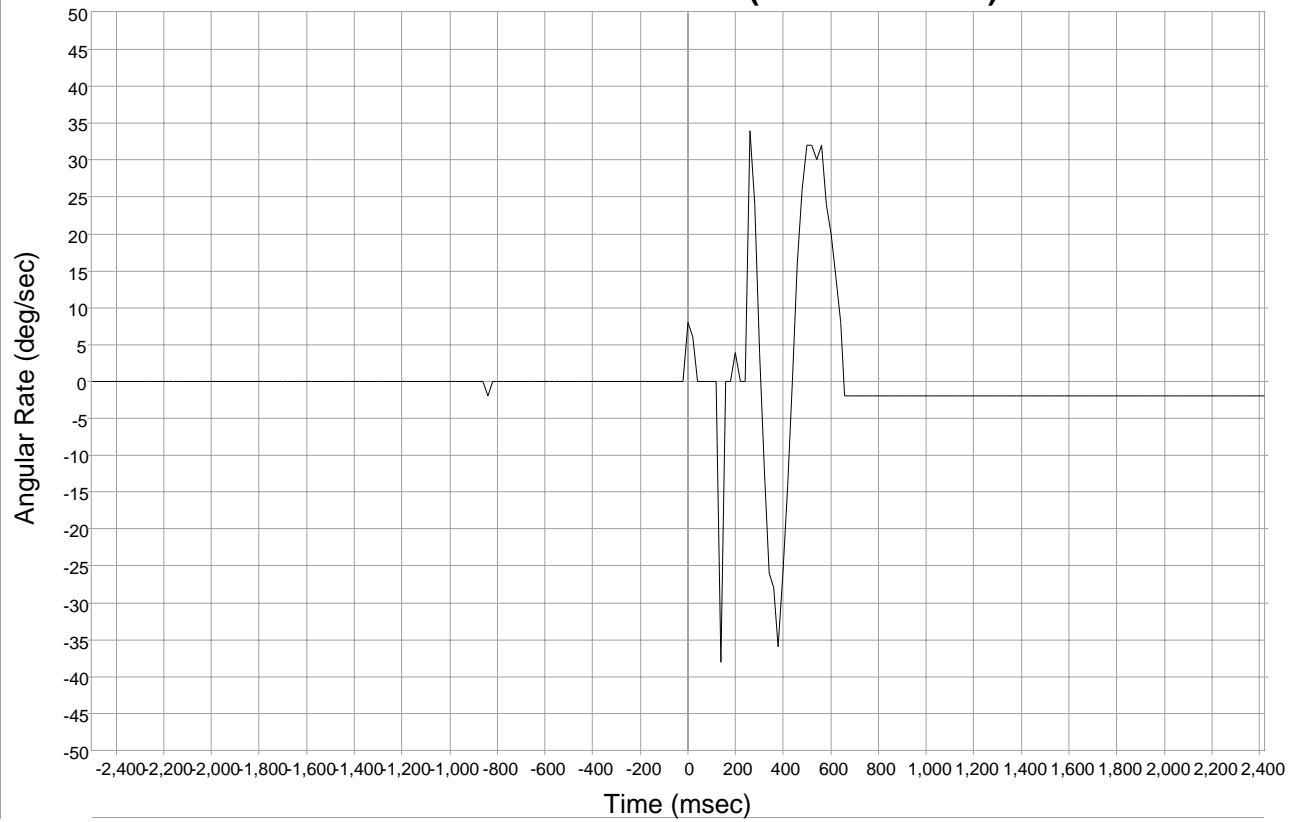
Longitudinal Crash Pulse (1st Prior Event)



Lateral Crash Pulse (1st Prior Event)



Rollover Crash Pulse (1st Prior Event)



Longitudinal Crash Pulse (1st Prior Event)

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
2	0.0 [0]
4	0.6 [1]
6	0.6 [1]
8	0.6 [1]
10	1.2 [2]
12	1.2 [2]
14	1.2 [2]
16	1.9 [3]
18	1.9 [3]
20	1.9 [3]
22	1.9 [3]
24	1.9 [3]
26	2.5 [4]
28	2.5 [4]
30	3.1 [5]
32	3.1 [5]
34	3.1 [5]
36	3.7 [6]
38	4.3 [7]
40	5.0 [8]
42	5.0 [8]
44	5.6 [9]
46	6.2 [10]
48	6.8 [11]
50	6.8 [11]
52	7.5 [12]
54	8.1 [13]
56	8.7 [14]
58	8.7 [14]
60	9.3 [15]
62	9.9 [16]
64	10.6 [17]
66	10.6 [17]
68	11.2 [18]
70	11.8 [19]
72	12.4 [20]
74	12.4 [20]
76	13.0 [21]
78	13.7 [22]
80	13.7 [22]
82	14.3 [23]
84	14.3 [23]
86	14.9 [24]
88	14.9 [24]
90	16.2 [26]
92	16.8 [27]
94	17.4 [28]
96	18.0 [29]
98	18.0 [29]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
100	18.6 [30]
102	18.6 [30]
104	19.3 [31]
106	20.5 [33]
108	21.1 [34]
110	21.7 [35]
112	22.4 [36]
114	22.4 [36]
116	23.6 [38]
118	24.2 [39]
120	24.2 [39]
122	24.2 [39]
124	24.9 [40]
126	24.9 [40]
128	25.5 [41]
130	25.5 [41]
132	26.1 [42]
134	26.1 [42]
136	26.1 [42]
138	26.7 [43]
140	26.7 [43]
142	26.7 [43]
144	26.7 [43]
146	26.7 [43]
148	26.7 [43]
150	26.7 [43]
152	26.7 [43]
154	26.7 [43]
156	26.7 [43]
158	26.7 [43]
160	26.7 [43]
162	27.3 [44]
164	27.3 [44]
166	27.3 [44]
168	27.3 [44]
170	27.3 [44]
172	27.3 [44]
174	27.3 [44]
176	27.3 [44]
178	27.3 [44]
180	27.3 [44]
182	27.3 [44]
184	27.3 [44]
186	27.3 [44]
188	27.3 [44]
190	0.0 [0]
192	0.0 [0]
194	0.0 [0]
196	0.0 [0]
198	0.0 [0]

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
200	0.0 [0]
202	0.0 [0]
204	0.0 [0]
206	0.0 [0]
208	0.0 [0]
210	0.0 [0]
212	0.0 [0]
214	0.0 [0]
216	0.0 [0]
218	0.0 [0]
220	0.0 [0]
222	0.0 [0]
224	0.0 [0]
226	0.0 [0]
228	0.0 [0]
230	0.0 [0]
232	0.0 [0]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
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]

Lateral Crash Pulse (1st Prior 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	0.0 [0]
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	0.6 [1]
28	0.6 [1]
30	0.6 [1]
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	1.9 [3]
46	1.9 [3]
48	1.9 [3]
50	2.5 [4]
52	2.5 [4]
54	2.5 [4]
56	3.1 [5]
58	3.1 [5]
60	3.1 [5]
62	3.1 [5]
64	3.1 [5]
66	3.7 [6]
68	3.7 [6]
70	3.7 [6]
72	3.7 [6]
74	4.3 [7]
76	4.3 [7]
78	4.3 [7]
80	4.3 [7]
82	4.3 [7]
84	4.3 [7]
86	5.0 [8]
88	5.0 [8]
90	5.6 [9]
92	5.6 [9]
94	5.6 [9]
96	5.6 [9]
98	5.0 [8]

Time (msec)	Delta-V, Lateral (MPH [km/h])
100	5.6 [9]
102	6.2 [10]
104	6.2 [10]
106	6.2 [10]
108	6.8 [11]
110	6.8 [11]
112	6.8 [11]
114	6.8 [11]
116	6.8 [11]
118	6.8 [11]
120	6.8 [11]
122	6.8 [11]
124	6.8 [11]
126	6.8 [11]
128	6.8 [11]
130	6.8 [11]
132	6.2 [10]
134	6.2 [10]
136	6.2 [10]
138	6.2 [10]
140	6.2 [10]
142	6.2 [10]
144	6.2 [10]
146	6.8 [11]
148	6.8 [11]
150	6.8 [11]
152	6.2 [10]
154	6.8 [11]
156	6.8 [11]
158	6.8 [11]
160	6.8 [11]
162	6.2 [10]
164	6.2 [10]
166	6.2 [10]
168	6.2 [10]
170	6.2 [10]
172	6.2 [10]
174	6.2 [10]
176	6.2 [10]
178	6.8 [11]
180	6.8 [11]
182	6.8 [11]
184	6.8 [11]
186	6.8 [11]
188	6.8 [11]
190	0.0 [0]
192	0.0 [0]
194	0.0 [0]
196	0.0 [0]
198	0.0 [0]

Time (msec)	Delta-V, Lateral (MPH [km/h])
200	0.0 [0]
202	0.0 [0]
204	0.0 [0]
206	0.0 [0]
208	0.0 [0]
210	0.0 [0]
212	0.0 [0]
214	0.0 [0]
216	0.0 [0]
218	0.0 [0]
220	0.0 [0]
222	0.0 [0]
224	0.0 [0]
226	0.0 [0]
228	0.0 [0]
230	0.0 [0]
232	0.0 [0]
234	0.0 [0]
236	0.0 [0]
238	0.0 [0]
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]

Rollover Crash Pulse (1st Prior Event) (if equipped)

Time (msec)	Angular Rate (deg/sec)
-2500	0.00
-2480	0.00
-2460	0.00
-2440	0.00
-2420	0.00
-2400	0.00
-2380	0.00
-2360	0.00
-2340	0.00
-2320	0.00
-2300	0.00
-2280	0.00
-2260	0.00
-2240	0.00
-2220	0.00
-2200	0.00
-2180	0.00
-2160	0.00
-2140	0.00
-2120	0.00
-2100	0.00
-2080	0.00
-2060	0.00
-2040	0.00
-2020	0.00
-2000	0.00
-1980	0.00
-1960	0.00
-1940	0.00
-1920	0.00
-1900	0.00
-1880	0.00
-1860	0.00
-1840	0.00
-1820	0.00
-1800	0.00
-1780	0.00
-1760	0.00
-1740	0.00
-1720	0.00
-1700	0.00
-1680	0.00
-1660	0.00
-1640	0.00
-1620	0.00
-1600	0.00
-1580	0.00
-1560	0.00
-1540	0.00
-1520	0.00

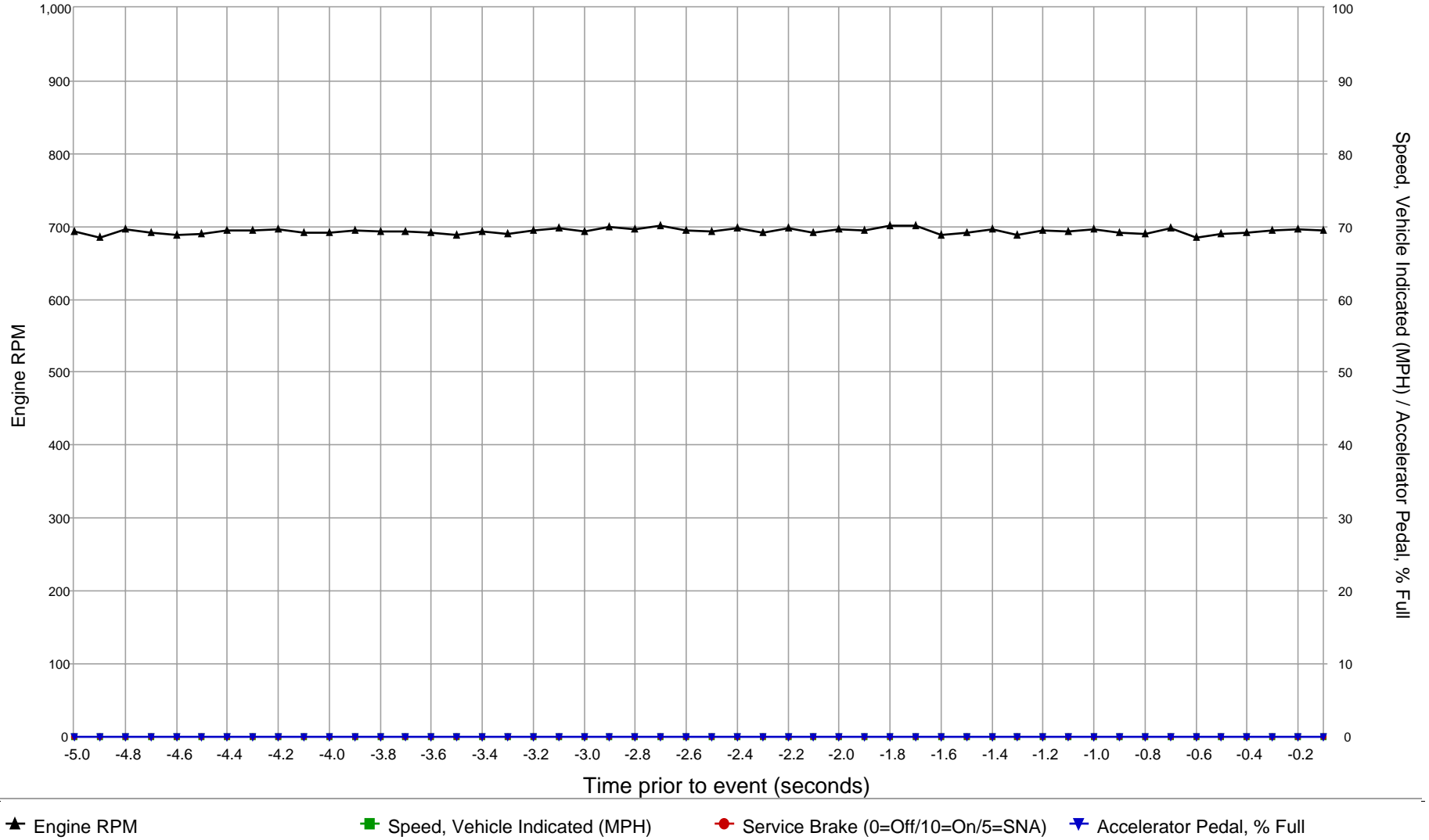
Time (msec)	Angular Rate (deg/sec)
-1500	0.00
-1480	0.00
-1460	0.00
-1440	0.00
-1420	0.00
-1400	0.00
-1380	0.00
-1360	0.00
-1340	0.00
-1320	0.00
-1300	0.00
-1280	0.00
-1260	0.00
-1240	0.00
-1220	0.00
-1200	0.00
-1180	0.00
-1160	0.00
-1140	0.00
-1120	0.00
-1100	0.00
-1080	0.00
-1060	0.00
-1040	0.00
-1020	0.00
-1000	0.00
-980	0.00
-960	0.00
-940	0.00
-920	0.00
-900	0.00
-880	0.00
-860	0.00
-840	-2.00
-820	0.00
-800	0.00
-780	0.00
-760	0.00
-740	0.00
-720	0.00
-700	0.00
-680	0.00
-660	0.00
-640	0.00
-620	0.00
-600	0.00
-580	0.00
-560	0.00
-540	0.00
-520	0.00

Time (msec)	Angular Rate (deg/sec)
-500	0.00
-480	0.00
-460	0.00
-440	0.00
-420	0.00
-400	0.00
-380	0.00
-360	0.00
-340	0.00
-320	0.00
-300	0.00
-280	0.00
-260	0.00
-240	0.00
-220	0.00
-200	0.00
-180	0.00
-160	0.00
-140	0.00
-120	0.00
-100	0.00
-80	0.00
-60	0.00
-40	0.00
-20	0.00
0	8.00
20	6.00
40	0.00
60	0.00
80	0.00
100	0.00
120	0.00
140	-38.00
160	0.00
180	0.00
200	4.00
220	0.00
240	0.00
260	34.00
280	24.00
300	4.00
320	-12.00
340	-26.00
360	-28.00
380	-36.00
400	-26.00
420	-14.00
440	0.00
460	16.00
480	26.00

Rollover Crash Pulse (1st Prior Event) (if equipped)

Time (msec)	Angular Rate (deg/sec)	Time (msec)	Angular Rate (deg/sec)
500	32.00	1500	-2.00
520	32.00	1520	-2.00
540	30.00	1540	-2.00
560	32.00	1560	-2.00
580	24.00	1580	-2.00
600	20.00	1600	-2.00
620	14.00	1620	-2.00
640	8.00	1640	-2.00
660	-2.00	1660	-2.00
680	-2.00	1680	-2.00
700	-2.00	1700	-2.00
720	-2.00	1720	-2.00
740	-2.00	1740	-2.00
760	-2.00	1760	-2.00
780	-2.00	1780	-2.00
800	-2.00	1800	-2.00
820	-2.00	1820	-2.00
840	-2.00	1840	-2.00
860	-2.00	1860	-2.00
880	-2.00	1880	-2.00
900	-2.00	1900	-2.00
920	-2.00	1920	-2.00
940	-2.00	1940	-2.00
960	-2.00	1960	-2.00
980	-2.00	1980	-2.00
1000	-2.00	2000	-2.00
1020	-2.00	2020	-2.00
1040	-2.00	2040	-2.00
1060	-2.00	2060	-2.00
1080	-2.00	2080	-2.00
1100	-2.00	2100	-2.00
1120	-2.00	2120	-2.00
1140	-2.00	2140	-2.00
1160	-2.00	2160	-2.00
1180	-2.00	2180	-2.00
1200	-2.00	2200	-2.00
1220	-2.00	2220	-2.00
1240	-2.00	2240	-2.00
1260	-2.00	2260	-2.00
1280	-2.00	2280	-2.00
1300	-2.00	2300	-2.00
1320	-2.00	2320	-2.00
1340	-2.00	2340	-2.00
1360	-2.00	2360	-2.00
1380	-2.00	2380	-2.00
1400	-2.00	2400	-2.00
1420	-2.00	2420	-2.00
1440	-2.00		
1460	-2.00		
1480	-2.00		

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	0 [0]	0	3	Off	693	No	On	-1
-4.9	Complete	0 [0]	0	4	Off	685	No	On	-1
-4.8	Complete	0 [0]	0	3	Off	697	No	On	-1
-4.7	Complete	0 [0]	0	3	Off	692	No	On	-1
-4.6	Complete	0 [0]	0	3	Off	689	No	On	-1
-4.5	Complete	0 [0]	0	3	Off	690	No	On	-1
-4.4	Complete	0 [0]	0	4	Off	694	No	On	-1
-4.3	Complete	0 [0]	0	3	Off	694	No	On	-1
-4.2	Complete	0 [0]	0	4	Off	697	No	On	-1
-4.1	Complete	0 [0]	0	4	Off	692	No	On	-1
-4.0	Complete	0 [0]	0	3	Off	691	No	On	-1
-3.9	Complete	0 [0]	0	3	Off	694	No	On	-1
-3.8	Complete	0 [0]	0	3	Off	693	No	On	-1
-3.7	Complete	0 [0]	0	3	Off	693	No	On	-1
-3.6	Complete	0 [0]	0	3	Off	691	No	On	-1
-3.5	Complete	0 [0]	0	3	Off	688	No	On	-1
-3.4	Complete	0 [0]	0	3	Off	693	No	On	-1
-3.3	Complete	0 [0]	0	3	Off	690	No	On	-1
-3.2	Complete	0 [0]	0	3	Off	694	No	On	-1
-3.1	Complete	0 [0]	0	3	Off	698	No	On	-1
-3.0	Complete	0 [0]	0	3	Off	693	No	On	-1
-2.9	Complete	0 [0]	0	3	Off	700	No	On	-1
-2.8	Complete	0 [0]	0	3	Off	696	No	On	-1
-2.7	Complete	0 [0]	0	3	Off	701	No	On	-1
-2.6	Complete	0 [0]	0	3	Off	695	No	On	-1
-2.5	Complete	0 [0]	0	3	Off	693	No	On	-1
-2.4	Complete	0 [0]	0	3	Off	698	No	On	-1
-2.3	Complete	0 [0]	0	3	Off	692	No	On	-1
-2.2	Complete	0 [0]	0	3	Off	698	No	On	-1
-2.1	Complete	0 [0]	0	3	Off	692	No	On	-1
-2.0	Complete	0 [0]	0	3	Off	697	No	On	-1
-1.9	Complete	0 [0]	0	3	Off	695	No	On	-1
-1.8	Complete	0 [0]	0	3	Off	701	No	On	-1
-1.7	Complete	0 [0]	0	3	Off	701	No	On	-1
-1.6	Complete	0 [0]	0	3	Off	689	No	On	-1
-1.5	Complete	0 [0]	0	3	Off	691	No	On	-1
-1.4	Complete	0 [0]	0	3	Off	696	No	On	-1
-1.3	Complete	0 [0]	0	4	Off	689	No	On	-1
-1.2	Complete	0 [0]	0	4	Off	694	No	On	-1
-1.1	Complete	0 [0]	0	4	Off	693	No	On	-1
-1.0	Complete	0 [0]	0	3	Off	696	No	On	-1
-0.9	Complete	0 [0]	0	4	Off	692	No	On	-1
-0.8	Complete	0 [0]	0	3	Off	690	No	On	-1
-0.7	Complete	0 [0]	0	3	Off	698	No	On	-1
-0.6	Complete	0 [0]	0	3	Off	686	No	On	-1
-0.5	Complete	0 [0]	0	3	Off	690	No	On	-1
-0.4	Complete	0 [0]	0	3	Off	691	No	On	-1
-0.3	Complete	0 [0]	0	4	Off	695	No	On	-1
-0.2	Complete	0 [0]	0	4	Off	696	No	On	-1
-0.1	Complete	0 [0]	0	3	Off	695	No	On	-1

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	26	Off	0	0	0	0	0	No	No
-4.9	26	Off	0	0	0	0	0	No	No
-4.8	26	Off	0	0	0	0	0	No	No
-4.7	26	Off	0	0	0	0	0	No	No
-4.6	26	Off	0	0	0	0	0	No	No
-4.5	26	Off	0	0	0	0	0	No	No
-4.4	26	Off	0	0	0	0	0	No	No
-4.3	26	Off	0	0	0	0	0	No	No
-4.2	26	Off	0	0	0	0	0	No	No
-4.1	26	Off	0	0	0	0	0	No	No
-4.0	26	Off	0	0	0	0	0	No	No
-3.9	26	Off	0	0	0	0	0	No	No
-3.8	26	Off	0	0	0	0	0	No	No
-3.7	26	Off	0	0	0	0	0	No	No
-3.6	26	Off	0	0	0	0	0	No	No
-3.5	26	Off	0	0	0	0	0	No	No
-3.4	26	Off	0	0	0	0	0	No	No
-3.3	26	Off	0	0	0	0	0	No	No
-3.2	26	Off	0	0	0	0	0	No	No
-3.1	26	Off	0	0	0	0	0	No	No
-3.0	26	Off	0	0	0	0	0	No	No
-2.9	26	Off	0	0	0	0	0	No	No
-2.8	26	Off	0	0	0	0	0	No	No
-2.7	26	Off	0	0	0	0	0	No	No
-2.6	26	Off	0	0	0	0	0	No	No
-2.5	26	Off	0	0	0	0	0	No	No
-2.4	26	Off	0	0	0	0	0	No	No
-2.3	26	Off	0	0	0	0	0	No	No
-2.2	26	Off	0	0	0	0	0	No	No
-2.1	26	Off	0	0	0	0	0	No	No
-2.0	26	Off	0	0	0	0	0	No	No
-1.9	26	Off	0	0	0	0	0	No	No
-1.8	26	Off	0	0	0	0	0	No	No
-1.7	26	Off	0	0	0	0	0	No	No
-1.6	26	Off	0	0	0	0	0	No	No
-1.5	26	Off	0	0	0	0	0	No	No
-1.4	26	Off	0	0	0	0	0	No	No
-1.3	26	Off	0	0	0	0	0	No	No
-1.2	26	Off	0	0	0	0	0	No	No
-1.1	26	Off	0	0	0	0	0	No	No
-1.0	26	Off	0	0	0	0	0	No	No
-0.9	26	Off	0	0	0	0	0	No	No
-0.8	26	Off	0	0	0	0	0	No	No
-0.7	26	Off	0	0	0	0	0	No	No
-0.6	26	Off	0	0	0	0	0	No	No
-0.5	26	Off	0	0	0	0	0	No	No
-0.4	26	Off	0	0	0	0	0	No	No
-0.3	26	Off	0	0	0	0	0	No	No
-0.2	26	Off	0	0	0	0	0	No	No
-0.1	26	Off	0	0	0	0	0	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)	Gear Position (ATX)	Reverse Gear (MTX)	Tire Pressure Monitor Indicator Lamp	Tire Pressure Status, LF	Tire Pressure Status, RF	Tire Pressure Status, LR	Tire Pressure Status, RR	Tire Pressure, LF (psi)	Tire Pressure, RF (psi)
-5.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-4.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-3.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-2.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-1.0	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.9	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.8	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.7	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.6	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.5	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.4	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.3	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.2	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38
-0.1	Park	Not Reverse	Off	Normal	Normal	Normal	Normal	36	38

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, LR (psi)	Tire Pressure, RR (psi)	Cruise Control Status	Cruise Control Engaged	Adaptive Cruise Control Status (if equip.)	ACC Speed Set (MPH) (if equip.)	Object of Interest Distance (if equip.)	Forward Collision Warning Lamp Status (if equip.)
-5.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-4.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-3.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-2.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-1.0	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.9	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.8	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.7	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.6	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.5	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.4	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.3	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.2	35	37	Off	Not Engaged	Off	SNA	SNA	Off
-0.1	35	37	Off	Not Engaged	Off	SNA	SNA	Off

D0 00 CC 8B 00 00 FF 00 F8 FF 1F 56 28 00 58 3F 00 00 00 01 08 07 FF 5C 04 00 00 00 00 00
00 53 03 00 00 0B 00 00 00 00 00

71 01 03 01 01 01 CC 00 02 B5 00 02 9A 3F FF 02 60 02 8E FF FF 00 00 00 00 23 DD 15 0A 25
00 08 40 01 00 00 00 00 00 00 00 00 0E E3 00 00 00 00 00 00 00 00 00 00 00 00 00 00
16 1C 00 00 00 40 00 00 24 26 23 25 FF 00 00 00 00 00 00 7D 00 00 00 02 F0 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 56 28 00 58 3F 00 00 00 01 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 0A 00 00 00 00 00

71 01 03 01 01 02 CC 00 02 8C 00 02 92 3F FF 02 6D 02 8F FF FF 00 00 00 00 22 DD 15 0A 25
00 08 40 01 00 00 00 00 00 00 00 00 0E EE 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
16 D9 00 00 00 40 00 00 24 26 23 25 FF 00 00 00 00 00 00 7D 00 00 00 02 E0 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 56 28 00 5B 3F 00 00 00 01 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 0A 00 00 00 00 00

71 01 03 01 01 03 CC 00 02 4C 00 02 C2 3F FF 02 5D 02 9B FF FF 00 00 00 00 23 DC 15 0A 24
00 09 40 01 00 00 00 00 00 00 00 00 0E DE 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
17 27 00 00 00 40 00 00 24 26 23 25 FF 00 00 00 00 00 00 7D 00 00 00 02 BB 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 56 28 00 5C 3F 00 00 00 01 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 0B 00 00 00 00 00

71 01 03 01 01 04 CC 00 02 34 00 02 A5 3F FF 02 7E 02 94 FF FF 00 00 00 00 24 DB 15 0A 22
00 07 40 00 00 00 00 00 00 00 00 00 0E EB 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
15 98 00 00 00 40 00 00 24 26 23 25 FF 00 00 00 00 00 00 7D 00 00 00 02 81 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 56 28 00 56 3F 00 00 00 01 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 0C 00 00 00 00 00

71 01 03 01 01 05 CC 00 02 49 00 02 98 3F FF 02 CE 02 BD FF FF 00 00 00 00 21 DE 15 0A 21
00 07 40 00 00 00 00 00 00 00 00 00 0F 8A 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
0C D5 00 00 00 40 00 00 24 26 23 25 FF 00 00 00 00 00 00 7C 00 00 00 02 6B 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 56 28 00 33 3F 00 00 00 01 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 08 00 00 00 00 00

71 01 03 01 01 06 CC 00 02 8E 00 01 AC 00 26 01 C1 01 C6 82 BE 00 00 00 00 21 DE 15 0A 20
00 07 40 00 00 00 00 00 00 00 00 00 0F D1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
01 A6 00 00 00 40 00 00 24 26 23 25 FF 22 00 00 00 00 00 7D 00 00 00 02 66 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 55 28 00 06 01 00 00 00 00 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 08 00 00 00 00 00

71 01 03 01 01 07 CC 00 02 B7 00 00 00 00 00 00 00 00 00 80 8E 00 00 00 00 21 DE 15 0B 20
00 07 40 00 00 00 00 00 00 00 00 00 0F FE 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 40 00 00 24 26 23 25 FF 22 00 00 00 00 00 7D 00 00 00 02 6B 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 55 28 00 00 00 00 00 00 00 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 08 00 00 00 00 00

71 01 03 01 01 08 CC 00 02 B7 00 00 00 00 00 00 00 00 00 7F FF 00 00 00 00 21 DE 15 0A 20
00 07 40 00 00 00 00 00 00 00 00 00 0F FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 40 00 00 24 26 23 25 FF 22 00 00 00 00 00 7D 00 00 00 02 6D 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 55 28 00 00 00 00 00 00 00 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 08 00 00 00 00 00

71 01 03 01 01 09 CC 00 02 B8 00 00 00 00 00 00 00 00 00 7F FA 00 00 00 00 21 DE 15 0A 20
00 07 40 00 00 00 00 00 00 00 00 00 0F FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 40 00 00 24 26 23 25 FF 22 00 00 00 00 00 7D 00 00 00 02 6D 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 55 28 00 00 00 00 00 00 00 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 09 00 00 00 00 00

71 01 03 01 01 0A CC 00 02 B7 00 00 00 00 00 00 00 00 00 80 00 00 00 21 DE 15 0A 20
00 07 40 00 00 00 00 00 00 00 00 00 0F FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 40 00 00 24 26 23 25 FF 22 00 00 00 00 00 7D 00 00 00 02 6B 00 00 00 04 00 00
D0 00 CC 8B 00 00 FF 00 F8 FF 1F 55 28 00 00 00 00 00 00 00 08 07 FF 5C 04 00 00 00 00 00 00
00 53 03 00 00 09 00 00 00 00 00

71 01 03 01 01 0B CC 00 02 B3 00 00 00 00 00 00 00 00 00 7F F5 00 00 00 00 21 DE 15 0A 20
00 07 40 00 00 00 00 00 00 00 00 00 0F FF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

Disclaimer of Liability

The users of the CDR product and reviewers of the CDR reports and exported data shall ensure that data and information supplied is applicable to the vehicle, vehicle's system(s) and the vehicle ECU. Robert Bosch LLC and all its directors, officers, employees and members shall not be liable for damages arising out of or related to incorrect, incomplete or misinterpreted software and/or data. Robert Bosch LLC expressly excludes all liability for incidental, consequential, special or punitive damages arising from or related to the CDR data, CDR software or use thereof.

Appendix B: 2020 Chevrolet Tahoe Event Data Recorder Report⁴

⁴ The EDR report contained in this technical report was imaged using the current version of the Bosch CDR software at the time of the vehicle inspection. The CDR report contained in the associated Crash Viewer application may differ relative to this 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	1GNSKBKC5LR*****
User	
Case Number	
EDR Data Imaging Date	10/01/2020
Crash Date	
Filename	CR20031_V2_ACM.CDRX
Saved on	Thursday, October 1 2020 at 09:58:24
Imaged with CDR version	Crash Data Retrieval Tool 19.5
Imaged with Software Licensed to (Company Name)	NHTSA
Reported with CDR version	Crash Data Retrieval Tool 21.5.1
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	Record 1 (Deployment)

Comments

No comments entered.

Data Limitations

Recorded Crash Events:

There are two types of recorded crash events for Front, Side, and Rear (FSR) Events. The first is the Non-Deployment Event. A Non-Deployment Event records data but does not deploy the air bag(s). The minimum SDM Recorded Vehicle Velocity Change, that is needed to record a Non-Deployment Event, is five MPH [8 km/h]. A Non-Deployment Event contains Pre-Crash and Crash data. The oldest Non-Deployment event can be overwritten by a Deployment Event, if all three records are full and the Non-Deployment Event is not locked. A Non-Deployment Event can be overwritten by a more recent Non-Deployment Event if all three records are full and the Non-Deployment is older than approximately 250 ignition cycles. Also, a Non-Deployment event can be recorded if one of the following occurs without the Deployment of any of the frontal air bags, side air bags, pretensioners, or roll bars:

- Head Rest Deployment
- Battery Cut-Off Deployment

The second type of SDM recorded crash event for FSR Events is the Deployment Event. It also may contain Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM.

Rollover Events contains Pre-Crash and Crash data. Rollover event follow the same rules as FSR Deployment events.

The SDM can store up to three Events.

There are two types of PedPro crash events. The first is the Non-Deployment PedPro Event. A Non-Deployment PedPro Event records data but does not deploy anything. A Non-Deployment PedPro Event may contain Pre-Crash and Crash data. The second type of PedPro recorded crash event is the Deployment PedPro Event. It also may contain Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM.

The SDM can store up to two PedPro Events.

Data:

For FSR Events, SDM Recorded Vehicle Velocity Change reflects the change in velocity that the sensing system experienced during the recorded portion of the event. SDM Recorded Vehicle Velocity Change is the change in velocity during the recording time and is not the speed the vehicle was traveling before the event and is also not the Barrier Equivalent Velocity. For Deployment and Non-Deployment Events, the SDM will record up to 300 milliseconds of data after time zero. The SDM will also record up to 300 milliseconds of Vehicle Acceleration data after time zero.

For Rollover Events, the SDM may record Lateral Acceleration, Vertical Acceleration, and Roll Rate data, if the SDM is rollover capable. This data reflects what the sensing system experienced during the recorded portion of the event. For Rollover Deployment Events, the SDM will record up to 700 milliseconds of data before the Deployment criteria is met and 290 milliseconds after the Deployment criteria is met.

-Time between events is recorded in 10 msec intervals and is displayed in seconds for a maximum time of 655.33 seconds. The counter measures the time from the start of one event to the start of the next event, if both events occur within the same ignition cycle.

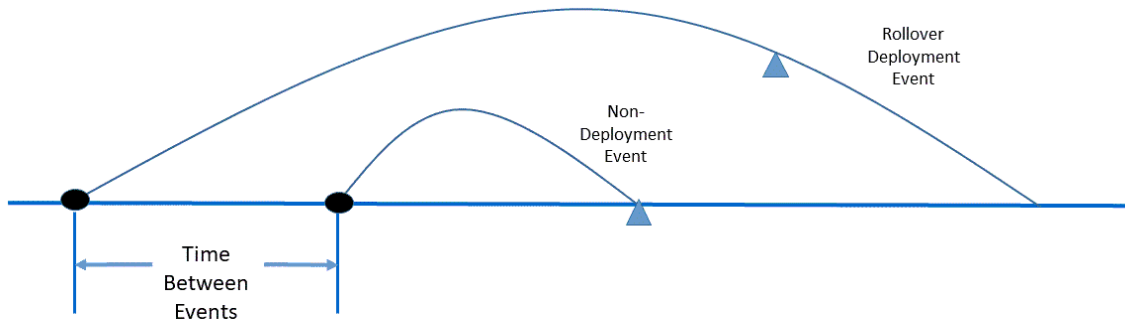
-The Maximum SDM Recorded Vehicle Velocity Change may occur between the recorded 10 millisecond sample points of the SDM Recorded Vehicle Velocity Change.

-Event Recording Complete will indicate if data from the recorded event has been fully written to the SDM memory or if it has been interrupted and not fully written.

-SDM Recorded Vehicle Speed accuracy can be affected by various factors, including but not limited to the following:

- Significant changes in the tire's rolling radius
- Final drive axle ratio changes
- Wheel lockup and wheel slip

- Brake Switch Circuit Status indicates the open/closed state of the brake switch circuit or the commanded state of the brake lamps.
- Pre-Crash data is recorded asynchronously. The 0.5 second Pre-crash data value (most recent recorded data point) is the data point last sampled before Time Zero. That is to say, the last data point may have been captured just before Time Zero but no more than 0.5 second before Time Zero. All subsequent Pre-crash data values are referenced from this data point.
- Pre-Crash Electronic Data Validity Check Status indicates "Data Invalid" if:
 - The SDM receives a message with an "invalid" flag from the module sending the pre-crash data
- Pre-Crash Electronic Data Validity Check Status indicates "Data Not Available" if:
 - No data is received from the module sending the pre-crash data
- For diesel powered vehicles, the data displayed as Throttle Position (%) is actually the data for the Air Inlet Flap Position. This is not the same as the throttle position for a gasoline powered engine.
- Belt Switch Circuit Status indicates the status of the seat belt switch circuit.
- The ignition cycle counter will increment when the power mode cycles from OFF/Accessory to RUN. Applying and removing of battery power to the module will not increment the ignition cycle counter.
- Ignition Cycles Since DTCs Were Last Cleared can record a maximum value of 253 cycles and can only be reset by a scan tool.
- Dynamic Deployment Event Counters tracks the number of Deployment events that have occurred during the SDM's lifetime.
- Dynamic Event Counters tracks the number of qualified events (either Deployments, Non-deploy, or Rollover events) that have occurred during the SDM's lifetime.
- For Deployment Events, DTC B0052 (Deployment commanded) shall be recorded with the remainder of the data for this event even though it occurred after Event Enable.
- For frontal Deployment Events, only the highest severity event is reported. For example, Stage 2 severity events include Pretensioner severity and Stage 1 severity.
- Once a firing loop has been commanded to be deployed, it will not be commanded to be deployed again during the same ignition cycle. Firing loop times for subsequent deployment type events, during the same ignition cycle, will record the deployment times as N/A.
- The airbag control module may continue to function after the vehicle has been turned off or to accessory, for a set period of time, this is called Prolongation. However, all other vehicle modules may have their functions shut down during Prolongation. For example, if the SIR warning lamp is commanded on by the airbag control module, during Prolongation, and is recorded in the EDR as being commanded on, the actual state of the warning lamp would be off to an observer since the vehicle display cluster would have been in the off state. Vehicle pre-event and system data may be recorded in the EDR as their commanded state, default state, or data invalid state.
- A Concurrent Event is when two events are happening nearly simultaneously. The "Concurrent Event Flag Set" parameter will indicate "Yes" if one event begins, but before that event is qualified, another event begins and is qualified.
- A Non-Deployment event typically becomes qualified if that event exceeds the 5 MPH (8 km/h) delta V recording threshold and the event has concluded. A deployment event (FSR or Rollover) becomes qualified when a deployment has been commanded for that event.
- Example of a Concurrent Event:
 A Rollover event begins. Before the Rollover event is qualified, a Non-Deployment event begins and is qualified. Sometime after the Non-Deployment event is qualified, the Rollover event is qualified. The Non-Deployment event will be recorded in the first open record even though the Rollover event enabled before the Non-Deployment event. The Rollover event will be recorded in the next open record. The "Concurrent Event Flag Set" parameter will indicate "Yes" for the Rollover event. The "Time Between Events" parameter will indicate the time from the start of the Rollover event to the start of the Non-Deployment event.



Event Recor #1	Event Record #2
Event Record Type = Non – Deployment	Event Record Type = Rollover
Concurrent Event Flag = No	Concurrent Event Flag = Yes
Time Between Events = NA	Time Between Events = XX seconds

- The GM parameter name is displayed in parentheses after the NHTSA Part 563 parameter name.
- All data should be examined in conjunction with other available physical evidence from the vehicle and scene.

Data Source:

All SDM recorded data is measured, calculated, and stored internally, except for the following:

- Vehicle Status Data (Pre-Crash) is transmitted by the Body Control Module, via the vehicle's communication network.
- The Belt Switch Circuit is wired directly to the SDM.

Data Element Sign Convention:

The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. Directional references to sign notation are all 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
Longitudinal Velocity Change	Forward
Lateral Acceleration	Left to Right
Lateral Velocity Change	Left to Right
Vertical Acceleration	Downward
Roll Rate	Clockwise Rotation

Hexadecimal Data:

Data that the vehicle manufacturer has specified for data retrieval is shown in the hexadecimal data section of the CDR report. The hexadecimal data section of the CDR report may contain data that is not translated by the CDR program. The control module contains additional data that is not retrievable by the CDR tool.

01067_SDM40-delphi_r003

System Status at Time of Retrieval

ESS # 1 Traceability Data, Component Identifier	AU
ESS # 1 Traceability Data, Part Number/Broadcast Code	8264
ESS # 1 Traceability Data, Supplier Code	D
ESS # 1 Traceability Data, Traceability Number	A00000000
ESS # 1 Verification Data	13,518,264
ESS # 2 Traceability Data, Component Identifier	AT
ESS # 2 Traceability Data, Part Number/Broadcast Code	8264
ESS # 2 Traceability Data, Supplier Code	D
ESS # 2 Traceability Data, Traceability Number	A00000000
ESS # 2 Verification Data	13,518,264
ESS # 3 Traceability Data, Component Identifier	AH
ESS # 3 Traceability Data, Part Number/Broadcast Code	9421
ESS # 3 Traceability Data, Supplier Code	D
ESS # 3 Traceability Data, Traceability Number	A00000000
ESS # 3 Verification Data	13,519,421
ESS # 4 Traceability Data, Component Identifier	AJ
ESS # 4 Traceability Data, Part Number/Broadcast Code	9421
ESS # 4 Traceability Data, Supplier Code	D
ESS # 4 Traceability Data, Traceability Number	A00000000
ESS # 4 Verification Data	13,519,421
ESS # 5 Traceability Data, Traceability Number	A00000000
ESS # 5 Traceability Data, Component Identifier	DA
ESS # 5 Traceability Data, Part Number/Broadcast Code	1010
ESS # 5 Traceability Data, Supplier Code	D
ESS # 5 Verification Data	26,671,010
ESS # 6 Traceability Data, Component Identifier	DB
ESS # 6 Traceability Data, Part Number/Broadcast Code	1010
ESS # 6 Traceability Data, Supplier Code	D
ESS # 6 Traceability Data, Traceability Number	A00000000
ESS # 6 Verification Data	26,671,010
ESS # 7 Traceability Data, Component Identifier	
ESS # 7 Traceability Data, Part Number/Broadcast Code	0000
ESS # 7 Traceability Data, Supplier Code	D
ESS # 7 Traceability Data, Traceability Number	A00000000
ESS # 7 Verification Data	0
ESS # 8 Traceability Data, Component Identifier	
ESS # 8 Traceability Data, Part Number/Broadcast Code	0000
ESS # 8 Traceability Data, Supplier Code	D
ESS # 8 Traceability Data, Traceability Number	A00000000
ESS # 8 Verification Data	0
AOS Data Key	0
SDM Primary Key Definition (Key 1-2)	41
SDM Primary Key Definition (Key 3-4)	36
Dynamic Deployment Event Counter	1
Multi-Event, Number of Events (Dynamic Event Counter)	1
Dynamic OnStar Notification Event Counter	1
Driver Frontal Stage 2 Commanded after Event End for Event Record #1	No
Passenger Frontal Stage 2 Commanded after Event End for Event Record #1	No
Driver Frontal Stage 2 Commanded after Event End for Event Record #2	No
Passenger Frontal Stage 2 Commanded after Event End for Event Record #2	No
Driver Frontal Stage 2 Commanded after Event End for Event Record #3	No
Passenger Frontal Stage 2 Commanded after Event End for Event Record #3	No
Longitudinal Accelerometer Range (g)	113
Lateral Accelerometer Range (g)	113
Dynamic PedPro Deploy Event Counter	0
Dynamic PedPro Event Counter	0
Vehicle Identification Number (VIN)	1GNSKBKC5LR*****
System Type	Delphi SDM40 with integrated IMU
Ignition Cycle, Download (Ignition Cycles at Investigation)	2,006

System Status at Event (Record 1)

Complete File Recorded (Event Recording Complete)	Yes
Event Record Type	Deployment
Crash Record Locked	Yes
OnStar Deployment Status Data Sent	Yes
OnStar SDM Recorded Vehicle Velocity Change Data Sent	Yes
High Voltage Disable Notification Sent	Yes
Deployment Commanded in Energy Reserve Mode	Yes
Deployment Event Counter	1
Multi-Event, Number of Events (Event Counter)	1
OnStar Notification Event Counter	1
Algorithm Active - Frontal	Yes
Algorithm Active - Side	Yes
Algorithm Active - Rollover	Yes
Algorithm Active - Rear	Yes
Ignition Cycle, Crash (Ignition Cycles at Event)	2,003
Time From Event 1 to 2 (Time Between Events) (msec)	Data Not Available
Concurrent Event Flag Set	No
Event Severity Status: Frontal Pretensioner	No
Event Severity Status: Frontal Stage 1	Yes
Event Severity Status: Frontal Stage 2	No
Event Severity Status: Left Side	No
Event Severity Status: Right Side	No
Event Severity Status: Rear	No
Event Severity Status: Rollover	No
Event Severity Status: Battery Disconnect Switch - Side Event	No
Safety Belt Status, Driver (Driver Belt Switch Circuit Status)	Not Buckled
Safety Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status)	Buckled
Center Front Row Belt Switch Circuit Status (If Equipped)	Data Not Available
Center Row 3 Belt Switch Circuit Status (If Equipped)	Data Not Available
Seat Track Position Switch, Foremost, Status, Driver (Driver Seat Position Status)	No (Rearward)
Passenger Seat Occupancy Status	Occupied
Occupant Size Right Front Passenger Child (Passenger Classification Status)	No (Adult)
Passenger Air Bag ON Indicator Status	On
Passenger Air Bag OFF Indicator Status	Off
Low Tire Pressure Warning Lamp Status 0.5 Seconds prior to Time Zero	Off
Frontal Air Bag Warning Lamp (SIR Warning Lamp Status 0.5 Seconds Prior to Time Zero)	Off
SIR Warning Lamp ON/OFF Time Continuously (seconds)	655,330
Number of Ignition Cycles SIR Warning Lamp was ON/OFF Continuously	1,048
Ignition Cycles Since DTCs Were Last Cleared 0.5 Seconds Prior to Time Zero	253
Maximum Delta-V, Longitudinal (Maximum Longitudinal SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h])	-27 [-44]
Time, Maximum Delta-V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change) (msec)	208
Maximum Delta-V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h])	-5 [-8]
Time Maximum Delta-V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change) (msec)	194
Maximum Resultant Delta-V – Longitudinal Component for FSR Event (MPH [km/h])	-27 [-44]
Maximum Resultant Delta-V – Lateral Component for FSR Event (MPH [km/h])	-5 [-8]
Time from FSR Time Zero to time of the Maximum Resultant Delta-V (msec)	208
Blended Event FSR 1 Severity Type	Frontal (Pretensioner/Stage 1/Stage 2)
Blended Event FSR 2 Severity Type	Data Not Available

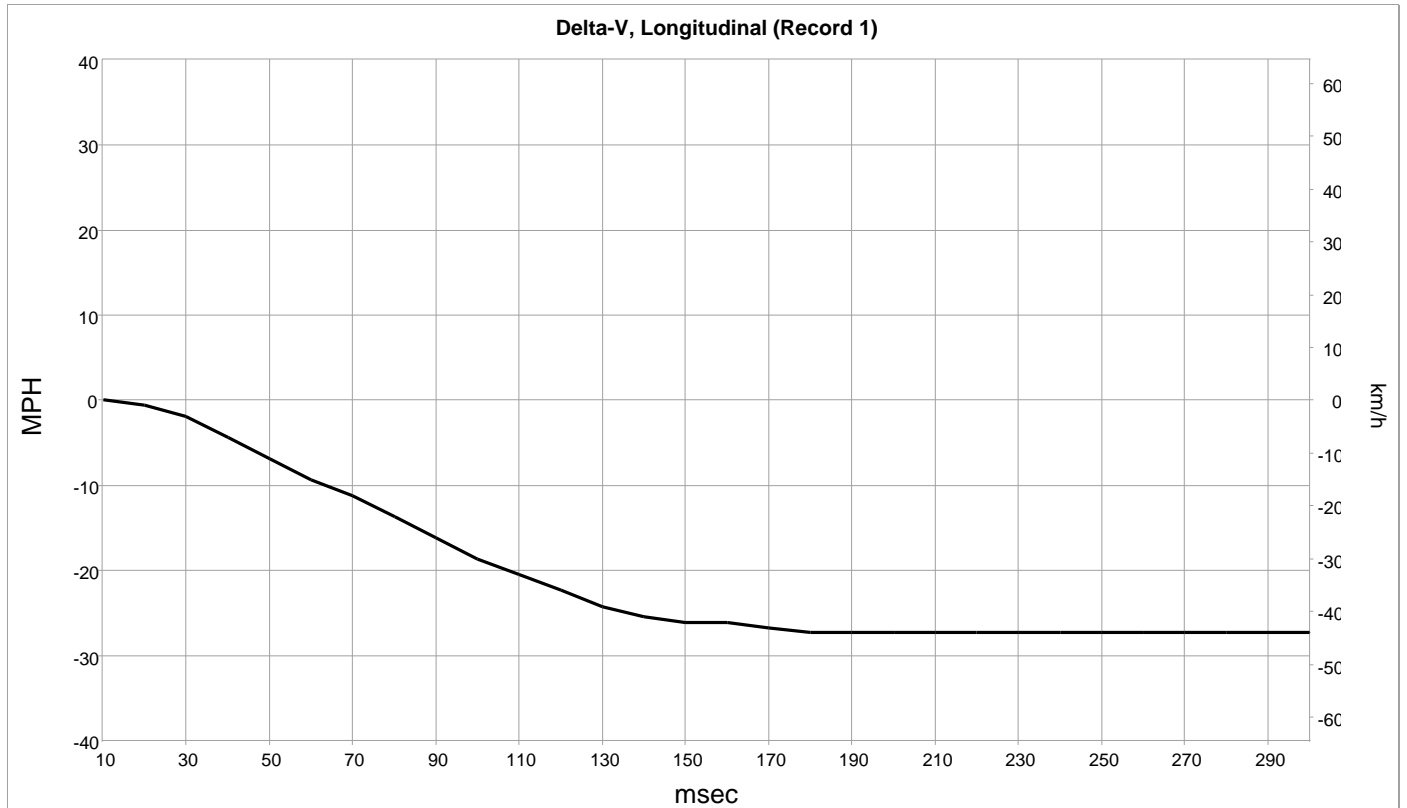
Blended Event Time from FSR 1 Time Zero to FSR 2 Time Zero (msec)	Data Not Available
Blended Event FSR 3 Severity Type	Data Not Available
Blended Event Time from FSR 1 Time Zero to FSR 3 Time Zero (msec)	Data Not Available

Diagnostic Trouble Codes 0.5 Seconds Prior to Time Zero (Record 1)

DTC 1	B0052-00
DTC 2	N/A
DTC 3	N/A
DTC 4	N/A
DTC 5	N/A
DTC 6	N/A
DTC 7	N/A
DTC 8	N/A
DTC 9	N/A

Deployment Command Data (Record 1)

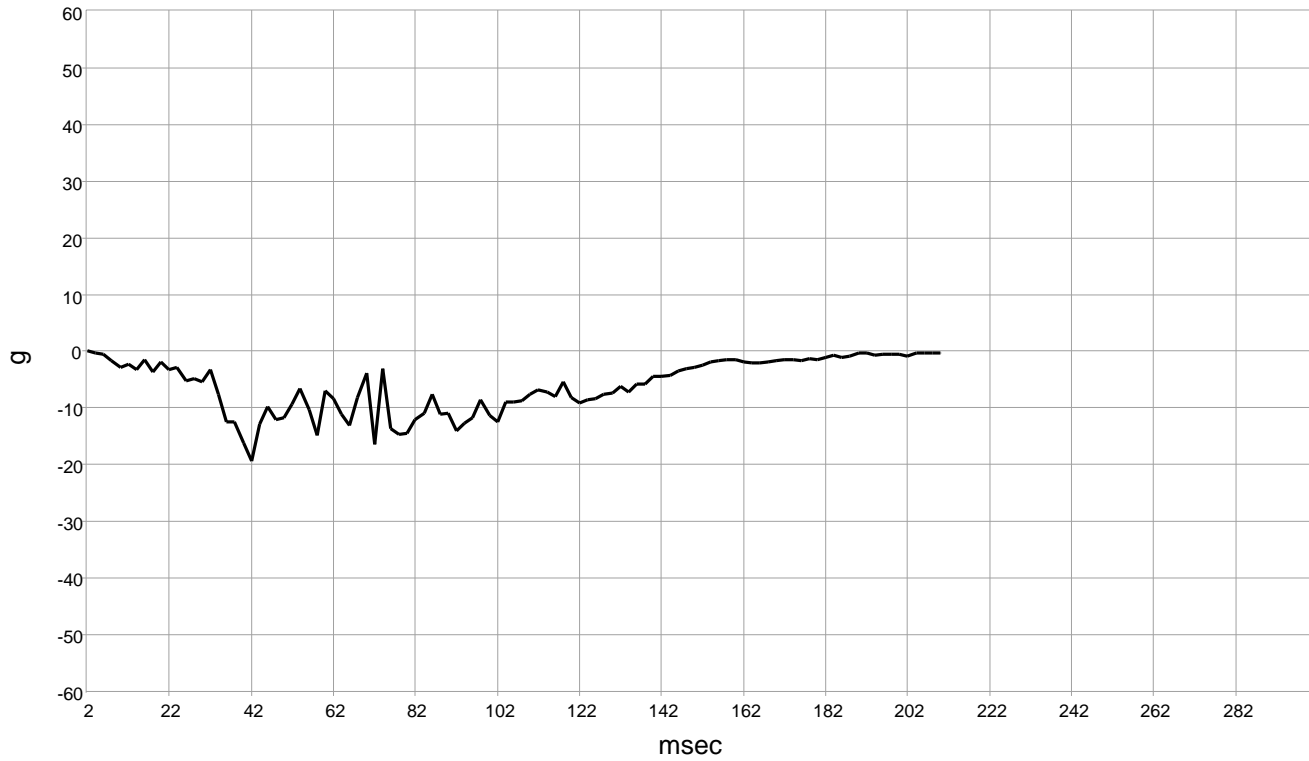
Driver 1st Stage Deployment Loop Commanded	Yes
Passenger 1st Stage Deployment Loop Commanded	Yes
Driver 2nd Stage Deployment Loop Commanded	Yes
Passenger 2nd Stage Deployment Loop Commanded	Yes
Driver Pretensioner Deployment Loop #1 Commanded	Yes
Passenger Pretensioner Deployment Loop #1 Commanded	Yes
Driver Pretensioner Deployment Loop #2 Commanded	Yes
Passenger Pretensioner Deployment Loop #2 Commanded	Yes
Driver Thorax Loop Commanded	No
Passenger Thorax Loop Commanded	No
Left Row 1 Roof Rail/Head Curtain Loop Commanded	No
Right Row 1 Roof Rail/Head Curtain Loop Commanded	No
Frontal Air Bag Deployment, Time to 1st Stage Deployment, Driver (Driver 1st Stage Time From Time Zero to Deployment Command Criteria Met) (msec)	44
Frontal Air Bag Deployment, Time to 1st Stage Deployment, Right Front Passenger (Passenger 1st Stage Time From Time Zero to Deployment Command Criteria Met) (msec)	44
Frontal Air Bag Deployment, Time to 2nd Stage, Driver (Driver 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec)	165
Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (Passenger 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec)	165
Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #1 Command Criteria Met) (msec)	44
Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #1 Command Criteria Met) (msec)	44
Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #2 Command Criteria Met) (msec)	50
Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #2 Command Criteria Met) (msec)	50
Side Air Bag Deployment, Time to Deploy, Driver (Driver Thorax Time From Time Zero to Deployment Command Criteria Met) (msec)	Data Not Available
Side Air Bag Deployment, Time to Deploy, Right Front Passenger (Passenger Thorax Time From Time Zero to Deployment Command Criteria Met) (msec)	Data Not Available
Left Row 1 Curtain Time From Time Zero to Deployment Command Criteria Met (msec)	Data Not Available
Right Row 1 Curtain Time From Time Zero to Deployment Command Criteria Met (msec)	Data Not Available
Driver Center Inboard Loop Commanded	No
Driver Center Inboard Time From Time Zero to Deployment Loop Command Criteria Met (msec)	Data Not Available



Longitudinal Delta-V (Record 1)

Time (msec)	Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (MPH [km/h])
10	0 [0]
20	-1 [-1]
30	-2 [-3]
40	-4 [-7]
50	-7 [-11]
60	-9 [-15]
70	-11 [-18]
80	-14 [-22]
90	-16 [-26]
100	-19 [-30]
110	-21 [-33]
120	-22 [-36]
130	-24 [-39]
140	-25 [-41]
150	-26 [-42]
160	-26 [-42]
170	-27 [-43]
180	-27 [-44]
190	-27 [-44]
200	-27 [-44]
210	-27 [-44]
220	-27 [-44]
230	-27 [-44]
240	-27 [-44]
250	-27 [-44]
260	-27 [-44]
270	-27 [-44]
280	-27 [-44]
290	-27 [-44]
300	-27 [-44]

Acceleration, Longitudinal (Record 1)

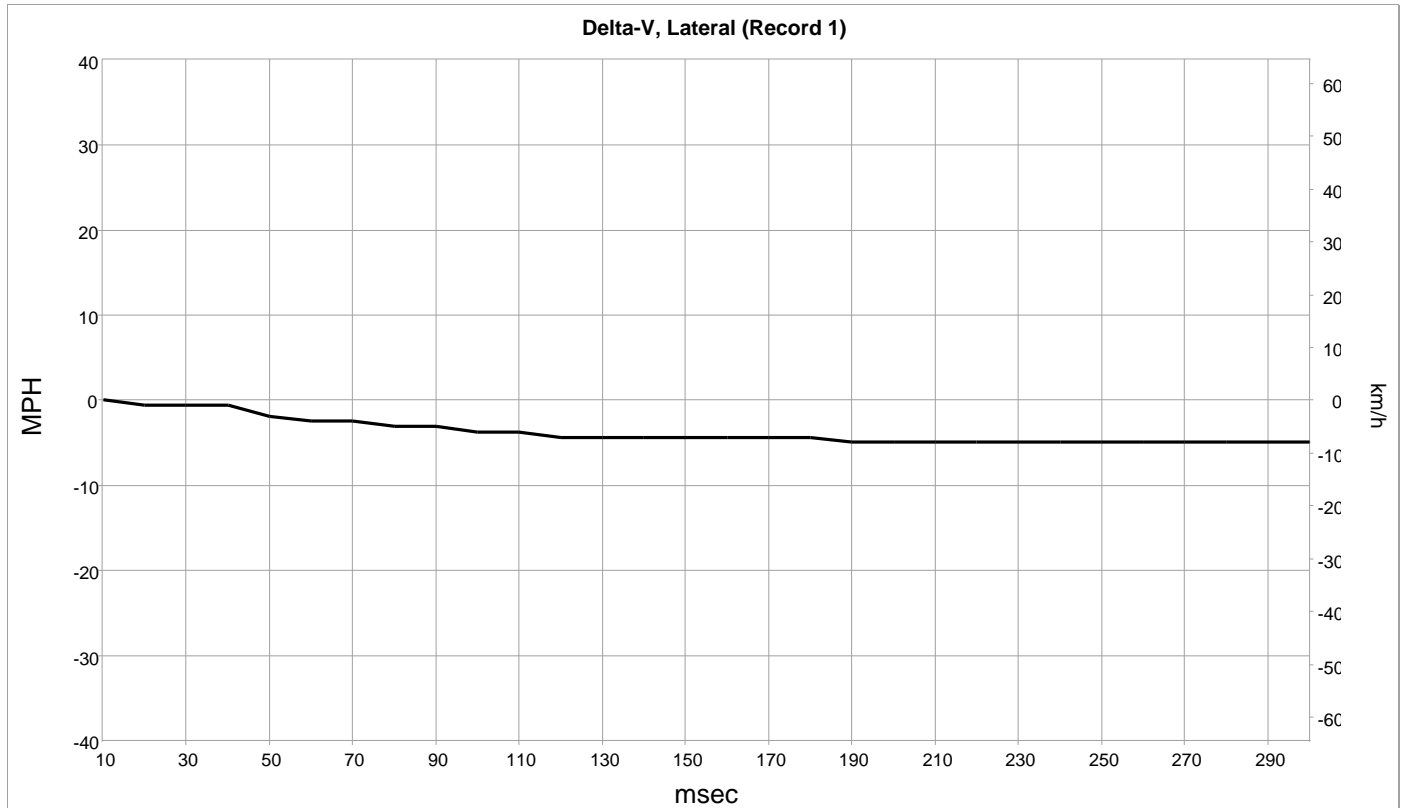


Longitudinal Acceleration (Record 1)

Time (msec)	Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g)
2	0.00
4	-0.25
6	-0.50
8	-1.75
10	-2.75
12	-2.25
14	-3.25
16	-1.50
18	-3.63
20	-1.88
22	-3.25
24	-2.88
26	-5.13
28	-4.75
30	-5.38
32	-3.25
34	-7.50
36	-12.50
38	-12.38
40	-16.25
42	-19.38
44	-12.88
46	-9.63
48	-12.00
50	-11.63
52	-9.25
54	-6.63
56	-10.25
58	-14.75
60	-7.00
62	-8.25
64	-11.13
66	-13.00
68	-8.13
70	-3.88
72	-16.38
74	-3.13
76	-13.63
78	-14.63
80	-14.50
82	-12.00
84	-10.88
86	-7.63
88	-11.13
90	-10.88
92	-14.00
94	-12.75
96	-11.63
98	-8.63
100	-11.38
102	-12.38
104	-9.00
106	-9.00
108	-8.75
110	-7.63
112	-6.75

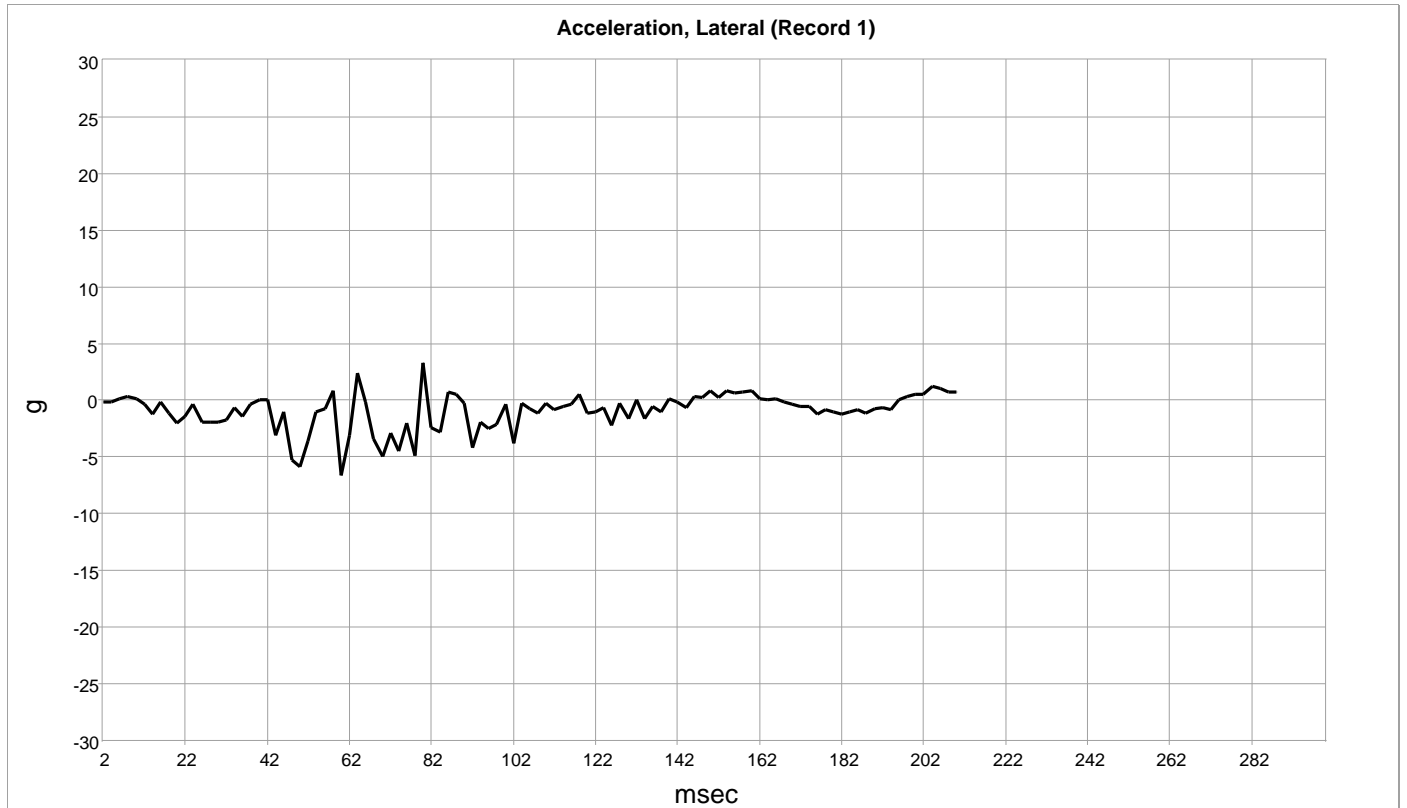
Time (msec)	Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g)
114	-7.25
116	-7.88
118	-5.38
120	-8.13
122	-9.13
124	-8.63
126	-8.25
128	-7.50
130	-7.38
132	-6.13
134	-7.13
136	-5.75
138	-5.75
140	-4.50
142	-4.50
144	-4.13
146	-3.38
148	-3.13
150	-2.88
152	-2.38
154	-1.88
156	-1.75
158	-1.50
160	-1.50
162	-1.88
164	-2.13
166	-2.00
168	-1.88
170	-1.63
172	-1.50
174	-1.50
176	-1.75
178	-1.25
180	-1.50
182	-1.13
184	-0.75
186	-1.00
188	-0.88
190	-0.38
192	-0.38
194	-0.75
196	-0.50
198	-0.50
200	-0.50
202	-0.88
204	-0.38
206	-0.25
208	-0.38
210	-0.25
212	Data Not Available
214	Data Not Available
216	Data Not Available
218	Data Not Available
220	Data Not Available
222	Data Not Available
224	Data Not Available
226	Data Not Available

Time (msec)	Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g)
228	Data Not Available
230	Data Not Available
232	Data Not Available
234	Data Not Available
236	Data Not Available
238	Data Not Available
240	Data Not Available
242	Data Not Available
244	Data Not Available
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256	Data Not Available
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264	Data Not Available
266	Data Not Available
268	Data Not Available
270	Data Not Available
272	Data Not Available
274	Data Not Available
276	Data Not Available
278	Data Not Available
280	Data Not Available
282	Data Not Available
284	Data Not Available
286	Data Not Available
288	Data Not Available
290	Data Not Available
292	Data Not Available
294	Data Not Available
296	Data Not Available
298	Data Not Available
300	Data Not Available



Lateral Delta-V (Record 1)

Time (msec)	Delta-V, Lateral (SDM Recorded Vehicle Lateral Velocity Change for FSR Event) (MPH [km/h])
10	0 [0]
20	-1 [-1]
30	-1 [-1]
40	-1 [-1]
50	-2 [-3]
60	-2 [-4]
70	-2 [-4]
80	-3 [-5]
90	-3 [-5]
100	-4 [-6]
110	-4 [-6]
120	-4 [-7]
130	-4 [-7]
140	-4 [-7]
150	-4 [-7]
160	-4 [-7]
170	-4 [-7]
180	-4 [-7]
190	-5 [-8]
200	-5 [-8]
210	-5 [-8]
220	-5 [-8]
230	-5 [-8]
240	-5 [-8]
250	-5 [-8]
260	-5 [-8]
270	-5 [-8]
280	-5 [-8]
290	-5 [-8]
300	-5 [-8]



Lateral Acceleration (Record 1)

Time (msec)	Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g)
2	-0.13
4	-0.13
6	0.12
8	0.37
10	0.12
12	-0.38
14	-1.25
16	-0.13
18	-1.13
20	-2.00
22	-1.38
24	-0.38
26	-1.88
28	-1.88
30	-1.88
32	-1.75
34	-0.63
36	-1.38
38	-0.38
40	0.00
42	0.00
44	-3.13
46	-1.00
48	-5.25
50	-5.88
52	-3.63
54	-1.00
56	-0.75
58	0.87
60	-6.63
62	-3.13
64	2.37
66	-0.13
68	-3.38
70	-5.00
72	-2.88
74	-4.50
76	-2.00
78	-4.88
80	3.25
82	-2.38
84	-2.75
86	0.75
88	0.50
90	-0.25
92	-4.13
94	-1.88
96	-2.50
98	-2.13
100	-0.38
102	-3.75
104	-0.25
106	-0.75
108	-1.13
110	-0.25
112	-0.88
114	-0.50

Time (msec)	Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g)
116	-0.38
118	0.50
120	-1.13
122	-1.00
124	-0.63
126	-2.25
128	-0.25
130	-1.63
132	0.00
134	-1.63
136	-0.50
138	-1.00
140	0.12
142	-0.13
144	-0.63
146	0.37
148	0.25
150	0.87
152	0.25
154	0.87
156	0.62
158	0.75
160	0.87
162	0.12
164	0.00
166	0.12
168	-0.13
170	-0.38
172	-0.50
174	-0.50
176	-1.25
178	-0.88
180	-1.00
182	-1.25
184	-1.00
186	-0.88
188	-1.13
190	-0.75
192	-0.63
194	-0.88
196	0.00
198	0.37
200	0.50
202	0.50
204	1.25
206	1.00
208	0.75
210	0.75
212	Data Not Available
214	Data Not Available
216	Data Not Available
218	Data Not Available
220	Data Not Available
222	Data Not Available
224	Data Not Available
226	Data Not Available
228	Data Not Available
230	Data Not Available

Time (msec)	Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g)
232	Data Not Available
234	Data Not Available
236	Data Not Available
238	Data Not Available
240	Data Not Available
242	Data Not Available
244	Data Not Available
246	Data Not Available
248	Data Not Available
250	Data Not Available
252	Data Not Available
254	Data Not Available
256	Data Not Available
258	Data Not Available
260	Data Not Available
262	Data Not Available
264	Data Not Available
266	Data Not Available
268	Data Not Available
270	Data Not Available
272	Data Not Available
274	Data Not Available
276	Data Not Available
278	Data Not Available
280	Data Not Available
282	Data Not Available
284	Data Not Available
286	Data Not Available
288	Data Not Available
290	Data Not Available
292	Data Not Available
294	Data Not Available
296	Data Not Available
298	Data Not Available
300	Data Not Available

Roll Rate (Record 1)

Contains No Recorded Data

Acceleration, Lateral, Rollover (Record 1)

Contains No Recorded Data

Acceleration, Normal, Rollover (Record 1)

Contains No Recorded Data

Pre-Crash Data -5.0 to -0.5 sec (Record 1) - Table 1 of 2

Time (sec)	Service Brake (Brake Switch Circuit State)	Accelerator Pedal Position, % Full (Accelerator Pedal Position) (%)	Engine RPM (Engine Speed) (RPM)	Engine Throttle, % Full (Throttle Position) (%)	Speed, Vehicle Indicated (Vehicle Speed) (MPH [km/h])	System Power Mode Status	System Backup Power Mode Status
-5.0	Off	17	1,280	23	54 [87]	Run	Run
-4.5	Off	17	1,280	20	54 [87]	Run	Run
-4.0	Off	17	1,216	21	54 [87]	Run	Run
-3.5	Off	17	1,280	24	54 [87]	Run	Run
-3.0	Off	17	1,280	25	53 [86]	Run	Run
-2.5	Off	17	1,280	25	53 [86]	Run	Run
-2.0	Off	17	1,216	26	53 [86]	Run	Run
-1.5	Off	17	1,216	26	53 [85]	Run	Run
-1.0	Off	17	1,216	26	53 [85]	Run	Run
-0.5	Off	17	1,216	26	53 [85]	Run	Run

Pre-Crash Data -5.0 to -0.5 sec (Record 1) - Table 2 of 2

Time (sec)	System Backup Power Mode Enabled	CommEnable Status	SDM Power Mode Status	Ignition Prolongation Timer (seconds)
-5.0	No	Active	Run	0.0
-4.5	No	Active	Run	0.0
-4.0	No	Active	Run	0.0
-3.5	No	Active	Run	0.0
-3.0	No	Active	Run	0.0
-2.5	No	Active	Run	0.0
-2.0	No	Active	Run	0.0
-1.5	No	Active	Run	0.0
-1.0	No	Active	Run	0.0
-0.5	No	Active	Run	0.0

Pre-Crash Data -2.0 to -0.5 sec (Record 1)

Time (sec)	Cruise Control Active	Cruise Control Resume Switch Active	Cruise Control Set Switch Active	Reduced Engine Power Mode Indicator	Engine Torque (N-m)
-2.0	No	No	No	Off	113
-1.5	No	No	No	Off	113
-1.0	No	No	No	Off	112
-0.5	No	No	No	Off	113

Hexadecimal Data

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DPID \$15
01 02 03 04 05 06 07

DPID \$16
08 09 0A 0D 0E 00 00

DPID \$17
22 00 00 00 00 00 00

DPID \$1F
01 01 02 02 00 00 00

DPID \$20
00 00 00 00 00 00 00

DPID \$30
00 FF 00 00 00 00 00

DPID \$32
00 FF 07 D6 00 00 00

DPID \$51
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DID \$01
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DID \$02
00 CE 45 B8

DID \$03
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DID \$04
00 CE 45 B8

DID \$05
41 48 39 34 32 31 44 41 30 30 30 30 30 30 30 30

DID \$06
00 CE 4A 3D

DID \$07
41 4A 39 34 32 31 44 41 30 30 30 30 30 30 30 30

DID \$08
00 CE 4A 3D

DID \$09
44 41 31 30 31 30 44 41 30 30 30 30 30 30 30 30

DID \$0A
01 96 F7 A2

DID \$0B
44 42 31 30 31 30 44 41 30 30 30 30 30 30 30 30

DID \$0C

01 96 F7 A2

DID \$0D

00 00 30 30 30 30 44 41 30 30 30 30 30 30 30

DID \$0E

00 00 00 00

DID \$0F

00 00 30 30 30 30 44 41 30 30 30 30 30 30 30

DID \$10

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DID \$11

00 00

DID \$22

41 36

DID \$30

01 00 01 01 00 71 71 00 00 00

DID \$31

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0030 11 11 11 11 11 11 11 11 11 00
0040 00 00 00 00 00 00 13 13 13 13
0050 14 14 14 13 14 14 07 82 07 7F
0060 07 81 07 82 1A 1A 1A 1A 19 19
0070 18 15 14 17 55 55 55 56 56 56
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U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

