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Each crash represents a unique sequence of events and generalized conclusions cannot be made concerning the crashworthiness performance of the involved vehicles or their safety systems. This report and associated case data are based on information available to the Special Crash Investigation team on the date this report was published.

16. Abstract

This report documents the on-site investigation of a single-vehicle, off-road rollover crash of a 2021 Toyota RAV4 and the injuries sustained by the driver. The crash occurred in the afternoon in clear and dry conditions in March 2022 in the area adjacent to the exit ramp of a southbound two-lane divided State highway in Arizona. The Toyota driver was a belted 36-year-old male. After departing the ramp on the left edge and traveling up an embankment, the Toyota struck a concrete retaining wall and metal light pole, then overturned onto its right side. The driver was transported by ambulance to a hospital where he was admitted overnight for treatment of a suspected serious head injury. It was later determined he sustained serious injuries including pulmonary contusions and compression fractures to the thoracic and lumbar spine. Medical personnel told police a possible seizure may have led to the crash. The driver told police he did not know what caused the crash.

17. Key Words	18. Distribution Statement
rollover, air bag, deployment, injury	This document is available to the public from the National Highway Traffic Safety Administration, National Center for Statistics and Analysis, https://crashstats.nhtsa.dot.gov

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Special Crash Investigations
On-Site Rollover Crash Investigation
Case No. DS22011
Vehicle: 2021 Toyota RAV4
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Background

This report documents the on-site investigation of a single-vehicle, off-road rollover crash selected by the Special Crash Investigations (SCI) group of the National Highway Traffic Safety Administration. SCI assigned the police report to Dynamic Science, Inc., via the Police Accident Report Sampling Engine (PARSE) program in May 2022, with instructions to locate and submit vehicle images prior to initiating the investigation. The team submitted images to NHTSA in May 2022 and permission to inspect the vehicle was obtained from the insurance company in June 2022. The case was assigned, and field inspections were completed in June 2022. The Toyota had an electronic control unit (ECU) with event data recorder (EDR) capability supported by the Bosch CDR tool. The SCI team imaged the crash data during the vehicle inspection. The EDR report is included in the Appendix of this report.

The crash occurred in the afternoon in clear and dry conditions in March 2022 in the area adjacent to the exit ramp of a southbound two-lane divided State highway in Arizona. The vehicle was a 2021 Toyota RAV4 (Figures 1 and 2) driven by a belted 36-year-old male. After departing the ramp on the left edge and traveling up an embankment, the Toyota struck a concrete retaining wall and metal light pole, then overturned onto its right side. The driver was transported by ambulance to a hospital where he was admitted overnight for treatment of a suspected serious head injury. Medical personnel told police a possible seizure sustained by the driver may have led to the crash. The driver told police he did not know what happened. The Toyota was towed due to disabling damage and was later declared a total loss.

Figure 1. 2021 Toyota RAV4

Figure 2. 2021 Toyota RAV4

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Summary

Crash Site

The crash site was the southbound exit ramp of a two-lane divided State highway in Arizona (Figure 3). The ramp was straight and level. It had two lanes each measuring 3.7 m (12.0 ft) wide separated by a dashed white painted lane line and bordered by a solid white painted fog line on the right and a solid yellow painted fog line on the left. The pavement and painted lines were in good condition. The roadway had a paved left shoulder and concrete gutter that were 1.0 m (3.3 ft) wide and a paved right shoulder and concrete gutter that were 3.1 m (10.2 ft) wide. The adjacent left roadside was an ascending gravel-covered embankment planted with low shrubs. The embankment had a maximum positive slope measuring 27 percent. At the top of the embankment, a concrete retaining wall measuring 78 cm (30.7 in) high separated the embankment from the highway. A breakaway metal light pole measuring 25.4 cm (10.0 in) in diameter at its base and 13.7 m (45.0 ft) tall stood between the exit ramp and wall. The posted speed limit for the highway was 105 km/h (65 mph). Conditions at the time of the crash were afternoon, daylight, clear and dry. A crash diagram is included at the end of this report.

Figure 3. Pre-crash approach, looking south

Pre-Crash

The Toyota was traveling southbound on the exit ramp at an EDR-reported vehicle speed of 85 km/h (52.8 mph) with a steering input of 6.0 degrees (left) at 3.15 seconds to algorithm enable (AE) (4th Prior Event, TGR 2 of EDR report). The driver steered left and the vehicle departed the ramp on the left edge, crossed over the left shoulder and concrete gutter, and traveled uphill on the ascending gravel embankment (Figure 4). While traveling uphill, the vehicle drove over two or more low shrubs. Based on scene evidence, the Toyota departed the roadway at an approximate 10° angle and continued on that trajectory path until impact. At T-2.15 seconds, steering input was 21.0° and at T-1.15 seconds, it was 28.5°. Vehicle stability control (VSC) status was enabled and at T-1.15 seconds it was engaged and remained so to impact. While traveling off-road the service brake remained off and vehicle speed was reduced to 52 km/h (32.3 mph) at time T-0 (TGR).

Figure 4. Crash site looking south to POI

Crash

The Toyota's front plane struck the concrete wall at an approximate heading angle of 170° (Event 1). Contact damage to the vehicle was on the front left corner outboard of the frame and bumper backing bar. The Toyota's left front tire struck and rode up the wall, depositing black marks measuring 134 cm (52.8 in) long and 68 cm (26.8 in) high ending at the top of the wall (Figure 5). The contact between the left front wheel and the wall caused the rim to bend and the tire to de-bead. The Toyota reached a state of instability with its left front tire off the ground. It rebounded off the wall and initiated a bounce-over type right side leading rollover. A breakaway metal light pole was located 95 cm (37.4 in) west of the wall. During the rollover, the vehicle's front plane struck the pole (Event 2) causing it to fracture at its base and fall to the ground (Figure 6). Direct damage to the Toyota was located on the right aspect of the front plane and hood. Following the pole impact, the Toyota continued to overturn until it completed one quarter-turn (Event 3) and its right plane contacted the ground. It came to rest on its right side, facing east on the roadside.

Front plane deformation for the wall and pole impacts was overlapping. The pole impact was higher in severity. The vehicle's EDR report did not capture an EDR event for the wall impact. The pole impact precluded using the WinSMASH reconstruction program because the vehicle had begun to overturn, and the pole yielded when it was sheared from its base. For the pole impact (4th Prior Event, TGR 2 of EDR report), the EDR captured a deployment-level frontal crash. The EDR-reported maximum delta V was -33.4 km/h (-20.8 mph) at 116.0 msec. The driver's frontal (1st stage) and knee air bags deployed, and his seat belt pretensioner actuated, at 21.5 msec. The inflatable curtain (IC) air bag deployed at 30.0 msec, and the driver's frontal air bag deployed (2nd stage), at 51.5 msec.

For the rollover (3rd Prior Event, TGR 3 of EDR report), the EDR report captured a deployment-level rollover event. It indicated the driver's IC air bag deployed and seat belt pretensioner actuated at 1,105.0 msec, but both had already deployed/actuated in the prior event. The EDR-reported maximum roll angle of 94.4° indicated the vehicle rolled clockwise around its longitudinal axis. Rollover dynamics and related EDR data are discussed in detail in the Rollover Discussion and EDR Report sections of this report.

Figure 5. POI Event 1, retaining wall looking south

Figure 6. POI Event 2, light pole looking south

Post-Crash

The Toyota had an automatic crash notification feature equipped as standard. The fire department was notified of a crash one minute after the crash, and EMS personnel arrived on-scene 15 minutes after the crash. The Toyota driver remained in the vehicle until responders arrived. They removed the driver from the vehicle due to perceived serious injuries and transported him via ambulance to a local hospital, where he arrived 36 minutes after the crash. During transport, he was examined and assigned a Glasgow coma score of 12 (out of a possible 15), based on inappropriate verbal responses. According to his hospital medical records, the driver did not recall the events leading to the crash. He remembered getting into the car, and per his family, was supposed to go to a store very close to their house, but he and the family had no idea why he was driving on the highway.[1] Doctors later identified a cerebral hemorrhage in a congenital cavernous malformation, which they said likely caused a seizure and caused him to lose control and crash. The medical records indicated a positive loss of consciousness of an unknown duration and did not clarify if it occurred before or after the crash. A drug screen administered at the hospital was positive for cannabinoids (THC). The driver was admitted overnight and discharged the following day. The Toyota was towed due to disabling damage and, after being declared a total loss, was sold.

[1] The crash site was approximately 8.7 km (5.4 mi) from the driver's home address.

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2021 Toyota RAV4

Vehicle Description

The 2021 Toyota RAV4 had the Vehicle Identification Number 2T3H1RFVXMCxxxxxx. The manufacture date was November 2021, and the odometer reading was 1,997 mi (3,214 km). The Toyota was a 5-door compact SUV with 2 rows of seating for 5 passengers. It had front-wheel drive, a 4-cylinder, 2.5-liter gasoline engine, and hydraulic brakes. The vehicle manufacturer recommended size P225/65R17 tires with a recommended cold tire pressure of 240 kPa (35 psi) for the front and rear. The Toyota had Dunlop Grandtrek PT20 tires of the recommended size. The vehicle had front-row bucket seats with adjustable head restraints. The driver's seat cushion was in the rear-most track position at the time of inspection. The steering column had tilt and telescoping functionality and was adjusted to the full-up and full-forward position at the time of inspection. The Toyota had standard crash avoidance and advanced driver assistance systems (ADAS) including pre-collision system (PCS), lane tracing assist (LTA), automatic high beam (AHB), and dynamic radar cruise control with full-speed range. These features are discussed in the Crash Avoidance Systems of this report.

Exterior Damage

The Toyota had direct and induced damage to the front, left, and right planes. For the Event 1 wall impact, direct damage to the Toyota's front plane began at the front left bumper corner and extended 40 cm (15.7 in) to the right. It extended 68 cm (26.8 in) down the left side beginning at the left front bumper corner and ending at the left front axle. The left front tire sidewall was abraded, the rim was scuffed and bent, and the tire was de-beaded. The collision deformation classification (CDC) for the Toyota in Event 1 was 12FLEE3. The vehicle EDR report did not capture an event for this impact. For the Event 2 pole impact, direct damage to the front plane was undetermined due to the absence of the bumper fascia and grille. Damage to the hood was present in the right sector in the form of a semicircular deformation measuring 27 cm (10.6 in) wide (Figure 7). The field L extended from bumper corner to bumper corner and measured 154 cm (60.6 in). Sixteen crush measurements were taken at bumper level using the Nikon total station and the AutoCrush program calculated six crush measurements as follows: C1 = 0 cm, C2 = 0 cm, C3 = 5 cm (2.0 in), C4 = 1 cm (0.4 in), C5 = 0 cm, C6 = 0 cm. Maximum crush measured 5 cm (2.0 in) located 90 cm (35.4 in) right of the front left bumper corner and the CDC for the Toyota in Event 2 was 12FREN1.

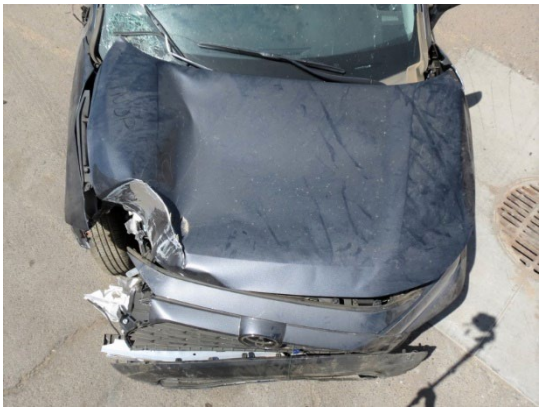

Figure 7. Front plane damage, 2021 Toyota RAV4

For the Event 3 rollover, direct damage extended from back to front on the right plane and measured 422 cm (166.1 in) (Figure 8). Direct damage extended vertically from sill to roof side rail. Maximum lateral crush to the greenhouse measured 2 cm (0.8 in) and was located on the right roof side rail at 92 cm (36.2 in) forward of the rear axle. The CDC for the rollover was 00RDAO3. The top plane did not contact the ground and no vertical crush was present.

Figure 8. Right plane damage, 2021 Toyota RAV4

Rollover Discussion

According to NHTSA's online source, the Vehicle Comparison Tool for the 2021 Toyota RAV4 Prime SUV AWD,[2] the 2021 RAV4 does not have a NHTSA rollover rating. An online search revealed no rollover test results for the vehicle. Typically, a rollover resistance test measures the risk of rollover in a single-vehicle, loss-of-control scenario. The Toyota had the following rollover mitigation, stability control, and safety systems features.

- Front seat belt pretensioners that actuate in rollover crashes.
- IC air bags that deploy (both left and right) in rollover crashes. The IC air bags were certified to FMVSS No. 226, *Ejection mitigation*.
- ABS (antilock brake system) intended to prevent wheel lock when the brakes are applied suddenly, or if the brakes are applied while driving on a slippery road surface.
- VSC (vehicle stability control) intended to control skidding when swerving suddenly or turning on slippery road surfaces.
- TRAC (traction control) intended to maintain drive power and prevent the drive wheels from spinning when starting the vehicle or accelerating on slippery roads.

In this crash the driver's belt pretensioner actuated and both IC air bags deployed. The IC air bags were combination side impact/roll-sensing and, while they deployed in a prior event, likely remained inflated during the rollover as designed. EDR pre-crash data showed that, at impact with the retaining wall, the ABS control status was "on" and VSC control status was "engaged." The Toyota sustained a one quarter-turn, bounce-over type rollover in an off-road scenario after striking the wall and light pole. The rollover was captured in the EDR report (3rd Prior Event, TRG 3) and the data suggests the driver lost control of the vehicle prior to departing the roadway. Following the left side departure, steering input to the left increased to a maximum of

[2] www.nhtsa.gov/vehicle/2021/TOYOTA/RAV4/SUV/FWD#safety-ratings-rollover

55.5° at TGR (0) and accelerator pedal increased to a maximum of 34.5 percent at TGR(0). The service brake remained "off."

Police did not report the vehicle's exact final rest location, but scene evidence including glass from the backlight suggested an estimated rollover distance of 6 m (20 ft). Rollover damage to the vehicle's greenhouse included sheet metal surface scratches and minor crush. Two factors that possibly mitigated the roll distance were the pole impact and the loose gravel surface of the embankment.

The driver remained belted in his seated position during the crash. A suspected blood deposit was present on the vehicle's roof header. The driver was removed from the vehicle by emergency responders and, according to EMS medical records, gave inappropriate verbal responses to their questions.

Event Data Recorder

The EDR was imaged during the vehicle inspection via the direct-to-module method using the Bosch CDR 900 tool. It was imaged and reported using software version 21.5.1. The EDR captured six events, including a front/rear/side event, three side events, and two rollover events. Three events were deployment level and included pre-crash data but none included crash avoidance or advanced driver assistance systems data. The 5th Prior Event (TRG 1) was a non-deployment event identified as a side crash event type with a right side component. The Toyota's left front tire struck and rode up the concrete wall and the Toyota reached a state of instability with the left front tire off the ground and the vehicle in a slight counterclockwise yaw. This event was followed 17.0 msec later by the 4th Prior Event (TRG 2) when the vehicle's front plane stuck the metal light pole and sheared it from its base. This was a frontal crash type deployment event and the driver's frontal, knee, and IC air bags deployed. The 3rd Prior Event (TRG 3) was the right side leading rollover, which was a deployment level event that occurred 41.0 msec after TRG 2. The roll angle at the time of TGR 3 was 8.3 degrees. Following TRG 3, all the driver's air bags had deployed and his seat belt pretensioner had activated. The 2nd Prior Event (TRG 4) was a non-deployment event identified as a side crash event type that occurred 59.0 msec after the rollover event. This event was likely related to lateral movement during the rollover. The 1st Prior Event (TRG 5) was a deployment level rollover event type that occurred 2,502 msec after the prior event. The roll angle at the time of TGR 5 was 75.8°. This event suggests the vehicle had not yet come to complete rest following the rollover. The Most Recent Event (TRG 6) was a non-deployment level side crash event type that was recorded at the upper limit value of 32,767 msec or greater after the prior event. The time between events suggests this event occurred after the crash. The complete EDR report is included in the Appendix of this report.

EDR Diagnostic Trouble Codes

The EDR record for 2nd Prior Event (TRG 4) indicated that no diagnostic trouble codes (DTCs) were present. At this time in the crash sequence, all the driver's available air bags had deployed and his seat belt pretensioner had actuated. The EDR record for the subsequent 1st Prior Event (TRG 5) indicated twelve DTCs were present. All the DTCs were "B" (body codes) that included references to the Toyota's supplemental restraint system (SRS).[3] A review of the DTCs using online sources identified incomplete circuits, shorts to ground, circuit failures, warning lamp

[3] www.calamp.com/blog/dtc-codes/

activity, air bag sensor activity, air bag switch activity, and pretensioner activity. Nothing suggested the DTCs interfered with SRS performance.

Crash Avoidance Technologies

The Toyota had standard crash avoidance and ADAS including PCS, LTA, and dynamic radar cruise control with full-speed range. The ADAS used a radar sensor located on the front grille and front camera located on the center windshield. The EDR report did not include crash avoidance and ADAS data. Efforts to interview the driver to obtain more information regarding ADAS usage and settings were unsuccessful.

Pre-collision system

According to the vehicle owner's manual, PCS included pre-collision warning and pre-collision brake assist. PCS uses a radar sensor and front camera to detect objects in front of the vehicle. The pre-collision system can be disabled/enabled and the warning timing can be changed.

Lane tracing assist

LTA system warns the driver when the vehicle deviates from a lane and can slightly operate the steering wheel to help avoid deviation from the lane. LTA recognizes lane lines using the front camera and detects preceding vehicles using the front camera and radar.

Dynamic radar cruise control with full-speed range

In vehicle-to-vehicle distance control mode, the vehicle automatically accelerates, decelerates, and stops to match the speed changes of the preceding vehicle even if the accelerator pedal is not depressed. In constant speed control mode, the vehicle runs at a fixed speed.

Interior Damage

The Toyota sustained interior damage caused by impact forces, air bag deployments, and post-crash activities. The windshield was fractured on the right aspect when contacted by the trailing edge of the hood and holed on the left aspect by an unknown source. The backlight was disintegrated. Frontal and side air bags had deployed and were later removed during post-crash activities. Driver contact evidence was present on the seat belt, and a small blood deposit was present on the roof header. The doors remained closed and operational, and no intrusions were observed.

Manual Restraint Systems

The Toyota had lap and shoulder seat belts for all seat positions. Based on evidence obtained during the vehicle inspection, the Toyota driver was belted. His seat belt webbing and buckle were scuffed when loaded by the driver during the crash. The belt retractor pretensioner actuated, locking the belt in the used, unspooled position. The evidence was supported by EDR data and the police report.

Supplemental Restraint Systems

The Toyota's supplemental restraint system had advanced air bags based on the Federal Motor Vehicle Safety Standards (FMVSS No. 208) including driver's and passenger's frontal, driver's knee, front passenger's seat cushion, front row outboard seat-mounted side impact, and front and second row IC air bags. The driver bought the vehicle new less than 4 months prior to the crash. A vehicle history report had no record of air bag recalls, service, or replacement.

The Toyota had combination side impact/roll-sensing IC air bags. According to the owner's manual, both IC air bags will deploy in a rollover event, and both may deploy in a severe frontal crash or serious undercarriage impact.

The driver's frontal, knee, and IC air bags deployed and his seat belt pretensioner actuated in the Event 2 pole impact. The frontal and IC air bags were removed during post-crash activities and were not inspected. The knee air bag appeared to have deployed normally and the seat belt pretensioner locked the belt in a spooled out orientation.

NHTSA Recalls and Investigations

VIN-based searches queried in September 2022 and November 2024 revealed no unrepaired recalls associated with this vehicle.

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2021 Toyota RAV4 Occupant

Driver Demographics

Age/sex:	36 years/male
Height:	180 cm (71 in)
Weight:	71 kg (156 lb)
Eyewear:	Unknown
Seat type:	Bucket with adjustable head restraint
Seat track position:	Rear most
Manual restraint usage:	Lap and shoulder belt available, used
Usage source:	Vehicle inspection, EDR, police report
Air bags:	Frontal, knee, seat-mounted and IC air bags available, frontal, knee and IC deployed
Alcohol/drug data:	Positive for cannabinoid (THC)
Egress from vehicle:	Removed due to perceived serious injuries
Transport from scene:	Ambulance to hospital
Type of medical treatment:	Admitted overnight, discharged

Driver Injuries

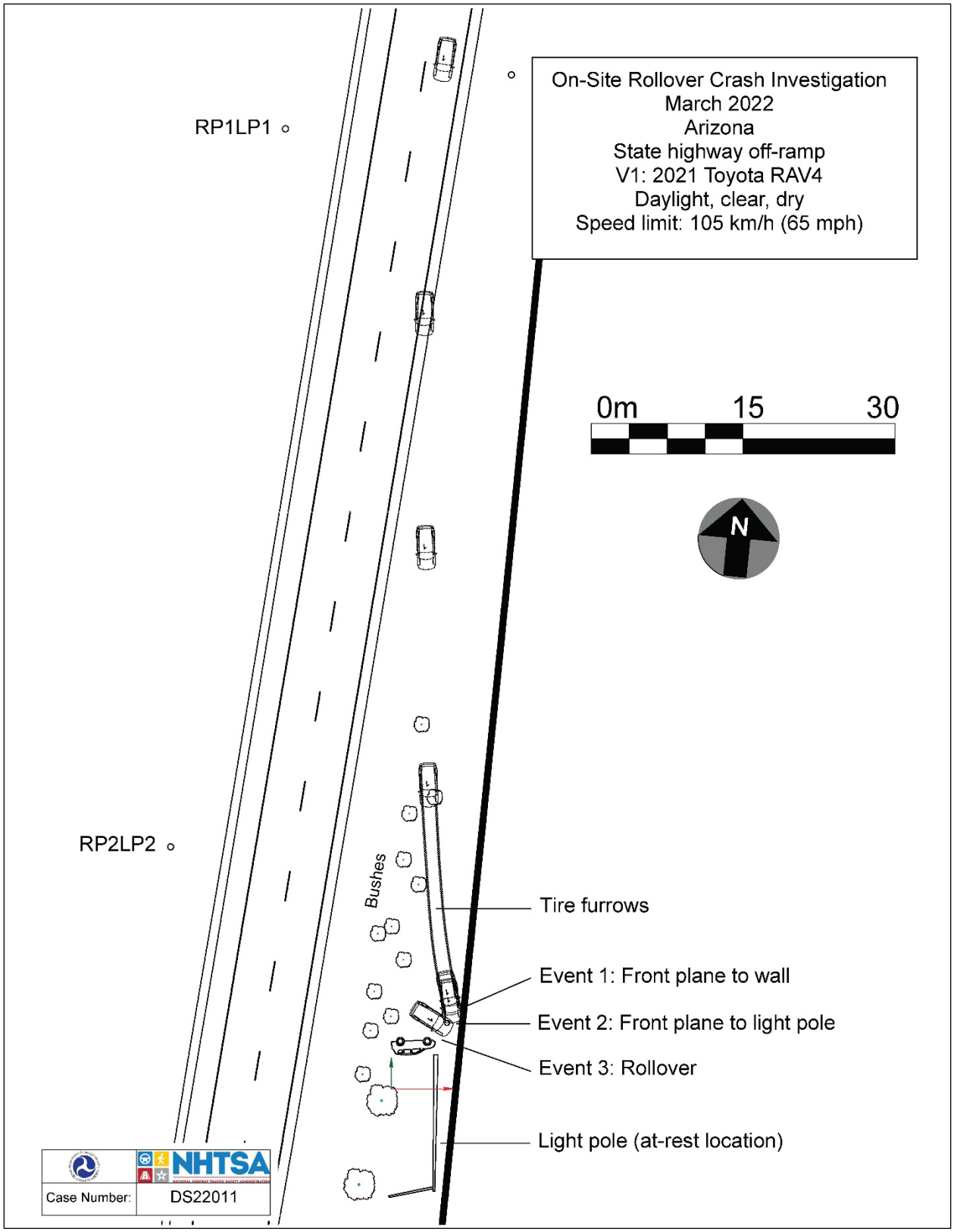
Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Component (IPC)	IPC Confidence Level
1	Pulmonary contusions, right upper lobe, right middle lobe	441408.3	Shoulder seat belt	Possible
2 3	Compression (endplate) fractures, T11 and T12 with 10% loss of anterior height	650432.2 650432.2	Shoulder seat belt	Possible
4 5	Compression (endplate) fractures, L1 and L4 with 10% loss of anterior height	650632.2 650632.2	Shoulder seat belt	Possible
6	Contusions, left neck, shoulder and chest	410402.1	Shoulder seat belt	Certain
7	Abrasions and contusions, abdomen	510202.1	Lap seat belt	Certain
8	Abrasions and contusions, bilateral lower legs	810202.1	Left lower instrument panel	Probable
9	Abrasions, face	210202.1	Frontal air bag	Possible
	Hemorrhage, left temporal lobe, cerebrum (2.4 x 1.9 x 2.1 cm)	Pre-existing condition		
	Loss of consciousness, unknown duration	Unknown if pre-existing related to possible seizure or impact-related		

Source: EMS and hospital medical records

Driver Kinematics

The belted driver was seated forward-facing. His medical records documented a cerebral hemorrhage that may have caused a seizure and possible loss of consciousness. The Toyota departed the exit ramp on the left edge, driving over a concrete rain gutter and traveling up a gravel-covered embankment. The driver remained in his seated position as the vehicle traveled over low shrubs. At impact with the retaining wall (Event 1), he was displaced forward and slightly left in response to the direction of force. At impact with the pole (Event 2), the driver's frontal, knee and IC air bags deployed and his seat belt pretensioner actuated. He was displaced forward loading the seat belt with his chest and abdomen and loading the frontal air bag with his face and chest. He had pulmonary contusions to his right lung and compression fractures to his thoracic and lumbar spine. His face had abrasions caused by air bag loading and his left neck, shoulder, chest, and abdomen had seat belt abrasions and contusions. The Toyota rolled one quarter-turn to the right (Event 3) and the driver was held in his seat by the pretensioned belt. The vehicle's right plane struck the ground, and the driver was displaced to the right where he remained in his seat position for an unknown time. When emergency responders arrived, he was removed from the vehicle due to perceived serious injuries and transported by ground ambulance to a hospital where he was admitted overnight. The police report and medical records indicated the driver was in a conscious but confused state. His verbal responses gradually improved over the next several hours.

Crash Diagram



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Appendix A. Event Data Recorder Report – 2021 Toyota RAV4[4]

[4] The EDR Report contained in this 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/Frame Number	2T3H1RFVXMC******
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	DS22011_V1_ACM.CDRX
Saved on	
Imaged with CDR version	Crash Data Retrieval Tool 21.5.1
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	Front/Rear/Side Events (1), Side Events (3), Rollover Events (2)

Comments

No comments entered.

Data Limitations

CDR Record Information:

- Due to limitations of the data recorded by the airbag ECU, such as the resolution, data range, sampling interval, time period of the recording, and the items recorded, the information provided by this data may not be sufficient to capture the entire crash.
- Pre-Crash data is recorded in discrete intervals. Due to different refresh rates within the vehicle's electronics, the data recorded may not be synchronous to each other.
- Airbag ECU data should be used in conjunction with other physical evidence obtained from the vehicle and the surrounding circumstances.
- If any of the front passenger seat airbags, side airbags, or Curtain Shield Airbags have deployed, data will not be overwritten or deleted by the airbag ECU following that event. If none of the airbags have deployed, the data of that event may be overwritten by a following event even if other airbags (pretensioner, rear seat airbag, etc.) have deployed.
- If power supply to the airbag ECU is lost during an event, all or part of the data may not be recorded.
- "Diagnostic Trouble Codes" are information about faults when a recording trigger is established. Various diagnostic trouble codes could be set and recorded due to component or system damage during an accident.
- The airbag ECU records only diagnostic information related to the airbag system. It does not record diagnostic information related to other vehicle systems.
- The TaSCAN, Global Tech Stream, or Intelligent Tester II devices (or any other Toyota genuine diagnostic tool) can be used to obtain detailed information on the diagnostic trouble codes from the airbag system, as well as diagnostic information from other systems. However, in some cases, the diagnostic trouble codes of the airbag system recorded by the airbag ECU when the event occurred may not match the diagnostic trouble codes read out when the diagnostic tool is used.

General Information:

- The data recording specifications of Toyota's airbag ECUs are divided into the following categories. The specifications for 12EDR or later are designed to be compatible with NHTSA's 49CFR Part 563 rule.
  - 00EDR / 02EDR / 04EDR / 06EDR / 10EDR / 12EDR / 13EDR / 15EDR / 17EDR / 19EDR
- The airbag ECU records data for all or some of the following accident types: frontal crash, rear crash , side crash, and rollover events. Depending on the installed airbag ECU, data for side crash and/or rollover events may not be recorded.
- The airbag ECU has the following recording pages (memory maps) for each accident type to store event data: four pages for frontal/rear/side crash, four pages for a side crash, and two pages for rollover event.
- When a crash impact for a lateral direction is occurred, data may be recorded in a page for frontal/rear/side crash. And additional data may be recorded in a page for side crash.
- The data recorded by the airbag ECU includes correlating information between each previously occurring event (i.e., information that clarifies the collision event sequence. This correlation information consists of the following items.
  - Time from Previous TRG
  - TRG Count
  - Previous Crash Type
- In frontal/rear/side crash events, earlier point in the following is regarded as time zero for the recorded data.
  - the first point where a longitudinal cumulative delta-V of over 0.8 km/h (0.5 mph) is reached
  - the first point where a lateral cumulative delta-V of over 0.8 km/h (0.5 mph) is reached

  In side crash event and rollover event, the point in time at which the recording trigger is established is regarded as time zero for the

recorded data.
- The recording trigger judgment threshold value differs depending on the collision type (i.e., frontal crash, rear crash, side crash, or rollover event).
- Some of the data recorded by the airbag ECU is transmitted to the airbag ECU from various vehicle control modules by the vehicle's Controller Area Network (CAN).
- In some cases, the airbag ECU part number printed on the ECU label may not match the airbag ECU part number that the CDR tool reports. The part number retrieved by the CDR tool should be considered as the official ECU part number.
- In frontal/rear/side collision events, the record time varies depending on the period during which a longitudinal and lateral cumulative delta-V of over 0.8 km/h (0.5 mph) is reached, and time series data is recorded for up to 250 ms. The record time described above is indicated as "Length of Delta-V". "Delta-V, Longitudinal" outside the record time is indicated by area shaded in the table, and not indicated in the graph.

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.

Data Element Name	Positive Sign Notation Indicates
Maximum Delta-V, Longitudinal	Forward
Delta-V, Longitudinal	Forward
Delta-V, Lateral	Left to Right
Lateral Acceleration, Side Satellite Sensor 1	Left to Right
Lateral Acceleration, Side Satellite Sensor 2	Left to Right
Lateral Acceleration, Side Satellite Sensor 3	Left to Right
Lateral Acceleration, Side Satellite Sensor 4	Left to Right
Rate of Change of Pressure, Side Satellite Sensor 1	The pressure of a door interior is applied.
Rate of Change of Pressure, Side Satellite Sensor 2	The pressure of a door interior is applied.
Rate of Change of Pressure, Side Satellite Sensor 3	The pressure of a door interior is applied.
Rate of Change of Pressure, Side Satellite Sensor 4	The pressure of a door interior is applied.
Lateral Acceleration for Side Crash, Floor Sensor	Left to Right
Roll Angle Peak	Clockwise Rotation
Roll Angle at the Time of TRG	Clockwise Rotation
Roll Rate	Clockwise Rotation
Lateral Acceleration for Rollover, Floor Sensor	Left to Right
Longitudinal Acceleration , VSC Sensor	Forward
Yaw Rate	Left Turn
Steering Input	Left Turn

Data Definitions:

- After "Freeze Signal" has been turned ON, subsequent events will not be recorded in the recording page.
- "Recording Status" indicates a state in which all recorded event data has been written into the non-volatile memory, or a state in which this process was interrupted and not fully written into the non-volatile memory. If "Recording Status" is "Incomplete", recorded event data may not be valid.
- "Engine RPM" indicates the number of engine revolutions, not the number of motor revolutions. The recorded value has an upper limit of 12,800 rpm. Resolution is 100 rpm and the value is rounded down and recorded. For example, if the actual engine speed is 799 rpm, the recorded value will be 700 rpm.
- If the electric vehicle is using a calculated/virtual engine RPM for drivetrain control, "Engine RPM" may be recorded, but should not be used during data analysis.
- The upper limit for the recorded "Vehicle Speed" value is 200 km/h (125mph). Resolution is 1km/h (0.6mph) and the value is rounded down and recorded. The accuracy of the "Vehicle Speed" value can be affected by various factors. These include, but not limited, to the following.
  - Significant changes in the tire's rolling radius
  - Wheel lock and wheel slip
- "Accelerator Pedal" value is recorded as a percentage. The percentage increases as the driver depresses the accelerator.
- If M/T transmission vehicle of some limited model, "Shift Position" may display "Drive" regardless of the actual shift position.
- Depending on the type of occupant sensor installed in the vehicle, one of the following three recording formats for "Occupant Size Classification, Front Passenger" will be utilized.
  - Occupied / Not Occupied
  - AM50 / AF05 / Child / Not Occupied
  - AM50 / AF05 / Child or Not Occupied
- "Cruise Control Status" indicates whether the cruise control system is actuated or not. OFF indicates that the cruise control system is not actuated, but can also indicates that the vehicle is not equipped with the system.
- "Air Bag Warning Lamp, On/Off", "Ignition Cycle, Crash", "Seat Track Position Switch, Foremost, Status, Driver", "Occupant Size Classification, Front Passenger", "Safety Belt Status, Driver", "Safety Belt Status, Front Passenger", "Frontal Air Bag Suppression Switch Status, Front Passenger", and "RSCA Disable Switch" indicate the state approximately 1 second before time zero. They may not always indicate the state at the moment of collision.
- The upper and lower limits for the recorded value of "Motor RPM" is 17,500 rpm and -7,500 rpm respectively. Resolution is 100 rpm and the value is rounded down and recorded.
- "Brake Oil Pressure" has an upper limit of 12.14 Mpa. In the case of the vehicle that has not VSC system, "0 Mpa" or "Invalid" may be displayed.
- "Longitudinal Acceleration , VSC Sensor" has upper and lower limits for the recorded value of 8.973 m/s^2 and -8.973 m/s^2 respectively. This acceleration sensor does not sense collisions.
- "Sequential Shift Range" displaying "Undetermined" indicates the shift range is undetermined or was not being used.
- Some vehicles will not be equipped with all "Drive Mode" types indicated in the "Drive Mode" table. If some or all drive modes are not

applicable to vehicle, "OFF" or "Invalid" may be displayed. The item in the "Drive Mode" table may not match the name of switch or indicator that equipped the vehicle.

- The upper and lower limits for the recorded value of "Steering Input" is 375 deg and -375 deg respectively. Resolution is 1.5 deg and the value is rounded down and recorded.
- Resolution of the "Air Bag Warning Lamp ON Time Since DTC was Set" is 15 minutes, and the value is rounded down and recorded.
- "Delta-V, Longitudinal" indicates the change in forward speed after time zero. This does not refer to vehicle speed, and it does not include the change in speed during the period from the start of the actual collision to establishment of the time zero.
- "Location of Side Satellite Sensor" shows the outline of a typical sensor position. Sensory location can be confirmed using the repair manual.
- "TRG Count" indicates a calculated value of the number of times recording triggers have been established for all crash types. The sequence in which each event occurred can be verified from the "TRG Count". The smaller the "TRG Count" value, the older the data. The upper limit for the recorded value is 65,533 times. When more than one event reaches the upper limit, the actual "TRG Count" may be greater than what is displayed for that event.
- Resolution of the "Time from Pre-Crash to TRG" is 50 [ms], and the value is rounded up and recorded.
- "Time from Previous TRG" indicates the time between the establishment of a most recent event's recording trigger to the establishment of a latest event's recording trigger. The upper limit for the recorded value is 32,767 milliseconds. In the event of establishment of the first recording trigger after the ignition is switched ON, the upper limit value(max value) is recorded.
- "Roll Angle at the Time of TRG" and "Roll Angle Peak" do not represent the actual roll angle of the vehicle. These values are used internally by the airbag ECU for sensing a rollover.
- Depending on the type of satellite sensor installed in the vehicle, "Lateral Acceleration" or "Rate of Change of Pressure" is displayed as Side satellite sensor. "Rate of Change of Pressure" indicates that of a door interior. 0% is displayed when the pressure of a door interior is equal with the outside air pressure.
- Depending on the type of satellite sensor installed in the vehicle, "Clipping Time, Lateral Acceleration" or "Clipping Time, Rate of Change of Pressure" is displayed.
- "VSC Control Status" displaying "OFF+ (disable)" indicates VSC is disable (a part of the behavior stabilization control is operated).
- "Trip count" indicates the number of ignition power applying to a vehicle. The upper limit for the recorded value is 65534 times. When trip count reaches the upper limit value, trip count is reset at the next counting up.
- "Time count input system" indicates a count method of "Time count" and "Trip count".
  - Normal: Airbag ECU correct the count value with vehicle common value and count it up.
  - IG: ECU uniquely counts up regardless of vehicle common value. (In case of IG system ECU.)
  - ACC: ECU uniquely counts up regardless of vehicle common value. (In case of ACC system ECU.)
  - +B: ECU uniquely counts up regardless of vehicle common value. (In case of +B system ECU.)
- "Time count" indicates time from ignition power applying. The upper limit for the recorded value is 1,677,721,400ms. The resolution is 100ms and the value is rounded down and recorded.

05017_ToyotaS00std_r028

System Status at Retrieval

ECU Part Number	89170-0R350
EDR Generation	17EDR
Complete File Recorded	Yes
Ignition Cycle, Download (times)	246
Multi-Event, Number of Events (times)	2 or greater
Time from Event 1 to 2 (sec)	2.561
Diagnostic Trouble Codes Exist	Yes
Location of Side Satellite Sensor 1, L	front door
Location of Side Satellite Sensor 2, L	B-Pillar
Location of Side Satellite Sensor 3, L	Not Equipped
Location of Side Satellite Sensor 4, L	Not Equipped
Location of Side Satellite Sensor 1, R	front door
Location of Side Satellite Sensor 2, R	B-Pillar
Location of Side Satellite Sensor 3, R	Not Equipped
Location of Side Satellite Sensor 4, R	Not Equipped
Location of Floor Sensor	Airbag ECU

Event Record Summary at Retrieval

Events Recorded	TRG Count	Crash Type	Time (msec)	Pre-Crash Recording Status	Diagnostic Data Recording Status	Occupant Data Recording Status	Crash Info Recording Status	Time Series Recording Status
Most Recent Event	6	Side Crash	0	N/A	Complete	N/A	N/A	Complete
1st Prior Event	5	Rollover	N/A	Complete	Complete	Complete	Complete	Complete
2nd Prior Event	4	Side Crash	N/A	N/A	Complete	N/A	N/A	Complete
3rd Prior Event	3	Rollover	N/A	Complete	Complete	Complete	Complete	Complete
4th Prior Event	2	Frontal/Rear/Side Crash	N/A	Complete	Complete	Complete	Complete	Complete
5th Prior Event	1	Side Crash	N/A	N/A	Complete	N/A	N/A	Complete

System Status at Event (Most Recent Event, TRG 6)

TRG Count (times)	6
Event Type	Side Crash
Previous Crash Type	Rollover
Time from Previous TRG (msec)	32767 or greater
Freeze Signal	OFF
Freeze Signal Factor	None
Odometer signal (miles [km])	1,997 [3,214]
Trip count (times)	257
Time count (msec)	3,655,600
Time count input system	Normal

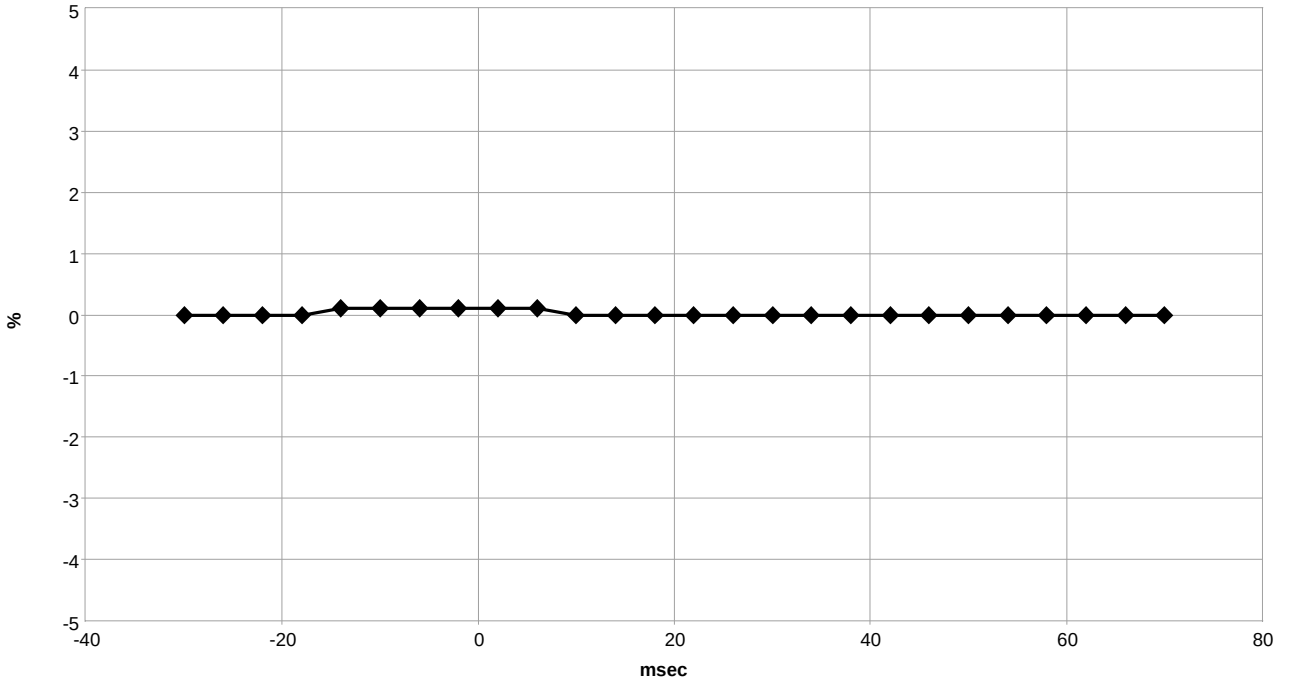
DTCs Present at Time of Event (Most Recent Event, TRG 6)

Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	1
Airbag Warning Lamp ON Time Since DTC was Set (min)	45
Diagnostic Trouble Codes	(B1862), (B1803), (B1837), (B1832), (B1811), (B1901), (B1906), (B1926), (B1831), (B1941), (B1921), (B1612)

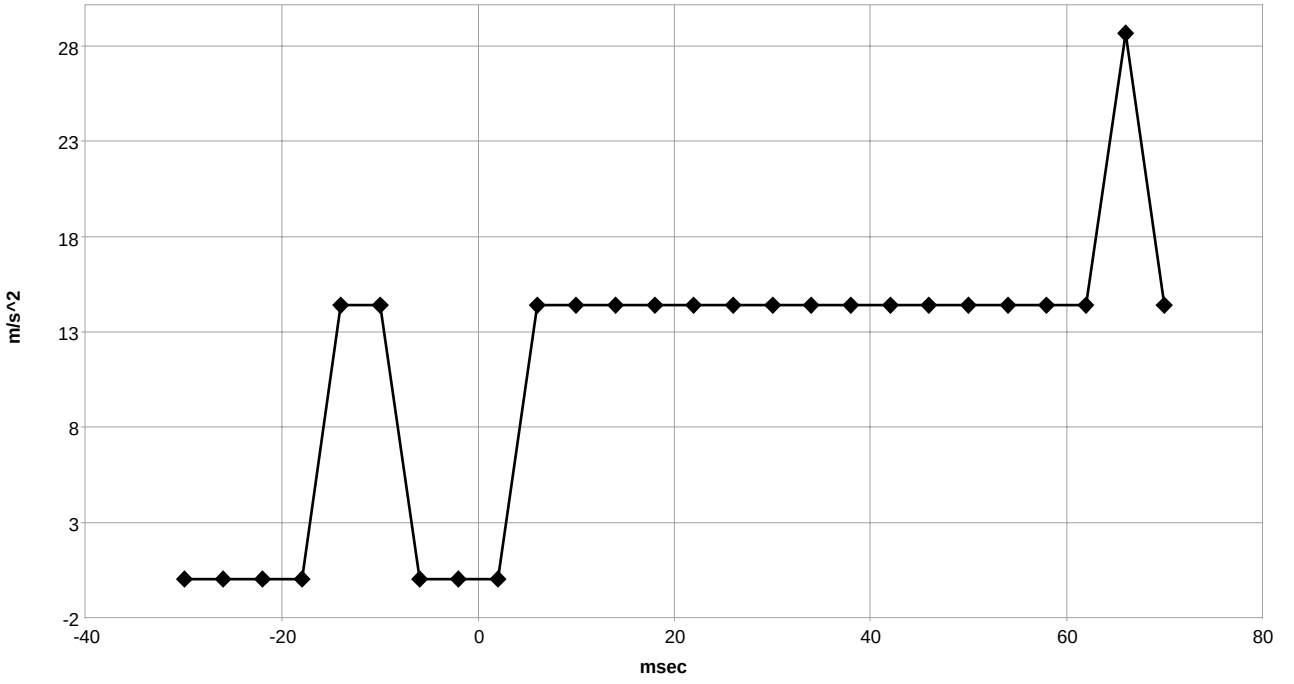
Lateral Crash Pulse (Most Recent Event, TRG 6)

Recording Status , Time Series Data	Complete
Time from TRG to Next Sample (msec)	2
Clipping Time, Rate of Change of Pressure, Side Satellite Sensor 1, L (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 2, L (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 3, L (msec)	SNA
Clipping Time, Lateral Acceleration, Side Satellite Sensor 4, L (msec)	SNA
Clipping Time, Rate of Change of Pressure, Side Satellite Sensor 1, R (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 2, R (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 3, R (msec)	SNA
Clipping Time, Lateral Acceleration, Side Satellite Sensor 4, R (msec)	SNA
Clipping Time, Lateral Acceleration, Floor Sensor (msec)	No

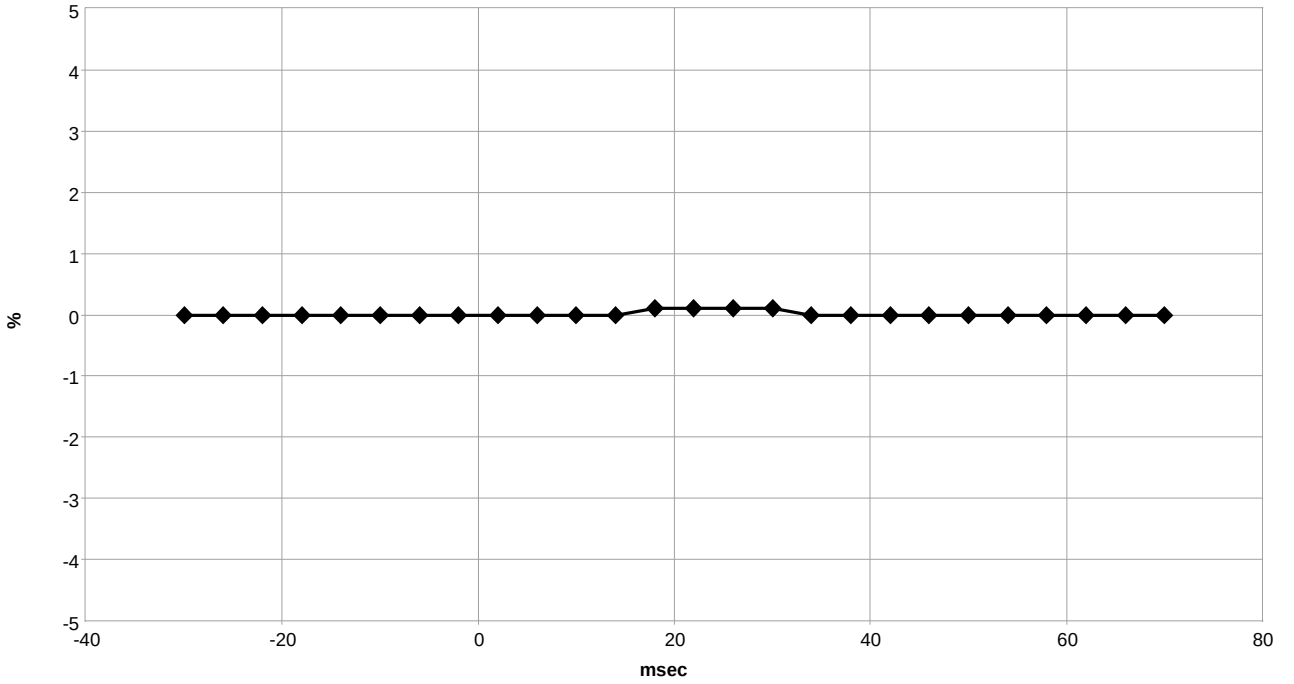
Rate of Change of Pressure, Side Satellite Sensor 1, L



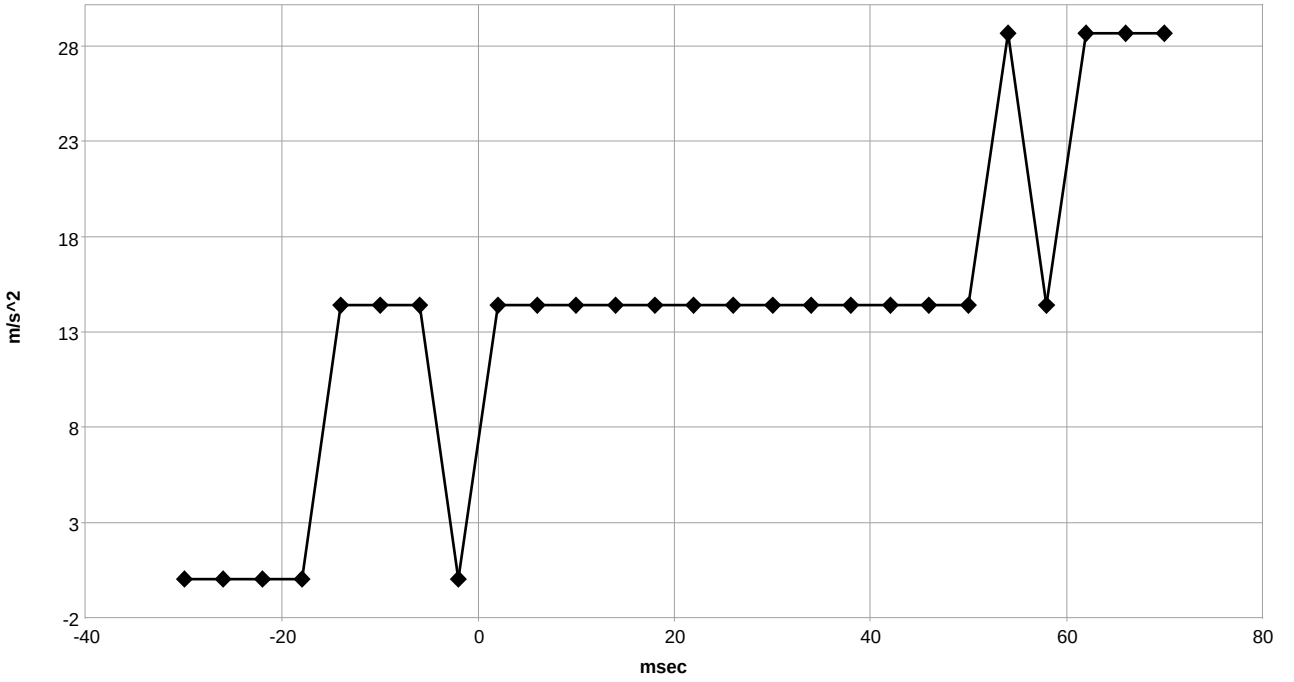
Lateral Acceleration, Side Satellite Sensor 2, L

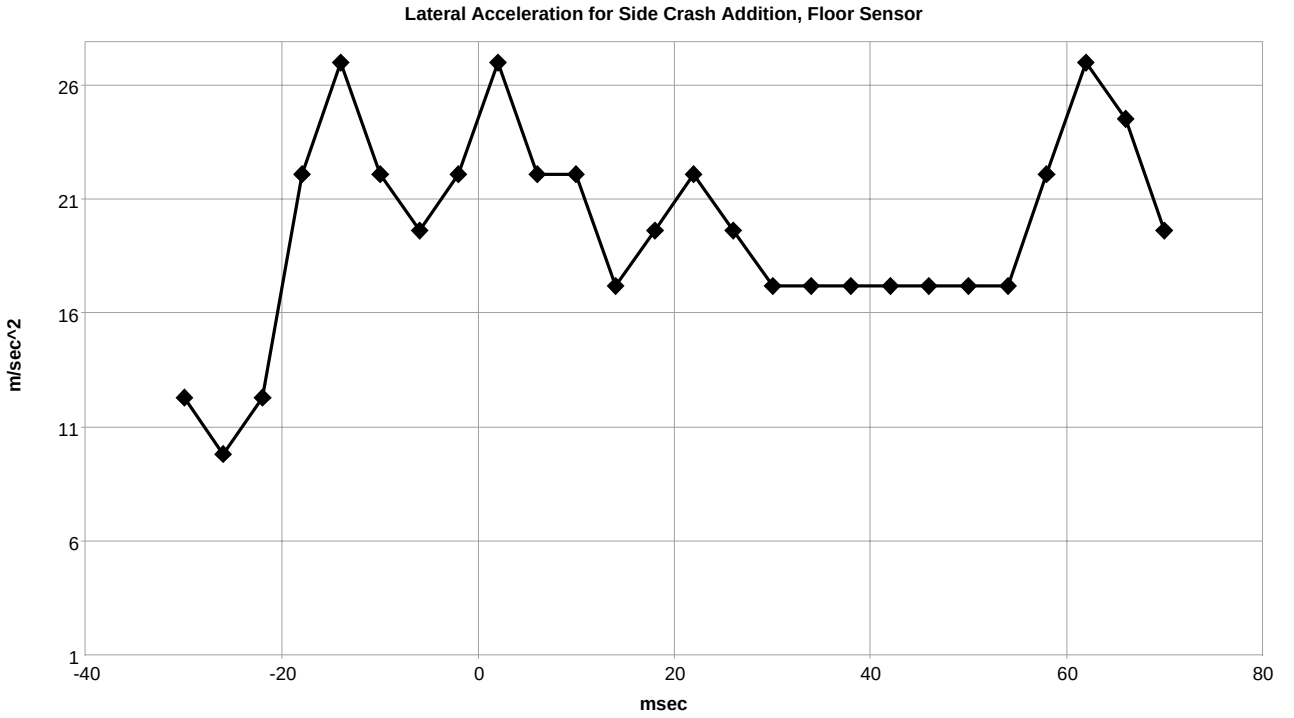


Rate of Change of Pressure, Side Satellite Sensor 1, R



Lateral Acceleration, Side Satellite Sensor 2, R




Lateral Acceleration for Side Crash Addition, Floor Sensor
m/sec^2
26
21
16
11
6
1
-40
-20
0
20
40
60
80
msec

Lateral Crash Pulse (Most Recent Event, TRG 6) - Table 1 of 2

Time (msec)	Rate of Change of Pressure, Side Satellite Sensor 1, L (%)	Lateral Acceleration, Side Satellite Sensor 2, L (m/s^2)	Lateral Acceleration, Side Satellite Sensor 3, L (m/s^2)	Lateral Acceleration, Side Satellite Sensor 4,L (m/s^2)	Rate of Change of Pressure, Side Satellite Sensor 1, R (%)	Lateral Acceleration, Side Satellite Sensor 2, R (m/s^2)	Lateral Acceleration, Side Satellite Sensor 3, R (m/s^2)	Lateral Acceleration, Side Satellite Sensor 4, R (m/s^2)
-30	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-26	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-22	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-18	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-14	0.1	14.4	SNA	SNA	0.0	14.4	SNA	SNA
-10	0.1	14.4	SNA	SNA	0.0	14.4	SNA	SNA
-6	0.1	0.0	SNA	SNA	0.0	14.4	SNA	SNA
-2	0.1	0.0	SNA	SNA	0.0	0.0	SNA	SNA
2	0.1	0.0	SNA	SNA	0.0	14.4	SNA	SNA
6	0.1	14.4	SNA	SNA	0.0	14.4	SNA	SNA
10	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
14	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
18	0.0	14.4	SNA	SNA	0.1	14.4	SNA	SNA
22	0.0	14.4	SNA	SNA	0.1	14.4	SNA	SNA
26	0.0	14.4	SNA	SNA	0.1	14.4	SNA	SNA
30	0.0	14.4	SNA	SNA	0.1	14.4	SNA	SNA
34	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
38	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
42	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
46	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
50	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
54	0.0	14.4	SNA	SNA	0.0	28.7	SNA	SNA
58	0.0	14.4	SNA	SNA	0.0	14.4	SNA	SNA
62	0.0	14.4	SNA	SNA	0.0	28.7	SNA	SNA
66	0.0	28.7	SNA	SNA	0.0	28.7	SNA	SNA
70	0.0	14.4	SNA	SNA	0.0	28.7	SNA	SNA

Lateral Crash Pulse (Most Recent Event, TRG 6) - Table 2 of 2

Time (msec)	Lateral Acceleration for Side Crash Addition, Floor Sensor (m/s^2)
-30	12.3
-26	9.8
-22	12.3
-18	22.1
-14	27.0
-10	22.1
-6	19.6
-2	22.1
2	27.0
6	22.1
10	22.1
14	17.2
18	19.6
22	22.1
26	19.6
30	17.2
34	17.2
38	17.2
42	17.2
46	17.2
50	17.2
54	17.2
58	22.1
62	27.0
66	24.5
70	19.6

System Status at Event (1st Prior Event, TRG 5)

TRG Count (times)	5
Event Type	Rollover
Previous Crash Type	Side Crash
Time from Previous TRG (msec)	2,502.0
Freeze Signal	ON
Freeze Signal Factor	Rollover CSA Deployment
Recording Status, Rollover Crash Info.	Complete
Odometer signal (miles [km])	1,997 [3,214]
Trip count (times)	257
Time count (msec)	382,100
Time count input system	Normal

Deployment Command Data (1st Prior Event, TRG 5)

Pretensioner Deployment, Time to Fire, 1st Seat, Driver (msec)	441.0
Pretensioner Deployment, Time to Fire, 1st Seat, Passenger (msec)	441.0
Pretensioner Deployment, Time to Fire, 2nd Seat, Driver (msec)	441.0
Pretensioner Deployment, Time to Fire, 2nd Seat, Passenger (msec)	441.0
Side Curtain Airbag Deployment, Time to Deploy, Driver (msec)	441.0
Side Curtain Airbag Deployment, Time to Deploy, Passenger (msec)	441.0

DTCs Present at Time of Event (1st Prior Event, TRG 5)

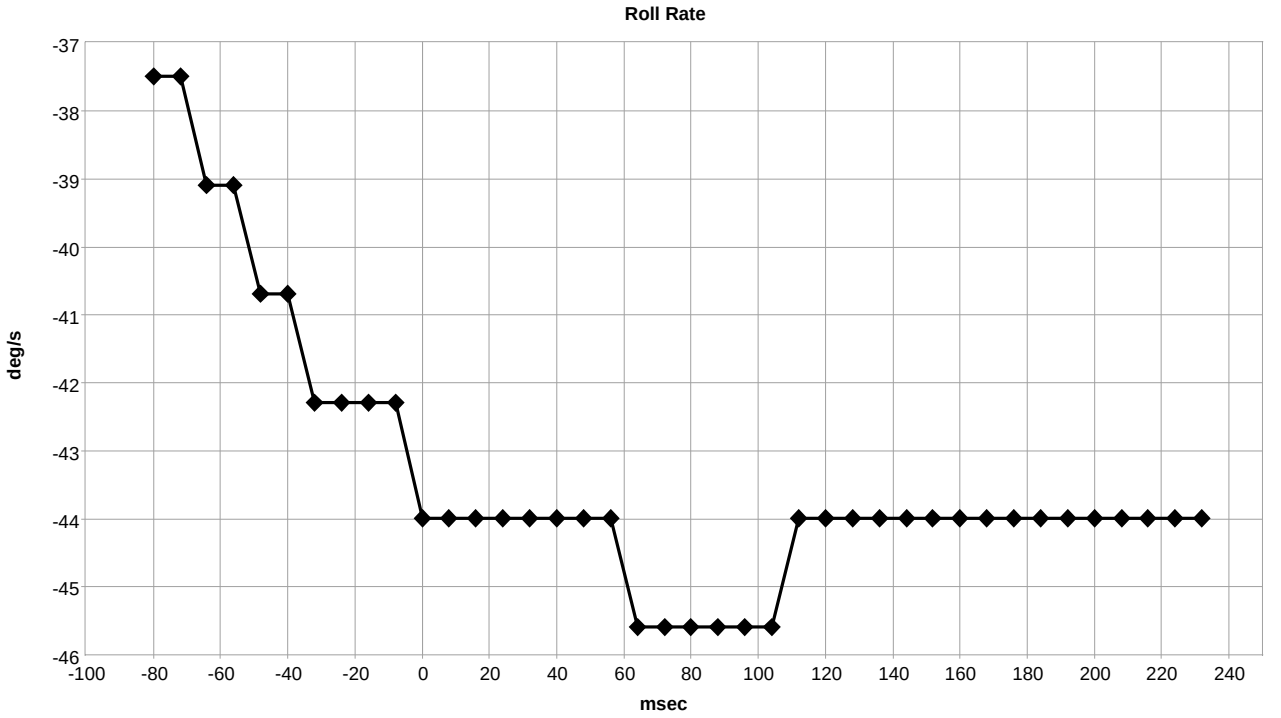
Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	0
Airbag Warning Lamp ON Time Since DTC was Set (min)	0
Diagnostic Trouble Codes	(B1862), (B1803), (B1837), (B1832), (B1811), (B1901), (B1906), (B1926), (B1831), (B1941), (B1921), (B1612)

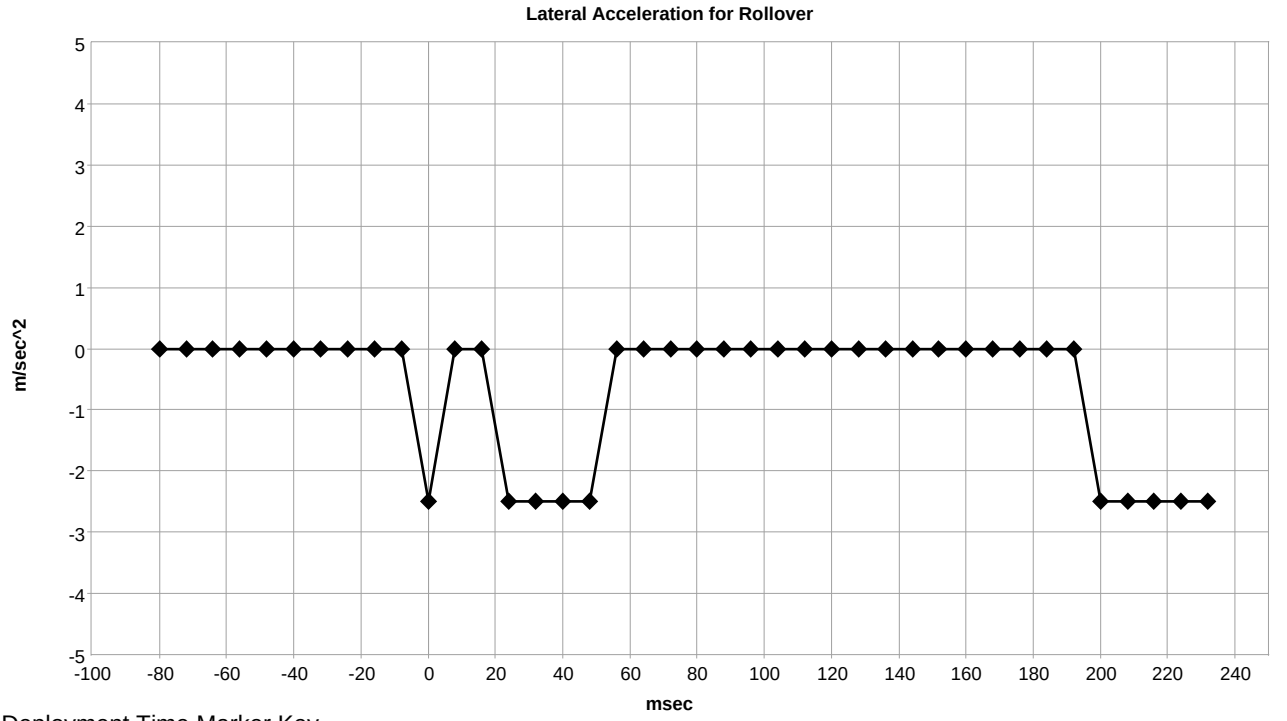
Pre-Crash Data, 1 Sample (1st Prior Event, TRG 5)

Recording Status, Occupant	Complete
Recording Status, Pre-Crash	Complete
Time from Pre-Crash to TRG (msec)	250
Safety Belt Status, Driver	ON
Safety Belt Status, Front Passenger	OFF
Occupant Size Classification, Front Passenger	Child or Not Occupied
Frontal Airbag Suppression Switch Status, Front Passenger	SNA
RSCA Disable Switch	SNA
Seat Track Position Switch, Foremost, Status, Driver	No
Airbag Warning Lamp, On/Off	ON
Ignition Cycle, Crash (times)	242

Rollover Crash Pulse (1st Prior Event, TRG 5)

Recording Status , Time Series Data	Complete
Time from TRG to Next Sample (msec)	0
RollAngle Peak (degrees)	75.8
Roll Angle at the Time of TRG (degrees)	75.8





Deployment Time Marker Key

1	Driver CSA
2	Passenger CSA
3	Driver Pretensioner Deployment
4	Passenger Pretensioner Deployment

Rollover Crash Pulse (1st Prior Event, TRG 5)

Time (msec)	Roll Rate (deg/s)	Lateral Acceleration for Rollover (m/s^2)
-80	-37.5	0.0
-72	-37.5	0.0
-64	-39.1	0.0
-56	-39.1	0.0
-48	-40.7	0.0
-40	-40.7	0.0
-32	-42.3	0.0
-24	-42.3	0.0
-16	-42.3	0.0
-8	-42.3	0.0
0	-44.0	-2.5
8	-44.0	0.0
16	-44.0	0.0
24	-44.0	-2.5
32	-44.0	-2.5
40	-44.0	-2.5
48	-44.0	-2.5
56	-44.0	0.0
64	-45.6	0.0
72	-45.6	0.0
80	-45.6	0.0
88	-45.6	0.0
96	-45.6	0.0
104	-45.6	0.0
112	-44.0	0.0
120	-44.0	0.0
128	-44.0	0.0
136	-44.0	0.0
144	-44.0	0.0
152	-44.0	0.0
160	-44.0	0.0
168	-44.0	0.0
176	-44.0	0.0
184	-44.0	0.0
192	-44.0	0.0
200	-44.0	-2.5
208	-44.0	-2.5
216	-44.0	-2.5
224	-44.0	-2.5
232	-44.0	-2.5

Pre-Crash Data -5 to 0 Seconds (1st Prior Event, TRG 5) - Table 1 of 4

Time (sec)	Vehicle Speed (MPH [km/h])	Accelerator Pedal, % Full (%)	Percentage of Engine Throttle (%)	Fuel Injection Quantity (mm^3/st)	Engine RPM (RPM)	Motor RPM (RPM)	Service Brake, ON/OFF
-4.75	51.0 [82]	7.0	0.0	Invalid	1,400	Invalid	OFF
-4.25	49.1 [79]	13.0	2.5	Invalid	1,300	Invalid	OFF
-3.75	43.5 [70]	1.5	0.0	Invalid	1,100	Invalid	OFF
-3.25	36.7 [59]	8.5	1.0	Invalid	1,100	Invalid	OFF
-2.75	32.9 [53]	25.5	13.5	Invalid	1,300	Invalid	OFF
-2.25	1.2 [2]	Invalid	Invalid	Invalid	Invalid	Invalid	OFF
-1.75	0.6 [1]	100.0	100.0	Invalid	900	Invalid	OFF
-1.25	0.6 [1]	100.0	100.0	Invalid	500	Invalid	OFF
-0.75	0.6 [1]	100.0	100.0	Invalid	200	Invalid	OFF
-0.25	0.6 [1]	100.0	0.0	Invalid	100	Invalid	OFF
TRG(0)	0.6 [1]	100.0	0.0	Invalid	0	Invalid	OFF

Pre-Crash Data -5 to 0 Seconds (1st Prior Event, TRG 5) - Table 2 of 4

Time (sec)	ABS Control Status	BOS Control Status	Brake Oil Pressure (Mpa)	Longitudinal Acceleration , VSC Sensor (m/s^2)	Yaw Rate (deg/s)	Steering Input (degrees)	Shift Position
-4.75	OFF	OFF	0.00	-1.651	6.83	21.0	D
-4.25	OFF	OFF	0.00	-3.445	14.64	21.0	D
-3.75	ON	OFF	0.00	-1.507	18.54	28.5	D
-3.25	OFF	OFF	0.00	-4.737	11.71	25.5	D
-2.75	OFF	OFF	0.00	-2.369	19.52	28.5	D
-2.25	OFF	OFF	0.00	Invalid	Invalid	-100.5	N
-1.75	OFF	OFF	0.00	0.144	50.75	-54.0	N
-1.25	OFF	OFF	0.00	2.584	5.86	24.0	N
-0.75	OFF	OFF	0.00	3.302	0.49	1.5	N
-0.25	OFF	OFF	0.00	2.871	2.44	1.5	N
TRG(0)	OFF	OFF	0.00	2.728	6.83	1.5	N

Pre-Crash Data -5 to 0 Seconds (1st Prior Event, TRG 5) - Table 3 of 4

Time (sec)	Sequential Shift Range	Cruise Control Status	VSC Control Status	READY Signal	Drive Mode, Power Train	Drive Mode, Snow	Drive Mode, EV
-4.75	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-4.25	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-3.75	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-3.25	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-2.75	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-2.25	Undetermined	Invalid	ON (enable)	Invalid	Normal	OFF	Invalid
-1.75	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-1.25	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-0.75	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-0.25	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
TRG(0)	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid

Pre-Crash Data -5 to 0 Seconds (1st Prior Event, TRG 5) - Table 4 of 4

Time (sec)	Drive mode select signal
-4.75	Normal
-4.25	Normal
-3.75	Normal
-3.25	Normal
-2.75	Normal
-2.25	Normal
-1.75	Normal
-1.25	Normal
-0.75	Normal
-0.25	Normal

Time (sec)	Drive mode select signal
TRG(0)	Normal

System Status at Event (2nd Prior Event, TRG 4)

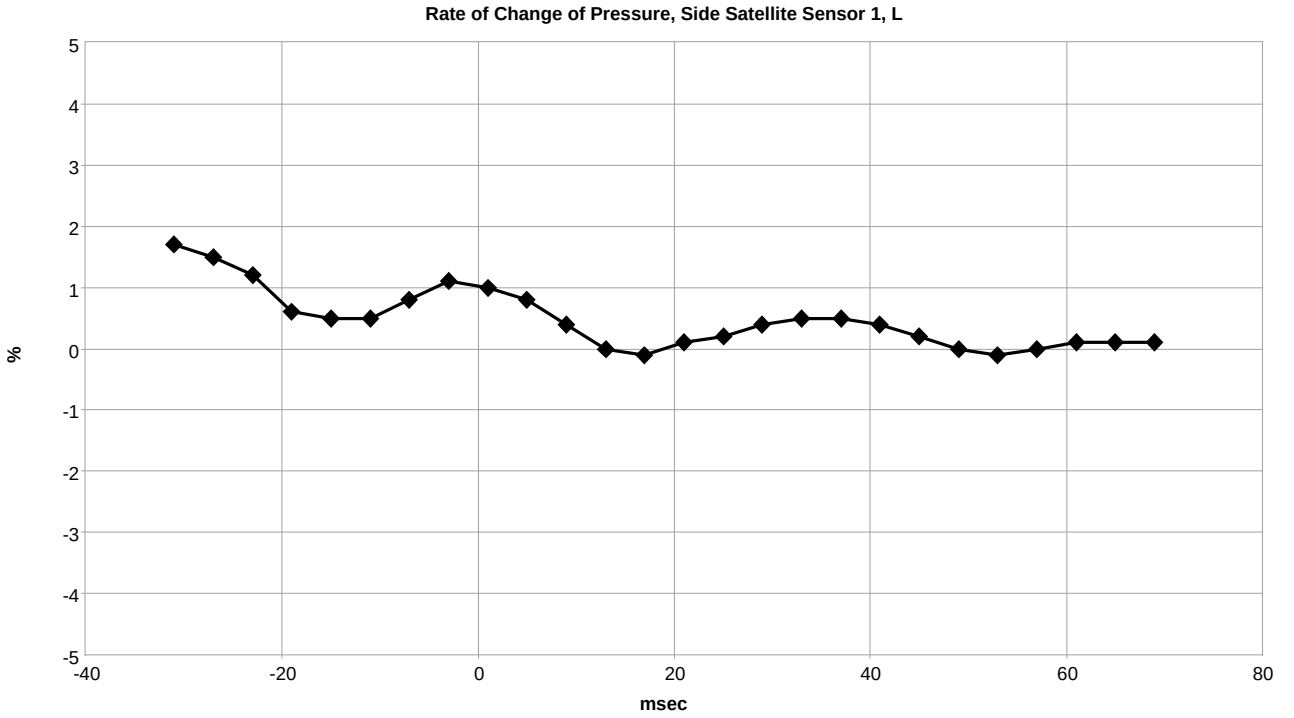
TRG Count (times)	4
Event Type	Side Crash
Previous Crash Type	Rollover
Time from Previous TRG (msec)	59.0
Freeze Signal	OFF
Freeze Signal Factor	None
Odometer signal (miles [km])	1,997 [3,214]
Trip count (times)	257
Time count (msec)	379,600
Time count input system	Normal

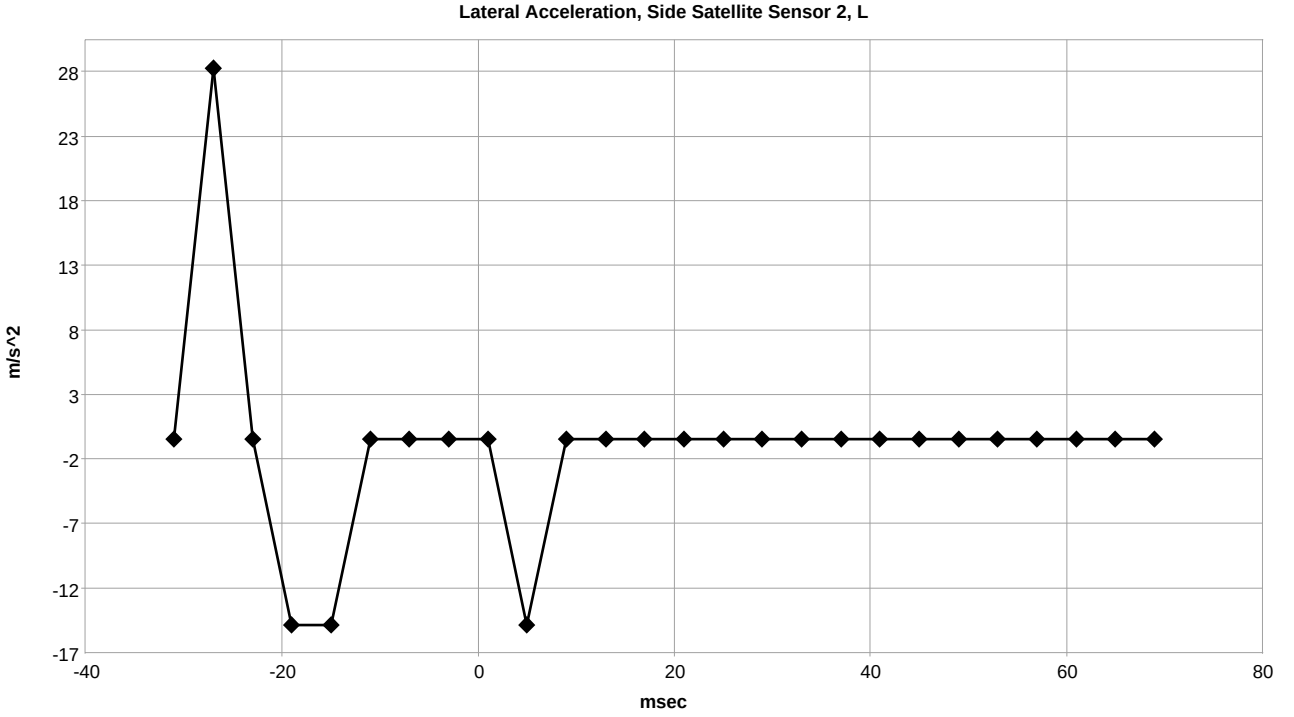
DTCs Present at Time of Event (2nd Prior Event, TRG 4)

Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	0
Airbag Warning Lamp ON Time Since DTC was Set (min)	0
Diagnostic Trouble Codes	None

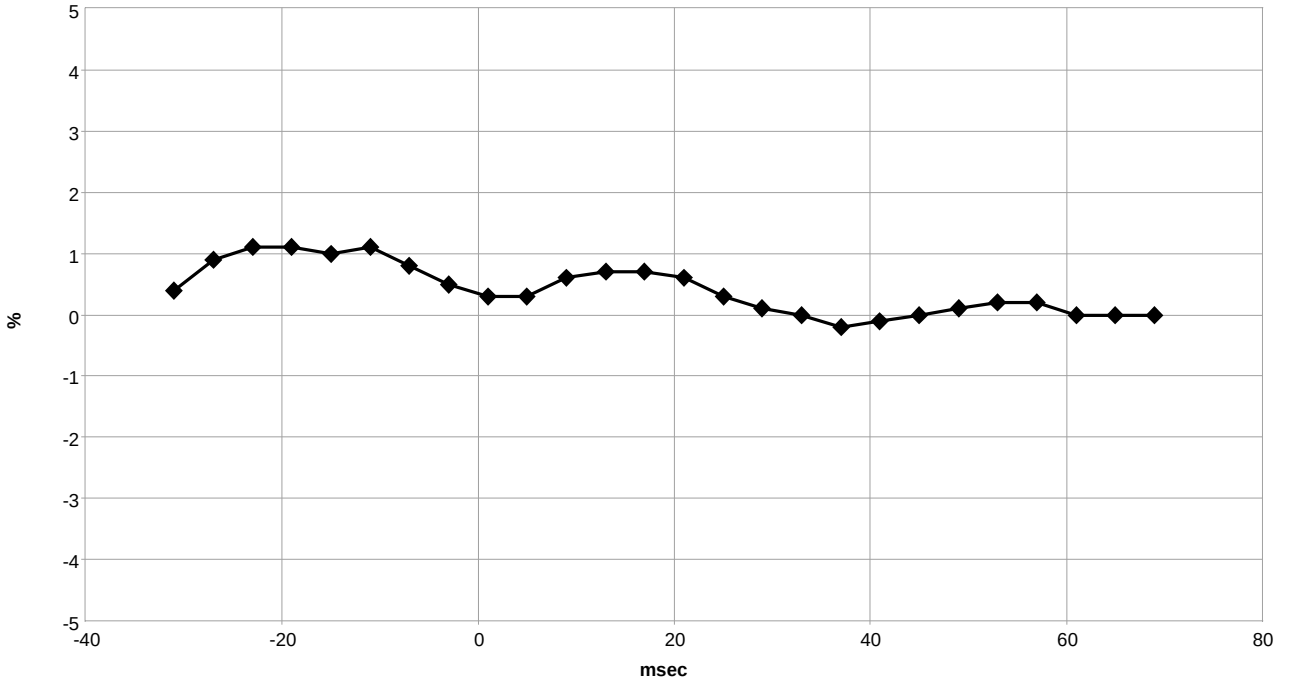
Lateral Crash Pulse (2nd Prior Event, TRG 4)

Recording Status , Time Series Data	Complete
Time from TRG to Next Sample (msec)	1
Clipping Time, Rate of Change of Pressure, Side Satellite Sensor 1, L (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 2, L (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 3, L (msec)	SNA
Clipping Time, Lateral Acceleration, Side Satellite Sensor 4, L (msec)	SNA
Clipping Time, Rate of Change of Pressure, Side Satellite Sensor 1, R (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 2, R (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 3, R (msec)	SNA
Clipping Time, Lateral Acceleration, Side Satellite Sensor 4, R (msec)	SNA
Clipping Time, Lateral Acceleration, Floor Sensor (msec)	No

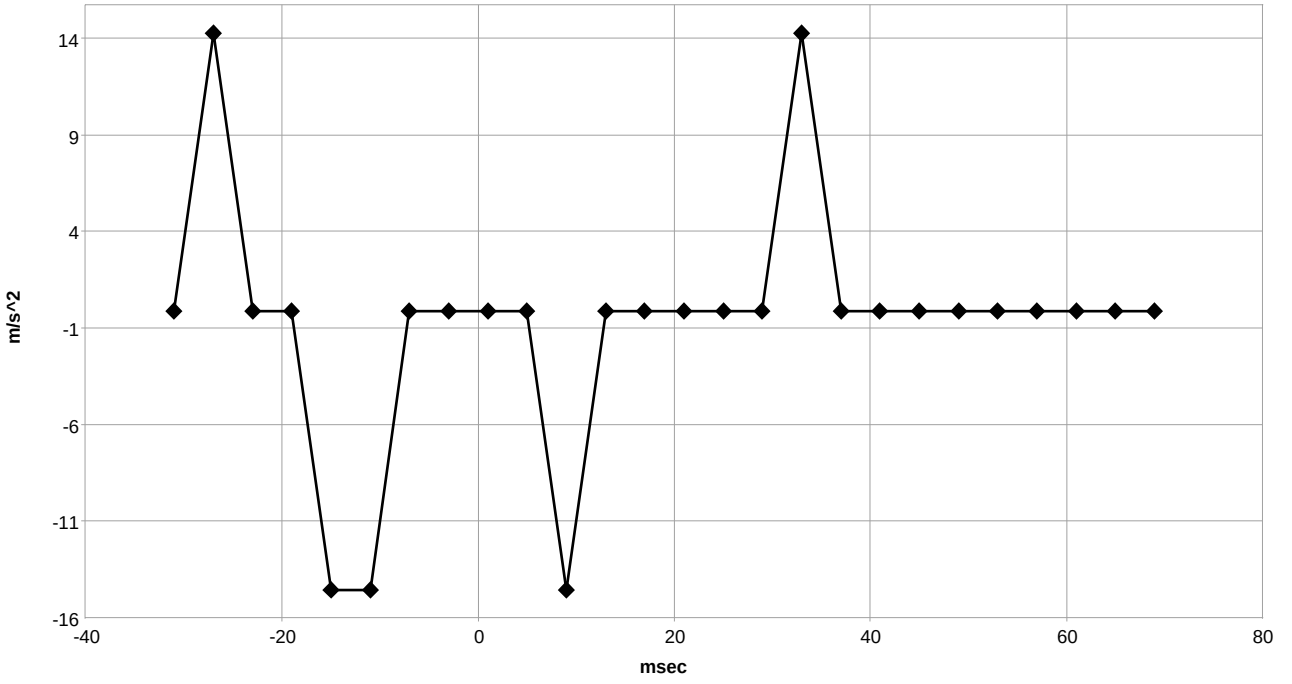

Rate of Change of Pressure, Side Satellite Sensor 1, L
%
5
4
3
2
1
0
-1
-2
-3
-4
-5
-40
-20
0
20
40
60
80
msec

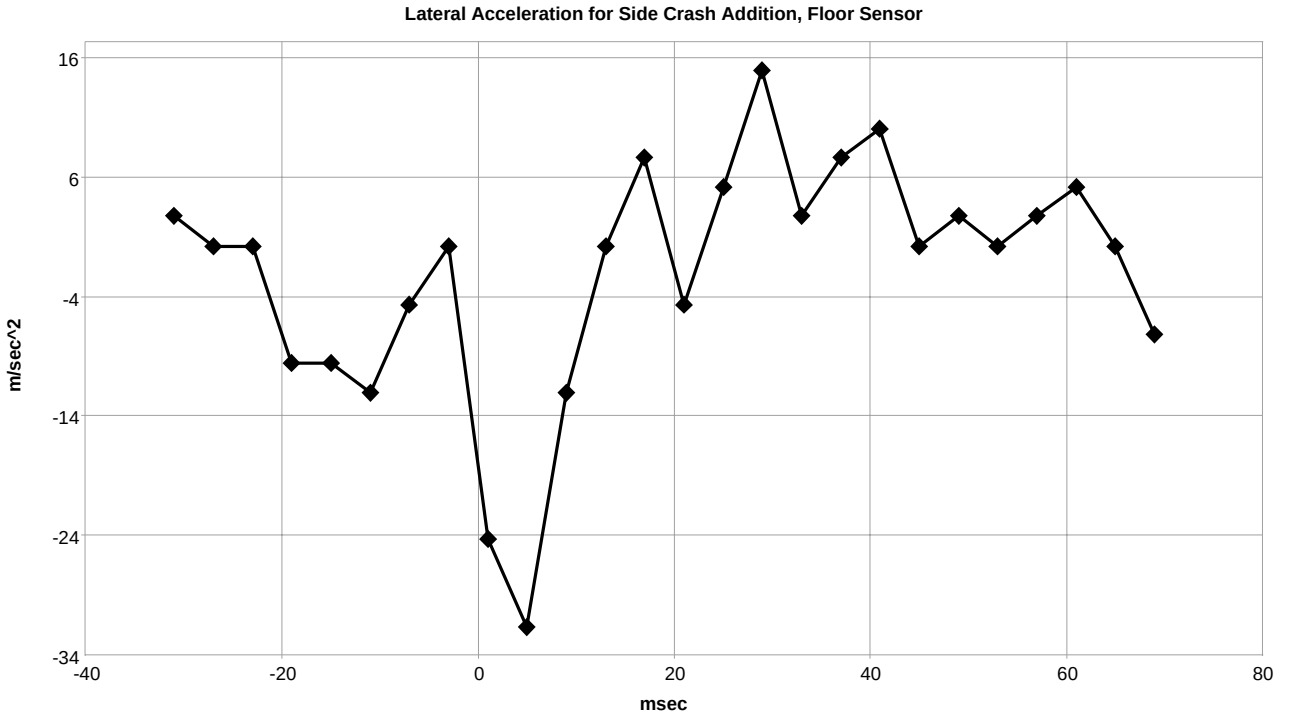

Lateral Acceleration, Side Satellite Sensor 2, L
m/s^2
28
23
18
13
8
3
-2
-7
-12
-17
-40
-20
0
20
40
60
80
msec

Rate of Change of Pressure, Side Satellite Sensor 1, R



Lateral Acceleration, Side Satellite Sensor 2, R




Lateral Acceleration for Side Crash Addition, Floor Sensor
16
6
-4
-14
-24
-34
m/sec^2
-40
-20
0
20
40
60
80
msec

Lateral Crash Pulse (2nd Prior Event, TRG 4) - Table 1 of 2

Time (msec)	Rate of Change of Pressure, Side Satellite Sensor 1, L (%)	Lateral Acceleration, Side Satellite Sensor 2, L (m/s^2)	Lateral Acceleration, Side Satellite Sensor 3, L (m/s^2)	Lateral Acceleration, Side Satellite Sensor 4,L (m/s^2)	Rate of Change of Pressure, Side Satellite Sensor 1, R (%)	Lateral Acceleration, Side Satellite Sensor 2, R (m/s^2)	Lateral Acceleration, Side Satellite Sensor 3, R (m/s^2)	Lateral Acceleration, Side Satellite Sensor 4, R (m/s^2)
-31	1.7	0.0	SNA	SNA	0.4	0.0	SNA	SNA
-27	1.5	28.7	SNA	SNA	0.9	14.4	SNA	SNA
-23	1.2	0.0	SNA	SNA	1.1	0.0	SNA	SNA
-19	0.6	-14.4	SNA	SNA	1.1	0.0	SNA	SNA
-15	0.5	-14.4	SNA	SNA	1.0	-14.4	SNA	SNA
-11	0.5	0.0	SNA	SNA	1.1	-14.4	SNA	SNA
-7	0.8	0.0	SNA	SNA	0.8	0.0	SNA	SNA
-3	1.1	0.0	SNA	SNA	0.5	0.0	SNA	SNA
1	1.0	0.0	SNA	SNA	0.3	0.0	SNA	SNA
5	0.8	-14.4	SNA	SNA	0.3	0.0	SNA	SNA
9	0.4	0.0	SNA	SNA	0.6	-14.4	SNA	SNA
13	0.0	0.0	SNA	SNA	0.7	0.0	SNA	SNA
17	-0.1	0.0	SNA	SNA	0.7	0.0	SNA	SNA
21	0.1	0.0	SNA	SNA	0.6	0.0	SNA	SNA
25	0.2	0.0	SNA	SNA	0.3	0.0	SNA	SNA
29	0.4	0.0	SNA	SNA	0.1	0.0	SNA	SNA
33	0.5	0.0	SNA	SNA	0.0	14.4	SNA	SNA
37	0.5	0.0	SNA	SNA	-0.2	0.0	SNA	SNA
41	0.4	0.0	SNA	SNA	-0.1	0.0	SNA	SNA
45	0.2	0.0	SNA	SNA	0.0	0.0	SNA	SNA
49	0.0	0.0	SNA	SNA	0.1	0.0	SNA	SNA
53	-0.1	0.0	SNA	SNA	0.2	0.0	SNA	SNA
57	0.0	0.0	SNA	SNA	0.2	0.0	SNA	SNA
61	0.1	0.0	SNA	SNA	0.0	0.0	SNA	SNA
65	0.1	0.0	SNA	SNA	0.0	0.0	SNA	SNA
69	0.1	0.0	SNA	SNA	0.0	0.0	SNA	SNA

Lateral Crash Pulse (2nd Prior Event, TRG 4) - Table 2 of 2

Time (msec)	Lateral Acceleration for Side Crash Addition, Floor Sensor (m/s^2)
-31	2.5
-27	0.0
-23	0.0
-19	-9.8
-15	-9.8
-11	-12.3
-7	-4.9
-3	0.0
1	-24.5
5	-31.9
9	-12.3
13	0.0
17	7.4
21	-4.9
25	4.9
29	14.7
33	2.5
37	7.4
41	9.8
45	0.0
49	2.5
53	0.0
57	2.5
61	4.9
65	0.0
69	-7.4

System Status at Event (3rd Prior Event, TRG 3)

TRG Count (times)	3
Event Type	Rollover
Previous Crash Type	Frontal/Rear/Side Crash
Time from Previous TRG (msec)	41.0
Freeze Signal	ON
Freeze Signal Factor	Rollover CSA Deployment
Recording Status, Rollover Crash Info.	Complete
Odometer signal (miles [km])	1,997 [3,214]
Trip count (times)	257
Time count (msec)	379,600
Time count input system	Normal

Deployment Command Data (3rd Prior Event, TRG 3)

Pretensioner Deployment, Time to Fire, 1st Seat, Driver (msec)	1,105.0
Pretensioner Deployment, Time to Fire, 1st Seat, Passenger (msec)	1,105.0
Pretensioner Deployment, Time to Fire, 2nd Seat, Driver (msec)	1,105.0
Pretensioner Deployment, Time to Fire, 2nd Seat, Passenger (msec)	1,105.0
Side Curtain Airbag Deployment, Time to Deploy, Driver (msec)	1,105.0
Side Curtain Airbag Deployment, Time to Deploy, Passenger (msec)	1,105.0

DTCs Present at Time of Event (3rd Prior Event, TRG 3)

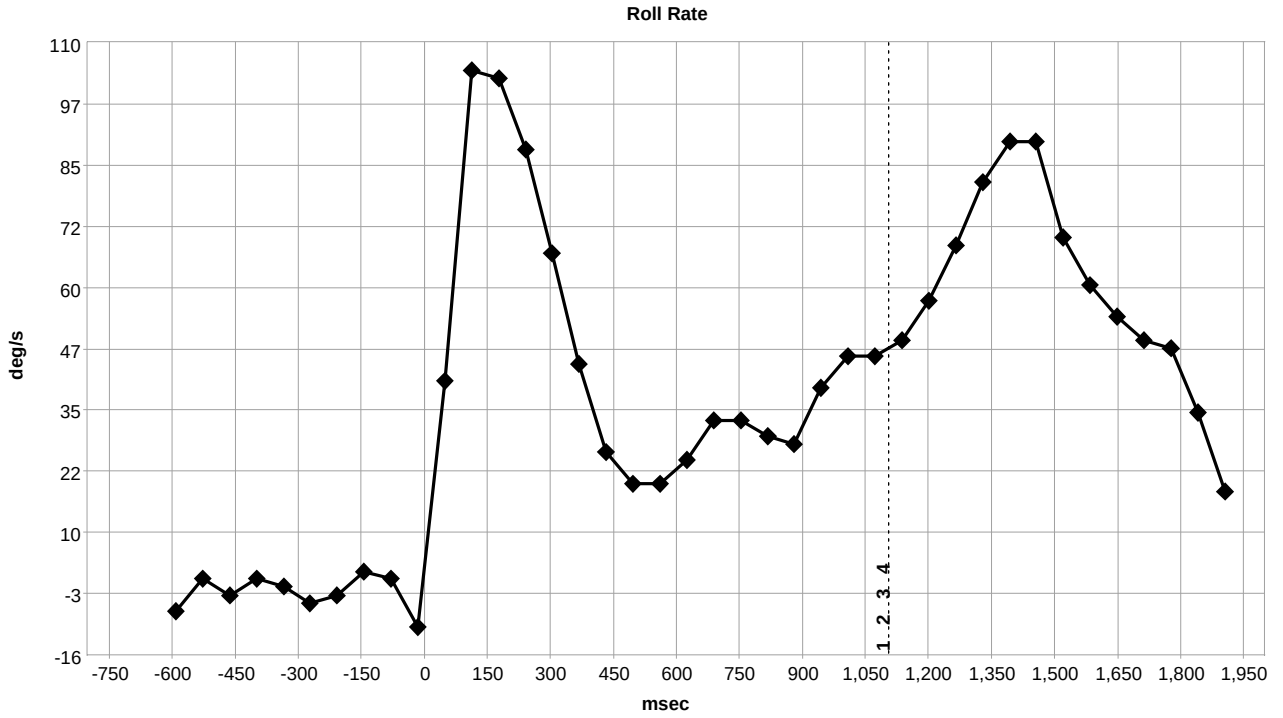
Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	0
Airbag Warning Lamp ON Time Since DTC was Set (min)	0
Diagnostic Trouble Codes	None

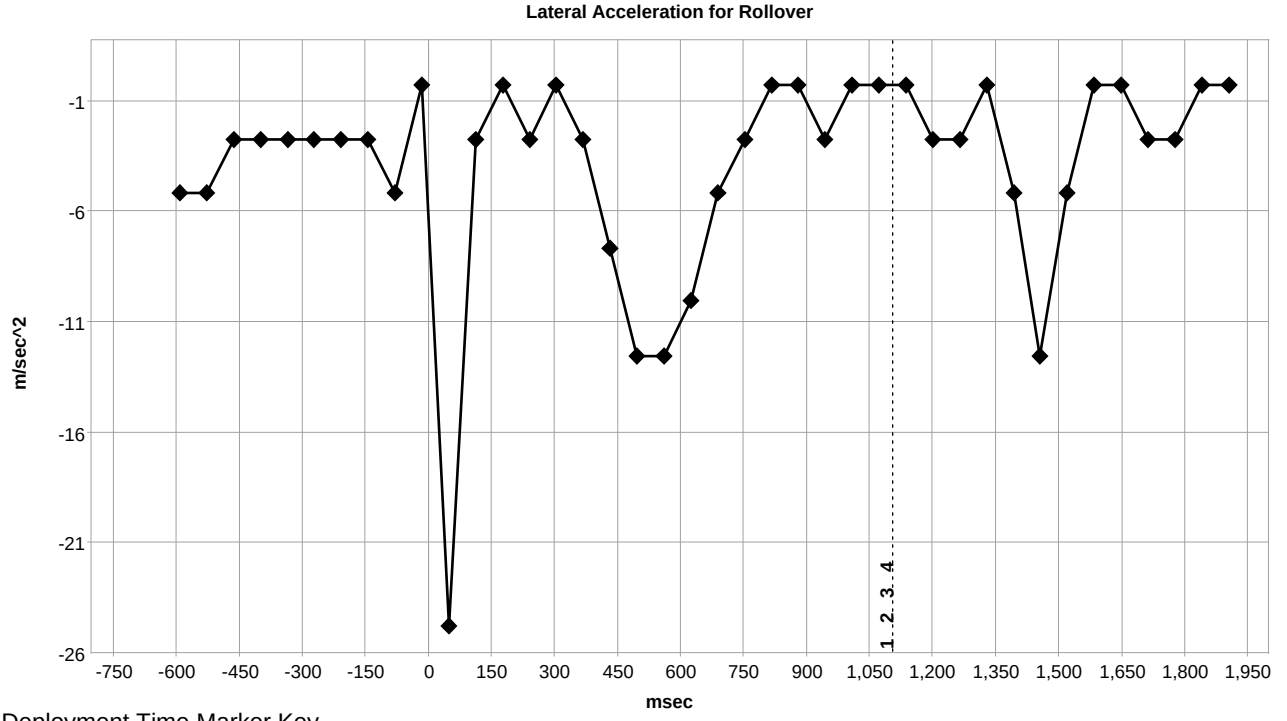
Pre-Crash Data, 1 Sample (3rd Prior Event, TRG 3)

Recording Status, Occupant	Complete
Recording Status, Pre-Crash	Complete
Time from Pre-Crash to TRG (msec)	200
Safety Belt Status, Driver	ON
Safety Belt Status, Front Passenger	OFF
Occupant Size Classification, Front Passenger	Child or Not Occupied
Frontal Airbag Suppression Switch Status, Front Passenger	SNA
RSCA Disable Switch	SNA
Seat Track Position Switch, Foremost, Status, Driver	No
Airbag Warning Lamp, On/Off	OFF
Ignition Cycle, Crash (times)	242

Rollover Crash Pulse (3rd Prior Event, TRG 3)

Recording Status , Time Series Data	Complete
Time from TRG to Next Sample (msec)	49
RollAngle Peak (degrees)	94.4
Roll Angle at the Time of TRG (degrees)	8.3





Deployment Time Marker Key

1	Driver CSA
2	Passenger CSA
3	Driver Pretensioner Deployment
4	Passenger Pretensioner Deployment

Rollover Crash Pulse (3rd Prior Event, TRG 3)

Time (msec)	Roll Rate (deg/s)	Lateral Acceleration for Rollover (m/s^2)
-591	-6.5	-4.9
-527	0.0	-4.9
-463	-3.3	-2.5
-399	0.0	-2.5
-335	-1.6	-2.5
-271	-4.9	-2.5
-207	-3.3	-2.5
-143	1.6	-2.5
-79	0.0	-4.9
-15	-9.8	0.0
49	40.7	-24.5
113	104.2	-2.5
177	102.6	0.0
241	88.0	-2.5
305	66.8	0.0
369	44.0	-2.5
433	26.1	-7.4
497	19.5	-12.3
561	19.5	-12.3
625	24.4	-9.8
689	32.6	-4.9
753	32.6	-2.5
817	29.3	0.0
881	27.7	0.0
945	39.1	-2.5
1009	45.6	0.0
1073	45.6	0.0
1137	48.9	0.0
1201	57.0	-2.5
1265	68.4	-2.5
1329	81.4	0.0
1393	89.6	-4.9
1457	89.6	-12.3
1521	70.0	-4.9
1585	60.3	0.0
1649	53.8	0.0
1713	48.9	-2.5
1777	47.2	-2.5
1841	34.2	0.0
1905	17.9	0.0

Pre-Crash Data -5 to 0 Seconds (3rd Prior Event, TRG 3) - Table 1 of 4

Time (sec)	Vehicle Speed (MPH [km/h])	Accelerator Pedal, % Full (%)	Percentage of Engine Throttle (%)	Fuel Injection Quantity (mm^3/st)	Engine RPM (RPM)	Motor RPM (RPM)	Service Brake, ON/OFF
-4.70	54.7 [88]	10.0	0.0	Invalid	1,400	Invalid	OFF
-4.20	54.7 [88]	10.5	0.0	Invalid	1,400	Invalid	OFF
-3.70	53.4 [86]	1.5	0.0	Invalid	1,400	Invalid	OFF
-3.20	52.8 [85]	1.5	0.0	Invalid	1,400	Invalid	OFF
-2.70	52.2 [84]	25.5	13.0	Invalid	1,300	Invalid	OFF
-2.20	51.0 [82]	7.0	0.0	Invalid	1,400	Invalid	OFF
-1.70	49.1 [79]	13.0	2.5	Invalid	1,300	Invalid	OFF
-1.20	43.5 [70]	1.5	0.0	Invalid	1,100	Invalid	OFF
-0.70	36.7 [59]	8.5	1.0	Invalid	1,100	Invalid	OFF
-0.20	32.9 [53]	25.5	13.5	Invalid	1,300	Invalid	OFF
TRG(0)	31.7 [51]	34.5	23.0	Invalid	1,500	Invalid	OFF

Pre-Crash Data -5 to 0 Seconds (3rd Prior Event, TRG 3) - Table 2 of 4

Time (sec)	ABS Control Status	BOS Control Status	Brake Oil Pressure (Mpa)	Longitudinal Acceleration , VSC Sensor (m/s^2)	Yaw Rate (deg/s)	Steering Input (degrees)	Shift Position
-4.70	OFF	OFF	0.00	-0.359	1.46	4.5	D
-4.20	OFF	OFF	0.00	-0.215	2.44	4.5	D
-3.70	OFF	OFF	0.00	-0.718	3.42	4.5	D
-3.20	OFF	OFF	0.00	-0.861	0.98	6.0	D
-2.70	OFF	OFF	0.00	0.215	1.95	15.0	D
-2.20	OFF	OFF	0.00	-1.651	6.83	21.0	D
-1.70	OFF	OFF	0.00	-3.445	14.64	21.0	D
-1.20	ON	OFF	0.00	-1.507	18.54	28.5	D
-0.70	OFF	OFF	0.00	-4.737	11.71	25.5	D
-0.20	OFF	OFF	0.00	-2.369	19.52	28.5	D
TRG(0)	ON	OFF	1.92	-8.973	-22.94	55.5	Undetermined

Pre-Crash Data -5 to 0 Seconds (3rd Prior Event, TRG 3) - Table 3 of 4

Time (sec)	Sequential Shift Range	Cruise Control Status	VSC Control Status	READY Signal	Drive Mode, Power Train	Drive Mode, Snow	Drive Mode, EV
-4.70	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-4.20	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-3.70	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-3.20	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-2.70	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-2.20	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-1.70	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-1.20	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-0.70	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-0.20	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
TRG(0)	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid

Pre-Crash Data -5 to 0 Seconds (3rd Prior Event, TRG 3) - Table 4 of 4

Time (sec)	Drive mode select signal
-4.70	Normal
-4.20	Normal
-3.70	Normal
-3.20	Normal
-2.70	Normal
-2.20	Normal
-1.70	Normal
-1.20	Normal
-0.70	Normal
-0.20	Normal

Time (sec)	Drive mode select signal
TRG(0)	Normal

System Status at Event (4th Prior Event, TRG 2)

TRG Count (times)	2
Event Type	Frontal/Rear/Side Crash
Previous Crash Type	Side Crash
Time from Previous TRG (msec)	17.0
Time from Time Zero to TRG (msec)	21.5
Event Establishment Factor	Frontal Crash
TRG Establishment Factor	Frontal Crash
Freeze Signal	ON
Freeze Signal Factor	Front Airbag Deployment, Driver / Front Airbag Deployment, Passenger
Recording Status , Front/Rear and Side Crash Info.	Complete
Odometer signal (miles [km])	1,997 [3,214]
Trip count (times)	257
Time count (msec)	379,600
Time count input system	Normal

Deployment Command Data (4th Prior Event, TRG 2)

Active Head Restraint, Time to Deploy, Driver (msec)	SNA
Active Head Restraint, Time to Deploy, Front Passenger (msec)	SNA
Frontal Airbag Deployment, Time to 1st Stage Deployment, Driver (msec)	21.5
Frontal Airbag Deployment, Time to 1st Stage Deployment, Front Passenger (msec)	No
Frontal Airbag Deployment, Time to 2nd Stage, Driver (msec)	51.5
Frontal Airbag Deployment, Time to 2nd Stage, Front Passenger (msec)	No
Pretensioner Deployment, Time to Fire, 1st Seat, Driver (msec)	21.5
Pretensioner Deployment, Time to Fire, 1st Seat, Passenger (msec)	21.5
Pretensioner Deployment, Time to Fire, 2nd Seat, Driver (msec)	21.5
Pretensioner Deployment, Time to Fire, 2nd Seat, Passenger (msec)	21.5
Rear Window Airbag Deployment, Time to Deploy (msec)	SNA
Side Airbag Deployment, Time to Deploy, 1st Seat, Driver (msec)	No
Side Airbag Deployment, Time to Deploy, 1st Seat, Passenger (msec)	No
Side Airbag Deployment, Time to Deploy, 2nd Seat, Driver (msec)	SNA
Side Airbag Deployment, Time to Deploy, 2nd Seat, Passenger (msec)	SNA
Side Curtain Airbag Deployment, Time to Deploy, Driver (msec)	30.0
Side Curtain Airbag Deployment, Time to Deploy, Passenger (msec)	30.0

DTCs Present at Time of Event (4th Prior Event, TRG 2)

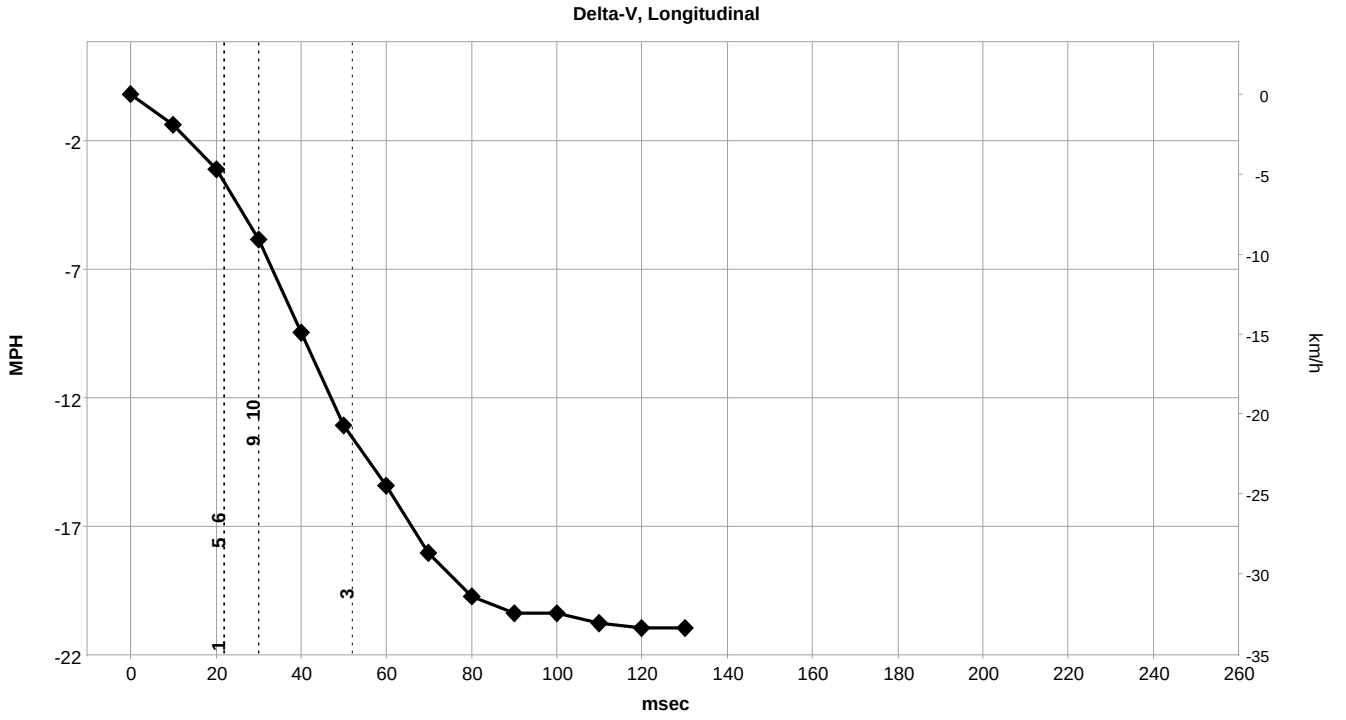
Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	0
Airbag Warning Lamp ON Time Since DTC was Set (min)	0
Diagnostic Trouble Codes	None

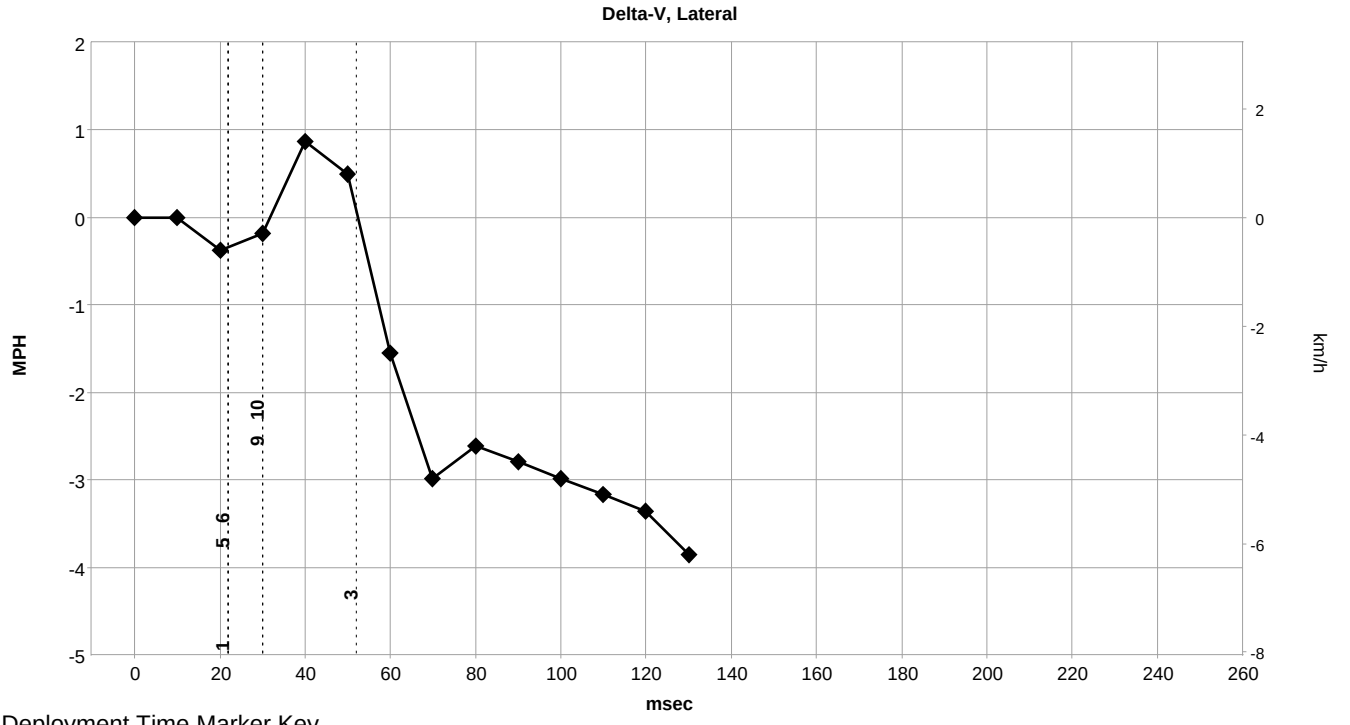
Pre-Crash Data, 1 Sample (4th Prior Event, TRG 2)

Recording Status, Occupant	Complete
Recording Status, Pre-Crash	Complete
Time from Pre-Crash to TRG (msec)	150
Safety Belt Status, Driver	ON
Safety Belt Status, Front Passenger	OFF
Occupant Size Classification, Front Passenger	Child or Not Occupied
Frontal Airbag Suppression Switch Status, Front Passenger	SNA
RSCA Disable Switch	SNA
Seat Track Position Switch, Foremost, Status, Driver	No
Airbag Warning Lamp, On/Off	OFF
Ignition Cycle, Crash (times)	242

Longitudinal/Lateral Crash Pulse (4th Prior Event, TRG 2)

Recording Status , Time Series Data	Complete
Power Supply Status at the time of Max. Delta-V	ON
Maximum Delta-V, Longitudinal (MPH [km/h])	-20.8 [-33.4]
Time, Maximum Delta-V, Longitudinal (msec)	116.0
Clipping Time, Longitudinal Delta-V (msec)	No
Clipping Time, Lateral Delta-V (msec)	No
Length of Delta-V (msec)	130





Deployment Time Marker Key

1	Driver Airbag Deployment Time
2	Passenger Airbag Deployment Time
3	Driver 2nd Stage Airbag Deployment
4	Passenger 2nd Stage Airbag
5	Driver Pretensioner Deployment
6	Passenger Pretensioner Deployment
7	Driver AHR
8	Passenger AHR
9	Driver CSA
10	Passenger CSA
11	Rear Window Airbag Deployment
12	Driver SAB
13	Passenger SAB

Longitudinal/Lateral Crash Pulse (4th Prior Event, TRG 2)

Time (msec)	Delta-V, Longitudinal (MPH [km/h])	Delta-V, Lateral (MPH [km/h])	Power Supply Status
0	0.0 [0.0]	0.0 [0.0]	ON
10	-1.2 [-1.9]	0.0 [0.0]	ON
20	-2.9 [-4.7]	-0.4 [-0.6]	ON
30	-5.7 [-9.1]	-0.2 [-0.3]	ON
40	-9.3 [-14.9]	0.9 [1.4]	ON
50	-12.9 [-20.7]	0.5 [0.8]	ON
60	-15.2 [-24.5]	-1.6 [-2.5]	ON
70	-17.8 [-28.7]	-3.0 [-4.8]	ON
80	-19.5 [-31.4]	-2.6 [-4.2]	ON
90	-20.2 [-32.5]	-2.8 [-4.5]	ON
100	-20.2 [-32.5]	-3.0 [-4.8]	ON
110	-20.6 [-33.1]	-3.2 [-5.1]	ON
120	-20.8 [-33.4]	-3.4 [-5.4]	ON
130	-20.8 [-33.4]	-3.9 [-6.2]	ON
140	0.0 [0.0]	0.0 [0.0]	ON
150	0.0 [0.0]	0.0 [0.0]	ON
160	0.0 [0.0]	0.0 [0.0]	ON
170	0.0 [0.0]	0.0 [0.0]	ON
180	0.0 [0.0]	0.0 [0.0]	ON
190	0.0 [0.0]	0.0 [0.0]	ON
200	0.0 [0.0]	0.0 [0.0]	ON
210	0.0 [0.0]	0.0 [0.0]	ON
220	0.0 [0.0]	0.0 [0.0]	ON
230	0.0 [0.0]	0.0 [0.0]	ON
240	0.0 [0.0]	0.0 [0.0]	ON
250	0.0 [0.0]	0.0 [0.0]	ON

Pre-Crash Data -5 to 0 Seconds (4th Prior Event, TRG 2) - Table 1 of 4

Time (sec)	Vehicle Speed (MPH [km/h])	Accelerator Pedal, % Full (%)	Percentage of Engine Throttle (%)	Fuel Injection Quantity (mm^3/st)	Engine RPM (RPM)	Motor RPM (RPM)	Service Brake, ON/OFF
-4.65	54.7 [88]	10.0	0.0	Invalid	1,400	Invalid	OFF
-4.15	54.7 [88]	10.5	0.0	Invalid	1,400	Invalid	OFF
-3.65	53.4 [86]	1.5	0.0	Invalid	1,400	Invalid	OFF
-3.15	52.8 [85]	1.5	0.0	Invalid	1,400	Invalid	OFF
-2.65	52.2 [84]	25.5	13.0	Invalid	1,300	Invalid	OFF
-2.15	51.0 [82]	7.0	0.0	Invalid	1,400	Invalid	OFF
-1.65	49.1 [79]	13.0	2.5	Invalid	1,300	Invalid	OFF
-1.15	43.5 [70]	1.5	0.0	Invalid	1,100	Invalid	OFF
-0.65	36.7 [59]	8.5	1.0	Invalid	1,100	Invalid	OFF
-0.15	32.9 [53]	25.5	13.5	Invalid	1,300	Invalid	OFF
TRG(0)	32.3 [52]	34.5	23.0	Invalid	1,500	Invalid	OFF

Pre-Crash Data -5 to 0 Seconds (4th Prior Event, TRG 2) - Table 2 of 4

Time (sec)	ABS Control Status	BOS Control Status	Brake Oil Pressure (Mpa)	Longitudinal Acceleration , VSC Sensor (m/s^2)	Yaw Rate (deg/s)	Steering Input (degrees)	Shift Position
-4.65	OFF	OFF	0.00	-0.359	1.46	4.5	D
-4.15	OFF	OFF	0.00	-0.215	2.44	4.5	D
-3.65	OFF	OFF	0.00	-0.718	3.42	4.5	D
-3.15	OFF	OFF	0.00	-0.861	0.98	6.0	D
-2.65	OFF	OFF	0.00	0.215	1.95	15.0	D
-2.15	OFF	OFF	0.00	-1.651	6.83	21.0	D
-1.65	OFF	OFF	0.00	-3.445	14.64	21.0	D
-1.15	ON	OFF	0.00	-1.507	18.54	28.5	D
-0.65	OFF	OFF	0.00	-4.737	11.71	25.5	D
-0.15	OFF	OFF	0.00	-2.369	19.52	28.5	D
TRG(0)	OFF	OFF	0.00	-8.973	17.57	30.0	D

Pre-Crash Data -5 to 0 Seconds (4th Prior Event, TRG 2) - Table 3 of 4

Time (sec)	Sequential Shift Range	Cruise Control Status	VSC Control Status	READY Signal	Drive Mode, Power Train	Drive Mode, Snow	Drive Mode, EV
-4.65	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-4.15	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-3.65	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-3.15	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-2.65	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-2.15	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-1.65	Undetermined	OFF	ON (enable)	Invalid	Normal	OFF	Invalid
-1.15	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-0.65	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
-0.15	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid
TRG(0)	Undetermined	OFF	Engaged	Invalid	Normal	OFF	Invalid

Pre-Crash Data -5 to 0 Seconds (4th Prior Event, TRG 2) - Table 4 of 4

Time (sec)	Drive mode select signal
-4.65	Normal
-4.15	Normal
-3.65	Normal
-3.15	Normal
-2.65	Normal
-2.15	Normal
-1.65	Normal
-1.15	Normal
-0.65	Normal
-0.15	Normal

Time (sec)	Drive mode select signal
TRG(0)	Normal

System Status at Event (5th Prior Event, TRG 1)

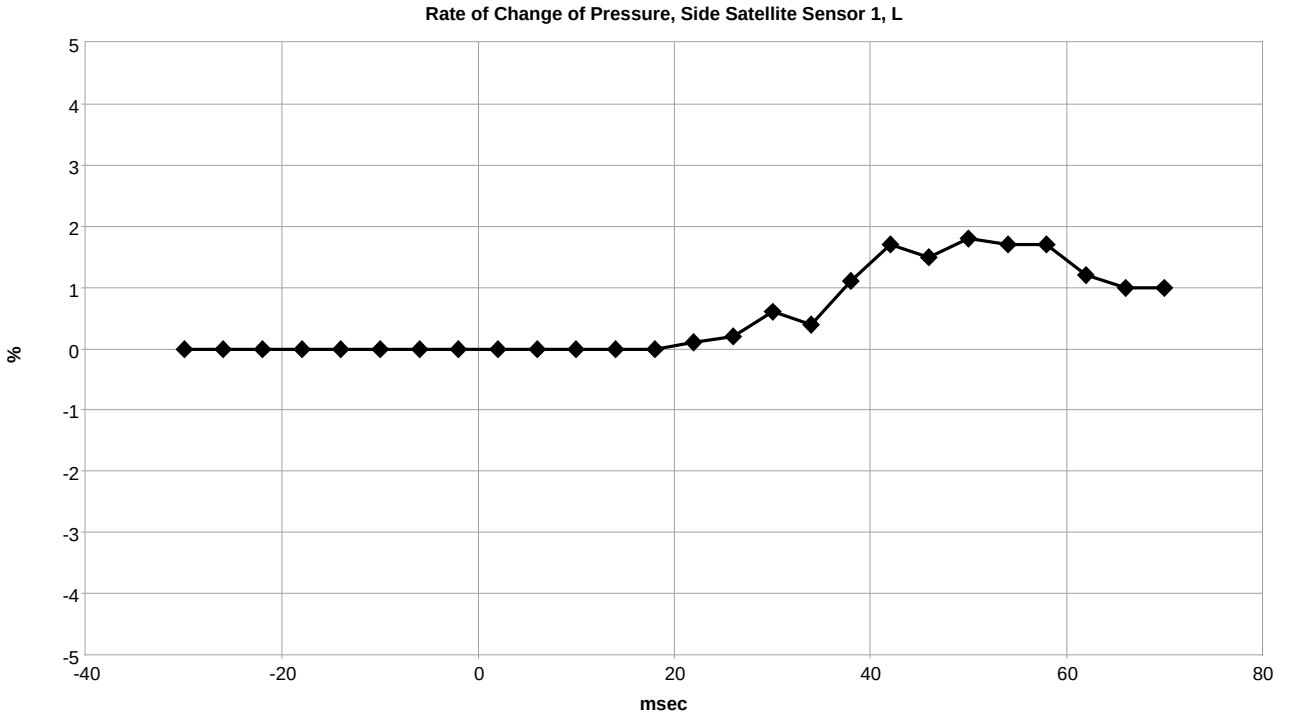
TRG Count (times)	1
Event Type	Side Crash
Previous Crash Type	No Event
Time from Previous TRG (msec)	32767 or greater
Freeze Signal	ON
Freeze Signal Factor	Side CSA Deployment, Right Side
Odometer signal (miles [km])	1,997 [3,214]
Trip count (times)	257
Time count (msec)	379,500
Time count input system	Normal

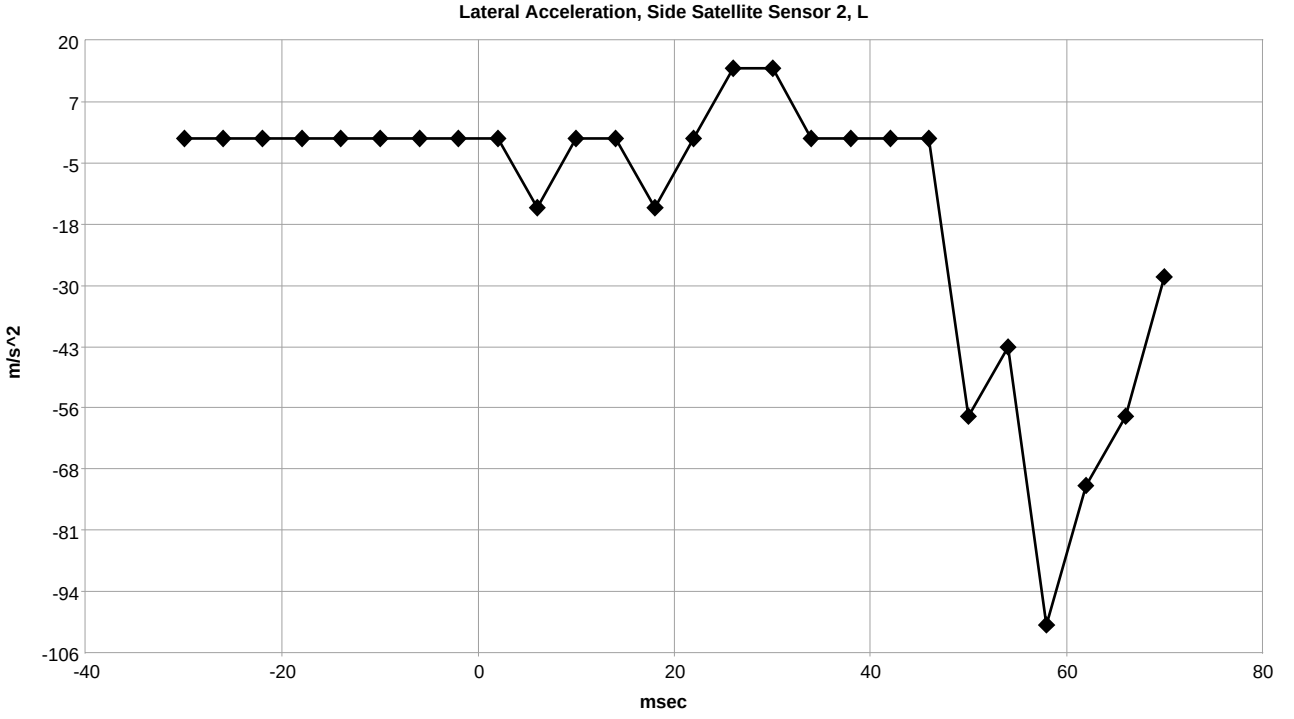
DTCs Present at Time of Event (5th Prior Event, TRG 1)

Recording Status, Diagnostic	Complete
Ignition Cycle Since DTC was Set (times)	0
Airbag Warning Lamp ON Time Since DTC was Set (min)	0
Diagnostic Trouble Codes	None

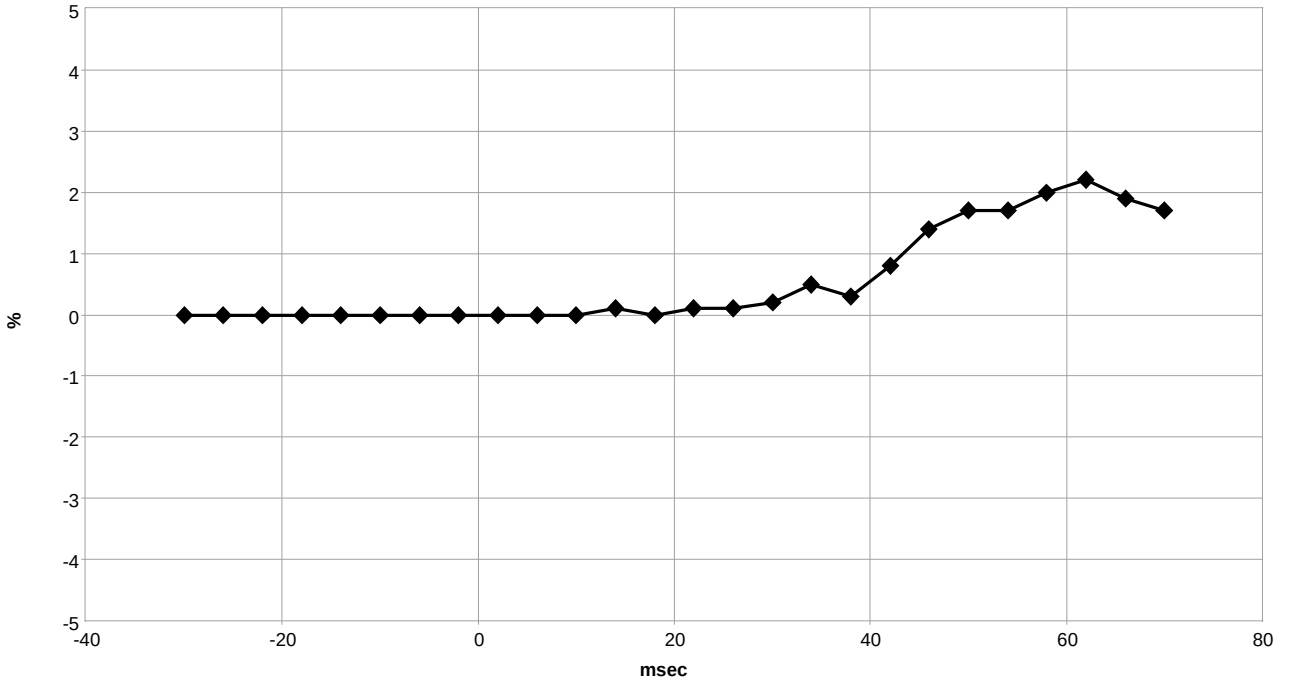
Lateral Crash Pulse (5th Prior Event, TRG 1)

Recording Status , Time Series Data	Complete
Time from TRG to Next Sample (msec)	2
Clipping Time, Rate of Change of Pressure, Side Satellite Sensor 1, L (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 2, L (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 3, L (msec)	SNA
Clipping Time, Lateral Acceleration, Side Satellite Sensor 4, L (msec)	SNA
Clipping Time, Rate of Change of Pressure, Side Satellite Sensor 1, R (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 2, R (msec)	No
Clipping Time, Lateral Acceleration, Side Satellite Sensor 3, R (msec)	SNA
Clipping Time, Lateral Acceleration, Side Satellite Sensor 4, R (msec)	SNA
Clipping Time, Lateral Acceleration, Floor Sensor (msec)	No

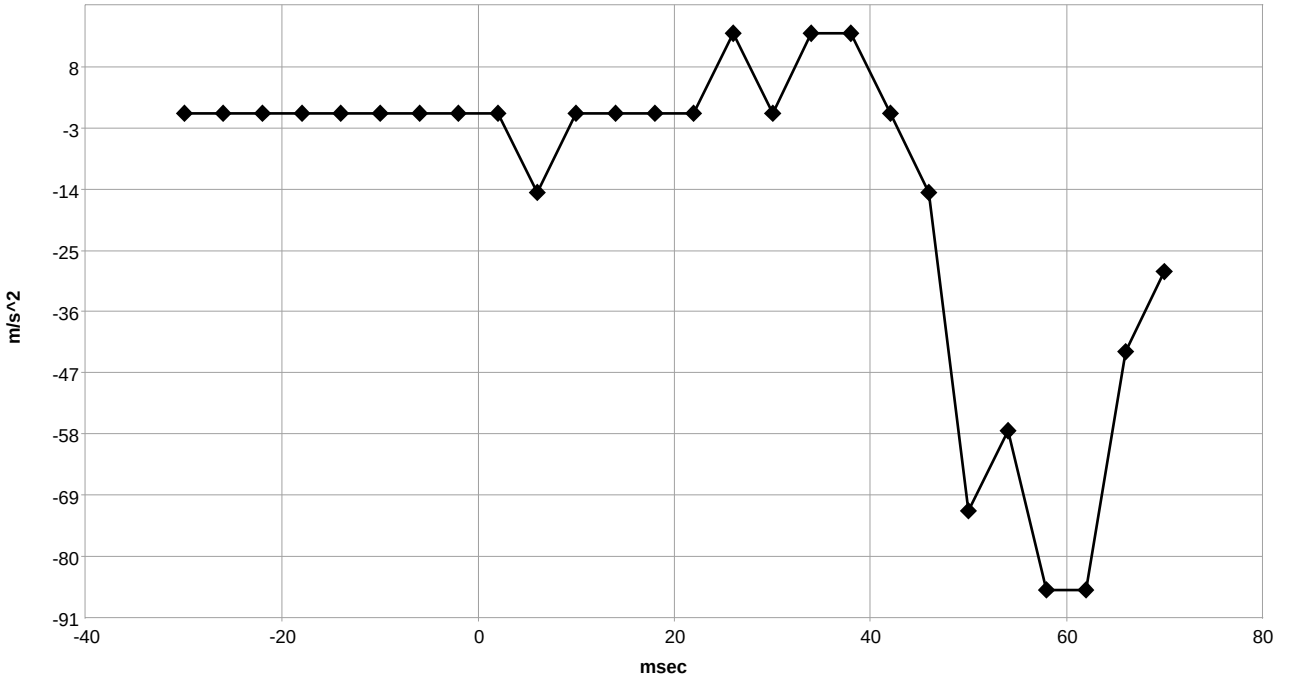

Rate of Change of Pressure, Side Satellite Sensor 1, L
%
5
4
3
2
1
0
-1
-2
-3
-4
-5
-40
-20
0
20
40
60
80
msec

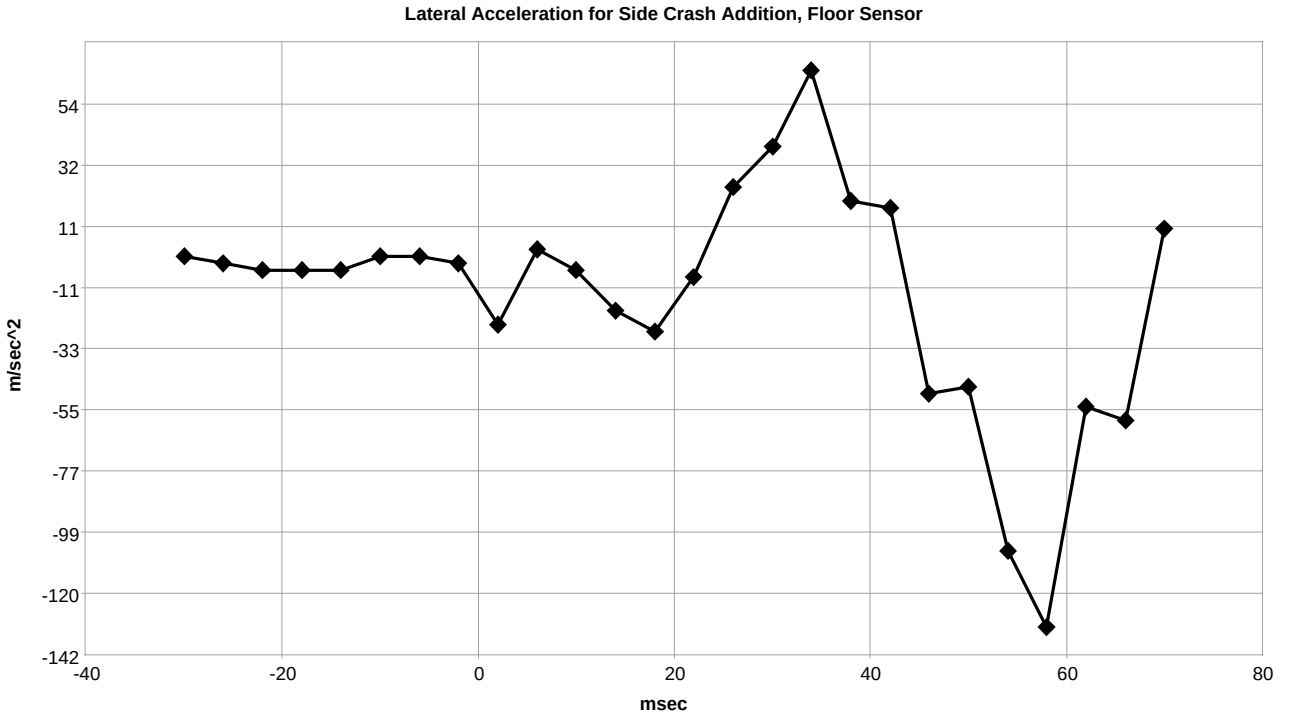

Lateral Acceleration, Side Satellite Sensor 2, L
m/s^2
20
7
-5
-18
-30
-43
-56
-68
-81
-94
-106
-40
-20
0
20
40
60
80
msec

Rate of Change of Pressure, Side Satellite Sensor 1, R



Lateral Acceleration, Side Satellite Sensor 2, R




Lateral Acceleration for Side Crash Addition, Floor Sensor
m/sec^2
54
32
11
-11
-33
-55
-77
-99
-120
-142
-40
-20
0
20
40
60
80
msec

Lateral Crash Pulse (5th Prior Event, TRG 1) - Table 1 of 2

Time (msec)	Rate of Change of Pressure, Side Satellite Sensor 1, L (%)	Lateral Acceleration, Side Satellite Sensor 2, L (m/s^2)	Lateral Acceleration, Side Satellite Sensor 3, L (m/s^2)	Lateral Acceleration, Side Satellite Sensor 4,L (m/s^2)	Rate of Change of Pressure, Side Satellite Sensor 1, R (%)	Lateral Acceleration, Side Satellite Sensor 2, R (m/s^2)	Lateral Acceleration, Side Satellite Sensor 3, R (m/s^2)	Lateral Acceleration, Side Satellite Sensor 4, R (m/s^2)
-30	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-26	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-22	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-18	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-14	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-10	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-6	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
-2	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
2	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
6	0.0	-14.4	SNA	SNA	0.0	-14.4	SNA	SNA
10	0.0	0.0	SNA	SNA	0.0	0.0	SNA	SNA
14	0.0	0.0	SNA	SNA	0.1	0.0	SNA	SNA
18	0.0	-14.4	SNA	SNA	0.0	0.0	SNA	SNA
22	0.1	0.0	SNA	SNA	0.1	0.0	SNA	SNA
26	0.2	14.4	SNA	SNA	0.1	14.4	SNA	SNA
30	0.6	14.4	SNA	SNA	0.2	0.0	SNA	SNA
34	0.4	0.0	SNA	SNA	0.5	14.4	SNA	SNA
38	1.1	0.0	SNA	SNA	0.3	14.4	SNA	SNA
42	1.7	0.0	SNA	SNA	0.8	0.0	SNA	SNA
46	1.5	0.0	SNA	SNA	1.4	-14.4	SNA	SNA
50	1.8	-57.5	SNA	SNA	1.7	-71.9	SNA	SNA
54	1.7	-43.1	SNA	SNA	1.7	-57.5	SNA	SNA
58	1.7	-100.6	SNA	SNA	2.0	-86.2	SNA	SNA
62	1.2	-71.9	SNA	SNA	2.2	-86.2	SNA	SNA
66	1.0	-57.5	SNA	SNA	1.9	-43.1	SNA	SNA
70	1.0	-28.7	SNA	SNA	1.7	-28.7	SNA	SNA

Lateral Crash Pulse (5th Prior Event, TRG 1) - Table 2 of 2

Time (msec)	Lateral Acceleration for Side Crash Addition, Floor Sensor (m/s^2)
-30	0.0
-26	-2.5
-22	-4.9
-18	-4.9
-14	-4.9
-10	0.0
-6	0.0
-2	-2.5
2	-24.5
6	2.5
10	-4.9
14	-19.6
18	-27.0
22	-7.4
26	24.5
30	39.2
34	66.2
38	19.6
42	17.2
46	-49.0
50	-46.6
54	-105.4
58	-132.4
62	-53.9
66	-58.8
70	9.8

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 system.

PIDs	PID	Data
	00	BC F5 00 01
	01	00
	03	30 52 33 35 30 30 30 30 30 30 30 30 30 30 30
	04	FF FF FF FF
	05	01
	06	3E 07
	09	30 30 30 30 30 30 30 30 30 30
	0A	06
	0B	00
	0C	30 30 30 30 30 30 30 30 30 30
	10	00
	20	E8 00 00 01
	21	02 A0
	22	00 00 00 00 00 00
	23	98 62 01 01 00 00 0E D8 98 03 01 01 00 00 0E DB 98 37 01 01 00 00 0E DB 98 32 01 01 00 00 0E DC 98 11 01 01 00 00 0E E7 99 01 01 01 00 00 0E E7
	25	00 00 00 00 00 00 00 00 00
	40	00 00 00 01
	60	F7 77 00 01
	61	02 09 05 00 04 E2 00 00 00 00 00 00 03 55 03 55 00 00 00 00 00 00 00 00 13 88 29 B1 85 5F 13 88 00 00 E8 00 FF FE 00 00 81 00 81 00 80 00 FF C0 00 F6 80 02 80 04
	62	55 3F FE 3F FE 00 2B 3F FE 00 2B 00 2B 00 67 3F FE 00 3C 00 3C 3F FE 3F FE 00 2B 00 2B 3F FE 3F FE 3F FE 55 04 2B 00 22 00 02 11 A5 03
	63	03 FE 0E 00 00 00 07 00 11 00 21 00 36 00 4B 00 59 00 68 00 72 00 76 00 76 00 78 00 79 00 79 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 79 00 E8
	64	03 FE 00 00 00 00 00 02 00 01 3F FB 3F FD 00 09 00 11 00 0F 00 10 00 11 00 12 00 13 00 16 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	66	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	67	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	68	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	6A	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	6B	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	6C	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	6E	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	6F	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	70	00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
	80	00 00 00 01
	A0	0C 0C FF FD
	A5	55 08 A2 08 A2 08 A2 08 A2 08 A2 08 A2 55 F1 FC 00 FE 00 FF FD FE

```
      01 00 FA 19 40 3F 36 29 1B 10 0C 0C 0F 14 14 12 11 18 1C 1C 1E 23
      2A 32 37 37 2B 25 21 1E 1D 15 0B 00 00 A5 40
A6    02 02 01 01 01 01 01 01 02 00 0A 01 00 01 00 01 03 05 05 04 02 01
      00 00 01 00 00 00 01 01 00 02 05 02 00 00 01 01 00 00 00 00 00 52
      00 03 00 A0 07 14 00
AD    55 03 72 03 72 03 72 03 72 03 72 03 72 55 00 E9 E9 E8 E8 E7 E7 E6
      E6 E6 E6 E5 E5 E5 E5 E5 E5 E5 E5 E4 E4 E4 E4 E4 E4 E5 E5 E5 E5 E5
      E5 E5 E5 E5 E5 E5 E5 E5 E5 E5 E5 00 00 A5 40
AE    00 00 00 00 00 00 00 00 00 00 01 00 00 01 01 01 01 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 01 01 01 01 01 00 00 13 8C
      00 05 05 AE 05 AE 01
B3    55 FF FE 00 01 E2 00 00 A5 20 55 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 01 00 00 0E
      D3 00 00 07 CD 02
B4    32 32 32 32 32 32 32 32 32 32 32 32 32 33 34 38 36 3D 43 41 44 43
      43 3E 3C 3C 32 32 32 32 32 32 32 32 32 32 32 33 32 33 33 34 37 35
      3A 40 43 43 46 48 45 43 01 FE 01 FE
B5    00 00 00 00 00 00 00 00 00 FF 00 00 FF 00 01 01 00 00 00 00 FC FD
      F9 FB FC FE 00 00 00 00 00 00 00 00 00 01 00 00 00 00 FF 00 FF FF
      00 01 05 04 06 06 03 02 01 FE 01 FE
B6    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
B7    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
B8    00 01 02 02 02 00 00 01 0A FF 02 08 0B 03 F6 F0 E5 F8 F9 14 13 2B
      36 16 18 FC 01 FE
B9    55 00 76 00 04 21 00 00 00 00 55 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 01 01 00 00 0E
      D4 00 00 07 CD 02
BA    43 41 3E 38 37 37 3A 3D 3C 3A 36 32 31 33 34 36 37 37 36 34 32 31
      32 33 33 33 36 3B 3D 3D 3C 3D 3A 37 35 35 38 39 39 38 35 33 32 30
      31 32 33 34 34 32 32 32 01 FE 01 FE
BB    00 02 00 FF FF 00 00 00 00 FF 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 FF 00 00 01 01 00 00 00 00 01 00 00 00 00 00 FF 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
BC    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
BD    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
BE    FF 00 00 04 04 05 02 00 0A 0D 05 00 FD 02 FE FA FF FD FC 00 FF 00
      FF FE 00 03 01 FE
C0    FF FF FF E1
C1    55 FF FE 00 06 22 00 00 00 00 55 00 01 00 03 98 62 98 03 98 37 98
      32 98 11 99 01 99 06 99 26 98 31 99 41 99 21 96 12 01 01 00 00 8E
      CC 00 00 07 CD 02
C2    32 32 32 32 33 33 33 33 33 33 32 32 32 32 32 32 32 32 32 32 32 32
      32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 32 33 33 33 33 32 32
      32 32 32 32 32 32 32 32 01 FE 01 FE
C3    00 00 00 00 01 01 00 00 00 01 01 01 01 01 01 01 01 01 01 01 01 01
      01 01 02 01 00 00 00 00 FF FF FF 00 FF FF FF FF FF FF FF FF FF FF
      FF FF FF FE FF FE FE FE 01 FE 01 FE
C4    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
C5    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 01 FE 01 FE
C6    FB FC FB F7 F5 F7 F8 F7 F5 F7 F7 F9 F8 F7 F8 F9 F9 F9 F9 F9 F9 F9
      F7 F5 F6 F8 01 FE
C7    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00
C8    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00
C9    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
      00 00 00 00 00 00 00 00 00 00 00 00
CA    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00
CB    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00
CC    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00
CD    55 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 01 01 00 00 0E D4 00 00 07 CD 02 55 11 10 00
      00
CE    55 00 F2 20 11 11 11 11 11 10 58 58 56 55 54 52 4F 46 3B 35 34 14
      15 03 03 33 0E 1A 03 11 33 45 00 00 00 0E 0E 0E 0E 0D 0E 0D 0B 0B
      0D 0F 00 00 00 00 00 00
CF    00 00 00 00 00 00 00 00 00 00 00 03 05 07 02 04 0E 1E 26 18 28 24
      FB FD F6 F4 03 E9 D0 EB BE DF 83 00 00 00 00 1A 00 05 00 02 1B 2E
      00 00 00
D0    00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40
      FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE

D1    00 03 00 03 00 03 00 04 00 0A 00 0E 00 0E 00 13 00 11 00 13 00 14
      00 02 00 02 00 02 00 02 00 02 00 02 00 02 00 26 00 06 00 06 00 06

D2    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00
D3    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00
D4    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00
D5    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

D6    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

D7    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00
D8    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00
D9    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00
DA    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

DB    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

E0    FC 11 FF FC
F0    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00
F1    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00
F2    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00
F3    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

F4    00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
      00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

F5    55 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00
```

```
        00 00 00 00 00 00 00 01 01 00 00 0E D4 00 00 07 CD 02 55 11 10 00
        00
F6      55 00 F2 30 11 11 11 11 11 D0 58 58 56 55 54 52 4F 46 3B 35 33 14
        15 03 03 33 0E 1A 03 11 33 45 00 00 00 0E 0E 0E 0E 0D 0E 0D 0B 0B
        0D 0F 00 00 00 00 00 00
F7      00 00 00 00 00 00 00 00 00 00 28 03 05 07 02 04 0E 1E 26 18 28 D1
        FB FD F6 F4 03 E9 D0 EB BE DF 83 00 00 00 00 1A 00 05 00 02 1B 2E
        00 00 00
F8      00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40
        FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE

F9      00 03 00 03 00 03 00 04 00 0A 00 0E 00 0E 00 13 00 11 00 13 00 25
        00 02 00 02 00 02 00 02 00 02 00 02 00 02 00 26 00 06 00 06 00 26

FA      55 00 00 00 00 98 62 98 03 98 37 98 32 98 11 99 01 99 06 99 26 98
        31 99 41 99 21 96 12 01 01 00 00 0E ED 00 00 07 CD 02 55 11 10 00
        00
FB      55 00 F2 43 11 11 10 00 00 00 52 4F 46 3B 35 02 01 01 01 01 01 0E
        1A 03 11 33 FE C8 C8 C8 C8 C8 00 00 00 0E 0D 0B 0B 0D FE 09 05 02
        01 00 00 00 00 00 00 00
FC      00 00 00 00 00 00 00 00 00 00 00 0E 1E 26 18 28 7E 68 0C 01 05 0E
        E9 D0 EB BE DF 7E 02 24 2E 28 26 00 05 00 02 1B FE C8 C8 C8 00 00
        00 20 00
FD      00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40 00 40
        FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE FE

FE      00 0E 00 0E 00 13 00 11 00 13 03 BD 03 DC 00 10 00 01 00 01 00 01
        00 02 00 02 00 26 00 06 00 06 00 02 00 02 00 02 00 02 00 02 00 02
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