National Transportation Safety Board
Office of Highway Safety
Washington, DC 20594

HWY24FH013

# TECHNICAL RECONSTRUCTION ATTACHMENT

Toyota EDR Report

(53 Pages)

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 | 5TDJKRFH2FS[redacted] |
| User | Trooper K.J. Baxter |
| Case Number | 89-0325-48 |
| EDR Data Imaging Date | 08/19/2024 |
| Crash Date | 08/15/2024 |
| Filename | 5TDJKRFH2FS[redacted]_ACM89-0325-48.CDRX |
| Saved on | Monday, August 19 2024 at 14:34:43 |
| Imaged with CDR version | Crash Data Retrieval Tool 24.1.259 |
| Imaged with Software Licensed to (Company Name) | Ohio DPS - Highway Patrol |
| Reported with CDR version | Crash Data Retrieval Tool 24.1.259 |
| Reported with Software Licensed to (Company Name) | Ohio DPS - Highway Patrol |
| EDR Device Type | Airbag Control Module |
| Event(s) recovered | Front/Rear (2), Side (2), Rollover (2) |

## Comments

Imaged direct to module, via search warrant obtained through Sylvania Municipal Court.
Cable #F-00K-108-616 and adapter #F-00K-108-387 used.
Canplus interface module powered by external power supply cord, applied through adapter.
All tires same as stock (245/60R18).
Image witnessed by Sergeant J. Eiden.

## 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 / 21EDR / 22EDR / 23EDR / 24EDR
- 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.
- This airbag ECU records record pre-crash data and post-crash data.
  - If a single event occurs independently, the data for that event is recorded on a one-to-one basis.
  - If multiple events occur successively (within a period of approximately 500ms), the establishment of the recording trigger for the first event is defined as the "pre-crash recording trigger". Pre-crash data for the first event and post-crash data for each successive event is then recorded.
- The airbag ECU has two recording pages (memory maps) to store pre-crash data. Additionally, to store post-crash data, the airbag ECU has two recording pages for each accident type: two pages for frontal and rear crash, two pages for a side crash, and two pages for rollover event.
- 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 Pre-Crash TRG
  - Linked Pre-Crash Page
  - Time from Pre-Crash TRG
  - TRG Count

- Previous Crash Type
- In frontal and rear collision events, the first point where a longitudinal cumulative delta-V of over 0.8 km/h (0.5 mph) is reached is regarded as time zero for the recorded data. In side impact collision and rollover events, 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 and rear collision events, the record time varies depending on the period during which a longitudinal 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 |
| Lateral Acceleration for Frontal/Rear Crash, Floor Sensor | 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 |
| 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:**

- The "ON" setting for the "Freeze Signal" indicates a state in which the non-volatile memory can not be overwritten or deleted by the airbag ECU. After "Freeze Signal" has been turned ON, subsequent events will not be recorded.
- "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.
- If the "Occupant Size Classification, Front Passenger" displays "Child" or "Not Occupied", "Side Air Bag Deployment, Time to Deploy" and "Pretensioner Deployment, Time to Fire" may indicate a time even if deployment did not occur on the for following part no's:
  - 89170-07280, 35400, 35410, 35470, 42660, 0R120, 0R080, 0R081, 0R150
- "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" has two recording specifications. Both the recorded value increases as the driver depresses the accelerator.
  - Percentage of accelerator pedal depressed (recorded as 0-100(%)).
  - Output voltage of accelerator pedal module (recorded as 0-5(V)).
- 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.
- "Time from Previous Pre-Crash TRG" indicates the time between the establishment of an event's pre-crash recording trigger to the establishment of a more recent event's pre-crash recording trigger. The upper limit for the recorded value is 16,381 milliseconds. In the event of establishment of the first pre-crash recording trigger after the ignition is switched ON, the upper limit value(max value) is recorded.
- "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.
- "Linked Pre-Crash Page" is used to link 'paged" pre-crash data with 'paged" post-crash data. When old pre-crash data is overwritten by new pre-crash data, the "Linked Pre-Crash Page" value may record a page number that is not actually linked.
- Resolution of the "Time from Pre-Crash to TRG" is 50 [ms], and the value is rounded up and 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.

05013_ToyotaS00std_r043

## System Status at Time of Retrieval

| | |
|---|---|
| ECU Part Number | 89170-0E111 |
| EDR Generation | 13EDR |
| Complete File Recorded | Yes |
| Freeze Signal | ON |
| Freeze Signal Factor | Side CSA Deployment, Left Side |
| Diagnostic Trouble Codes Exist | No |
| Ignition Cycle ,Download (times) | 16761 |
| Multi-event, number of events (times) | 2 or greater |
| Time from event 1 to 2 (s) | 0.043 |
| Time from Previous Pre Crash TRG (msec) | 16381 or greater |
| Latest Pre-Crash Page | 0 |
| Contains Unlinked Pre-Crash Data | No |

## Event Record Summary at Retrieval

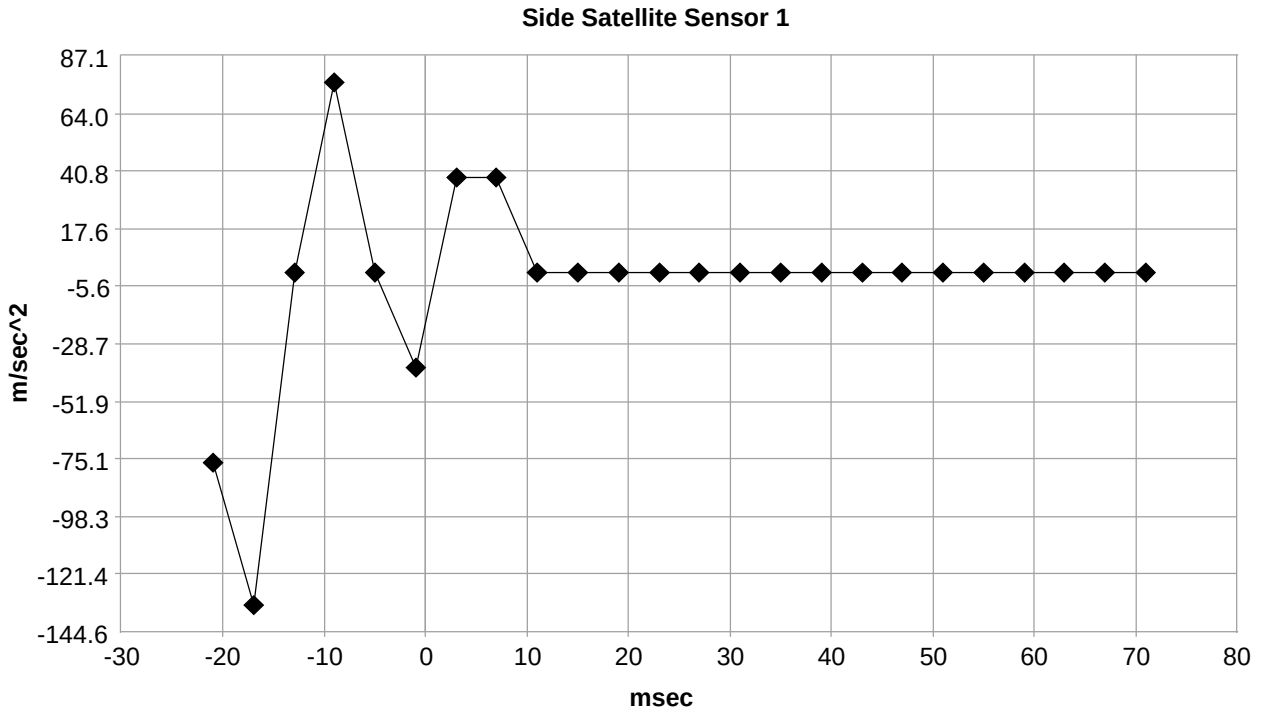
| Events Recorded | TRG Count | Crash Type | Time (msec) | Pre-Crash & DTC Data Recording Status | Event & Crash Pulse Data Recording Status |
|---|---|---|---|---|---|
| Most Recent Event | 6 | Side Crash | 0 | Complete (Page 0) | Complete (Side Page 1) |
| 1st Prior Event | 5 | Rollover | -43 | Complete (Page 0) | Complete (Rollover Page 1) |
| 2nd Prior Event | 4 | Front/Rear Crash | -113 | Complete (Page 0) | Complete (Front/Rear Page 1) |
| 3rd Prior Event | 3 | Side Crash | -106 | Complete (Page 0) | Complete (Side Page 0) |
| 4th Prior Event | 2 | Front/Rear Crash | -16381 or greater | Complete (Page 1) | Complete (Front/Rear Page 0) |
| 5th Prior Event | 1 | Rollover | N/A | N/A | Complete (Rollover Page 0) |

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

| | |
|---|---|
| Recording Status, Side Crash Info. | Complete |
| Crash Type | Side Crash |
| TRG Count (times) | 6 |
| Previous Crash Type | Rollover |
| Time from Pre-Crash TRG (msec) | 106 |
| Linked Pre-Crash Page | 0 |
| Side Airbag Deployment, Time to Deploy (If Equipped) (msec) | No |
| Side Curtain Airbag Deployment, Time to Deploy (If Equipped) (msec) | No |
| Pretensioner Deployment, Time to Fire (msec) | SNA |
| Rear Window Airbag Deployment, Time to Deploy (msec) | SNA |

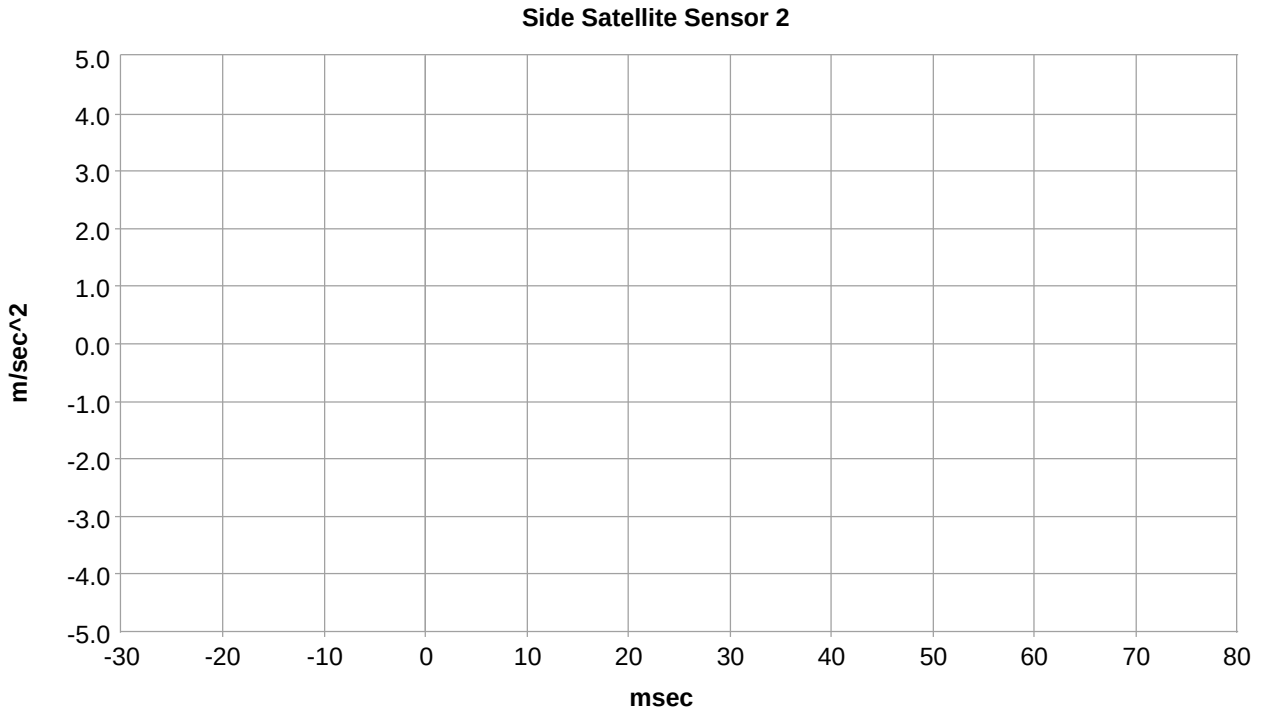
## Lateral Crash Pulse (Most Recent Event, TRG 6 - table 1 of 2)

| | |
|---|---|
| Recording Status, Time Series Data | Complete |
| Recorded Side | Left Side |
| Time from TRG to Next Sample (msec) | 3 |
| Location of Side Satellite Sensor 1 | Front Door |
| Location of Side Satellite Sensor 2 | Not Equipped |
| Location of Side Satellite Sensor 3 | Not Equipped |
| Location of Side Satellite Sensor 4 | C-Pillar |
| Location of Floor Sensor | Airbag ECU |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 1 (msec) | No |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 2 (msec) | SNA |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 3 (msec) | SNA |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 4 (msec) | -1.0 |
| Clipping Time of Lateral Acceleration, Floor Sensor (msec) | No |



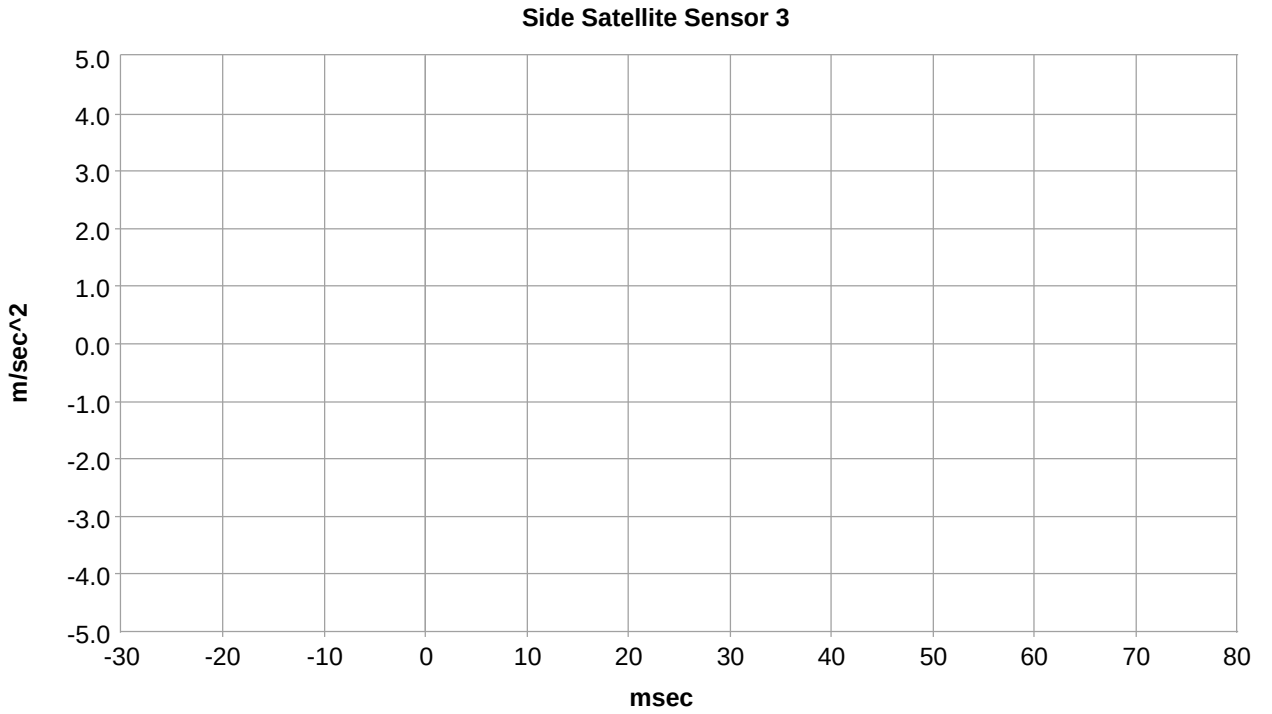

Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger Pretensioner |
| 2 | Side Airbag |
| 3 | Rear Window Airbag Deployment Time |



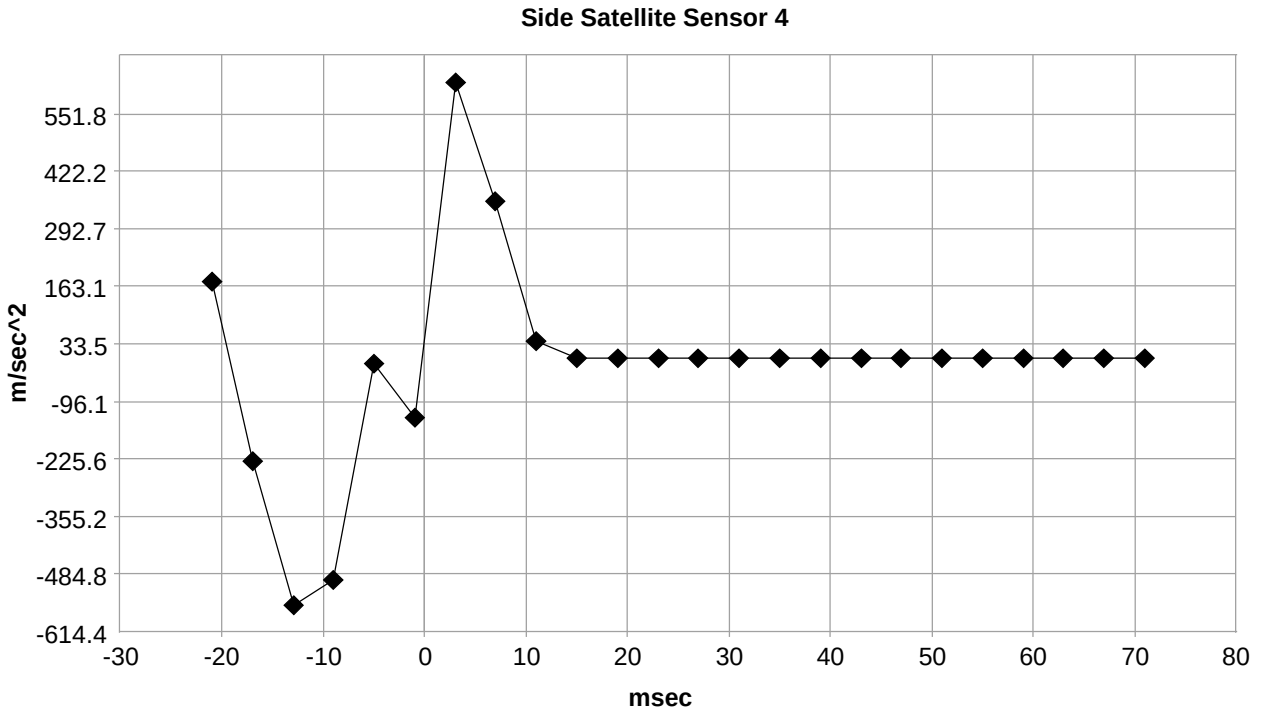

Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger Pretensioner |
| 2 | Side Airbag |
| 3 | Rear Window Airbag Deployment Time |



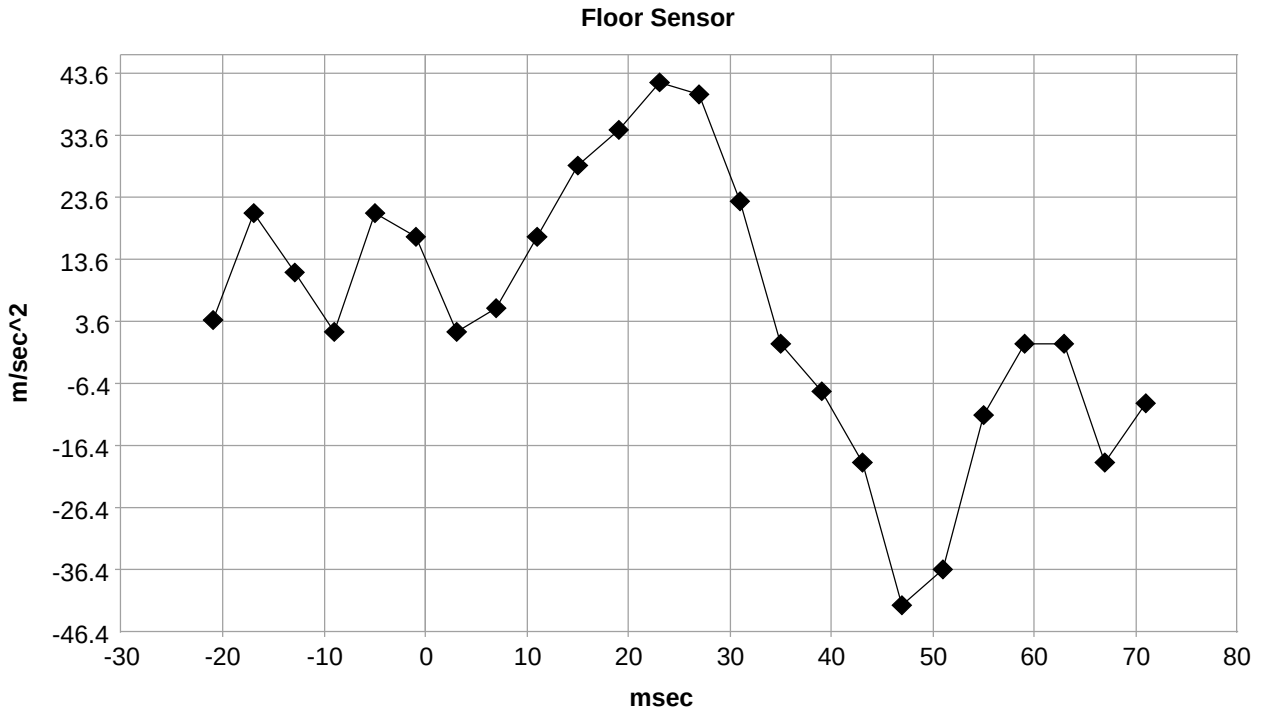

Deployment Time Marker Key

| | |
|---|---|
| 1 | Side Curtain Airbag |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Side Curtain Airbag |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger Pretensioner |
| 2 | Side Airbag |
| 3 | Rear Window Airbag Deployment Time |
| 4 | Side Curtain Airbag |

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

| Time (msec) | Lateral Acceleration, Side Satellite Sensor 1 (m/sec^2) | Lateral Acceleration, Side Satellite Sensor 2 (m/sec^2) | Lateral Acceleration, Side Satellite Sensor 3 (m/sec^2) | Lateral Acceleration, Side Satellite Sensor 4 (m/sec^2) | Lateral Acceleration for Side Crash, Floor Sensor (m/sec^2) |
|---|---|---|---|---|---|
| -21 | -76.6 | SNA | SNA | 172.4 | 3.8 |
| -17 | -134.1 | SNA | SNA | -229.8 | 21.1 |
| -13 | 0.0 | SNA | SNA | -555.5 | 11.5 |
| -9 | 76.6 | SNA | SNA | -498.0 | 1.9 |
| -5 | 0.0 | SNA | SNA | -9.6 | 21.1 |
| -1 | -38.3 | SNA | SNA | -134.1 | 17.2 |
| 3 | 38.3 | SNA | SNA | 622.5 | 1.9 |
| 7 | 38.3 | SNA | SNA | 354.3 | 5.7 |
| 11 | 0.0 | SNA | SNA | 38.3 | 17.2 |
| 15 | 0.0 | SNA | SNA | 0.0 | 28.7 |
| 19 | 0.0 | SNA | SNA | 0.0 | 34.5 |
| 23 | 0.0 | SNA | SNA | 0.0 | 42.1 |
| 27 | 0.0 | SNA | SNA | 0.0 | 40.2 |
| 31 | 0.0 | SNA | SNA | 0.0 | 23.0 |
| 35 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| 39 | 0.0 | SNA | SNA | 0.0 | -7.7 |
| 43 | 0.0 | SNA | SNA | 0.0 | -19.2 |
| 47 | 0.0 | SNA | SNA | 0.0 | -42.1 |
| 51 | 0.0 | SNA | SNA | 0.0 | -36.4 |
| 55 | 0.0 | SNA | SNA | 0.0 | -11.5 |
| 59 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| 63 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| 67 | 0.0 | SNA | SNA | 0.0 | -19.2 |
| 71 | 0.0 | SNA | SNA | 0.0 | -9.6 |

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

| | |
|---|---|
| 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 (Most Recent Event, TRG 6)

| | |
|---|---|
| Recording Status, Pre-Crash/Occupant | Complete |
| Time from Pre-Crash to TRG (msec) | 250 |
| TRG Count when Pre-crash TRG was Established (times) | 3 |
| 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) | 16760 |

## Pre-Crash Data, -5 to 0 seconds (Most Recent Event, TRG 6)

| Time (sec) | -4.75 | -4.25 | -3.75 | -3.25 | -2.75 | -2.25 | -1.75 | -1.25 | -0.75 | -0.25 | 0 (TRG) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Speed (MPH [km/h]) | 43.5 [70] | 40.4 [65] | 37.3 [60] | 34.2 [55] | 31.1 [50] | 27.3 [44] | 23.6 [38] | 19.9 [32] | 16.8 [27] | 15.5 [25] | 14.9 [24] |
| Accelerator Pedal, % Full (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentage of Engine Throttle (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Engine RPM (RPM) | 1,200 | 1,100 | 1,000 | 900 | 800 | 1,000 | 900 | 800 | 900 | 800 | 800 |
| Motor RPM (RPM) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |
| Service Brake, ON/OFF | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| Brake Oil Pressure (Mpa) | 2.64 | 2.78 | 2.98 | 2.98 | 3.07 | 3.26 | 3.36 | 3.46 | 2.50 | 0.82 | 0.82 |
| Longitudinal Acceleration , VSC Sensor (m/sec^2) | -2.584 | -2.728 | -2.799 | -2.871 | -3.158 | -3.230 | -3.374 | -3.230 | -2.225 | -0.646 | 8.973 |
| Yaw Rate (deg/sec) | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.98 | -0.98 | 0.00 | -1.46 | -1.95 |
| Steering Input (degrees) | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -4.5 | -4.5 | 0.0 | -10.5 | -12.0 |
| Shift Position | D | D | D | D | D | D | D | D | D | D | D |
| Sequential Shift Range | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined |
| Cruise Control Status | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, PWR | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, ECO | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Sport | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Snow | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, EV | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

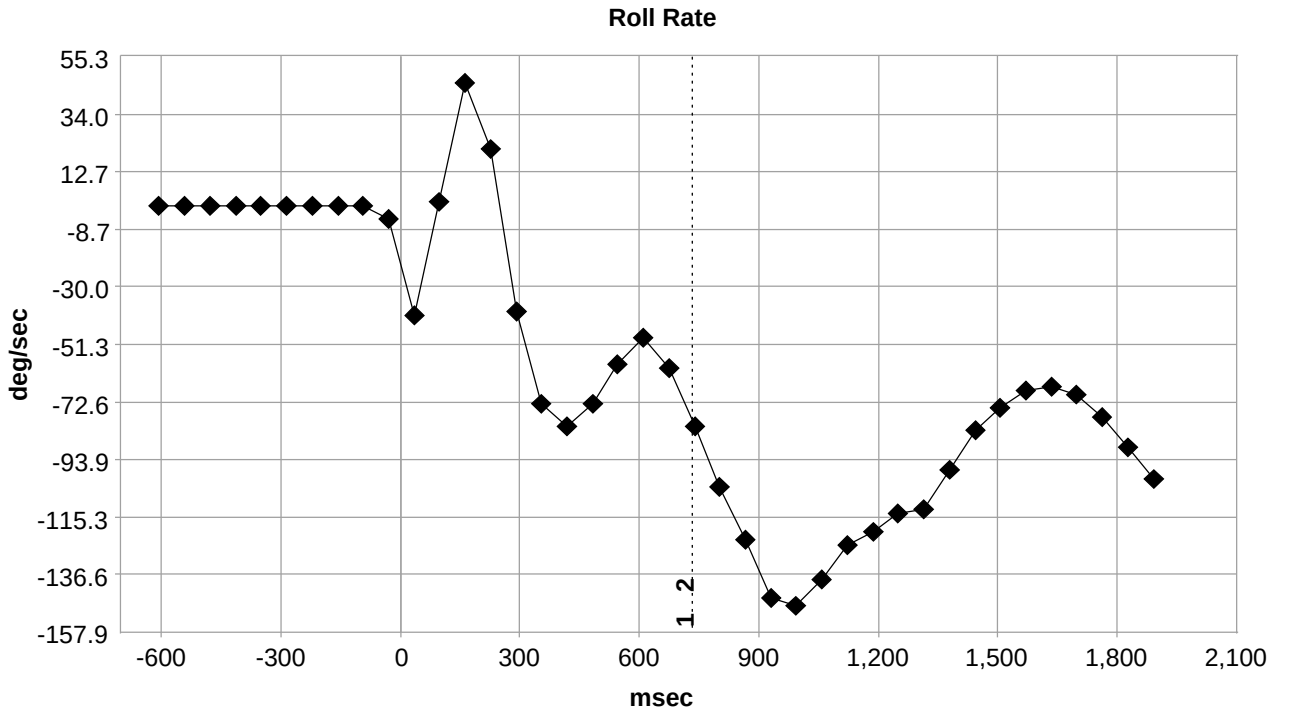
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fuel Injection Quantity (mm3/st) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

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

| | |
|---|---|
| Recording Status, Rollover Crash Info. | Complete |
| Crash Type | Rollover |
| TRG Count (times) | 5 |
| Previous Crash Type | Front/Rear Crash |
| Time from Pre-Crash TRG (msec) | 63 |
| Linked Pre-Crash Page | 0 |
| Side Curtain Airbag Deployment, Time to Deploy (msec) | 731 |
| Pretensioner Deployment, Time to Fire, Driver (msec) | 731 |
| Pretensioner Deployment, Time to Fire, Front Passenger (msec) | 731 |

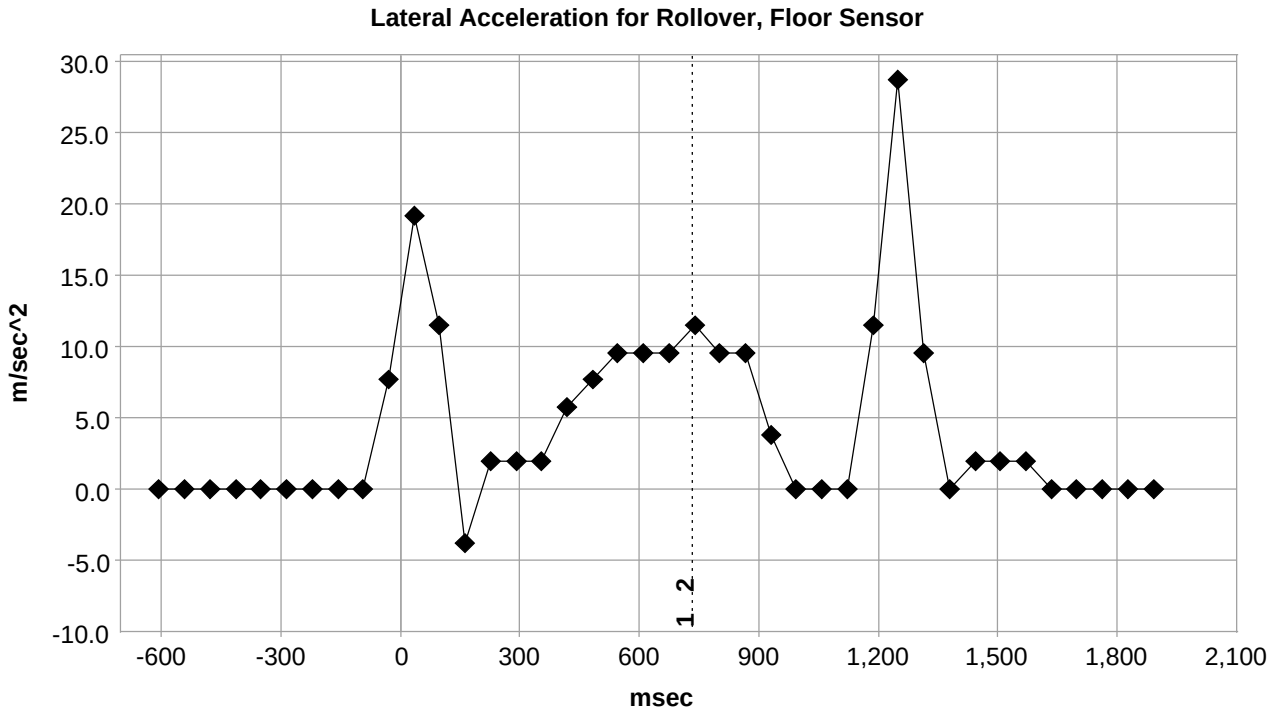
## Rollover Crash Pulse (1st Prior Event, TRG 5 - table 1 of 2)

| | |
|---|---|
| Recording Status, Time Series Data | Complete |
| Time from TRG to Next Sample (msec) | 34 |
| Roll Angle Peak (degrees) | -145.6 |
| Roll Angle at the Time of TRG (degrees) | -3.4 |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger CSA |
| 2 | Driver/Passenger Pretensioner |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger CSA |
| 2 | Driver/Passenger Pretensioner |

## Rollover Crash Pulse (1st Prior Event, TRG 5 - table 2 of 2)

| Time (msec) | Roll Rate (deg/sec) | Lateral Acceleration for Rollover, Floor Sensor (m/sec^2) |
|---|---|---|
| -606 | 0.0 | 0.0 |
| -542 | 0.0 | 0.0 |
| -478 | 0.0 | 0.0 |
| -414 | 0.0 | 0.0 |
| -350 | 0.0 | 0.0 |
| -286 | 0.0 | 0.0 |
| -222 | 0.0 | 0.0 |
| -158 | 0.0 | 0.0 |
| -94 | 0.0 | 0.0 |
| -30 | -4.9 | 7.7 |
| 34 | -40.7 | 19.2 |
| 98 | 1.6 | 11.5 |
| 162 | 45.6 | -3.8 |
| 226 | 21.2 | 1.9 |
| 290 | -39.1 | 1.9 |
| 354 | -73.3 | 1.9 |
| 418 | -81.4 | 5.7 |
| 482 | -73.3 | 7.7 |
| 546 | -58.6 | 9.6 |
| 610 | -48.9 | 9.6 |
| 674 | -60.3 | 9.6 |
| 738 | -81.4 | 11.5 |
| 802 | -104.2 | 9.6 |
| 866 | -123.8 | 9.6 |
| 930 | -145.0 | 3.8 |
| 994 | -148.2 | 0.0 |
| 1058 | -138.4 | 0.0 |
| 1122 | -125.4 | 0.0 |
| 1186 | -120.5 | 11.5 |
| 1250 | -114.0 | 28.7 |
| 1314 | -112.4 | 9.6 |
| 1378 | -97.7 | 0.0 |
| 1442 | -83.1 | 1.9 |
| 1506 | -74.9 | 1.9 |
| 1570 | -68.4 | 1.9 |
| 1634 | -66.8 | 0.0 |
| 1698 | -70.0 | 0.0 |
| 1762 | -78.2 | 0.0 |
| 1826 | -89.6 | 0.0 |
| 1890 | -101.0 | 0.0 |

## 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 | None |

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

| | |
|---|---|
| Recording Status, Pre-Crash/Occupant | Complete |
| Time from Pre-Crash to TRG (msec) | 250 |
| TRG Count when Pre-crash TRG was Established (times) | 3 |
| 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) | 16760 |

## Pre-Crash Data, -5 to 0 seconds (1st Prior Event, TRG 5)

| Time (sec) | -4.75 | -4.25 | -3.75 | -3.25 | -2.75 | -2.25 | -1.75 | -1.25 | -0.75 | -0.25 | 0 (TRG) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Speed (MPH [km/h]) | 43.5 [70] | 40.4 [65] | 37.3 [60] | 34.2 [55] | 31.1 [50] | 27.3 [44] | 23.6 [38] | 19.9 [32] | 16.8 [27] | 15.5 [25] | 14.9 [24] |
| Accelerator Pedal, % Full (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentage of Engine Throttle (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Engine RPM (RPM) | 1,200 | 1,100 | 1,000 | 900 | 800 | 1,000 | 900 | 800 | 900 | 800 | 800 |
| Motor RPM (RPM) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |
| Service Brake, ON/OFF | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| Brake Oil Pressure (Mpa) | 2.64 | 2.78 | 2.98 | 2.98 | 3.07 | 3.26 | 3.36 | 3.46 | 2.50 | 0.82 | 0.82 |
| Longitudinal Acceleration , VSC Sensor (m/sec^2) | -2.584 | -2.728 | -2.799 | -2.871 | -3.158 | -3.230 | -3.374 | -3.230 | -2.225 | -0.646 | 8.973 |
| Yaw Rate (deg/sec) | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.98 | -0.98 | 0.00 | -1.46 | -1.95 |
| Steering Input (degrees) | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -4.5 | -4.5 | 0.0 | -10.5 | -12.0 |
| Shift Position | D | D | D | D | D | D | D | D | D | D | D |
| Sequential Shift Range | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined |
| Cruise Control Status | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, PWR | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, ECO | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Sport | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Snow | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, EV | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

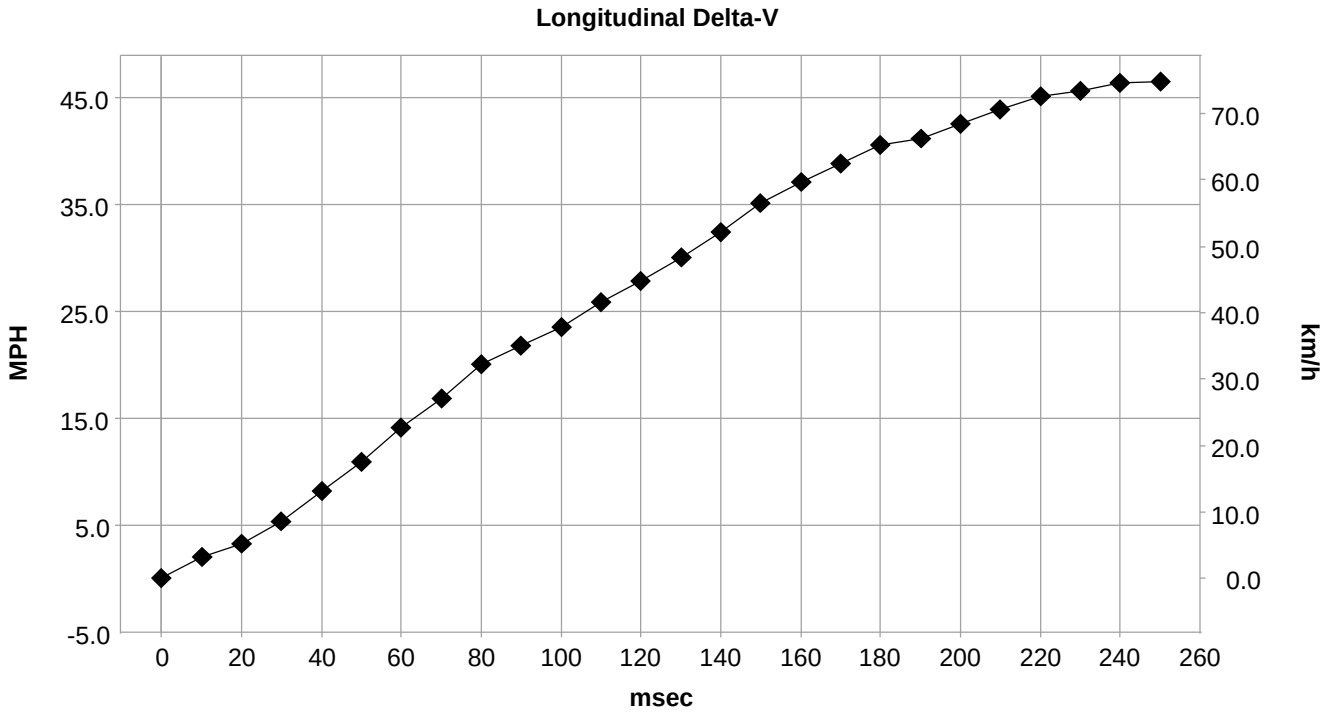
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fuel Injection Quantity (mm3/st) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

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

| | |
|---|---|
| Recording Status, Front/Rear Crash Info. | Complete |
| Crash Type | Front/Rear Crash |
| TRG Count (times) | 4 |
| Previous Crash Type | Side Crash |
| Time from Pre-Crash TRG (msec) | 22 |
| Linked Pre-Crash Page | 0 |
| Frontal Airbag Deployment, Time to 1st Stage Deployment, Driver (msec) | No |
| Frontal Airbag Deployment, Time to 1st Stage Deployment, Front Passenger (msec) | No |
| Pretensioner Deployment, Time to Fire, Driver (msec) | No |
| Pretensioner Deployment, Time to Fire, Front Passenger (msec) | No |
| Frontal Airbag Deployment, Time to 2nd Stage, Driver (msec) | N/A |
| Frontal Airbag Deployment, Time to 2nd Stage, Front Passenger (msec) | N/A |
| Active Head Restraint, Time to Deploy, Driver (msec) | SNA |
| Active Head Restraint, Time to Deploy, Front Passenger (msec) | SNA |
| Side Curtain Airbag Deployment, Time to Deploy, Driver (msec) | No |
| Side Curtain Airbag Deployment, Time to Deploy, Passenger (msec) | No |
| Side Airbag Deployment, Time to Deploy, Driver (msec) | No |
| Side Airbag Deployment, Time to Deploy, Passenger (msec) | No |
| Rear Window Airbag Deployment, Time to Deploy (msec) | SNA |

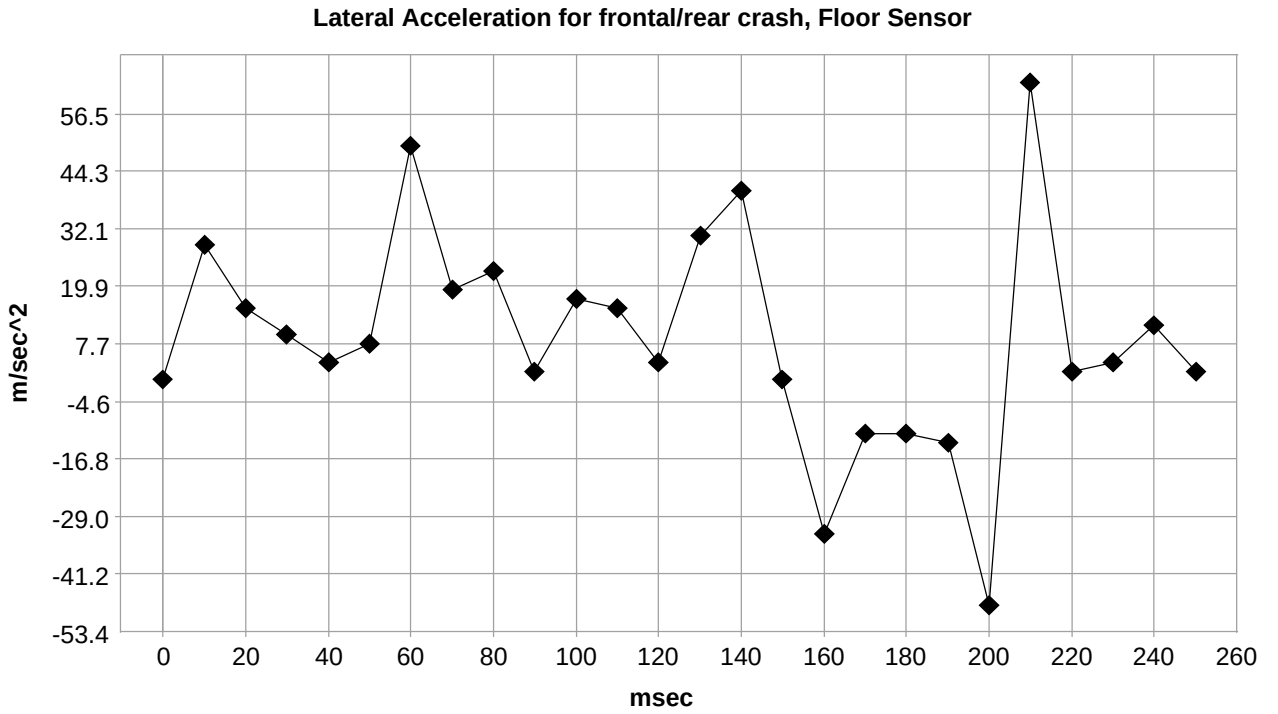
## Longitudinal/Lateral Crash Pulse (2nd Prior Event, TRG 4 - table 1 of 2)

| | |
|---|---|
| Recording Status, Time Series Data | Complete |
| Time from Time Zero to TRG (msec) | 29.0 |
| Length of Delta-V (msec) | 250 |
| Max. Longitudinal Delta-V (MPH [km/h]) | 47.3 [76.1] |
| Time, Maximum Delta-V, Longitudinal (msec) | 284.0 |
| Power Supply Status at Max. Delta-V | ON |
| Clipping Time of Longitudinal Delta-V (msec) | No |
| Clipping Time of Lateral Acceleration, Floor Sensor (msec) | No |




Deployment Time Marker Key

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




Deployment Time Marker Key

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

## Longitudinal/Lateral Crash Pulse (2nd Prior Event, TRG 4 - table 2 of 2)

| Time (msec) | Longitudinal Delta-V (MPH [km/h]) | Lateral Acceleration for Frontal/Rear Crash, Floor Sensor (m/sec^2) | Power Supply Status |
|---|---|---|---|
| 0 | 0.0 [0.0] | 0.0 | ON |
| 10 | 2.1 [3.3] | 28.7 | ON |
| 20 | 3.3 [5.2] | 15.3 | ON |
| 30 | 5.3 [8.6] | 9.6 | ON |
| 40 | 8.2 [13.2] | 3.8 | ON |
| 50 | 11.0 [17.7] | 7.7 | ON |
| 60 | 14.1 [22.6] | 49.8 | ON |
| 70 | 16.8 [27.0] | 19.2 | ON |
| 80 | 20.1 [32.3] | 23.0 | ON |
| 90 | 21.8 [35.0] | 1.9 | ON |
| 100 | 23.5 [37.8] | 17.2 | ON |
| 110 | 25.9 [41.6] | 15.3 | ON |
| 120 | 27.8 [44.7] | 3.8 | ON |
| 130 | 30.0 [48.3] | 30.6 | ON |
| 140 | 32.4 [52.1] | 40.2 | ON |
| 150 | 35.1 [56.5] | 0.0 | ON |
| 160 | 37.0 [59.6] | -32.6 | ON |
| 170 | 38.7 [62.3] | -11.5 | ON |
| 180 | 40.4 [65.1] | -11.5 | ON |
| 190 | 41.1 [66.2] | -13.4 | ON |
| 200 | 42.5 [68.4] | -47.9 | ON |
| 210 | 43.9 [70.6] | 63.2 | ON |
| 220 | 45.1 [72.5] | 1.9 | ON |
| 230 | 45.6 [73.4] | 3.8 | ON |
| 240 | 46.3 [74.5] | 11.5 | ON |
| 250 | 46.4 [74.7] | 1.9 | ON |

## 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 |

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

| | |
|---|---|
| Recording Status, Pre-Crash/Occupant | Complete |
| Time from Pre-Crash to TRG (msec) | 250 |
| TRG Count when Pre-crash TRG was Established (times) | 3 |
| 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) | 16760 |

## Pre-Crash Data, -5 to 0 seconds (2nd Prior Event, TRG 4)

| Time (sec) | -4.75 | -4.25 | -3.75 | -3.25 | -2.75 | -2.25 | -1.75 | -1.25 | -0.75 | -0.25 | 0 (TRG) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Speed (MPH [km/h]) | 43.5 [70] | 40.4 [65] | 37.3 [60] | 34.2 [55] | 31.1 [50] | 27.3 [44] | 23.6 [38] | 19.9 [32] | 16.8 [27] | 15.5 [25] | 14.9 [24] |
| Accelerator Pedal, % Full (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentage of Engine Throttle (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Engine RPM (RPM) | 1,200 | 1,100 | 1,000 | 900 | 800 | 1,000 | 900 | 800 | 900 | 800 | 800 |
| Motor RPM (RPM) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |
| Service Brake, ON/OFF | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| Brake Oil Pressure (Mpa) | 2.64 | 2.78 | 2.98 | 2.98 | 3.07 | 3.26 | 3.36 | 3.46 | 2.50 | 0.82 | 0.82 |
| Longitudinal Acceleration , VSC Sensor (m/sec^2) | -2.584 | -2.728 | -2.799 | -2.871 | -3.158 | -3.230 | -3.374 | -3.230 | -2.225 | -0.646 | 8.973 |
| Yaw Rate (deg/sec) | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.98 | -0.98 | 0.00 | -1.46 | -1.95 |
| Steering Input (degrees) | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -4.5 | -4.5 | 0.0 | -10.5 | -12.0 |
| Shift Position | D | D | D | D | D | D | D | D | D | D | D |
| Sequential Shift Range | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined |
| Cruise Control Status | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, PWR | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, ECO | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Sport | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Snow | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, EV | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

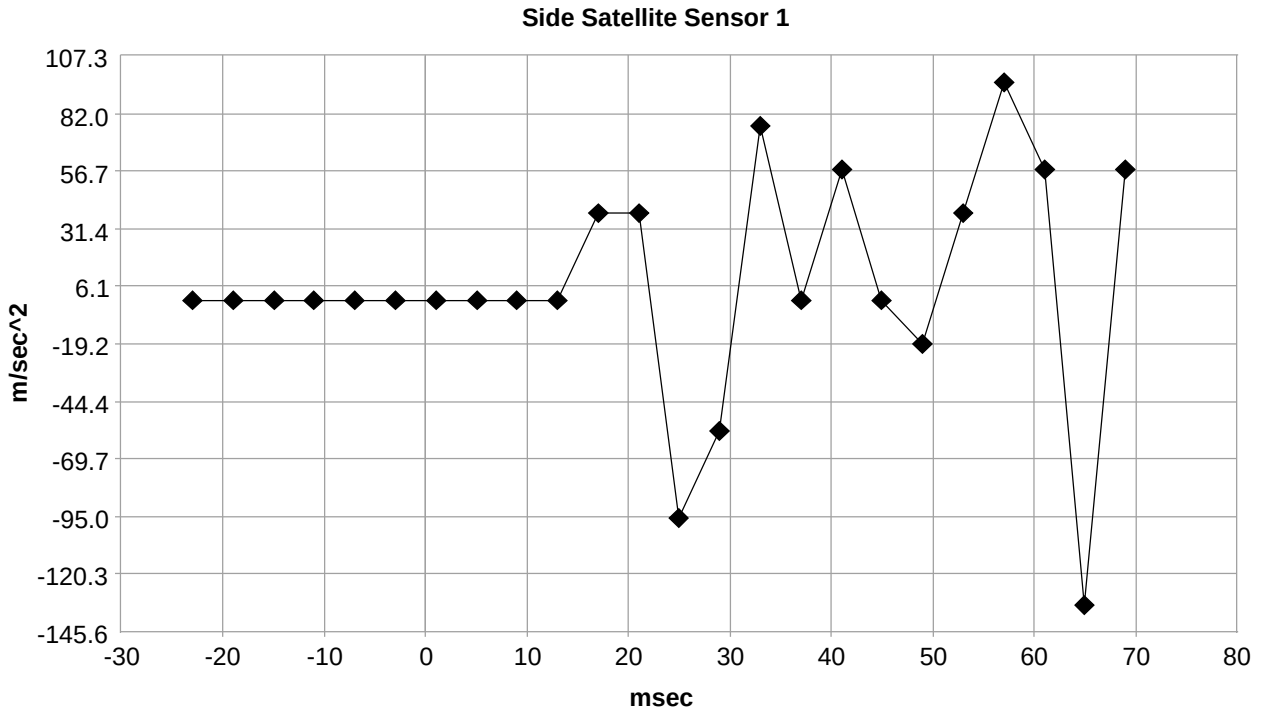
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fuel Injection Quantity (mm3/st) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

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

| | |
|---|---|
| Recording Status, Side Crash Info. | Complete |
| Crash Type | Side Crash |
| TRG Count (times) | 3 |
| Previous Crash Type | No Event |
| Time from Pre-Crash TRG (msec) | 0 |
| Linked Pre-Crash Page | 0 |
| Side Airbag Deployment, Time to Deploy (If Equipped) (msec) | No |
| Side Curtain Airbag Deployment, Time to Deploy (If Equipped) (msec) | 32 |
| Pretensioner Deployment, Time to Fire (msec) | SNA |
| Rear Window Airbag Deployment, Time to Deploy (msec) | SNA |

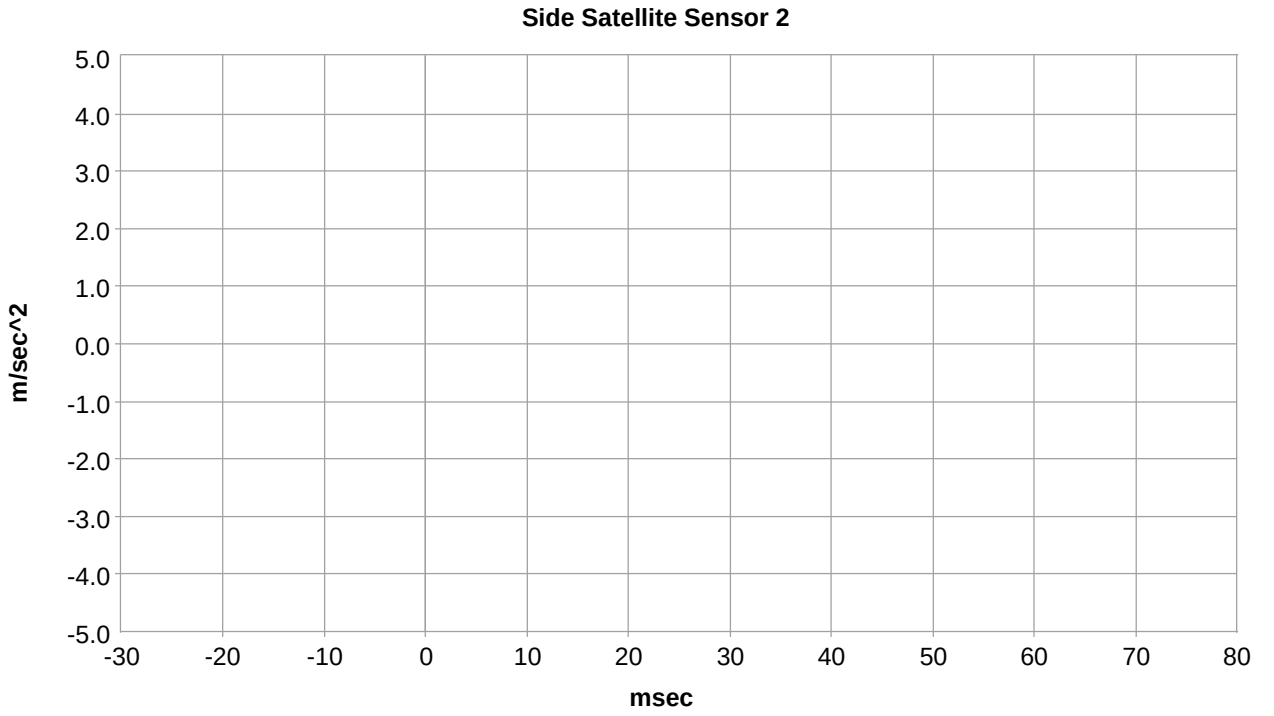
## Lateral Crash Pulse (3rd Prior Event, TRG 3 - table 1 of 2)

| | |
|---|---|
| Recording Status, Time Series Data | Complete |
| Recorded Side | Left Side |
| Time from TRG to Next Sample (msec) | 1 |
| Location of Side Satellite Sensor 1 | Front Door |
| Location of Side Satellite Sensor 2 | Not Equipped |
| Location of Side Satellite Sensor 3 | Not Equipped |
| Location of Side Satellite Sensor 4 | C-Pillar |
| Location of Floor Sensor | Airbag ECU |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 1 (msec) | No |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 2 (msec) | SNA |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 3 (msec) | SNA |
| Clipping Time of Lateral Acceleration, Side Satellite Sensor 4 (msec) | 19.5 |
| Clipping Time of Lateral Acceleration, Floor Sensor (msec) | No |



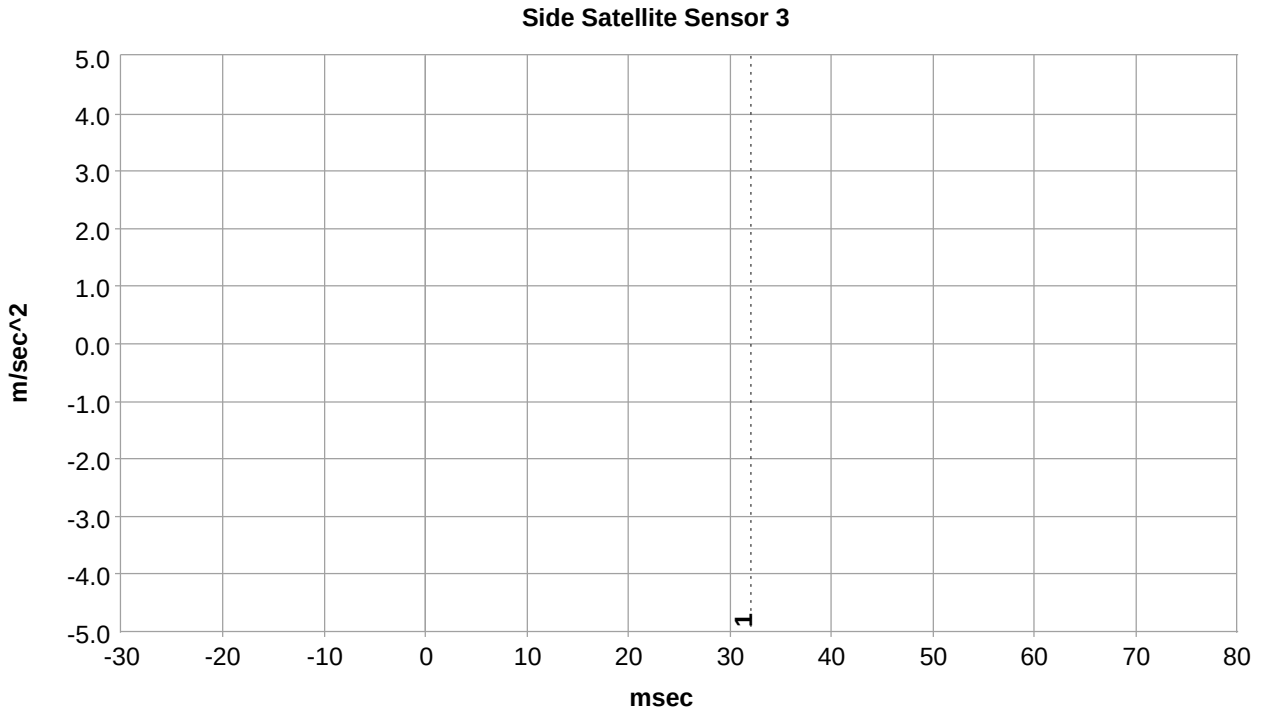

Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger Pretensioner |
| 2 | Side Airbag |
| 3 | Rear Window Airbag Deployment Time |



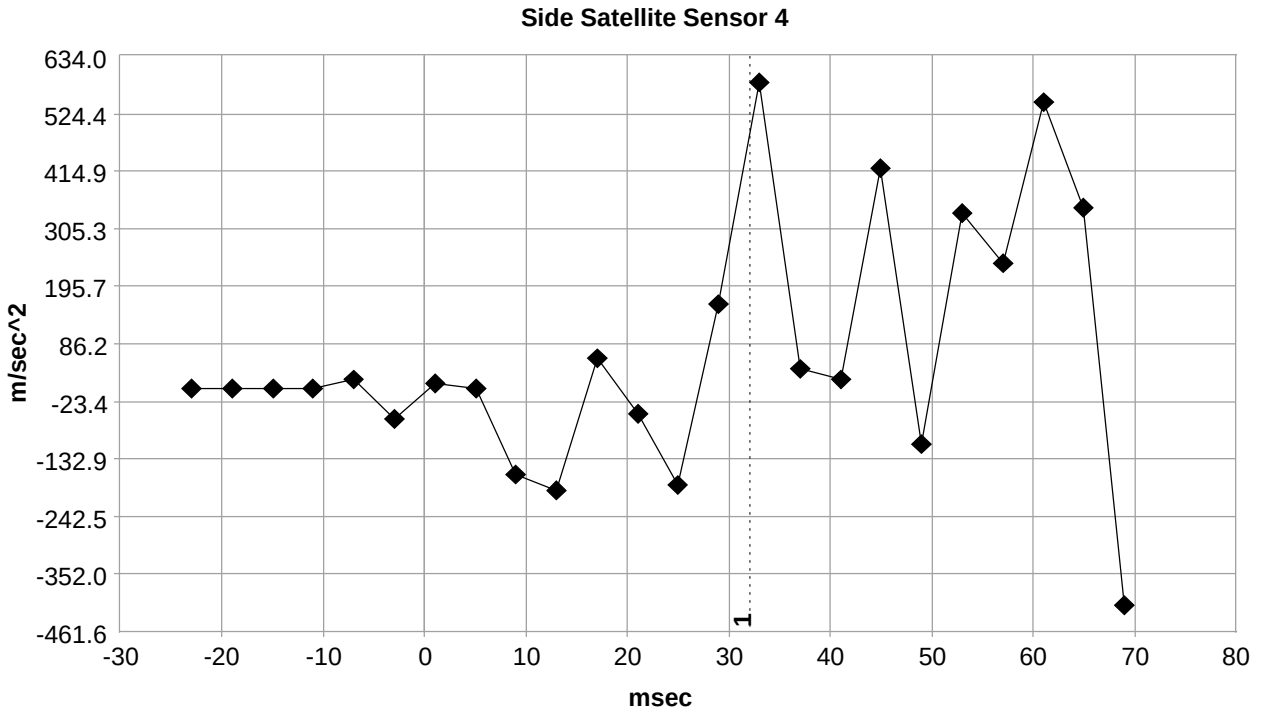

Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger Pretensioner |
| 2 | Side Airbag |
| 3 | Rear Window Airbag Deployment Time |



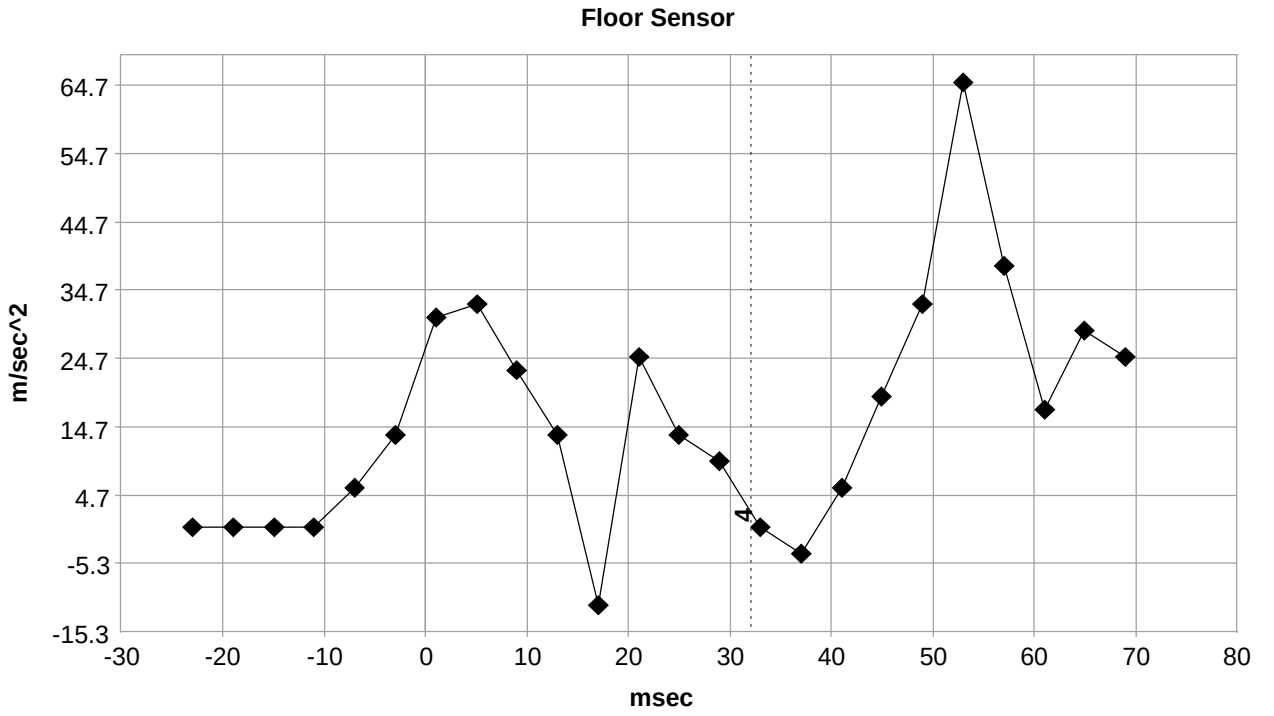

Deployment Time Marker Key

| | |
|---|---|
| 1 | Side Curtain Airbag |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Side Curtain Airbag |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger Pretensioner |
| 2 | Side Airbag |
| 3 | Rear Window Airbag Deployment Time |
| 4 | Side Curtain Airbag |

## Lateral Crash Pulse (3rd Prior Event, TRG 3 - table 2 of 2)

| Time (msec) | Lateral Acceleration, Side Satellite Sensor 1 (m/sec^2) | Lateral Acceleration, Side Satellite Sensor 2 (m/sec^2) | Lateral Acceleration, Side Satellite Sensor 3 (m/sec^2) | Lateral Acceleration, Side Satellite Sensor 4 (m/sec^2) | Lateral Acceleration for Side Crash, Floor Sensor (m/sec^2) |
|---|---|---|---|---|---|
| -23 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| -19 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| -15 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| -11 | 0.0 | SNA | SNA | 0.0 | 0.0 |
| -7 | 0.0 | SNA | SNA | 19.2 | 5.7 |
| -3 | 0.0 | SNA | SNA | -57.5 | 13.4 |
| 1 | 0.0 | SNA | SNA | 9.6 | 30.6 |
| 5 | 0.0 | SNA | SNA | 0.0 | 32.6 |
| 9 | 0.0 | SNA | SNA | -162.8 | 23.0 |
| 13 | 0.0 | SNA | SNA | -191.5 | 13.4 |
| 17 | 38.3 | SNA | SNA | 57.5 | -11.5 |
| 21 | 38.3 | SNA | SNA | -47.9 | 24.9 |
| 25 | -95.8 | SNA | SNA | -182.0 | 13.4 |
| 29 | -57.5 | SNA | SNA | 162.8 | 9.6 |
| 33 | 76.6 | SNA | SNA | 584.2 | 0.0 |
| 37 | 0.0 | SNA | SNA | 38.3 | -3.8 |
| 41 | 57.5 | SNA | SNA | 19.2 | 5.7 |
| 45 | 0.0 | SNA | SNA | 421.4 | 19.2 |
| 49 | -19.2 | SNA | SNA | -105.3 | 32.6 |
| 53 | 38.3 | SNA | SNA | 335.2 | 65.1 |
| 57 | 95.8 | SNA | SNA | 239.4 | 38.3 |
| 61 | 57.5 | SNA | SNA | 545.9 | 17.2 |
| 65 | -134.1 | SNA | SNA | 344.8 | 28.7 |
| 69 | 57.5 | SNA | SNA | -411.8 | 24.9 |

## 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, Pre-Crash/Occupant | Complete |
| Time from Pre-Crash to TRG (msec) | 250 |
| TRG Count when Pre-crash TRG was Established (times) | 3 |
| 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) | 16760 |

## Pre-Crash Data, -5 to 0 seconds (3rd Prior Event, TRG 3)

| Time (sec) | -4.75 | -4.25 | -3.75 | -3.25 | -2.75 | -2.25 | -1.75 | -1.25 | -0.75 | -0.25 | 0 (TRG) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Speed (MPH [km/h]) | 43.5 [70] | 40.4 [65] | 37.3 [60] | 34.2 [55] | 31.1 [50] | 27.3 [44] | 23.6 [38] | 19.9 [32] | 16.8 [27] | 15.5 [25] | 14.9 [24] |
| Accelerator Pedal, % Full (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentage of Engine Throttle (%) | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Engine RPM (RPM) | 1,200 | 1,100 | 1,000 | 900 | 800 | 1,000 | 900 | 800 | 900 | 800 | 800 |
| Motor RPM (RPM) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |
| Service Brake, ON/OFF | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON | ON |
| Brake Oil Pressure (Mpa) | 2.64 | 2.78 | 2.98 | 2.98 | 3.07 | 3.26 | 3.36 | 3.46 | 2.50 | 0.82 | 0.82 |
| Longitudinal Acceleration , VSC Sensor (m/sec^2) | -2.584 | -2.728 | -2.799 | -2.871 | -3.158 | -3.230 | -3.374 | -3.230 | -2.225 | -0.646 | 8.973 |
| Yaw Rate (deg/sec) | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.49 | -0.98 | -0.98 | 0.00 | -1.46 | -1.95 |
| Steering Input (degrees) | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -1.5 | -4.5 | -4.5 | 0.0 | -10.5 | -12.0 |
| Shift Position | D | D | D | D | D | D | D | D | D | D | D |
| Sequential Shift Range | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined |
| Cruise Control Status | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, PWR | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, ECO | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Sport | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Snow | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, EV | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

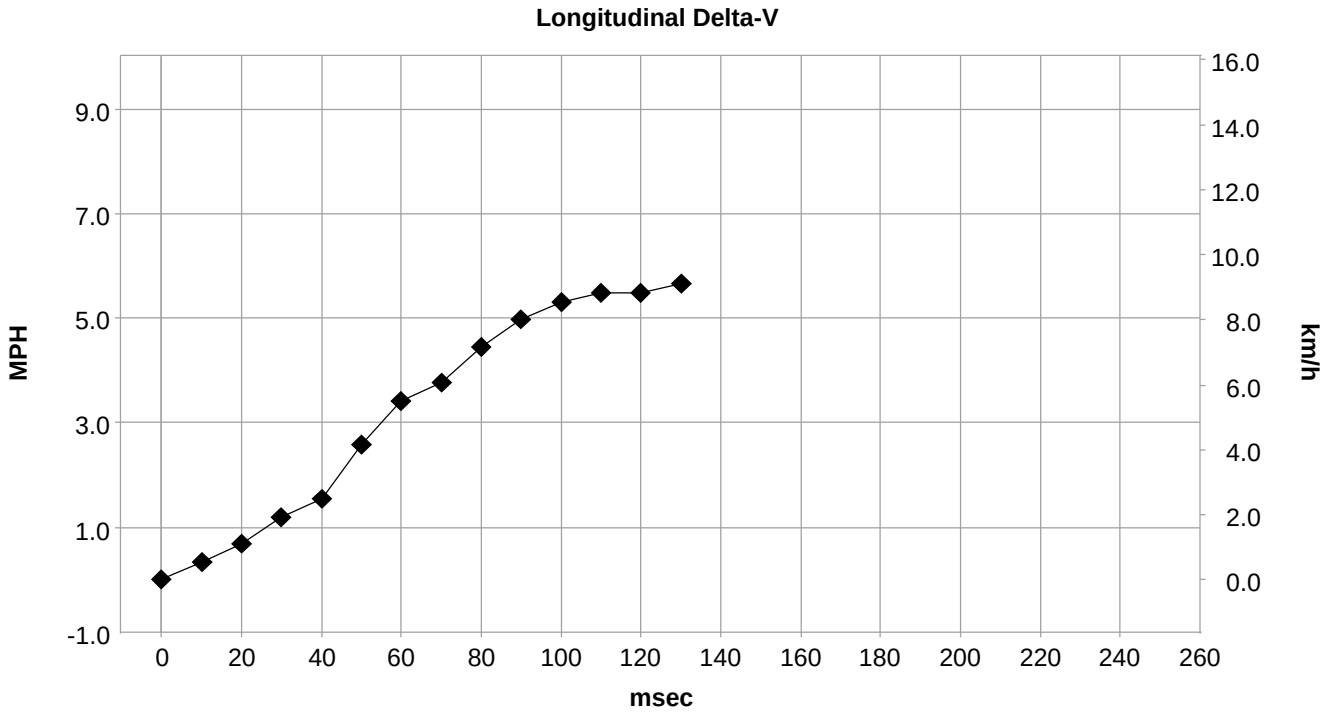
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fuel Injection Quantity (mm3/st) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

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

| | |
|---|---|
| Recording Status, Front/Rear Crash Info. | Complete |
| Crash Type | Front/Rear Crash |
| TRG Count (times) | 2 |
| Previous Crash Type | No Event |
| Time from Pre-Crash TRG (msec) | 0 |
| Linked Pre-Crash Page | 1 |
| Frontal Airbag Deployment, Time to 1st Stage Deployment, Driver (msec) | No |
| Frontal Airbag Deployment, Time to 1st Stage Deployment, Front Passenger (msec) | No |
| Pretensioner Deployment, Time to Fire, Driver (msec) | No |
| Pretensioner Deployment, Time to Fire, Front Passenger (msec) | No |
| Frontal Airbag Deployment, Time to 2nd Stage, Driver (msec) | N/A |
| Frontal Airbag Deployment, Time to 2nd Stage, Front Passenger (msec) | N/A |
| Active Head Restraint, Time to Deploy, Driver (msec) | SNA |
| Active Head Restraint, Time to Deploy, Front Passenger (msec) | SNA |
| Side Curtain Airbag Deployment, Time to Deploy, Driver (msec) | No |
| Side Curtain Airbag Deployment, Time to Deploy, Passenger (msec) | No |
| Side Airbag Deployment, Time to Deploy, Driver (msec) | No |
| Side Airbag Deployment, Time to Deploy, Passenger (msec) | No |
| Rear Window Airbag Deployment, Time to Deploy (msec) | SNA |

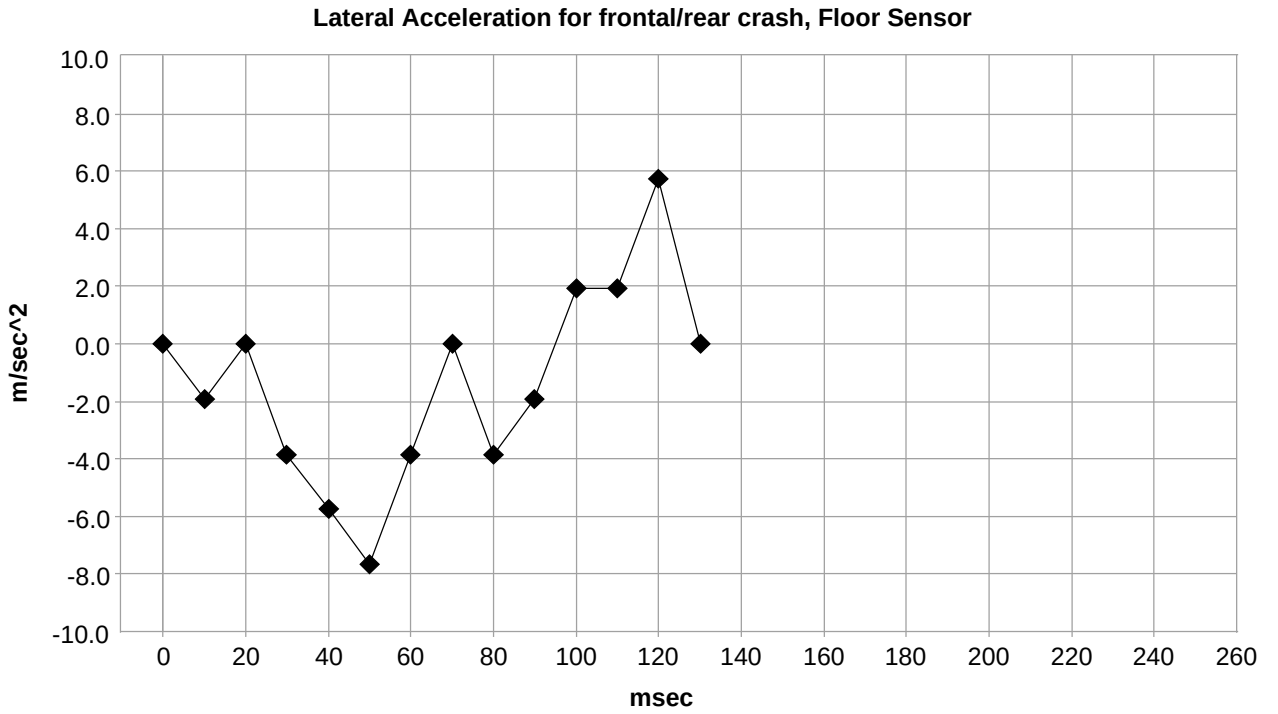
## Longitudinal/Lateral Crash Pulse (4th Prior Event, TRG 2 - table 1 of 2)

| | |
|---|---|
| Recording Status, Time Series Data | Complete |
| Time from Time Zero to TRG (msec) | 92.5 |
| Length of Delta-V (msec) | 130 |
| Max. Longitudinal Delta-V (MPH [km/h]) | 5.7 [9.1] |
| Time, Maximum Delta-V, Longitudinal (msec) | 122.5 |
| Power Supply Status at Max. Delta-V | ON |
| Clipping Time of Longitudinal Delta-V (msec) | No |
| Clipping Time of Lateral Acceleration, Floor Sensor (msec) | No |




Deployment Time Marker Key

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




Deployment Time Marker Key

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

## Longitudinal/Lateral Crash Pulse (4th Prior Event, TRG 2 - table 2 of 2)

| Time (msec) | Longitudinal Delta-V (MPH [km/h]) | Lateral Acceleration for Frontal/Rear Crash, Floor Sensor (m/sec^2) | Power Supply Status |
|---|---|---|---|
| 0 | 0.0 [0.0] | 0.0 | ON |
| 10 | 0.3 [0.6] | -1.9 | ON |
| 20 | 0.7 [1.1] | 0.0 | ON |
| 30 | 1.2 [1.9] | -3.8 | ON |
| 40 | 1.5 [2.5] | -5.7 | ON |
| 50 | 2.6 [4.1] | -7.7 | ON |
| 60 | 3.4 [5.5] | -3.8 | ON |
| 70 | 3.8 [6.1] | 0.0 | ON |
| 80 | 4.5 [7.2] | -3.8 | ON |
| 90 | 5.0 [8.0] | -1.9 | ON |
| 100 | 5.3 [8.6] | 1.9 | ON |
| 110 | 5.5 [8.8] | 1.9 | ON |
| 120 | 5.5 [8.8] | 5.7 | ON |
| 130 | 5.7 [9.1] | 0.0 | ON |
| 140 | 0.0 [0.0] | 0.0 | ON |
| 150 | 0.0 [0.0] | 0.0 | ON |
| 160 | 0.0 [0.0] | 0.0 | ON |
| 170 | 0.0 [0.0] | 0.0 | ON |
| 180 | 0.0 [0.0] | 0.0 | ON |
| 190 | 0.0 [0.0] | 0.0 | ON |
| 200 | 0.0 [0.0] | 0.0 | ON |
| 210 | 0.0 [0.0] | 0.0 | ON |
| 220 | 0.0 [0.0] | 0.0 | ON |
| 230 | 0.0 [0.0] | 0.0 | ON |
| 240 | 0.0 [0.0] | 0.0 | ON |
| 250 | 0.0 [0.0] | 0.0 | ON |

## 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, Pre-Crash/Occupant | Complete |
| Time from Pre-Crash to TRG (msec) | 300 |
| TRG Count when Pre-crash TRG was Established (times) | 2 |
| Safety Belt Status, Driver | ON |
| Safety Belt Status, Front Passenger | ON |
| Occupant Size Classification, Front Passenger | AM50 (Not Child) |
| 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) | 10396 |

## Pre-Crash Data, -5 to 0 seconds (4th Prior Event, TRG 2)

| Time (sec) | -4.8 | -4.3 | -3.8 | -3.3 | -2.8 | -2.3 | -1.8 | -1.3 | -0.8 | -0.3 | 0 (TRG) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vehicle Speed (MPH [km/h]) | 11.8 [19] | 11.8 [19] | 11.8 [19] | 11.8 [19] | 11.8 [19] | 11.2 [18] | 9.3 [15] | 6.2 [10] | 3.1 [5] | 1.2 [2] | 3.1 [5] |
| Accelerator Pedal, % Full (%) | 0.0 | 0.0 | 0.0 | 11.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Percentage of Engine Throttle (%) | 0.0 | 0.0 | 0.0 | 2.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Engine RPM (RPM) | 800 | 800 | 800 | 900 | 800 | 800 | 700 | 600 | 700 | 500 | 600 |
| Motor RPM (RPM) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |
| Service Brake, ON/OFF | ON | OFF | OFF | OFF | OFF | ON | ON | ON | ON | ON | OFF |
| Brake Oil Pressure (Mpa) | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.96 | 2.21 | 2.59 | 2.21 | 1.58 | 0.00 |
| Longitudinal Acceleration , VSC Sensor (m/sec^2) | 0.000 | 0.000 | 0.000 | 0.072 | 0.072 | -1.005 | -2.369 | -2.943 | -1.651 | -1.220 | 8.973 |
| Yaw Rate (deg/sec) | -3.90 | -3.90 | -4.88 | -7.32 | -8.78 | -5.86 | -4.39 | -2.93 | -1.46 | -0.98 | 15.13 |
| Steering Input (degrees) | -28.5 | -30.0 | -40.5 | -66.0 | -70.5 | -48.0 | -45.0 | -48.0 | -48.0 | -46.5 | -42.0 |
| Shift Position | D | D | D | D | D | D | D | D | D | D | D |
| Sequential Shift Range | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined | Undetermined |
| Cruise Control Status | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, PWR | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, ECO | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Sport | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, Snow | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| Drive Mode, EV | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

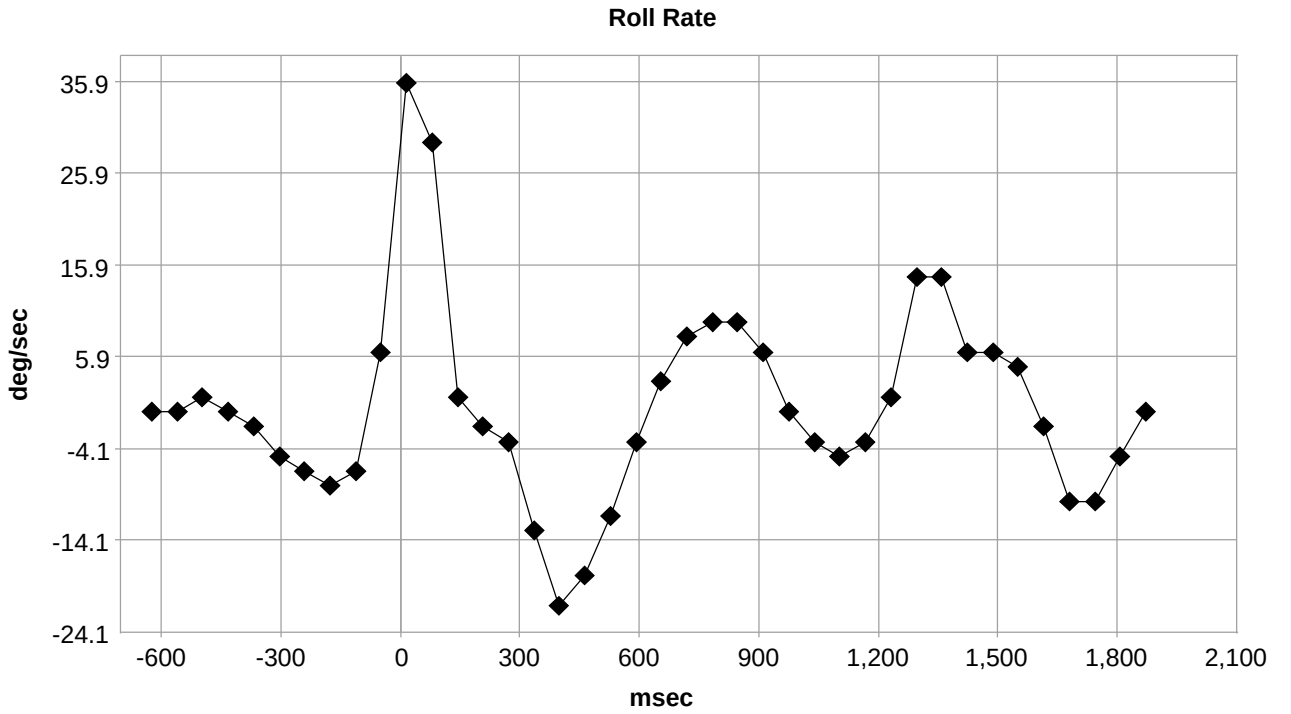
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Fuel Injection Quantity (mm3/st) | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid | Invalid |

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

| | |
|---|---|
| Recording Status, Rollover Crash Info. | Complete |
| Crash Type | Rollover |
| TRG Count (times) | 1 |
| Previous Crash Type | No Event |
| Time from Pre-Crash TRG (msec) | 0 |
| Linked Pre-Crash Page | 0 |
| Side Curtain Airbag Deployment, Time to Deploy (msec) | No |
| Pretensioner Deployment, Time to Fire, Driver (msec) | No |
| Pretensioner Deployment, Time to Fire, Front Passenger (msec) | No |

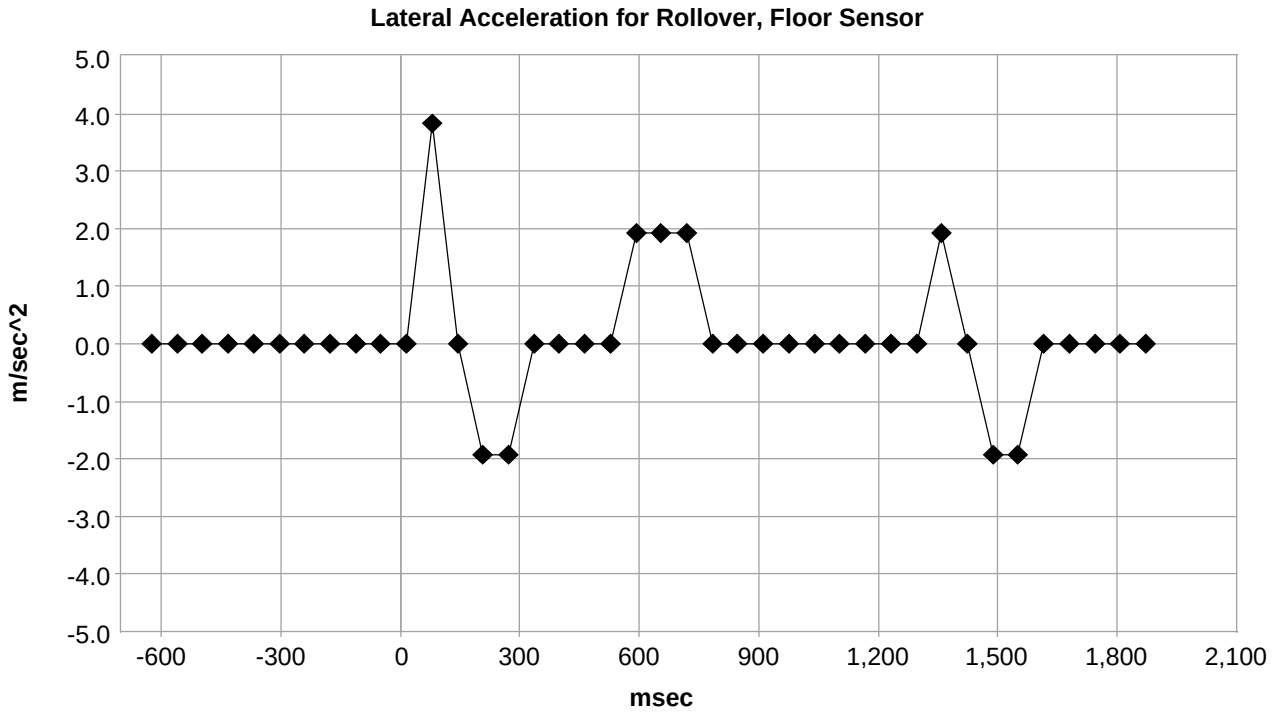
## Rollover Crash Pulse (5th Prior Event, TRG 1 - table 1 of 2)

| | |
|---|---|
| Recording Status, Time Series Data | Complete |
| Time from TRG to Next Sample (msec) | 15 |
| Roll Angle Peak (degrees) | -3.1 |
| Roll Angle at the Time of TRG (degrees) | -0.4 |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger CSA |
| 2 | Driver/Passenger Pretensioner |




Deployment Time Marker Key

| | |
|---|---|
| 1 | Driver/Passenger CSA |
| 2 | Driver/Passenger Pretensioner |

## Rollover Crash Pulse (5th Prior Event, TRG 1 - table 2 of 2)

| Time (msec) | Roll Rate (deg/sec) | Lateral Acceleration for Rollover, Floor Sensor (m/sec^2) |
|---|---|---|
| -625 | 0.0 | 0.0 |
| -561 | 0.0 | 0.0 |
| -497 | 1.6 | 0.0 |
| -433 | 0.0 | 0.0 |
| -369 | -1.6 | 0.0 |
| -305 | -4.9 | 0.0 |
| -241 | -6.5 | 0.0 |
| -177 | -8.1 | 0.0 |
| -113 | -6.5 | 0.0 |
| -49 | 6.5 | 0.0 |
| 15 | 35.8 | 0.0 |
| 79 | 29.3 | 3.8 |
| 143 | 1.6 | 0.0 |
| 207 | -1.6 | -1.9 |
| 271 | -3.3 | -1.9 |
| 335 | -13.0 | 0.0 |
| 399 | -21.2 | 0.0 |
| 463 | -17.9 | 0.0 |
| 527 | -11.4 | 0.0 |
| 591 | -3.3 | 1.9 |
| 655 | 3.3 | 1.9 |
| 719 | 8.1 | 1.9 |
| 783 | 9.8 | 0.0 |
| 847 | 9.8 | 0.0 |
| 911 | 6.5 | 0.0 |
| 975 | 0.0 | 0.0 |
| 1039 | -3.3 | 0.0 |
| 1103 | -4.9 | 0.0 |
| 1167 | -3.3 | 0.0 |
| 1231 | 1.6 | 0.0 |
| 1295 | 14.7 | 0.0 |
| 1359 | 14.7 | 1.9 |
| 1423 | 6.5 | 0.0 |
| 1487 | 6.5 | -1.9 |
| 1551 | 4.9 | -1.9 |
| 1615 | -1.6 | 0.0 |
| 1679 | -9.8 | 0.0 |
| 1743 | -9.8 | 0.0 |
| 1807 | -4.9 | 0.0 |
| 1871 | 0.0 | 0.0 |

## 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 64 00 01 |
| | 01 | 00 |
| | 03 | 30 45 31 31 31 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 |
| | 04 | FF FF FF FF |
| | 05 | 01 |
| | 06 | 17 |
| | 0A | 03 |
| | 0B | 00 |
| | 20 | 80 00 00 01 |
| | 21 | 02 A0 |
| | 40 | 00 00 00 01 |
| | 60 | FF FF F0 01 |
| | 61 | 02 05 E8 00 C0 E0 05 00 02 80 02 80 00 00 00 00 00 00 00 00 05 00 05 00 19 00 29 B1 85 5F 88 00 |
| | 62 | A5 08 3F FD 41 79 00 00 00 00 |
| | 63 | 55 10 41 78 11 10 00 00 11 11 11 11 11 10 46 41 3C 37 32 2C 26 20 1B 19 18 00 00 00 00 00 00 00 00 00 00 00 55 55 54 0C 0B 0A 09 08 0A 09 08 09 08 08 00 00 00 00 00 00 00 03 |
| | 64 | 55 14 28 9C 13 11 00 00 11 11 11 11 11 10 13 13 13 13 13 12 0F 0A 05 02 05 00 00 00 16 00 00 00 00 00 00 00 40 15 50 08 08 08 09 08 08 07 06 07 05 06 00 00 00 00 00 00 00 02 |
| | 65 | 55 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |
| | 66 | 55 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |
| | 67 | 55 E4 00 00 02 FE FE FE FE FE 55 FD FD FF FE FF FE FF FE FF FE 03 FE |
| | 68 | 55 10 16 00 04 FE FE FE FE FE 55 FD FD FF FE FF FE FF FE FF FE 03 FE |
| | 69 | 00 B9 0E 00 00 3F FE 3F FC 3F F9 3F F7 3F F1 3F EC 3F EA 3F E6 3F E3 3F E1 3F E0 3F E0 3F DF 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 3F DF 00 F5 |
| | 6A | 00 3A 1A 00 00 3F F4 3F ED 3F E1 3F D0 3F C0 3F AE 3F 9E 3F 8B 3F 81 3F 77 3F 69 3F 5E 3F 51 3F 43 3F 33 3F 28 3F 1E 3F 14 3F 10 3F 08 3F 00 3E F9 3E F6 3E F2 3E F1 3E EC 02 38 |
| | 6B | 55 E0 00 00 03 FE 20 FE 00 55 01 00 00 00 00 00 00 00 00 00 02 02 FB FD 04 00 03 00 FF 02 05 03 F9 03 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |
| | 6C | 55 20 6A 00 06 FE FE FE FE 55 03 FC F9 00 04 00 FE 02 02 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 |
| | 6D | 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 02 FA 01 00 EF EC 06 FB ED 11 3D 04 02 2C F5 23 19 39 24 D5 00 FE 01 FE 01 FE 01 FE 00 27 |
| | 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 12 E8 C6 CC FF F2 41 25 04 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

```
      00 00 00 05 00 00 00 00 00 00 00 00 00 00
80    00 00 00 01
A0    0C 00 DF 81
A5    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
      FE FE FE FE FE FE FE FE FE FE FE
A6    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
      FE FE FE FE FE FE FE FE FE FE FE
B4    00 00 00 00 FD F9 F0 EF F4 F9 06 F3 F9 FB 00 02 FD F6 EF DE EC F7
      F1 F3 01 FE
B5    FE F5 FA FF F5 F7 FF FD F7 F1 EE EA EB F4 00 04 0A 16 13 06 00 00
      0A 05 01 FE
B6    00 01 00 02 03 04 02 00 02 01 FF FF FD 00 00 00 00 00 00 00 00 00
      00 00 00 00 03 FE
B7    00 F1 F8 FB FE FC E6 F6 F4 FF F7 F8 FE F0 EB 00 11 06 06 07 19 DF
      FF FE FA FF 03 FE
B8    03 FF 03 FF 03 FF 03 FF 03 FF 03 FF 03 FD 03 FD 00 00 03 F9 03 F8

B9    03 ED 03 EC 03 E5 03 D4 03 D1 03 E0 03 E2 03 E0 03 E0 03 E1 03 E4
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