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

NHTSA

DOT HS 813 605

August 2024

# Special Crash Investigations: On-Site Rollover Crash Investigation; Vehicle: 2022 Chevrolet Trailblazer; Location: California; Crash Date: December 2021

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Suggested APA Format Citation:

Dynamic Science, Inc. (2024, August). *Special Crash Investigations: On-site rollover crash investigation; Vehicle: 2022 Chevrolet Trailblazer; Location: California; Crash Date: December 2021* (Report No. DOT HS 813 605). National Highway Traffic Safety Administration.

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# Technical Report Documentation Page

| 1. Report No. | 2. Government Accession No. | 3. Recipient's Catalog No. |
|---|---|---|
| DOT HS 813 605 | | |

| 4. Title and Subtitle | 5. Report Date |
|---|---|
| Special Crash Investigations:<br>On-Site Rollover Crash Investigation;<br>Vehicle: 2022 Chevrolet Trailblazer;<br>Location: California;<br>Crash Date: December 2021 | August 2024 |
| | **6. Performing Organization Code** |

| 7. Author | 8. Performing Organization Report No. |
|---|---|
| Dynamic Science, Inc. | |

| 9. Performing Organization Name and Address | 10. Work Unit No. (TRAIS) |
|---|---|
| Dynamic Science, Inc.<br>26141 Marguerite Parkway, Suite C<br>Mission Viejo, CA 92692 | **11. Contract or Grant No.**<br>693JJ918C000012 |

| 12. Sponsoring Agency Name and Address | 13. Type of Report and Period Covered |
|---|---|
| National Highway Traffic Safety Administration<br>1200 New Jersey Avenue SE<br>Washington, DC 20590 | Technical Report, December 2021 |
| | **14. Sponsoring Agency Code** |

**15. Supplementary Notes**

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

**16. Abstract**

This on-site investigation documented a single-vehicle rollover of a 2022 Chevrolet Trailblazer in December 2021 in California. The Chevrolet driver was an unbelted 27-year-old male traveling at a speed reported by police to be too fast for the conditions present. After traversing the intersection, the Chevrolet struck the locked metal gate and a rock wall of a public park entrance, then overturned onto its roof. After exiting the vehicle under his own power, the driver was transported by ambulance to a hospital where he was treated in the emergency room. The driver left the hospital against medical advice. He was cited by police for not having a valid driver's license.

| 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, crashstats.nhtsa.dot.gov. |

| 19. Security Classif. (of this report) | 20. Security Classif. (of this page) | 21. No. of Pages | 22. Price |
|---|---|---|---|
| Unclassified | Unclassified | 122 | |

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

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## Background

This report documents the on-site investigation of a single-vehicle rollover crash selected by the Special Crash Investigations (SCI) group of the National Highway Traffic Safety Administration. In March 2022 the SCI team requested to obtain and forward photos of the involved vehicle, a 2022 Chevrolet Trailblazer. The team submitted photos of the damaged vehicle from an online auto auction in March 2022 and obtained the police crash report via the Police Accident Report Sampling Engine (PARSE). The case was assigned in March 2022 and field inspections were completed in April 2022. The Chevrolet (Figures 1 and 2) had an air bag control module with an event data recorder (EDR) capability and a front camera module (FCM) supported by the Bosch crash data retrieval system. The team imaged both modules during the vehicle inspection and the crash data reports are included in Appendices A and B of this technical report. The team also imaged the vehicle's active safety control module (ASCM). The ASCM data was identical to the FCM data, so it was not included or discussed further in this report.

*Figure 1. The 2022 Chevrolet Trailblazer*

*Figure 2. The 2022 Chevrolet Trailblazer*

The crash occurred in the morning in December 2021. Conditions were daylight, cloudy, raining, and wet. The crash site was on the south leg of a four-way intersection, which was the entrance to a public park. The intersection was controlled with three-phase traffic signals. At the time of the crash, the park was closed and a locked metal swing gate blocked the entrance. The Chevrolet driver was an unbelted 27-year-old male who was traveling southbound at a speed that the police crash report said to be too fast for conditions. The posted speed limit was 56 km/h (35 mph). After traversing the intersection, the Chevrolet struck the metal swing gate, a rock wall, and then overturned onto its roof. During the crash, the driver contacted interior components

resulting in minor severity injuries. After exiting the vehicle under his own power, he complained of pain and was transported by ambulance to a hospital where he was treated in the emergency department. The medical plan was to admit the driver but he left the hospital against medical advice. He was cited by police for not having a valid driver's license. The vehicle was towed due to disabling damage and was declared a total loss.

## Summary

### Crash Site

The crash site was the undivided driveway entrance and exit to a city park immediately south of a four-way intersection controlled by three-phase traffic signals. The posted speed limit for the southbound roadway was 56 km/h (35 mph). Conditions during the crash were morning daylight, cloudy, raining, and wet. The driveway had one southbound lane separated from two northbound lanes by a double solid yellow painted stripe and bordered by raised concrete curbs and sidewalks. It was 14.4 m (47.2 ft) long beginning at the crosswalk of the intersection and ending at a parking lot. In the southbound direction, the driveway had a descending slope measuring -30 percent. At 5.5 m (18.0 ft) south of the crosswalk, a metal double swing-style gate was used to block the park entrance when the park was closed to the public. Each half of the gate was 6.6 m (21.6 ft) long and the top edge was 1.3 m (4.3 ft) above ground. The gate was constructed of welded tubular metal bars. The right gate blocking the southbound entrance lane had signs declaring “No stopping anytime” and “Park closed.” The third sign was a solid-red-painted diamond shape. At the time of the crash, the gate was closed and fastened with a steel chain and padlock.

The level, concrete parking lot was 22.6 m (74.1 ft) wide, beginning at the end of the driveway and ending at a stone wall. A lower section of the wall was 65 cm (25.6 in) high, then it stepped back 44 cm (17.3 in) and became vertical again for another 65 cm (25.6 in) for a total height of 130 cm (51.1 in). A crash diagram and crash site satellite view are included at the end of this report.

*Figure 3. Crash site looking south, metal gate (left and right) and stone wall (background)*

### Pre-Crash

The Chevrolet driver told police he was initially traveling westbound when an unidentified vehicle entered his lane, causing him to steer left into the swing gate. Police determined the Chevrolet was initially traveling southbound, based on scene evidence including damage to the gate, scuff marks on the driveway, and the final rest location of the vehicle. The Chevrolet’s FCM pre-event image showed the vehicle traveling southbound and approaching the intersection in the second lane from the right on a straight, level section of roadway. The FCM-reported

speed was 89 km/h (56 mph) and the GPS heading angle was 178.5° at T-4.45 seconds to algorithm enable (AE). According to the vehicle's EDR report, the Chevrolet driver was unbelted, actively accelerating, and not braking prior to impact. He passed through the intersection in a straight path and entered the driveway that descended at a negative 30 percent slope (Figure 3). Crash data suggests that just prior to impact the vehicle was traveling in a slight counterclockwise yaw. At T-0.5 seconds, the EDR-reported vehicle speed was 103 km/h (64 mph), the accelerator pedal position was 35 percent full, the service brake was "Off," and the cruise control feature was not activated.

## Crash

The Chevrolet's front plane struck the gate (Event 1) at an FCM-reported speed of 95 km/h (59 mph) and a GPS heading angle of 177.4°. The two sections of gate were held together by a steel chain that broke at impact. allowing the sections to swing open. The EDR captured this impact as a frontal event (EDR Record 1) triggering deployment of the driver's frontal and knee air bags. Following the gate impact, the vehicle traveled approximately 10 m (33 ft) down the 30 percent descending slope that transitioned to the parking lot. The police crash report showed that the vehicle deposited a scrape mark near the bottom of the slope, possibly caused by contact from the front end, a wheel, or undercarriage. The vehicle rotated counterclockwise and continued traveling southbound in a right-side-leading yaw on level, wet concrete.

At 770 ms after the first event, the EDR captured a low delta V right side deployment event (EDR Record 2). The right front tire, wheel, constant velocity (CV) shaft, and strut assembly were displaced from the vehicle during the crash, and the investigation determined this EDR event was likely in response to the lateral opposing forces caused by the wheel and undercarriage contacting the concrete (Event 2). The vehicle possibly tilted to the right, causing the sensing diagnostic module (SDM) to anticipate a rollover event and trigger deployment of both inflatable curtain (IC) air bags and the front and second row right outboard seat-mounted side-impact air bags.

The vehicle continued traveling south in a right-side-leading yaw until its right plane struck a stone wall (Event 3). The EDR reported a right-side deployment-level event for this impact (EDR Record 3) with a relatively high lateral delta V (-62 km/h [-39 mph]). Based on EDR pre-crash data, the time between the first and third events was approximately 2 seconds.

The wall was built in a stepped-back layout. The lower section was 65 cm (25.6 in) high, then it stepped back 44 cm (17.3 in) and became vertical again for another 65 cm (25.6 in) for a total height of 130 cm (51.1 in) (Figure 4). When the Chevrolet's right plane engaged the lower section, the opposing lateral force caused the vehicle to initiate a right-side-leading rollover (Event 4).[1] The Chevrolet rotated clockwise along its longitudinal axis and its left side tires came off the ground. After completing a one-quarter-turn the vehicle rebounded off the wall (Figure 5) and landed on its roof where it came to rest upside down. The police crash report stated the vehicle came to rest on its roof and facing east.

[1] This investigation is treating right side impact (Event 3) and rollover (Event 4) separately. The wall was a stationary object causing right side damage with an associated EDR deployment event, as well as the opposing force causing the rollover. Event 3 caused right side damage and Event 4 caused right side and top plane greenhouse damage.

*Figure 4. Stone wall looking south, area of crash events 3 and 4*

*Figure 5. View from final rest looking east*

For Event 1, the gate yielded which placed it out of scope for WinSMASH reconstruction. The barrier algorithm of WinSMASH calculated a barrier equivalent speed of 20 km/h (12 mph). The WinSMASH results fit the collision model and appear reasonable. The EDR Record 1 reported a maximum longitudinal delta V of -29 km/h (-18 mph) and a maximum lateral delta V of -16 km/h (-10 mph).

For Event 2, the impact involved a tire, wheel, or undercarriage precluding reconstruction. This was a deployment event with relatively low EDR-reported maximum velocity changes of -5 km/h (-3 mph) delta V for both the longitudinal and lateral components (EDR Record 2). The vehicle was likely tilting toward a right-side-leading rollover that triggered deployment of both IC air bags and the right seat-mounted side-impact air bags.

For Event 3, the right side impact with the wall, the EDR reported a maximum longitudinal delta V of -19 km/h (-12 mph) and a maximum lateral delta V of -62 km/h (-39 mph) (EDR Record 3). Based on EDR data, this was the highest delta V event of the crash. It was a deployment-level event but the vehicle's right seat-mounted side-impact air bags and right IC air bag had already deployed in prior events. The struck wall (barrier) and overlapping damage caused during the rollover precluded a reconstruction for this impact.

The Chevrolet's SDM had the capacity to store up to three locked events, including rollover events. The rollover event occurred after the SDM had reached its capacity of three locked events and consequently the rollover event was not captured in the EDR report.

## Post-Crash

An unknown party reported the crash, and police and fire responders were dispatched to the park. A ground ambulance arrived 7 minutes after the crash was reported. According to his EMS medical record, the Chevrolet driver exited the vehicle under his own power prior to EMS arrival and was standing beside his vehicle when they arrived. The driver complained of pain in the head, chest, and back. He was transported to a hospital located 6.0 km (3.7 miles) from the crash site where he arrived 29 minutes after the crash. The driver was treated for minor injuries in the emergency room before leaving the hospital against medical advice. A blood test revealed no presence of alcohol or drugs. Police cited him for driving too fast for the conditions present and for not having a valid driver's license.

## 2022 Chevrolet Trailblazer

### Vehicle Description

The 2022 Chevrolet Trailblazer was identified with Vehicle Identification Number KL79MSSLXNBxxxxxx. The manufacture date was June 2021. The Chevrolet was a 5-passenger, 4-door compact SUV. It had all-wheel drive, a turbo-charged, 3-cylinder, 1.3-liter gasoline engine, and hydraulic brakes. The vehicle manufacturer recommended size P225/60R17 tires with a tire pressure of 240 kPa (35 psi) on the front and rear. The Chevrolet had Hankook Dynapro AT2 tires of the recommended size.

The vehicle had front-row bucket seats with adjustable head restraints. The driver's seat track was set between the middle and rear-most track positions. The steering column had tilt and telescoping functionality adjusted to the full-down and full-forward position. The steering wheel was outfitted with a Plasticolor brand padded steering wheel cover, black with yellow stitching and graphics, part # 006693W02.

The Chevrolet had standard and optional crash avoidance features discussed in the Crash Avoidance Systems section of this report.

### Exterior Damage

The Chevrolet had damage to the front, right, left, and top planes, and the undercarriage. Event 1 was a frontal impact with the gate. The front bumper fascia, EAD, grille, and headlamps were displaced from the vehicle at the time of the inspection. The direct damage width was unknown, and field L extended from bumper corner to bumper corner. Fourteen measurements were taken at the bumper level using the Nikon total station and the AutoCrush program calculated 6 crush measurements as follows: C1 = 3 cm (1.3 in), C2 = 6 cm (2.4 in), C3 = 11 cm (4.3 in), C4 = 13 cm (5.1 in), C5=13 cm (5.1 in), C6= 14 cm (5.5 in). Maximum crush measured 14 cm (5.5 in) at the front right bumper corner and the collision deformation classification (CDC) for the Chevrolet in Event 1 was 01FDEW1.

Event 2 was a right plane impact with the ground that likely damaged the right front tire, wheel, CV shaft, and strut assembly; those components were detached from the vehicle at the time of inspection. The right front tire sidewall was cut, abraded and de-beaded, and the wheel was fractured and scuffed around the perimeter. The right rear tire was flat and de-beaded, and the right rear wheel was scuffed. The CDC for the Chevrolet in Event 2 was 02RFWN3.

Event 3 was a right side impact to the wall. Direct damage to the right plane was distributed longitudinally from bumper corner to bumper corner and measured 410 cm (161.4 in) long. Vertically, direct damage included everything below the beltline. Events 3 and 4 caused overlapping damage to the right plane and the estimated CDC for the Chevrolet in Event 3 was 02RDEW2 (Figure 6).

Event 4 was a two-quarter-turn rollover causing damage to the right and top planes. Direct damage to the right plane extended from bumper corner to bumper corner. Direct damage to the top plane was distributed longitudinally on the OEM roof rack and left and right roof side rails (Figure 7). Direct damage was also present on the windshield header and hood. Maximum lateral crush to the greenhouse measured 3 cm (1.2 in) and was located 140 cm (55.1 in) forward of the right rear axle at the right roof side rail. Maximum vertical crush to the greenhouse measured 6

cm (2.4 in) and was located 66 cm (26.0 in) left of the right roof side rail on the left windshield header. The CDC for the Chevrolet in Event 4 was 00TDDO2.

*Figure 6. Right plane damage, the 2022 Chevrolet Trailblazer*

*Figure 7. Top plane damage, the 2022 Chevrolet Trailblazer*

## Rollover Discussion

NHTSA's Five Star Safety Rating[2] gave the 2022 Chevrolet Trailblazer an overall Five Star Rating, but a Four-Star Rating for the rollover category (18.5%), based on a rollover resistance test measuring the risk of rollover in a single-vehicle, loss-of-control scenario. The test scenario appears to match the scenario in this crash. According to another online source published in 2018,[3] the Chevrolet Trailblazer had a calculated rollover stability rating of 1.17 percent, whereas SUVs usually have values in the 1.00 to 1.30 range, with the higher value showing greater stability.[4] The Chevrolet sustained a two-quarter-turn, right-side-leading rollover along its longitudinal axis after striking a stone wall with its right plane. Following the first quarter-turn, the vehicle rebounded off the wall and came to rest on its roof. The estimated rollover distance was 2 m (6 ft). Rollover damage to the vehicle's greenhouse was minor. The EDR did not capture the rollover event due to data limitations having been reached in prior locked deployment events. Rollover dynamics were determined based on the EDR and FCM reports, damage on the right plane, the absence of damage on the left plane, and final rest orientation.

The unbelted driver was likely displaced from his seat before or during the rollover but his specific movement and kinematics are unknown. He remained inside the vehicle during the rollover and exited the vehicle under his own power, either through a left side door or right side window. Efforts to obtain a driver interview were unsuccessful.

The Chevrolet had combination side impact/roll-sensing IC air bags that deployed in Event 2 prior to the rollover. According to the vehicle owner's manual, the IC air bags "are designed to help reduce the risk of full or partial ejection in rollover events." They are designed to remain

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[2] NHTSA. (n.d.). *Recommended safety technologies: 2022 Chevrolet Trailblazer SUV AWD.* https://www.nhtsa.gov/vehicle/2022/CHEVROLET/TRAILBLAZER/SUV/AWD#safety-ratings-rollover

[3] 4N6XPRT systems experts autostats lite specs database for 2022 Chevrolet Trailblazer AWD.

[4] Scotti, T. (2018, November 1). *Vehicle static stability factor.* Security Driver. https://securitydriver.com/11/vehicle-static-stability-factor/

inflated for a minimum of 6 seconds after deployment, suggesting they remained inflated during the rollover. The air bags are discussed further in the Supplemental Restraint Systems section of this report.

## Event Data Recorder

The EDR was imaged during the vehicle inspection via the data link connector method using the Bosch CDR 900 tool with software version 21.4.1. Software version 24.0 was used to report the data. The Chevrolet had an SDM with EDR capacity to store up to three events. The EDR captured three locked deployment events associated with this crash—the frontal impact with the gate, the tire and wheel impact with the ground, and the right plane impact with the wall. The rollover event was not captured because the capacity for three events had been met. The three event records included pre-crash and post-crash data. For Event 1 (EDR Record 1), the report showed that the driver was accelerating, (vehicle speed was greater than 40 km/h [24 mph] above the posted speed limit), he was not braking, he was not belted, it was a frontal impact, the driver's frontal and knee air bags deployed, and the driver's and passenger's seat belt pretensioners actuated. The EDR report included additional data for EDR Records 2 and 3. It did not include crash avoidance data, but the FCM report did include crash avoidance data, which is discussed in the Front Camera Module section of this report. The complete EDR report is included in Appendix A of this technical report.

## Front Camera Module

The Chevrolet had an FCM with the capacity to record two events. According to the data limitations, recording is triggered by "events of interest," such as an air bag deployment event, pretensioner deployment event, non-deployment event, pedestrian braking, collision imminent breaking, pedestrian warning, front collision alert, and lane departure warning. At the time of download, the FCM report contained two records—an air bag deployment event associated with this crash (FCR Record 1), and a crash imminent braking event that occurred 1 day prior to this crash (FCR Record 2). The module captured pre-event, at-event, and post-event black and white images for both records. The records included pre-crash, at-event, and post-event crash-related and crash avoidance data. In summary, for the air bag deployment event associated with this crash, the FCR showed that lane keep assist (LKA) was enabled, Forward Collision Alert (FCA) following gap[5] setting was "medium," and automatic emergency braking (AEB) and FPC were set to "alert and brake," At-impact data showed that the FCA and lane departure warning (LDW) systems did not send alerts, and AEB did not activate because it did not detect a vehicle in the Chevrolet's path, specific at-impact data included the following: vehicle speed was 95 km/h (59 mph), yaw rate (deg/sec) was 55.8750, and GPS heading (deg) was 177.4. The complete FCM report is included in Appendix B of this technical report.

## Crash Avoidance Technologies

The Chevrolet had standard crash avoidance features including FCA, LKA with LDW, AEB, intelligent brake assist (IBA), front pedestrian braking, and optional crash avoidance features including lane change alert with side blind zone alert. The vehicle crash avoidance systems included a forward vision camera (Figure 8), rear vision camera, sensors, side view mirror

[5] Following distance behind a lead vehicle when using adaptive cruise control. Available OEM data does not specify distances for these settings.

displays, instrument panel indicator and warning lamps, infotainment screen (Figure 9), and user setting controls. During the vehicle inspection, the user settings for crash avoidance features were not viewable on the infotainment screen due to vehicle damage. To view the user settings, the vehicle's engine must be running. During the inspection, the transmission was stuck in Neutral. The gear shift lever appeared to be damaged and stuck in a fixed position. Since the vehicle could not be shifted to Park, the engine could not be started and the settings could not be viewed. According to the data in the FCM, no crash avoidance warnings or systems were activated prior to this crash.

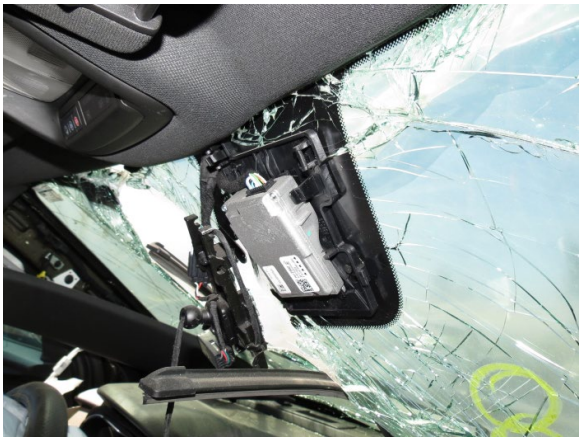


*Figure 8. Front camera, the 2022 Chevrolet Trailblazer*

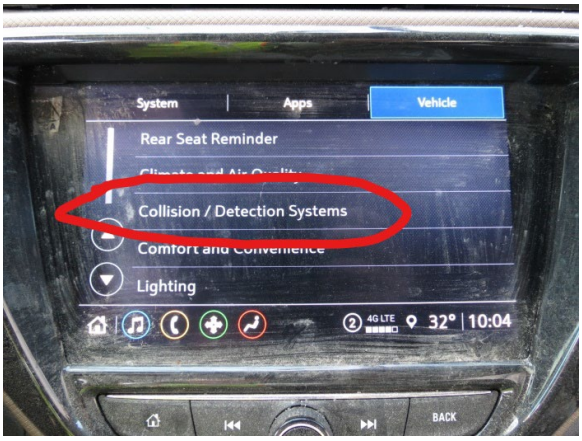



*Figure 9. Crash avoidance menu on infotainment screen, the 2022 Chevrolet Trailblazer*

### *Forward Collision Alert*

According to the owner's manual, FCA is a warning system and does not apply the brakes. FCA warnings will not occur unless the FCA system detects a vehicle ahead. FCA does not warn of pedestrians, animals, signs, guardrails, bridges, construction barrels, or other objects. According to FCM data, the FCA did not alert the driver prior to this crash.

### *Lane Keep Assist*

According to the owner's manual, LKA uses the front camera to detect lane markings and may help avoid crashes due to unintentional lane departures. According to FCM data, LKA was enabled via a driver setting.

### *Lane Departure Warning*

According to the owner's manual, LDW uses the front camera to detect lane markings and may provide an alert if the vehicle crosses a detected lane marking. According to FCM data, LDW did not issue a warning prior to this crash.

### *Automatic Emergency Braking*

According to the owner's manual, AEB includes the IBA feature and may boost braking or automatically stop the vehicle to avoid or reduce the severity of a crash when the system detects a vehicle in the lane ahead of this vehicle. According to the FCM, no automatic braking occurred prior to this crash.

## Interior Damage

The Chevrolet sustained interior damage caused by impact forces, air bag deployments, driver contacts and post-crash activities. The right side doors were jammed shut and the second row right door was forced open during post-crash activities. The windshield was fractured and holed in the center section, and the front right side glass was disintegrated. Six air bags deployed and the front row seat belt retractor pretensioners actuated. Lateral intrusion was documented at the right front door and rear lower quadrant (10 cm [3.9 in]). Vertical intrusion was documented at the left windshield header (4 cm [1.6 in]). During the inspection, evidence of likely driver contacts was documented on the driver's deployed frontal air bag, which had blood deposits on the face panel; the windshield, which was fractured and holed; the rear-view mirror, which was detached and hanging from electrical wiring; the center console and gear shift lever, which was broken off; and the front passenger's seat back, which was bent to the right and pressed against the right B-pillar. No contact evidence was present on the roof header.

## Manual Restraint Systems

The Chevrolet had lap and shoulder seat belts for all seat positions. The driver told responders he was belted and the police crash report stated likewise but the evidence showed that he was unbelted. The EDR report stated his seat belt was unbuckled, his pretensioned seat belt was locked in the unused position against the left B-pillar, and his EMS medical records stated he had "no seat belt marks."

## Supplemental Restraint Systems

The Chevrolet's supplemental restraint systems included driver's and passenger's frontal air bags, driver knee air bag, front and second row outboard seat-mounted side impact air bags, and front and second row IC air bags. A vehicle history report showed the air bags had not been recalled, replaced, or serviced. The driver's frontal and knee air bags deployed in Event 1, and his left IC air bag deployed in Event 2. The driver's frontal air bag exhibited slight blood deposits and a scuff mark on the front panel. His outboard seat-mounted side-impact air bag did not deploy. The driver's and front passenger's seat belt retractor pretensioners actuated in

Event 1, locking them in the unused position against the left and right B-pillars. The right IC air bag, and right outboard seat-mounted side-impact air bags in the front and second rows were deployed in Event 2. The second row left outboard seat-mounted side-impact air bag did not deploy. The front row section of the left IC air bag was cut away during post-crash activities.

## NHTSA Recalls and Investigations

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

## 2022 Chevrolet Trailblazer Occupant

### Driver Demographics

| | |
|---|---|
| Age/sex: | 27 years/male |
| Height: | 183 cm (72 in) |
| Weight: | 84 kg (185 lb) |
| Eyewear: | Unknown |
| Seat type: | Bucket with adjustable head restraint |
| Seat track position: | Between middle and rear-most |
| Manual restraint usage: | Lap and shoulder belt available, not used |
| Usage source: | Vehicle inspection, EDR report, medical records |
| Air bags: | Frontal, knee, outboard seat-mounted side impact, and IC air bags available; frontal, knee, and IC air bags deployed |
| Alcohol/drug data: | Tested, determined to have not been drinking |
| Egress from vehicle: | Exited under own power |
| Transport from scene: | Ground ambulance to the hospital |
| Type of medical treatment: | Treated and left hospital against medical advice |

### Driver Injuries

| Injury No. | Injury | Injury Severity AIS 2015 | Involved Physical Component (IPC) | IPC Confidence Level |
|---|---|---|---|---|
| 1 | Blunt head trauma, traumatic brain injury with altered level of consciousness | 110009.1 | Roof | Possible |
| 2 | Cervical strain | 640278.1 | Frontal air bag | Possible |
| 3 | Contusion, right shoulder | 710402.1 | Other occupant's seat back | Possible |
| 4 | Contusions, left lateral ribs | 450289.1 | Steering wheel rim | Possible |
| 5 | Contusion, left forearm | 710402.1 | Left door panel, unknown quadrant | Possible |
| 6 | Sprain, right wrist | 740602.1 | Unknown | Unknown |
| 7 | Abrasion, contusion, dorsal left hand | 710202.1 | Left door panel, unknown quadrant | Possible |
| 8 | Contusion, abrasion, medial left knee | 810402.1 | Left IP | Possible |
| 9 | Abrasion, anterior right lower leg | 810202.1 | Left IP | Possible |
| 10 | Sprain, left ankle | 840602.1 | Floor | Possible |

Source: Emergency room medical records

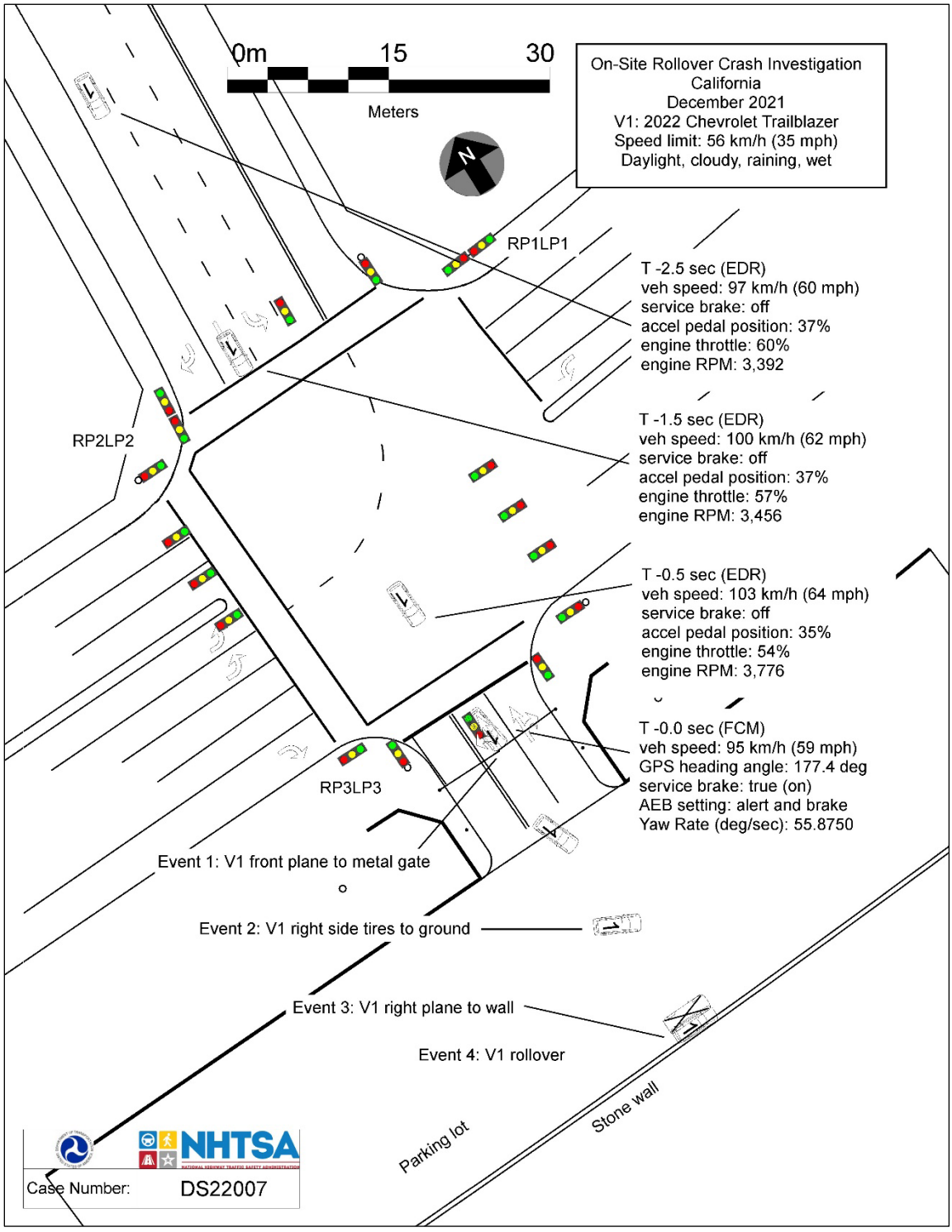
### Driver Kinematics

The unbelted driver was seated in a forward-facing seat and depressing the accelerator pedal. At impact with the metal gate, his frontal and knee air bags deployed and he was displaced forward from his seated position in response to the direction of force. His face, neck, and chest likely loaded the frontal air bag. He possibly continued moving forward until he contacted the windshield, which was fractured, and the rear-view mirror, which was detached and hanging by

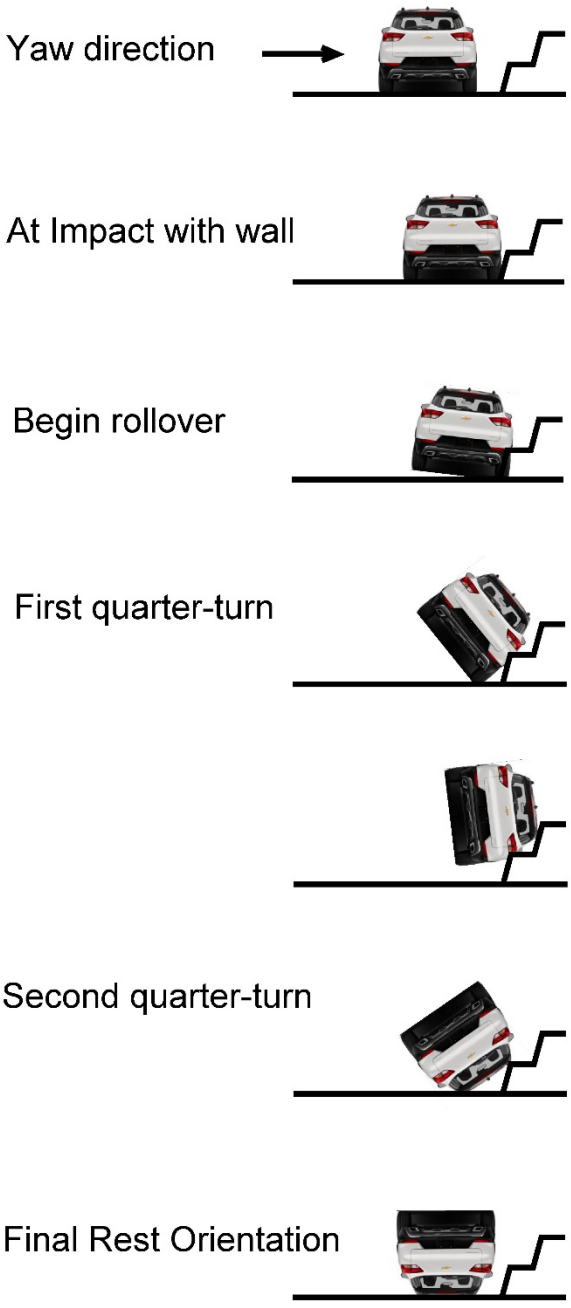
electrical wiring from the forward camera assembly. The vehicle rotated counterclockwise and traveled down the descending driveway and the driver was probably displaced to the right in response to the rotational forces. The Chevrolet's right side tires and right front wheel engaged the pavement causing an EDR-reported right side deployment event that triggered the left and right IC air bags. This event likely displaced the driver to the right. While traveling in a right-side-leading yaw, the vehicle crossed a level parking lot until its right plane struck a stone wall, causing the driver to again be displaced to the right. He possibly contacted the center console and gear shift lever, which was broken off. He likely continued moving to the right and contacted the front passenger seat back, which was bent to the right until it pressed against the right B-pillar. The Chevrolet overturned two-quarter-turns to the right and came to rest on its roof in an upside-down orientation. At final rest, he was likely in contact with the roof. Due to his unbuckled status, the multiple impacts and the rollover event, his kinematic movement inside the vehicle and the associated injury mechanisms were uncertain. He sustained a minor severity head injury, cervical neck strain, contusions to the left ribs, sprains to the right wrist and left ankle, and abrasions and contusions to upper and lower extremities. Slight blood deposits were documented on the deployed driver's frontal air bag. The driver exited under his own power, probably through a left side door or the right front window, which was disintegrated. When emergency responders arrived, he was standing, conscious, and complaining of pain.

The driver was transported to a nearby hospital where he was treated in the emergency room with a critical care time of 1 hour, 45 minutes. The medical plan was to admit him for trauma assessment. During his treatment, he was lethargic; he removed his cervical collar and refused to have it replaced. Following 7 hours, 15 minutes of care, he left the hospital against medical advice. It was unknown if he sought additional treatment.

# Crash Diagram



## Rollover Dynamics Diagram




Case Number: DS22007

## Crash Site Satellite View

(Image Source: Google Maps ©2024 Maxar Technologies)

# Appendix A: Event Data Recorder Report – 2022 Chevrolet Trailblazer

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 | KL79MSSLXNB****** |
| User | |
| Case Number | |
| EDR Data Imaging Date | |
| Crash Date | |
| Filename | DS22007_V1_ACM.CDRX |
| Saved on | |
| Imaged with CDR version | Crash Data Retrieval Tool 21.4.1 |
| Imaged with Software Licensed to (Company Name) | NHTSA |
| Reported with CDR version | Crash Data Retrieval Tool 24.0 |
| Reported with Software Licensed to (Company Name) | NHTSA |
| EDR Device Type | Airbag Control Module |
| Event(s) recovered | Record 1 (Deployment),<br>Record 2 (Deployment),<br>Record 3 (Deployment) |

## Comments

No comments entered.

## Data Limitations

**Recorded Crash Events:**

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

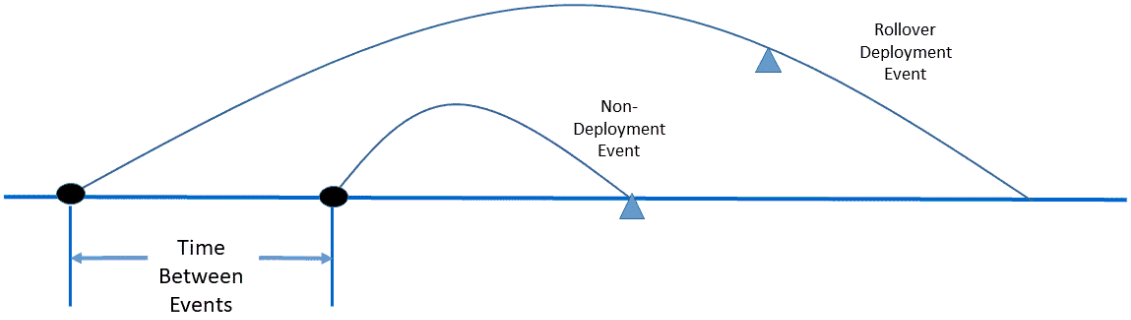
-Head Rest Deployment
-Battery Cut-Off Deployment

The second type of SDM recorded crash event for FSR Events is the Deployment Event. It also may contain Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM.
Rollover Events contains Pre-Crash and Crash data. Rollover event follow the same rules as FSR Deployment events.
The SDM can store up to three Events.
There are two types of PedPro crash events. The first is the Non-Deployment PedPro Event. A Non-Deployment PedPro Event records data but does not deploy anything. A Non-Deployment PedPro Event may contain Pre-Crash and Crash data. The second type of PedPro recorded crash event is the Deployment PedPro Event. It also may contain Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM.
The SDM can store up to two PedPro Events.

**Data:**

For FSR Events, SDM Recorded Vehicle Velocity Change reflects the change in velocity that the sensing system experienced during the recorded portion of the event. SDM Recorded Vehicle Velocity Change is the change in velocity during the recording time and is not the speed the vehicle was traveling before the event and is also not the Barrier Equivalent Velocity. For Deployment and Non-Deployment Events, the SDM will record up to 300 milliseconds of data after time zero. The SDM will also record up to 300 milliseconds of Vehicle Acceleration data after time zero.
For Rollover Events, the SDM may record Lateral Acceleration, Vertical Acceleration,and Roll Rate data, if the SDM is rollover capable. This data reflects what the sensing system experienced during the recorded portion of the event. For Rollover Deployment Events, the SDM will record up to 700 milliseconds of data before the Deployment criteria is met and 290 milliseconds after the Deployment criteria is met.
-Time between events is recorded in 10 msec intervals and is displayed in seconds for a maximum time of 655.33 seconds. The counter measures the time from the start of one event to the start of the next event, if both events occur within the same ignition cycle.
-The Maximum SDM Recorded Vehicle Velocity Change may occur between the recorded 10 millisecond sample points of the SDM Recorded Vehicle Velocity Change.
-Event Recording Complete will indicate if data from the recorded event has been fully written to the SDM memory or if it has been interrupted and not fully written.

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




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

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

**Data Source:**
All SDM recorded data is measured, calculated, and stored internally, except for the following:
-Vehicle Status Data (Pre-Crash) is transmitted by the Body Control Module, via the vehicle's communication network.
-The Belt Switch Circuit is wired directly to the SDM.

**Data Element Sign Convention:**
The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. Directional references to sign notation are all from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

| Data Element Name | Positive Sign Notation Indicates |
|---|---|
| Longitudinal Acceleration | Forward |
| Longitudinal Velocity Change | Forward |
| Lateral Acceleration | Left to Right |
| Lateral Velocity Change | Left to Right |
| Vertical Acceleration | Downward |
| Roll Rate | Clockwise Rotation |

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

01067_SDM40-delphi_r004

## System Status at Time of Retrieval

| | |
|---|---|
| ESS # 1 Traceability Data, Component Identifier | AU |
| ESS # 1 Traceability Data, Part Number/Broadcast Code | 9412 |
| ESS # 1 Traceability Data, Supplier Code | D |
| ESS # 1 Traceability Data, Traceability Number | A00000000 |
| ESS # 1 Verification Data | 13,519,412 |
| ESS # 2 Traceability Data, Component Identifier | AT |
| ESS # 2 Traceability Data, Part Number/Broadcast Code | 9412 |
| ESS # 2 Traceability Data, Supplier Code | D |
| ESS # 2 Traceability Data, Traceability Number | A00000000 |
| ESS # 2 Verification Data | 13,519,412 |
| ESS # 3 Traceability Data, Component Identifier | AH |
| ESS # 3 Traceability Data, Part Number/Broadcast Code | 4077 |
| ESS # 3 Traceability Data, Supplier Code | D |
| ESS # 3 Traceability Data, Traceability Number | A00000000 |
| ESS # 3 Verification Data | 13,514,077 |
| ESS # 4 Traceability Data, Component Identifier | AJ |
| ESS # 4 Traceability Data, Part Number/Broadcast Code | 4077 |
| ESS # 4 Traceability Data, Supplier Code | D |
| ESS # 4 Traceability Data, Traceability Number | A00000000 |
| ESS # 4 Verification Data | 13,514,077 |
| ESS # 5 Traceability Data, Traceability Number | A00000000 |
| ESS # 5 Traceability Data, Component Identifier | DA |
| ESS # 5 Traceability Data, Part Number/Broadcast Code | 4198 |
| ESS # 5 Traceability Data, Supplier Code | D |
| ESS # 5 Verification Data | 13,514,198 |
| ESS # 6 Traceability Data, Component Identifier | DB |
| ESS # 6 Traceability Data, Part Number/Broadcast Code | 4198 |
| ESS # 6 Traceability Data, Supplier Code | D |
| ESS # 6 Traceability Data, Traceability Number | A00000000 |
| ESS # 6 Verification Data | 13,514,198 |
| ESS # 7 Traceability Data, Component Identifier | |
| ESS # 7 Traceability Data, Part Number/Broadcast Code | 0000 |
| ESS # 7 Traceability Data, Supplier Code | D |
| ESS # 7 Traceability Data, Traceability Number | A00000000 |
| ESS # 7 Verification Data | 0 |
| ESS # 8 Traceability Data, Component Identifier | |
| ESS # 8 Traceability Data, Part Number/Broadcast Code | 0000 |
| ESS # 8 Traceability Data, Supplier Code | D |
| ESS # 8 Traceability Data, Traceability Number | A00000000 |
| ESS # 8 Verification Data | 0 |
| AOS Data Key | 0 |
| SDM Primary Key Definition (Key 1-2) | 57 |
| SDM Primary Key Definition (Key 3-4) | 45 |
| Dynamic Deployment Event Counter | 5 |
| Multi-Event, Number of Events (Dynamic Event Counter) | 8 |
| Dynamic OnStar Notification Event Counter | 5 |
| Driver Frontal Stage 2 Commanded after Event End for Event Record #1 | No |
| Passenger Frontal Stage 2 Commanded after Event End for Event Record #1 | No |
| Driver Frontal Stage 2 Commanded after Event End for Event Record #2 | No |
| Passenger Frontal Stage 2 Commanded after Event End for Event Record #2 | No |
| Driver Frontal Stage 2 Commanded after Event End for Event Record #3 | No |
| Passenger Frontal Stage 2 Commanded after Event End for Event Record #3 | No |
| Longitudinal Accelerometer Range (g) | 113 |
| Lateral Accelerometer Range (g) | 113 |
| Dynamic PedPro Deploy Event Counter | 0 |
| Dynamic PedPro Event Counter | 0 |
| Vehicle Identification Number (VIN) | KL79MSSLXNB****** |
| System Type | Delphi SDM40 with integrated IMU |
| Ignition Cycle, Download (Ignition Cycles at Investigation) | 3,067 |

## System Status at Event (Record 1)

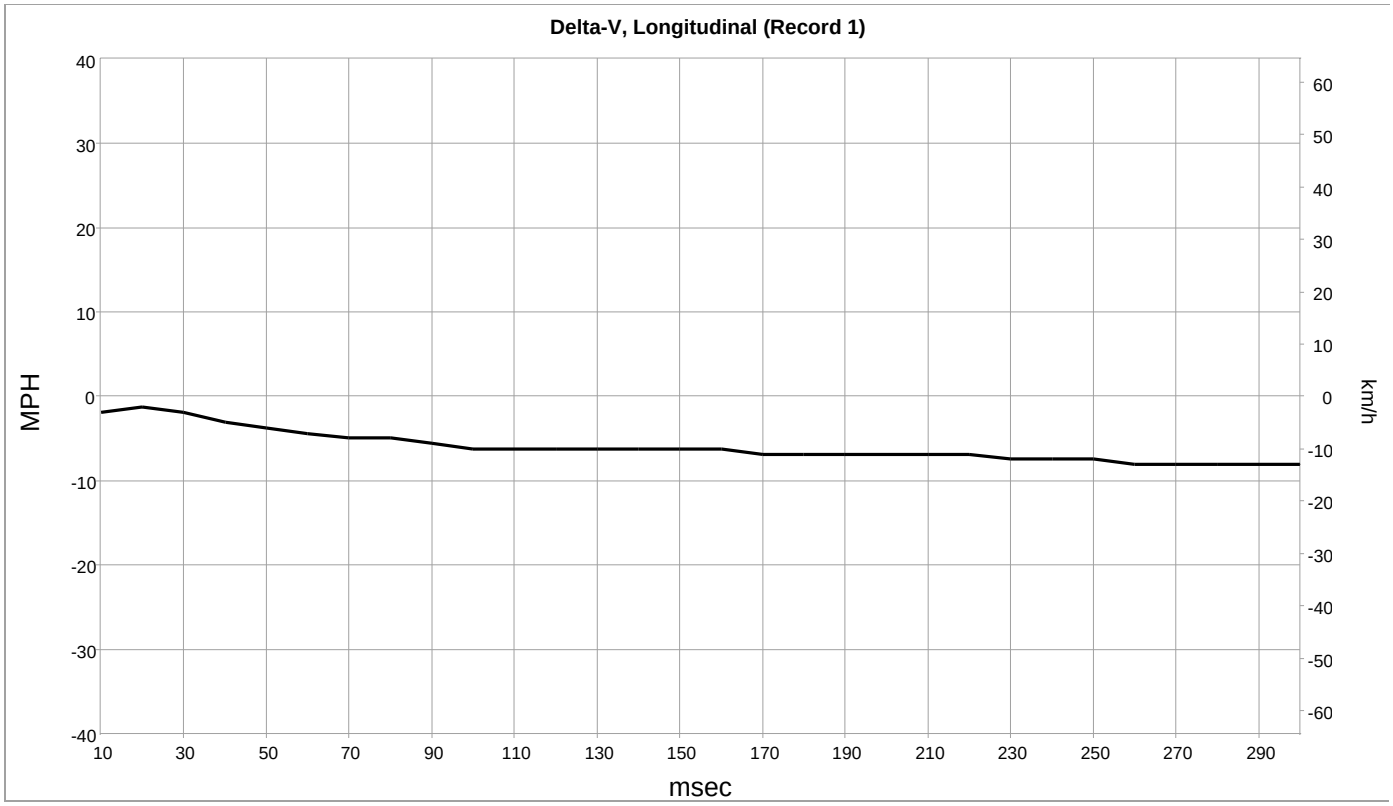
| | |
|---|---|
| Complete File Recorded (Event Recording Complete) | Yes |
| Event Record Type | Deployment |
| Crash Record Locked | Yes |
| OnStar Deployment Status Data Sent | Yes |
| OnStar SDM Recorded Vehicle Velocity Change Data Sent | Yes |
| High Voltage Disable Notification Sent | No |
| Power Loss Detected for Deployment Event | No |
| Deployment Event Counter | 1 |
| Multi-Event, Number of Events (Event Counter) | 1 |
| OnStar Notification Event Counter | 1 |
| Algorithm Active - Frontal | Yes |
| Algorithm Active - Side | Yes |
| Algorithm Active - Rollover | Yes |
| Algorithm Active - Rear | Yes |
| Ignition Cycle, Crash (Ignition Cycles at Event) | 3,067 |
| Time From Event 1 to 2 (Time Between Events) (msec) | Data Not Available |
| Concurrent Event Flag Set | No |
| Event Severity Status: Frontal Pretensioner | No |
| Event Severity Status: Frontal Stage 1 | Yes |
| Event Severity Status: Frontal Stage 2 | No |
| Event Severity Status: Left Side | No |
| Event Severity Status: Right Side | No |
| Event Severity Status: Rear | No |
| Event Severity Status: Rollover | No |
| Event Severity Status: Battery Disconnect Switch - Side Event | No |
| Safety Belt Status, Driver (Driver Belt Switch Circuit Status) | Not Buckled |
| Safety Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status) | Not Buckled |
| Passenger Seat Occupancy Status | Empty |
| Occupant Size Right Front Passenger Child (Passenger Classification Status) | No (Not Applicable) |
| Passenger Air Bag ON Indicator Status | Off |
| Passenger Air Bag OFF Indicator Status | On |
| Low Tire Pressure Warning Lamp Status 0.5 Seconds prior to Time Zero | Off |
| Frontal Air Bag Warning Lamp (SIR Warning Lamp Status 0.5 Seconds Prior to Time Zero) | Off |
| SIR Warning Lamp ON/OFF Time Continuously (seconds) | 655,330 |
| Number of Ignition Cycles SIR Warning Lamp was ON/OFF Continuously | 1,797 |
| Ignition Cycles Since DTCs Were Last Cleared 0.5 Seconds Prior to Time Zero | 253 |
| Maximum Delta-V, Longitudinal (Maximum Longitudinal SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h]) | -18 [-29] |
| Time, Maximum Delta-V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change) (msec) | 506 |
| Maximum Delta-V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h]) | -10 [-16] |
| Time Maximum Delta-V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change) (msec) | 498 |
| Maximum Resultant Delta-V – Longitudinal Component for FSR Event (MPH [km/h]) | -18 [-29] |
| Maximum Resultant Delta-V – Lateral Component for FSR Event (MPH [km/h]) | -10 [-16] |
| Time from FSR Time Zero to time of the Maximum Resultant Delta-V (msec) | 506 |
| Blended Event FSR 1 Severity Type | Frontal (Pretensioner/Stage 1/Stage 2) |
| Blended Event FSR 2 Severity Type | Data Not Available |
| Blended Event Time from FSR 1 Time Zero to FSR 2 Time Zero (msec) | Data Not Available |
| Blended Event FSR 3 Severity Type | Data Not Available |
| Blended Event Time from FSR 1 Time Zero to FSR 3 Time Zero (msec) | Data Not Available |

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

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

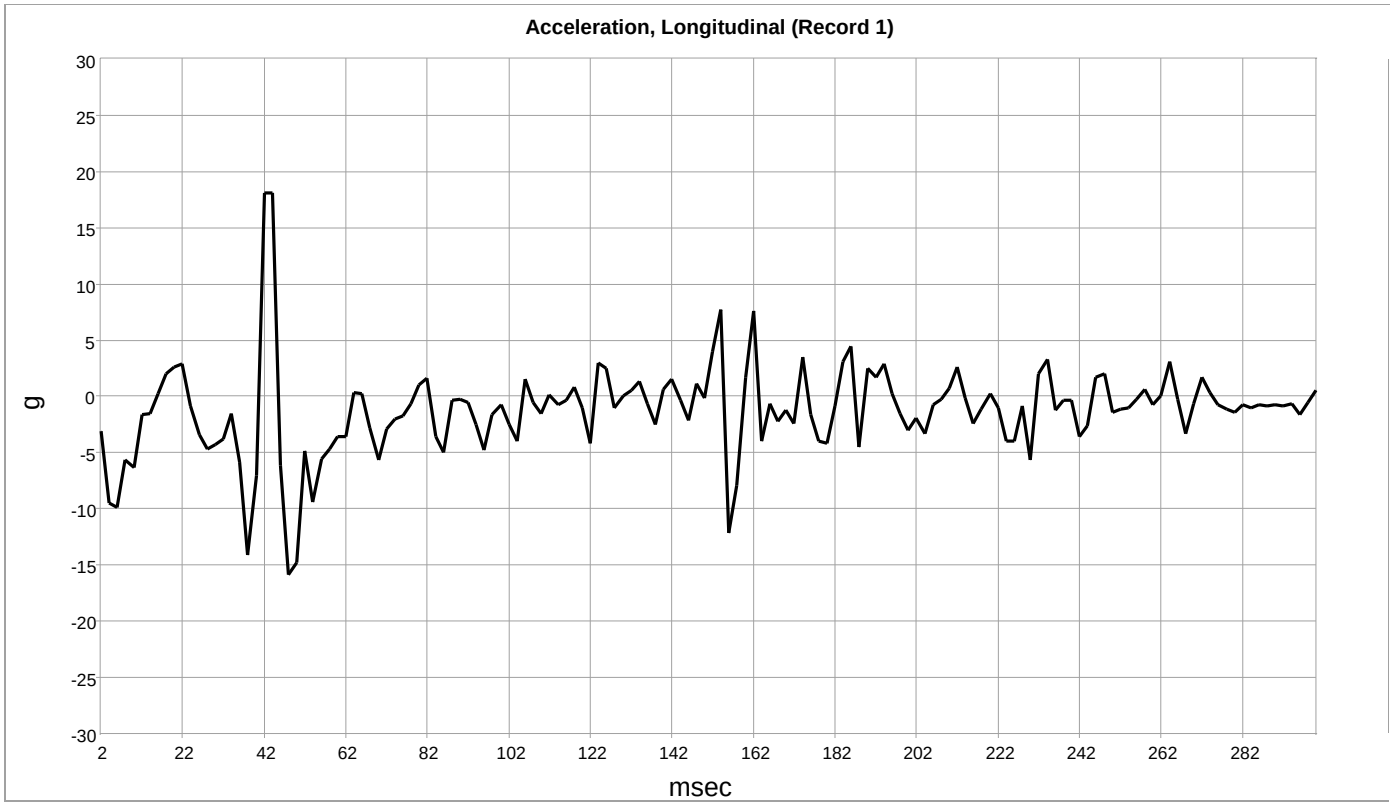
## Deployment Command Data (Record 1)

| | |
|---|---|
| Driver 1st Stage Deployment Loop Commanded | Yes |
| Passenger 1st Stage Deployment Loop Commanded | No |
| Driver 2nd Stage Deployment Loop Commanded | Yes |
| Passenger 2nd Stage Deployment Loop Commanded | No |
| Driver Pretensioner Deployment Loop #1 Commanded | Yes |
| Passenger Pretensioner Deployment Loop #1 Commanded | Yes |
| Driver Pretensioner Deployment Loop #2 Commanded | Yes |
| Passenger Pretensioner Deployment Loop #2 Commanded | Yes |
| Driver Thorax Loop Commanded | No |
| Passenger Thorax Loop Commanded | No |
| Left Row 2 Thorax Loop Commanded | No |
| Right Row 2 Thorax Loop Commanded | No |
| Left Row 1 Roof Rail/Head Curtain Loop Commanded | No |
| Right Row 1 Roof Rail/Head Curtain Loop Commanded | No |
| Driver Knee Deployment Loop Commanded | Yes |
| Passenger Knee Deployment Loop Commanded | No |
| Frontal Air Bag Deployment, Time to 1st Stage Deployment, Driver (Driver 1st Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | 253 |
| Frontal Air Bag Deployment, Time to 1st Stage Deployment, Right Front Passenger (Passenger 1st Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Frontal Air Bag Deployment, Time to 2nd Stage, Driver (Driver 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | 253 |
| Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (Passenger 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #1 Command Criteria Met) (msec) | 50 |
| Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #1 Command Criteria Met) (msec) | 50 |
| Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #2 Command Criteria Met) (msec) | 58 |
| Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #2 Command Criteria Met) (msec) | 58 |
| Side Air Bag Deployment, Time to Deploy, Driver (Driver Thorax Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Side Air Bag Deployment, Time to Deploy, Right Front Passenger (Passenger Thorax Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Left Row 2 Thorax Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |
| Right Row 2 Thorax Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |
| Left Row 1 Curtain Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |
| Right Row 1 Curtain Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |
| Driver Knee Time From Time Zero to Deployment Command Criteria Met (msec) | 253 |
| Passenger Knee Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |


Delta-V, Longitudinal (Record 1)
MPH
km/h
msec
40
30
20
10
0
-10
-20
-30
-40
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290

## Longitudinal Delta-V (Record 1)

| Time (msec) | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (MPH [km/h]) |
|---|---|
| 10 | -2 [-3] |
| 20 | -1 [-2] |
| 30 | -2 [-3] |
| 40 | -3 [-5] |
| 50 | -4 [-6] |
| 60 | -4 [-7] |
| 70 | -5 [-8] |
| 80 | -5 [-8] |
| 90 | -6 [-9] |
| 100 | -6 [-10] |
| 110 | -6 [-10] |
| 120 | -6 [-10] |
| 130 | -6 [-10] |
| 140 | -6 [-10] |
| 150 | -6 [-10] |
| 160 | -6 [-10] |
| 170 | -7 [-11] |
| 180 | -7 [-11] |
| 190 | -7 [-11] |
| 200 | -7 [-11] |
| 210 | -7 [-11] |
| 220 | -7 [-11] |
| 230 | -7 [-12] |
| 240 | -7 [-12] |
| 250 | -7 [-12] |
| 260 | -8 [-13] |
| 270 | -8 [-13] |
| 280 | -8 [-13] |
| 290 | -8 [-13] |
| 300 | -8 [-13] |

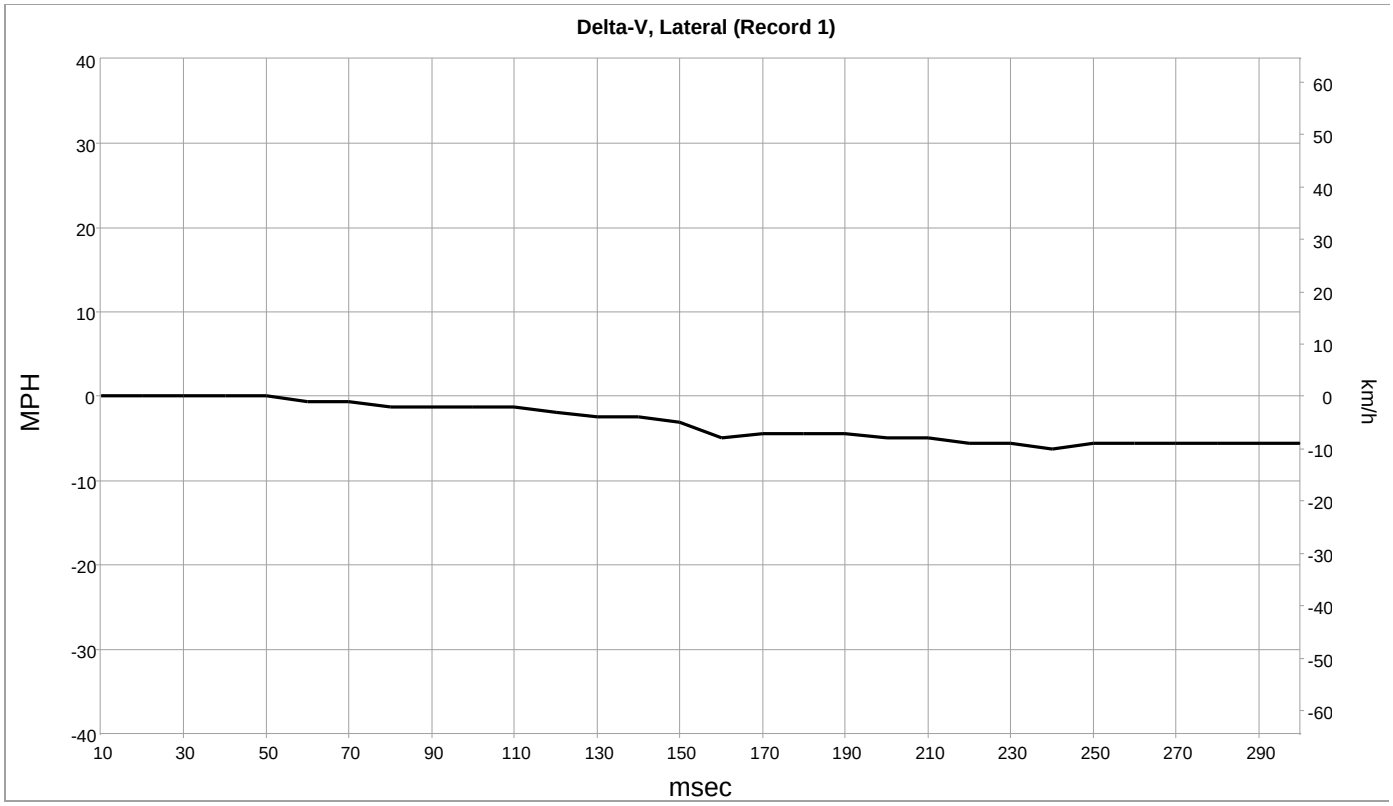

Acceleration, Longitudinal (Record 1)
g
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
2
22
42
62
82
102
122
142
162
182
202
222
242
262
282
msec

## Longitudinal Acceleration (Record 1)

| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 2 | -3.13 |
| 4 | -9.50 |
| 6 | -9.88 |
| 8 | -5.63 |
| 10 | -6.38 |
| 12 | -1.63 |
| 14 | -1.50 |
| 16 | 0.25 |
| 18 | 2.00 |
| 20 | 2.62 |
| 22 | 2.87 |
| 24 | -0.88 |
| 26 | -3.38 |
| 28 | -4.63 |
| 30 | -4.25 |
| 32 | -3.75 |
| 34 | -1.50 |
| 36 | -5.88 |
| 38 | -14.13 |
| 40 | -7.00 |
| 42 | 18.12 |
| 44 | 18.12 |
| 46 | -6.13 |
| 48 | -15.88 |
| 50 | -14.75 |
| 52 | -4.88 |
| 54 | -9.38 |
| 56 | -5.50 |
| 58 | -4.63 |
| 60 | -3.63 |
| 62 | -3.63 |
| 64 | 0.37 |
| 66 | 0.25 |
| 68 | -2.75 |
| 70 | -5.63 |
| 72 | -2.88 |
| 74 | -2.00 |
| 76 | -1.75 |
| 78 | -0.63 |
| 80 | 1.00 |
| 82 | 1.62 |
| 84 | -3.63 |
| 86 | -5.00 |
| 88 | -0.38 |
| 90 | -0.25 |
| 92 | -0.50 |
| 94 | -2.50 |
| 96 | -4.75 |
| 98 | -1.63 |
| 100 | -0.75 |
| 102 | -2.50 |
| 104 | -4.00 |
| 106 | 1.50 |
| 108 | -0.50 |
| 110 | -1.50 |
| 112 | 0.12 |

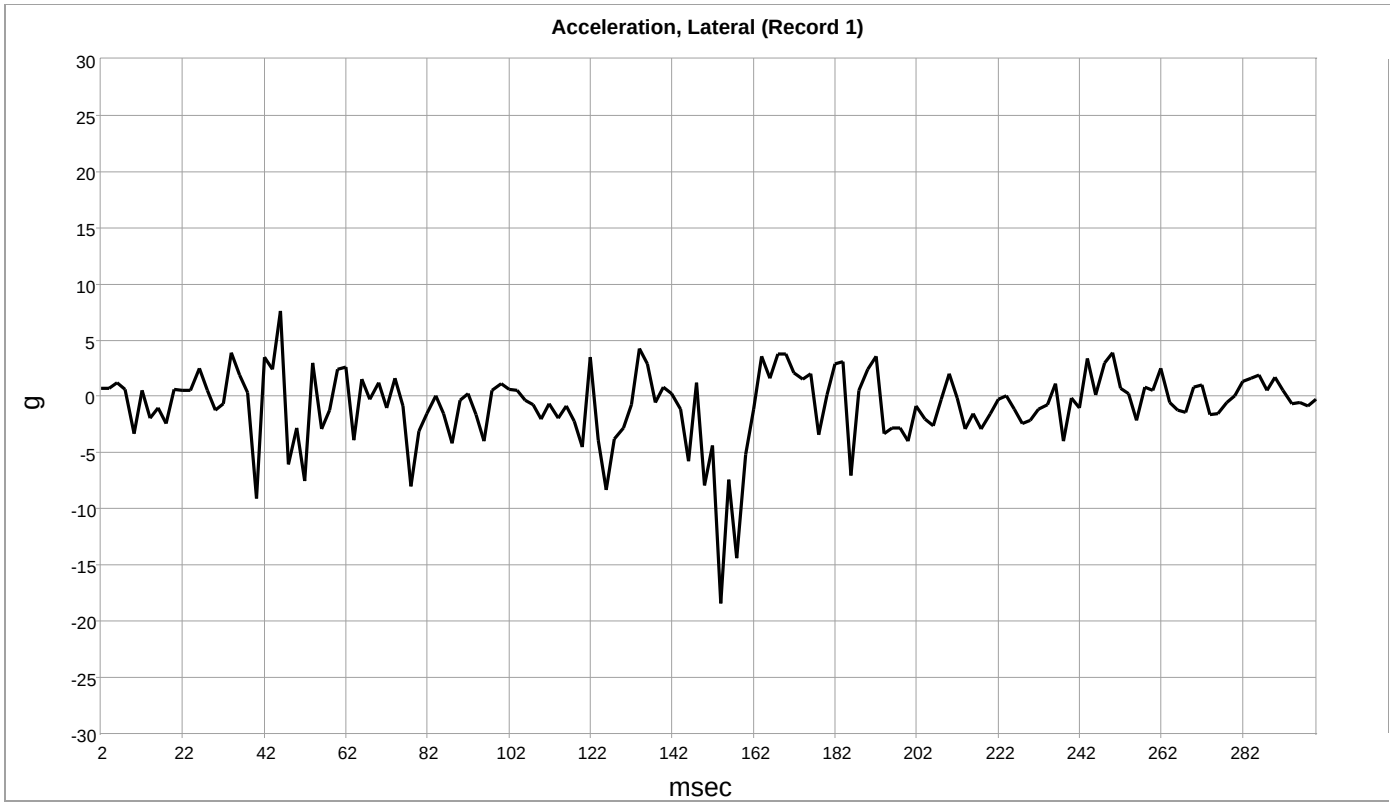
| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 114 | -0.75 |
| 116 | -0.38 |
| 118 | 0.87 |
| 120 | -1.00 |
| 122 | -4.13 |
| 124 | 3.00 |
| 126 | 2.50 |
| 128 | -1.00 |
| 130 | 0.00 |
| 132 | 0.50 |
| 134 | 1.37 |
| 136 | -0.63 |
| 138 | -2.50 |
| 140 | 0.62 |
| 142 | 1.50 |
| 144 | -0.38 |
| 146 | -2.13 |
| 148 | 1.12 |
| 150 | -0.13 |
| 152 | 4.00 |
| 154 | 7.75 |
| 156 | -12.13 |
| 158 | -7.88 |
| 160 | 1.75 |
| 162 | 7.62 |
| 164 | -4.00 |
| 166 | -0.63 |
| 168 | -2.25 |
| 170 | -1.25 |
| 172 | -2.38 |
| 174 | 3.50 |
| 176 | -1.63 |
| 178 | -4.00 |
| 180 | -4.13 |
| 182 | -0.88 |
| 184 | 3.12 |
| 186 | 4.50 |
| 188 | -4.50 |
| 190 | 2.50 |
| 192 | 1.75 |
| 194 | 2.87 |
| 196 | 0.25 |
| 198 | -1.50 |
| 200 | -3.00 |
| 202 | -1.88 |
| 204 | -3.25 |
| 206 | -0.75 |
| 208 | -0.25 |
| 210 | 0.75 |
| 212 | 2.62 |
| 214 | -0.13 |
| 216 | -2.38 |
| 218 | -1.13 |
| 220 | 0.25 |
| 222 | -1.00 |
| 224 | -4.00 |
| 226 | -4.00 |

| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 228 | -0.88 |
| 230 | -5.63 |
| 232 | 2.00 |
| 234 | 3.25 |
| 236 | -1.25 |
| 238 | -0.38 |
| 240 | -0.38 |
| 242 | -3.63 |
| 244 | -2.63 |
| 246 | 1.75 |
| 248 | 2.00 |
| 250 | -1.38 |
| 252 | -1.13 |
| 254 | -1.00 |
| 256 | -0.25 |
| 258 | 0.62 |
| 260 | -0.75 |
| 262 | 0.00 |
| 264 | 3.12 |
| 266 | -0.25 |
| 268 | -3.25 |
| 270 | -0.63 |
| 272 | 1.75 |
| 274 | 0.37 |
| 276 | -0.75 |
| 278 | -1.13 |
| 280 | -1.38 |
| 282 | -0.75 |
| 284 | -1.00 |
| 286 | -0.75 |
| 288 | -0.88 |
| 290 | -0.75 |
| 292 | -0.88 |
| 294 | -0.63 |
| 296 | -1.63 |
| 298 | -0.50 |
| 300 | 0.50 |


Delta-V, Lateral (Record 1)
MPH
km/h
msec
40
30
20
10
0
-10
-20
-30
-40
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290

## Lateral Delta-V (Record 1)

| Time (msec) | Delta-V, Lateral (SDM Recorded Vehicle Lateral Velocity Change for FSR Event) (MPH [km/h]) |
|---|---|
| 10 | 0 [0] |
| 20 | 0 [0] |
| 30 | 0 [0] |
| 40 | 0 [0] |
| 50 | 0 [0] |
| 60 | -1 [-1] |
| 70 | -1 [-1] |
| 80 | -1 [-2] |
| 90 | -1 [-2] |
| 100 | -1 [-2] |
| 110 | -1 [-2] |
| 120 | -2 [-3] |
| 130 | -2 [-4] |
| 140 | -2 [-4] |
| 150 | -3 [-5] |
| 160 | -5 [-8] |
| 170 | -4 [-7] |
| 180 | -4 [-7] |
| 190 | -4 [-7] |
| 200 | -5 [-8] |
| 210 | -5 [-8] |
| 220 | -6 [-9] |
| 230 | -6 [-9] |
| 240 | -6 [-10] |
| 250 | -6 [-9] |
| 260 | -6 [-9] |
| 270 | -6 [-9] |
| 280 | -6 [-9] |
| 290 | -6 [-9] |
| 300 | -6 [-9] |


Acceleration, Lateral (Record 1)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
g
2
22
42
62
82
102
122
142
162
182
202
222
242
262
282
msec

## Lateral Acceleration (Record 1)

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 2 | 0.75 |
| 4 | 0.75 |
| 6 | 1.25 |
| 8 | 0.62 |
| 10 | -3.25 |
| 12 | 0.50 |
| 14 | -1.88 |
| 16 | -1.00 |
| 18 | -2.38 |
| 20 | 0.62 |
| 22 | 0.50 |
| 24 | 0.50 |
| 26 | 2.50 |
| 28 | 0.50 |
| 30 | -1.25 |
| 32 | -0.63 |
| 34 | 3.87 |
| 36 | 1.87 |
| 38 | 0.37 |
| 40 | -9.13 |
| 42 | 3.50 |
| 44 | 2.37 |
| 46 | 7.62 |
| 48 | -6.00 |
| 50 | -2.75 |
| 52 | -7.50 |
| 54 | 3.00 |
| 56 | -2.88 |
| 58 | -1.25 |
| 60 | 2.37 |
| 62 | 2.62 |
| 64 | -3.88 |
| 66 | 1.50 |
| 68 | -0.25 |
| 70 | 1.25 |
| 72 | -1.00 |
| 74 | 1.62 |
| 76 | -0.88 |
| 78 | -8.00 |
| 80 | -3.13 |
| 82 | -1.50 |
| 84 | 0.00 |
| 86 | -1.50 |
| 88 | -4.13 |
| 90 | -0.38 |
| 92 | 0.25 |
| 94 | -1.63 |
| 96 | -4.00 |
| 98 | 0.50 |
| 100 | 1.12 |
| 102 | 0.62 |
| 104 | 0.50 |
| 106 | -0.38 |
| 108 | -0.75 |
| 110 | -2.00 |
| 112 | -0.63 |
| 114 | -1.88 |

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 116 | -0.88 |
| 118 | -2.25 |
| 120 | -4.50 |
| 122 | 3.50 |
| 124 | -3.88 |
| 126 | -8.25 |
| 128 | -3.75 |
| 130 | -2.75 |
| 132 | -0.75 |
| 134 | 4.25 |
| 136 | 2.87 |
| 138 | -0.50 |
| 140 | 0.87 |
| 142 | 0.25 |
| 144 | -1.13 |
| 146 | -5.75 |
| 148 | 1.25 |
| 150 | -7.88 |
| 152 | -4.38 |
| 154 | -18.38 |
| 156 | -7.38 |
| 158 | -14.38 |
| 160 | -5.13 |
| 162 | -1.13 |
| 164 | 3.62 |
| 166 | 1.62 |
| 168 | 3.75 |
| 170 | 3.75 |
| 172 | 2.12 |
| 174 | 1.50 |
| 176 | 2.00 |
| 178 | -3.38 |
| 180 | 0.12 |
| 182 | 2.87 |
| 184 | 3.12 |
| 186 | -7.00 |
| 188 | 0.50 |
| 190 | 2.37 |
| 192 | 3.62 |
| 194 | -3.25 |
| 196 | -2.75 |
| 198 | -2.75 |
| 200 | -4.00 |
| 202 | -0.88 |
| 204 | -2.00 |
| 206 | -2.63 |
| 208 | -0.25 |
| 210 | 2.00 |
| 212 | -0.13 |
| 214 | -2.88 |
| 216 | -1.50 |
| 218 | -2.88 |
| 220 | -1.50 |
| 222 | -0.25 |
| 224 | 0.00 |
| 226 | -1.13 |
| 228 | -2.38 |
| 230 | -2.13 |

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 232 | -1.13 |
| 234 | -0.75 |
| 236 | 1.12 |
| 238 | -4.00 |
| 240 | -0.13 |
| 242 | -1.00 |
| 244 | 3.37 |
| 246 | 0.12 |
| 248 | 3.00 |
| 250 | 3.87 |
| 252 | 0.75 |
| 254 | 0.25 |
| 256 | -2.13 |
| 258 | 0.87 |
| 260 | 0.50 |
| 262 | 2.50 |
| 264 | -0.50 |
| 266 | -1.25 |
| 268 | -1.38 |
| 270 | 0.87 |
| 272 | 1.00 |
| 274 | -1.63 |
| 276 | -1.50 |
| 278 | -0.50 |
| 280 | 0.00 |
| 282 | 1.37 |
| 284 | 1.62 |
| 286 | 1.87 |
| 288 | 0.50 |
| 290 | 1.75 |
| 292 | 0.50 |
| 294 | -0.63 |
| 296 | -0.50 |
| 298 | -0.88 |
| 300 | -0.25 |

## Roll Rate (Record 1)

Contains No Recorded Data

## Acceleration, Lateral, Rollover (Record 1)

Contains No Recorded Data

## Acceleration, Normal, Rollover (Record 1)

Contains No Recorded Data

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

| Time (sec) | Service Brake (Brake Switch Circuit State) | Accelerator Pedal Position, % Full (Accelerator Pedal Position) (%) | Engine RPM (Engine Speed) (RPM) | Engine Throttle, % Full (Throttle Position) (%) | Speed, Vehicle Indicated (Vehicle Speed) (MPH [km/h]) | System Power Mode Status | System Backup Pow Mode Statu |
|---|---|---|---|---|---|---|---|
| -5.0 | Off | 37 | 3,264 | 57 | 56 [90] | Run | Run |
| -4.5 | Off | 37 | 3,264 | 61 | 57 [92] | Run | Run |
| -4.0 | Off | 37 | 3,264 | 62 | 58 [93] | Run | Run |
| -3.5 | Off | 37 | 3,328 | 64 | 58 [94] | Run | Run |
| -3.0 | Off | 37 | 3,328 | 63 | 60 [96] | Run | Run |
| -2.5 | Off | 37 | 3,392 | 60 | 60 [97] | Run | Run |
| -2.0 | Off | 37 | 3,456 | 58 | 62 [99] | Run | Run |
| -1.5 | Off | 37 | 3,456 | 57 | 62 [100] | Run | Run |
| -1.0 | Off | 37 | 3,584 | 55 | 63 [102] | Run | Run |
| -0.5 | Off | 35 | 3,776 | 54 | 64 [103] | Run | Run |

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

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

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

| Time (sec) | Cruise Control Active | Cruise Control Resume Switch Active | Cruise Control Set Switch Active | Reduced Engine Power Mode Indicator | Engine Torque (N-m) |
|---|---|---|---|---|---|
| -2.0 | No | No | No | Off | 162 |
| -1.5 | No | No | No | Off | 159 |
| -1.0 | No | No | No | Off | 156 |
| -0.5 | No | No | No | Off | 154 |

## System Status at Event (Record 2)

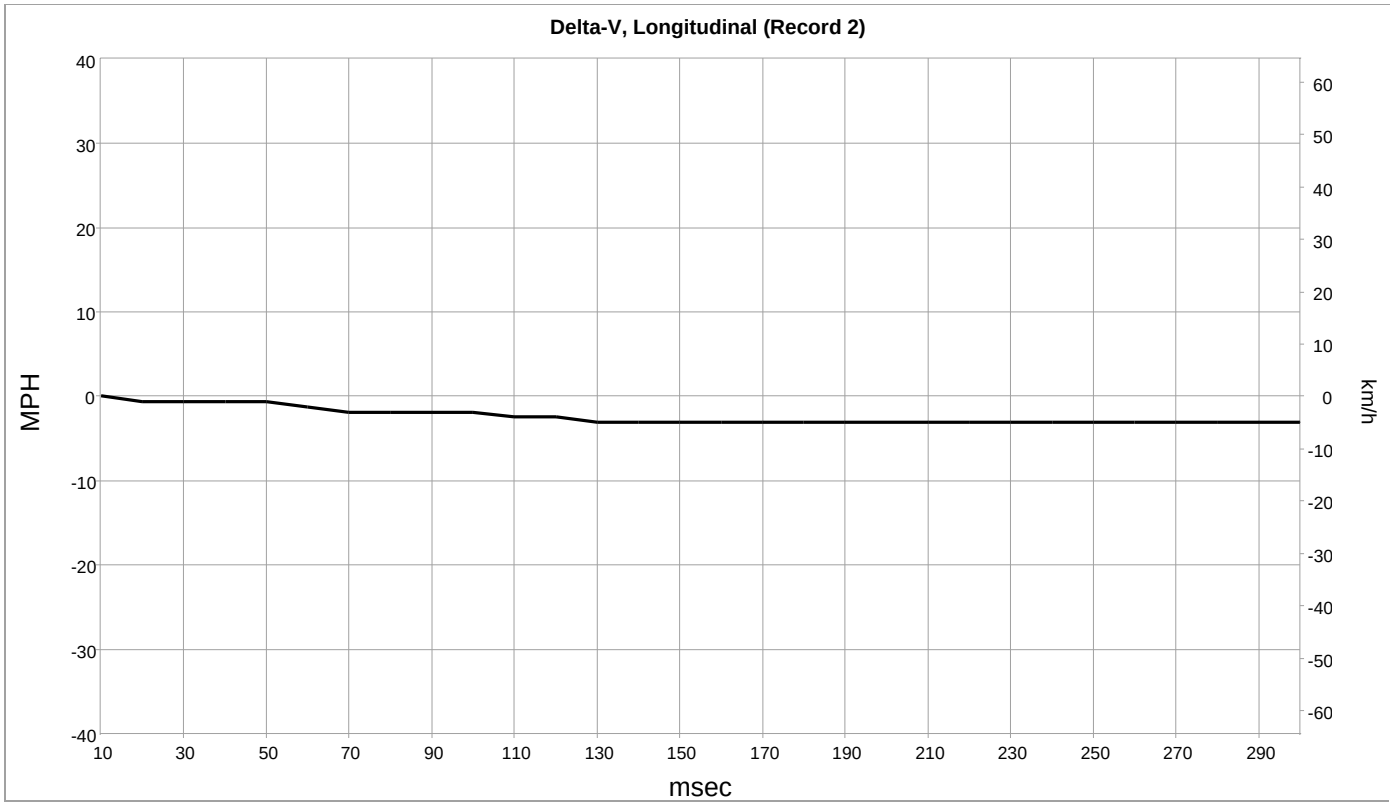
| | |
|---|---|
| Complete File Recorded (Event Recording Complete) | Yes |
| Event Record Type | Deployment |
| Crash Record Locked | Yes |
| OnStar Deployment Status Data Sent | Yes |
| OnStar SDM Recorded Vehicle Velocity Change Data Sent | Yes |
| High Voltage Disable Notification Sent | No |
| Power Loss Detected for Deployment Event | No |
| Deployment Event Counter | 2 |
| Multi-Event, Number of Events (Event Counter) | 2 |
| OnStar Notification Event Counter | 2 |
| Algorithm Active - Frontal | Yes |
| Algorithm Active - Side | Yes |
| Algorithm Active - Rollover | Yes |
| Algorithm Active - Rear | Yes |
| Ignition Cycle, Crash (Ignition Cycles at Event) | 3,067 |
| Time From Event 1 to 2 (Time Between Events) (msec) | 710 |
| Concurrent Event Flag Set | No |
| Event Severity Status: Frontal Pretensioner | No |
| Event Severity Status: Frontal Stage 1 | No |
| Event Severity Status: Frontal Stage 2 | No |
| Event Severity Status: Left Side | No |
| Event Severity Status: Right Side | Yes |
| Event Severity Status: Rear | No |
| Event Severity Status: Rollover | No |
| Event Severity Status: Battery Disconnect Switch - Side Event | No |
| Safety Belt Status, Driver (Driver Belt Switch Circuit Status) | Not Buckled |
| Safety Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status) | Not Buckled |
| Passenger Seat Occupancy Status | Empty |
| Occupant Size Right Front Passenger Child (Passenger Classification Status) | No (Not Applicable) |
| Passenger Air Bag ON Indicator Status | Off |
| Passenger Air Bag OFF Indicator Status | On |
| Low Tire Pressure Warning Lamp Status 0.5 Seconds prior to Time Zero | Off |
| Frontal Air Bag Warning Lamp (SIR Warning Lamp Status 0.5 Seconds Prior to Time Zero) | On |
| SIR Warning Lamp ON/OFF Time Continuously (seconds) | 0 |
| Number of Ignition Cycles SIR Warning Lamp was ON/OFF Continuously | 0 |
| Ignition Cycles Since DTCs Were Last Cleared 0.5 Seconds Prior to Time Zero | 253 |
| Maximum Delta-V, Longitudinal (Maximum Longitudinal SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h]) | -3 [-5] |
| Time, Maximum Delta-V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change) (msec) | 154 |
| Maximum Delta-V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h]) | -3 [-5] |
| Time Maximum Delta-V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change) (msec) | 154 |
| Maximum Resultant Delta-V – Longitudinal Component for FSR Event (MPH [km/h]) | -3 [-5] |
| Maximum Resultant Delta-V – Lateral Component for FSR Event (MPH [km/h]) | -3 [-5] |
| Time from FSR Time Zero to time of the Maximum Resultant Delta-V (msec) | 154 |
| Blended Event FSR 1 Severity Type | Non-deploy FSR (qualified or non-qualified) |
| Blended Event FSR 2 Severity Type | Side (Left or Right Side) |
| Blended Event Time from FSR 1 Time Zero to FSR 2 Time Zero (msec) | 1 |
| Blended Event FSR 3 Severity Type | Data Not Available |
| Blended Event Time from FSR 1 Time Zero to FSR 3 Time Zero (msec) | Data Not Available |

## Diagnostic Trouble Codes 0.5 Seconds Prior to Time Zero (Record 2)

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

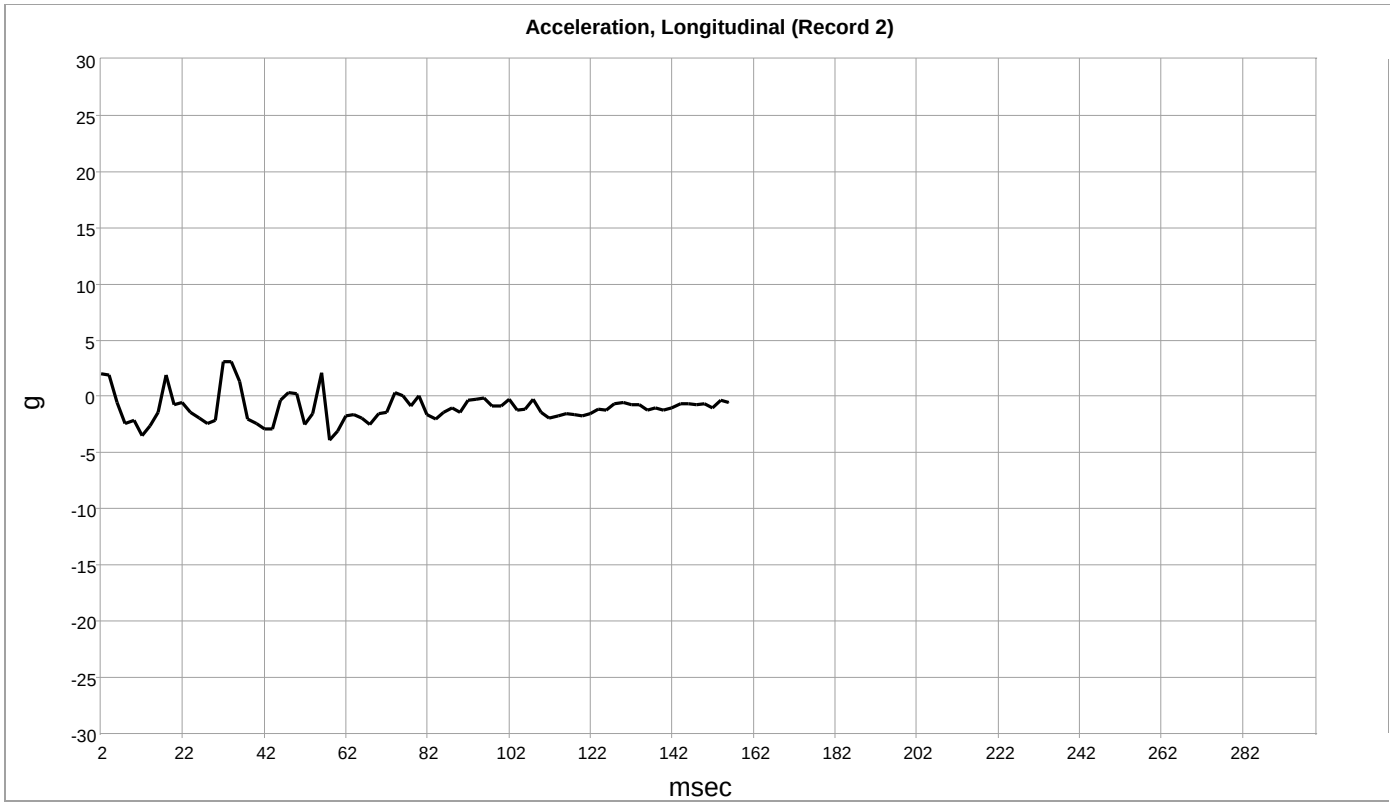
## Deployment Command Data (Record 2)

| | |
|---|---|
| Driver 1st Stage Deployment Loop Commanded | No |
| Passenger 1st Stage Deployment Loop Commanded | No |
| Driver 2nd Stage Deployment Loop Commanded | No |
| Passenger 2nd Stage Deployment Loop Commanded | No |
| Driver Pretensioner Deployment Loop #1 Commanded | No |
| Passenger Pretensioner Deployment Loop #1 Commanded | No |
| Driver Pretensioner Deployment Loop #2 Commanded | No |
| Passenger Pretensioner Deployment Loop #2 Commanded | No |
| Driver Thorax Loop Commanded | No |
| Passenger Thorax Loop Commanded | Yes |
| Left Row 2 Thorax Loop Commanded | No |
| Right Row 2 Thorax Loop Commanded | Yes |
| Left Row 1 Roof Rail/Head Curtain Loop Commanded | Yes |
| Right Row 1 Roof Rail/Head Curtain Loop Commanded | Yes |
| Driver Knee Deployment Loop Commanded | No |
| Passenger Knee Deployment Loop Commanded | No |
| Frontal Air Bag Deployment, Time to 1st Stage Deployment, Driver (Driver 1st Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Frontal Air Bag Deployment, Time to 1st Stage Deployment, Right Front Passenger (Passenger 1st Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Frontal Air Bag Deployment, Time to 2nd Stage, Driver (Driver 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (Passenger 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #1 Command Criteria Met) (msec) | Data Not Available |
| Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #1 Command Criteria Met) (msec) | Data Not Available |
| Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #2 Command Criteria Met) (msec) | Data Not Available |
| Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #2 Command Criteria Met) (msec) | Data Not Available |
| Side Air Bag Deployment, Time to Deploy, Driver (Driver Thorax Time From Time Zero to Deployment Command Criteria Met) (msec) | Data Not Available |
| Side Air Bag Deployment, Time to Deploy, Right Front Passenger (Passenger Thorax Time From Time Zero to Deployment Command Criteria Met) (msec) | 47 |
| Left Row 2 Thorax Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |
| Right Row 2 Thorax Time From Time Zero to Deployment Command Criteria Met (msec) | 47 |
| Left Row 1 Curtain Time From Time Zero to Deployment Command Criteria Met (msec) | 47 |
| Right Row 1 Curtain Time From Time Zero to Deployment Command Criteria Met (msec) | 47 |
| Driver Knee Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |
| Passenger Knee Time From Time Zero to Deployment Command Criteria Met (msec) | Data Not Available |


Delta-V, Longitudinal (Record 2)
MPH
km/h
msec
40
30
20
10
0
-10
-20
-30
-40
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290

## Longitudinal Delta-V (Record 2)

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

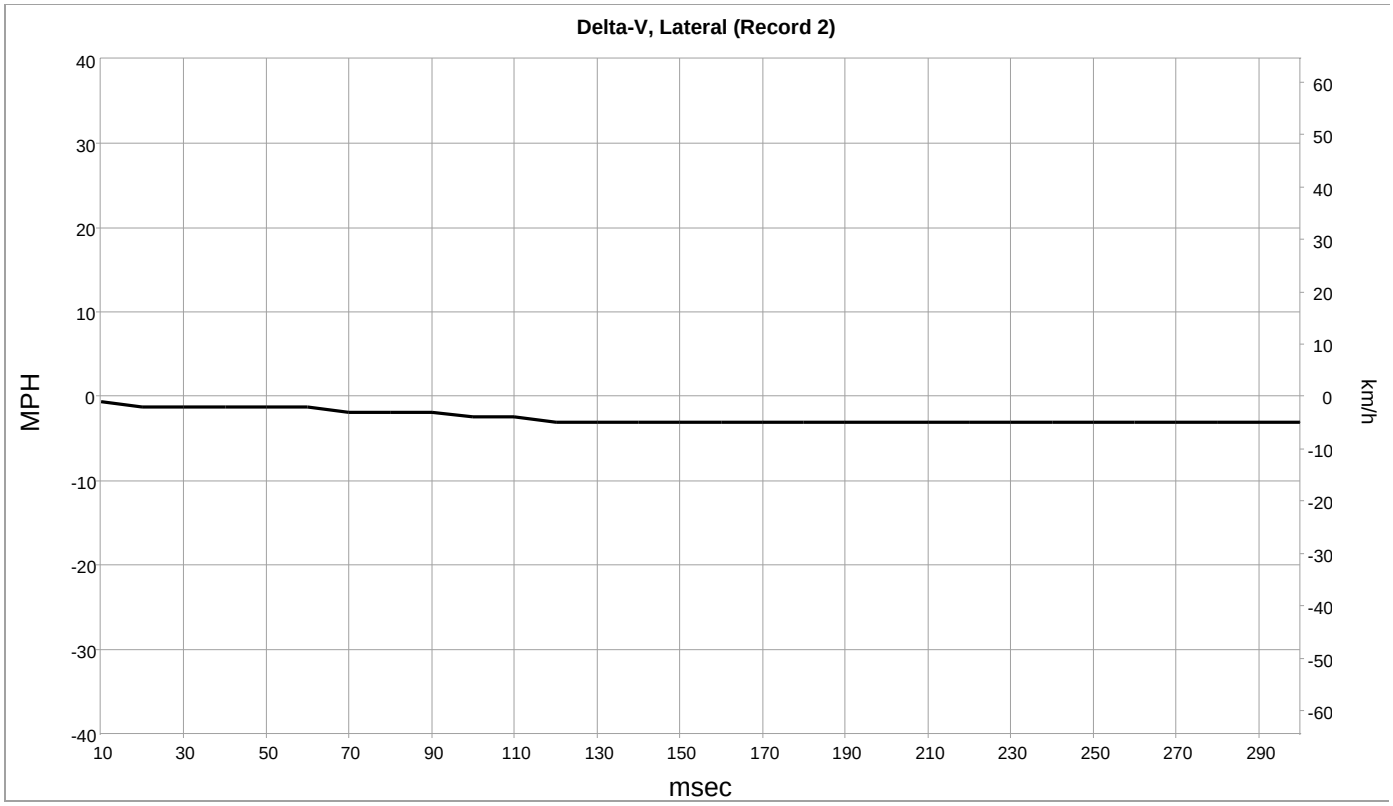

Acceleration, Longitudinal (Record 2)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
g
2
22
42
62
82
102
122
142
162
182
202
222
242
262
282
msec

## Longitudinal Acceleration (Record 2)

| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 2 | 2.00 |
| 4 | 1.87 |
| 6 | -0.50 |
| 8 | -2.38 |
| 10 | -2.13 |
| 12 | -3.50 |
| 14 | -2.63 |
| 16 | -1.38 |
| 18 | 1.87 |
| 20 | -0.75 |
| 22 | -0.50 |
| 24 | -1.38 |
| 26 | -1.88 |
| 28 | -2.38 |
| 30 | -2.13 |
| 32 | 3.12 |
| 34 | 3.12 |
| 36 | 1.37 |
| 38 | -2.00 |
| 40 | -2.38 |
| 42 | -2.88 |
| 44 | -2.88 |
| 46 | -0.38 |
| 48 | 0.37 |
| 50 | 0.25 |
| 52 | -2.50 |
| 54 | -1.50 |
| 56 | 2.12 |
| 58 | -3.88 |
| 60 | -3.13 |
| 62 | -1.75 |
| 64 | -1.63 |
| 66 | -1.88 |
| 68 | -2.50 |
| 70 | -1.50 |
| 72 | -1.38 |
| 74 | 0.37 |
| 76 | 0.00 |
| 78 | -0.88 |
| 80 | 0.00 |
| 82 | -1.63 |
| 84 | -2.00 |
| 86 | -1.38 |
| 88 | -1.00 |
| 90 | -1.38 |
| 92 | -0.38 |
| 94 | -0.25 |
| 96 | -0.13 |
| 98 | -0.88 |
| 100 | -0.88 |
| 102 | -0.25 |
| 104 | -1.25 |
| 106 | -1.13 |
| 108 | -0.25 |
| 110 | -1.38 |
| 112 | -1.88 |

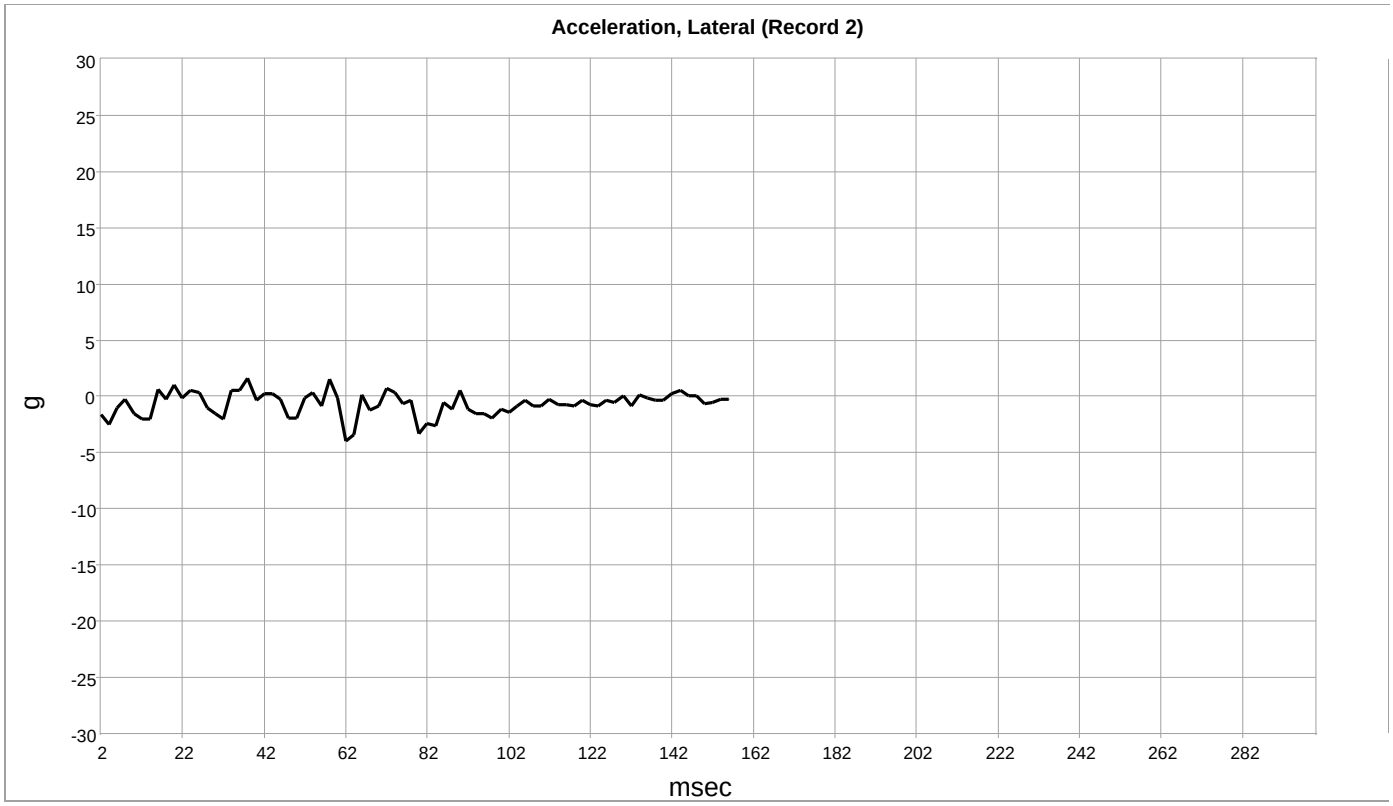
| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 114 | -1.75 |
| 116 | -1.50 |
| 118 | -1.63 |
| 120 | -1.75 |
| 122 | -1.50 |
| 124 | -1.13 |
| 126 | -1.25 |
| 128 | -0.63 |
| 130 | -0.50 |
| 132 | -0.75 |
| 134 | -0.75 |
| 136 | -1.25 |
| 138 | -1.00 |
| 140 | -1.25 |
| 142 | -1.00 |
| 144 | -0.63 |
| 146 | -0.63 |
| 148 | -0.75 |
| 150 | -0.63 |
| 152 | -1.00 |
| 154 | -0.38 |
| 156 | -0.50 |
| 158 | Data Not Available |
| 160 | Data Not Available |
| 162 | Data Not Available |
| 164 | Data Not Available |
| 166 | Data Not Available |
| 168 | Data Not Available |
| 170 | Data Not Available |
| 172 | Data Not Available |
| 174 | Data Not Available |
| 176 | Data Not Available |
| 178 | Data Not Available |
| 180 | Data Not Available |
| 182 | Data Not Available |
| 184 | Data Not Available |
| 186 | Data Not Available |
| 188 | Data Not Available |
| 190 | Data Not Available |
| 192 | Data Not Available |
| 194 | Data Not Available |
| 196 | Data Not Available |
| 198 | Data Not Available |
| 200 | Data Not Available |
| 202 | Data Not Available |
| 204 | Data Not Available |
| 206 | Data Not Available |
| 208 | Data Not Available |
| 210 | Data Not Available |
| 212 | Data Not Available |
| 214 | Data Not Available |
| 216 | Data Not Available |
| 218 | Data Not Available |
| 220 | Data Not Available |
| 222 | Data Not Available |
| 224 | Data Not Available |
| 226 | Data Not Available |

| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 228 | Data Not Available |
| 230 | Data Not Available |
| 232 | Data Not Available |
| 234 | Data Not Available |
| 236 | Data Not Available |
| 238 | Data Not Available |
| 240 | Data Not Available |
| 242 | Data Not Available |
| 244 | Data Not Available |
| 246 | Data Not Available |
| 248 | Data Not Available |
| 250 | Data Not Available |
| 252 | Data Not Available |
| 254 | Data Not Available |
| 256 | Data Not Available |
| 258 | Data Not Available |
| 260 | Data Not Available |
| 262 | Data Not Available |
| 264 | Data Not Available |
| 266 | Data Not Available |
| 268 | Data Not Available |
| 270 | Data Not Available |
| 272 | Data Not Available |
| 274 | Data Not Available |
| 276 | Data Not Available |
| 278 | Data Not Available |
| 280 | Data Not Available |
| 282 | Data Not Available |
| 284 | Data Not Available |
| 286 | Data Not Available |
| 288 | Data Not Available |
| 290 | Data Not Available |
| 292 | Data Not Available |
| 294 | Data Not Available |
| 296 | Data Not Available |
| 298 | Data Not Available |
| 300 | Data Not Available |


Delta-V, Lateral (Record 2)
MPH
km/h
msec
40
30
20
10
0
-10
-20
-30
-40
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290

## Lateral Delta-V (Record 2)

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


Acceleration, Lateral (Record 2)
30
25
20
15
10
5
0
-5
-10
-15
-20
-25
-30
g
2
22
42
62
82
102
122
142
162
182
202
222
242
262
282
msec

## Lateral Acceleration (Record 2)

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 2 | -1.63 |
| 4 | -2.50 |
| 6 | -1.00 |
| 8 | -0.25 |
| 10 | -1.50 |
| 12 | -2.00 |
| 14 | -2.00 |
| 16 | 0.62 |
| 18 | -0.25 |
| 20 | 1.00 |
| 22 | -0.13 |
| 24 | 0.50 |
| 26 | 0.37 |
| 28 | -1.00 |
| 30 | -1.50 |
| 32 | -2.00 |
| 34 | 0.50 |
| 36 | 0.50 |
| 38 | 1.62 |
| 40 | -0.38 |
| 42 | 0.25 |
| 44 | 0.25 |
| 46 | -0.25 |
| 48 | -1.88 |
| 50 | -1.88 |
| 52 | -0.13 |
| 54 | 0.37 |
| 56 | -0.88 |
| 58 | 1.50 |
| 60 | -0.13 |
| 62 | -4.00 |
| 64 | -3.38 |
| 66 | 0.12 |
| 68 | -1.25 |
| 70 | -0.88 |
| 72 | 0.75 |
| 74 | 0.37 |
| 76 | -0.63 |
| 78 | -0.38 |
| 80 | -3.25 |
| 82 | -2.38 |
| 84 | -2.63 |
| 86 | -0.50 |
| 88 | -1.13 |
| 90 | 0.50 |
| 92 | -1.13 |
| 94 | -1.50 |
| 96 | -1.50 |
| 98 | -1.88 |
| 100 | -1.13 |
| 102 | -1.38 |
| 104 | -0.88 |
| 106 | -0.38 |
| 108 | -0.88 |
| 110 | -0.88 |
| 112 | -0.25 |
| 114 | -0.75 |

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

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

## Roll Rate (Record 2)

Contains No Recorded Data

## Acceleration, Lateral, Rollover (Record 2)

Contains No Recorded Data

## Acceleration, Normal, Rollover (Record 2)

Contains No Recorded Data

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

| Time (sec) | Service Brake (Brake Switch Circuit State) | Accelerator Pedal Position, % Full (Accelerator Pedal Position) (%) | Engine RPM (Engine Speed) (RPM) | Engine Throttle, % Full (Throttle Position) (%) | Speed, Vehicle Indicated (Vehicle Speed) (MPH [km/h]) | System Power Mode Status | System Backup Pow Mode Statu |
|---|---|---|---|---|---|---|---|
| -5.0 | Off | 37 | 3,264 | 61 | 57 [92] | Run | Run |
| -4.5 | Off | 37 | 3,264 | 62 | 58 [93] | Run | Run |
| -4.0 | Off | 37 | 3,328 | 64 | 58 [94] | Run | Run |
| -3.5 | Off | 37 | 3,328 | 63 | 60 [96] | Run | Run |
| -3.0 | Off | 37 | 3,392 | 60 | 60 [97] | Run | Run |
| -2.5 | Off | 37 | 3,456 | 58 | 62 [99] | Run | Run |
| -2.0 | Off | 37 | 3,456 | 57 | 62 [100] | Run | Run |
| -1.5 | Off | 37 | 3,584 | 55 | 63 [102] | Run | Run |
| -1.0 | Off | 35 | 3,776 | 54 | 64 [103] | Run | Run |
| -0.5 | Off | 99 | 3,456 | 33 | 51 [82] | Run | Run |

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

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

## Pre-Crash Data -2.0 to -0.5 sec (Record 2)

| Time (sec) | Cruise Control Active | Cruise Control Resume Switch Active | Cruise Control Set Switch Active | Reduced Engine Power Mode Indicator | Engine Torque (N-m) |
|---|---|---|---|---|---|
| -2.0 | No | No | No | Off | 159 |
| -1.5 | No | No | No | Off | 156 |
| -1.0 | No | No | No | Off | 154 |
| -0.5 | No | No | No | Off | 29 |

## System Status at Event (Record 3)

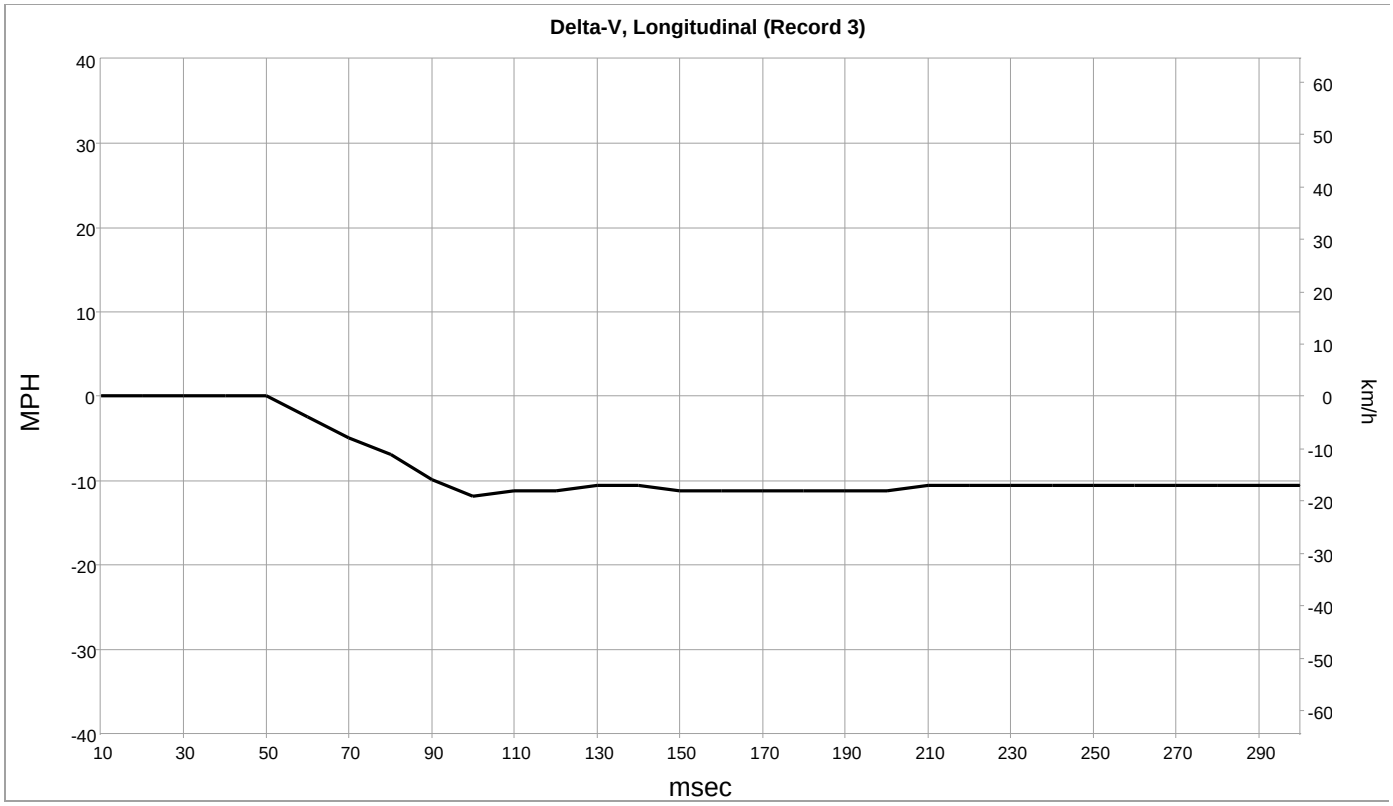
| | |
|---|---|
| Complete File Recorded (Event Recording Complete) | Yes |
| Event Record Type | Deployment |
| Crash Record Locked | Yes |
| OnStar Deployment Status Data Sent | Yes |
| OnStar SDM Recorded Vehicle Velocity Change Data Sent | Yes |
| High Voltage Disable Notification Sent | No |
| Power Loss Detected for Deployment Event | No |
| Deployment Event Counter | 3 |
| Multi-Event, Number of Events (Event Counter) | 3 |
| OnStar Notification Event Counter | 3 |
| Algorithm Active - Frontal | Yes |
| Algorithm Active - Side | Yes |
| Algorithm Active - Rollover | Yes |
| Algorithm Active - Rear | Yes |
| Ignition Cycle, Crash (Ignition Cycles at Event) | 3,067 |
| Time From Event 1 to 2 (Time Between Events) (msec) | 770 |
| Concurrent Event Flag Set | No |
| Event Severity Status: Frontal Pretensioner | No |
| Event Severity Status: Frontal Stage 1 | No |
| Event Severity Status: Frontal Stage 2 | No |
| Event Severity Status: Left Side | No |
| Event Severity Status: Right Side | Yes |
| Event Severity Status: Rear | No |
| Event Severity Status: Rollover | No |
| Event Severity Status: Battery Disconnect Switch - Side Event | No |
| Safety Belt Status, Driver (Driver Belt Switch Circuit Status) | Not Buckled |
| Safety Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status) | Not Buckled |
| Passenger Seat Occupancy Status | Empty |
| Occupant Size Right Front Passenger Child (Passenger Classification Status) | No (Not Applicable) |
| Passenger Air Bag ON Indicator Status | Off |
| Passenger Air Bag OFF Indicator Status | On |
| Low Tire Pressure Warning Lamp Status 0.5 Seconds prior to Time Zero | Off |
| Frontal Air Bag Warning Lamp (SIR Warning Lamp Status 0.5 Seconds Prior to Time Zero) | On |
| SIR Warning Lamp ON/OFF Time Continuously (seconds) | 0 |
| Number of Ignition Cycles SIR Warning Lamp was ON/OFF Continuously | 0 |
| Ignition Cycles Since DTCs Were Last Cleared 0.5 Seconds Prior to Time Zero | 253 |
| Maximum Delta-V, Longitudinal (Maximum Longitudinal SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h]) | -12 [-19] |
| Time, Maximum Delta-V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change) (msec) | 102 |
| Maximum Delta-V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event) (MPH [km/h]) | -39 [-62] |
| Time Maximum Delta-V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change) (msec) | 140 |
| Maximum Resultant Delta-V – Longitudinal Component for FSR Event (MPH [km/h]) | -12 [-19] |
| Maximum Resultant Delta-V – Lateral Component for FSR Event (MPH [km/h]) | -39 [-62] |
| Time from FSR Time Zero to time of the Maximum Resultant Delta-V (msec) | 106 |
| Blended Event FSR 1 Severity Type | Side (Left or Right Side) |
| Blended Event FSR 2 Severity Type | Data Not Available |
| Blended Event Time from FSR 1 Time Zero to FSR 2 Time Zero (msec) | Data Not Available |
| Blended Event FSR 3 Severity Type | Data Not Available |
| Blended Event Time from FSR 1 Time Zero to FSR 3 Time Zero (msec) | Data Not Available |

## Diagnostic Trouble Codes 0.5 Seconds Prior to Time Zero (Record 3)

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

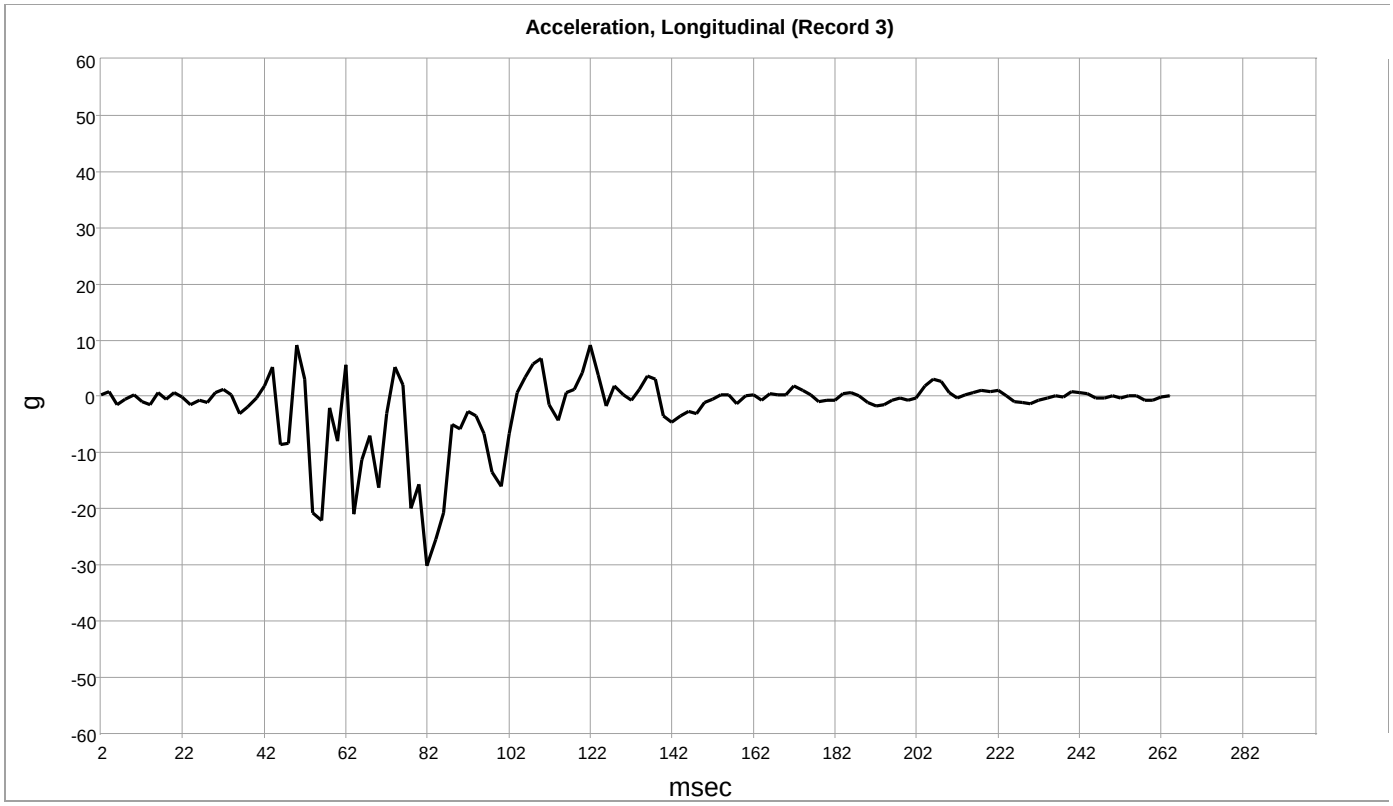
## Deployment Command Data (Record 3)

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


Delta-V, Longitudinal (Record 3)
MPH
km/h
msec
40
30
20
10
0
-10
-20
-30
-40
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290

## Longitudinal Delta-V (Record 3)

| Time (msec) | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (MPH [km/h]) |
|---|---|
| 10 | 0 [0] |
| 20 | 0 [0] |
| 30 | 0 [0] |
| 40 | 0 [0] |
| 50 | 0 [0] |
| 60 | -2 [-4] |
| 70 | -5 [-8] |
| 80 | -7 [-11] |
| 90 | -10 [-16] |
| 100 | -12 [-19] |
| 110 | -11 [-18] |
| 120 | -11 [-18] |
| 130 | -11 [-17] |
| 140 | -11 [-17] |
| 150 | -11 [-18] |
| 160 | -11 [-18] |
| 170 | -11 [-18] |
| 180 | -11 [-18] |
| 190 | -11 [-18] |
| 200 | -11 [-18] |
| 210 | -11 [-17] |
| 220 | -11 [-17] |
| 230 | -11 [-17] |
| 240 | -11 [-17] |
| 250 | -11 [-17] |
| 260 | -11 [-17] |
| 270 | -11 [-17] |
| 280 | -11 [-17] |
| 290 | -11 [-17] |
| 300 | -11 [-17] |

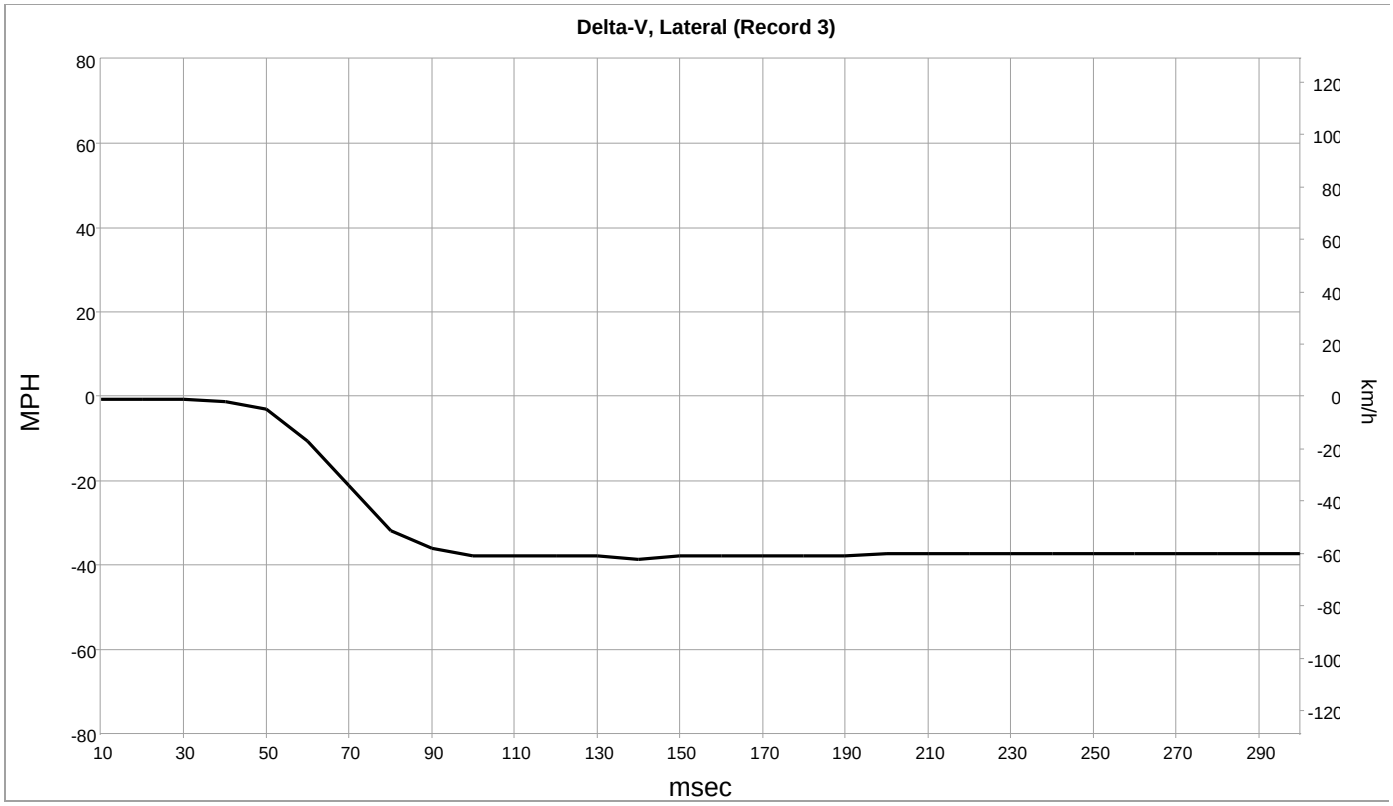

Acceleration, Longitudinal (Record 3)
60
50
40
30
20
10
0
-10
-20
-30
-40
-50
-60
g
2
22
42
62
82
102
122
142
162
182
202
222
242
262
282
msec

## Longitudinal Acceleration (Record 3)

| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 2 | 0.25 |
| 4 | 0.87 |
| 6 | -1.50 |
| 8 | -0.50 |
| 10 | 0.37 |
| 12 | -0.88 |
| 14 | -1.50 |
| 16 | 0.62 |
| 18 | -0.50 |
| 20 | 0.62 |
| 22 | -0.13 |
| 24 | -1.38 |
| 26 | -0.63 |
| 28 | -1.00 |
| 30 | 0.62 |
| 32 | 1.37 |
| 34 | 0.37 |
| 36 | -3.00 |
| 38 | -1.88 |
| 40 | -0.25 |
| 42 | 1.87 |
| 44 | 5.25 |
| 46 | -8.63 |
| 48 | -8.25 |
| 50 | 9.12 |
| 52 | 3.12 |
| 54 | -20.63 |
| 56 | -22.00 |
| 58 | -2.00 |
| 60 | -7.88 |
| 62 | 5.62 |
| 64 | -21.00 |
| 66 | -11.25 |
| 68 | -6.88 |
| 70 | -16.25 |
| 72 | -3.00 |
| 74 | 5.25 |
| 76 | 2.00 |
| 78 | -19.88 |
| 80 | -15.63 |
| 82 | -30.13 |
| 84 | -25.50 |
| 86 | -20.75 |
| 88 | -5.00 |
| 90 | -5.75 |
| 92 | -2.63 |
| 94 | -3.38 |
| 96 | -6.50 |
| 98 | -13.50 |
| 100 | -16.00 |
| 102 | -6.50 |
| 104 | 0.75 |
| 106 | 3.37 |
| 108 | 5.75 |
| 110 | 6.75 |
| 112 | -1.38 |

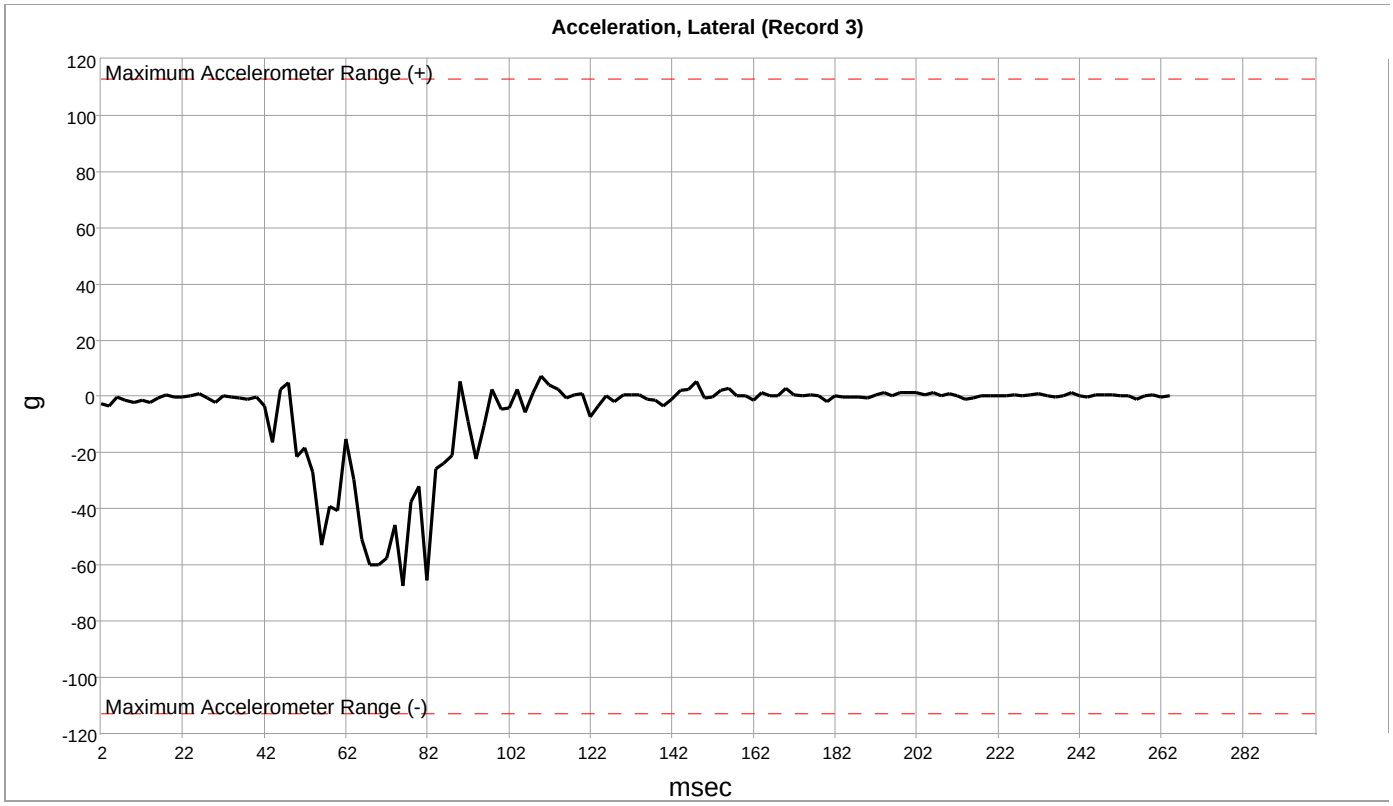
| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 114 | -4.13 |
| 116 | 0.75 |
| 118 | 1.37 |
| 120 | 4.25 |
| 122 | 9.12 |
| 124 | 3.87 |
| 126 | -1.63 |
| 128 | 1.87 |
| 130 | 0.37 |
| 132 | -0.75 |
| 134 | 1.37 |
| 136 | 3.62 |
| 138 | 3.00 |
| 140 | -3.38 |
| 142 | -4.63 |
| 144 | -3.38 |
| 146 | -2.63 |
| 148 | -3.00 |
| 150 | -1.13 |
| 152 | -0.50 |
| 154 | 0.25 |
| 156 | 0.37 |
| 158 | -1.25 |
| 160 | 0.12 |
| 162 | 0.25 |
| 164 | -0.75 |
| 166 | 0.50 |
| 168 | 0.25 |
| 170 | 0.37 |
| 172 | 1.87 |
| 174 | 1.00 |
| 176 | 0.37 |
| 178 | -0.88 |
| 180 | -0.63 |
| 182 | -0.63 |
| 184 | 0.50 |
| 186 | 0.75 |
| 188 | 0.12 |
| 190 | -1.00 |
| 192 | -1.75 |
| 194 | -1.38 |
| 196 | -0.75 |
| 198 | -0.25 |
| 200 | -0.63 |
| 202 | -0.25 |
| 204 | 1.87 |
| 206 | 3.00 |
| 208 | 2.62 |
| 210 | 0.75 |
| 212 | -0.25 |
| 214 | 0.37 |
| 216 | 0.62 |
| 218 | 1.00 |
| 220 | 0.87 |
| 222 | 1.00 |
| 224 | 0.00 |
| 226 | -0.88 |

| Time (msec) | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (g) |
|---|---|
| 228 | -1.13 |
| 230 | -1.25 |
| 232 | -0.63 |
| 234 | -0.25 |
| 236 | 0.00 |
| 238 | -0.13 |
| 240 | 0.87 |
| 242 | 0.75 |
| 244 | 0.50 |
| 246 | -0.38 |
| 248 | -0.25 |
| 250 | 0.00 |
| 252 | -0.25 |
| 254 | 0.00 |
| 256 | 0.00 |
| 258 | -0.75 |
| 260 | -0.75 |
| 262 | -0.13 |
| 264 | 0.00 |
| 266 | Data Not Available |
| 268 | Data Not Available |
| 270 | Data Not Available |
| 272 | Data Not Available |
| 274 | Data Not Available |
| 276 | Data Not Available |
| 278 | Data Not Available |
| 280 | Data Not Available |
| 282 | Data Not Available |
| 284 | Data Not Available |
| 286 | Data Not Available |
| 288 | Data Not Available |
| 290 | Data Not Available |
| 292 | Data Not Available |
| 294 | Data Not Available |
| 296 | Data Not Available |
| 298 | Data Not Available |
| 300 | Data Not Available |


Delta-V, Lateral (Record 3)
MPH
km/h
msec
80
60
40
20
0
-20
-40
-60
-80
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
10
30
50
70
90
110
130
150
170
190
210
230
250
270
290

## Lateral Delta-V (Record 3)

| Time (msec) | Delta-V, Lateral (SDM Recorded Vehicle Lateral Velocity Change for FSR Event) (MPH [km/h]) |
|---|---|
| 10 | -1 [-1] |
| 20 | -1 [-1] |
| 30 | -1 [-1] |
| 40 | -1 [-2] |
| 50 | -3 [-5] |
| 60 | -11 [-17] |
| 70 | -21 [-34] |
| 80 | -32 [-51] |
| 90 | -36 [-58] |
| 100 | -38 [-61] |
| 110 | -38 [-61] |
| 120 | -38 [-61] |
| 130 | -38 [-61] |
| 140 | -39 [-62] |
| 150 | -38 [-61] |
| 160 | -38 [-61] |
| 170 | -38 [-61] |
| 180 | -38 [-61] |
| 190 | -38 [-61] |
| 200 | -37 [-60] |
| 210 | -37 [-60] |
| 220 | -37 [-60] |
| 230 | -37 [-60] |
| 240 | -37 [-60] |
| 250 | -37 [-60] |
| 260 | -37 [-60] |
| 270 | -37 [-60] |
| 280 | -37 [-60] |
| 290 | -37 [-60] |
| 300 | -37 [-60] |


Acceleration, Lateral (Record 3)
Maximum Accelerometer Range (+)
Maximum Accelerometer Range (-)
120
100
80
60
40
20
0
-20
-40
-60
-80
-100
-120
g
2
22
42
62
82
102
122
142
162
182
202
222
242
262
282
msec

## Lateral Acceleration (Record 3)

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 2 | -2.50 |
| 4 | -3.38 |
| 6 | -0.13 |
| 8 | -1.38 |
| 10 | -2.00 |
| 12 | -1.50 |
| 14 | -2.25 |
| 16 | -0.75 |
| 18 | 0.62 |
| 20 | -0.38 |
| 22 | -0.25 |
| 24 | 0.00 |
| 26 | 0.87 |
| 28 | -0.50 |
| 30 | -2.25 |
| 32 | 0.00 |
| 34 | -0.38 |
| 36 | -0.75 |
| 38 | -0.88 |
| 40 | -0.38 |
| 42 | -3.25 |
| 44 | -16.38 |
| 46 | 2.37 |
| 48 | 4.87 |
| 50 | -21.38 |
| 52 | -18.13 |
| 54 | -26.88 |
| 56 | -52.75 |
| 58 | -39.25 |
| 60 | -40.63 |
| 62 | -15.25 |
| 64 | -29.50 |
| 66 | -51.00 |
| 68 | -60.00 |
| 70 | -59.88 |
| 72 | -57.50 |
| 74 | -45.75 |
| 76 | -67.50 |
| 78 | -37.50 |
| 80 | -31.88 |
| 82 | -65.50 |
| 84 | -25.75 |
| 86 | -23.88 |
| 88 | -21.13 |
| 90 | 5.25 |
| 92 | -8.88 |
| 94 | -22.38 |
| 96 | -10.38 |
| 98 | 2.37 |
| 100 | -4.50 |
| 102 | -4.13 |
| 104 | 2.37 |
| 106 | -5.50 |
| 108 | 1.37 |
| 110 | 7.25 |
| 112 | 4.25 |
| 114 | 2.37 |

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 116 | -0.50 |
| 118 | 0.50 |
| 120 | 1.00 |
| 122 | -7.13 |
| 124 | -3.50 |
| 126 | 0.00 |
| 128 | -1.75 |
| 130 | 0.50 |
| 132 | 0.62 |
| 134 | 0.75 |
| 136 | -1.00 |
| 138 | -1.25 |
| 140 | -3.50 |
| 142 | -0.88 |
| 144 | 2.00 |
| 146 | 2.50 |
| 148 | 5.12 |
| 150 | -0.63 |
| 152 | -0.38 |
| 154 | 2.00 |
| 156 | 3.00 |
| 158 | 0.25 |
| 160 | 0.00 |
| 162 | -1.38 |
| 164 | 1.25 |
| 166 | 0.37 |
| 168 | 0.00 |
| 170 | 3.00 |
| 172 | 0.62 |
| 174 | 0.37 |
| 176 | 0.75 |
| 178 | 0.25 |
| 180 | -1.88 |
| 182 | 0.00 |
| 184 | -0.38 |
| 186 | -0.38 |
| 188 | -0.13 |
| 190 | -0.50 |
| 192 | 0.62 |
| 194 | 1.37 |
| 196 | 0.37 |
| 198 | 1.25 |
| 200 | 1.50 |
| 202 | 1.25 |
| 204 | 0.50 |
| 206 | 1.50 |
| 208 | 0.25 |
| 210 | 1.12 |
| 212 | 0.37 |
| 214 | -1.00 |
| 216 | -0.75 |
| 218 | 0.00 |
| 220 | 0.37 |
| 222 | 0.12 |
| 224 | 0.00 |
| 226 | 0.50 |
| 228 | 0.12 |
| 230 | 0.75 |

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|---|---|
| 232 | 1.00 |
| 234 | 0.25 |
| 236 | -0.25 |
| 238 | 0.25 |
| 240 | 1.37 |
| 242 | 0.37 |
| 244 | -0.38 |
| 246 | 0.50 |
| 248 | 0.62 |
| 250 | 0.62 |
| 252 | 0.25 |
| 254 | 0.12 |
| 256 | -0.88 |
| 258 | 0.00 |
| 260 | 0.50 |
| 262 | -0.38 |
| 264 | 0.00 |
| 266 | Data Not Available |
| 268 | Data Not Available |
| 270 | Data Not Available |
| 272 | Data Not Available |
| 274 | Data Not Available |
| 276 | Data Not Available |
| 278 | Data Not Available |
| 280 | Data Not Available |
| 282 | Data Not Available |
| 284 | Data Not Available |
| 286 | Data Not Available |
| 288 | Data Not Available |
| 290 | Data Not Available |
| 292 | Data Not Available |
| 294 | Data Not Available |
| 296 | Data Not Available |
| 298 | Data Not Available |
| 300 | Data Not Available |

## Roll Rate (Record 3)

Contains No Recorded Data

## Acceleration, Lateral, Rollover (Record 3)

Contains No Recorded Data

## Acceleration, Normal, Rollover (Record 3)

Contains No Recorded Data

## Pre-Crash Data -5.0 to -0.5 sec (Record 3) - Table 1 of 2

| Time (sec) | Service Brake (Brake Switch Circuit State) | Accelerator Pedal Position, % Full (Accelerator Pedal Position) (%) | Engine RPM (Engine Speed) (RPM) | Engine Throttle, % Full (Throttle Position) (%) | Speed, Vehicle Indicated (Vehicle Speed) (MPH [km/h]) | System Power Mode Status | System Backup Pow Mode Statu |
|---|---|---|---|---|---|---|---|
| -5.0 | Off | 37 | 3,328 | 64 | 58 [94] | Run | Run |
| -4.5 | Off | 37 | 3,328 | 63 | 60 [96] | Run | Run |
| -4.0 | Off | 37 | 3,392 | 60 | 60 [97] | Run | Run |
| -3.5 | Off | 37 | 3,456 | 58 | 62 [99] | Run | Run |
| -3.0 | Off | 37 | 3,456 | 57 | 62 [100] | Run | Run |
| -2.5 | Off | 37 | 3,584 | 55 | 63 [102] | Run | Run |
| -2.0 | Off | 35 | 3,776 | 54 | 64 [103] | Run | Run |
| -1.5 | Off | 99 | 3,456 | 33 | 51 [82] | Run | Run |
| -1.0 | Off | 0 | 3,264 | 32 | 22 [36] | Run | Run |
| -0.5 | On | 0 | 3,264 | 31 | 16 [25] | Run | Run |

## Pre-Crash Data -5.0 to -0.5 sec (Record 3) - Table 2 of 2

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

## Pre-Crash Data -2.0 to -0.5 sec (Record 3)

| Time (sec) | Cruise Control Active | Cruise Control Resume Switch Active | Cruise Control Set Switch Active | Reduced Engine Power Mode Indicator | Engine Torque (N-m) |
|---|---|---|---|---|---|
| -2.0 | No | No | No | Off | 154 |
| -1.5 | No | No | No | Off | 29 |
| -1.0 | No | No | No | Off | 10 |
| -0.5 | No | No | No | Off | 9 |

## Hexadecimal Data

```
DPID $11
FF 3F 03 00 3F 0E 41

DPID $15
01 02 03 04 05 06 07

DPID $16
08 09 0A 0D 0E 13 14

DPID $17
00 00 0B 0C 00 00 00

DPID $1F
01 01 02 02 00 00 00

DPID $20
00 00 00 00 00 00 00

DPID $30
00 FF 00 00 00 00 00

DPID $32
00 FF 0B FB 00 00 00

DPID $51
0B 00 00 00 00 00 00

DID $01
41 55 39 34 31 32 44 41 30 30 30 30 30 30 30 30

DID $02
00 CE 4A 34

DID $03
41 54 39 34 31 32 44 41 30 30 30 30 30 30 30 30

DID $04
00 CE 4A 34

DID $05
41 48 34 30 37 37 44 41 30 30 30 30 30 30 30 30

DID $06
00 CE 35 5D

DID $07
41 4A 34 30 37 37 44 41 30 30 30 30 30 30 30 30

DID $08
00 CE 35 5D

DID $09
44 41 34 31 39 38 44 41 30 30 30 30 30 30 30 30

DID $0A
00 CE 35 D6

DID $0B
44 42 34 31 39 38 44 41 30 30 30 30 30 30 30 30

DID $0C
```

```
00 CE 35 D6

DID $0D
00 00 30 30 30 30 44 41 30 30 30 30 30 30 30 30

DID $0E
00 00 00 00

DID $0F
00 00 30 30 30 30 44 41 30 30 30 30 30 30 30 30

DID $10
00 00 00 00

DID $11
00 00

DID $22
57 45

DID $30
05 00 08 05 00 71 71 00 00 00

DID $31
0000   A5 F0 01 00 01 01 0F 0B FB FF
0010   FF 00 00 00 02 AF 00 20 00 00
0020   00 0C FC FC F0 00 00 F0 1C 23
0030   25 25 25 25 25 25 25 25 25 00
0040   00 00 00 00 00 00 3B 38 36 36
0050   35 34 34 33 33 33 07 D3 07 D7
0060   07 DE 07 E4 36 37 39 3A 3C 3F
0070   40 3E 3D 39 67 66 64 63 61 60
0080   5E 5D 5C 5A 00 FF FD 07 05 FD
0090   80 52 00 FF FF FF FF FF FF FF
0100   FF FF FF FF FF FF FF FF FF FF
0110   FF FF FF FF FF FF FF 62 FD 6F
0120   F9 62 6F FD 00 E0 FF E0 FF FD
0130   FF FD FF 32 32 3A 3A FF FF FF
0140   FF FF FF FF FF FF FF FD FF FF
0150   FF FF FF FF FF FF FF 00 00 00
0160   00 00 FF FF FF FF FF 00 00 00
0170   00 00 00 00 00 00 00 7C 7F 7D
0180   7F 7C 7F 7A 7F 79 7F 78 7E 77
0190   7E 77 7D 76 7D 75 7D 75 7D 75
0200   7C 75 7B 75 7B 75 7A 75 77 74
0210   78 74 78 74 78 74 77 74 77 74
0220   76 73 76 73 75 73 76 72 76 72
0230   76 72 76 72 76 72 76 7E C6 80
0240   4A 7C 49 80 4A 7C 23 80 7C 7D
0250   CC 80 3D 7D 81 7E BA 7F 5C 80
0260   31 7F 69 7F 43 80 18 7F 9B 80
0270   C7 7F 11 81 05 80 3D 81 1E 80
0280   31 7F A7 80 31 7E AD 80 F9 7E
0290   30 80 31 7E 56 7F 82 7E 88 7F
0300   C0 7F 69 81 82 7D B3 80 BA 7A
0310   7A 80 24 7D 43 7C 6E 87 13 81
0320   5D 87 13 80 EC 7D 9A 82 F9 79
0330   CB 7D A7 7A 3C 7E EC 7E 17 7D
0340   11 7C 55 81 2B 7D D9 7E DF 7E
0350   30 7F 82 7E 94 80 EC 7E 94 81
0360   05 80 24 7E 7B 80 18 80 95 7E
0370   EC 7F E6 7D CC 80 7C 7E DF 7F
0380   9B 7F 37 80 A1 7F 50 7F A7 7F
0390   C0 7C DF 80 63 7E C6 80 A1 7F
0400   69 7E 94 7F FF 7E 0B 7F 69 7F
0410   D9 7E 62 7F E6 7F D9 7F CD 80
0420   18 7F 05 7F 5C 7E 24 7E 6F 7F
```

```
0430   5C 80 31 7F B4 80 6F 7F 05 80
0440   3D 7E 6F 80 31 80 95 7F D9 7F
0450   CD 7F B4 7F 69 7F 37 80 0B 7F
0460   C0 7F B4 7F 43 7F D9 7F A7 80
0470   56 7F 1E 7F 9B 7E 3D 7E 62 81
0480   5D 81 2B 7E 7B 80 F9 7C C6 7F
0490   9B 7E 88 7F FF 7E EC 80 31 7F
0500   B4 80 88 81 A8 7F C0 81 1E 7F
0510   05 7F CD 80 3D 80 56 80 95 80
0520   18 7F D9 7F 8E 7F 2A 7D C0 80
0530   6F 80 7C 7F F2 7C EB 81 8F 7E
0540   49 83 06 78 D1 7B 42 7D 1D 7C
0550   EB 7A 61 80 AE 7D FE 82 F9 7F
0560   8E 7E 6F 81 69 7F C0 80 A1 7F
0570   1E 81 76 7F 82 81 76 7F 11 80
0580   D3 81 5D 80 95 7F 5C 80 C7 7E
0590   6F 7E AD 7E 62 80 0B 7F A7 81
0600   1E 81 37 81 37 81 C1 7D 43 7E
0610   3D 80 31 80 F9 80 EC 80 AE 81
0620   69 81 1E 7E BA 80 18 7E EC 7F
0630   69 7E EC 7E D3 7E 6F 7F 43 7F
0640   A7 7E BA 7F 37 7F B4 7E F8 7F
0650   E6 7F E6 80 4A 80 C7 81 05 7F
0660   F2 7F F2 7E DF 7F 11 7F 69 7F
0670   8E 7E DF 80 18 7F 69 7F 9B 7F
0680   E6 7E 6F 7F FF 7E 6F 7F 8E 7F
0690   A7 7F 11 7D CC 7F 2A 80 C7 7F
0700   8E 81 44 7F B4 7F 82 80 6F 7F
0710   D9 7E 6F 7F D9 7F F2 7E 94 7F
0720   9B 7E F8 81 50 80 AE 80 0B 80
0730   C7 81 2B 7F 75 81 82 7F 8E 80
0740   4A 7F 9B 80 18 7F E6 7F 2A 80
0750   3D 80 56 7F B4 80 31 7F FF 80
0760   F9 81 37 7F CD 7F E6 7F 82 7E
0770   BA 7F 75 7F C0 80 56 80 AE 80
0780   63 80 24 7F 5C 7F B4 7F 69 7F
0790   8E 7F CD 7F 75 7F FF 7F B4 80
0800   88 7F 9B 80 A1 7F B4 80 BA 7F
0810   A7 80 31 7F B4 80 AE 7F A7 80
0820   31 7F C0 7F C0 7F 5C 7F CD 7F
0830   CD 7F A7 80 31 7F E6 FF FF FF
0840   FF FF FF FF FF FF FF FF FF FF
0850   FF FF FF FF FF FF FF FF FF FF
0860   FF FF FF FF FF FF FF FF FF FF
0870   FF FF FF FF FF FF FF FF FF FF
0880   FF FF FF FF FF FF FF FF FF FF
0890   FF FF FF FF FF FF FF FF FF FF
0900   FF FF FF FF FF FF FF FF FF FF
0910   FF FF FF FF FF FF FF FF FF FF
0920   FF FF FF FF FF FF FF FF FF FF
0930   FF FF FF FF FF FF FF FF FF FF
0940   FF FF FF FF FF FF FF FF FF FF
0950   FF FF FF FF FF FF FF FF FF FF
0960   FF FF FF FF FF FF FF FF FF FF
0970   FF FF FF FF FF FF FF FF FF FF
0980   FF FF FF FF FF FF FF FF FF FF
0990   FF FF FF FF FF FF FF FF FF FF
1000   FF FF FF FF FF FF FF FF FF FF
1010   FF FF FF FF FF FF FF FF FF FF
1020   FF FF FF FF FF FF FF FF FF FF
1030   FF FF FF FF FF FF FF FF FF FF
1040   FF FF FF FF FF FF FF FF FF FF
1050   FF FF FF FF FF FF FF FF FF FF
1060   FF FF FF FF FF FF FF FF FF FF
1070   FF FF FF FF FF FF FF FF FF FF
1080   FF FF FF FF FF FF FF FF FF FF
1090   FF FF FF FF FF FF FF FF FF FF
```

```
1100   FF FF FF FF FF FF FF FF FF FF
1110   FF FF FF FF FF FF FF FF FF FF
1120   FF FF FF FF FF FF FF FF FF FF
1130   FF FF FF FF FF FF FF 48 48 48
1140   48 48 48 48 48 48 48 00 00 55
1150   55 50 48 48 48 48 48 00 00 00
1160   00 00 00 00 00 00 00 00 00 00
1170   00 00 00 00 00 00 00 00 00 00
1180   00 00 00 00 00 00 00 1C 17 AA
1190   01 01 A5 01 00 FB 0B 00 00 FF
1200   FF FF FF FF 7F 23 25 25 25 25
1210   25 25 25 25 25 00 00 00 00 00
1220   00 00 00 00 00 00 3B 38 36 36 35
1230   34 34 33 33 33 D3 07 D7 07 DE
1240   07 E4 07 36 37 39 3A 3C 3F 40
1250   3E 3D 39 67 66 64 63 61 60 5E
1260   5D 5C 5A 00 00 48 48 48 48 48
1270   48 48 48 48 48 00 00 00 50 55
1280   55 48 48 48 48 48 00 00 00 00
1290   00 00 00 00 00 00 A5 B5 00 00
1300   00 12 00 08 00 02 00 FD FF 05
1310   07 FF FF F2 D7 19 00 0F A0 FF
1320   FF FD FF FF FF 0C FC FC 00 F0
1330   00 00 00 00 00 00 00 00 00 00
1340   00 00 00 00 00 00 00 00 00 00
1350   00 00 00 00 00 00 00 00 00 00
1360   00 00 00 00 00 00 00 00 00 00
1370   00 00 00 00 00 00 00 00 00 00
1380   00 00 00 00 00 00 00 00 00 00
1390   00 00 00 00 00 00 00 50 00 02
1400   FF DA 01 FF FF 6D DB B6 FD D3
1410   07 15 3E 34 71 02 02 02 00 00
1420   D0 A5 FF FF FF FF FF FF FF 72
1430   01 72 01 00 00 A5 FF FF FF FF
1440   FF FF FF FF FF EB 01 EB 01 00
1450   02 A5 FF FF FF FF FF FF FF FF
1460   FF 32 00 32 00 00 04 A5 FF 32
1470   00 32 00 00 05 A5 FF 3A 00 3A
1480   00 00 06 A5 FF 3A 00 3A 00 00
1490   07 A5 FF FF FF FF FF FF FF FF
1500   FF FF FF FF FF FF FF FF FF FF
1510   FF FF FF FF FF FF FF FF FF FF
1520   FF FF FF FF FF 72 01 72 01 00
1530   12 A5 FF FF FF FF FF FF FF FF
1540   FF FF FF FF FF FF FF FF FF FF
1550   FF FF FF FF FF FF FF FF FF FF
1560   FF FF FF FF FF FF FF FF FF FF
1570   FF FF FF FF FF FF FF FF FF FF
1580   FF FF FF FF FF FF FF FF FF 00
1590   00 64 00 FF FF E4 02 FF FF FF
1600   FF 11 FF 14 FF FF 2D FF 27 FF
1610   FF FF FF FF FF A5 FF FF FF FF
1620   FF FF FF FF FF 00 00 E0 03 00
1630   00 E0 03 00 00 00 00 02 00 00
1640   00 FF FF 04 00 00 00 00 FF FF
1650   FF FF FF FF FF 05 FF DE 1A 00
1660   FF 00 00 FF FF FF A5 FF FF FF
1670   FF FF FF FF FF FF FF FF FF FF
1680   FF FF FF FF FF FF FF FF FF FF
1690   FF FF FF FF FF FF FF FF FF FF
1700   FF 39 00 2F 00 FC 03 FC 03 00
1710   00 FF FF FF FF 2F 00 FC 03 FF
1720   FF FF FF FF FF FF FF FF FF 00
1730   FF FF FF FF FF FF FF FF FF FF
1740   FF 39 00 2F 00 69 01 43 01 FF
1750   FF FF FF 00 00 00 00 00 00 00
1760   00 00 00 FF FF FF FF FF FF FF
```

```
1770   FF FF FF FF FF FF FF FF FF FF
1780   FF FF FF 00 00 00 00 05 05 A5
1790   FF FF FF 7F 06 8A FC 66 06 81
1800   FC 7F 06 8A FC 03 02 F2 01 03
1810   02 00 00 FF FF FF FF 01 0F 02
1820   00 01 00 00 A5 F5 10 00 00 F5
1830   10 00 00 03 02 00 00 00 00 00
1840   00 00 00 00 00 00 00 00 00 00
1850   00 00 00 00 00 00 00 00 00 10
1860   00 00 00 00 00 00 00 00 00 00
1870   00 00 00 00 00 00 00 00 00 00
1880   00 00 00 00 00 00 00 00 00 00
1890   00 00 00 00 00 00 00 00 00 00
1900   00 00 00 00 01 12 02 FF A5 01
1910   01 01 01 01 01 00 19 00 06 00
1920   4C 00 06 00 4F 00 0A 00 2D 00
1930   05 00 33 00 E6 FF 0D 00 04 00
1940   0C 00 F1 FF FE FF F8 FF F0 FF
1950   ED FF EB FF 05 00 E9 FF 04 00
1960   07 00 04 00 1B 00 14 00 25 00
1970   04 00 22 00 F6 FF 0E A5 FF FF
1980   1E 00 FB FF 0C 00 1F 00 2F 00
1990   0F 00 71 00 03 00 38 00 B7 FF
2000   6F FF 1C 00 6F FF 13 00 31 00
2010   3D 00 7F 00 D0 FF 76 00 EA FF
2020   27 00 C4 FF 4B 00 18 00 2C 00
2030   E9 FF 25 00 F6 FF 1D 00 13 00
2040   0E A5 FF FF 1D 00 15 00 FD FF
2050   E1 FF FE FF 0C 00 16 00 FE FF
2060   2D 00 0A 00 17 00 F8 FF 10 00
2070   0D 00 0E 00 F9 FF 05 00 C0 FF
2080   F8 FF E7 FF F3 FF F4 FF 1D 00
2090   00 00 28 00 F4 FF 03 00 DF FF
2100   02 00 FD FF 0E A5 FF FF 04 00
2110   02 00 14 00 F3 FF 26 00 E0 FF
2120   0D 00 04 00 06 00 09 00 14 00
2130   05 00 20 00 04 00 F4 FF FD FF
2140   04 00 FA FF 0C 00 F0 FF FF FF
2150   FB FF 06 00 F1 FF 03 00 F9 FF
2160   F9 FF EE FF 08 00 DC FF 0E A5
2170   FF FF 21 00 1C 00 E8 FF E1 FF
2180   EC FF BE FF 08 00 E2 FF 00 00
2190   EA FF FC FF FA FF F5 FF 22 00
2200   05 00 17 00 14 00 FC FF FB FF
2210   07 00 F4 FF 02 00 03 00 F7 FF
2220   11 00 D2 FF F7 FF 0A 00 01 00
2230   C1 FF 0E A5 FF FF E0 FF DD FF
2240   C2 FF 6D FF 61 00 C5 FF 3F 00
2250   8D FF F2 FF D7 FF C3 FF F7 FF
2260   20 00 1D 00 05 00 0D 00 12 00
2270   1E 00 0A 00 1E 00 13 00 11 00
2280   E4 FF 0C 00 0D 00 10 00 20 00
2290   E5 FF 21 00 01 00 0E A5 FF FF
2300   07 00 17 00 E7 FF 19 00 DC FF
2310   C8 FF 24 00 04 00 EC FF 13 00
2320   F2 FF 1D 00 E9 FF E6 FF FE FF
2330   EA FF 0C 00 EA FF 18 00 E0 FF
2340   0F 00 F9 FF 1A 00 F0 FF 06 00
2350   EB FF 02 00 FE FF FA FF 10 00
2360   0E A5 FF FF EB FF FF FF 01 00
2370   E9 FF 13 00 F4 FF 09 00 E9 FF
2380   FE FF F4 FF 08 00 FE FF 20 00
2390   00 00 20 00 F7 FF 07 00 ED FF
2400   2D 00 EF FF F0 FF F7 FF E6 FF
2410   FA FF 0A 00 09 00 03 00 E0 FF
2420   03 00 FF FF 0E A5 FF FF 1D 00
2430   F8 FF 15 00 1B 00 F2 FF 01 00
```

```
2440   F0 FF 18 00 0B 00 1F 00 09 00
2450   06 00 08 00 02 00 02 00 EF FF
2460   FB FF 07 00 06 00 04 00 00 00
2470   14 00 E7 FF FC FF 02 00 F6 FF
2480   1A 00 F5 FF 05 00 07 00 0E A5
2490   FF FF F2 FF 08 00 FD FF F3 FF
2500   06 00 F4 FF 09 00 FC FF 0B 00
2510   00 00 06 00 0B 00 08 00 0D 00
2520   06 00 0F 00 07 00 04 00 06 00
2530   0E 00 07 00 04 00 05 00 FB FF
2540   0D 00 FC FF 04 00 F9 FF FC FF
2550   FE FF 0E A5 FF FF 03 00 02 00
2560   03 00 05 00 06 00 07 FF 05 A5
2570   FF FF 08 FF 08 FE 09 FE 0A FE
2580   0A FE 0A FD 05 A5 FF FF 0A FC
2590   0A FC 0A FB 0A F8 0B F9 0B F9
2600   05 A5 FF FF 0B F9 0B F8 0B F8
2610   0B F7 0C F7 0C F6 05 A5 FF FF
2620   0C F7 0D F7 0D F7 0D F7 0D F7
2630   0D F7 05 A5 FF FF 00 00 00 00
2640   00 00 00 00 00 00 00 00 00 00
2650   00 00 00 00 00 00 00 00 00 00
2660   00 00 00 00 00 00 00 00 00 00
2670   00 00 00 00 00 00 00 00 00 00
2680   00 00 00 00 00 00 00 00 00 00
2690   00 00 00 00 00 00 00 00 00 00
2700   00 00 00 00 00 00 00 00 00 00
2710   00 00 00 00 00 00 00 00 00 00
2720   00 00 00 00 00 00 00 00 00 00
2730   00 00 00 00 00 00 00 00 00 00
2740   00 00 00 00 00 00 00 00 00 00
2750   00 00 00 00 00 00 00 00 00 00
2760   00 00 00 00 00 00 00 00 00 00
2770   00 00 00 00 00 00 00 00 00 00
2780   00 00 00 00 00 00 00 00 00 00
2790   00 00 00 00 00 00 00 00 00 00

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| 1800 | F2 | 27 | 04 | 57 | F2 | 66 | 00 | 8D | 00 | 6A |
| 1810 | 00 | 00 | 01 | FF | FF | FF | FF | 01 | 0F | 10 |
| 1820 | 00 | 03 | 00 | 00 | A5 | 00 | 00 | 00 | 00 | 00 |
| 1830 | 00 | 00 | 00 | 08 | 01 | 00 | 00 | 00 | 00 | 00 |
| 1840 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 1850 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 10 |
| 1860 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 1870 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 1880 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 1890 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 1900 | 00 | 00 | 00 | 00 | 01 | 3F | 02 | FF | A5 | 01 |
| 1910 | 01 | 01 | 01 | 01 | 01 | 00 | FE | FF | EC | FF |
| 1920 | F9 | FF | E5 | FF | 0C | 00 | FF | FF | 04 | 00 |
| 1930 | F5 | FF | FD | FF | F0 | FF | 07 | 00 | F4 | FF |
| 1940 | 0C | 00 | EE | FF | FB | FF | FA | FF | 04 | 00 |
| 1950 | 05 | 00 | FB | FF | FD | FF | 01 | 00 | FE | FF |
| 1960 | 0B | 00 | 00 | 00 | 05 | 00 | 07 | 00 | 08 | 00 |
| 1970 | FC | FF | FB | FF | EE | FF | 0E | A5 | FF | FF |
| 1980 | F5 | FF | 00 | 00 | FD | FF | FD | FF | 18 | 00 |
| 1990 | FA | FF | 0F | 00 | F9 | FF | 02 | 00 | FD | FF |
| 2000 | F1 | FF | E6 | FF | D6 | FF | 7D | FF | 45 | 00 |
| 2010 | 13 | 00 | 42 | 00 | 27 | 00 | B7 | FF | 55 | FF |
| 2020 | E7 | FF | 6F | FF | A5 | 00 | 29 | FF | B0 | 00 |
| 2030 | 5A | FE | 10 | 00 | C6 | FE | 3F | 00 | BB | FE |
| 2040 | 0E | A5 | FF | FF | D3 | FF | 86 | FF | A8 | 00 |
| 2050 | 14 | FF | 5A | 00 | 68 | FE | 37 | 00 | 20 | FE |
| 2060 | 82 | 00 | 21 | FE | 18 | 00 | 34 | FE | D6 | FF |
| 2070 | 92 | FE | F0 | FF | E4 | FD | 9F | 00 | D4 | FE |
| 2080 | 7D | 00 | 01 | FF | F1 | 00 | F4 | FD | CC | 00 |
| 2090 | 32 | FF | A6 | 00 | 41 | FF | 28 | 00 | 57 | FF |
| 2100 | 2E | 00 | 2A | 00 | 0E | A5 | FF | FF | 15 | 00 |
| 2110 | B9 | FF | 1B | 00 | 4D | FF | 34 | 00 | AD | FF |
| 2120 | 6C | 00 | 13 | 00 | 80 | 00 | DC | FF | 34 | 00 |
| 2130 | DF | FF | FA | FF | 13 | 00 | E5 | FF | D4 | FF |
| 2140 | D2 | FF | 0B | 00 | CA | FF | 3A | 00 | 0B | 00 |
| 2150 | 22 | 00 | 21 | 00 | 13 | 00 | FA | FF | FC | FF |

```
2160   F5 FF 04 00 DE FF 08 00 0E A5
2170   FF FF B7 FF C7 FF E1 FF E4 FF
2180   0D 00 00 00 F1 FF F2 FF FD FF
2190   04 00 06 00 05 00 F5 FF 06 00
2200   E3 FF F8 FF E8 FF F6 FF 1B 00
2210   E4 FF 25 00 F9 FF 1B 00 10 00
2220   15 00 14 00 18 00 29 00 09 00
2230   FB FF 0E A5 FF FF 04 00 FD FF
2240   FE FF 10 00 FD FF 18 00 0A 00
2250   02 00 FF FF 00 00 FE FF F5 FF
2260   06 00 0A 00 FC FF 03 00 FE FF
2270   00 00 FD FF 18 00 F1 FF 05 00
2280   F8 FF 03 00 FD FF 06 00 07 00
2290   02 00 05 00 F1 FF 0E A5 FF FF
2300   05 00 00 00 FC FF FD FF FA FF
2310   FD FF FF FF FF FF 08 00 FC FF
2320   0E 00 05 00 0B 00 0B 00 06 00
2330   03 00 02 00 0A 00 05 00 0C 00
2340   02 00 0A 00 F1 FF 04 00 E8 FF
2350   0C 00 EB FF 02 00 FA FF 09 00
2360   0E A5 FF FF 02 00 03 00 FD FF
2370   F8 FF FB FF FA FF F8 FF 00 00
2380   F9 FF 03 00 F8 FF 01 00 00 00
2390   00 00 07 00 04 00 09 00 01 00
2400   0A 00 06 00 05 00 08 00 02 00
2410   02 00 00 00 FE FF 01 00 02 00
2420   F9 FF 0B 00 0E A5 FF FF FA FF
2430   03 00 FC FF FD FF 03 00 04 00
2440   02 00 05 00 00 00 05 00 02 00
2450   02 00 00 00 01 00 00 00 F9 FF
2460   06 00 00 00 06 00 04 00 01 00
2470   FD FF 00 00 00 00 FF FF FF FF
2480   FF FF FF FF FF FF FF FF 0B A5
2490   FF FF FF FF FF FF FF FF FF FF
2500   FF FF FF FF FF FF FF FF FF FF
2510   FF FF FF FF FF FF FF FF FF FF
2520   FF FF FF FF FF FF FF FF FF FF
2530   FF FF FF FF FF FF FF FF FF FF
2540   FF FF FF FF FF FF FF FF FF FF
2550   FF FF FF FF FF FF 00 FF 00 FF
2560   00 FF 00 FE 00 FB 04 EF 05 A5
2570   FF FF 08 DE 0B CD 10 C6 13 C3
2580   12 C3 12 C3 05 A5 FF FF 11 C3
2590   11 C2 12 C3 12 C3 12 C3 12 C3
2600   05 A5 FF FF 12 C3 12 C4 11 C4
2610   11 C4 11 C4 11 C4 05 A5 FF FF
2620   11 C4 11 C4 11 C4 11 C4 11 C4
2630   11 C4 05 A5 FF FF 00 00 00 00
2640   00 00 00 00 00 00 00 00 00 00
2650   00 00 00 00 00 00 00 00 00 00
2660   00 00 00 00 00 00 00 00 00 00
2670   00 00 00 00 00 00 00 00 00 00
2680   00 00 00 00 00 00 00 00 00 00
2690   00 00 00 00 00 00 00 00 00 00
2700   00 00 00 00 00 00 00 00 00 00
2710   00 00 00 00 00 00 00 00 00 00
2720   00 00 00 00 00 00 00 00 00 00
2730   00 00 00 00 00 00 00 00 00 00
2740   00 00 00 00 00 00 00 00 00 00
2750   00 00 00 00 00 00 00 00 00 00
2760   00 00 00 00 00 00 00 00 00 00
2770   00 00 00 00 00 00 00 00 00 00
2780   00 00 00 00 00 00 00 00 00 00
2790   00 00 00 00 00 00 00 00 00 00

DID $34
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```
0010   FF FF FF FF FF FF FF FF FF FF
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0030   FF FF FF FF FF FF FF FF FF FF
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0060   FF FF FF FF FF FF FF FF FF FF
0070   FF FF FF FF FF FF FF FF FF FF
0080   FF FF FF FF FF FF FF FF FF FF
0090   FF FF FF FF FF FF FF FF FF FF
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0170   FF FF FF FF FF FF FF FF FF FF
0180   FF FF FF FF FF FF FF FF FF FF
0190   FF FF FF FF FF FF FF FF FF FF
0200   FF FF FF FF FF FF FF FF FF FF
0210   FF FF FF FF FF FF FF FF FF FF
0220   FF FF FF FF FF FF FF FF FF FF
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0510   FF FF FF FF FF FF FF FF FF FF
0520   FF FF FF FF FF FF FF FF FF FF
0530   FF FF FF FF FF FF FF FF FF FF
0540   FF FF FF FF FF FF FF FF FF FF
0550   FF FF FF FF FF FF FF FF FF FF

DID $35
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0020   FF FF FF FF FF FF FF FF FF FF
0030   FF FF FF FF FF FF FF FF FF FF
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0050   FF FF FF FF FF FF FF FF FF FF
0060   FF FF FF FF FF FF FF FF FF FF
0070   FF FF FF FF FF FF FF FF FF FF
0080   FF FF FF FF FF FF FF FF FF FF
0090   FF FF FF FF FF FF FF FF FF FF
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0100   FF FF FF FF FF FF FF FF FF FF
0110   FF FF FF FF FF FF FF FF FF FF
0120   FF FF FF FF FF FF FF FF FF FF
0130   FF FF FF FF FF FF FF FF FF FF
0140   FF FF FF FF FF FF FF FF FF FF
0150   FF FF FF FF FF FF FF FF FF FF
0160   FF FF FF FF FF FF FF FF FF FF
0170   FF FF FF FF FF FF FF FF FF FF
0180   FF FF FF FF FF FF FF FF FF FF
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0470   FF FF FF FF FF FF FF FF FF FF
0480   FF FF FF FF FF FF FF FF FF FF
0490   FF FF FF FF FF FF FF FF FF FF
0500   FF FF FF FF FF FF FF FF FF FF
0510   FF FF FF FF FF FF FF FF FF FF
0520   FF FF FF FF FF FF FF FF FF FF
0530   FF FF FF FF FF FF FF FF FF FF
0540   FF FF FF FF FF FF FF FF FF FF
0550   FF FF FF FF FF FF FF FF FF FF

DID $36
5A 00 03 00 01 60 20 01 F0 E3 33 0B FB 5A 00 03 00 01 03 02 02 FB FB 0F 0B FB 5A 00 03 00
01 00 02 03 C2 ED 0A 0B FB

DID $90
4B 4C 37 39 4D 53 53 4C 58 4E 42 2A 2A 2A 2A 2A 2A

DID $98
50 43 49 35 53 54 4E 23 35 31

DID $99
20 21 06 10

DID $9A
12 12

DID $9F
FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF

DID $B3
```

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35 34 34 39 33 30 39 37 37

DID $B4
41 31 32 31 31 33 35 32 31 31 33 35 30 39 33 31

DID $B7
50 AA 25 F0 8B

DID $C1
00 CE 84 D1

DID $C2
02 8C B4 C1

DID $C3
02 8A AA 09

DID $CB
00 CE 84 CD

PID $CC00
CE 5D 19
```

## Disclaimer of Liability

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# Appendix B: Front Camera Module Report – 2022 Chevrolet Trailblazer

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 | KL79MSSLXNB****** |
| User | |
| Case Number | |
| EDR Data Imaging Date | |
| Crash Date | |
| Filename | DS22007_V1_FCM.CDRX |
| Saved on | |
| Imaged with CDR version | Crash Data Retrieval Tool 21.4.1 |
| Imaged with Software Licensed to (Company Name) | NHTSA |
| Reported with CDR version | Crash Data Retrieval Tool 24.0 |
| Reported with Software Licensed to (Company Name) | NHTSA |
| EDR Device Type | Front Camera Module |
| Event(s) recovered | Record 1 - SIR Event - Airbag Deployment Event,<br>Record 2 - Automatic Emergency Braking |

## Comments

No comments entered.

## Data Limitations

**Recorded Events:**

The Front Camera Module (FCM) can record up to two events that include images. Event Recording is triggered by an “event of interest”. The following are possible “events of interest” that trigger event recording and are listed in the priority order from highest to lowest:

- Airbag Deployment Event
- Pretensioner Deployment Event
- Non-Deployment Event
- Pedestrian Braking
- Collision Imminent Breaking (CIB)
- Pedestrian Warning
- Front Collision Alert
- Lane Departure Warning

If both event records are full, a new event can be stored if it is of a higher or equal priority than the priority of one of the currently recorded events. The new event would overwrite the lowest priority event but if both recorded events are of the same priority as the new event, the oldest event would be overwritten.

**Data:**

-FCM parameters pertaining to an event are recorded at ~4 seconds intervals for 3 samples (Pre-Event, At-Event, and Post Event)

-Data is written to non-volatile memory when the System Power Mode transitions to OFF, except for airbag deployment triggered events. If the transition to power mode OFF is not detected by the FCM or FCM power is lost, the event data may not be recorded.

-When storing an Airbag Deployment Event, the FCM requires about 30 seconds of power, after receiving the trigger message from the ACM, to write an event, or the event data may not be recorded.

-All data should be examined in conjunction with other available physical evidence from the vehicle and scene.

-Event data is recorded asynchronously. In other words, there is a delay between trigger point being generated and “at event” (t0) data sample. All subsequent pre/post event data values are referenced from this time point.

-FCM Time is a running counter used for recording relative time between Pre-Event, At-Event, and Post-Event data.

-Vehicle Acceleration - Lateral, values larger than 32 are incorrect and should not be considered.

-AEB Object Type has a default value of “Car”

-AEB Object Dynamic Property has a default value of “Target Never Identified as Moved”

-VSES Active and ABS Active will always display “TRUE” and should not be considered for the following vehicle lines:
2020-2023 Buick Encore GX
2021-2023 Chevrolet Bolt EV

**Data Element Sign Convention:**
The following table provides an explanation of the sign notation for data elements that may be included in this CDR report. Directional references to sign notation are all from the perspective of the driver when seated in the vehicle facing the direction of forward vehicle travel.

| Data Element Name | Positive Sign Notation Indicates |
|---|---|
| Vehicle Acceleration - Longitudinal | Forward |
| Vehicle Acceleration - Lateral | Left to Right |
| Yaw Rate | Counter-clockwise Rotation |
| AEB Object Relative Longitudinal Velocity | Forward |
| AEB Object Relative Longitudinal Acceleration | Forward |
| AEB Object Lateral Distance | Right |
| AEB Object Azimuth | Clockwise |
| AEB Braking Requested Acceleration | Forward |
| GPS Heading | Clockwise Rotation from North |

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

01073_FCM-MagnaGA3.0_r005

## General Data

| | |
|---|---|
| Vehicle Identification Number (VIN) | KL79MSSLXNB****** |

## System Status at Event (Record 1 - SIR Event - Airbag Deployment Event)

| | |
|---|---|
| FCM Event Trigger Type | Airbag Deployment Event |
| Event Recording Complete | Yes |
| Odometer (miles [km]) | 16170.2 [26023.3] |
| UTC Date at Event | |
| UTC Time at Event | 15:32:24 |
| LKA Customer Setting | Lane Keep Assist Enabled |
| FCA Gap Customer Setting | Medium |
| Current AEB Type Setting | Alert and Brake |
| FPB Customer Setting | Alert and Brake |
| IBA Occurred Flag | False |
| AEB Braking Requested Acceleration (m/s^2) | 0.00 |

## Event Data (Record 1 - SIR Event - Airbag Deployment Event)

| Data Element | Pre-Event | At-Event | Post-Event |
|---|---|---|---|
| FCM Time (sec) | 1,677.00 | 1,681.55 | 1,685.55 |
| Vehicle Speed Average Non Driven (MPH [km/h]) | 56 [89] | 59 [95] | 0 [0] |
| Vehicle Acceleration - Longitudinal (m/s^2) | 0.89 | -20.00 | 0.00 |
| Vehicle Acceleration - Lateral (m/s^2) | -31.94 | -28.50 | -21.94 |
| Yaw Rate (deg/sec) | 0.0625 | 55.8750 | 8.6875 |
| VSES Active | True | True | True |
| ABS Active | True | True | True |
| FCA Alert Indication | None | None | None |
| LDW Alert Direction | No Alert | No Alert | No Alert |
| Accelerator Pedal, % Full (%) | 37 | 100 | 0 |
| Brake Pedal Position (%) | 1 | 10 | 0 |
| Service Brake (Brake Switch Circuit State) | False | True | Invalid |
| Turn Signal Switch Active | Left | No Activation | No Activation |
| ACC Operational State Status | Conventional Cruise Control Engaged | Conventional Cruise Control Engaged | Conventional Cruise Control Engaged |
| AEB Control Automatic Braking Request Type | None | None | None |
| AEB Object Type | Car | Car | Car |
| AEB Object Dynamic Property | Target Never Identified as Moved | Target Never Identified as Moved | Target Never Identified as Moved |
| AEB Object Longitudinal Distance (m) | 0.0 | 0.0 | 0.0 |
| AEB Object Relative Longitudinal Velocity (m/s) | 0.0075 | 0.0075 | 0.0075 |
| AEB Object Relative Longitudinal Acceleration (m/s^2) | 0.000 | 0.000 | 0.000 |
| AEB Object Lateral Distance (m) | 0.0 | 0.0 | 0.0 |
| GPS Heading (deg) | 178.5 | 177.4 | 92.5 |

## System Status at Event (Record 2 - Automatic Emergency Braking)

| | |
|---|---|
| FCM Event Trigger Type | Automatic Emergency Braking |
| Event Recording Complete | Yes |
| Odometer (miles [km]) | 15900.4 [25589.2] |
| UTC Date at Event | |
| UTC Time at Event | 17:33:11 |
| LKA Customer Setting | Lane Keep Assist Enabled |
| FCA Gap Customer Setting | Medium |
| Current AEB Type Setting | Alert and Brake |
| FPB Customer Setting | Alert and Brake |
| IBA Occurred Flag | True |
| AEB Braking Requested Acceleration (m/s^2) | -4.90 |

## Event Data (Record 2 - Automatic Emergency Braking)

| Data Element | Pre-Event | At-Event | Post-Event |
|---|---|---|---|
| FCM Time (sec) | 1,202.00 | 1,206.80 | 1,210.80 |
| Vehicle Speed Average Non Driven (MPH [km/h]) | 34 [55] | 39 [62] | 14 [22] |
| Vehicle Acceleration - Longitudinal (m/s^2) | 0.00 | -1.12 | -0.09 |
| Vehicle Acceleration - Lateral (m/s^2) | -31.81 | -32.00 | -31.88 |
| Yaw Rate (deg/sec) | 0.1875 | 0.0000 | 0.2500 |
| VSES Active | True | True | True |
| ABS Active | True | True | True |
| FCA Alert Indication | Solid Green Vehicle Ahead Telltale | Solid Green Vehicle Ahead Telltale | Solid Green Vehicle Ahead Telltale |
| LDW Alert Direction | No Alert | No Alert | No Alert |
| Accelerator Pedal, % Full (%) | 13 | 0 | 0 |
| Brake Pedal Position (%) | 1 | 22 | 2 |
| Service Brake (Brake Switch Circuit State) | False | True | False |
| Turn Signal Switch Active | No Activation | No Activation | No Activation |
| ACC Operational State Status | Conventional Cruise Control Engaged | Conventional Cruise Control Engaged | Conventional Cruise Control Engaged |
| AEB Control Automatic Braking Request Type | None | Brake Per Requested Deceleration | None |
| AEB Object Type | Car | Car | Car |
| AEB Object Dynamic Property | Target Identified as Moved | Target Identified as Moved | Target Identified as Moved |
| AEB Object Longitudinal Distance (m) | 48.3 | 26.3 | 26.7 |
| AEB Object Relative Longitudinal Velocity (m/s) | -1.3675 | -10.3050 | -2.4925 |
| AEB Object Relative Longitudinal Acceleration (m/s^2) | 0.100 | -1.925 | -0.300 |
| AEB Object Lateral Distance (m) | 0.0 | -0.1 | 0.7 |
| GPS Heading (deg) | 179.6 | 179.1 | 179.8 |

## 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.

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DID $50
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0040   07 FC 5F 00 A7 00 83 5F 07 3F
0050   39 82 E6 B5 94 6A 06 EE 00 00
0060   19 69 D6 01 88 1F EC 15 00 03
0070   00 AA 00 00 58 00 13 00 FE 2F
0080   82 00 32 46 FC 8E 08 30 40 09
0090   42 0A C6 00 00 00 00 00 02 71
0100   0F FE 00 7F F0 00 02 CE 00 00
0110   0F F2 0F F7 80 08 3A F0 1C 00
0120   00 07 80 A3 9D 00 00 00 00 00
0130   00 11 65 20 08 B4 70 53 A5 42
0140   20 C0 14 40 00 00 00 00 00 00
0150   00 07 01 A1 BF E4 1F EF 00 09
0160   42 00 00 18 00 00 00 00 02 71
0170   0F FE 00 7F F0 00 7F 01 C2 00
0180   F1 EC 15

DID $51
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0030   3F FE 04 7E 93 04 15 3E 12 0A
0040   0F 00 71 00 71 00 5E 48 07 3A
0050   F4 27 E6 B0 93 64 06 FF 00 00
0060   18 FD 4A 00 B8 63 DC 15 00 03
0070   04 AA 00 00 D8 00 1B 00 00 1F
0080   1A 00 71 40 00 80 0F 90 40 09
0090   2A 8A CB 82 10 00 00 00 02 70
0100   FF F9 B3 75 A1 A4 00 0A E1 63
0110   00 05 80 05 8F 05 E9 80 00 00
0120   00 07 82 A7 06 01 00 2C 00 00
0130   00 00 00 07 00 44 00 40 44 04
0140   38 17 FE BF DC 00 0B 38 00 00
0150   00 50 00 E0 E0 0D 20 0D 47 89
0160   45 00 00 1D 00 00 00 00 02 71
0170   30 19 F4 7D 71 AB 7F 00 F2 11
0180   11 DC 15

DID $90
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0010   42 2A 2A 2A 2A 2A 2A

DID $98
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DID $99
0000   20 21 06 10

DID $A0
0000   00

DID $B4
0000   5A 31 32 31 30 36 37 35 35 38
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DID $C1
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DID $C2
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DID $CB
0000   05 10 95 98

DID $CC
0000   05 08 F3 5F

DID $D0
0000   41 4C

DID $D1
0000   41 44

DID $D2
0000   41 41

DID $DB
0000   41 41

DID $DC
0000   41 41
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DOT HS 813 605
August 2024

U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

16326-073124-v2