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National Highway Traffic Safety Administration

NHTSA

DOT HS 813 562

April 2024

Special Crash Investigations: On-Site Rollover Crash Investigation; Vehicle: 2021 Subaru Crosstrek; Location: Pennsylvania; Crash Date: June 2021

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Technical Report Documentation Page

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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 submitted.

16. Abstract

This on-site investigation documented the roadway departure/fixed-object/rollover crash of a 2021 Subaru Crosstrek that resulted in B-level (non-incapacitating) injuries to the 36-year-old belted female driver. The driver failed to negotiate a right curve at an event-data-recorder-reported speed of 74 km/h (46 mph), departed the roadway, struck and separated a utility pole, and traveled down an embankment with a negative grade of 60 percent. The vehicle rolled three-quarter turns over its left side, crushed several sapling trees, and came to final rest on its right side facing west. The driver was transported by ambulance to a local hospital where she was treated and released. The vehicle was towed from the scene due to disabling damage.

17. Key Words	18. Distribution Statement
crash avoidance, road departure, rollover	This document is available to the public from the National Highway Traffic Safety Administration, National Center for Statistics and Analysis, crashstats.nhtsa.dot.gov.

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Special Crash Investigations
On-Site Rollover Crash Investigation
Case Number: CR21021
Vehicle: 2021 Subaru Crosstrek
Location: Pennsylvania
Crash Date: June 2021

Background

This on-site investigation documented the roadway departure/fixed object/rollover crash of a 2021 Subaru Crosstrek (Figure 1) that resulted in B-level (non-incapacitating) injuries to the 36-year-old belted female driver. The driver failed to negotiate a right curve at an event-data-recorder-reported (EDR) speed of 74 km/h (46 mph), departed the roadway, struck and separated a utility pole, and traveled down an embankment with a negative grade of 60 percent. The vehicle rolled three-quarter turns over its left side, struck several sapling trees, and came to final rest on its right side facing west. The driver was transported by ambulance to a local hospital where she was treated and released. The vehicle was towed from the scene due to disabling damage.

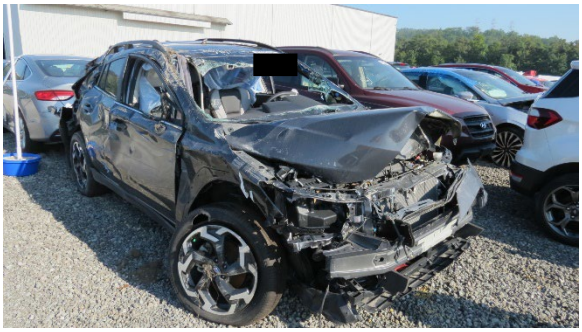


Figure 1. Right-front oblique view of the Subaru

The crash was identified by the National Highway Traffic Safety Administration through the sampling activities of the Crash Research Sampling System in August 2021. The investigation was assigned to the Special Crash Investigations (SCI) team at Crash Research & Analysis, Inc. The crash was then assigned for on-site investigation in August 2021.

After obtaining cooperation from the driver's insurance provider, the on-site activities included an inspection of the Subaru to measure exterior deformation, interior damage and intrusion, documentation of interior occupant contact, assessment of the manual and supplemental restraint systems, and verification of any crash avoidance (CA) systems usage. The Subaru had an EDR, which was imaged during the inspection process with the Bosch Crash Data Retrieval (CDR) tool. The crash site was photographed and measured by total station. Several attempts to interview the driver were unsuccessful.

Crash Summary

Crash Site

This crash occurred on the roadside of an undivided, unmarked, two-lane rural roadway during daylight. Reported weather conditions were cloudy with a temperature of 20 ºC (68 ºF) with winds from the south-southwest at 21 km/h (13 mph). The posted speed limit was 56 km/h (35 mph). The Subaru's roadway traversed in a northwest/southeast direction with no lane markings. The roadway was 5.8 meters (19 feet) wide and was bordered by an open field on the west side and mature trees on the east side. Approaching the area of impact there was a hill sag that led into a positive grade of 4.4 percent and a right curve. The embankment on the east side of the roadway had a negative grade of 60 percent. A crash diagram is included at the end of this report.

Pre-Crash

The Subaru was traveling southeast (Figure 2) in the right lane at an EDR-reported speed of 74 km/h (46 mph) 5 seconds prior to algorithm enabled (AE). The driver, for unknown reasons, allowed the vehicle to track straight through the curve. She did steer to the right beginning at 2.5 seconds prior to AE but it was insufficient to maintain the roadway. The vehicle departed the left (east) side of the roadway.

Figure 2. Southeast view of the Subaru's pre-crash approach to the crash site

Crash

After departing the roadway, the Subaru struck and fractured a 22 cm (8.6 in) wide utility pole (Event 1). Immediately after impact, the vehicle encountered the negative grade of the embankment. This sudden negative grade and the driver's steering to the right caused the vehicle to begin a left-side leading roll (Event 2). The vehicle rolled three-quarter turns, crushed several sapling trees, then struck the ground with its right D-pillar. It came to final rest facing west on its passenger side.

Post-Crash

Local emergency services were notified and responded to the incident. First responders cut the left-side pillars and lifted the vehicle's roof to extract the driver. She was transported by ambulance to a hospital where she was treated and released. The vehicle was towed from the scene due to disabling damage.

2021 Subaru Crosstrek

Description

The 2021 Subaru Crosstrek (Figure 3) was an all-wheel-drive, 5-passenger, 4-door, hybrid SUV powered by a 2.5-liter, 4-cylinder gasoline engine that was linked to a continuous variable transmission. The Vehicle Identification Number was JF2GTHNC6M8xxxxxx. Its service brakes were power-assisted 4-wheel disc with an antilock brake system. The gross vehicle weight rating was 1,970 kg (4,343 lb). The manufacturer recommended tire size was 225/55R18. At the time of the SCI inspection, the Subaru had Falken Ziex tires of the recommended size. All tires had a minimum of 7 mm (9/32) tread depth.

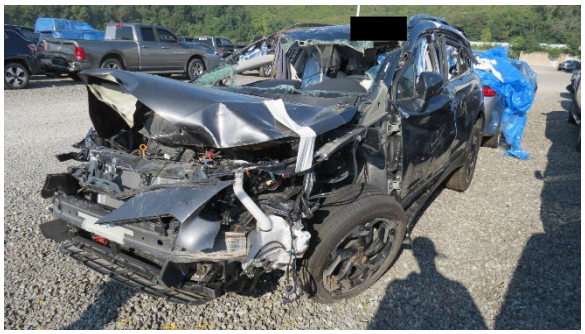


Figure 3. Left-front oblique view of the Subaru

The Subaru's interior had seating for five occupants (2 front/3 rear), with front-row bucket seats and a second-row bench seat with split-folding seat backs. All seating positions had adjustable head restraints and manual restraint systems which consisted of 3-point lap and shoulder belts. The driver and front passenger seating positions had retractor pretensioners. Additionally, supplemental restraint systems included seven air bags consisting of driver's and passenger's frontal, driver knee, front outboard seat-mounted side impact, and inflatable curtain (IC) air bags. The driver's frontal, driver knee, and both IC air bags deployed.

Exterior Damage

The collision with the utility pole (Event 1) resulted in its fracture and damage to the corner of the Subaru's front-left bumper. The front-left bumper fascia, bumper reinforcement, and hood sustained direct damage from the impact with the utility pole. The direct damage was 23 cm (9.0 in) wide beginning 73 cm (28.7 in) left of the front centerline extending right. The field-L was 145 cm (57.0 in). The crush measurements were documented on the bumper beam and the maximum residual crush was 3 cm (1.1 in), occurring 73 cm (28.7 in) left of the front centerline. The crush values were C1 = 3 cm (1.1 in), C2 = 0 cm, C3 = 1 cm (0.4 in), C4 = 1 cm (0.4 in), C5 = 0 cm, and C6 = 0 cm. The impact forces were then directed into the wheel assembly reducing the wheelbase by 12 cm (4.7 in). The frontal impact to the utility pole resulted in a collision deformation classification[1] of 11FLEN1.

[1] SAE J224_202205 – SAE Recommended Practice describing vehicle collision damage in an alphanumeric format.

Damage from the rollover was noted on all planes of the Subaru, consistent with three-quarter turns. During the rollover event, the right-front, right-rear, left-front, and backlight glazing disintegrated. The windshield appeared to be in place and cracked from impact forces and was later cut out during extrication by emergency personnel. The rollover resulted in a maximum vertical crush of 4 cm (1.5 in) and a maximum lateral crush of 3 cm (1.1 in) both located at the right D-pillar. The collision deformation classification was 00TDDO2.

Event Data Recorder

The Subaru had an air bag control module that performed the diagnostic, sensing, and deployment command functions for the vehicle's supplemental restraint systems. This module had EDR capabilities and was located on the vehicle's center tunnel. The EDR was imaged with the Bosch CDR tool and software version 21.2 via direct connection to the module. The imaged data is reported with version 23.3 and included as Appendix A in this report.

The EDR module had the ability to record data occurring in a front/rear, side, and rollover crash type and store two records for each type. Associated with each record was 5-seconds of pre-crash data containing multiple vehicle parameters that described its operations. The EDR used the concepts of a "multiple event counter" and "recording order" to align the crash sequence. During the crash, the EDR recorded five records. All five records occurred on ignition cycle 228. The ignition cycle count at the time of imaging was 250. The driver's seat belt was buckled in all records and the air bag warning lamp was initially off.

The pre-crash data sets recorded with each record created a consistent timeline between the events. The recording order variable showed that the crash sequence was recorded in the following order.

1. Front/Rear Crash Record 2 (attributed to Event 1)
2. Front/Rear Crash Record 1
3. Rollover Record 2 (attributed to Event 2)
4. Rollover Record 1
5. Side Crash Record 1

The pre-crash data associated with Front/Rear Crash Record 2 reported the vehicle struck the utility pole at a speed of 68 km/h (42.3 mph). The driver began steering right approximately 2.5 seconds prior to AE with an avoidance input of 60° to the right at AE. The driver's seat belt pretensioner actuated and the driver's frontal, knee, and both IC air bags deployed as a result of the pole impact. A left side leading rollover was recorded approximately 1.5 seconds later (Rollover Record 2). Refer to Appendix A for further details.

Interior Damage

The Subaru's interior showed no signs of intrusion or occupant contacts. Dirt, grass, small branches, and glass was found inside the vehicle. The small branches and glass resulted in several scuffs and minimal cuts throughout the Subaru's interior. The steering wheel rim was

fractured at the 5-o'clock sector (Figure 4) likely by recovery efforts. The vehicle's roof (Figure 5) was scuffed and soiled likely by recovery personnel during the extraction process.

Figure 4. View of the Subaru's fractured steering wheel

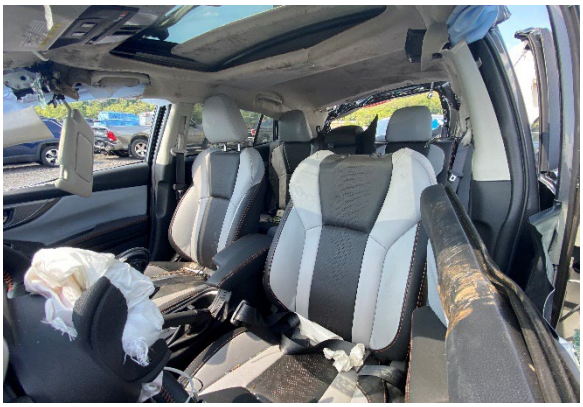


Figure 5. View of the scuffed and soiled roof in the Subaru

Manual Restraint Systems

The Subaru had manual 3-point lap and shoulder seat belts for all five seating positions. All the 3-point lap and shoulder belt systems consisted of continuous loop webbing with sliding latch plates. The driver's seat belt systems used retractor pretensioners and retracted onto an emergency locking retractor. The front passenger's and second-row seat belt systems used switchable emergency locking and automatic locking retractors. The seat belt for the driver was cut during the extraction process but the pretensioner was observed to be actuated.

Supplemental Restraint Systems

The Subaru had several supplemental restraints for its occupants. These included dual-stage driver's and passenger's frontal, driver knee, front outboard seat-mounted side impact, and IC air bags. IC air bags would deploy for rollover and/or side-impact collisions. The driver's frontal (Figure 6), driver knee (Figure 7), and both IC air bags deployed during the crash sequence.

Figure 6. View of the driver's frontal air bag in the Subaru

Figure 7. View of the driver's knee air bag in the Subaru

Crash Avoidance Systems Discussion

The 2021 Subaru Crosstrek had several CA systems, known collectively by the manufacturer as EyeSight, that were designed to aid and support the driver in avoiding a potential crash and/or reducing the severity of a crash event should a collision be imminent. The driver could turn these CA systems on or off by pressing buttons located on the steering wheel (Figure 8), left side of the steering column (Figure 9), and overhead console. It is unknown if the driver had manually activated these systems. These systems included forward collision warning, crash imminent braking, roadway departure mitigation, lane departure warning, lane keeping assist, blind spot detection, and adaptive cruise control. Per the EyeSight manual,[2] the lane departure warning, lane keep assist, and roadway departure mitigation systems would not have engaged in this crash since there are no roadway markings and the EyeSight software doesn't capture road edges. Additionally, the forward collision warning and crash imminent braking systems would not engage due to the EyeSight software not being able to capture telephone poles.

[2] Subaru Corporation. (2018). EyeSight manual. . https://techinfo.subaru.com/stis/doc/ownerManual/MSA5M1913A_STIS.pdf

Figure 8. Image of CA system buttons on the steering wheel

Figure 9. Image of CA system buttons left of the steering wheel column

2021 Subaru Crosstrek Occupant

Driver Demographics

Age/sex:	36 years/female
Height:	178 cm (70 in)
Weight:	74 kg (164 lb)
Eyewear:	Unknown
Seat type:	Bucket
Seat track position:	Middle track position
Manual restraint usage:	Lap and shoulder belt
Usage source:	Vehicle inspection and EDR data
Air bags:	Driver's frontal, knee, seat-mounted, and IC available; driver's frontal, knee, and IC deployed
Alcohol/drug involvement:	None per medical records
Egress from vehicle:	Extricated by fire department
Transport from scene:	Transported to level-2 trauma center
Medical treatment:	Treated and released

Driver Injuries

Injury No.	Injury	Injury Severity AIS 2015	Involved Physical Components (IPC)	IPC Confidence Level
1	Bilateral pulmonary contusions, right greater than left	441410.3	Isolated IPC Interior – Shoulder portion of belt restraint	Probable
2	Lower abdominal wall contusion	510402.1	Isolated Interior – Lap portion of belt restraint	Certain
3	Small scattered ecchymoses over left thigh	810402.1	Unknown	Unknown
4	Contusion over right iliac crest	810402.1	Isolated Interior – Lap portion of belt restraint	Certain
5	Contusion over left iliac crest	810402.1	Isolated Interior – Lap portion of belt restraint	Certain

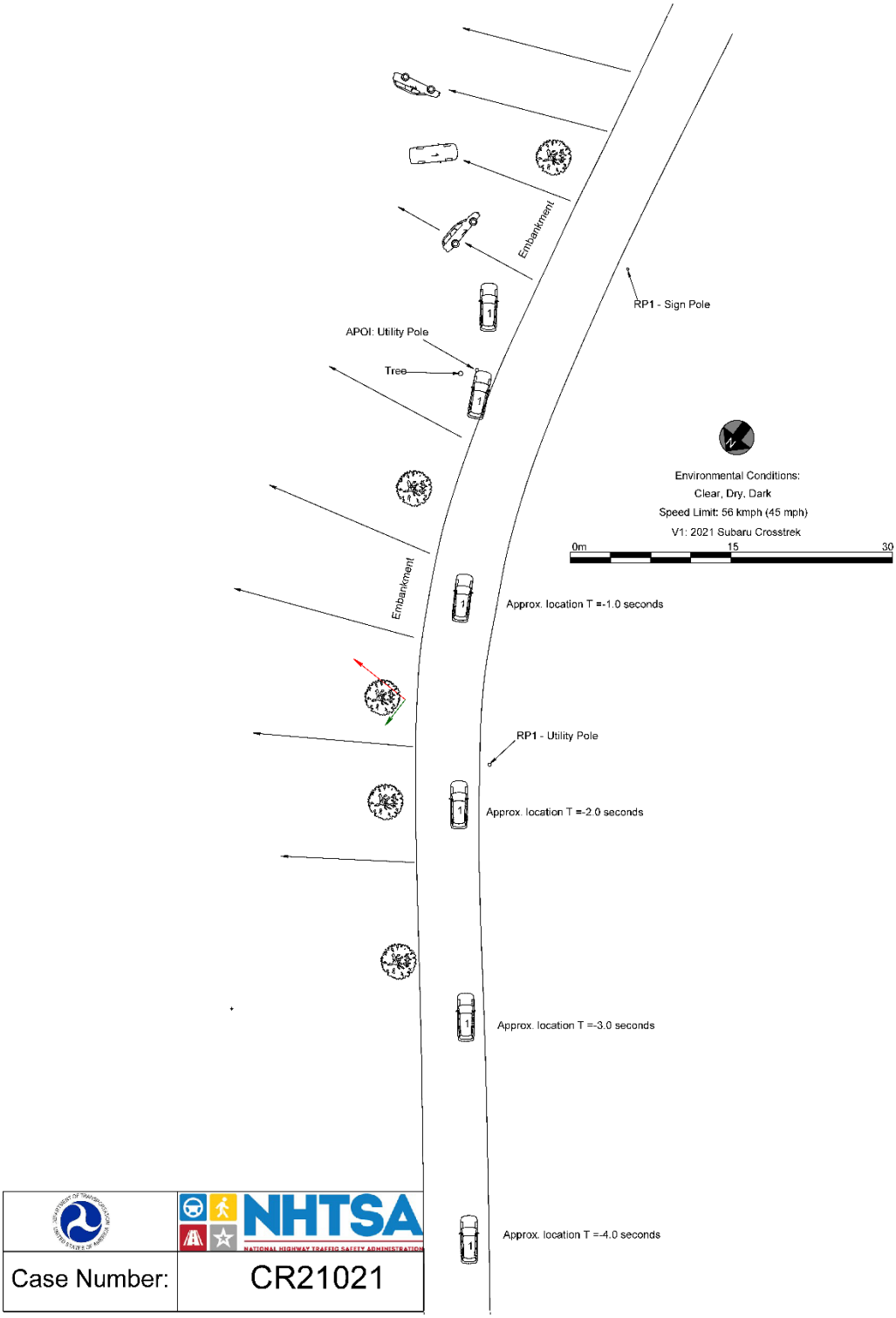
Source: Emergency room report

Driver Kinematics

The 36-year-old female driver was restrained by the 3-point lap and shoulder seat belt system. The driver's seat track was adjusted to the middle track position at the time of the SCI inspection. As the Subaru struck the utility pole, the seat belt pretensioner, frontal air bags, and IC air bags deployed, securing the driver in her seat. She was displaced forward as she loaded the seat belt during the impact with the utility pole and then in several directions during the rollover event. The driver sustained her injuries during the rollover sequence as it is unlikely she received

them from the frontal impact to the utility pole. The driver was transported to a hospital by ambulance where she was treated and released.

Crash Diagram



Appendix A. 2021 Subaru Crosstrek Event Data Recorder Report[3]

[3] The EDR report contained in this technical report was imaged using the current version of the Bosch CDR software at the time of the vehicle inspection. The CDR report contained in the associated Crash Viewer application may differ relative to this report.

IMPORTANT NOTICE: Robert Bosch LLC and the manufacturers whose vehicles are accessible using the CDR System urge end users to use the latest production release of the Crash Data Retrieval system software when viewing, printing or exporting any retrieved data from within the CDR program. Using the latest version of the CDR software is the best way to ensure that retrieved data has been translated using the most current information provided by the manufacturers of the vehicles supported by this product.

CDR File Information

User Entered VIN	JF2GTHNC6M8******
User	
Case Number	
EDR Data Imaging Date	
Crash Date	
Filename	CR21021_V1.CDRX
Saved on	
Imaged with CDR version	Crash Data Retrieval Tool 21.2
Imaged with Software Licensed to (Company Name)	Company Name information was removed when this file was saved without VIN sequence number
Reported with CDR version	Crash Data Retrieval Tool 23.3
Reported with Software Licensed to (Company Name)	NHTSA
EDR Device Type	Airbag Control Module
Event(s) recovered	Frontal / Rear Crash (Record 1), Frontal / Rear Crash (Record 2), Side Crash (Record 1), Rollover (Record 1), Rollover (Record 2)

Comments

No comments entered.

Data Limitations

CDR Record Information:

1. Due to limitations of the data recorded by the airbag ECU, such as the resolution, data range, sampling interval, time period of the recording, and the items recorded, the information provided by this data may not be sufficient to capture the entire crash.

2. Pre-Crash data is recorded in discrete intervals.
Due to different refresh rates within the vehicle's electronics, the data recorded may not be synchronous to each other.

3.Airbag ECU data should be used in conjunction with other physical evidence obtained from the vehicle and the surrounding circumstances.

4. If the airbags did not deploy or the pretensioners did not operate during an event that meets a specified recording threshold, it is called a Non-Deployment Event. Data from a Non-Deployment Event can be overwritten by a succeeding event that meets the specified recording threshold. If the airbag(s) deploy or the pretensioners are operated, it is called a Deployment Event.
Deployment Event data cannot be overwritten or deleted by the airbag ECU following that event.

5. If power supply to the airbag ECU is lost during an event, all or part of the data may not be recorded.

6. The Subaru Select Monitor 3 or Subaru Select Monitor 4 can be used to obtain detailed information on the diagnostic trouble codes from the airbag system , as well as diagnostic information from other systems.

General Information:

1. The airbag ECU records data for all or some of the following accident types: frontal crash, rear crash , side crash, and rollover events. Depending on the installed airbag ECU, data for side crash and/or rollover events may not be recorded.

2. This airbag ECU records data before crash and data after crash - When a single event occurs independently, the data of this event is recorded one to one.
- When multiple events occur consecutively, information on two crash events can be recorded in one storage space.

3. The airbag ECU has two recording pages for each accident type: two pages for frontal and rear crash, two pages for a side crash, two pages for rollover event(*), and two pages for pedestrian crash(*).
*if equipped

4. The data recorded by the airbag ECU includes correlating information between each previously occurring event (i.e., information that clarifies the collision event sequence.

5. In frontal and rear collision events, the first point where a longitudinal cumulative delta-V of over 0.8 km/h (0.5 mph) is reached is regarded as time zero for the recorded data.

In side collision events, the first point where a lateral cumulative delta-V of over 0.8 km/h (0.5 mph) is reached is regarded as time zero for the recorded data.

In rollover events and pedestrian crash, the point in time at which the recording trigger is established is regarded as time zero for the recorded data.

6. The recording trigger judgment threshold value differs depending on the collision type (i.e., frontal crash, rear crash, side crash, or rollover event).

7. Some of the data recorded by the airbag ECU is transmitted to the airbag ECU from various vehicle control modules by the vehicle's Controller Area Network (CAN).

8. In some cases, the airbag ECU part number printed on the ECU label may not match the airbag ECU part number that the CDR tool reports. The part number retrieved by the CDR tool should be considered as the official ECU part number.

9. In frontal and rear collision events, the record time varies depending on the period during which a longitudinal cumulative delta-V of over 0.8 km/h (0.5 mph) is reached, and time series data is recorded for up to 250 ms.

10. In side collision events, the record time varies depending on the period during which a lateral cumulative delta-V of over 0.8 km/h (0.5 mph) is reached, and time series data is recorded for up to 250 ms.

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 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
Maximum Delta-V, Longitudinal	Forward
Delta-V, Longitudinal	Forward
Maximum Delta-V, Lateral	Left to Right
Delta-V, Lateral	Left to Right
Lateral Acceleration, Side Impact Sensor [1]	Left to Right
Lateral Acceleration, Side Impact Sensor [2]	Left to Right
Lateral Acceleration, Side Impact Sensor [3]	Left to Right
Lateral Acceleration, Side Impact Sensor [4,5]	Left to Right
Roll Angle when roll over detection threshold is exceeded [5]	** Clockwise Rotation
Roll Rate	** Clockwise Rotation
Steering Input	Left Turn

** The following part numbers are "Counterclockwise Rotation": 98221FJ240 / 98221FJ241 / 98221FJ420 / 98221FJ450 / 98221FJ490 / 98221FJ500 / 98221FJ520 / 98221SG001 / 98221SG160 / 98221AJ16B / 98221VA110

[1] Front Door
[2] Center Pillar
[3] Forward of Rear Wheel Apron
[4] Backward of Rear Wheel Apron
[5] If equipped

Data Definitions:
1. "Recording Status" **i**ndicates a state in which all recorded event data has been written into the non-volatile memory, or a state in which this process was interrupted and not fully written into the non-volatile memory. If "Recording Status" is "Incomplete", recorded event data may not be valid

2. "Time to Deployment Command" indicates the time between recording trigger establishment and the determination of airbag deployment. This value may differ from the actual time it takes for the airbag to fully deploy.

3."Engine RPM" indicates the number of engine revolutions, not the number of motor revolutions. The recorded value has an upper limit of 10,000 rpm. Resolution is 100 rpm and the value is rounded down and recorded. For example, if the actual engine speed is 799 rpm, the recorded value will be 700 rpm.

4. The upper limit for the recorded **"Vehicle Speed" value** is 200 km/h (125mph). Resolution is 1km/h (0.6mph) and the value is rounded down and recorded. The accuracy of the "Vehicle Speed" value can be affected by various factors. These include, but not limited, to the following.
- Significant changes in the tire•fs rolling radius
- Wheel lock and wheel slip

5. The value of the accelerator opening rate is recorded as percentage. It will increase as the driver depresses the accelerator pedal. Recording range is 0 - 100% and Resolution is 1%.

6. The shift position reverse information records information to check whether the shift position was "R" or not at the time of a crash.
- YES: "R"
- NO: other than "R"

Values recorded for AT / CVT and MT are different as shown below:

For AT / CVT: records the following, (MT) record as invalid
- No: The shift position reverse information (AT/CVT)
- Invalid: The shift position reverse information (MT)

For MT: records the following, (AT/CVT) record as invalid.
- No: The shift position reverse information (MT)
- Invalid: The shift position reverse information (AT/CVT)

7. For the question "Is the occupant judgment of passenger seat a child?" uses the following recording format: YES / NO
- No: "Is the occupant judgment of passenger seat a child?" answer is no

8. "Passenger information" will use the following recording format.
- vacant seat, CRS
- occupant yes (AF 05)
- occupant yes (AM 50)
- failure
- invalid

9. The items to be recorded one second before time zero (T0) are as follows.
The following information does not necessarily indicate the state at the crashing moment:
- IG / ACC ON times (in case of crash)
- D / P seat belt information
- Front air bag warning light ON / OFF
- Pedestrian protection system warning light ON / OFF, if equipped
- IGN power loss information in case of crash
- D seat position (forefront or not), if equipped
- P seat position (forefront or not), if equipped
- Shift position information (reverse or not) [MT / AT · CVT]
- P seat occupant information, if equipped
- Presence of VDC communication error
- Presence of MET communication error
- Presence of CAN fail
- Presence of auto door unlocked communication error, if equipped
- Presence of EPB communication error
- Temperature sensor information, if equipped
- Outside temperature information, if equipped

10. The upper limits for the recorded value of "Motor RPM" is10,000 rpm. Resolution is 100 rpm and the value is rounded down and recorded.

11. The upper and lower limits for the recorded value of "Steering Input" is 250 deg and -250 deg respectively. Resolution is 2.5 deg and the value is rounded down and recorded.

12. "Delta-V, Longitudinal" indicates the change in forward speed after time zero. This does not refer to vehicle speed, and it does not include the change in speed during the period from the start of the actual collision to establishment of the time zero.

13. "Roll Angle at the Time of TRG" do not represent the actual roll angle of the vehicle. These values are used internally by the airbag ECU for sensing a rollover.

14. "Multi-event time number" indicates whether multiple crash occurred or not (two or more crashes within 5 s).
- 1: first time
- 2: second time
- The upper limit of the value to be recorded is 65,534 times.

15. "Time since the last event" indicates the time from the establishment of the record TGR event of the previous crash to the establishment of the record TRG of the latest crash. The upper limit of the value to be recorded is 5000 ms. The resolution is 100 ms.

16. Recording range of "Brake Master Cylinder Pressure" is 0 [Mpa] - 25 [MPa.]

17. "Wheel Cylinder Pressure Front LH" is the value of the wheel cylinder pressure of the front left wheel.
Recording range of "Wheel Cylinder Pressure Front LH" is 0[MPa] - 20.4[MPa]

18. "Wheel Cylinder Pressure Front RH" is the value of the wheel cylinder pressure of the front right wheel.
Recording range of "Wheel Cylinder Pressure Front RH" is 0[MPa] - 20.4[MPa]

22002_DL002_r004

System Status at Retrieval

ROMID	00 92 15 40 01
ACM Part Number	98221FL400
Frontal / Rear Crash (Record 1)	Recorded
Frontal / Rear Crash (Record 2)	Recorded
Side Crash (Record 1)	Recorded
Side Crash (Record 2)	Not Recorded
Rollover (Record 1)	Recorded
Rollover (Record 2)	Recorded
Pedestrian Crash (Record 1)	Not Recorded
Pedestrian Crash (Record 2)	Not Recorded

System Status at Event (Frontal / Rear Crash (Record 1))

Ignition Cycle, Download (cycles)	250
Complete File Recorded (Yes, No)	Yes
Multi-Event, Number of Events	2
Recording order information	2
Time from Event 1 to 2 (sec)	0.7
Maximum Delta-V, Longitudinal (MPH [km/h])	-5.6 [-9]
Time, Maximum Delta-V, Longitudinal (ms)	80.0
Maximum Delta-V, Lateral (MPH [km/h])	-3.1 [-5]
Time, Maximum Delta-V, Lateral (ms)	75.0
Sensor Design Range Exceeded time, Longitudinal Acceleration (ms)	invalid
Sensor Design Range Exceeded time, Lateral Acceleration (ms)	15

Deployment Command Data (Frontal / Rear Crash (Record 1))

Frontal Airbag Deployment, Time to First Stage Deployment, Driver (ms)	15
Frontal Airbag Deployment, 1st Stage, Driver	Yes
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Driver (ms)	55
Frontal Airbag Deployment, 2nd Stage, Driver	Yes
Pretensioner Deployment, Time to Fire, Driver (ms)	15
Frontal Airbag Deployment, Time to 2nd Stage, Passenger (ms)	invalid
Side Airbag Deployment, Time to Deploy, Driver (ms)	invalid
Side Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Driver Side (ms)	25
Side Curtain/Tube Airbag Deployment, Time to Deploy, Passenger (ms)	25
Pretensioner Deployment, Time to Fire, Passenger (ms)	15
Frontal Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Lap Pretensioner Deployment, Time to Deploy, Driver (ms)	invalid
Adaptive Belt, Time to Deploy, Driver (ms)	invalid
Lap Pretensioner Deployment, Time to Deploy, Passenger (ms)	20
Adaptive Belt, Time to Deploy, Passenger (ms)	25

Pre-Crash Data -1 Sec (Frontal / Rear Crash (Record 1))

Ignition Cycle, Crash (cycles)	228
Safety Belt Status, Driver	buckled
Frontal Airbag Warning Lamp, On/Off	ON
Safety Belt Status, Passenger	unbuckled
Occupant Size Classification, Passenger, Child Size (Yes, No)	Yes
Occupant Information, Passenger	Empty
Shift position information (reverse or not)	No
MT reverse SW (reverse or not)	No

Pre-Crash Data -5 to 0 Sec (Frontal / Rear Crash (Record 1 (Table 1 of 2))

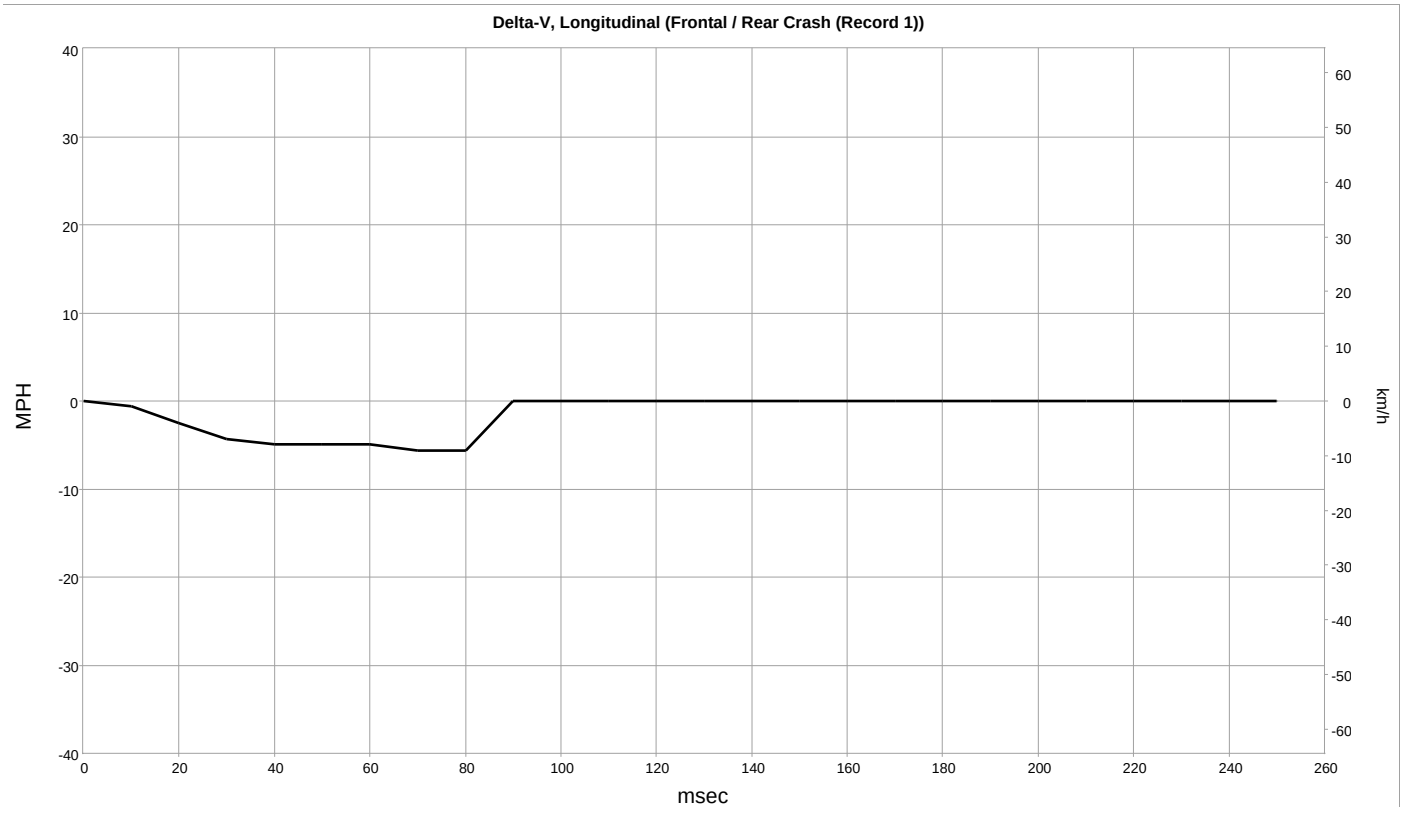
Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0
Speed, Vehicle Indicated (MPH [km/h])	46.0 [74]	46.0 [74]	45.4 [73]	44.7 [72]	43.5 [70]	42.9 [69]	42.9 [69]	42.9 [69]	31.1 [50]	16.2 [26]	16.2 [26]
Accelerator Pedal, % Full (%)	3	3	0	0	0	0	0	0	0	0	0
Service Brake, On/Off	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Engine RPM (RPM)	1,000	1,000	1,100	1,200	1,100	1,200	1,200	1,200	1,100	800	800
Motor RPM (RPM)	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid
ABS Activity	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
Stability Control (On, Off, Engaged)	ON	ON	ON	ON	ON	ON	ON	ON	ON	Engaged	Engaged
Steering Input (deg)	0.0	0.0	0.0	-7.5	-10.0	-12.5	-15.0	-10.0	-72.5	-120.0	-130.0

Pre-Crash Data -5 to 0 Sec (Frontal / Rear Crash (Record 1 (Table 2 of 2))

Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0

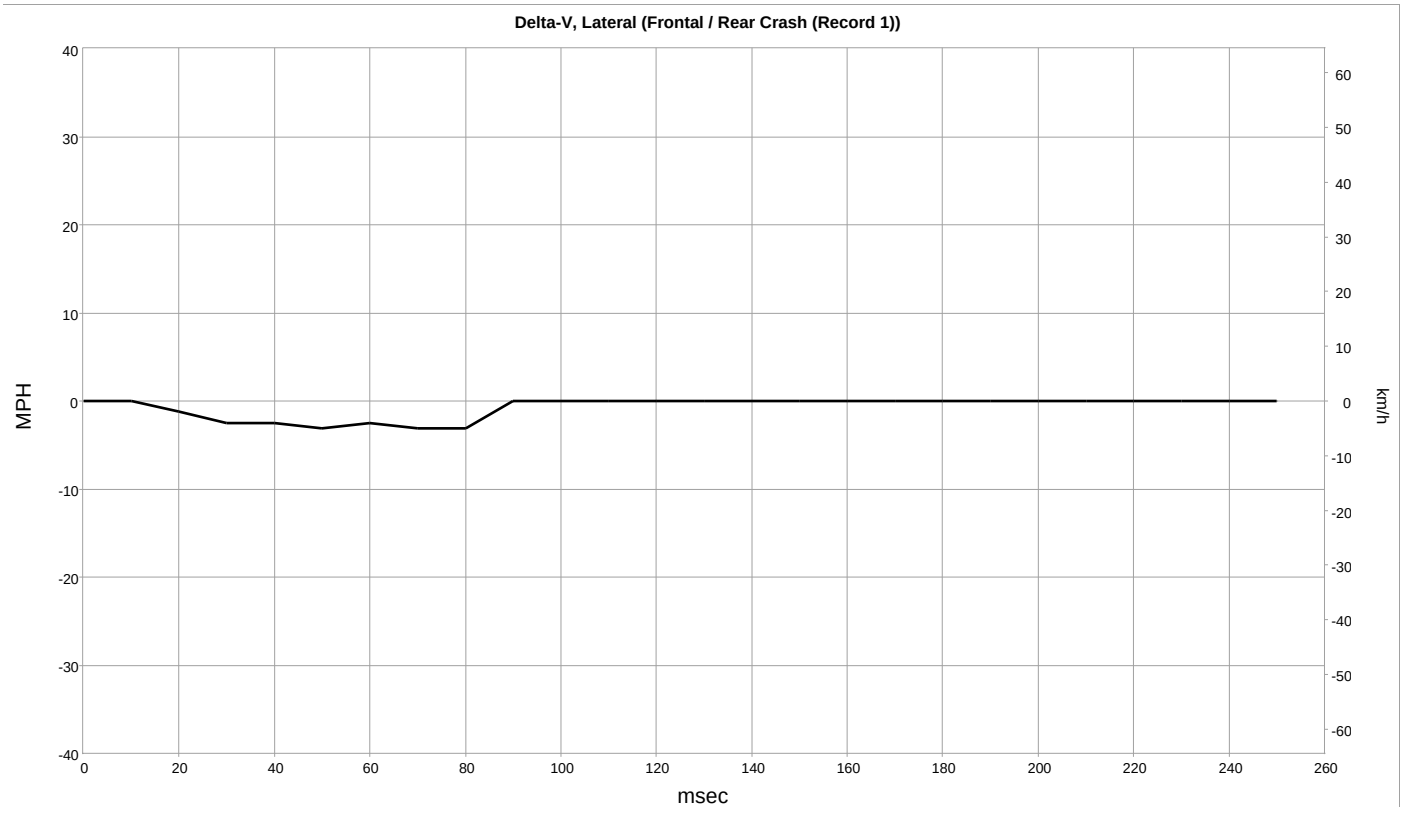
Longitudinal Crash Pulse (Frontal / Rear Crash (Record 1))

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
10	-0.6 [-1]
20	-2.5 [-4]
30	-4.3 [-7]
40	-5.0 [-8]
50	-5.0 [-8]
60	-5.0 [-8]
70	-5.6 [-9]
80	-5.6 [-9]
90	0.0 [0]
100	0.0 [0]
110	0.0 [0]
120	0.0 [0]
130	0.0 [0]
140	0.0 [0]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



Lateral Crash Pulse (Frontal / Rear Crash (Record 1))

Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
10	0.0 [0]
20	-1.2 [-2]
30	-2.5 [-4]
40	-2.5 [-4]
50	-3.1 [-5]
60	-2.5 [-4]
70	-3.1 [-5]
80	-3.1 [-5]
90	0.0 [0]
100	0.0 [0]
110	0.0 [0]
120	0.0 [0]
130	0.0 [0]
140	0.0 [0]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



System Status at Event (Frontal / Rear Crash (Record 2))

Ignition Cycle, Download (cycles)	250
Complete File Recorded (Yes, No)	Yes
Multi-Event, Number of Events	1
Recording order information	1
Time from Event 1 to 2 (sec)	-
Maximum Delta-V, Longitudinal (MPH [km/h])	-7.5 [-12]
Time, Maximum Delta-V, Longitudinal (ms)	120.0
Maximum Delta-V, Lateral (MPH [km/h])	3.1 [5]
Time, Maximum Delta-V, Lateral (ms)	100.0
Sensor Design Range Exceeded time, Longitudinal Acceleration (ms)	invalid
Sensor Design Range Exceeded time, Lateral Acceleration (ms)	invalid

Deployment Command Data (Frontal / Rear Crash (Record 2))

Frontal Airbag Deployment, Time to First Stage Deployment, Driver (ms)	1
Frontal Airbag Deployment, 1st Stage, Driver	Yes
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Driver (ms)	41
Frontal Airbag Deployment, 2nd Stage, Driver	Yes
Pretensioner Deployment, Time to Fire, Driver (ms)	1
Frontal Airbag Deployment, Time to 2nd Stage, Passenger (ms)	invalid
Side Airbag Deployment, Time to Deploy, Driver (ms)	invalid
Side Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Driver Side (ms)	11
Side Curtain/Tube Airbag Deployment, Time to Deploy, Passenger (ms)	11
Pretensioner Deployment, Time to Fire, Passenger (ms)	1
Frontal Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Lap Pretensioner Deployment, Time to Deploy, Driver (ms)	invalid
Adaptive Belt, Time to Deploy, Driver (ms)	invalid
Lap Pretensioner Deployment, Time to Deploy, Passenger (ms)	6
Adaptive Belt, Time to Deploy, Passenger (ms)	11

Pre-Crash Data -1 Sec (Frontal / Rear Crash (Record 2))

Ignition Cycle, Crash (cycles)	228
Safety Belt Status, Driver	buckled
Frontal Airbag Warning Lamp, On/Off	OFF
Safety Belt Status, Passenger	unbuckled
Occupant Size Classification, Passenger, Child Size (Yes, No)	Yes
Occupant Information, Passenger	Empty
Shift position information (reverse or not)	No
MT reverse SW (reverse or not)	No

Pre-Crash Data -5 to 0 Sec (Frontal / Rear Crash (Record 2 (Table 1 of 2))

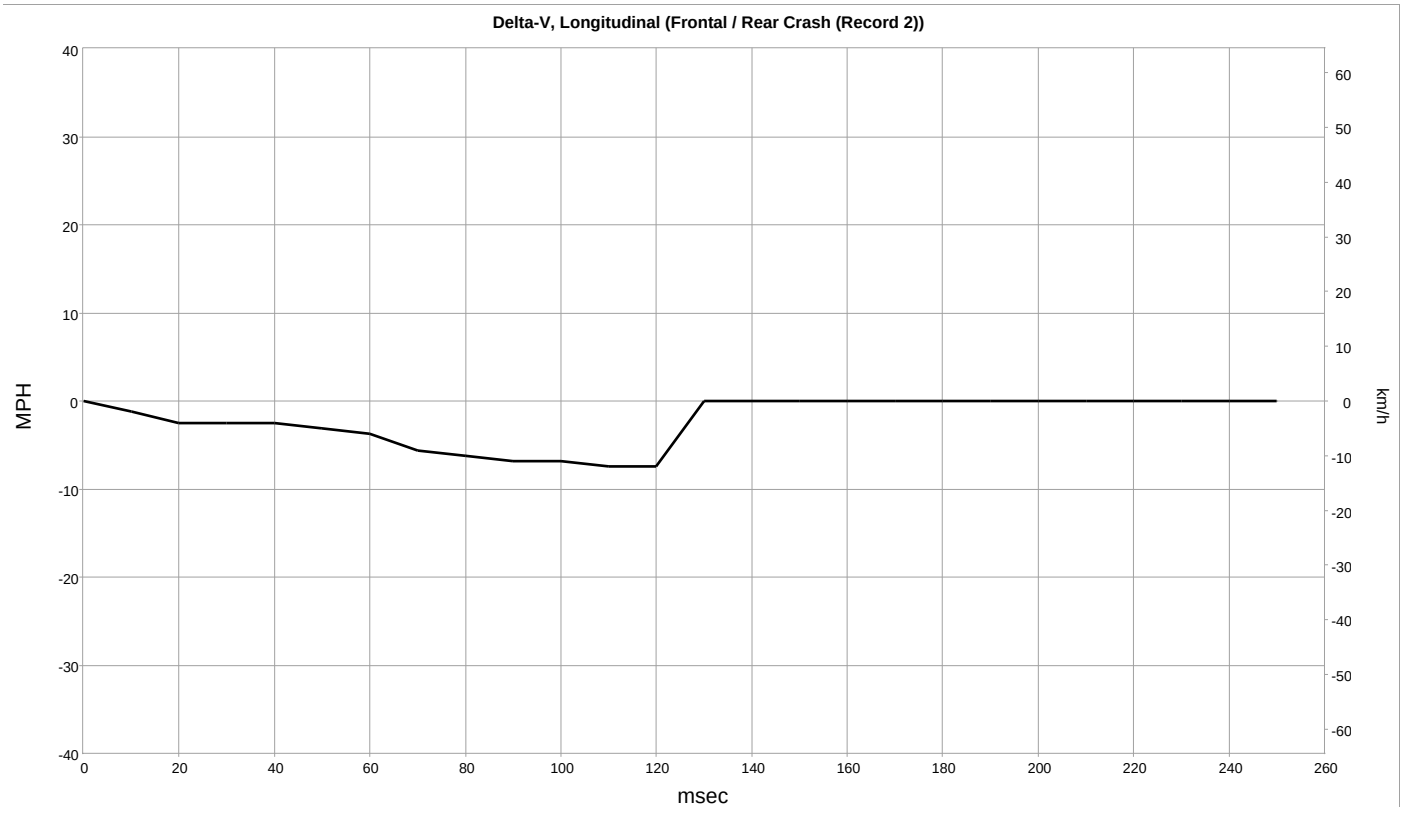
Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0
Speed, Vehicle Indicated (MPH [km/h])	45.4 [73]	45.4 [73]	46.0 [74]	46.0 [74]	45.4 [73]	44.7 [72]	43.5 [70]	42.9 [69]	42.9 [69]	42.9 [69]	42.3 [68]
Accelerator Pedal, % Full (%)	3	3	3	3	0	0	0	0	0	0	0
Service Brake, On/Off	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Engine RPM (RPM)	1,000	1,000	1,000	1,000	1,100	1,200	1,100	1,200	1,200	1,200	1,200
Motor RPM (RPM)	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid
ABS Activity	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Stability Control (On, Off, Engaged)	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON
Steering Input (deg)	-2.5	0.0	0.0	0.0	0.0	-7.5	-10.0	-12.5	-15.0	-10.0	-60.0

Pre-Crash Data -5 to 0 Sec (Frontal / Rear Crash (Record 2 (Table 2 of 2))

Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0

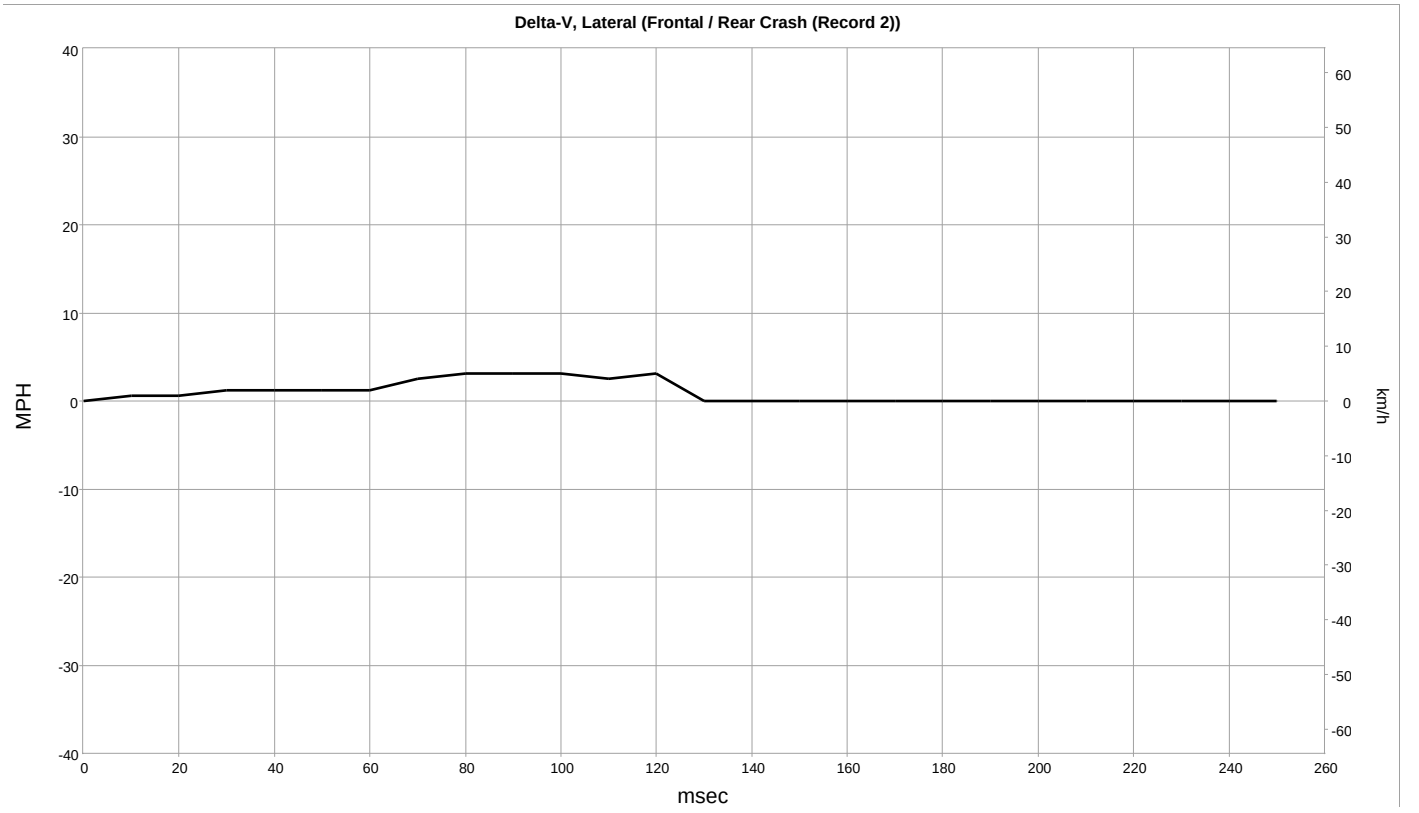
Longitudinal Crash Pulse (Frontal / Rear Crash (Record 2))

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
10	-1.2 [-2]
20	-2.5 [-4]
30	-2.5 [-4]
40	-2.5 [-4]
50	-3.1 [-5]
60	-3.7 [-6]
70	-5.6 [-9]
80	-6.2 [-10]
90	-6.8 [-11]
100	-6.8 [-11]
110	-7.5 [-12]
120	-7.5 [-12]
130	0.0 [0]
140	0.0 [0]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



Lateral Crash Pulse (Frontal / Rear Crash (Record 2))

Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
10	0.6 [1]
20	0.6 [1]
30	1.2 [2]
40	1.2 [2]
50	1.2 [2]
60	1.2 [2]
70	2.5 [4]
80	3.1 [5]
90	3.1 [5]
100	3.1 [5]
110	2.5 [4]
120	3.1 [5]
130	0.0 [0]
140	0.0 [0]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



System Status at Event (Side Crash (Record 1))

Ignition Cycle, Download (cycles)	250
Complete File Recorded (Yes, No)	Yes
Multi-Event, Number of Events	1
Recording order information	5
Time from Event 1 to 2 (sec)	-
Maximum Delta-V, Longitudinal (MPH [km/h])	5.0 [8]
Time, Maximum Delta-V, Longitudinal (ms)	142.5
Maximum Delta-V, Lateral (MPH [km/h])	-13.0 [-21]
Time, Maximum Delta-V, Lateral (ms)	115.0
Sensor Design Range Exceeded time, Longitudinal Acceleration (ms)	invalid
Sensor Design Range Exceeded time, Lateral Acceleration (ms)	invalid

Deployment Command Data (Side Crash (Record 1))

Frontal Airbag Deployment, Time to First Stage Deployment, Driver (ms)	invalid
Frontal Airbag Deployment, 1st Stage, Driver	No
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Driver (ms)	invalid
Frontal Airbag Deployment, 2nd Stage, Driver	No
Pretensioner Deployment, Time to Fire, Driver (ms)	invalid
Frontal Airbag Deployment, Time to 2nd Stage, Passenger (ms)	invalid
Side Airbag Deployment, Time to Deploy, Driver (ms)	invalid
Side Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Driver Side (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Pretensioner Deployment, Time to Fire, Passenger (ms)	invalid
Frontal Airbag Deployment, Time to Deploy, Passenger (ms)	invalid

Pre-Crash Data -1 Sec (Side Crash (Record 1))

Ignition Cycle, Crash (cycles)	228
Safety Belt Status, Driver	buckled
Frontal Airbag Warning Lamp, On/Off	ON
Safety Belt Status, Passenger	unbuckled
Occupant Size Classification, Passenger, Child Size (Yes, No)	Yes
Occupant Information, Passenger	Empty
Shift position information (reverse or not)	No
MT reverse SW (reverse or not)	No

Pre-Crash Data -5 to 0 Sec (Side Crash (Record 1 (Table 1 of 2))

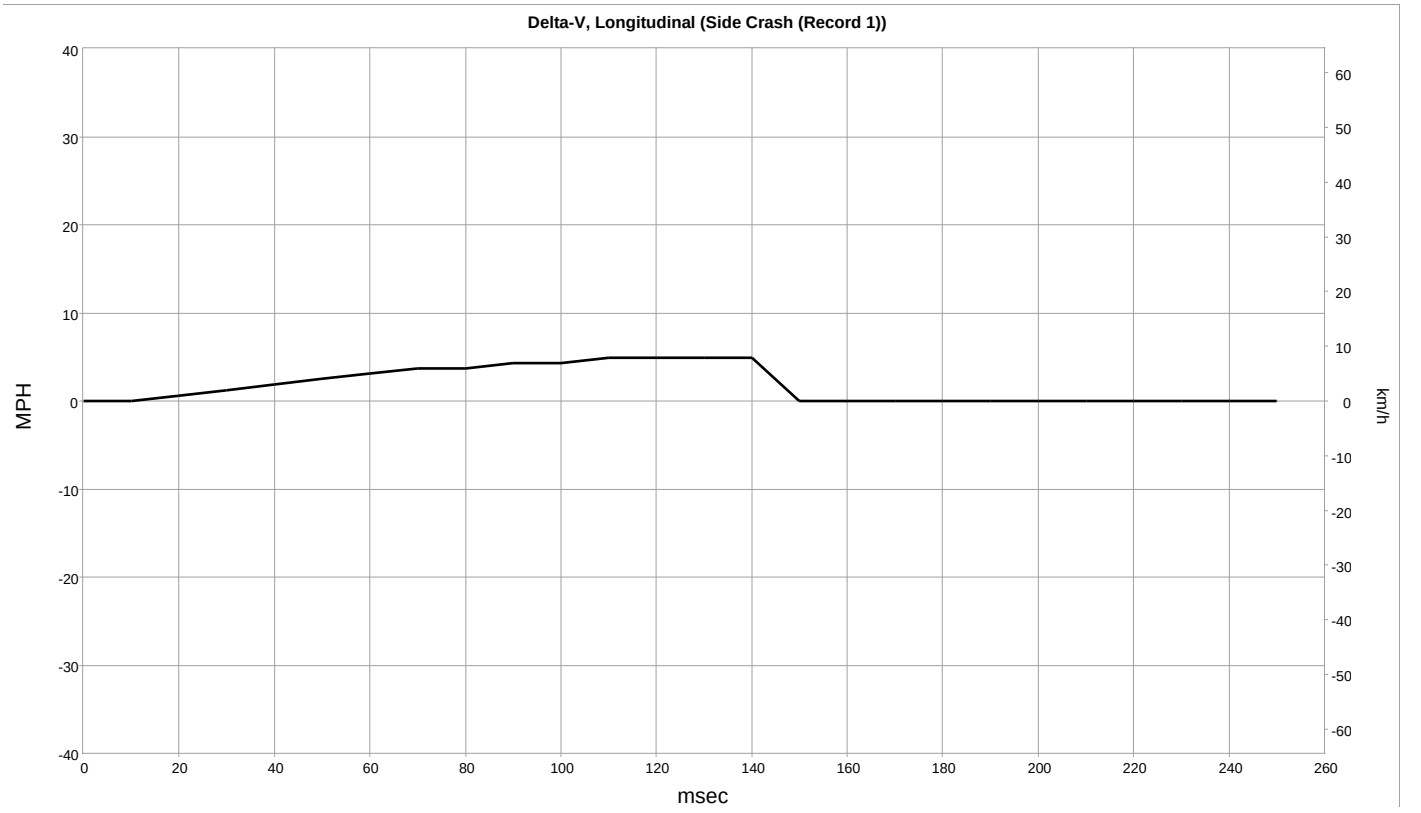
Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0
Speed, Vehicle Indicated (MPH [km/h])	44.7 [72]	43.5 [70]	42.9 [69]	42.9 [69]	42.9 [69]	31.1 [50]	16.2 [26]	1.9 [3]	0.0 [0]	0.0 [0]	0.0 [0]
Accelerator Pedal, % Full (%)	0	0	0	0	0	0	0	0	0	0	0
Service Brake, On/Off	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Engine RPM (RPM)	1,200	1,100	1,200	1,200	1,200	1,100	800	700	1,000	1,000	800
Motor RPM (RPM)	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid
ABS Activity	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
Stability Control (On, Off, Engaged)	ON	ON	ON	ON	ON	ON	Engaged	Engaged	Engaged	Engaged	Engaged
Steering Input (deg)	-7.5	-10.0	-12.5	-15.0	-10.0	-72.5	-120.0	-177.5	-202.5	-202.5	-190.0

Pre-Crash Data -5 to 0 Sec (Side Crash (Record 1 (Table 2 of 2))

Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0

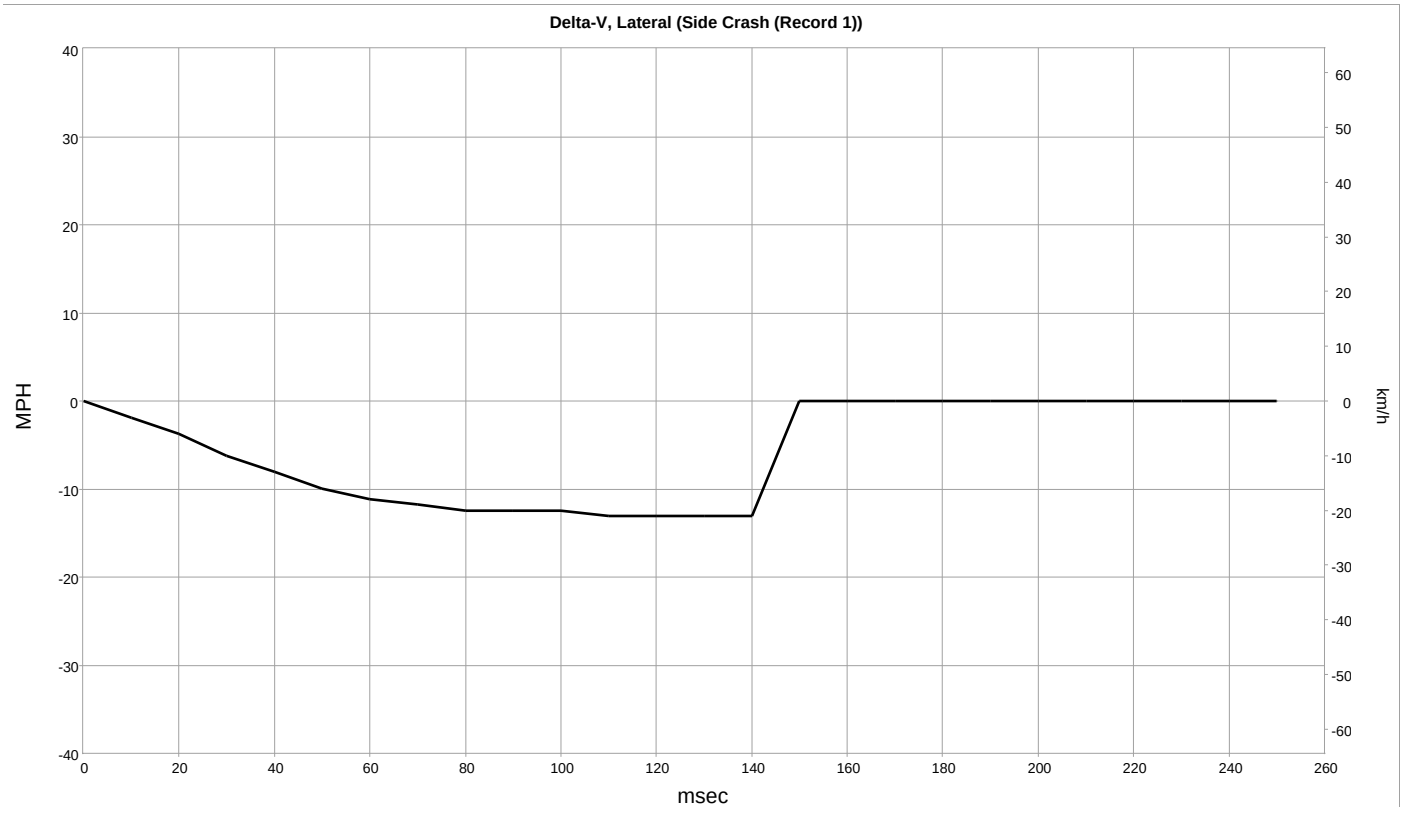
Longitudinal Crash Pulse (Side Crash (Record 1))

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
10	0.0 [0]
20	0.6 [1]
30	1.2 [2]
40	1.9 [3]
50	2.5 [4]
60	3.1 [5]
70	3.7 [6]
80	3.7 [6]
90	4.3 [7]
100	4.3 [7]
110	5.0 [8]
120	5.0 [8]
130	5.0 [8]
140	5.0 [8]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



Lateral Crash Pulse (Side Crash (Record 1))

Time (msec)	Delta-V, Lateral (MPH [km/h])
0	0.0 [0]
10	-1.9 [-3]
20	-3.7 [-6]
30	-6.2 [-10]
40	-8.1 [-13]
50	-9.9 [-16]
60	-11.2 [-18]
70	-11.8 [-19]
80	-12.4 [-20]
90	-12.4 [-20]
100	-12.4 [-20]
110	-13.0 [-21]
120	-13.0 [-21]
130	-13.0 [-21]
140	-13.0 [-21]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



System Status at Event (Rollover (Record 1))

Ignition Cycle, Download (cycles)	250
Complete File Recorded (Yes, No)	Yes
Multi-Event, Number of Events	2
Recording order information	4
Time from Event 1 to 2 (sec)	1.5
Maximum Delta-V, Longitudinal (MPH [km/h])	1.2 [2]
Time, Maximum Delta-V, Longitudinal (ms)	300.0
Sensor Design Range Exceeded time, Longitudinal Acceleration (ms)	invalid
Roll angle, Rollover Deployment (deg)	-118
Delta-V, Lateral, Rollover Deployment (MPH [km/h])	0.0 [0.0]

Deployment Command Data (Rollover (Record 1))

Frontal Airbag Deployment, Time to First Stage Deployment, Driver (ms)	invalid
Frontal Airbag Deployment, 1st Stage, Driver	No
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Driver (ms)	invalid
Frontal Airbag Deployment, 2nd Stage, Driver	No
Pretensioner Deployment, Time to Fire, Driver (ms)	invalid
Frontal Airbag Deployment, Time to 2nd Stage, Passenger (ms)	invalid
Side Airbag Deployment, Time to Deploy, Driver (ms)	invalid
Side Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Driver Side (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Pretensioner Deployment, Time to Fire, Passenger (ms)	invalid
Frontal Airbag Deployment, Time to Deploy, Passenger (ms)	invalid

Pre-Crash Data -1 Sec (Rollover (Record 1))

Ignition Cycle, Crash (cycles)	228
Safety Belt Status, Driver	buckled
Frontal Airbag Warning Lamp, On/Off	ON
Safety Belt Status, Passenger	unbuckled
Occupant Size Classification, Passenger, Child Size (Yes, No)	Yes
Occupant Information, Passenger	Empty
Shift position information (reverse or not)	No
MT reverse SW (reverse or not)	No

Pre-Crash Data -5 to 0 Sec (Rollover (Record 1 (Table 1 of 2))

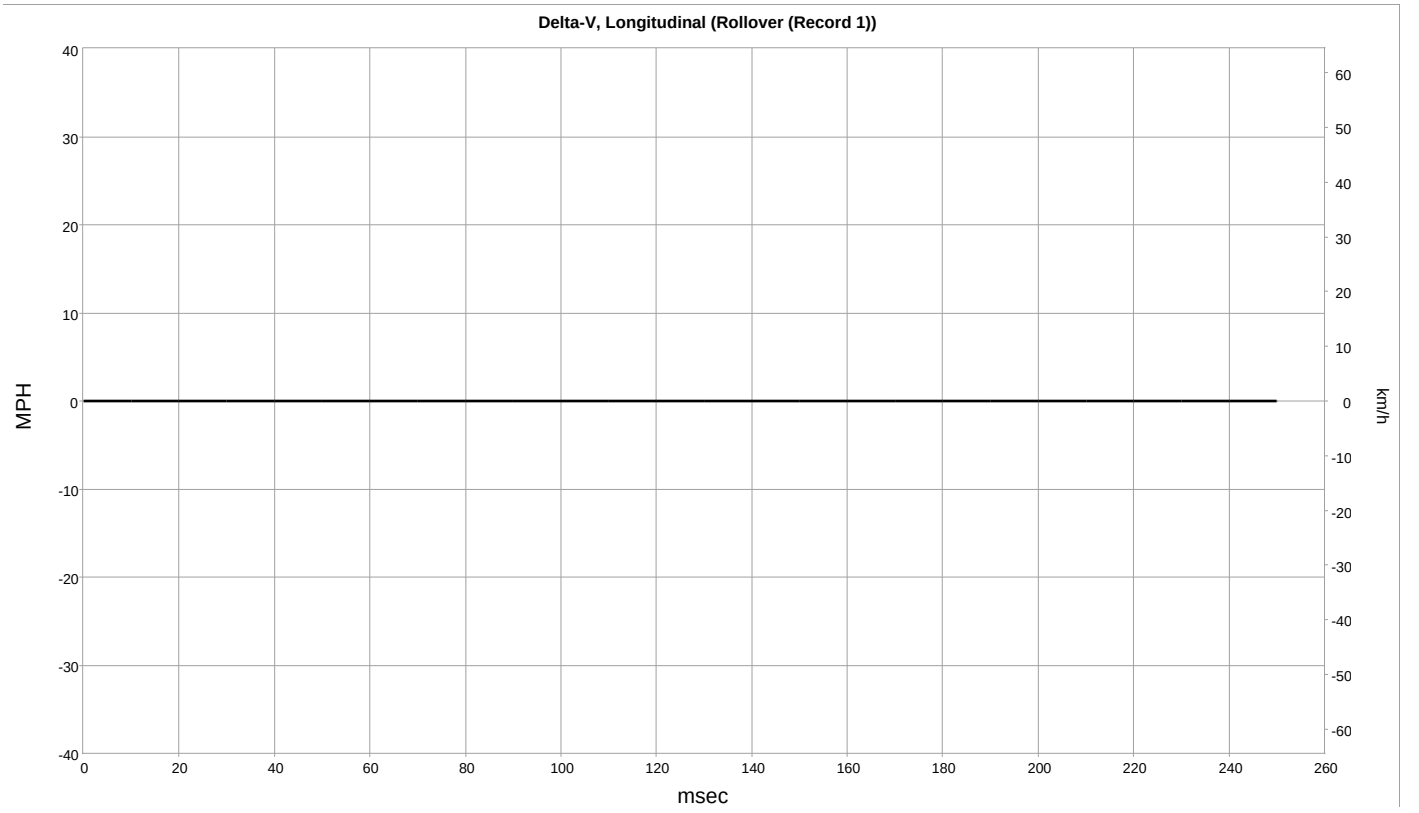
Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0
Speed, Vehicle Indicated (MPH [km/h])	44.7 [72]	43.5 [70]	42.9 [69]	42.9 [69]	42.9 [69]	31.1 [50]	16.2 [26]	1.9 [3]	0.0 [0]	0.0 [0]	0.0 [0]
Accelerator Pedal, % Full (%)	0	0	0	0	0	0	0	0	0	0	2
Service Brake, On/Off	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF
Engine RPM (RPM)	1,200	1,100	1,200	1,200	1,200	1,100	800	700	1,000	1,000	900
Motor RPM (RPM)	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid
ABS Activity	OFF	OFF	OFF	OFF	OFF	ON	ON	ON	ON	ON	ON
Stability Control (On, Off, Engaged)	ON	ON	ON	ON	ON	ON	Engaged	Engaged	Engaged	Engaged	Engaged
Steering Input (deg)	-7.5	-10.0	-12.5	-15.0	-10.0	-72.5	-120.0	-177.5	-202.5	-202.5	-197.5

Pre-Crash Data -5 to 0 Sec (Rollover (Record 1 (Table 2 of 2))

Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0

Longitudinal Crash Pulse (Rollover (Record 1))

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
10	0.0 [0]
20	0.0 [0]
30	0.0 [0]
40	0.0 [0]
50	0.0 [0]
60	0.0 [0]
70	0.0 [0]
80	0.0 [0]
90	0.0 [0]
100	0.0 [0]
110	0.0 [0]
120	0.0 [0]
130	0.0 [0]
140	0.0 [0]
150	0.0 [0]
160	0.0 [0]
170	0.0 [0]
180	0.0 [0]
190	0.0 [0]
200	0.0 [0]
210	0.0 [0]
220	0.0 [0]
230	0.0 [0]
240	0.0 [0]
250	0.0 [0]



System Status at Event (Rollover (Record 2))

Ignition Cycle, Download (cycles)	250
Complete File Recorded (Yes, No)	Yes
Multi-Event, Number of Events	1
Recording order information	3
Time from Event 1 to 2 (sec)	-
Maximum Delta-V, Longitudinal (MPH [km/h])	-1.2 [-2]
Time, Maximum Delta-V, Longitudinal (ms)	300.0
Sensor Design Range Exceeded time, Longitudinal Acceleration (ms)	invalid
Roll angle, Rollover Deployment (deg)	-31
Delta-V, Lateral, Rollover Deployment (MPH [km/h])	0.0 [0.0]

Deployment Command Data (Rollover (Record 2))

Frontal Airbag Deployment, Time to First Stage Deployment, Driver (ms)	invalid
Frontal Airbag Deployment, 1st Stage, Driver	No
Frontal Airbag Deployment, Time to 2nd Stage Deployment, Driver (ms)	invalid
Frontal Airbag Deployment, 2nd Stage, Driver	No
Pretensioner Deployment, Time to Fire, Driver (ms)	0
Frontal Airbag Deployment, Time to 2nd Stage, Passenger (ms)	invalid
Side Airbag Deployment, Time to Deploy, Driver (ms)	invalid
Side Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Driver Side (ms)	invalid
Side Curtain/Tube Airbag Deployment, Time to Deploy, Passenger (ms)	invalid
Pretensioner Deployment, Time to Fire, Passenger (ms)	0
Frontal Airbag Deployment, Time to Deploy, Passenger (ms)	invalid

Pre-Crash Data -1 Sec (Rollover (Record 2))

Ignition Cycle, Crash (cycles)	228
Safety Belt Status, Driver	buckled
Frontal Airbag Warning Lamp, On/Off	ON
Safety Belt Status, Passenger	unbuckled
Occupant Size Classification, Passenger, Child Size (Yes, No)	Yes
Occupant Information, Passenger	Empty
Shift position information (reverse or not)	No
MT reverse SW (reverse or not)	No

Pre-Crash Data -5 to 0 Sec (Rollover (Record 2 (Table 1 of 2))

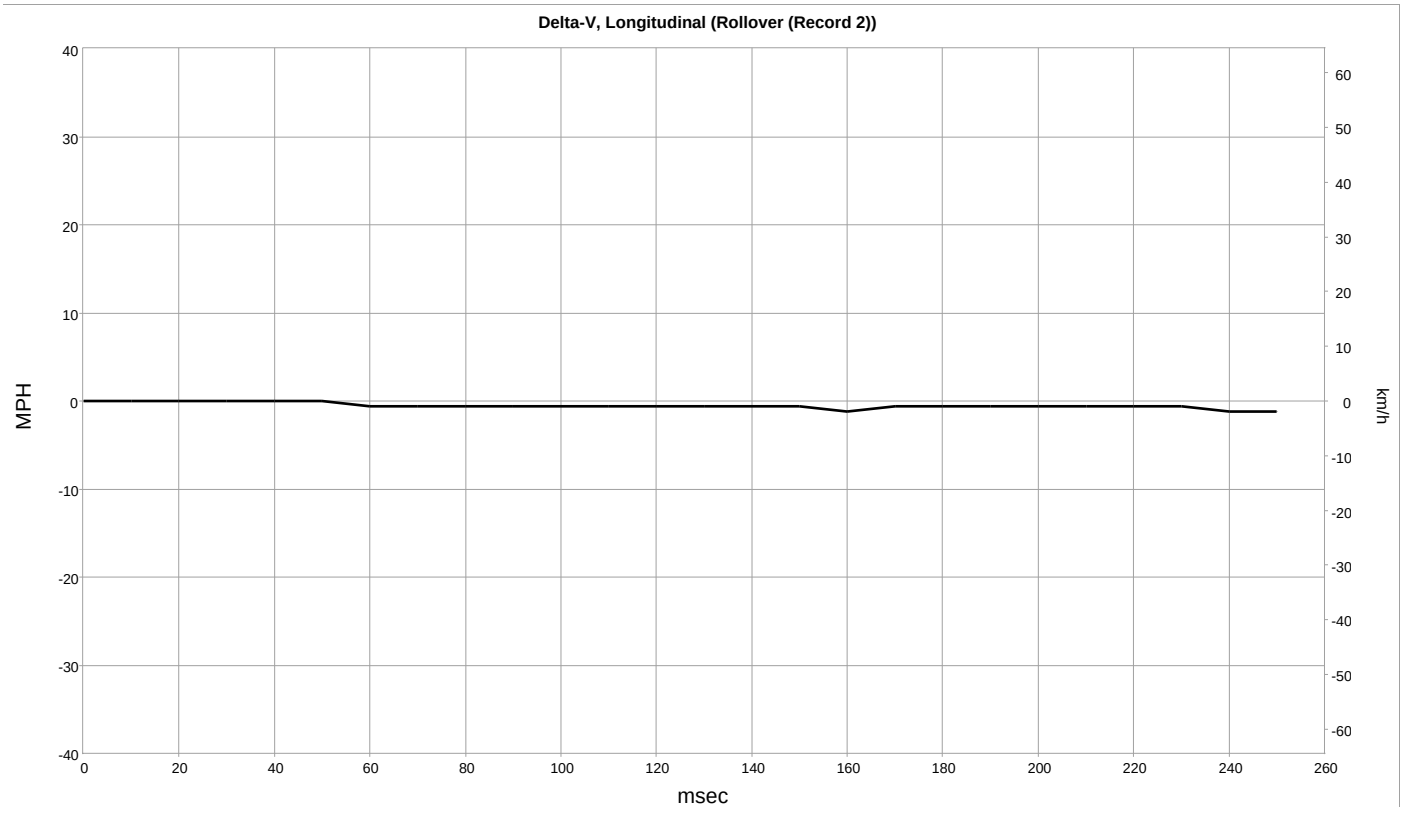
Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0
Speed, Vehicle Indicated (MPH [km/h])	46.0 [74]	46.0 [74]	45.4 [73]	44.7 [72]	43.5 [70]	42.9 [69]	42.9 [69]	42.9 [69]	31.1 [50]	16.2 [26]	11.2 [18]
Accelerator Pedal, % Full (%)	3	3	0	0	0	0	0	0	0	0	50
Service Brake, On/Off	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON
Engine RPM (RPM)	1,000	1,000	1,100	1,200	1,100	1,200	1,200	1,200	1,100	800	800
Motor RPM (RPM)	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid	invalid
ABS Activity	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	ON	ON	ON
Stability Control (On, Off, Engaged)	ON	ON	ON	ON	ON	ON	ON	ON	ON	Engaged	Engaged
Steering Input (deg)	0.0	0.0	0.0	-7.5	-10.0	-12.5	-15.0	-10.0	-72.5	-120.0	-145.0

Pre-Crash Data -5 to 0 Sec (Rollover (Record 2 (Table 2 of 2))

Time (sec)	-5.0	-4.5	-4.0	-3.5	-3.0	-2.5	-2.0	-1.5	-1.0	-0.5	0.0

Longitudinal Crash Pulse (Rollover (Record 2))

Time (msec)	Delta-V, Longitudinal (MPH [km/h])
0	0.0 [0]
10	0.0 [0]
20	0.0 [0]
30	0.0 [0]
40	0.0 [0]
50	0.0 [0]
60	-0.6 [-1]
70	-0.6 [-1]
80	-0.6 [-1]
90	-0.6 [-1]
100	-0.6 [-1]
110	-0.6 [-1]
120	-0.6 [-1]
130	-0.6 [-1]
140	-0.6 [-1]
150	-0.6 [-1]
160	-1.2 [-2]
170	-0.6 [-1]
180	-0.6 [-1]
190	-0.6 [-1]
200	-0.6 [-1]
210	-0.6 [-1]
220	-0.6 [-1]
230	-0.6 [-1]
240	-1.2 [-2]
250	-1.2 [-2]



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.

```
62 10 00 3E 00 00 15
62 10 20 F7 96 00 01
62 10 40 03 80 00 01
62 10 60 08 00 00 00
62 10 65 DC
62 20 00 C0 01 FE 01
62 20 01 00 FE FC FC FC FB FA F7 F6 F5 F5 F4 F4 00 00 00 00 00 00 00 00 00 00 00 00 00
62 20 02 00 01 01 02 02 02 02 04 05 05 05 04 05 00 00 00 00 00 00 00 00 00 00 00 00 00
62 20 10 49 49 4A 4A 49 48 46 45 45 45 44
62 20 11 03 03 03 03 00 00 00 00 00 00 00
62 20 12 00 00 00 00 00 00 00 00 00 00 00
62 20 13 0A 0A 0A 0A 0B 0C 0B 0C 0C 0C 0C
62 20 14 FF FF FF FF FF FF FF FF FF FF FF
62 20 15 00 00 00 00 00 00 00 00 00 00 00
62 20 16 00 00 00 00 00 00 00 00 00 00 00
62 20 17 FF 00 00 00 00 FD FC FB FA FC E8
62 20 20 F7 FF F7 6F
62 20 21 F4
62 20 22 30
62 20 23 05
62 20 24 28
62 20 26 01
62 20 27 FF
62 20 28 29
62 20 29 FF
62 20 2A FF
62 20 2B FF
62 20 2C 0B
62 20 2D 0B
62 20 2E 01
```

62 20 2F FF

62 20 30 FF

62 20 31 01

62 20 32 00

62 20 33 00

62 20 34 01

62 20 36 00

62 20 37 FF

62 20 38 FF

62 20 3A 06

62 20 3B 0B

62 20 3D 00

62 20 3E 00

62 20 3F 00

62 20 40 F8 00 00 01

62 20 41 00 E4

62 20 42 00 FA

62 20 43 FF

62 20 44 FF

62 20 45 55

62 20 56 00 01

62 20 57 55

62 20 60 C0 01 FE 01

62 20 61 00 FF FC F9 F8 F8 F8 F7 F7 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

62 20 62 00 00 FE FC FC FB FC FB FB 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

62 20 70 4A 4A 49 48 46 45 45 45 32 1A 1A

62 20 71 03 03 00 00 00 00 00 00 00 00 00

62 20 72 00 00 00 00 00 00 00 00 00 00 00

62 20 73 0A 0A 0B 0C 0B 0C 0C 0C 0B 08 08

62 20 74 FF FF FF FF FF FF FF FF FF FF FF

62 20 75 00 00 00 00 00 00 00 00 01 01 01

62 20 76 00 00 00 00 00 00 00 00 00 01 01

62 20 77 00 00 00 FD FC FB FA FC E3 D0 CC

62 20 80 F7 FF F7 6F

62 20 81 F7

62 20 82 20

62 20 83 FB

62 20 84 1E

62 20 86 0F

62 20 87 FF

62 20 88 37

62 20 89 FF

62 20 8A FF

62 20 8B FF

62 20 8C 19

62 20 8D 19

62 20 8E 0F

62 20 8F FF

62 20 90 FF

62 20 91 0F

62 20 92 01

62 20 93 00

62 20 94 01

62 20 96 00

62 20 97 FF

62 20 98 0F

62 20 9A 14

62 20 9B 19

62 20 9D 00

62 20 9E 00

62 20 9F 00

62 20 A0 F8 00 00 01

62 20 A1 00 E4

62 20 A2 00 FA

62 20 A3 07

62 20 A4 07

62 20 A5 55

62 20 B6 00 02

62 20 B7 55

62 20 C0 C0 01 FE 01

62 20 C1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

62 20 C2 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

62 20 D0 00 00 00 00 00 00 00 00 00 00

62 20 D1 00 00 00 00 00 00 00 00 00 00

62 20 D2 00 00 00 00 00 00 00 00 00 00

62 20 D3 00 00 00 00 00 00 00 00 00 00

62 20 D4 00 00 00 00 00 00 00 00 00 00

62 20 D5 00 00 00 00 00 00 00 00 00 00

62 20 D6 00 00 00 00 00 00 00 00 00 00

62 20 D7 00 00 00 00 00 00 00 00 00 00

62 20 E0 F7 FC F7 0F

62 20 E1 00

62 20 E2 00

62 20 E3 00

62 20 E4 00

62 20 E6 00

62 20 E7 00

62 20 E8 00

62 20 E9 00

62 20 EA 00

62 20 EB 00

62 20 EC 00

62 20 ED 00

62 20 EE 00

62 20 F1 00

62 20 F2 00

62 20 F3 00

62 20 F4 00

62 20 F6 00

62 20 F7 00

62 20 F8 00

62 20 FD 00

62 20 FE 00

62 20 FF 00

62 21 00 F8 00 00 01

62 21 01 00 00

62 21 02 00 FA

62 21 03 00

62 21 04 00

62 21 05 00

62 21 16 00 00

62 21 17 00

62 21 20 C0 01 FE 01

62 21 21 00 00 01 02 03 04 05 06 06 07 07 08 08 08 08 00 00 00 00 00 00 00 00 00 00 00

62 21 22 00 FD FA F6 F3 F0 EE ED EC EC EC EB EB EB EB 00 00 00 00 00 00 00 00 00 00 00

62 21 30 48 46 45 45 45 32 1A 03 00 00 00

62 21 31 00 00 00 00 00 00 00 00 00 00 00

62 21 32 00 00 00 00 00 00 00 00 00 00 00

62 21 33 0C 0B 0C 0C 0C 0B 08 07 0A 0A 08

62 21 34 FF FF FF FF FF FF FF FF FF FF FF

62 21 35 00 00 00 00 00 01 01 01 01 01 01

62 21 36 00 00 00 00 00 00 01 01 01 01 01

62 21 37 FD FC FB FA FC E3 D0 B9 AF AF B4

62 21 40 F7 FC F7 0F

62 21 41 08

62 21 42 39

62 21 43 EB

62 21 44 2E

62 21 46 FF

62 21 47 FF

62 21 48 FF

62 21 49 FF

62 21 4A FF

62 21 4B FF

62 21 4C FF

62 21 4D FF

62 21 4E FF

62 21 51 FF

62 21 52 01

62 21 53 00

62 21 54 01

62 21 56 00

62 21 57 FF

62 21 58 FF

62 21 5D 00

62 21 5E 00

62 21 5F 00

62 21 60 F8 00 00 01

62 21 61 00 E4

62 21 62 00 FA

62 21 63 FF

62 21 64 FF

62 21 65 55

62 21 76 00 05

62 21 77 55

62 21 80 80 01 FE 01

62 21 81 00 00 00 00 00 00 FF FF FF FF FF FF FF FF FF FF FE FF FF FF FF FF FF FF FE FE

62 21 90 4A 4A 49 48 46 45 45 45 32 1A 12

62 21 91 03 03 00 00 00 00 00 00 00 00 32

62 21 92 00 00 00 00 00 00 00 00 00 00 01

62 21 93 0A 0A 0B 0C 0B 0C 0C 0C 0B 08 08

62 21 94 FF FF FF FF FF FF FF FF FF FF FF

62 21 95 00 00 00 00 00 00 00 00 01 01 01

62 21 96 00 00 00 00 00 00 00 00 00 01 01

62 21 97 00 00 00 FD FC FB FA FC E3 D0 C6

62 21 A0 C7 FC F6 7F

62 21 A1 FE

62 21 A2 78

62 21 A6 FF

62 21 A7 FF

62 21 A8 FF

62 21 A9 FF

62 21 AA FF

62 21 AB FF

62 21 AC FF

62 21 AD FF

62 21 AE 00

62 21 B1 00

62 21 B2 01

62 21 B3 00

62 21 B4 01

62 21 B6 00

62 21 B7 FF

62 21 BA E1

62 21 BB 00

62 21 BD 00

62 21 BE 00

62 21 BF 00

62 21 C0 F8 00 00 41

62 21 C1 00 E4

62 21 C2 00 FA

62 21 C3 FF

62 21 C4 FF

62 21 C5 55

62 21 D6 00 03

62 21 D7 55

62 21 E0 80 01 FE 01

62 21 E1 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00

62 21 F0 48 46 45 45 45 32 1A 03 00 00 00

62 21 F1 00 00 00 00 00 00 00 00 00 00 02

62 21 F2 00 00 00 00 00 00 00 00 00 00 00

62 21 F3 0C 0B 0C 0C 0C 0B 08 07 0A 0A 09

62 21 F4 FF FF FF FF FF FF FF FF FF FF FF

62 21 F5 00 00 00 00 00 01 01 01 01 01 01

62 21 F6 00 00 00 00 00 00 01 01 01 01 01

62 21 F7 FD FC FB FA FC E3 D0 B9 AF AF B1

62 22 00 C7 FC F6 7F

62 22 01 02

62 22 02 78

62 22 06 FF

62 22 07 FF

62 22 08 FF

62 22 09 FF

62 22 0A FF

62 22 0B FF

62 22 0C FF

62 22 0D FF

62 22 0E FF

62 22 11 FF

62 22 12 01

62 22 13 00

62 22 14 01

62 22 16 00

62 22 17 FF

62 22 1A 8A

62 22 1B 00

62 22 1D 00

62 22 1E 00

62 22 1F 00

62 22 20 F8 00 00 40

62 22 21 00 E4

62 22 22 00 FA

62 22 23 0F

62 22 24 0F

62 22 25 55

62 22 36 00 04

62 22 37 55

62 F1 82 00 92 15 40 01

62 F1 8E 39 38 32 32 31 46 4C 34 30 30

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U.S. Department
of Transportation

**National Highway
Traffic Safety
Administration**

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