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	LYV102RK1JB******
User	N. Funk
Case Number	22132
EDR Data Imaging Date	09/29/2022
Crash Date	08/29/2022
Filename	VOLVO PROJECT.CDRX
Saved on	Thursday, September [redacted] at 14:09:29
Imaged with CDR version	Crash Data Retrieval Tool 23.5.1
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 23.4
Reported with Software Licensed to (Company Name)	Weston Forensic Collision Investigations
EDR Device Type	Airbag Control Module
Event(s) recovered	Event Record 1 Event Record 2

Comments

VIN: LYV102RK1JB[redacted]
Inspection location: COPART[redacted]
Individuals present: [redacted]

Observed visible restraint deployment(s): Side Curtain

Imaging conducted pursuant to search warrant (warrant details) (Y/N)? No
Imaging conducted pursuant to court order (Y/N)? No
Imaging conducted pursuant to owner consent (Y/N)? Yes
Imaging conducted pursuant to civil discovery (Y/N)? No

Ignition key or fob available and its position at the start of the inspection: Yes, in vehicle
Odometer reading/units: 46689 mi
Recommended tire size (sticker): 255/45R20
Tire size(s) (actual): 255/45R20 x4
For GM vehicles, were RPOs documented (i.e.: photo)? N/A

Imaging completed by DLC or direct-to-module access: DLC
"Re-powering" required (Y/N)? Yes, jump box
Additional power-up used: None

Other notes: None

Disclaimer
I have accessed and retrieved data from CDR Tool accessible system(s) from or in the vehicle identified by the applied VIN in which potential Event Data Recorder (EDR) may be found. The retrieved data may be related to a crash or other physical event. The successful retrieval of the data and production of this report is an indication that the procedure(s) necessary to properly access and retrieve the data have been followed and the data was properly imaged/downloaded.

I have or will provide the appropriate party(s) a copy of the original, raw data file - the underlying CDR System file - for discovery and/or later re-printing as necessary. This file will be named using the vehicle's Vehicle Identification Number (VIN) and identified by the *.CDRx file extension. This file should only be opened and viewed with the latest version of the Bosch Crash Data Retrieval System Software; improper use of a "text viewer" may corrupt the CDRx file which would prevent it from being opened again in the CDR Tool software and generating a data translation report.

The raw data as found in the CDRx file might be compared to a photographic negative and it is a direct image or copy of the data stored on/in the module(s) accessed using the CDR Tool. The CDRx file should be preserved in its native format, unedited, and should be shared in that format where it may be viewed at a later date using a licensed copy of the CDR Tool software or using the "free reader" version of the CDR Tool software in the latest production release of that software. Prior to any analytical use of this data or legal proceeding, the original *.CDRx file should be reopened and the raw data translated in the latest production version of the CDR software to ensure the most recent, complete translation of the data is used as described in the "Important Notice" above.

I have indicated to the individual(s) receiving the CDRx file that the report includes a Data Limitations section which follows this disclaimer and that portion of this translation report may describe or suggest conditions or characteristics of the data which may be, on the surface, confusing or require a more complete analysis by other means. I have also informed the individual(s) that the data may be

Data Limitations

General storage information:

- The EDR can store up to six events.
- The information stored is the same for deployment events and non-deployment events
- Deployment event data is locked after writing
    - Airbag deployment data can overwrite Other deployment data if there is no other data area available
- Non-deployment event data is unlocked
- Unlocked data can be overwritten by new data
- An event will not start capture/storage of data if there is already an ongoing event that is being captured
- An event will start a capture/storage of data if there is capture going on for an event that has finished

Data Element Sign Convention:
The following table provides an explanation of the sign notation for data elements that may be included in this CDR report.

Data Element Name	Positive Sign Notation Indicates
Longitudinal Acceleration	Forward
Delta-V, Longitudinal	Forward
Maximum Delta-V, Longitudinal	Forward
Lateral Acceleration	Left to Right
Delta-V, Lateral	Left to Right
Maximum Delta-V, Lateral	Left to Right
Normal Acceleration	Downward
Vehicle Roll Angle	Left to Right Rotation
Steering Input	Left Turn

Data limitations:

- All data contained in this CDR report is indicative of what information the SRS control unit has measured or received on the vehicle communication bus at and around the time of crash. Data should be examined in conjunction with all other available evidence to give a better understanding of the situation.
- All data elements have additional functional encoding, giving extra information about the data element in question when there's no data value stored:
    - 0xFF "not written" means the data element was never written (0xFF stored by default in a fresh control unit)
    - 0xFE "written but no data available" means the data element was written, but there was no information to write
    - 0xFD "not equipped" (where applicable) means the source of the information is not equipped in the car
    - 0xFC "not commanded" (where applicable) means the deployable device was never activated
- Special care has to be taken when "Complete file recorded" data element does not read "Yes". The writing process of the recorder has then not been able to run its full course, and the validity of information stored cannot be guaranteed.
- Signal information originating from other control units in the car have delays, this have to be taken into account when observing information at crash time. Examples of signals in the EDR record originating from other control units are:
    - Speed, vehicle indicated (ABS module)
    - Engine throttle (ECM module)
    - Service brake (ABS module)
    - Occupant size classification (OWS module)
- "Time to deploy" data elements are related to TimeZero, which means that they are subject to when the restraint control algorithm becomes active. This can vary from case to case and is individual to each crash situation. These times are therefore not well suited for comparison between EDR records.

11002_Volvo002_r001

System Status at Retrieval

Vehicle Identification Number	LYV102RK1JB******
Application Diagnostic Database Part Number	31387255 AO
Ignition Cycle, Download	6,806
Lifetime Operating Timer (sec)	8,626,688

System Status at Event (Event Record 1)

Data Area Status, Event Record 1	Unlocked, Data Stored
Data Area Read Status, Event Record 1	Data Not Read
Complete File Recorded (Yes/No)	Yes
Multi-Event, Number of Events (1,2)	Event Number 1
Time from Preceding Event (sec)	Written but No Data Available
Maximum Delta-V, Longitudinal (MPH [km/h])	0.0 [0.0]
Time, Maximum Delta-V, Longitudinal (msec)	0
Maximum Delta-V, Lateral (MPH [km/h])	0.0 [0.0]
Time, Maximum Delta-V, Lateral (msec)	115

Deployment Command Data (Event Record 1)

Frontal Airbag Deployment, Time to Deploy, First Stage, Driver (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, First Stage, Front Passenger (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Second Stage, Passenger (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Third Stage, Passenger (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Second Stage, Driver (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Third Stage, Driver (msec)	Not Equipped
Left Side Airbag, Time to Deploy (msec)	Not Deployed
Right Side Airbag, Time to Deploy (msec)	Not Deployed
Left Side Curtain, Time to Deploy (msec)	Not Deployed
Right Side Curtain, Time to Deploy (msec)	Not Deployed
Driver Shoulder Belt Pretensioner, Time to Deploy (msec)	Not Deployed
Passenger Shoulder Belt Pretensioner, Time to Deploy (msec)	Not Deployed
Adaptive Steering Column, Time to Deploy (msec)	Not Equipped
Driver Lap Belt Pretensioner, Time to Deploy (msec)	Not Equipped
Passenger Lap Belt Pretensioner, Time to Deploy (msec)	Not Equipped
Driver Belt Load Limiter, Time to Deploy (msec)	Not Deployed
Passenger Belt Load Limiter, Time to Deploy (msec)	Not Deployed
2nd Row Right Belt Pretensioner, Time to Deploy (msec)	Not Deployed
2nd Row Middle Belt Pretensioner, Time to Deploy (msec)	Not Deployed
2nd Row Left Belt Pretensioner, Time to Deploy (msec)	Not Deployed
3rd Row Right Belt Pretensioner, Time to Deploy (msec)	Not Equipped
3rd Row Left Belt Pretensioner, Time to Deploy (msec)	Not Equipped
Driver knee airbag, time to deploy, first stage (msec)	Not Deployed
Driver knee airbag, time to deploy, second stage (msec)	Not Equipped
Passenger knee airbag, time to deploy, first stage (msec)	Not Equipped
Passenger knee airbag, time to deploy, second stage (msec)	Not Equipped

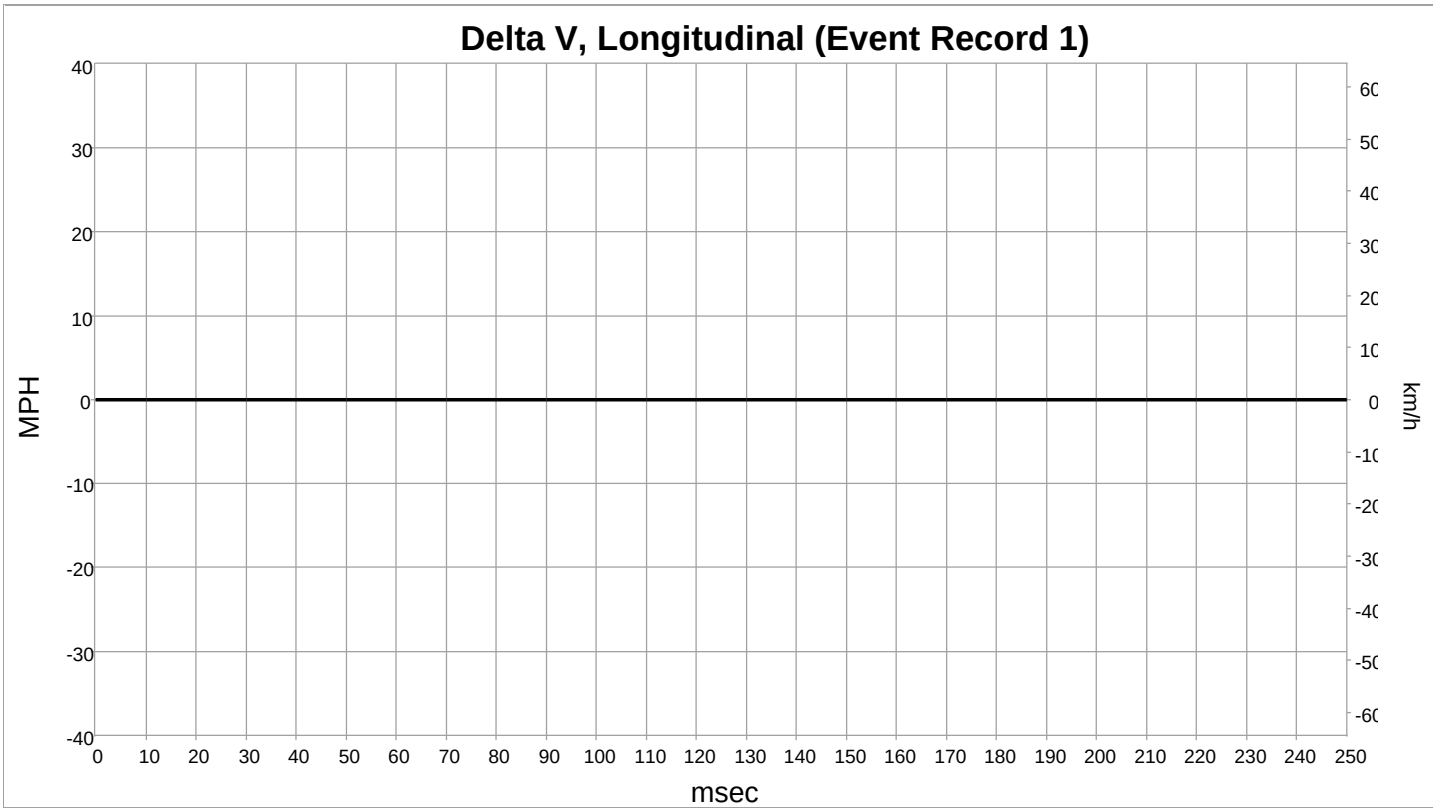
Pre-Crash Data -1 Sec (Event Record 1)

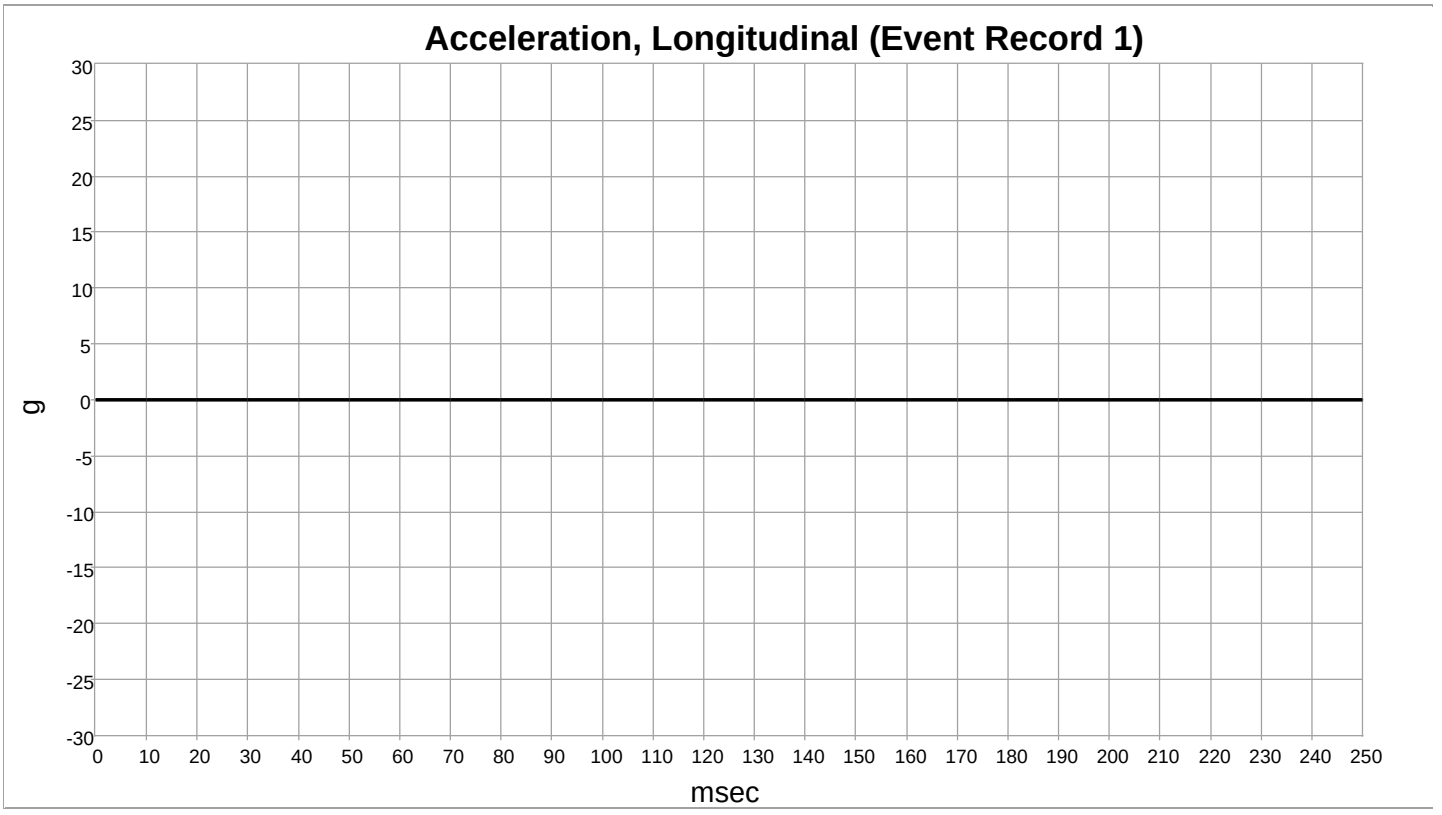
Ignition Cycle, Crash	4,446
Safety Belt Status, Driver	Off, Unbelted
Safety Belt Status, Passenger	Off, Unbelted
Frontal Airbag Warning Lamp	Off
Frontal Airbag Suppression Switch Status, Front Passenger	Not Equipped
Seat Track Position Switch, Foremost, Status, Driver	No
Seat Track Position Switch, Foremost, Status, Front Passenger	No
Occupant Size Right Front Passenger Child	No

Pre-Crash -5 to 0 sec (Event Record 1)

Time (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % Full (%)	Service Brake (On, Off)	Steering input (%)	ABS Activity	Stability Control Status
-5.0	58.4 [94.0]	61.0	Off	0.0	Off	On
-4.5	59.7 [96.0]	61.0	Off	0.0	Off	On
-4.0	60.9 [98.0]	61.0	Off	0.0	Off	On
-3.5	62.1 [100.0]	64.0	Off	0.0	Off	On
-3.0	63.4 [102.0]	64.0	Off	0.0	Off	On
-2.5	64.6 [104.0]	64.0	Off	0.0	Off	On
-2.0	65.9 [106.0]	57.0	Off	0.0	Off	On
-1.5	66.5 [107.0]	47.0	Off	0.0	Off	On
-1.0	67.1 [108.0]	45.0	Off	0.0	Off	On
-0.5	67.7 [109.0]	47.0	Off	0.0	Off	On
0.0	68.4 [110.0]	42.0	Off	0.0	Off	On

Longitudinal Crash Pulse (Event Record 1)

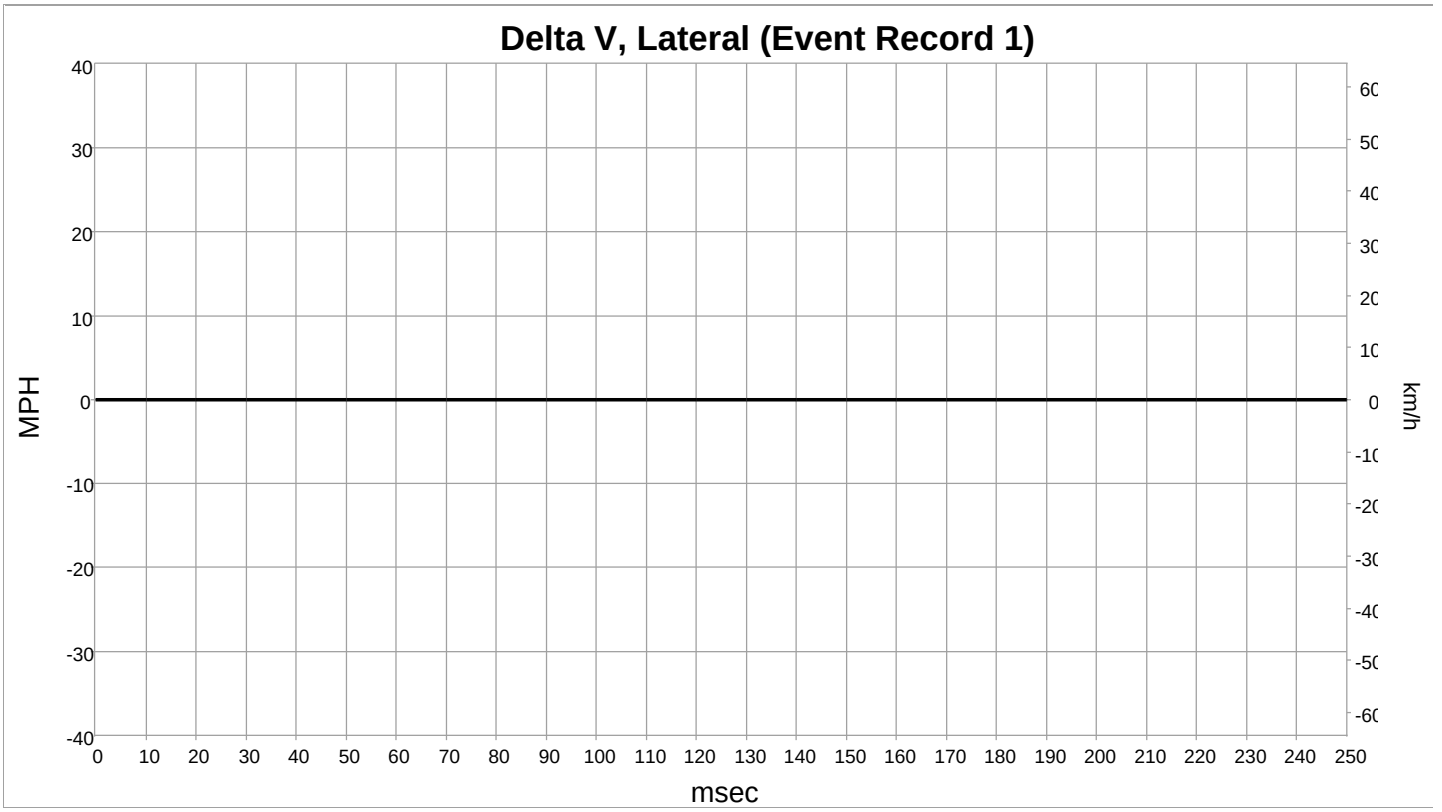


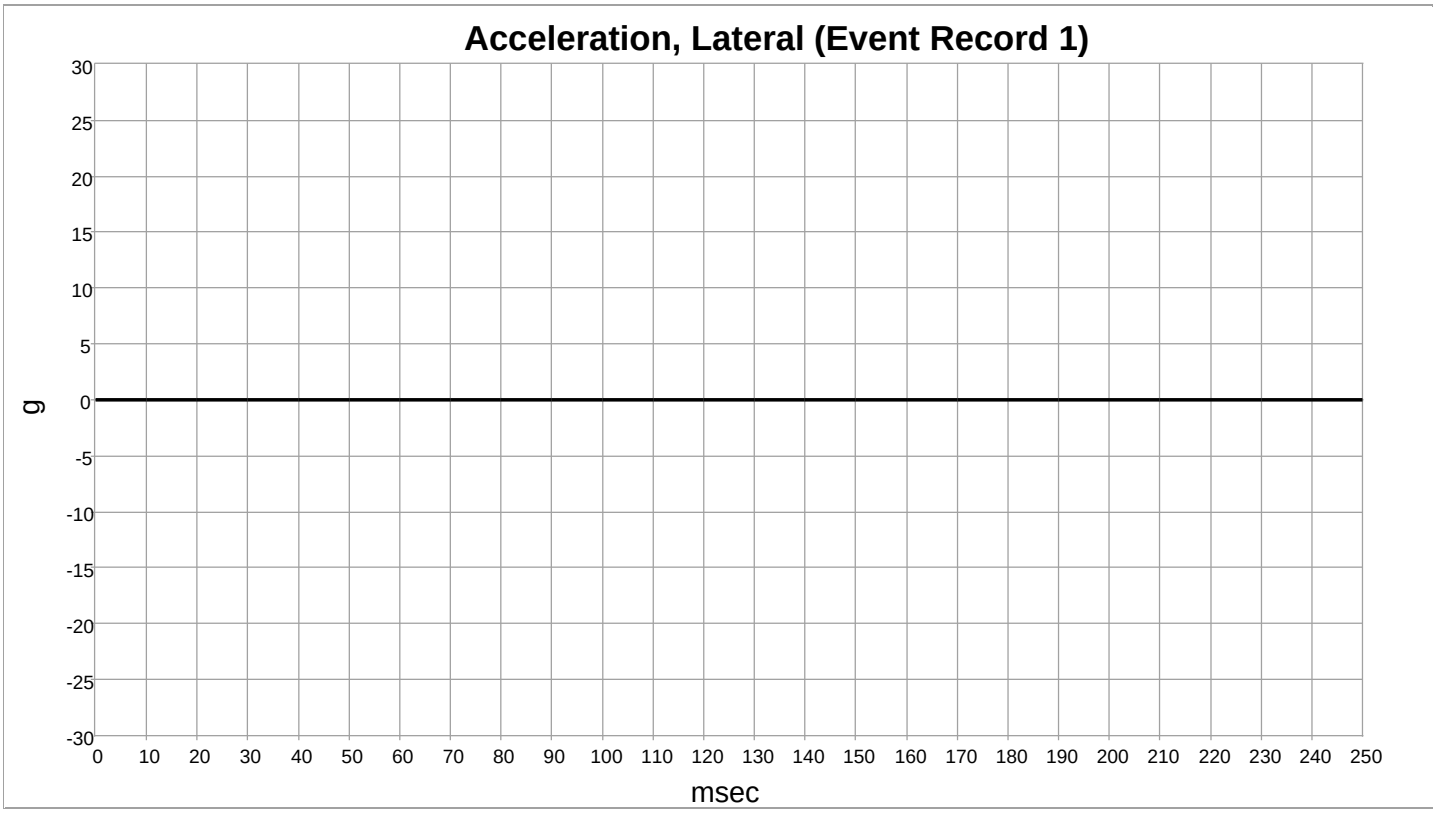


Longitudinal Crash Pulse (Event Record 1)

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

Lateral Crash Pulse (Event Record 1)

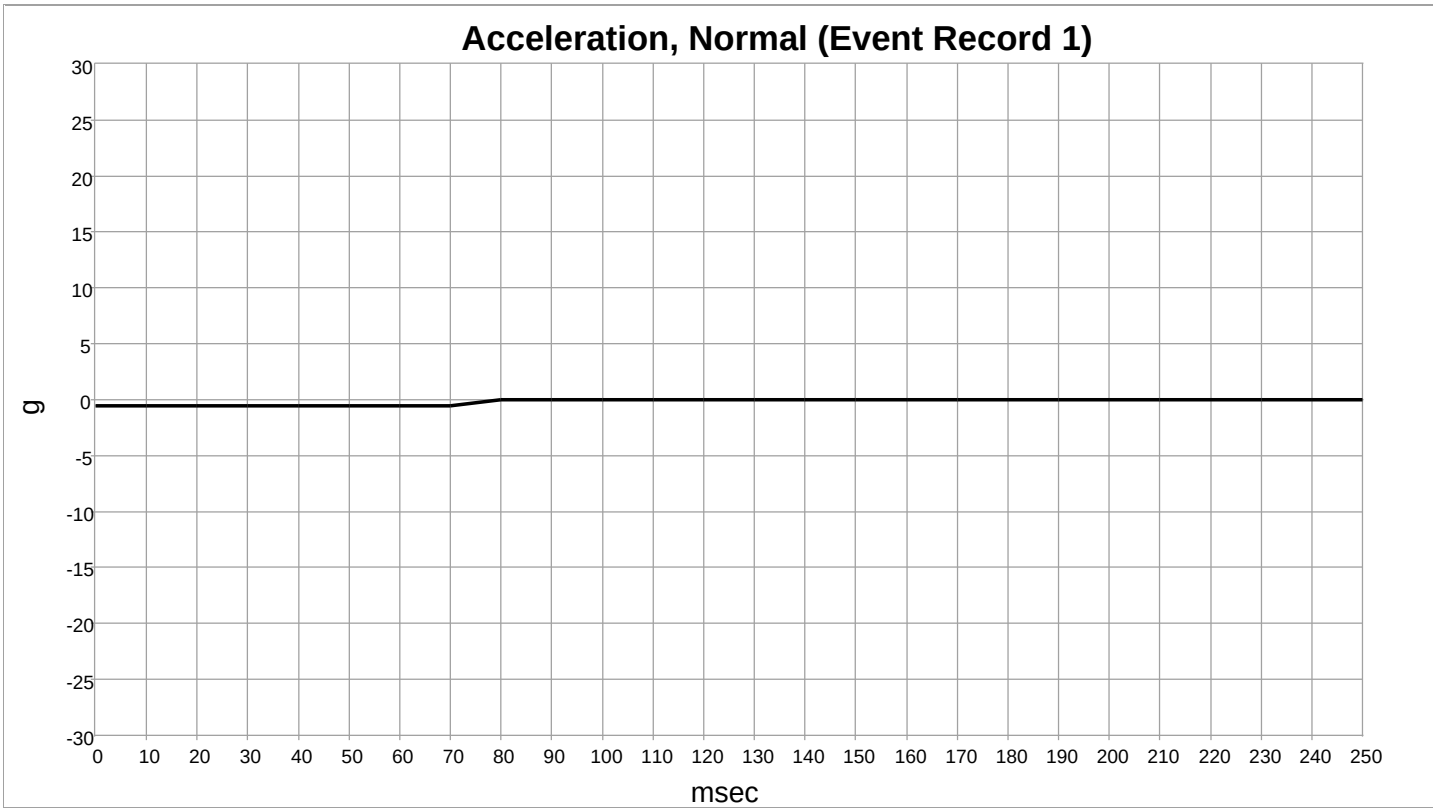




Lateral Crash Pulse (Event Record 1)

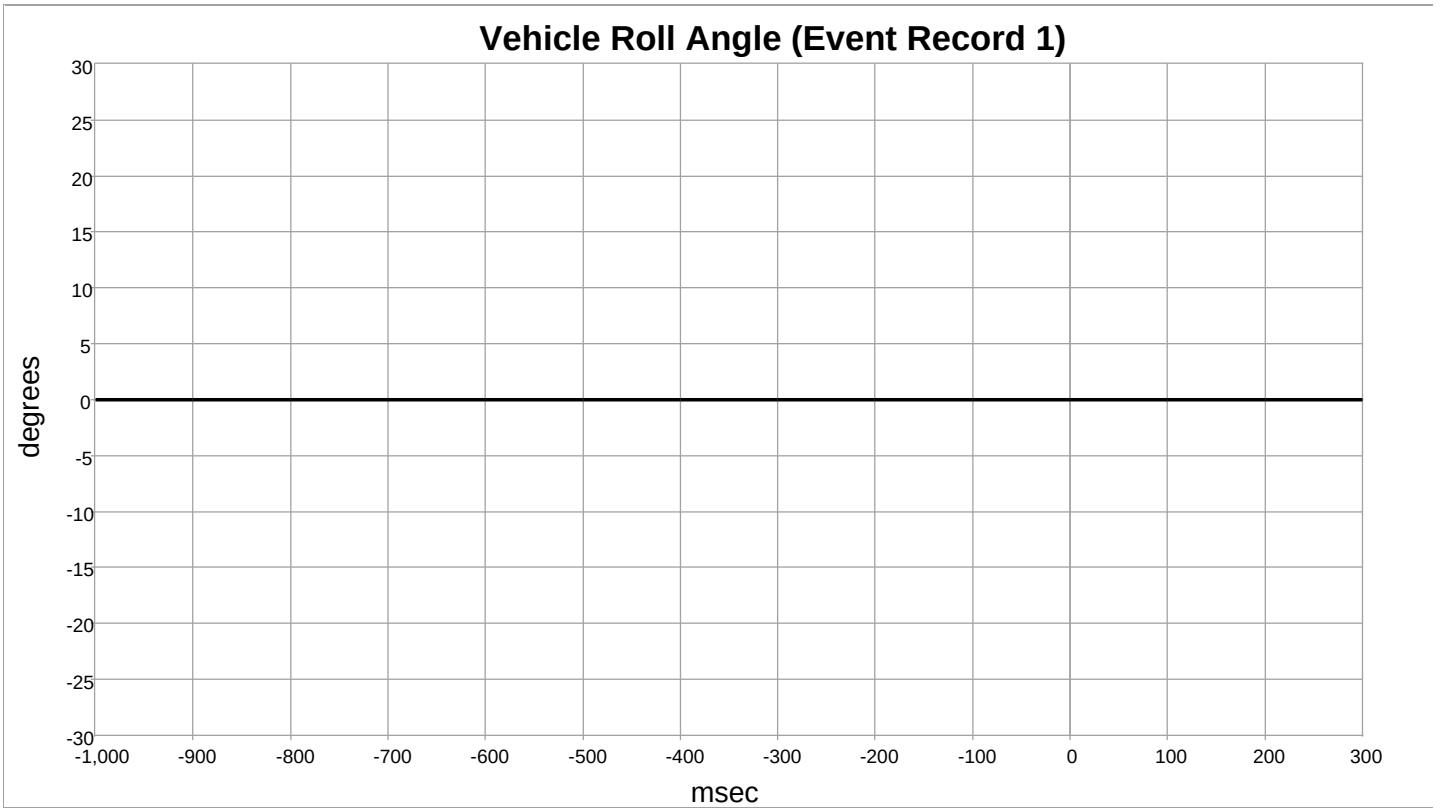
Time (msec)	Delta-V, lateral (MPH [km/h])	Lateral Acceleration (g)
0	0.0 [0.0]	0.0
10	0.0 [0.0]	0.0
20	0.0 [0.0]	0.0
30	0.0 [0.0]	0.0
40	0.0 [0.0]	0.0
50	0.0 [0.0]	0.0
60	0.0 [0.0]	0.0
70	0.0 [0.0]	0.0
80	0.0 [0.0]	0.0
90	0.0 [0.0]	0.0
100	0.0 [0.0]	0.0
110	0.0 [0.0]	0.0
120	0.0 [0.0]	0.0
130	0.0 [0.0]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

Vertical Crash Pulse (Event Record 1)



Time (msec)	Normal Acceleration (g)
0	-0.5
10	-0.5
20	-0.5
30	-0.5
40	-0.5
50	-0.5
60	-0.5
70	-0.5
80	0.0
90	0.0
100	0.0
110	0.0
120	0.0
130	0.0
140	0.0
150	0.0
160	0.0
170	0.0
180	0.0
190	0.0
200	0.0
210	0.0
220	0.0
230	0.0
240	0.0
250	0.0

Rollover Crash Pulse (Event Record 1)



Time (msec)	Vehicle Roll Angle (deg)
-1000	0.0
-900	0.0
-800	0.0
-700	0.0
-600	0.0
-500	0.0
-400	0.0
-300	0.0
-200	0.0
-100	0.0
0	0.0
100	0.0
200	0.0
300	0.0

System Status at Event (Event Record 2)

Data Area Status, Event Record 2	Unlocked, Data Stored
Data Area Read Status, Event Record 2	Data Not Read
Complete File Recorded (Yes/No)	Yes
Multi-Event, Number of Events (1,2)	Event Number 1
Time from Preceding Event (sec)	Written but No Data Available
Maximum Delta-V, Longitudinal (MPH [km/h])	0.0 [0.0]
Time, Maximum Delta-V, Longitudinal (msec)	0
Maximum Delta-V, Lateral (MPH [km/h])	0.0 [0.0]
Time, Maximum Delta-V, Lateral (msec)	0

Deployment Command Data (Event Record 2)

Frontal Airbag Deployment, Time to Deploy, First Stage, Driver (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, First Stage, Front Passenger (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Second Stage, Passenger (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Third Stage, Passenger (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Second Stage, Driver (msec)	Not Deployed
Frontal Airbag Deployment, Time to Deploy, Third Stage, Driver (msec)	Not Equipped
Left Side Airbag, Time to Deploy (msec)	Not Deployed
Right Side Airbag, Time to Deploy (msec)	Not Deployed
Left Side Curtain, Time to Deploy (msec)	Not Deployed
Right Side Curtain, Time to Deploy (msec)	Not Deployed
Driver Shoulder Belt Pretensioner, Time to Deploy (msec)	Not Deployed
Passenger Shoulder Belt Pretensioner, Time to Deploy (msec)	Not Deployed
Adaptive Steering Column, Time to Deploy (msec)	Not Equipped
Driver Lap Belt Pretensioner, Time to Deploy (msec)	Not Equipped
Passenger Lap Belt Pretensioner, Time to Deploy (msec)	Not Equipped
Driver Belt Load Limiter, Time to Deploy (msec)	Not Deployed
Passenger Belt Load Limiter, Time to Deploy (msec)	Not Deployed
2nd Row Right Belt Pretensioner, Time to Deploy (msec)	Not Deployed
2nd Row Middle Belt Pretensioner, Time to Deploy (msec)	Not Deployed
2nd Row Left Belt Pretensioner, Time to Deploy (msec)	Not Deployed
3rd Row Right Belt Pretensioner, Time to Deploy (msec)	Not Equipped
3rd Row Left Belt Pretensioner, Time to Deploy (msec)	Not Equipped
Driver knee airbag, time to deploy, first stage (msec)	Not Deployed
Driver knee airbag, time to deploy, second stage (msec)	Not Equipped
Passenger knee airbag, time to deploy, first stage (msec)	Not Equipped
Passenger knee airbag, time to deploy, second stage (msec)	Not Equipped

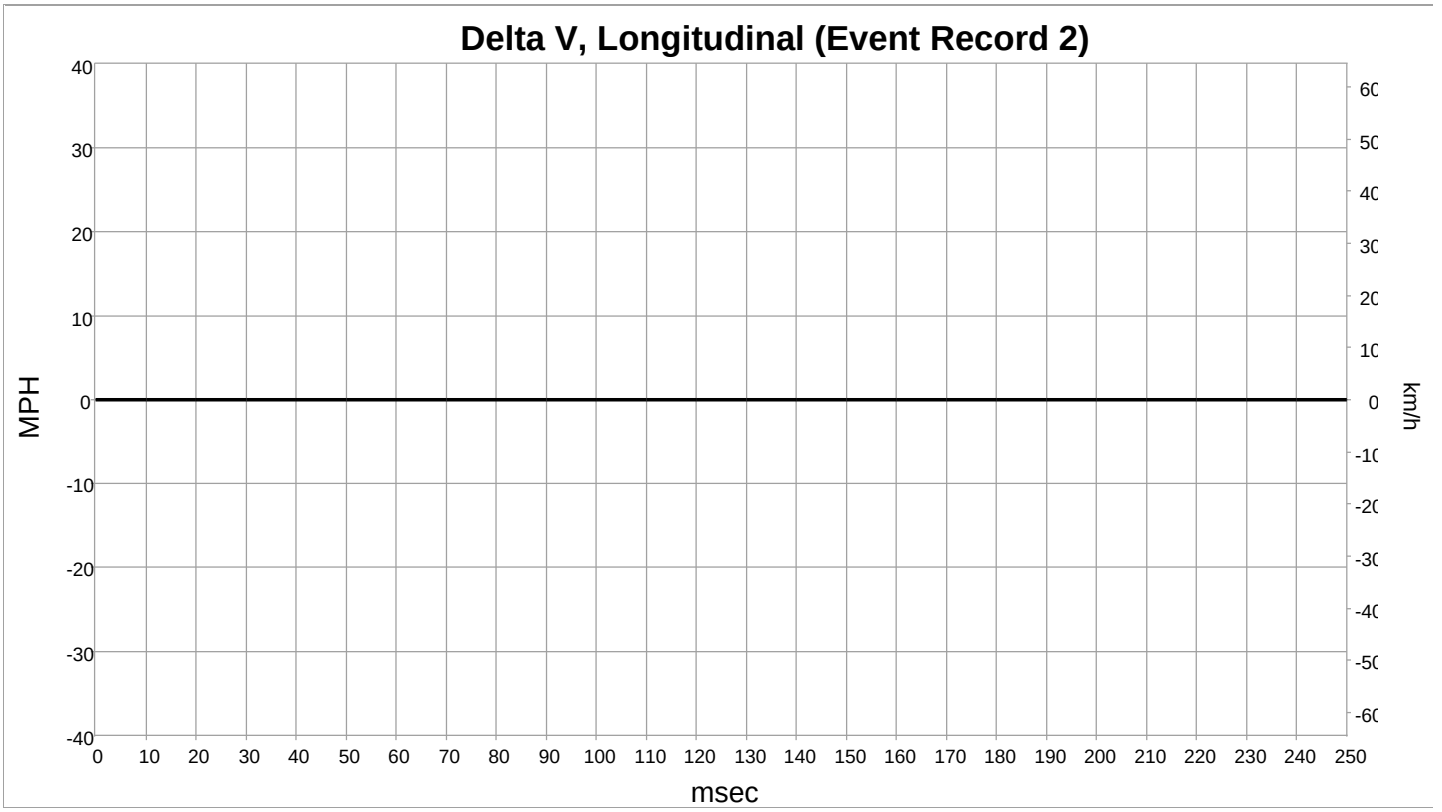
Pre-Crash Data -1 Sec (Event Record 2)

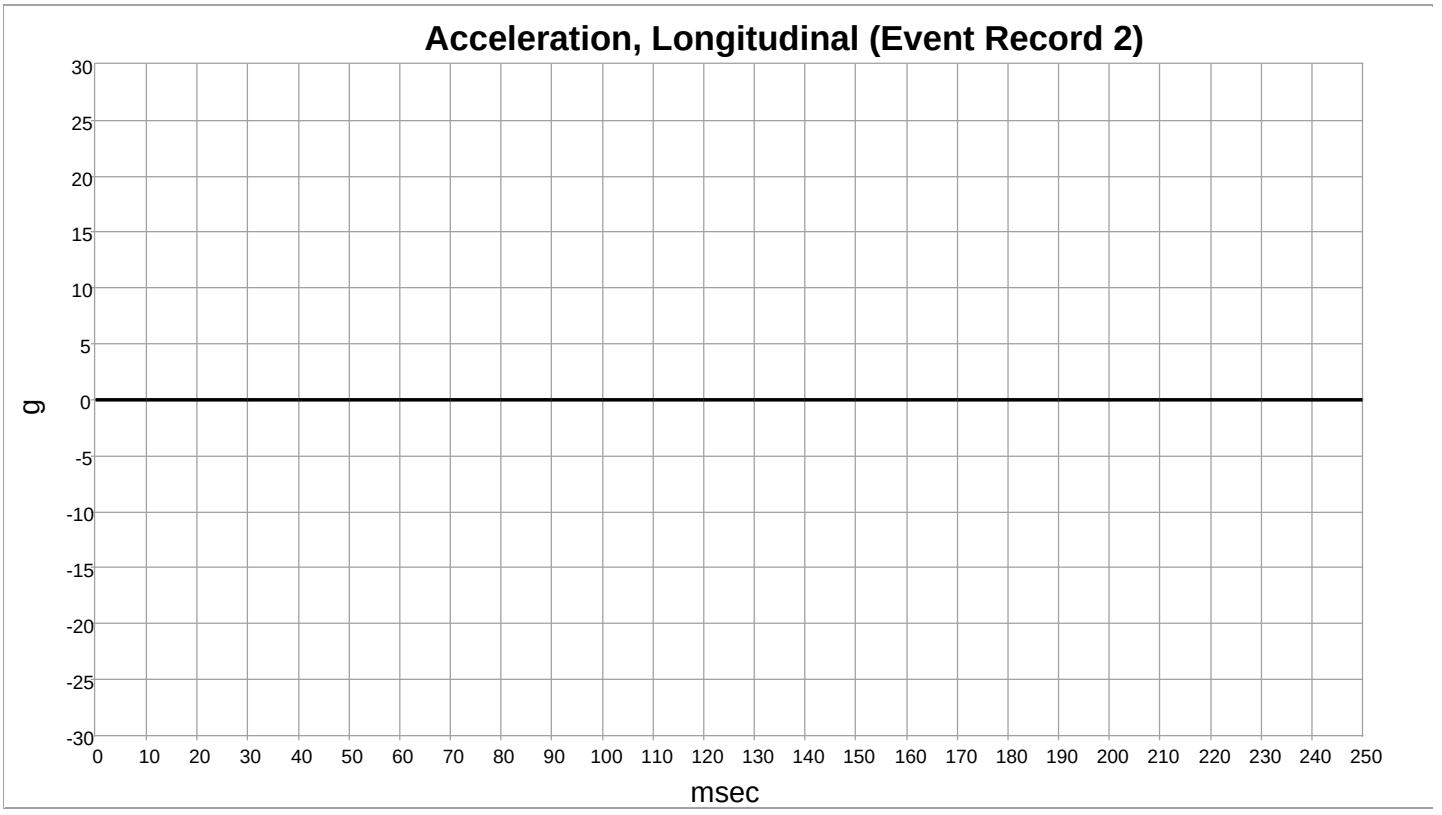
Ignition Cycle, Crash	3,550
Safety Belt Status, Driver	On, Belted
Safety Belt Status, Passenger	On, Belted
Frontal Airbag Warning Lamp	Off
Frontal Airbag Suppression Switch Status, Front Passenger	Not Equipped
Seat Track Position Switch, Foremost, Status, Driver	No
Seat Track Position Switch, Foremost, Status, Front Passenger	No
Occupant Size Right Front Passenger Child	No

Pre-Crash -5 to 0 sec (Event Record 2)

Time (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % Full (%)	Service Brake (On, Off)	Steering input (%)	ABS Activity	Stability Control Status
-5.0	73.3 [118.0]	7.0	Off	0.0	Off	On
-4.5	72.7 [117.0]	28.0	Off	0.0	Off	On
-4.0	72.7 [117.0]	33.0	Off	0.0	Off	On
-3.5	72.1 [116.0]	30.0	Off	0.0	Off	On
-3.0	72.1 [116.0]	36.0	Off	0.0	Off	On
-2.5	71.5 [115.0]	38.0	Off	0.0	Off	On
-2.0	71.5 [115.0]	38.0	Off	0.0	Off	On
-1.5	71.5 [115.0]	33.0	Off	0.0	Off	On
-1.0	71.5 [115.0]	33.0	Off	0.0	Off	On
-0.5	70.8 [114.0]	16.0	Off	0.0	Off	On
0.0	70.8 [114.0]	0.0	Off	0.0	Off	On

Longitudinal Crash Pulse (Event Record 2)

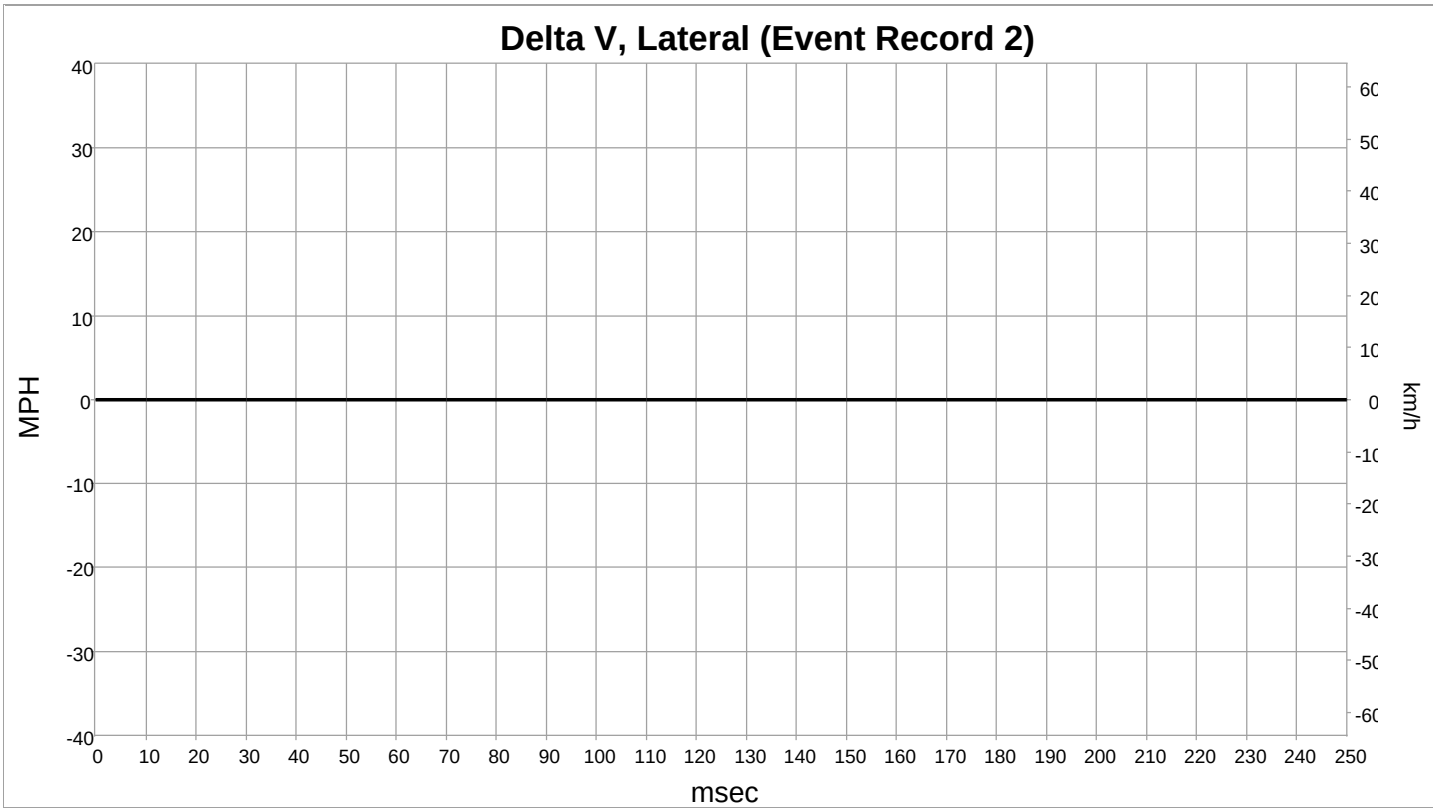


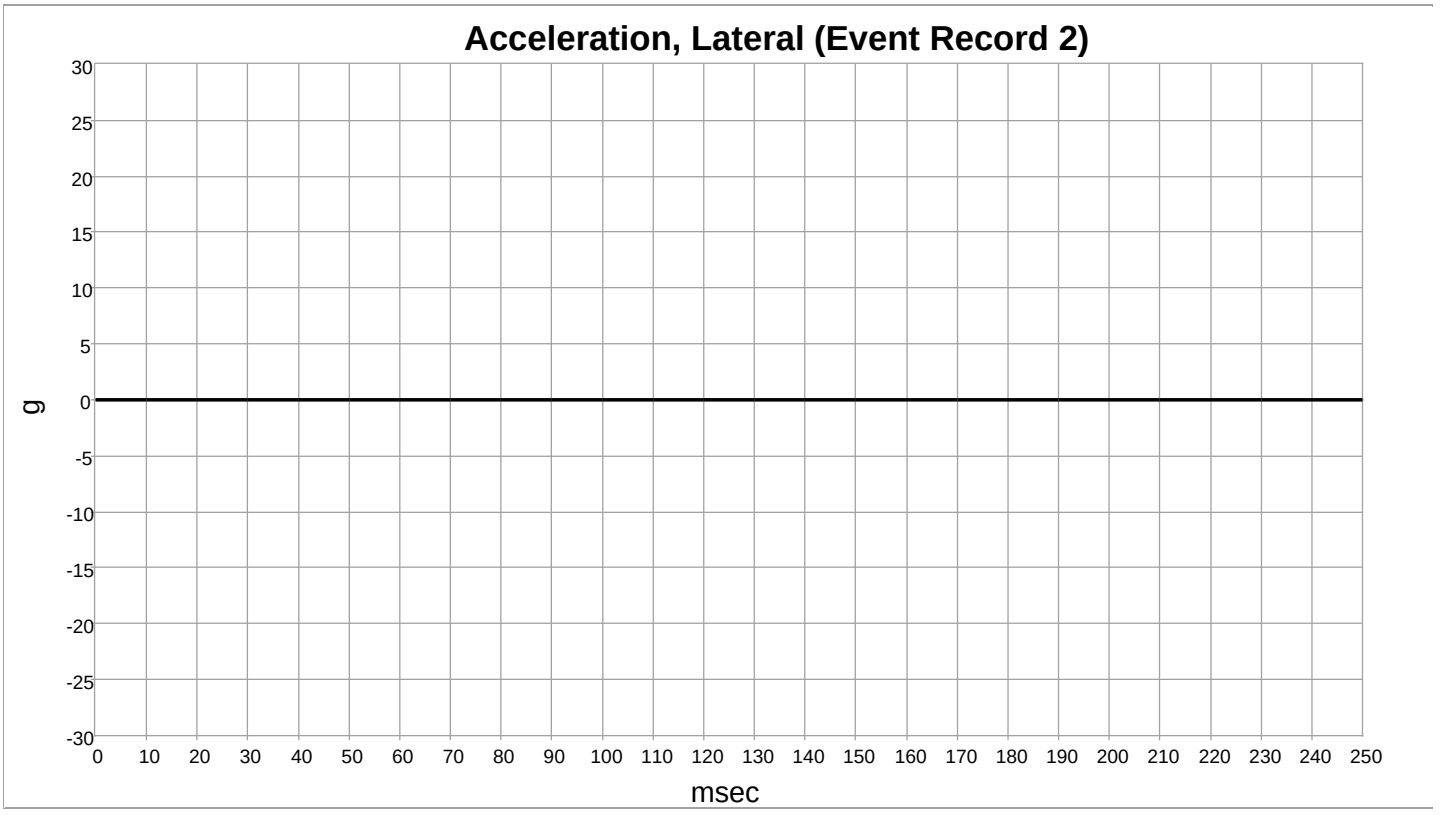


Longitudinal Crash Pulse (Event Record 2)

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

Lateral Crash Pulse (Event Record 2)

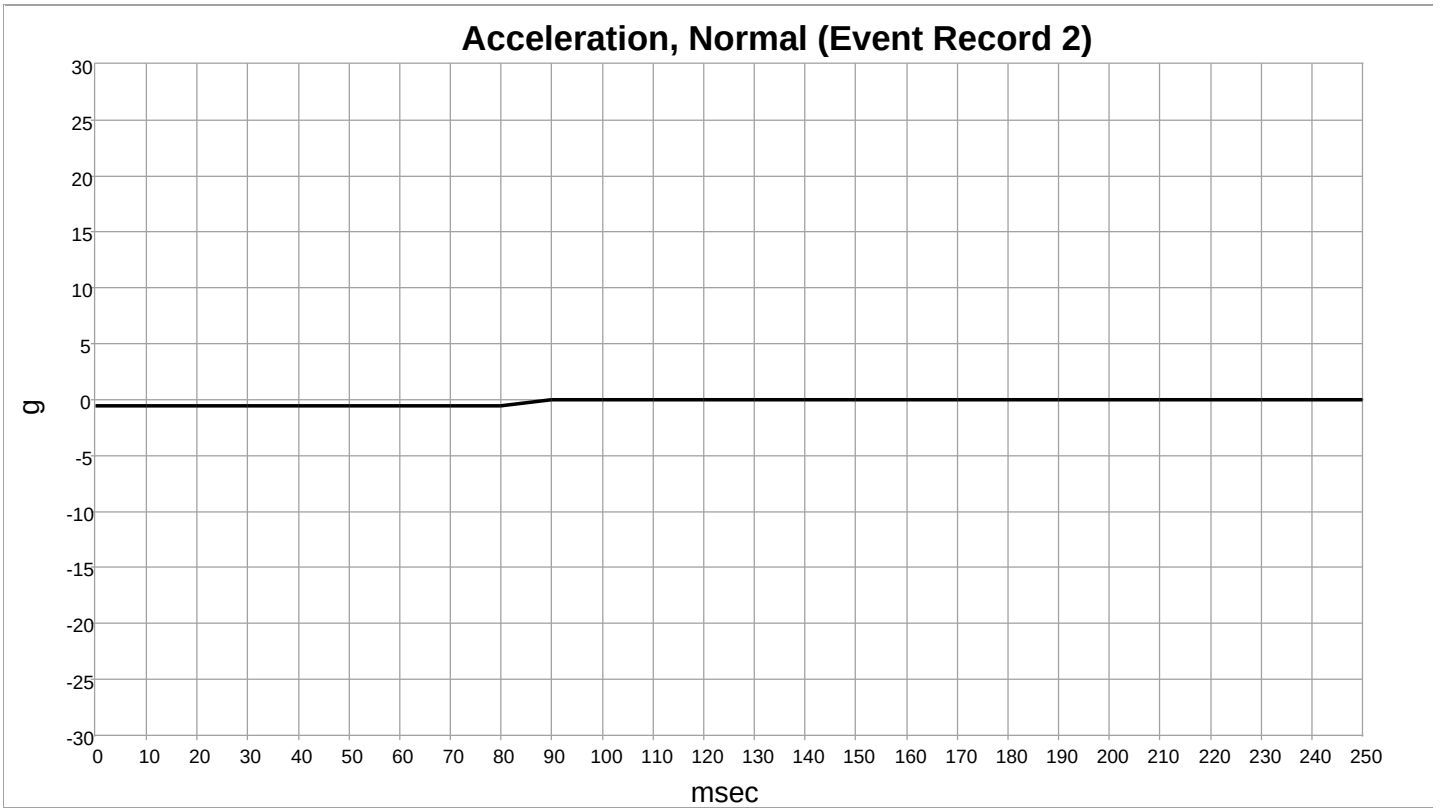




Lateral Crash Pulse (Event Record 2)

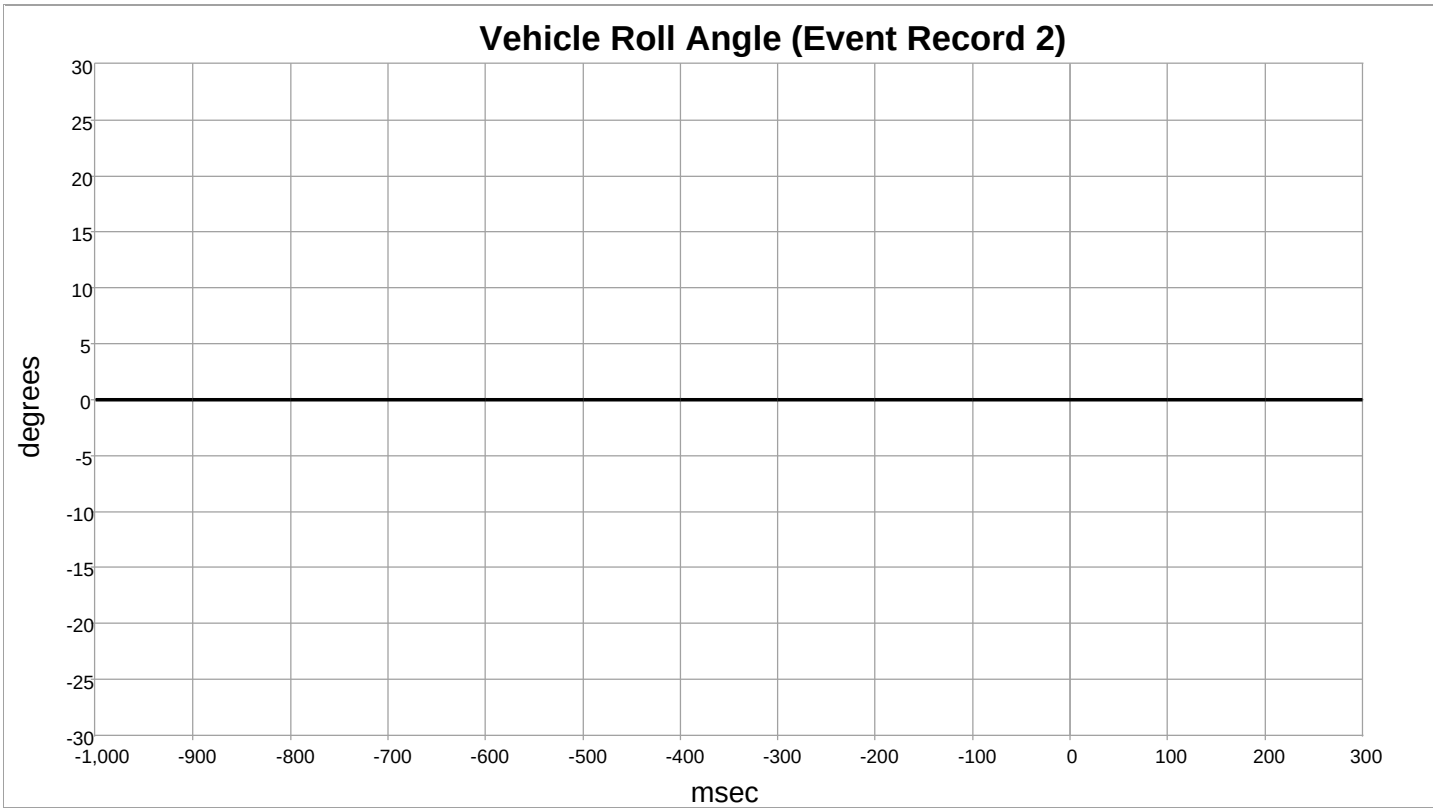
Time (msec)	Delta-V, lateral (MPH [km/h])	Lateral Acceleration (g)
0	0.0 [0.0]	0.0
10	0.0 [0.0]	0.0
20	0.0 [0.0]	0.0
30	0.0 [0.0]	0.0
40	0.0 [0.0]	0.0
50	0.0 [0.0]	0.0
60	0.0 [0.0]	0.0
70	0.0 [0.0]	0.0
80	0.0 [0.0]	0.0
90	0.0 [0.0]	0.0
100	0.0 [0.0]	0.0
110	0.0 [0.0]	0.0
120	0.0 [0.0]	0.0
130	0.0 [0.0]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

Vertical Crash Pulse (Event Record 2)



Time (msec)	Normal Acceleration (g)
0	-0.5
10	-0.5
20	-0.5
30	-0.5
40	-0.5
50	-0.5
60	-0.5
70	-0.5
80	-0.5
90	0.0
100	0.0
110	0.0
120	0.0
130	0.0
140	0.0
150	0.0
160	0.0
170	0.0
180	0.0
190	0.0
200	0.0
210	0.0
220	0.0
230	0.0
240	0.0
250	0.0

Rollover Crash Pulse (Event Record 2)



Time (msec)	Vehicle Roll Angle (deg)
-1000	0.0
-900	0.0
-800	0.0
-700	0.0
-600	0.0
-500	0.0
-400	0.0
-300	0.0
-200	0.0
-100	0.0
0	0.0
100	0.0
200	0.0
300	0.0

Hexadecimal Data

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

```
DID    Data

EE01  64 64 64 64 64 64 64 64 64 64 64 64 64 64 64 64
      64 64 64 64 64 64 64 64 64 64 64 00 5E 60 62 64
      66 68 6A 6B 6C 6D 6E 3D 3D 3D 40 40 40 39 2F 2D
      2F 2A 00 00 00 00 00 00 00 00 00 00 00 11 5E 00
      00 FF FC FF FC 01 FE 01 02 31 00 01

EE02  64 64 64 64 64 64 64 64 64 64 64 64 64 64 64 64
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      00 00 00 01 01 01 01 01 01 01 01 01 01 01 64 64
      64 64 64 64 64 64 64 64 00 FD FF FC FF FD FF
      FC FF FC FF FC FF FC FF FC FF FC FF FC FF FC 00
      00 00 FF FD FF FD FF FD FF FC FF FC FF FC FF FC
      FF FC FF FD FF FD FF FC FF FD FF FD FF FD 02 31
      00 3D 00 01

EE05  01

EE08  01

EE09  1A 96

EE0A  4C 59 56 31 30 32 52 4B 31 4A 42 2A 2A 2A 2A 2A
      2A

EE0B  00 00 83 A2 00

EE21  64 64 64 64 64 64 64 64 64 64 64 64 64 64 64 64
      64 64 64 64 64 64 64 64 64 64 64 00 76 75 75 74
      74 73 73 73 73 72 72 07 1C 21 1E 24 26 26 21 21
      10 00 00 00 00 00 00 00 00 00 00 00 00 0D DE 01
      00 FF FC FF FC 01 FE 01 06 17 00 13

EE22  64 64 64 64 64 64 64 64 64 64 64 64 64 64 64 64
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EE25  01

EE28  01
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EE2A  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
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EE2B  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
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EE3A  00

EE3C  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
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EE3D  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
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EE46  FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF FF
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EE49  00

EE4C  00

F120  31 38 72 55 20 41 4F
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