TECHNICAL RECONSTRUCTION GROUP CHAIRMAN'S
FACTUAL REPORT

ATTACHMENT 3: NISSAN ACM-CDR DOWNLOAD REPORT

Orland, CA
HWY14MH009

(15 pages)

CDR File Information

User Entered VIN	
User	
Case Number	NF-007-14
EDR Data Imaging Date	04/13/2014
Crash Date	04/10/2014
Filename	1N4AL3AP7DC _ACM.CDRX
Saved on	Sunday, April 13 2014 at 15:37:57
Collected with CDR version	Crash Data Retrieval Tool 12.2
Reported with CDR version	Crash Data Retrieval Tool 12.2
EDR Device Type	Airbag Control Module
Event(s) recovered	Event Record 1, Event Record 2

Comments

Present during imaging:

Parsons
Horner
NTSB personnel

Data Limitations

CDR Record information:

Airbag Control Unit (ACU)
- The Air bag Control Unit (ACU) can store two types of events: Non-Deployment Events and Deployment.
    - A Non-Deployment Event is a crash or other physical occurrence which causes the ACU algorithm to be activated, but in which deployment thresholds are not reached.
    - A Deployment Event is a crash or other physical occurrence which causes ACU deployment thresholds to be reached or exceeded. Depending on the vehicle model, one or more of the following may be activated during a Deployment Event: front air bags, seat-mounted side airbags, roof-mounted or door-mounted curtain air bags, pretensioners, or pop-up roll bars.

- The ACU can record up to two events. If additional events occur subsequently, the older of the two events already recorded (i.e. the one which occurred first) is overwritten.
    - A Non-Deployment Event can be overwritten by another Non-Deployment event, or by a Deployment Event.
    - A Deployment Event has higher priority than a Non-Deployment Event, and cannot be interrupted or overwritten by another event.
    - The data pertaining to a Deployment Event is locked after being recorded. However, a second event can still be recorded subsequently in the portion of the event memory which is not locked.

- Event data includes both pre-crash data and crash data.
    - If the power supply to the ACU is lost during an event, all or part of the event data may not be recorded.
    - In addition to the recording of event data, the ACU has the ability to perform diagnostics and record Diagnostic Trouble Codes (DTCs).

Data Element Sign Convention:
The following table provides an explanation of the sign convention for data elements in the 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
Vehicle Roll Angle	Left to Right Rotation
Steering Input	Left Turn

- "Life Time Counter (sec)" indicates the elapsed time, in seconds, from the vehicle's first ignition activation until the start of the first recorded event. The counter is incremented whenever the vehicle's ignition is on. The counter is reset to 0 if the ACU is replaced.
- "Complete File Recorded" indicates whether a complete EDR data set has been stored after the event. "Yes" indicates that a complete data set has been recorded. "No" indicates that only a portion of the data set has been recorded, for example due to the power to the ACU being lost during the event.
- "Multi-Event, Number of Events (1, 2)" indicates the number of events which are stored during a given ignition cycle. A Multi-Event occurs whenever the time between Event 2 trigger threshold and Event 1 trigger threshold is less than or equal to 5 seconds during the same ignition

cycle, and "2" will be recorded in this case. Otherwise, "1" will be recorded.
- "Air Bag Warning Lamp (On, Off)" indicates whether the ACU was in trouble mode or in normal operation mode at the time of the event. "On" indicates that the air bag warning lamp was illuminated at the time of the event, and the ACU was in trouble mode. "Off" indicates that the air bag warning lamp was not illuminated at the time of the event, and the ACU was in normal operation mode.
- "Frontal Air Bag Suppression Switch Status" indicates whether front passenger air bag deployment was suppressed at the time of the event. "On" indicates that the front passenger air bag was suppressed at the time of the event (deployment inhibited). "Off" indicates that the front passenger air bag was not suppressed at the time of the event (deployment enabled).
- "Delta-V, Longitudinal" indicates the cumulative change in velocity along the longitudinal direction.
- "Acceleration, Longitudinal" indicates the rate of change of velocity with time along the longitudinal direction.
- "Delta-V, Lateral" indicates the cumulative change in velocity along the lateral direction.
- "Acceleration, Lateral" indicates the rate of change of velocity with time along the lateral direction.
- "Engine Throttle, % full" indicates the position of the accelerator pedal as a percentage of the fully depressed position.
- "Service Brake (On, Off)" indicates whether the service brake is activated ("On") or not activated ("Off").
- "Steering Input (deg)" indicates the angular displacement of the steering wheel measured in degrees. -250 deg indicates a 250 degree turn to the right of the steering wheel, 0 deg indicates the straight-ahead steering wheel position, and 250 deg indicates a 250 degree turn to the left of the steering wheel.
- The notation "CLP" indicates that the measurement captured by a sensor exceeded the design range of the sensor.
- "Seat Track Position Switch, Foremost, Status, Driver (Yes/No)" indicates whether the driver's seat is positioned within a designated threshold value of the most forward adjustment position. "Yes" indicates that the driver's seat is positioned within a designated threshold value of the most forward adjustment position. For all other adjustment positions, "No" is displayed. This data will not be available if the seat track position switch is not installed in the vehicle.
- "Occupant Size Classification, Right Front Passenger, Child (Yes/No)" indicates whether or not the right front passenger is classified as a child (as defined in 49 CFR part 572, subpart N or smaller). This data will not be available for all vehicles.

Hexadecimal Data:
Data displayed in the Hexadecimal Data section of this CDR report may contain data that is not translated by the CDR program.

Data Sources:
- Crash data is measured internally in the ACU.
- Pre-crash data is not measured internally in the ACU, but is transmitted from other control units through the Controller Area Network (CAN).
- Pre-crash data and crash data are asynchronous.

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DTCs at Time of Retrieval

DTC	Status	Description
B1421	Current	FRONTAL COLLISION DETECTION
B1422	Current	SIDE COLLISION DETECTION
B1433	Current	FRONT PRE-TEN2 RH CIRCUIT [GND-SHORT]
B1432	Current	FRONT PRE-TEN2 LH CIRCUIT [GND-SHORT]
B0020	Current	SIDE AIRBAG MODULE LH CIRCUIT [GND-SHORT]
B0021	Current	CURTAIN AIRBAG MODULE LH CIRCUIT [GND-SHORT]
B0001	Current	DRIVER AIRBAG MODULE CIRCUIT [SHORT]
B1431	Current	FRONT PRE-TEN RH CIRCUIT [OPEN]
B1430	Current	FRONT PRE-TEN LH CIRCUIT [OPEN]
B0002	Current	DRIVER AIRBAG MODULE 2ND CIRCUIT [OPEN]
B1422	Past	SIDE COLLISION DETECTION
B1421	Past	FRONTAL COLLISION DETECTION

System Status at Event (Event Record 1)

|	
Life Time Counter (sec)	2964340
Complete File Recorded (Yes/No)	Yes (Complete)
Ignition Cycle, Crash	2691
Ignition Cycle, Download	2693
Multi-Event, Number of Events (1, 2)	1
Time from Event 1 to 2 (sec)	0
Safety Belt Status, Driver	On (Fastened)
Safety Belt Status, Right Front Passenger	On (Fastened)
Frontal Air Bag Warning Lamp (On, Off)	Off
Frontal Air Bag Suppression Switch Status	On (AS airbag inhibit)
Maximum Delta-V, Longitudinal (MPH [km/h])	12 [19]
Time, Maximum Delta-V, Longitudinal (msec)	300
Maximum Delta-V, Lateral (MPH [km/h])	10 [16]
Time, Maximum Delta-V, Lateral (msec)	95
Maximum Acceleration, Longitudinal (g)	26.5
Time, Maximum Acceleration, Longitudinal (msec)	42.5
Maximum Acceleration, Lateral (g)	31
Time, Maximum Acceleration, Lateral (msec)	55

Deployment Command Data (Event Record 1)

Frontal Air Bag Deployment, Time to Deploy/First Stage, Driver (msec)	118
Frontal Air Bag Deployment, Time to Deploy/First Stage, Passenger (msec)	N/A
Frontal Air Bag Deployment, Time to 2nd Stage, Driver (msec)	121
Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (msec)	N/A
Side Air Bag Deployment, Time to Deploy, Driver (msec)	22
Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	N/A
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec)	22
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	N/A
Pretensioner Deployment, Time to Fire, Driver (msec)	22
Pretensioner Deployment, Time to Fire, Right Front Passenger (msec)	118

## Pre-Crash Data -5 to 0 sec [2 samples/sec] (Event Record 1)
(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % full	Engine RPM	Motor RPM	Service Brake (On, Off)	Steering Input (deg)
-5.0	80 [129]	11	1900	1900	Off (Brake Not Activated)	0
-4.5	80 [128]	11	1900	1900	Off (Brake Not Activated)	0
-4.0	80 [128]	11	1900	1900	Off (Brake Not Activated)	0
-3.5	80 [128]	10	1900	1900	Off (Brake Not Activated)	0
-3.0	80 [128]	11	1900	1900	Off (Brake Not Activated)	0
-2.5	79 [127]	0	1900	1900	Off (Brake Not Activated)	-12.5
-2.0	77 [124]	0	1800	1800	On (Brake Activated)	-5
-1.5	73 [117]	0	1700	1700	On (Brake Activated)	-15
-1.0	70 [112]	0	1600	1600	On (Brake Activated)	-2.5
-0.5	66 [106]	0	1500	1500	On (Brake Activated)	-20
0.0	64 [103]	0	1500	1500	On (Brake Activated)	-10

Delta V, Longitudinal (Event Record 1)
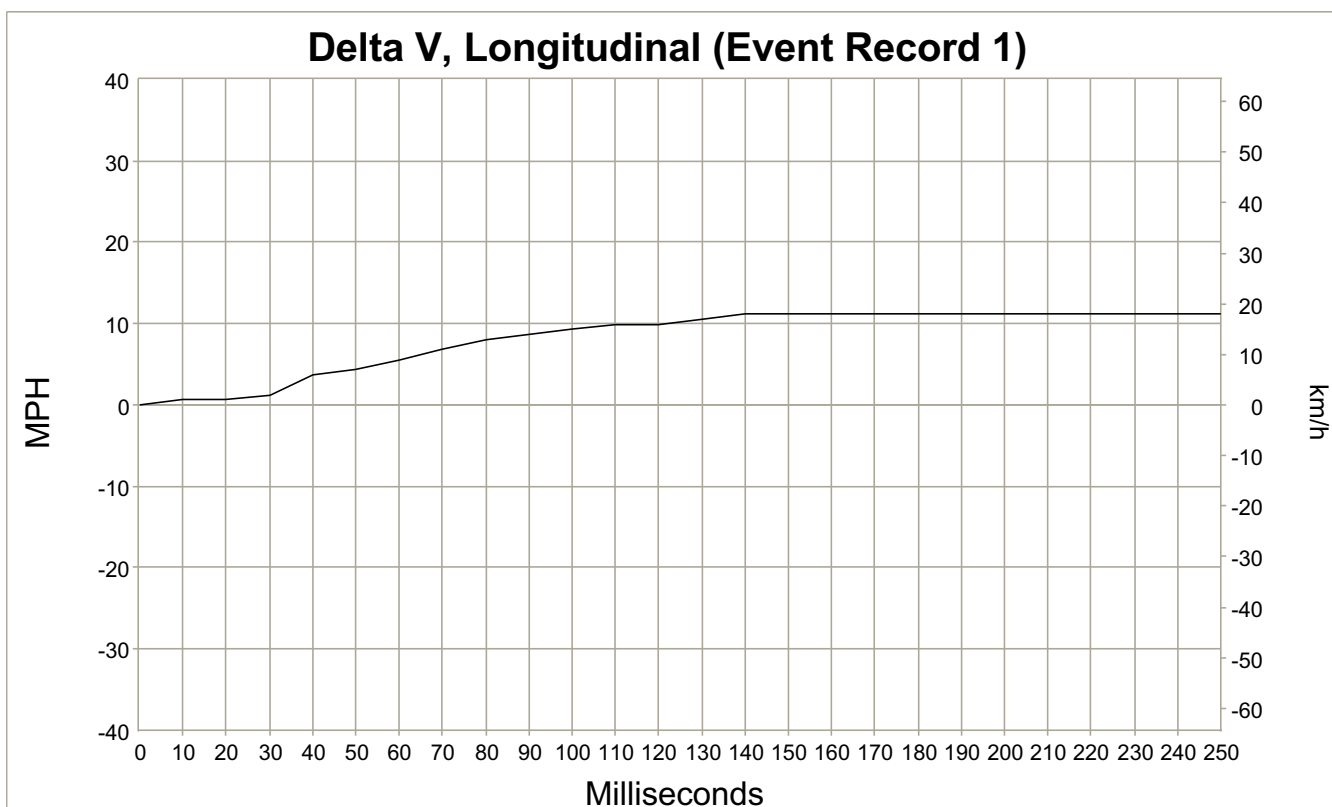
Longitudinal Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	1 [1]
20	1 [1]
30	1 [2]
40	4 [6]
50	4 [7]
60	6 [9]
70	7 [11]
80	8 [13]
90	9 [14]
100	9 [15]
110	10 [16]
120	10 [16]
130	11 [17]
140	11 [18]
150	11 [18]
160	11 [18]
170	11 [18]
180	11 [18]
190	11 [18]
200	11 [18]
210	11 [18]
220	11 [18]
230	11 [18]
240	11 [18]
250	11 [18]

Delta V, Lateral (Event Record 1)
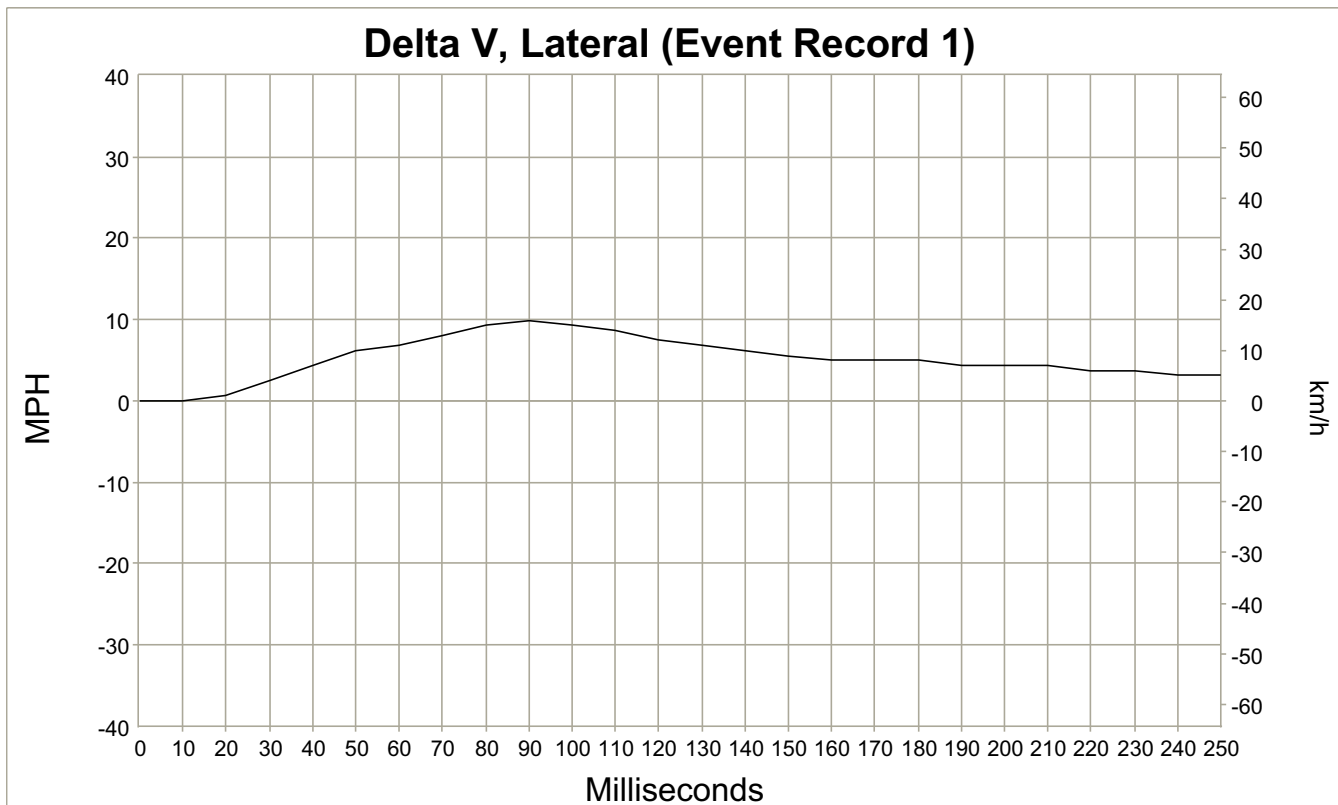
Lateral Delta V (Event Record 1)

Time (msec)	MPH [km/h]
0	0 [0]
10	0 [0]
20	1 [1]
30	2 [4]
40	4 [7]
50	6 [10]
60	7 [11]
70	8 [13]
80	9 [15]
90	10 [16]
100	9 [15]
110	9 [14]
120	7 [12]
130	7 [11]
140	6 [10]
150	6 [9]
160	5 [8]
170	5 [8]
180	5 [8]
190	4 [7]
200	4 [7]
210	4 [7]
220	4 [6]
230	4 [6]
240	3 [5]
250	3 [5]

System Status at Event (Event Record 2)

|	
Life Time Counter (sec)	2964340
Complete File Recorded (Yes/No)	Yes (Complete)
Ignition Cycle, Crash	2691
Ignition Cycle, Download	2693
Multi-Event, Number of Events (1, 2)	2
Time from Event 1 to 2 (sec)	0.1
Safety Belt Status, Driver	On (Fastened)
Safety Belt Status, Right Front Passenger	On (Fastened)
Frontal Air Bag Warning Lamp (On, Off)	On or Blinking
Frontal Air Bag Suppression Switch Status	On (AS airbag inhibit)
Maximum Delta-V, Longitudinal (MPH [km/h])	0 [0]
Time, Maximum Delta-V, Longitudinal (msec)	155
Maximum Delta-V, Lateral (MPH [km/h])	-7 [-11]
Time, Maximum Delta-V, Lateral (msec)	300
Maximum Acceleration, Longitudinal (g)	2.5
Time, Maximum Acceleration, Longitudinal (msec)	2.5
Maximum Acceleration, Lateral (g)	-4.5
Time, Maximum Acceleration, Lateral (msec)	2.5

Deployment Command Data (Event Record 2)

Frontal Air Bag Deployment, Time to Deploy/First Stage, Driver (msec)	N/A
Frontal Air Bag Deployment, Time to Deploy/First Stage, Passenger (msec)	N/A
Frontal Air Bag Deployment, Time to 2nd Stage, Driver (msec)	N/A
Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (msec)	N/A
Side Air Bag Deployment, Time to Deploy, Driver (msec)	N/A
Side Air Bag Deployment, Time to Deploy, Right Front Passenger (msec)	N/A
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Driver Side (msec)	N/A
Side Curtain/Tube Air Bag Deployment, Time to Deploy, Right Side (msec)	N/A
Pretensioner Deployment, Time to Fire, Driver (msec)	N/A
Pretensioner Deployment, Time to Fire, Right Front Passenger (msec)	N/A

## Pre-Crash Data -5 to 0 sec [2 samples/sec] (Event Record 2)

(the most recent sampled values are recorded prior to the event)

Time Stamp (sec)	Speed, Vehicle Indicated (MPH [km/h])	Accelerator Pedal, % full	Engine RPM	Motor RPM	Service Brake (On, Off)	Steering Input (deg)
-5.0	80 [129]	11	1900	1900	Off (Brake Not Activated)	0
-4.5	80 [128]	11	1900	1900	Off (Brake Not Activated)	0
-4.0	80 [128]	11	1900	1900	Off (Brake Not Activated)	0
-3.5	80 [128]	10	1900	1900	Off (Brake Not Activated)	0
-3.0	80 [128]	11	1900	1900	Off (Brake Not Activated)	0
-2.5	79 [127]	0	1900	1900	Off (Brake Not Activated)	-12.5
-2.0	77 [124]	0	1800	1800	On (Brake Activated)	-5
-1.5	73 [117]	0	1700	1700	On (Brake Activated)	-15
-1.0	70 [112]	0	1600	1600	On (Brake Activated)	-2.5
-0.5	66 [106]	0	1500	1500	On (Brake Activated)	-20
0.0	53 [86]	0	1200	1000	On (Brake Activated)	-15

Delta V, Longitudinal (Event Record 2)
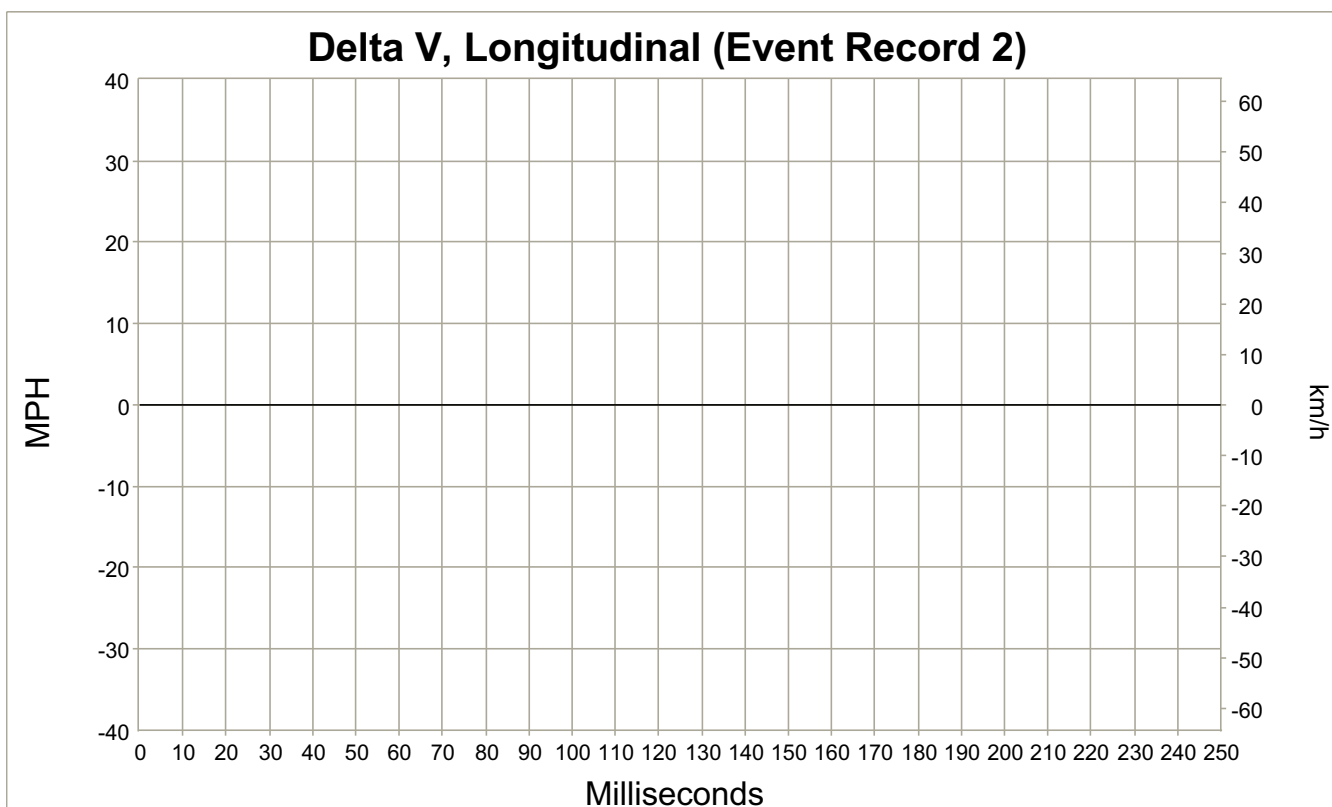
Longitudinal Delta V (Event Record 2)

Time (msec)	MPH [km/h]
0	0 [0]
10	0 [0]
20	0 [0]
30	0 [0]
40	0 [0]
50	0 [0]
60	0 [0]
70	0 [0]
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]

Delta V, Lateral (Event Record 2)
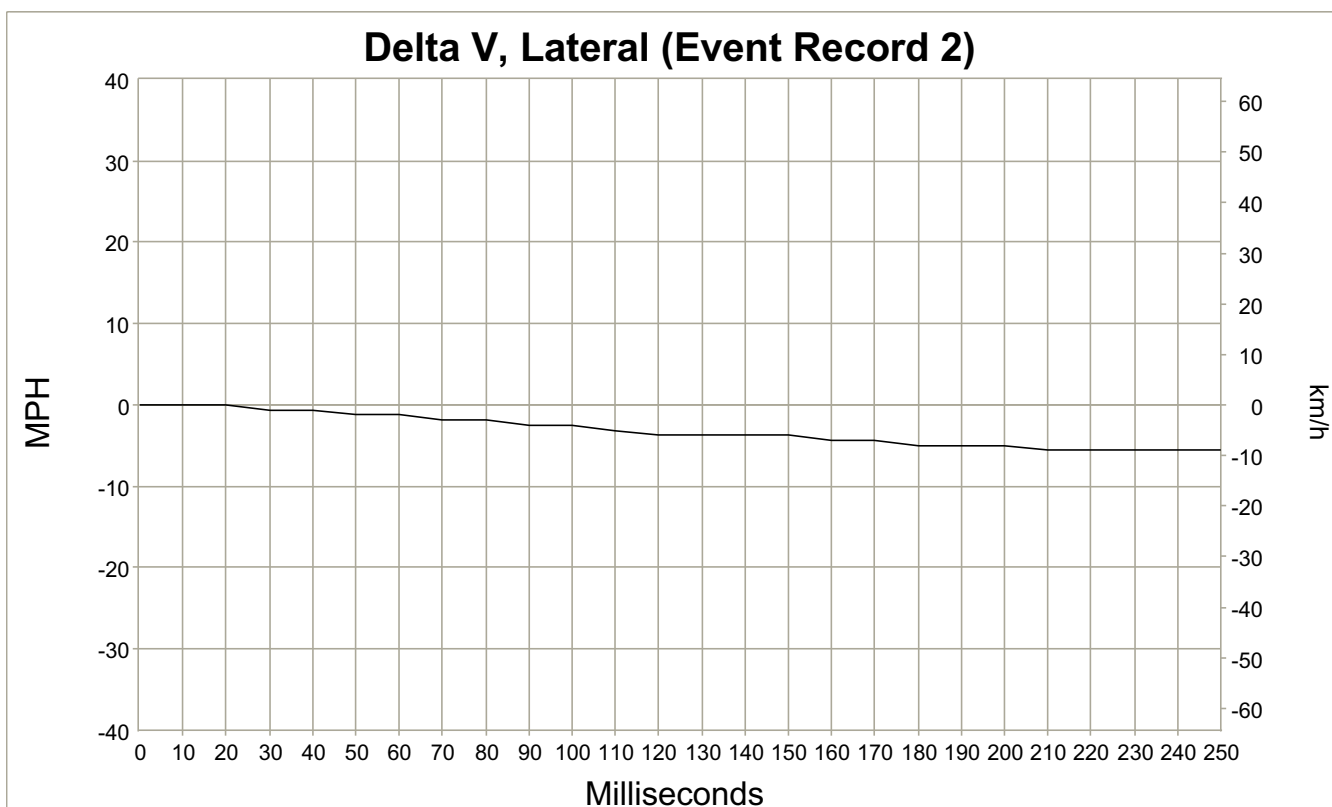
Lateral Delta V (Event Record 2)

Time (msec)	MPH [km/h]
0	0 [0]
10	0 [0]
20	0 [0]
30	-1 [-1]
40	-1 [-1]
50	-1 [-2]
60	-1 [-2]
70	-2 [-3]
80	-2 [-3]
90	-2 [-4]
100	-2 [-4]
110	-3 [-5]
120	-4 [-6]
130	-4 [-6]
140	-4 [-6]
150	-4 [-6]
160	-4 [-7]
170	-4 [-7]
180	-5 [-8]
190	-5 [-8]
200	-5 [-8]
210	-6 [-9]
220	-6 [-9]
230	-6 [-9]
240	-6 [-9]
250	-6 [-9]

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31 13 09 94 30 13 09 80 02 13 09
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59 02 09 94 22 00 09 94 21 00 09
59 0F 08
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