

PE14-010

GM

6/6/2014

Q 3



June 10, 2014

Howard Imes  
609 Carey Pl  
Lakeland, FL 33803

RE: Service Request: [REDACTED]  
Vehicle Identification Number: 2G1155S3XE9 [REDACTED]  
Customer Relationship Specialist: Lapeshaa

Dear Mr. [REDACTED]:

We have been made aware about your recent repairs involving your 2014 Chevrolet Impala. We apologize we have been unable to contact you using the telephone number that was provided or any listed in our records.

If your dealership has been able to resolve your situation to your satisfaction, no further action is necessary. If it has not, please contact me at your earliest convenience by calling 1-866-790-5600, extension 31430, Monday through Friday between 8:00 a.m. and 5:00 p.m., Eastern Time

Thank you for giving Chevrolet this opportunity to be of assistance. We hope to earn your trust and respect with every contact you have with our Early Response Team. In order to ensure that we do not create any disruption by continuing to contact you, if we do not hear from you in 10 days, your case will be closed.

Sincerely,

Chevrolet

PE14-010

GM

6/6/2014

Q 3



Tiffany Garcia/Austin/GM1

07/22/2013 04:28 PM

To scott.roslund@gm.com

cc

bcc

Subject Chevrolet Notification of TAC Escalation to the Early Response Team

Service Request: [REDACTED]  
Customer Full Name: [REDACTED]  
Involved Dealership: Greenwood Chevrolet  
Dealership Contact: Guy Bass  
VIN: 2G1155S3XE9 [REDACTED]  
Automobile: 2014 Chevrolet Impala

ER Agent: Tiffany Garcia  
Telephone: 866-790-5600 ext. 31346  
Fax: 866-476-8244

Dear Mr. [REDACTED]

This email is being sent to notify you of a case escalation to the BRC Early Response Team (ER). This is a courtesy communication. No further contact is required. A case has already been created.

Vehicle History Overview: The Early Response Team received a file from TAC regarding the above referenced customer. Per the TAC file the vehicle has been in 2 times for a concern with the cruise control cutting out. I spoke to the Svc Mgr at the Dealership and he advised me that the vehicle was taken in 2 times for this concern but 1 time was before ownership and they were unable to duplicate the concern. They have reprogrammed the BCM and this seems to have corrected the concern. Guy has advised me that it is okay to follow up with the customer at this time.

If you would like more information or have additional information to provide please respond to this email within 24 hours.

If you have further questions, please contact the Customer Relationship Specialist at the telephone number and extension above or contact The Business Resource Center at 1-800-231-1841 Monday through Friday between 8:00 a.m. and 5:00 p.m., Eastern Time. Please refer to the service request number above.

Sincerely,

General Motors



PE14-010

GM

6/6/2014

Q 3



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**From:** Sean Z Kelly  
**Sent:** Tuesday, February 04, 2014 11:37 AM  
**To:** h.reed@gwccnet.com  
**Subject:** Your File: G57045. Your insured: Shreiner Trucking. Our file: 768745

Hannah,

I received your subrogation notice dated Jan. 7, 2014.

You stated that the Sept. 3, 2013 accident was caused by "the negligence of your insured driver, [REDACTED]."

Please note GM does not insure [REDACTED] nor the 2014 Impala she was driving. Alamo owned the subject Impala and I believe it is self-insured.

Please let me know if you have any questions.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

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GM

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**From:** Lawrence Harrington  
**Sent:** Tuesday, December 03, 2013 9:55 AM  
**To:** Liz  
**Subject:** RE: [REDACTED] inspection

Good morning Liz,

All the data associated with the documentation of the subject vehicle, reports, etc., have been shared with Jack of ELCO/Enterprise. Jack would be the best resource to obtain information on the Enterprise rental unit.

There is no report created or shared.

Regards,

Lawrence L. Harrington, ARM  
ESIS/General Motors, LLC  
P.O. Box 300  
Mail Code 482 C19 B61  
Detroit, MI 48265 3000  
Tel: 313.665.3387  
Fax: 248.707.1653

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**From:** Liz [<mailto:Liz@whibbsandstone.com>]  
**Sent:** Tuesday, December 03, 2013 9:50 AM  
**To:** Lawrence Harrington  
**Subject:** [REDACTED] Inspection

Hello Mr. Harrington,

Our office represents Ms. [REDACTED]. I was given your information by Jack at National Car Rental. He said that the inspection report should be ready on Ms. [REDACTED]'s vehicle and I should contact you. If the report is available, please let me know how I should obtain it from you. If there are charges involved with acquiring this report, please let me know this as well.

Thank you for your time Mr. Harrington.

Liz N. Plant  
Legal Assistant  
Whibbs & Stone, P.A.  
850.434.5395 Phone  
888.231.5326 Toll Free  
850.469.0043 Fax  
[whibbsandstone.com](http://whibbsandstone.com)

[BBB](#) | [Facebook](#) | [Google Plus](#) | [YouTube](#) | [Twitter](#) | [LinkedIn](#)

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GM

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**From:** Sean Z Kelly  
**Sent:** Sunday, April 06, 2014 8:34 PM  
**To:** Reed, Hannah  
**Subject:** RE: Your File: [REDACTED] Your insured: Shreiner Trucking. Our file: [REDACTED]

Hannah,

We have completed our investigation into the Sept. 3, 2013 accident.

Based on all documentation received and reviewed, ESIS, on behalf of General Motors LLC, will not be in a position to honor your request for damages. If you have any additional evidence that supports your claim of a product defect, please forward it to my attention for further review.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

---

**From:** Reed, Hannah [<mailto:H.REED@gwccnet.com>]  
**Sent:** Tuesday, February 11, 2014 2:28 PM  
**To:** Sean Z Kelly  
**Subject:** RE: Your File: [REDACTED]. Your insured: Shreiner Trucking. Our file: [REDACTED]

I don't have a specific allegation. I was informed that if GM found an issue with the subject vehicle you would defend and indemnify National.

Thank you,

Hannah

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**From:** Sean Z Kelly [<mailto:sean.z.kelly@gm.com>]  
**Sent:** Tuesday, February 11, 2014 12:37 PM  
**To:** Reed, Hannah  
**Subject:** RE: Your File: [REDACTED] Your insured: Shreiner Trucking. Our file: [REDACTED]

Hannah,

What is your allegation against GM?  
Please submit all proofs to support your allegation.

Thank you.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300

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**From:** Reed, Hannah [<mailto:H.REED@gwccnet.com>]  
**Sent:** Tuesday, February 04, 2014 1:32 PM  
**To:** Sean Z Kelly  
**Subject:** RE: Your File: [REDACTED]. Your insured: Shreiner Trucking. Our file: [REDACTED]

Hello Sean,

Thank you for clarification on this matter. I received this matter as a transfer and was informed that there was also potential subrogation against GM depending on some inspection and testing results performed by you. Thus, we forwarded our notice of subrogation to you as well. Please let me know if you have made a liability decision.

Thank you,

*J. Hannah Reed, CPCU*  
Senior Subrogation Attorney  
Great West Casualty  
P.O. Box 94  
South Sioux City, NE 68776-0094  
(865) 670-6447  
(F) (865) 670-6304

**PLEASE NOTE NEW CLAIMS MAILING ADDRESS ABOVE.**

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**From:** Sean Z Kelly [<mailto:sean.z.kelly@gm.com>]  
**Sent:** Tuesday, February 04, 2014 11:37 AM  
**To:** Reed, Hannah  
**Subject:** Your File: [REDACTED] Your insured: Shreiner Trucking. Our file: [REDACTED]

Hannah,

I received your subrogation notice dated Jan. 7, 2014.

You stated that the Sept. 3, 2013 accident was caused by "the negligence of your insured driver, [REDACTED]."

Please note GM does not insure Ms. Durard nor the 2014 Impala she was driving. Alamo owned the subject Impala and I believe it is self-insured.

Please let me know if you have any questions.

*Sean Kelly*



P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

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**From:** Sean Z Kelly  
**Sent:** Tuesday, February 04, 2014 11:37 AM  
**To:** h.reed@gwccnet.com  
**Subject:** Your File: [REDACTED] Your insured: Shreiner Trucking. Our file: [REDACTED]

Hannah,

I received your subrogation notice dated Jan. 7, 2014.

You stated that the Sept. 3, 2013 accident was caused by "the negligence of your insured driver, [REDACTED]."

Please note GM does not insure [REDACTED] nor the 2014 Impala she was driving. Alamo owned the subject Impala and I believe it is self-insured.

Please let me know if you have any questions.

*Sean Kelly*

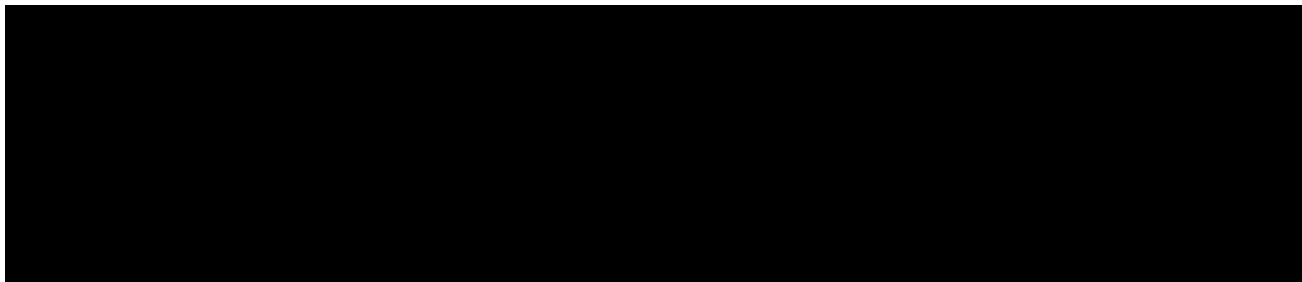
P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

PE14-010

GM

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768745

## Services Request Detail

|                      |                                                                                         |             |                     |              |                               |           |                       |
|----------------------|-----------------------------------------------------------------------------------------|-------------|---------------------|--------------|-------------------------------|-----------|-----------------------|
| SR No.               | [REDACTED]                                                                              | Ref No.     |                     | Goodwill     | No Goodwill Offered           | BRC Type  | PAR                   |
| Account              | National Car Rental                                                                     | Site        | 427785              | GW SubType   |                               | Bus. Unit | BRC                   |
| Last Name            | [REDACTED]                                                                              | First Name  | [REDACTED]          | Approval     | Not Initiated                 | Area      | PAR                   |
| Daytime #            | [REDACTED]                                                                              | Evening #   | [REDACTED]          | UCC          | Brakes - Pedal and Linkage    | Sub-Area  | ESIS Escalation       |
| Address              | [REDACTED]                                                                              | City        | Coconut Creek       | Involved Dir | Sandy Sansing Chevrolet, Inc. | Safety    | Yes                   |
| State                | FL ZipCd [REDACTED]                                                                     | Con Acct    | National Car Rental | Source       | Phone                         | Updated   | 9/11/2013 06:07:51 PM |
| Serial #/VIN         | 2G1125S36E9 [REDACTED]                                                                  | Model Year  | 2014                | Priority     | Medium License # CHEVROL      | Owner     | RANGELD               |
| Make                 | Chevrolet                                                                               | Warr. Start | 07/30/2013          | Status       | Open                          | Opened    | 9/10/2013 10:50:22 AM |
| Model                | Impala                                                                                  | Mileage     | 3173                | Sub-Status   | Satisfied                     | Closed    |                       |
| Abstract             | PAC - veh stalled causing collision                                                     |             |                     |              |                               |           |                       |
| Customer Description | This is a BRC Par Case. Do not assume case. Forward any inquiries to Dalia at ext 11350 |             |                     |              |                               |           |                       |

## Pre-PAR

|                 |                      |   |   |   |         |         |
|-----------------|----------------------|---|---|---|---------|---------|
| Insurance Agent | 9/3/2013 09:56:25 AM | Y | 1 | 1 | unknown | unknown |
|-----------------|----------------------|---|---|---|---------|---------|

|        |        |         |         |
|--------|--------|---------|---------|
| Durard | Tracie | unknown | unknown |
|--------|--------|---------|---------|

Elco Insurance

|                 |                       |               |                                                                 |
|-----------------|-----------------------|---------------|-----------------------------------------------------------------|
| Incident Loc    | exact address unknown | Incident Desc | cust was driving and veh started to stall and veh was rearended |
| Component       | engine                | Damage Desc   | unknown                                                         |
| Vehicle Loc     | insurance has veh     | Add'l Info    |                                                                 |
| Emgcy Svc Names | unknown               | Maint Loc     | unknown                                                         |

## PAR Detail

|                        |                |                      |                              |                         |                          |                      |         |            |         |
|------------------------|----------------|----------------------|------------------------------|-------------------------|--------------------------|----------------------|---------|------------|---------|
| Collision              | Y              | Non Collision        | N                            | Property Damage         | N                        | Thermal Evt          | N       | Spec Equip | none    |
| Vehicle Speed          | 0              | Weather Condition    | unknown                      | Prop Owner              | unknown                  | Property Type        | unknown | Property   | unknown |
| Last Service Date      |                | Loc Last Service     |                              | Property Location       | unknown                  | Prop Est Repair Cost |         |            |         |
| Veh Est Repair Cost    |                | Spec Equip Installer | n/a                          | Prop Damage Description | unknown                  |                      |         |            |         |
| Primary Veh Use        | Fleet          | Inspection Type      | Accelerator/Throttle Systems | Inspected By            | Inspection Not Performed | Inspection Date/Time |         |            |         |
| Veh Damage Description | rearend damage | Explain Other        | escalate to esis             |                         |                          |                      |         |            |         |

Save Request Detail

## PAR Injuries

| Durard  | Tracie | Occupant of Owner's Vehicle | Driver  | unknown |
|---------|--------|-----------------------------|---------|---------|
| unknown |        | unknown                     | unknown | unknown |

## Activities

|                                                           |         |                     |                     |                 |                                    |
|-----------------------------------------------------------|---------|---------------------|---------------------|-----------------|------------------------------------|
| 9/12/2013 10:43:37 AM                                     | RANGELD | RANGELD             | Scheduled Follow-up | Scheduled Alarm | check if file has been p/u by esis |
| [REDACTED]                                                |         | National Car Rental |                     | 427785          |                                    |
| THIS IS NOT A CALLBACK TO CUST.DO NOT ADVISE CUST OF THIS |         |                     |                     |                 |                                    |

|                       |         |                     |         |                         |      |                       |                   |
|-----------------------|---------|---------------------|---------|-------------------------|------|-----------------------|-------------------|
| 9/12/2013 10:43:16 AM | RANGELD | RANGELD             | BRC PAR | Inspection Not Required | Done | 9/12/2013 10:43:35 AM | file sent to esis |
| [REDACTED]            |         | National Car Rental |         | 427785                  |      |                       |                   |

|                                             |         |                     |            |                 |             |          |
|---------------------------------------------|---------|---------------------|------------|-----------------|-------------|----------|
| 9/12/2013 10:42:39 AM                       | RANGELD | ESISBIQU            | Escalation | ESIS - Injuries | In Progress | injuries |
| [REDACTED]                                  |         | National Car Rental |            | 427785          |             |          |
| Cust alleges veh stalled causing collision. |         |                     |            |                 |             |          |

injury w/medical treatment  
atty involvement

Data Rangel/pac/atx

[REDACTED]

## Activities

9/12/2013 10:41:26 AM RANGELD RANGELD BRC PAR Business Case Done 9/12/2013 10:42:37 AM case assessment

[REDACTED] National Car Rental 427785

Cust alleges veh stalled causing collision.  
Crs escalated due to injury w/medical treatment and atty involvement

Dalia Rangel/pac/atx

9/12/2013 10:34:52 AM RANGELD RANGELD Outbound Call Dealer Made Contact Done 9/12/2013 10:40:36 AM called Sandy Sansing Chevrolet, Inc. (850) 476-2480

[REDACTED] National Car Rental 427785

Crs called dlr for initial dlr contact

see initial dlr contact

Dalia Rangel/pac/atx

9/12/2013 09:36:47 AM RANGELD RANGELD Scheduled Outbound Call Cust Done 9/12/2013 10:34:49 AM called Sandy Sansing Chevrolet, Inc. (850) 476-2480

[REDACTED] National Car Rental 427785

initial dlr contact

Dalia Rangel/pac/atx

## Activities

<http://www.irs.gov/efile>     
 <http://www.irs.gov/efile>     
 Account: 427785

**Flechaus                                          Jack                                          National Car Rental                                          427785**

initial contact

Dalia Rangel/pac/atx

National Car Rental 427785

Crs Adv: This is Dalia calling from the Business Resource Center Product Assistance Claims Dept. I have received your file and do require further information. Do you have a moment to speak to me?

Cust sts: Yes

Continued in Initial

Dalia Rangel/pac/atx



Salvage Report Detail

## Activities

9/11/2013 10:07:58 AM RANGELD RANGELD Other Done 9/11/2013 10:09:15 AM correction to Research

Contracted Repair Shop: [REDACTED] National Car Rental 427785

no prev sr #'s associated w/cust name or vin

no recalls

prev repairs related to allegation

08/13/2013 535180 ZREG---Regular Vehicle Transaction 4027990 - Flexible Fuel Sensor Replacement 1,490 MI

Dalia Rangel/pac/atx

9/11/2013 10:07:34 AM RANGELD RANGELD Outbound Email Field Initial Done 9/11/2013 06:05:09 PM e-mail to dma Adler Larry

Contracted Repair Shop: [REDACTED] National Car Rental 427785

A product allegation claim has been made in your region. The customer is alleging veh stalled causing a collision. This case is being escalated to ESIS because of insurance involvement.

Flechaus

2014 Chevrolet Impala

2G1125S36E9 [REDACTED]

No dlr involved

Dealership Contact, Title/Position

This is only a notification. No action is required on your part at this time.

Best wishes,

Dalia Rangel I CRS

Aditya Birla Minacs I inspired every day

7401 E. Ben White Blvd, Bldg. F, Austin, TX 78741

Phone: 866-790-5600 ext. 11350 Fax: 866-480-3628 www.minacs.adityabirla.com

Contracted Repair Shop: [REDACTED]

## Activities

|                       |         |         |                      |                     |      |                       |                                                        |
|-----------------------|---------|---------|----------------------|---------------------|------|-----------------------|--------------------------------------------------------|
| 9/11/2013 10:07:14 AM | RANGELD | RANGELD | Outbound Call Dealer | Dealer Initial      | Done | 9/12/2013 10:39:54 AM | called Sandy Sansing Chevrolet, Inc.<br>(850) 476-2480 |
|                       |         |         |                      | National Car Rental |      | 427785                |                                                        |

Crs advsd  
need to verify veh hist on cust veh  
Crs spoke w/Svc Adv Tony Staples  
Dir sts  
veh was last in 8/13 due to ses light on. Found p0179 code. Found fuel sensor eratic and replaced sensor.

Dalia Rangel/pac/atx

|                       |         |         |                        |                     |      |                       |                   |
|-----------------------|---------|---------|------------------------|---------------------|------|-----------------------|-------------------|
| 9/11/2013 09:42:29 AM | RANGELD | RANGELD | Outbound Call Customer | Initial Contact     | Done | 9/11/2013 10:06:11 AM | called [REDACTED] |
|                       |         |         |                        | National Car Rental |      | 427785                |                   |

Crs advsd  
wanted to verify if concern is w/the same veh.  
Cust sts  
this is another veh. The cust was driving and veh stalled and veh was rearended. The cust was taken to hospital. I am not sure of the injuries. She has retained  
an Atty is [REDACTED] ph # [REDACTED]  
Cust alleges veh stalled causing a collision.  
Crs advsd  
I will need to escalate file to our Central Claims dept. Someone will contact you 5-7 buisness days.

Dalia Rangel/pac/atx

|                       |         |         |                        |                     |      |                       |                   |
|-----------------------|---------|---------|------------------------|---------------------|------|-----------------------|-------------------|
| 9/11/2013 09:41:38 AM | RANGELD | RANGELD | Outbound Call Customer | Acknowledgement     | Done | 9/11/2013 09:42:27 AM | called [REDACTED] |
|                       |         |         |                        | National Car Rental |      | 427785                |                   |

Duplicate file [REDACTED]

Dalia Rangel/pac/atx

Service Request Detail

Activities

9/10/2013 03:48:46 PM WAGNERCI WAGNERCI Inbound Call Customer Voice Mail Received Done 9/10/2013 03:51:42 PM CAC to PAC Voice Mail

National Car Rental 427785

Cindy/BRC/WF/ATX/21255

9/10/2013 11:08:48 AM VARGASME RANGELD Ownership Changed Done 9/10/2013 11:08:48 AM Service Request Ownership has changed FROM: PENAMA TO: RANGELD

National Car Rental 427785

9/10/2013 11:08:23 AM VARGASME RANGELD Research Done 9/11/2013 09:41:25 AM 2G1125S36E9

National Car Rental 427785

duplicate file to SR

Dalia Rangel/pac/atx

9/10/2013 11:08:13 AM VARGASME RANGELD Notify CRM Done 9/11/2013 09:38:05 AM File Assigned

National Car Rental 427785

Service Request Detail

## Activities

|                       |          |          |                          |                     |        |                       |                                                       |
|-----------------------|----------|----------|--------------------------|---------------------|--------|-----------------------|-------------------------------------------------------|
| 9/10/2013 11:08:01 AM | VARGASME | RANGELD  | BRC PAR                  | Case Assigned       | Done   | 9/11/2013 09:37:52 AM | Assigned to RANGELD x11350                            |
|                       |          |          |                          | National Car Rental | 427785 |                       |                                                       |
|                       |          |          |                          |                     |        |                       |                                                       |
| 9/10/2013 11:07:47 AM | VARGASME | PENAMA   | SR Opened                |                     | Done   | 9/10/2013 11:07:47 AM | SR in Status of Closed has been Re-Opened by VARGASME |
|                       |          |          |                          | National Car Rental | 427785 |                       |                                                       |
|                       |          |          |                          |                     |        |                       |                                                       |
| 9/10/2013 11:07:44 AM | VARGASME | PENAMA   | SR Closed - Dissatisfied |                     | Done   | 9/10/2013 11:07:44 AM | Service Request has been Closed Dissatisfied.         |
|                       |          |          |                          | National Car Rental | 427785 |                       |                                                       |
|                       |          |          |                          |                     |        |                       |                                                       |
| 9/10/2013 10:57:30 AM | PENAMA   | BRC PARQ | Escalation               | CAC to PAC          | Done   | 9/10/2013 11:07:41 AM | CAC to PAC                                            |
|                       |          |          |                          | National Car Rental | 427785 |                       |                                                       |
|                       |          |          |                          |                     |        |                       |                                                       |

Service Request Detail

## Activities

9/10/2013 10:51:39 AM PENAMA PENAMA Inbound Call Customer Complex Request Done 9/10/2013 10:56:23 AM Collision

[REDACTED] National Car Rental 427785

Date: September 10 2013

Name: National Rent A Car

[REDACTED] Coconut Creek FL [REDACTED]

Daytime #:

Evening #:

Cellphone #:

BTTC: ---

VIN: 2G1125S36E9 [REDACTED]

Mileage: 3173

Dealership: ---

Reason for Call: complaint vehicle

Cust States:

- brake lamps began to flash and decelerate and the customer was rear ended by another vehicle
- the customer's name is [REDACTED]
- and we want this investigated by the manufacturer
- it happened on the third of September
- there were injuries im not sure what kind of injuries

Cust seeks:

- have the vehicle inspected

CRS adv:

- let me get a representative from our PAC Dept for this
- all representatives are currently assisting other customers
- will have someone call you back within 1-2 business days

Source:

- CAC Procedures for Product Assistance Claims (PAC)

Document ID: d\_108767

Marga / MNL / CAC / T1 / Lvl1

[REDACTED]

Is it Wide From Pedal

## UCC Information

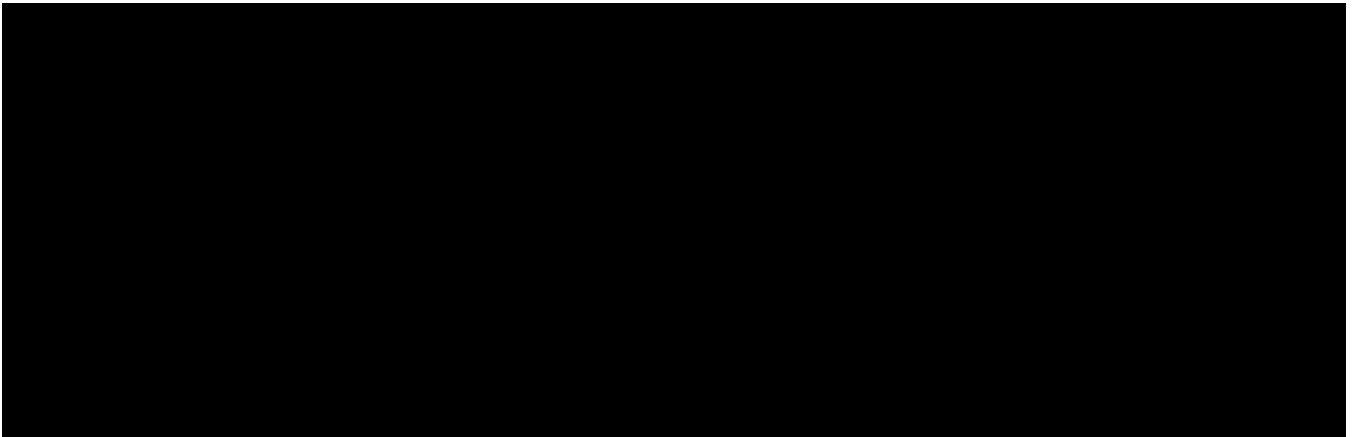
H50 Inoperative Brakes - Pedal and Linkage

PE14-010

GM

6/6/2014

Q 3



768745



## Warranty

[Logout](#)

September 13, 2013

Global Warranty Management: Main &gt; Interface With Customer &gt; View Vehicle Summary

INTERFACE WITH  
CUSTOMER

## View Vehicle Summary

This screen allows IVH users to view the Summary of Vehicle information, Field Actions, Service Information, Applicable Warranties, Transaction History, Service Contract(s) if applicable, Warranty Block, Branded Title information and OnStar and XM Radio information (if applicable).

## Vehicle Information

VIN: 2G1125S36E9

Model: 1GY69-2014 IMPALA LT

Service Contract: No

Branded Title: No

Warranty Block: No

PDI Status: Yes

Order Type: 50 - FLEET

Field Actions: [0 Open](#)[REQUEST ANOTHER VIN](#)

## For this vehicle:

[View Vehicle Summary](#)[Service Contract](#)[Branded Title](#)[Warranty Block](#)[View Vehicle Build](#)[View Vehicle](#)[Component Summary](#)[View Vehicle](#)[Transaction History Detail](#)[View Vehicle Delivery Information](#)

## Required Field Actions

Open field actions are highlighted

Vehicle has no current record of required field actions.

## Branded Title

\*The VIN information contained herein and information derived therefrom is the proprietary property of The Polk Company and is to be used only for the purpose of warranty verification and shall not be used for any other purpose whatsoever.

Vehicle has no current record of branded titles.

## Warranty Block

Vehicle has no current record of warranty block.

## Service Information

Vehicle has no current record of outstanding service information.

## OnStar and XM Satellite Radio Information

Refer to Help page for details. For OnStar contact 888.ON.STAR1 (888.667.8271) and for XM Radio contact 877.GET.XMST (877.438.9677 Canada) and in the USA: 800-556-3600.

OnStar Equipped: Y

OnStar Status: Active

XM Equipped: Y

XM Radio ID: 8495T2MK

XM Status: Active

OnStar Vehicle Diagnostics: N

DMN Enabled: N

## Applicable Warranties

Valid warranties are highlighted



| Valid | Description                            | Warranty Add Date | Start Date | Effective Odometer | End Date   | End Odometer |
|-------|----------------------------------------|-------------------|------------|--------------------|------------|--------------|
|       | Emission Select Component Ltd Wty      | 08/07/2013        | 07/30/2013 | 9 MI               | 07/30/2021 | 80,009 MI    |
|       | Corrosion Limited Warranty             | 08/07/2013        | 07/30/2013 | 9 MI               | 07/30/2019 | 100,009 MI   |
|       | Chevrolet 2 Year Scheduled Maintenance | 08/07/2013        | 07/30/2013 | 9 MI               | 07/30/2015 | 24,009 MI    |
|       | Bumper to Bumper Limited Warranty      | 08/07/2013        | 07/30/2013 | 9 MI               | 07/30/2016 | 36,009 MI    |
|       | Powertrain Limited Warranty            | 08/07/2013        | 07/30/2013 | 9 MI               | 07/30/2018 | 100,009 MI   |

### Service Contract

Vehicle has no current record of service contracts.

### Transaction History

[View Details](#)

| Job Card Date | Job Card Number | Transaction Type                    | Transaction Adjustment | Labour Operation                              | Odometer Reading |
|---------------|-----------------|-------------------------------------|------------------------|-----------------------------------------------|------------------|
| 08/13/2013    | 535180          | ZREG----Regular Vehicle Transaction |                        | 4027990 - Flexible Fuel Sensor Replacement    | 1,490 MI         |
| 07/31/2013    | A29885          | ZPDI----Pre-Delivery Inspection     |                        | 0590072 - Pre-Delivery Inspection - Base Time | 1 MI             |

Global Warranty Management: Site Map

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**Warranty**[Logout](#)

September 13, 2013

Global Warranty Management: Main &gt; Interface With Customer &gt; View Vehicle Build

INTERFACE WITH  
CUSTOMER**View Vehicle Build**

This screen allows IVH users to view the initial build information on the selected VIN including option codes with descriptions (where available).

**Vehicle Information**

VIN: 2G1125S36E9

Model: 1GY69-2014 IMPALA LT

Service Contract: No

Branded Title: No

Warranty Block: No

PDI Status: Yes

Order Type: 50 - FLEET

Field Actions: [0 Open](#)[REQUEST ANOTHER VIN](#)**Vehicle Build**

Model: 1GY69-2014 IMPALA LT

Gross Vehicle Weight: 2,166

Order Number: RCJXKN

Build Date: 07/27/2013

Build Plant: 9

**Option Codes**

\*IVH is not the definitive source of GM Vehicle RPO information and is intended for service reference only. Should there be any questions about the vehicle's original build or RPO information please refer to the original vehicle invoice or window sticker.

06D - TRIM COLOR SEAT NONE

1SZ - LT PREMIUM PACKAGE DISCOUNT

4AJ - JET BLACK/DARK TITANIUM

7X1 - COMPONENT FRT RH NON-COMPUTER  
SEL SUSP9XA - COMPONENT RR RH COMPUTER SEL  
SUSP (9XA)

A69 - SEAT BELT TENSIONER, FRONT

A70 - SEAT BELT TENSIONER, FRONT

AE2 - REAR DOOR LOCKOUT SYSTEM

AEQ - POWER WINDOWS, FRONT & REAR  
WITH EXPRESS DOWN

AHR - HEAD RESTRAINTS

AKP - GLASS, TINTED

AL0 - AIRBAG SENSING SYSTEM, PASSENGER

APH - CONTROL SEAT, POWER LUMBAR, RH

ASV - HUMIDITY/WINDSHIELD TEMP SENSOR

AXJ - VEHICLE TYPE PASSENGER CAR

AYR - HEAD RESTRAINTS, REAR ADJUSTABLE,  
FOLDINGB34 - COLOR-KEYED FRONT FLOOR MATS -  
CARPETED

BTT - PANIC ALARM BUTTON

1D3 - TRIM COLOR SE PANEL

2LT - 2LT PACKAGE

6X1 - COMPONENT FRT LH NON-COMPUTER SEL SUSP

8XA - COMPONENT RR LH COMPUTER SEL SUSP (8XA)

A51 - FRONT BUCKET SEATS

A6C - SEAT ADJUST, FRT PASS 4-WAY MANUAL, 2 WAY  
PWR VERTICAL

A90 - TRUNK RELEASE, POWER

AED - WINDOW, POWER WITH FRONT PASSENGER  
EXPRESS DOWN

AG1 - SIX-WAY POWER DRIVER SEAT

AKK - WINDSHIELD, LAMINATED GLASS

AKX - WINDSHIELD TYPE SOLAR ABSORB

APG - PWR SEAT ADJUSTER, DRIVER, 4-WAY LUMBAR

AQQ - POWER DOOR LOCKS W/ REMOTE KEYLESS  
ACCESS

AXG - POWER WINDOW W/ EXPRESS DRIVER UP/DOWN

AYF - AIRBAGS, DRIVER & PASSENGER FRONTAL AND  
KNEE FRT/OTBRD RR - HEAD CURTAIN AND SIDE

B0R - GM PRODUCTION WEEK #34

B35 - FLOOR MATS, REAR

C1U - FLT-ENTERPRISE RENT A CAR

**For this vehicle:**[→ View Vehicle Summary](#)[→ Service  
Contract](#)[→ Branded Title](#)[→ Warranty Block](#)[→ View Vehicle Build](#)[→ View Vehicle](#)[→ Component Summary](#)[View Vehicle](#)[→ Transaction History  
Detail](#)[→ View Vehicle Delivery  
Information](#)

|                                                                                               |                                                                                                                                     |
|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| C59 - VENT AIR CONSOLE RR                                                                     | CJ2 - AIR CONDITIONING, DUAL ZONE CLIMATE CONTROL                                                                                   |
| D31 - MIRROR, MANUAL INSIDE RR VIEW                                                           | D53 - CONSOLE, FLOOR                                                                                                                |
| D70 - RATIO TRANSAXLE FINAL DRIVE 2.77                                                        | D75 - OUTSIDE DOOR HANDLES                                                                                                          |
| DA5 - ARMREST, REAR CENTER                                                                    | DCP - ONSTAR PROCESSING DIRECTIONS & CONNECTIONS                                                                                    |
| DH6 - DRIVER VISOR MIRROR-LIGHTED                                                             | DLL - POWER DUAL OUTSIDE MIRRORS, HEATED, TURN SIGNAL                                                                               |
| E3E - HANDLE O/S, L/GATE, R/CMPT, CHROME                                                      | EA1 - FRONT SEAT BACK POCKET LH                                                                                                     |
| EA2 - FRONT SEAT BACK POCKET RH                                                               | EF7 - COUNTRY CODE U.S.A.                                                                                                           |
| EWV - TRIM SEAT NONE                                                                          | FE9 - 50-STATE EMISSIONS                                                                                                            |
| FHS - VEHICLE FUEL GASOLINE E85                                                               | FLT - FLEET PROCESSING OPTION                                                                                                       |
| FLY - TRIM DOOR NONE                                                                          | FX3 - STABILITRAK-STABILITY CONTROL SYSTEM W/ TRACTION CONTROL                                                                      |
| GBA - BLACK                                                                                   | GNA - SUSPENSION, FRONT                                                                                                             |
| GNC - SUSPENSION, REAR 4 LINK                                                                 | H0X - JET BLACK / DARK TITANIUM                                                                                                     |
| I14 - ENGINEERING MODEL YEAR                                                                  | IO5 - AUDIO SYSTEM, CHEVROLET MYLINK RADIO, AM/FM STEREO W/ CD PLAYER                                                               |
| J61 - ANTILOCK BRAKE SYSTEM, 4 WHEEL DISC                                                     | J71 - BRAKE, PARKING                                                                                                                |
| JJ2 - BRAKE LINING                                                                            | K34 - CRUISE CONTROL                                                                                                                |
| KD4 - POWER OUTLET, FRONT CONSOLE 12 VOLT                                                     | KG4 - GENERATOR 150 AMP                                                                                                             |
| KPA - FRONT CONSOLE                                                                           | LFX - ENGINE 3.6L, SIDI V6                                                                                                          |
| LHD - LEFT HAND DRIVE                                                                         | M7W - TRANSMISSION, 6-SPEED AUTOMATIC                                                                                               |
| MAH - MARKETING AREA US, PUERTO RICO/ USVI                                                    | MCR - MEMORY CARD                                                                                                                   |
| MCY - USB PORTS, 3                                                                            | MDE - MOLDINGS, BRIGHT WINDOW SURROUND                                                                                              |
| MM1 - TRANSMISSION, 6-SPD AUTOMATIC                                                           | N37 - STEERING COLUMN, TILT AND TELESCOPIC                                                                                          |
| NCG - REAR DOOR LOCKS, POWER, CHILD SECURITY                                                  | NJ2 - POWER STEERING, ELECTRIC                                                                                                      |
| NR0 - LEATHER WRAP STEERING WHEEL                                                             | NT7 - FEDERAL EMISSION SYST TIER 2                                                                                                  |
| NWT - TAILPIPE DUAL, TURNED TURNED DOWN. HIDDEN                                               | OSH - PLANT CODE OSHAWA 1, ONT, CANADA                                                                                              |
| QCL - TIRE, COMPACT SPARE                                                                     | QGK - TIRES, ALL SEASON BLACKWALL                                                                                                   |
| R6F - IDENTIFY B-CODE USERS                                                                   | R9N - CONTROL SALES ITEM NO. 89                                                                                                     |
| RT4 - WHEELS, 19" PAINTED ALLOY                                                               | RV9 - 17" COMPACT STEEL SPARE WHEEL TIRE (REPLACES COMPACT SPARE TIRE)                                                              |
| T4A - HEADLAMPS, HALOGEN                                                                      | T67 - BATTERY, RUNDOWN                                                                                                              |
| T83 - HEADLAMP CONTROL AUTO ON/OFF ON-OFF                                                     | TU2 - LAMP MARKER, SIDE                                                                                                             |
| U2M - SIRIUSXM AND HD RADIO + SERVICE SUBSCRIPTION SOLD SEPARATELY BY SIRIUSXM AFTER 3 MONTHS | U77 - ANTENNA, ROOF MOUNTED                                                                                                         |
| U80 - COMPASS DISPLAY                                                                         | UDD - DISPLAY, MULTI-COLOR DRIVER INSTRUMENT INFO ENHANCED                                                                          |
| UDT - AUDIO SYSTEM FEATURE, 8" DIAGONAL COLOR INFO DISPLAY, TOUCHSCREEN                       | UE1 - 6 MTHS ONSTAR DIRECTIONS AND CONNECTIONS WITH AUTOMATIC CRASH RESPONSE & TURN-BY-TURN NAVIGATION (ASK DEALER ABOUT GEOGRAPHIC |
| UH1 - SEAT BELT WARNING                                                                       | UJM - TIRE PRESSURE MONITOR SYSTEM (EXCL SPARE TIRE)                                                                                |
| UMN - SPEEDOMETER                                                                             | UQG - AUDIO SYSTEM, 6 SPEAKER, 100 WATTS                                                                                            |
| UTJ - THEFT DETERRENT SYSTEM                                                                  | V33 - TOOL KIT                                                                                                                      |
| DETERRMENT SYSTEM                                                                             |                                                                                                                                     |
| V8D - VEHICLE STATEMENT US                                                                    | VQ2 - FLEET ORDERING AND ASSISTANCE                                                                                                 |
| VRG - VAA/COMPONENT REL COCKPIT                                                               | VRH - VAA/COMPONENT REL STEERING COLUMN                                                                                             |
| VRK - VAA/COMPONENT REL ROOF TRIM                                                             | VRL - VAA/COMPONENT REL FRONT HORIZONTAL SUSPENSION                                                                                 |

|                                                      |                                         |
|------------------------------------------------------|-----------------------------------------|
| VRM - VAA/COMPONENT REL FRONT<br>VERTICAL SUSPENSION | VRN - VAA/COMPONENT REL REAR SUSPENSION |
| VRR - VAA/COMPONENT REL TIRES AND<br>WHEELS          | VX7 - FLT-PURCHASE RISK PROGRAM         |
| VY7 - LEATHER TRIMMED SHIFT LEVER                    | VZE - MODEL YEAR 2014                   |
| W1Y - STEERING WHEEL CONTROLS                        | XL7 - FREQUENCY RATING 315 MH           |

Added Option Codes

---

Vehicle has no current record of SAIO codes.

**Warranty**

September 13, 2013

[Logout](#)

Global Warranty Management: Main &gt; Interface With Customer &gt; View Vehicle Component Summary

INTERFACE WITH  
CUSTOMER**View Vehicle Component Summary**

This screen allows IVH users to view the information on various major components added to the VIN selected during vehicle build.

**Vehicle Information**

VIN: 2G1125S36E

Model: 1GY69-2014 IMPALA LT

Service Contract: No

Branded Title: No

Warranty Block: No

PDI Status: Yes

Order Type: 50 - FLEET

Field Actions: [Open](#)[REQUEST ANOTHER VIN](#)**For this vehicle:**[→ View Vehicle Summary](#)[→ Service  
Contract](#)[→ Branded Title](#)[→ Warranty Block](#)[→ View Vehicle Build](#)[→ View Vehicle  
Component Summary](#)[→ View Vehicle  
Transaction History  
Detail](#)[→ View Vehicle Delivery  
Information](#)**Vehicle Component**

Component Code: 10-ENGINE ASSEMBLY

Traceability: 132061015

Source Plant: K-GM OF CANADA, LTD. ST. CATHARINES, ONTARIO

Part / Number Broadcast:

Date Scanned: 07/27/2013

Time Scanned: 10:28:00 Scan Station:

Component Code: 61-TRANSMISSION

Traceability: 3203B1624

Source Plant: W-HYDRAMATIC WARREN, MICHIGAN

Part / Number Broadcast:

Date Scanned: 07/27/2013

Time Scanned: 10:36:00 Scan Station:

Component Code: 86-ELECTRONIC CONTROL MODULE (ECM)

Traceability: 132001752

Source Plant: C-

Part / Number Broadcast:  
AA1H

Date Scanned: 07/27/2013

Time Scanned: 17:21:00 Scan Station:  
03

Component Code: 87-BODY CONTROL MODULE

Traceability: 131780236

Source Plant: G-

Part / Number Broadcast: 9093

Date Scanned: 07/27/2013

Time Scanned: 17:21:00 Scan Station: 03

Component Code: 89-RADIO/RADIO AMPLIFIER

Traceability: NK1134500

Source Plant: E-

Part / Number Broadcast: 5521

Date Scanned: 07/27/2013

Time Scanned: 17:21:00 Scan Station: 03

Component Code: AB-IR-MODULE ASM-INFLATOR

Traceability:

Source Plant: -

Part / Number Broadcast:

Date Scanned: N/A

Time Scanned: N/A Scan Station: 03

Component Code: AH-IR-SENSOR ASM-LEFT

Traceability: 00F7A8D01

Source Plant: E-METHODE ELECTRONICS CARTHAGE IL.

Part / Number Broadcast: 4470

Date Scanned: 07/27/2013

Time Scanned: 17:21:00 Scan Station: 03

Component Code: AJ-IR-SENSOR ASM-RIGHT

Traceability: 0497C8D01

Source Plant: E-METHODE ELECTRONICS CARTHAGE IL.

Part / Number Broadcast: 4470

Date Scanned: 07/27/2013

Time Scanned: 17:21:00 Scan Station: 03

Component Code: AL-IR-MODULE ASM-I/P

Traceability:

Source Plant: -

Part / Number Broadcast:

|                                                           |                               |                  |
|-----------------------------------------------------------|-------------------------------|------------------|
| Date Scanned: N/A                                         | Time Scanned: N/A             | Scan Station: 03 |
| Component Code: AP-RH SIDE IMPACT AIRBAG MODULE           | Traceability:                 |                  |
| Source Plant: -                                           | Part / Number Broadcast:      |                  |
| Date Scanned: N/A                                         | Time Scanned: N/A             | Scan Station: 03 |
| Component Code: AQ-LH SIDE IMPACT AIRBAG MODULE           | Traceability:                 |                  |
| Source Plant: -                                           | Part / Number Broadcast:      |                  |
| Date Scanned: N/A                                         | Time Scanned: N/A             | Scan Station: 03 |
| Component Code: AS-SENSING DIAGNOSTIC MODULE              | Traceability:                 |                  |
| Source Plant: -                                           | Part / Number Broadcast:      |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 17:21:00        | Scan Station: 03 |
| Component Code: AT-RIGHT SIDE IMPACT SENSING MODULE       | Traceability: 0106B47D0       |                  |
| Source Plant: E-METHODE ELECTRONICS CARTHAGE IL.          | Part / Number Broadcast: 6422 |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 17:21:00        | Scan Station: 03 |
| Component Code: AU-LEFT SIDE IMPACT SENSING MODULE        | Traceability: 0B55B47D0       |                  |
| Source Plant: E-METHODE ELECTRONICS CARTHAGE IL.          | Part / Number Broadcast: 6422 |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 17:21:00        | Scan Station: 03 |
| Component Code: BR-SENSOR ASSY - (PSIR) PRESENCE DETECTOR | Traceability: 170300WEG       |                  |
| Source Plant: R-                                          | Part / Number Broadcast: 1686 |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 17:21:00        | Scan Station: 03 |
| Component Code: BV-COMMUNICATIONS INTERFACE MODULE        | Traceability:                 |                  |
| Source Plant: -                                           | Part / Number Broadcast:      |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 17:21:00        | Scan Station: 03 |
| Component Code: CB-SEQ NUM (FLEX) BODY ASM                | Traceability: 3400547         |                  |
| Source Plant: -                                           | Part / Number Broadcast: 1ZZ  |                  |
| Date Scanned: 07/23/2013                                  | Time Scanned: 00:18:00        | Scan Station:    |
| Component Code: CF-SEQ NUM (FLEX) PAINT PROCESS           | Traceability: 0550900         |                  |
| Source Plant: -                                           | Part / Number Broadcast: 1PP  |                  |
| Date Scanned: 07/26/2013                                  | Time Scanned: 13:05:00        | Scan Station:    |
| Component Code: CP-SEQ NUM (FLEX) GEN ASM                 | Traceability: 0549988         |                  |
| Source Plant: -                                           | Part / Number Broadcast: 1GA  |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 05:38:00        | Scan Station:    |
| Component Code: GA---                                     | Traceability: C31831201       |                  |
| Source Plant: D-                                          | Part / Number Broadcast: 4299 |                  |
| Date Scanned: 07/27/2013                                  | Time Scanned: 17:21:00        | Scan Station: 03 |

---

**Service Agent Installed Component**

Vehicle has no current record of vehicle component.

Global Warranty Management: Site Map

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## Warranty

[Logout](#)

September 13, 2013

Global Warranty Management: Main &gt; Interface With Customer &gt; View Vehicle Transaction History Detail

INTERFACE WITH  
CUSTOMER

## View Vehicle Transaction History Detail



This screen allows IVH users to view the available information on individual transaction for the VIN selected.

## Vehicle Information

VIN: 2G1125S36E9 [REDACTED] Model: 1GY69-2014 IMPALA LT  
Service Contract: No Branded Title: No Warranty Block: No PDI Status: Yes  
Order Type: 50 - FLEET  
Field Actions: [0 Open](#)

[REQUEST ANOTHER VIN](#)

Job Card Date: 08/13/2013

Job Card Number: 535180

Repair Service Agent: 112630  
SANDY SANSING CHEVROLET, INC.  
6200 PENSACOLA BLVD  
PENSACOLA FL 32505-2214  
8504762480

Odometer Reading: 1,490 MI  
Authorization Code:

Process Date:  
08/15/2013

Transaction Type:  
ZREG---Regular Vehicle Transaction  
Transaction Expense Category:  
Warranty

Customer Complaint Code:  
0329-Engine/Fuel/Exhaust -  
SES/Check-Engine/MIL

Job Card Line #: 1

Transaction Adjustment:

Cause Code: 6581-Module/Component -  
Registers Incorrectly

Labour Op 4027990-Flexible Fuel Sensor Replacement

Causal Part Number 00000000013577429-SENSORASM-FLEXFUEL

[See other Parts and/or Net Items](#)

Job Card Date: 07/31/2013

Job Card Number: A29885

Repair Service Agent: 125828  
EAN HOLDINGS, LLC  
6211 TIPPIN AVE.  
PENSACOLA FL 32504-8221

Odometer Reading: 1 MI  
Authorization Code:

Process Date:  
07/31/2013

Transaction Type:  
ZPD---Pre-Delivery Inspection  
Transaction Expense Category:  
Pre-Delivery Inspection

Customer Complaint Code:

## For this vehicle:

[View Vehicle Summary](#)

- Service Contract
- Branded Title
- Warranty Block

[View Vehicle Build](#)[View Vehicle Component Summary](#)[View Vehicle Transaction History Detail](#)[View Vehicle Delivery Information](#)



Job Card Line #: 1

Transaction Adjustment:

Cause Code: -

Labour Op 0590072-Pre-Delivery Inspection - Base Time

Causal Part Number

Global Warranty Management: Site Map

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## Warranty

[Logout](#)

September 13, 2013

Global Warranty Management: Main &gt; Interface With Customer &gt; View Vehicle Delivery Information

INTERFACE WITH  
CUSTOMER

## View Vehicle Delivery Information



This screen allows IVH users to view the available information for the selected VIN delivered to the Service Agent and the ultimate customer. Not all sections will be populated for all VINs.

## Vehicle Information

VIN: 2G1125S36E9

Model: 1GY69-2014 IMPALA LT

Service Contract: No

Branded Title: No

Warranty Block: No

PDI Status: Yes

Order Type: 50 - FLEET

Field Actions: [0 Open](#)[REQUEST ANOTHER VIN](#)

## Invoice Information

Invoicing Service Agent: 111304  
ELCO CHEVROLET AND CADILLAC, INC.  
15110 MANCHESTER  
BALLWIN MO 63011-4632 6362275333

Invoice Date: 07/29/2013

## Ship to Information

Ship to Service Agent: 141536  
NATIONAL CAR RENTAL  
6211 TIPPIN AVE  
PENSACOLA FL 32504-8221

Ship to Date: N/A

## Delivery Information

Delivery Service Agent: 111304  
ELCO CHEVROLET AND CADILLAC, INC.  
15110 MANCHESTER  
BALLWIN MO 63011-4632 6362275333

Delivery Date: 07/30/2013  
Delivery Type: 020---DAILY RENTAL  
Delivery Odometer: 9

## In Service Information

Invoicing Service Agent:

In Service Date: N/A  
In Service Type: 0000  
In Service Odometer: 0

## Registration Information

Registration Service Agent: N/A

Registration Date: N/A  
Registration Number: N/A  
Registration Odometer: 0

## For this vehicle:

[View Vehicle Summary](#)[Service Contract](#)[Branded Title](#)[Warranty Block](#)[View Vehicle Build](#)[View Vehicle Component Summary](#)[View Vehicle Transaction History Detail](#)[View Vehicle Delivery Information](#)

PE14-010

GM

6/6/2014

Q 3



This CARFAX Vehicle History Report provided free of charge by:



ESIS GM  
300 Renaissance Center Mc 482 C19 B61  
Detroit, MI 48265  
586-212-2141

SHOW ME THE CARFAX



## CARFAX® Vehicle History Report™

US \$39.99

### Vehicle Information:

2014 CHEVROLET IMPALA LT

VIN: 2G1125S36E5

SEDAN 4 DR

3.6L V6 DIR DOHC 24V

FRONT WHEEL DRIVE

[Standard Equipment](#) | [Safety Options](#)

### CARFAX Report Provided By:

ESIS GM

300 Renaissance Center Mc 482 C19 B61

Detroit, MI 48265

586-212-2141



Accident / Damage reported



CARFAX 1-Owner vehicle



1 Service record available



Lease vehicle



1,505 Last reported odometer reading



\$430 Below retail book value



This CARFAX Vehicle History Report is based only on information supplied to CARFAX and available as of 9/16/13 at 10:25:15 AM (EDT). Other information about this vehicle, including problems, may not have been reported to CARFAX. Use this report as one important tool, along with a vehicle inspection and test drive, to make a better decision about your next used car.



## Price Calculator™

Adjust the value of this 2014 Chevrolet Impala LT based on the information available in this report

### 1) Retail Book Value

\$ 0

Enter retail book value here

### 2) CARFAX Price Adjustment™



- \$430

Below retail book value

### 3) Adjusted Retail Value



Begin by entering the retail book value



Start by entering the retail book value from a pricing guide website.



This vehicle is worth less than average, based on information in this report.



Compare adjusted retail value to seller's asking price when making your decision.



## Ownership History

The number of owners is estimated

Owner 1

Year purchased

2013

Type of owner

Lease



|                                         |                                                                                   |         |
|-----------------------------------------|-----------------------------------------------------------------------------------|---------|
| Estimated length of ownership           |  | 1 month |
| Owned in the following states/provinces |                                                                                   | Florida |
| Estimated miles driven per year         |                                                                                   | ---     |
| Last reported odometer reading          |                                                                                   | 1,505   |

|                                                                                                                                                                                                                                                                                                                                                       |  | Owner 1               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-----------------------|
| CARFAX guarantees the information in this section                                                                                                                                                                                                                                                                                                                                                                                     |  |                       |
| Salvage   Junk   Rebuilt   Fire   Flood   Hail   Lemon                                                                                                                                                                                                                                                                                                                                                                                |  | Guaranteed No Problem |
| Not Actual Mileage   Exceeds Mechanical Limits                                                                                                                                                                                                                                                                                                                                                                                        |  | Guaranteed No Problem |
|  <b>GUARANTEED</b> - None of these major title problems were reported by a state Department of Motor Vehicles (DMV). If you find that any of these title problems were reported by a DMV and not included in this report, CARFAX will buy this vehicle back. <a href="#">Register</a>   <a href="#">View Terms</a>   <a href="#">View Certificate</a> |  |                       |

|                                    |  | Owner 1                                                 |
|--------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------|
| Not all accidents / issues are reported to CARFAX                                                                  |  |                                                         |
| <b>Total Loss</b><br>No total loss reported to CARFAX.                                                             |  | <input checked="" type="checkbox"/> No Issues Reported  |
| <b>Structural Damage</b><br>No structural damage reported to CARFAX.                                               |  | <input checked="" type="checkbox"/> No Issues Reported  |
| <b>Airbag Deployment</b><br>No airbag deployment reported to CARFAX.                                               |  | <input checked="" type="checkbox"/> No Issues Reported  |
| <b>Odometer Check</b><br>No indication of an odometer rollback.                                                    |  | <input checked="" type="checkbox"/> No Issues Indicated |
| <b>Accident / Damage</b><br>Accident reported on 09/03/2013.                                                       |  | <input type="checkbox"/> Accident Reported              |
| <b>Manufacturer Recall</b><br>Check with an authorized <a href="#">General Motors dealer</a> for any open recalls. |  | <input checked="" type="checkbox"/> No Recalls Reported |
| <b>Basic Warranty</b><br>No data reported to CARFAX.                                                               |  | No Data Reported                                        |

CARFAX

Detailed History

Glossary

Owner 1

Purchased:

2013

Type:

Lease

Where:

Florida

Est. length owned:

8/6/13 - present (1 month)

| Date:      | Mileage: | Source:                                                     | Comments:                                                                                                                                                  |
|------------|----------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08/06/2013 | 10       | Florida Motor Vehicle Dept. Tulsa, OK                       | Vehicle purchase reported                                                                                                                                  |
| 08/07/2013 |          | Florida Motor Vehicle Dept. Tulsa, OK<br>Title # [REDACTED] | Title issued or updated<br>Registration issued or renewed<br>First owner reported<br>Titled or registered as lease vehicle<br>Vehicle color noted as Black |

Two states? Vehicle leasing companies often title a car in one state but register it to be driven in another.



|            |       |                                                                                 |                                                                  |
|------------|-------|---------------------------------------------------------------------------------|------------------------------------------------------------------|
| 08/13/2013 | 1,505 | Sandy Sansing<br>Chevrolet<br>Pensacola, FL<br>850-476-2480<br>sandysansing.com | Engine checked                                                   |
| 09/03/2013 |       | Florida<br>Damage Report                                                        | Accident reported<br>With another motor vehicle<br>Vehicle towed |



I'm here to help! Print and bring my [SmartBuyer Checklist](#) when you go to test drive this 2014 Chevrolet Impala LT.

Have Questions? Consumers, please visit our Help Center at [www.carfax.com](http://www.carfax.com). Dealers or Subscribers, please visit our Help Center at [www.carfaxonline.com](http://www.carfaxonline.com).



## Glossary

[View Full Glossary](#)

### Accident / Damage Indicator

CARFAX receives information about accidents in all 50 states, the District of Columbia and Canada. Different information in a vehicle's history can indicate an accident or damage, such as: salvage auction, fire damage, police-reported accident, crash test vehicle, damage disclosure, collision repair facility and automotive recycler records. Not every accident or damage event is reported and not all reported are provided to CARFAX. Details about the accident or damage event when reported to CARFAX (e.g. severity, impact location, airbag deployment) are included on the Vehicle History Report. CARFAX recommends you obtain a vehicle inspection from your dealer or an independent mechanic.

- According to the National Safety Council, Injury Facts, 2007 edition, 7% of the 245 million registered vehicles in the U.S. were involved in an accident in 2005. Over 75% of these were considered minor or moderate.
- CARFAX depends on many sources for its accident / damage data. CARFAX can only report what is in our database on 9/16/13 at 10:25:15 AM (EDT). New data will result in a change to this report.

### Florida Police Reports:

- Provide an estimate of the extent of damage in its accident reports for the following:
  - **SEVERE/TOTALED:** The vehicle cannot be driven from the accident scene due to severe damage or an injury. This level of damage often results in a Salvage or Junk title.
  - **DISABLED:** The vehicle had to be towed or hauled away from the accident location.
  - **FUNCTIONAL:** The vehicle could be driven from the accident location.
  - **MODERATE:** The accident damage affects the operation of the vehicle and/or its parts. Examples include broken windows, trunk lids, doors, bumpers and tires.
  - **MINOR:** The accident damage does not affect the operation of the vehicle. Examples include dented bumpers, fenders, grills and body panels. This level of accident should not compromise vehicle safety.
  - **NO DAMAGE:** The vehicle was not damaged.
- Are required if the estimated damage exceeds \$500

### CARFAX Price Adjustment™

Accidents, service records, number of owners and many other history factors can affect a vehicle's value. The CARFAX Price Adjustment is a tool that analyzes millions of used car transactions to measure how the combination of all the information reported to CARFAX affects the value of a particular vehicle. The vehicle's retail book value plus the CARFAX Price Adjustment will give you a



more accurate measure of the vehicle's value. Use this tool, along with a vehicle inspection and test drive, to make a better decision about your next used car.

#### First Owner

When the first owner(s) obtains a title from a Department of Motor Vehicles as proof of ownership.

#### Lease

When someone leases a car from a dealer, the dealer actually sells the vehicle to a leasing company. The leasing company then collects payments for the vehicle from the new owner for 24, 36, 48 or more months. A leasing company can be an independent car dealer or a car manufacturer.

#### Ownership History

CARFAX defines an owner as an individual or business that possesses and uses a vehicle. Not all title transactions represent changes in ownership. To provide estimated number of owners, CARFAX proprietary technology analyzes all the events in a vehicle history. Estimated ownership is available for vehicles manufactured after 1994 and titled solely in the US including Puerto Rico. Dealers sometimes opt to take ownership of a vehicle and are required to in the following states: Maine, Massachusetts, New Jersey, Ohio, Oklahoma, Pennsylvania and South Dakota. Please consider this as you review a vehicle's estimated ownership history.

#### Title Issued

A state issues a title to provide a vehicle owner with proof of ownership. Each title has a unique number. Each title or registration record on a CARFAX report does not necessarily indicate a change in ownership. In Canada, a registration and bill of sale are used as proof of ownership.

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Covered by United States Patents Nos. 7,113,853; 7,505,838 and 7,596,512.  
9/16/13 10:25:15 AM (EDT)

**CARFAX**

**VEHICLE HIGHLIGHTS**

**2014 CHEVROLET IMPALA LT**  
VIN: 2G1125S36E9  
Body Style: SEDAN 4 DR  
Engine Size: 3.6L V6 DIR DOHC 24V  
Drivetrain: FRONT WHEEL DRIVE

**CARFAX**  
**1 OWNER**

**OWNERSHIP HISTORY:**

Number of Owners:

**CARFAX**  
**1 OWNER**

Last owned in the following state/province:

Florida

**STATE DMV-REPORTED TITLE PROBLEMS:**

None of these major title problems were reported by a state Department of Motor Vehicles:

**BUYBACK**  
**CARFAX**  
**GUARANTEE**

Salvage, Junk, Rebuilt, Fire, Flood, Hail, Lemon

**Guaranteed**  
No Problem

Not Actual Mileage, Exceeds Mechanical Limits

**Guaranteed**  
No Problem

**ACCIDENTS AND OTHER ISSUES:**

No issues reported to CARFAX on the following:

Total Loss

☒ No Issues Reported

Structural Damage

☒ No Issues Reported

☒ No Issues

Courtesy of  
**ESIS GM**

300 Renaissance Center Mc 482 C19 B61  
Detroit, MI 48265  
586-212-2141

Information excerpted from the CARFAX Vehicle History Report and/or Safety & Reliability Ratings; see full reports for additional information, glossary of terms, source attributions, disclaimers & limitations. Go to [carfax.com](http://carfax.com) for complete Buyback Guarantee terms and conditions.

|                   |                                                                                                        |
|-------------------|--------------------------------------------------------------------------------------------------------|
| Airbag Deployment | Reported                                                                                               |
| Odometer Rollback |  No Issues Reported |

Accident reported on this vehicle. Please see the full CARFAX Vehicle History Report for more details.

**Ask your dealer  
for the full CARFAX<sup>®</sup>  
Vehicle History Report<sup>™</sup>**

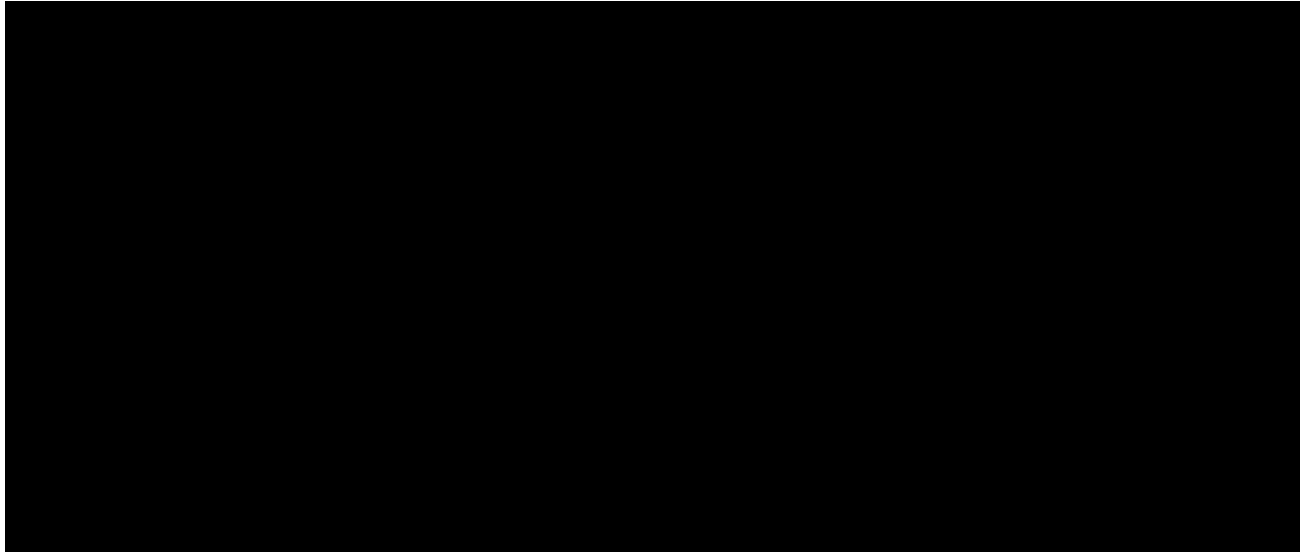


PE14-010

GM

6/6/2014

Q 3





**esis**

ESIS/GM Central Claims Unit  
PO Box 300  
Mail Code 482 C19 B61  
Detroit, MI 48265-3000

313.665.3387 *tel*  
248.707.1653 *fax*

**Lawrence Harrington**  
**Claims Administrator**  
**lawrence.harrington@gm.com**

9/16/13

██████████  
ELCO Administrative Services

RE:     Claimant:     ██████████  
       Our File No.:   768745 ELCO matter # 04308814  
       Our Client:     General Motors LLC  
       Date/Event:     9/3/2013

Dear Mr. ██████████:

I am writing to confirm our conversation of 9/16/13 regarding the accident of 9/3/13 in a 2014 Chevrolet Impala. ESIS provides administrative claims handling services to General Motors LLC (GM) in connection with product liability claims against GM. They have referred your claim to our office for further handling. Please address all future correspondence to my attention.

Per our conversation, you agreed to allow us to inspect your 204 Chevrolet Impala and retrieve data from the air bag system. I estimate the inspection will take about three (3) hours.

As part of the inspection, we will likely take photographs and measurements. Also, your vehicle is equipped with an air bag Sensing and Diagnostic Module (SDM). As explained in the Owner's Manual, in addition to its other functions, the SDM records information about the air bag system and other crash related data in an air bag deployment event and some near-deployment crashes. The SDM in your vehicle also records the following pre-crash data: vehicle speed, throttle position, brake application and engine RPM for 5 seconds prior to the deployment or near deployment event. As part of our investigation, we will download the SDM data using the Bosch Crash Data Retrieval System software. We will provide you with a copy of that data at the time we retrieve it or as soon after as is practical.

Please note the potential GM uses of this crash data once GM has a copy in its files. Once collected, the SDM crash data is available for GM's research needs. Also, in summary form, this information may be provided to non-GM organizations (i) which have a reasonable need for it, (ii) which have a demonstrated ability to utilize such data, and (iii) which are expected to use it for studies aimed at improving safety to the benefit of the public at large, the auto industry, or GM. However, information which ties SDM crash data to a particular vehicle, such as VIN, owner name, or date and location, will generally not be disclosed by GM other than (a) to the involved owner/lessee or his/her designated agent, (b) in response to an official request of police or similar government office, (c) for research where appropriate confidentiality is maintained and need is shown, (d) as part of GM's defense of litigation involving the subject vehicle or other GM products, or (e) as otherwise required by law.



**esis**

To assist us in the investigation of your claim, we request that you provide us with the following information:

1. Documentation to substantiate the amount of damages to your vehicle;
2. Original photographs (or color copies) taken by you, or someone on your behalf, of the vehicle that is the basis of your claim;
3. Copy of accident report;
4. Copy of all maintenance records;
5. Statement of facts of the accident.

Once we have completed our investigation, a review of your claim will be conducted.

**Please be advised that you have an obligation and responsibility to ensure that the subject vehicle and its related components are maintained and preserved in their immediate post-incident condition for as long as you intend to pursue a claim and/or cause of action.**

Should you have any questions regarding this letter or your claim, please feel free to contact me directly at 313.665.3387, Monday through Friday, 7:00 a.m. to 3:00 p.m., EST.

Sincerely,

*Lawrence Harrington*

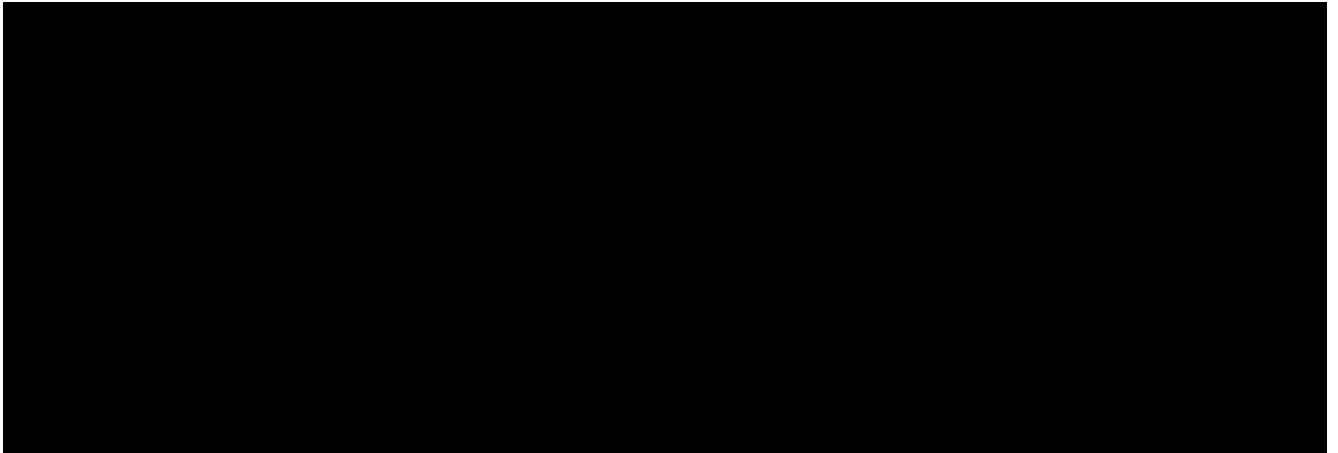
Lawrence Harrington  
Claims Administrator

PE14-010

GM

6/6/2014

Q 3



## CDR File Information

|                            |                                       |
|----------------------------|---------------------------------------|
| User Entered VIN           | 2G1125S36E9                           |
| User                       | RYAN JAHR ESIS/GM                     |
| Case Number                |                                       |
| EDR Data Imaging Date      | 10/02/2013                            |
| Crash Date                 | 09/03/2013                            |
| Filename                   | 2G1125S36E9 ACM.CDRDURAND.CDRX        |
| Saved on                   | Wednesday, October 2 2013 at 11:37:11 |
| Collected with CDR version | Crash Data Retrieval Tool 11.1.1      |
| Reported with CDR version  | Crash Data Retrieval Tool 11.1.1      |
| EDR Device Type            | Airbag Control Module                 |
| Event(s) recovered         | Non-Deployment                        |

**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.

## 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. Non-Deployment Events can be overwritten after 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, or roll bars:

- Pretensioner(s) only Deployment
- Head Rest Deployment
- Battery Cut-Off Deployment

The second type of SDM recorded crash event for FSR Events is the Deployment Event. It also contains Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM. There are also two types of recorded crash events for Rollover Events. The first is the Non-Deployment (Non-rollover) Event. A Non-Deployment Event records data but does not deploy the air bag(s). A Non-Deployment Event contains Pre-Crash and Crash data. Non-Deployment Rollover event follow the same rules as FSR Non-Deployment events.

The SDM can store up to three 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 300 milliseconds of data after time zero. The SDM will also record 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 Non-Deployment (Non-rollover) Events, the SDM will record 1 second of data before a calibrated angle threshold is reached. 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.

-Deployment loops may be displayed as being deployed in a Non-Deployment event record, if a Deployment event is qualified during the Non-Deployment event. That is, if two or more events are occurring at the same time and one is a Non-Deployment event and one of the others is a Deployment event, and the Deployment event is qualified while the Non-Deployment is still active, the deployed loops may be recorded in the Non-Deployment event record.

-Deployment loops can only be deployed once per module power cycle.

-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.
- 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
- 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 Last Cleared can record a maximum value of 253 cycles and can only be reset by a scan tool.
- Deployment Event Counter tracks the number of Deployment events that have occurred during the SDM's lifetime.
- Event Counter tracks the number of qualified events (either Deployments, Non-deploy, or Rollover events) that have occurred during the SDM's lifetime.
- The Time Zero to Deployment Command Criteria Met times for the following will be indicated for whichever occurs first:
  - Driver Thorax or Driver Curtain
  - Passenger Thorax or Passenger Curtain
  - Driver Pretensioner Loop #1 or Driver Pretensioner Loop #2
  - Passenger Pretensioner Loop #1 or Passenger Pretensioner Loop #2
- 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.
- 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 GM parameter name is displayed in parentheses after the NHTSA Part 563 parameter name.
- The reported range of the longitudinal and lateral acceleration values is approximately  $\pm 50$  g.
- 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                 | Positive Sign Notation |
|------------------------------|------------------------|
| 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.

01049\_SDM30-autoliv\_r006



## Event Data General (part one)

| Data Location       | Data Value (Hex)     | Parameter Descriptor                                        | Translated Value | Units  |
|---------------------|----------------------|-------------------------------------------------------------|------------------|--------|
| DPID \$32 Bytes 2-3 | \$0118               | Ignition Cycle, Download (Ignition Cycles at Investigation) | 280              | counts |
| DID \$01 Bytes 0-1  | \$4155               | ESS # 1 Traceability Data, Component Identifier             | AU               |        |
| DID \$01 Bytes 2-5  | \$36343232           | ESS # 1 Traceability Data, Part Number/Broadcast Code       | 6422             |        |
| DID \$01 Byte 6     | \$45                 | ESS # 1 Traceability Data, Supplier Code                    | E                |        |
| DID \$01 Bytes 7-15 | \$304235354234374430 | ESS # 1 Traceability Data, Traceability Number              | 0B55B47D0        |        |
| DID \$03 Bytes 0-1  | \$4154               | ESS # 2 Traceability Data, Component Identifier             | AT               |        |
| DID \$03 Bytes 2-5  | \$36343232           | ESS # 2 Traceability Data, Part Number/Broadcast Code       | 6422             |        |
| DID \$03 Byte 6     | \$45                 | ESS # 2 Traceability Data, Supplier Code                    | E                |        |
| DID \$03 Bytes 7-15 | \$303130364234374430 | ESS # 2 Traceability Data, Traceability Number              | 0106B47D0        |        |
| DID \$05 Bytes 0-1  | \$4148               | ESS # 3 Traceability Data, Component Identifier             | AH               |        |
| DID \$05 Bytes 2-5  | \$34343730           | ESS # 3 Traceability Data, Part Number/Broadcast Code       | 4470             |        |
| DID \$05 Byte 6     | \$45                 | ESS # 3 Traceability Data, Supplier Code                    | E                |        |
| DID \$05 Bytes 7-15 | \$303046374138443031 | ESS # 3 Traceability Data, Traceability Number              | 00F7A8D01        |        |
| DID \$07 Bytes 0-1  | \$414A               | ESS # 4 Traceability Data, Component Identifier             | AJ               |        |
| DID \$07 Bytes 2-5  | \$34343730           | ESS # 4 Traceability Data, Part Number/Broadcast Code       | 4470             |        |
| DID \$07 Byte 6     | \$45                 | ESS # 4 Traceability Data, Supplier Code                    | E                |        |
| DID \$07 Bytes 7-15 | \$303439374338443031 | ESS # 4 Traceability Data, Traceability Number              | 0497C8D01        |        |
| DID \$09 Bytes 0-1  | \$4441               | ESS # 5 Traceability Data, Component Identifier             | DA               |        |
| DID \$09 Bytes 2-5  | \$34343730           | ESS # 5 Traceability Data, Part Number/Broadcast Code       | 4470             |        |
| DID \$09 Byte 6     | \$45                 | ESS # 5 Traceability Data, Supplier Code                    | E                |        |
| DID \$09 Bytes 7-15 | \$304532363638363031 | ESS # 5 Traceability Data, Traceability Number              | 0E2668601        |        |
| DID \$0B Bytes 0-1  | \$4442               | ESS # 6 Traceability Data, Component Identifier             | DB               |        |
| DID \$0B Bytes 2-5  | \$34343730           | ESS # 6 Traceability Data, Part Number/Broadcast Code       | 4470             |        |
| DID \$0B Byte 6     | \$45                 | ESS # 6 Traceability Data, Supplier Code                    | E                |        |
| DID \$0B Bytes 7-15 | \$303131423138433031 | ESS #6 Traceability Data, Traceability Number               | 011B18C01        |        |
| DID \$0D Bytes 0-1  | \$3030               | ESS # 7 Traceability Data, Component Identifier             | 00               |        |
| DID \$0D Bytes 2-5  | \$30303030           | ESS # 7 Traceability Data, Part Number/Broadcast Code       | 0000             |        |
| DID \$0D Byte 6     | \$30                 | ESS # 7 Traceability Data, Supplier Code                    | 0                |        |

| Data Location       | Data Value (Hex)   | Parameter Descriptor                                  | Translated Value | Units  |
|---------------------|--------------------|-------------------------------------------------------|------------------|--------|
| DID \$0D Bytes 7-15 | \$3030303030303030 | ESS # 7 Traceability Data, Traceability Number        | 000000000        |        |
| DID \$0F Bytes 0-1  | \$3030             | ESS # 8 Traceability Data, Component Identifier       | 00               |        |
| DID \$0F Bytes 2-5  | \$30303030         | ESS # 8 Traceability Data, Part Number/Broadcast Code | 0000             |        |
| DID \$0F Byte 6     | \$30               | ESS # 8 Traceability Data, Supplier Code              | 0                |        |
| DID \$0F Bytes 7-15 | \$3030303030303030 | ESS # 8 Traceability Data, Traceability Number        | 000000000        |        |
| DID \$30 Byte 0     | \$00               | Dynamic Deployment Event Counter                      | 0                | counts |
| DID \$30 Bytes 1-2  | \$0001             | Multi-Event, Number of Events (Dynamic Event Counter) | 1                | counts |
| DID \$30 Byte 3     | \$01               | Dynamic OnStar Notification Event Counter             | 1                | counts |

## Event Record #1 Data

| Data Location           | Data Value (Hex) | Parameter Descriptor                                           | Translated Value   | Units   |
|-------------------------|------------------|----------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 0         | \$A5             | Complete File Recorded (Event Recording Complete)              | Yes                |         |
| DID \$31 Byte 1, bit 7  | \$78             | Event Record Type                                              | Non-Deployment     |         |
| DID \$31 Byte 1, bit 6  | \$78             | Crash Record Locked                                            | Yes                |         |
| DID \$31 Byte 1, bit 5  | \$78             | OnStar Deployment Status Data Sent                             | Yes                |         |
| DID \$31 Byte 1, bit 4  | \$78             | OnStar SDM Recorded Vehicle Velocity Change Data Sent          | Yes                |         |
| DID \$31 Byte 1, bit 3  | \$78             | High Voltage Disable Notification Sent                         | Yes                |         |
| DID \$31 Byte 1, bit 2  | \$78             | Deployment Commanded in Energy Reserve Mode                    | No                 |         |
| DID \$31 Byte 2         | \$00             | Deployment Event Counter                                       | 0                  | counts  |
| DID \$31 Bytes 3-4      | \$0001           | Multi-Event, Number of Events (Event Counter)                  | 1                  | counts  |
| DID \$31 Byte 5         | \$01             | OnStar Notification Event Counter                              | 1                  | counts  |
| DID \$31 Byte 6, bit 3  | \$0C             | Algorithm Active: Rear                                         | Yes                |         |
| DID \$31 Byte 6, bit 2  | \$0C             | Algorithm Active: Rollover                                     | Yes                |         |
| DID \$31 Byte 6, bit 1  | \$0C             | Algorithm Active: Side                                         | No                 |         |
| DID \$31 Byte 6, bit 0  | \$0C             | Algorithm Active: Frontal                                      | No                 |         |
| DID \$31 Bytes 7-8      | \$0107           | Ignition Cycle, Crash (Ignition Cycles at Event)               | 263                | counts  |
| DID \$31 Bytes 9-10     | \$FFFF           | Time From Event 1 to 2 (Time Between Events)                   | Data Not Available | seconds |
| DID \$31 Byte 11 bit 0  | \$00             | Concurrent Event Flag Set                                      | No                 |         |
| DID \$31 Byte 14, bit 7 | \$40             | Event Severity Status: Rollover                                | No                 |         |
| DID \$31 Byte 14, bit 6 | \$40             | Event Severity Status: Rear                                    | Yes                |         |
| DID \$31 Byte 14, bit 5 | \$40             | Event Severity Status: Right Side                              | No                 |         |
| DID \$31 Byte 14, bit 4 | \$40             | Event Severity Status: Left Side                               | No                 |         |
| DID \$31 Byte 14, bit 3 | \$40             | Event Severity Status: Frontal Stage 2                         | No                 |         |
| DID \$31 Byte 14, bit 2 | \$40             | Event Severity Status: Frontal Stage 1                         | No                 |         |
| DID \$31 Byte 14, bit 1 | \$40             | Event Severity Status: Frontal Pretensioner                    | No                 |         |
| DID \$31 Byte 15 bit 7  | \$03             | Driver 1st Stage Deployment Loop Commanded                     | No                 |         |
| DID \$31 Byte 15 bit 6  | \$03             | Passenger 1st Stage Deployment Loop Commanded                  | No                 |         |
| DID \$31 Byte 15 bit 5  | \$03             | Driver 2nd Stage Deployment Loop Commanded                     | No                 |         |
| DID \$31 Byte 15 bit 3  | \$03             | Passenger 2nd Stage Deployment Loop Commanded                  | No                 |         |
| DID \$31 Byte 15 bit 1  | \$03             | Driver Pretensioner Deployment Loop #1 Commanded               | Yes                |         |
| DID \$31 Byte 15 bit 0  | \$03             | Passenger Pretensioner Deployment Loop #1 Commanded            | Yes                |         |
| DID \$31 Byte 16 bit 7  | \$C0             | Driver Pretensioner Deployment Loop #2 Commanded (If Equipped) | Yes                |         |

| Data Location          | Data Value (Hex) | Parameter Descriptor                                                | Translated Value | Units |
|------------------------|------------------|---------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 16 bit 6 | \$C0             | Passenger Pretensioner Deployment Loop #2 Commanded (If Equipped)   | Yes              |       |
| DID \$31 Byte 16 bit 5 | \$C0             | Driver Thorax Loop Commanded (If Equipped)                          | No               |       |
| DID \$31 Byte 16 bit 4 | \$C0             | Passenger Thorax Loop Commanded (If Equipped)                       | No               |       |
| DID \$31 Byte 16 bit 3 | \$C0             | Left Row 2 Thorax Loop Commanded (If Equipped)                      | No               |       |
| DID \$31 Byte 16 bit 2 | \$C0             | Right Row 2 Thorax Loop Commanded (If Equipped)                     | No               |       |
| DID \$31 Byte 16 bit 1 | \$C0             | Driver Row 1 Roof Rail/Head Curtain Loop Commanded (If Equipped)    | No               |       |
| DID \$31 Byte 16 bit 0 | \$C0             | Passenger Row 1 Roof Rail/Head Curtain Loop Commanded (If Equipped) | No               |       |
| DID \$31 Byte 17 bit 7 | \$00             | Left Row 2 Roof Rail/Head Curtain Loop Commanded (If Equipped)      | No               |       |
| DID \$31 Byte 17 bit 6 | \$00             | Right Row 2 Roof Rail/Head Curtain Loop Commanded (If Equipped)     | No               |       |
| DID \$31 Byte 17 bit 5 | \$00             | Left Row 3 Roof Rail/Head Curtain Loop Commanded (If Equipped)      | No               |       |
| DID \$31 Byte 17 bit 4 | \$00             | Right Row 3 Roof Rail/Head Curtain Loop Commanded (If Equipped)     | No               |       |
| DID \$31 Byte 17 bit 3 | \$00             | Driver Knee Deployment Loop Commanded (If Equipped)                 | No               |       |
| DID \$31 Byte 17 bit 2 | \$00             | Passenger Knee Deployment Loop Commanded (If Equipped)              | No               |       |
| DID \$31 Byte 17 bit 1 | \$00             | Left Row 2 Pretensioner Deployment Loop Commanded (If Equipped)     | No               |       |
| DID \$31 Byte 17 bit 0 | \$00             | Right Row 2 Pretensioner Deployment Loop Commanded (If Equipped)    | No               |       |
| DID \$31 Byte 18 bit 7 | \$00             | Center Row 2 Pretensioner Deployment Loop Commanded (If Equipped)   | No               |       |
| DID \$31 Byte 18 bit 6 | \$00             | Battery Cutoff Loop Commanded (If Equipped)                         | No               |       |
| DID \$31 Byte 18 bit 5 | \$00             | Driver Roll Bar Loop Commanded (If Equipped)                        | No               |       |
| DID \$31 Byte 18 bit 4 | \$00             | Passenger Roll Bar Loop Commanded (If Equipped)                     | No               |       |
| DID \$31 Byte 18 bit 3 | \$00             | Steering Column Energy Absorbing Loop Commanded (If Equipped)       | No               |       |
| DID \$31 Byte 18 bit 2 | \$00             | Driver Head Rest Loop Commanded (If Equipped)                       | No               |       |
| DID \$31 Byte 18 bit 1 | \$00             | Passenger Head Rest Loop Commanded (If Equipped)                    | No               |       |
| DID \$31 Byte 18 bit 0 | \$00             | Left Row 2 Head Rest Loop Commanded (If Equipped)                   | No               |       |
| DID \$31 Byte 19 bit 7 | \$00             | Right Row 2 Head Rest Loop Commanded (If Equipped)                  | No               |       |
| DID \$31 Byte 19 bit 6 | \$00             | Center Row 2 Head Rest Loop Commanded (If Equipped)                 | No               |       |
| DID \$31 Byte 19 bit 5 | \$00             | High Voltage Battery Cutoff Commanded (If Equipped)                 | No               |       |

| Data Location             | Data Value (Hex) | Parameter Descriptor                                                                                               | Translated Value   | Units |
|---------------------------|------------------|--------------------------------------------------------------------------------------------------------------------|--------------------|-------|
| DID \$31 Byte 20 bits 7-6 | \$4C             | Safety Belt Status, Driver (Driver Belt Switch Circuit Status)                                                     | Buckled            |       |
| DID \$31 Byte 20 bits 5-4 | \$4C             | Safety Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status)                                   | Not Buckled        |       |
| DID \$31 Byte 20 bits 3-2 | \$4C             | Center Front Row Belt Switch Circuit Status (If Equipped)                                                          | Data Not Available |       |
| DID \$31 Byte 21 bits 7-6 | \$FC             | Left Row 2 Belt Switch Circuit Status (If Equipped)                                                                | Data Not Available |       |
| DID \$31 Byte 21 bits 5-4 | \$FC             | Center Row 2 Belt Switch Circuit Status (If Equipped)                                                              | Data Not Available |       |
| DID \$31 Byte 21 bits 3-2 | \$FC             | Left Row 2 Belt Switch Circuit Status (If Equipped)                                                                | Data Not Available |       |
| DID \$31 Byte 22 bits 7-6 | \$FC             | Left Row 3 Belt Switch Circuit Status (If Equipped)                                                                | Data Not Available |       |
| DID \$31 Byte 22 bits 5-4 | \$FC             | Center Row 3 Belt Switch Circuit Status (If Equipped)                                                              | Data Not Available |       |
| DID \$31 Byte 22 bits 3-2 | \$FC             | Right Row 3 Belt Switch Circuit Status (If Equipped)                                                               | Data Not Available |       |
| DID \$31 Byte 23 bits 7-6 | \$F0             | Seat Track Position Switch, Foremost, Status, Driver (Driver Seat Position Status) (If Equipped)                   | Data Not Available |       |
| DID \$31 Byte 23 bits 5-4 | \$F0             | Seat Track Position Switch, Foremost, Status, Right Front Passenger (Passenger Seat Position Status) (If Equipped) | Data Not Available |       |
| DID \$31 Byte 24 bits 7-5 | \$00             | Passenger Seat Occupancy Status                                                                                    | Empty              |       |
| DID \$31 Byte 25 bits 7-4 | \$00             | Passenger Classification Status                                                                                    | Not Applicable     |       |
| DID \$31 Byte 26 bits 7-6 | \$C0             | Passenger SIR Suppression Switch Circuit Status (If Equipped)                                                      | Data Not Available |       |
| DID \$31 Byte 27 bits 7-6 | \$10             | Passenger Air Bag ON Indicator Status                                                                              | Off                |       |
| DID \$31 Byte 27 bits 5-4 | \$10             | Passenger Air Bag OFF Indicator Status                                                                             | On                 |       |
| DID \$31 Byte 28          | \$00             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-0.5 sec)                                                  | 0                  | %     |
| DID \$31 Byte 29          | \$23             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-1.0 sec)                                                  | 35                 | %     |
| DID \$31 Byte 30          | \$00             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-1.5 sec)                                                  | 0                  | %     |
| DID \$31 Byte 31          | \$00             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-2.0 sec)                                                  | 0                  | %     |
| DID \$31 Byte 32          | \$00             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-2.5 sec)                                                  | 0                  | %     |
| DID \$31 Byte 33          | \$00             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-3.0 sec)                                                  | 0                  | %     |
| DID \$31 Byte 34          | \$12             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-3.5 sec)                                                  | 18                 | %     |
| DID \$31 Byte 35          | \$13             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-4.0 sec)                                                  | 19                 | %     |
| DID \$31 Byte 36          | \$19             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-4.5 sec)                                                  | 25                 | %     |
| DID \$31 Byte 37          | \$1B             | Accelerator Pedal, % Full (Accelerator Pedal Position) (-5.0 sec)                                                  | 27                 | %     |

| Data Location             | Data Value (Hex) | Parameter Descriptor                                  | Translated Value | Units |
|---------------------------|------------------|-------------------------------------------------------|------------------|-------|
| DID \$31 Byte 38 bits 7-6 | \$01             | Service Brake (Brake Switch Circuit State) (-0.5 sec) | Off              |       |
| DID \$31 Byte 38 bits 5-4 | \$01             | Service Brake (Brake Switch Circuit State) (-1.0 sec) | Off              |       |
| DID \$31 Byte 38 bits 3-2 | \$01             | Service Brake (Brake Switch Circuit State) (-1.5 sec) | Off              |       |
| DID \$31 Byte 38 bits 1-0 | \$01             | Service Brake (Brake Switch Circuit State) (-2.0 sec) | On               |       |
| DID \$31 Byte 39 bits 7-6 | \$00             | Service Brake (Brake Switch Circuit State) (-2.5 sec) | Off              |       |
| DID \$31 Byte 39 bits 5-4 | \$00             | Service Brake (Brake Switch Circuit State) (-3.0 sec) | Off              |       |
| DID \$31 Byte 39 bits 3-2 | \$00             | Service Brake (Brake Switch Circuit State) (-3.5 sec) | Off              |       |
| DID \$31 Byte 39 bits 1-0 | \$00             | Service Brake (Brake Switch Circuit State) (-4.0 sec) | Off              |       |
| DID \$31 Byte 40 bits 7-6 | \$00             | Service Brake (Brake Switch Circuit State) (-4.5 sec) | Off              |       |
| DID \$31 Byte 40 bits 5-4 | \$00             | Service Brake (Brake Switch Circuit State) (-5.0 sec) | Off              |       |
| DID \$31 Byte 41 bits 7-6 | \$00             | Cruise Control Resume Switch Active (-0.5 sec)        | No               |       |
| DID \$31 Byte 41 bits 5-4 | \$00             | Cruise Control Resume Switch Active (-1.0 sec)        | No               |       |
| DID \$31 Byte 41 bits 3-2 | \$00             | Cruise Control Resume Switch Active (-1.5 sec)        | No               |       |
| DID \$31 Byte 41 bits 1-0 | \$00             | Cruise Control Resume Switch Active (-2.0 sec)        | No               |       |
| DID \$31 Byte 42 bits 7-6 | \$00             | Cruise Control Active (-0.5 sec)                      | No               |       |
| DID \$31 Byte 42 bits 5-4 | \$00             | Cruise Control Active (-1.0 sec)                      | No               |       |
| DID \$31 Byte 42 bits 3-2 | \$00             | Cruise Control Active (-1.5 sec)                      | No               |       |
| DID \$31 Byte 42 bits 1-0 | \$00             | Cruise Control Active (-2.0 sec)                      | No               |       |
| DID \$31 Byte 43 bits 7-6 | \$00             | Cruise Control Set Switch Active (-0.5 sec)           | No               |       |
| DID \$31 Byte 43 bits 5-4 | \$00             | Cruise Control Set Switch Active (-1.0 sec)           | No               |       |
| DID \$31 Byte 43 bits 3-2 | \$00             | Cruise Control Set Switch Active (-1.5 sec)           | No               |       |
| DID \$31 Byte 43 bits 1-0 | \$00             | Cruise Control Set Switch Active (-2.0 sec)           | No               |       |
| DID \$31 Byte 44 bits 7-6 | \$00             | Reduced Engine Power Mode indicator (-0.5 sec)        | Off              |       |
| DID \$31 Byte 44 bits 5-4 | \$00             | Reduced Engine Power Mode indicator (-1.0 sec)        | Off              |       |
| DID \$31 Byte 44 bits 3-2 | \$00             | Reduced Engine Power Mode indicator (-1.5 sec)        | Off              |       |
| DID \$31 Byte 44 bits 1-0 | \$00             | Reduced Engine Power Mode indicator (-2.0 sec)        | Off              |       |
| DID \$31 Byte 45          | \$0D             | Engine RPM (Engine Speed) (-0.5 sec)                  | 832              | RPM   |
| DID \$31 Byte 46          | \$10             | Engine RPM (Engine Speed) (-1.0 sec)                  | 1024             | RPM   |
| DID \$31 Byte 47          | \$13             | Engine RPM (Engine Speed) (-1.5 sec)                  | 1216             | RPM   |
| DID \$31 Byte 48          | \$16             | Engine RPM (Engine Speed) (-2.0 sec)                  | 1408             | RPM   |
| DID \$31 Byte 49          | \$19             | Engine RPM (Engine Speed) (-2.5 sec)                  | 1600             | RPM   |
| DID \$31 Byte 50          | \$1A             | Engine RPM (Engine Speed) (-3.0 sec)                  | 1664             | RPM   |
| DID \$31 Byte 51          | \$1C             | Engine RPM (Engine Speed) (-3.5 sec)                  | 1792             | RPM   |
| DID \$31 Byte 52          | \$1C             | Engine RPM (Engine Speed) (-4.0 sec)                  | 1792             | RPM   |
| DID \$31 Byte 53          | \$1D             | Engine RPM (Engine Speed) (-4.5 sec)                  | 1856             | RPM   |
| DID \$31 Byte 54          | \$1D             | Engine RPM (Engine Speed) (-5.0 sec)                  | 1856             | RPM   |

| Data Location                  | Data Value (Hex) | Parameter Descriptor                                   | Translated Value | Units                          |
|--------------------------------|------------------|--------------------------------------------------------|------------------|--------------------------------|
| DID \$31 Bytes 55,56 (12 bits) | \$06A6           | Engine Torque (-0.5 sec)                               | 2 [ 3]           | Foot-pounds<br>[Newton meters] |
| DID \$31 Bytes 57,58 (12 bits) | \$06A8           | Engine Torque (-1.0 sec)                               | 3 [ 4]           | Foot-pounds<br>[Newton meters] |
| DID \$31 Bytes 59,60 (12 bits) | \$0698           | Engine Torque (-1.5 sec)                               | -3 [-4]          | Foot-pounds<br>[Newton meters] |
| DID \$31 Bytes 61,62 (12 bits) | \$0693           | Engine Torque (-2.0 sec)                               | -5 [-6]          | Foot-pounds<br>[Newton meters] |
| DID \$31 Byte 63               | \$02             | Engine Throttle, % Full (Throttle Position) (-0.5 sec) | 2                | % full throttle                |
| DID \$31 Byte 64               | \$07             | Engine Throttle, % Full (Throttle Position) (-1.0 sec) | 7                | % full throttle                |
| DID \$31 Byte 65               | \$07             | Engine Throttle, % Full (Throttle Position) (-1.5 sec) | 7                | % full throttle                |
| DID \$31 Byte 66               | \$08             | Engine Throttle, % Full (Throttle Position) (-2.0 sec) | 8                | % full throttle                |
| DID \$31 Byte 67               | \$0A             | Engine Throttle, % Full (Throttle Position)(-2.5 sec)  | 10               | % full throttle                |
| DID \$31 Byte 68               | \$0A             | Engine Throttle, % Full (Throttle Position) (-3.0 sec) | 10               | % full throttle                |
| DID \$31 Byte 69               | \$0D             | Engine Throttle, % Full (Throttle Position) (-3.5 sec) | 13               | % full throttle                |
| DID \$31 Byte 70               | \$0F             | Engine Throttle, % Full (Throttle Position) (-4.0 sec) | 15               | % full throttle                |
| DID \$31 Byte 71               | \$27             | Engine Throttle, % Full (Throttle Position) (-4.5 sec) | 39               | % full throttle                |
| DID \$31 Byte 72               | \$34             | Engine Throttle, % Full (Throttle Position)(-5.0 sec)  | 52               | % full throttle                |



| Data Location             | Data Value (Hex) | Parameter Descriptor                                                                  | Translated Value | Units         |
|---------------------------|------------------|---------------------------------------------------------------------------------------|------------------|---------------|
| DID \$31 Byte 73          | \$3B             | Speed, Vehicle Indicated (Vehicle Speed) (-0.5 sec)                                   | 37 [ 59]         | MPH<br>[km/h] |
| DID \$31 Byte 74          | \$46             | Speed, Vehicle Indicated (Vehicle Speed) (-1.0 sec)                                   | 43 [ 70]         | MPH<br>[km/h] |
| DID \$31 Byte 75          | \$51             | Speed, Vehicle Indicated (Vehicle Speed) (-1.5 sec)                                   | 50 [ 81]         | MPH<br>[km/h] |
| DID \$31 Byte 76          | \$5B             | Speed, Vehicle Indicated (Vehicle Speed) (-2.0 sec)                                   | 57 [ 91]         | MPH<br>[km/h] |
| DID \$31 Byte 77          | \$66             | Speed, Vehicle Indicated (Vehicle Speed)(-2.5 sec)                                    | 63 [ 102]        | MPH<br>[km/h] |
| DID \$31 Byte 78          | \$6D             | Speed, Vehicle Indicated (Vehicle Speed) (-3.0 sec)                                   | 68 [ 109]        | MPH<br>[km/h] |
| DID \$31 Byte 79          | \$71             | Speed, Vehicle Indicated (Vehicle Speed) (-3.5 sec)                                   | 70 [ 113]        | MPH<br>[km/h] |
| DID \$31 Byte 80          | \$72             | Speed, Vehicle Indicated (Vehicle Speed) (-4.0 sec)                                   | 71 [ 114]        | MPH<br>[km/h] |
| DID \$31 Byte 81          | \$72             | Speed, Vehicle Indicated (Vehicle Speed) (-4.5 sec)                                   | 71 [ 114]        | MPH<br>[km/h] |
| DID \$31 Byte 82          | \$72             | Speed, Vehicle Indicated (Vehicle Speed)(-5.0 sec)                                    | 71 [ 114]        | MPH<br>[km/h] |
| DID \$31 Byte 83 bits 7-6 | \$00             | Low Tire Pressure Warning Lamp Status 0.5 Seconds Prior to Time Zero                  | Off              |               |
| DID \$31 Byte 83 bits 5-4 | \$00             | Frontal Air Bag Warning Lamp (SIR Warning Lamp Status 0.5 Seconds Prior to Time Zero) | Off              |               |
| DID \$31 Bytes 84-85      | \$7092           | SIR Warning Lamp ON/OFF Time Continuously                                             | 288180           | seconds       |
| DID \$31 Bytes 86-87      | \$0101           | Number of Ignition Cycles SIR Warning Lamp was ON/OFF Continuously                    | 257              |               |
| DID \$31 Byte 88          | \$FD             | Ignition Cycles Since DTCs Were Last Cleared 0.5 Seconds Prior to Time Zero           | 253              |               |
| DID \$31 Bytes 89-90      | \$0000           | DTC number                                                                            | N/A              |               |
| DID \$31 Byte 91          | \$00             | DTC fault type                                                                        | N/A              |               |
| DID \$31 Bytes 92-93      | \$0000           | DTC number                                                                            | N/A              |               |
| DID \$31 Byte 94          | \$00             | DTC fault type                                                                        | N/A              |               |
| DID \$31 Bytes 95-96      | \$0000           | DTC number                                                                            | N/A              |               |
| DID \$31 Byte 97          | \$00             | DTC fault type                                                                        | N/A              |               |
| DID \$31 Bytes 98-99      | \$0000           | DTC number                                                                            | N/A              |               |
| DID \$31 Byte 100         | \$00             | DTC fault type                                                                        | N/A              |               |



| Data Location          | Data Value (Hex) | Parameter Descriptor                                                                                                                                         | Translated Value   | Units         |
|------------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|---------------|
| DID \$31 Bytes 101-102 | \$0000           | DTC number                                                                                                                                                   | N/A                |               |
| DID \$31 Byte 103      | \$00             | DTC fault type                                                                                                                                               | N/A                |               |
| DID \$31 Bytes 104-105 | \$0000           | DTC number                                                                                                                                                   | N/A                |               |
| DID \$31 Byte 106      | \$00             | DTC fault type                                                                                                                                               | N/A                |               |
| DID \$31 Bytes 107-108 | \$0000           | DTC number                                                                                                                                                   | N/A                |               |
| DID \$31 Byte 109      | \$00             | DTC fault type                                                                                                                                               | N/A                |               |
| DID \$31 Bytes 110-111 | \$0000           | DTC number                                                                                                                                                   | N/A                |               |
| DID \$31 Byte 112      | \$00             | DTC fault type                                                                                                                                               | N/A                |               |
| DID \$31 Bytes 113-114 | \$8052           | DTC number                                                                                                                                                   | B0052              |               |
| DID \$31 Byte 115      | \$00             | DTC fault type                                                                                                                                               | \$00               |               |
| DID \$31 Byte 116      | \$9E             | Maximum Delta-V, Longitudinal (Maximum Longitudinal SDM Recorded Vehicle Velocity Change for FSR Event)                                                      | 19 [ 31]           | MPH<br>[km/h] |
| DID \$31 Byte 117      | \$5B             | Time, Maximum Delta-V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change)                                                 | 182                | msec          |
| DID \$31 Byte 118      | \$7F             | Maximum Delta-V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event)                                                                | 0 [ 0]             | MPH<br>[km/h] |
| DID \$31 Byte 119      | \$19             | Time Maximum Delta-V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change)                                              | 50                 | msec          |
| DID \$31 Byte 120      | \$FF             | Frontal Air Bag Deployment, Time to 1st Stage Deployment, Driver (Driver 1st Stage Time From Time Zero to Deployment Command Criteria Met)                   | Data Not Available | msec          |
| DID \$31 Byte 121      | \$FF             | Frontal Air Bag Deployment, Time to 2nd Stage, Driver (Driver 2nd Stage Time From Time Zero to Deployment Command Criteria Met)                              | Data Not Available | msec          |
| DID \$31 Byte 122      | \$FF             | Frontal Air Bag Deployment, Time to 1st Stage Deployment, Right Front Passenger (Passenger 1st Stage Time From Time Zero to Deployment Command Criteria Met) | Data Not Available | msec          |
| DID \$31 Byte 123      | \$FF             | Frontal Air Bag Deployment, Time to 2nd Stage, Right Front Passenger (Passenger 2nd Stage Time From Time Zero to Deployment Command Criteria Met)            | Data Not Available | msec          |
| DID \$31 Byte 124      | \$FF             | Side air bag deployment, time to deploy, driver (Driver Thorax/Curtain Time From Time Zero to Deployment Command Criteria Met)                               | Data Not Available | msec          |
| DID \$31 Byte 125      | \$FF             | Side air bag deployment, time to deploy, right front passenger (Passenger Thorax/Curtain Time From Time Zero to Deployment Command Criteria Met)             | Data Not Available | msec          |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                                                                                            | Translated Value | Units         |
|-------------------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------|
| DID \$31 Byte 126 | \$41             | Pretensioner Deployment, Time to Fire, Driver (Driver Pretensioner Time From Time Zero to Deployment Loop #1 or Loop #2 Command Criteria Met)                   | 65               | msec          |
| DID \$31 Byte 127 | \$41             | Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #1 or Loop #2 Command Criteria Met) | 65               | msec          |
| DID \$31 Byte 128 | \$81             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (10 ms)                                                                 | 1.2 [2]          | MPH<br>[km/h] |
| DID \$31 Byte 129 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (10 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 130 | \$82             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (20 ms)                                                                 | 1.9 [3]          | MPH<br>[km/h] |
| DID \$31 Byte 131 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (20 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 132 | \$85             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (30 ms)                                                                 | 3.7 [6]          | MPH<br>[km/h] |
| DID \$31 Byte 133 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (30 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 134 | \$88             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (40 ms)                                                                 | 5.6 [9]          | MPH<br>[km/h] |
| DID \$31 Byte 135 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (40 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 136 | \$8A             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (50 ms)                                                                 | 6.8 [11]         | MPH<br>[km/h] |
| DID \$31 Byte 137 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (50 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 138 | \$8D             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (60 ms)                                                                 | 8.7 [14]         | MPH<br>[km/h] |
| DID \$31 Byte 139 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (60 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 140 | \$90             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (70 ms)                                                                 | 10.6 [17]        | MPH<br>[km/h] |
| DID \$31 Byte 141 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (70 ms)                                                                      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 142 | \$92             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (80 ms)                                                                 | 11.8 [19]        | MPH<br>[km/h] |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units         |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|---------------|
| DID \$31 Byte 143 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (80 ms)       | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 144 | \$94             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (90 ms)  | 13 [21]          | MPH<br>[km/h] |
| DID \$31 Byte 145 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (90 ms)       | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 146 | \$96             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (100 ms) | 14.3 [23]        | MPH<br>[km/h] |
| DID \$31 Byte 147 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (100 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 148 | \$98             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (110 ms) | 15.5 [25]        | MPH<br>[km/h] |
| DID \$31 Byte 149 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (110 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 150 | \$99             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (120 ms) | 16.2 [26]        | MPH<br>[km/h] |
| DID \$31 Byte 151 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (120 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 152 | \$9B             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (130 ms) | 17.4 [28]        | MPH<br>[km/h] |
| DID \$31 Byte 153 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (130 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 154 | \$9B             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (140 ms) | 17.4 [28]        | MPH<br>[km/h] |
| DID \$31 Byte 155 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (140 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 156 | \$9C             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (150 ms) | 18 [29]          | MPH<br>[km/h] |
| DID \$31 Byte 157 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (150 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 158 | \$9D             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (160 ms) | 18.6 [30]        | MPH<br>[km/h] |
| DID \$31 Byte 159 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (160 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 160 | \$9D             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (170 ms) | 18.6 [30]        | MPH<br>[km/h] |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units         |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|---------------|
| DID \$31 Byte 161 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (170 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 162 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (180 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 163 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (180 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 164 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (190 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 165 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (190 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 166 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (200 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 167 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (200 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 168 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (210 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 169 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (210 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 170 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (220 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 171 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (220 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 172 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (230 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 173 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (230 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 174 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (240 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 175 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (240 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 176 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (250 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 177 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (250 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 178 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (260 ms) | 19.3 [31]        | MPH<br>[km/h] |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units         |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|---------------|
| DID \$31 Byte 179 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (260 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 180 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (270 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 181 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (270 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 182 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (280 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 183 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (280 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 184 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (290 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 185 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (290 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 186 | \$9E             | Delta-V, Longitudinal (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (300 ms) | 19.3 [31]        | MPH<br>[km/h] |
| DID \$31 Byte 187 | \$7F             | Delta-V, Lateral (SDM Recorded Vehicle Longitudinal Velocity Change for FSR Event) (300 ms)      | 0 [0]            | MPH<br>[km/h] |
| DID \$31 Byte 188 | \$99             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (2 ms)  | 10.2             | G             |
| DID \$31 Byte 189 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (2 ms)            | -0.2             | G             |
| DID \$31 Byte 190 | \$99             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (4 ms)  | 10.2             | G             |
| DID \$31 Byte 191 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (4 ms)            | -1.0             | G             |
| DID \$31 Byte 192 | \$89             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (6 ms)  | 3.8              | G             |
| DID \$31 Byte 193 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (6 ms)            | -0.2             | G             |
| DID \$31 Byte 194 | \$86             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (8 ms)  | 2.6              | G             |
| DID \$31 Byte 195 | \$7B             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (8 ms)            | -1.8             | G             |
| DID \$31 Byte 196 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (10 ms) | 1.0              | G             |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 197 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (10 ms)           | -0.2             | G     |
| DID \$31 Byte 198 | \$89             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (12 ms) | 3.8              | G     |
| DID \$31 Byte 199 | \$7B             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (12 ms)           | -1.8             | G     |
| DID \$31 Byte 200 | \$8A             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (14 ms) | 4.2              | G     |
| DID \$31 Byte 201 | \$84             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (14 ms)           | 1.8              | G     |
| DID \$31 Byte 202 | \$8B             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (16 ms) | 4.6              | G     |
| DID \$31 Byte 203 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (16 ms)           | -0.6             | G     |
| DID \$31 Byte 204 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (18 ms) | 5.4              | G     |
| DID \$31 Byte 205 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (18 ms)           | 0.6              | G     |
| DID \$31 Byte 206 | \$86             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (20 ms) | 2.6              | G     |
| DID \$31 Byte 207 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (20 ms)           | -0.6             | G     |
| DID \$31 Byte 208 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (22 ms) | 5.0              | G     |
| DID \$31 Byte 209 | \$7C             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (22 ms)           | -1.4             | G     |
| DID \$31 Byte 210 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (24 ms) | 5.0              | G     |
| DID \$31 Byte 211 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (24 ms)           | -0.6             | G     |
| DID \$31 Byte 212 | \$92             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (26 ms) | 7.4              | G     |
| DID \$31 Byte 213 | \$7C             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (26 ms)           | -1.4             | G     |
| DID \$31 Byte 214 | \$93             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (28 ms) | 7.8              | G     |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 215 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (28 ms)           | -0.6             | G     |
| DID \$31 Byte 216 | \$96             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (30 ms) | 9.0              | G     |
| DID \$31 Byte 217 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (30 ms)           | -0.2             | G     |
| DID \$31 Byte 218 | \$95             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (32 ms) | 8.6              | G     |
| DID \$31 Byte 219 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (32 ms)           | -0.2             | G     |
| DID \$31 Byte 220 | \$91             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (34 ms) | 7.0              | G     |
| DID \$31 Byte 221 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (34 ms)           | -1.0             | G     |
| DID \$31 Byte 222 | \$8E             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (36 ms) | 5.8              | G     |
| DID \$31 Byte 223 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (36 ms)           | 0.2              | G     |
| DID \$31 Byte 224 | \$92             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (38 ms) | 7.4              | G     |
| DID \$31 Byte 225 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (38 ms)           | -1.0             | G     |
| DID \$31 Byte 226 | \$95             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (40 ms) | 8.6              | G     |
| DID \$31 Byte 227 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (40 ms)           | -1.0             | G     |
| DID \$31 Byte 228 | \$8E             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (42 ms) | 5.8              | G     |
| DID \$31 Byte 229 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (42 ms)           | 0.2              | G     |
| DID \$31 Byte 230 | \$92             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (44 ms) | 7.4              | G     |
| DID \$31 Byte 231 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (44 ms)           | 0.2              | G     |
| DID \$31 Byte 232 | \$95             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (46 ms) | 8.6              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 233 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (46 ms)           | -0.2             | G     |
| DID \$31 Byte 234 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (48 ms) | 5.0              | G     |
| DID \$31 Byte 235 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (48 ms)           | -0.6             | G     |
| DID \$31 Byte 236 | \$94             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (50 ms) | 8.2              | G     |
| DID \$31 Byte 237 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (50 ms)           | -1.0             | G     |
| DID \$31 Byte 238 | \$98             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (52 ms) | 9.8              | G     |
| DID \$31 Byte 239 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (52 ms)           | -0.6             | G     |
| DID \$31 Byte 240 | \$9A             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (54 ms) | 10.6             | G     |
| DID \$31 Byte 241 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (54 ms)           | 0.6              | G     |
| DID \$31 Byte 242 | \$92             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (56 ms) | 7.4              | G     |
| DID \$31 Byte 243 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (56 ms)           | 0.2              | G     |
| DID \$31 Byte 244 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (58 ms) | 5.0              | G     |
| DID \$31 Byte 245 | \$83             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (58 ms)           | 1.4              | G     |
| DID \$31 Byte 246 | \$8E             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (60 ms) | 5.8              | G     |
| DID \$31 Byte 247 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (60 ms)           | -0.2             | G     |
| DID \$31 Byte 248 | \$90             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (62 ms) | 6.6              | G     |
| DID \$31 Byte 249 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (62 ms)           | -0.2             | G     |
| DID \$31 Byte 250 | \$92             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (64 ms) | 7.4              | G     |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                             | Translated Value | Units |
|-------------------|------------------|--------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 251 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (64 ms)           | -1.0             | G     |
| DID \$31 Byte 252 | \$96             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (66 ms) | 9.0              | G     |
| DID \$31 Byte 253 | \$85             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (66 ms)           | 2.2              | G     |
| DID \$31 Byte 254 | \$92             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (68 ms) | 7.4              | G     |
| DID \$31 Byte 255 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (68 ms)           | -0.2             | G     |
| DID \$31 Byte 256 | \$90             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (70 ms) | 6.6              | G     |
| DID \$31 Byte 257 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (70 ms)           | -0.2             | G     |
| DID \$31 Byte 258 | \$8E             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (72 ms) | 5.8              | G     |
| DID \$31 Byte 259 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (72 ms)           | -0.2             | G     |
| DID \$31 Byte 260 | \$90             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (74 ms) | 6.6              | G     |
| DID \$31 Byte 261 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (74 ms)           | 0.6              | G     |
| DID \$31 Byte 262 | \$93             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (76 ms) | 7.8              | G     |
| DID \$31 Byte 263 | \$84             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (76 ms)           | 1.8              | G     |
| DID \$31 Byte 264 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (78 ms) | 5.4              | G     |
| DID \$31 Byte 265 | \$76             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (78 ms)           | -3.8             | G     |
| DID \$31 Byte 266 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (80 ms) | 5.0              | G     |
| DID \$31 Byte 267 | \$87             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (80 ms)           | 3.0              | G     |
| DID \$31 Byte 268 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (82 ms) | 1.8              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 269 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (82 ms)            | -1.0             | G     |
| DID \$31 Byte 270 | \$93             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (84 ms)  | 7.8              | G     |
| DID \$31 Byte 271 | \$82             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (84 ms)            | 1.0              | G     |
| DID \$31 Byte 272 | \$91             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (86 ms)  | 7.0              | G     |
| DID \$31 Byte 273 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (86 ms)            | -1.0             | G     |
| DID \$31 Byte 274 | \$8A             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (88 ms)  | 4.2              | G     |
| DID \$31 Byte 275 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (88 ms)            | 0.6              | G     |
| DID \$31 Byte 276 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (90 ms)  | 5.4              | G     |
| DID \$31 Byte 277 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (90 ms)            | -0.6             | G     |
| DID \$31 Byte 278 | \$8A             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (92 ms)  | 4.2              | G     |
| DID \$31 Byte 279 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (92 ms)            | -0.6             | G     |
| DID \$31 Byte 280 | \$90             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (94 ms)  | 6.6              | G     |
| DID \$31 Byte 281 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (94 ms)            | 0.6              | G     |
| DID \$31 Byte 282 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (96 ms)  | 5.4              | G     |
| DID \$31 Byte 283 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (96 ms)            | 0.6              | G     |
| DID \$31 Byte 284 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (98 ms)  | 5.0              | G     |
| DID \$31 Byte 285 | \$83             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (98 ms)            | 1.4              | G     |
| DID \$31 Byte 286 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (100 ms) | 5.4              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 287 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (100 ms)           | -0.2             | G     |
| DID \$31 Byte 288 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (102 ms) | 5.4              | G     |
| DID \$31 Byte 289 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (102 ms)           | -0.2             | G     |
| DID \$31 Byte 290 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (104 ms) | 5.4              | G     |
| DID \$31 Byte 291 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (104 ms)           | 0.2              | G     |
| DID \$31 Byte 292 | \$8C             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (106 ms) | 5.0              | G     |
| DID \$31 Byte 293 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (106 ms)           | -0.6             | G     |
| DID \$31 Byte 294 | \$8D             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (108 ms) | 5.4              | G     |
| DID \$31 Byte 295 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (108 ms)           | 0.2              | G     |
| DID \$31 Byte 296 | \$88             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (110 ms) | 3.4              | G     |
| DID \$31 Byte 297 | \$81             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (110 ms)           | 0.6              | G     |
| DID \$31 Byte 298 | \$88             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (112 ms) | 3.4              | G     |
| DID \$31 Byte 299 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (112 ms)           | -0.6             | G     |
| DID \$31 Byte 300 | \$86             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (114 ms) | 2.6              | G     |
| DID \$31 Byte 301 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (114 ms)           | -0.2             | G     |
| DID \$31 Byte 302 | \$87             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (116 ms) | 3.0              | G     |
| DID \$31 Byte 303 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (116 ms)           | -1.0             | G     |
| DID \$31 Byte 304 | \$88             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (118 ms) | 3.4              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 305 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (118 ms)           | -0.2             | G     |
| DID \$31 Byte 306 | \$88             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (120 ms) | 3.4              | G     |
| DID \$31 Byte 307 | \$80             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (120 ms)           | 0.2              | G     |
| DID \$31 Byte 308 | \$85             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (122 ms) | 2.2              | G     |
| DID \$31 Byte 309 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (122 ms)           | -0.2             | G     |
| DID \$31 Byte 310 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (124 ms) | 1.8              | G     |
| DID \$31 Byte 311 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (124 ms)           | -0.2             | G     |
| DID \$31 Byte 312 | \$86             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (126 ms) | 2.6              | G     |
| DID \$31 Byte 313 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (126 ms)           | -0.2             | G     |
| DID \$31 Byte 314 | \$88             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (128 ms) | 3.4              | G     |
| DID \$31 Byte 315 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (128 ms)           | -0.2             | G     |
| DID \$31 Byte 316 | \$8A             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (130 ms) | 4.2              | G     |
| DID \$31 Byte 317 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (130 ms)           | -0.2             | G     |
| DID \$31 Byte 318 | \$89             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (132 ms) | 3.8              | G     |
| DID \$31 Byte 319 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (132 ms)           | -0.2             | G     |
| DID \$31 Byte 320 | \$85             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (134 ms) | 2.2              | G     |
| DID \$31 Byte 321 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (134 ms)           | -0.2             | G     |
| DID \$31 Byte 322 | \$83             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (136 ms) | 1.4              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 323 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (136 ms)           | -0.2             | G     |
| DID \$31 Byte 324 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (138 ms) | 1.8              | G     |
| DID \$31 Byte 325 | \$7D             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (138 ms)           | -1.0             | G     |
| DID \$31 Byte 326 | \$83             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (140 ms) | 1.4              | G     |
| DID \$31 Byte 327 | \$7C             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (140 ms)           | -1.4             | G     |
| DID \$31 Byte 328 | \$83             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (142 ms) | 1.4              | G     |
| DID \$31 Byte 329 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (142 ms)           | -0.2             | G     |
| DID \$31 Byte 330 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (144 ms) | 1.8              | G     |
| DID \$31 Byte 331 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (144 ms)           | -0.6             | G     |
| DID \$31 Byte 332 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (146 ms) | 1.8              | G     |
| DID \$31 Byte 333 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (146 ms)           | -0.2             | G     |
| DID \$31 Byte 334 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (148 ms) | 1.8              | G     |
| DID \$31 Byte 335 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (148 ms)           | -0.2             | G     |
| DID \$31 Byte 336 | \$84             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (150 ms) | 1.8              | G     |
| DID \$31 Byte 337 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (150 ms)           | -0.2             | G     |
| DID \$31 Byte 338 | \$83             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (152 ms) | 1.4              | G     |
| DID \$31 Byte 339 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (152 ms)           | -0.2             | G     |
| DID \$31 Byte 340 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (154 ms) | 1.0              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 341 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (154 ms)           | -0.2             | G     |
| DID \$31 Byte 342 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (156 ms) | 1.0              | G     |
| DID \$31 Byte 343 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (156 ms)           | -0.2             | G     |
| DID \$31 Byte 344 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (158 ms) | 1.0              | G     |
| DID \$31 Byte 345 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (158 ms)           | -0.2             | G     |
| DID \$31 Byte 346 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (160 ms) | 1.0              | G     |
| DID \$31 Byte 347 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (160 ms)           | -0.2             | G     |
| DID \$31 Byte 348 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (162 ms) | 0.6              | G     |
| DID \$31 Byte 349 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (162 ms)           | -0.2             | G     |
| DID \$31 Byte 350 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (164 ms) | 0.6              | G     |
| DID \$31 Byte 351 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (164 ms)           | -0.2             | G     |
| DID \$31 Byte 352 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (166 ms) | 0.6              | G     |
| DID \$31 Byte 353 | \$7E             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (166 ms)           | -0.6             | G     |
| DID \$31 Byte 354 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (168 ms) | 0.6              | G     |
| DID \$31 Byte 355 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (168 ms)           | -0.2             | G     |
| DID \$31 Byte 356 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (170 ms) | 0.6              | G     |
| DID \$31 Byte 357 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (170 ms)           | -0.2             | G     |
| DID \$31 Byte 358 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (172 ms) | 0.6              | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 359 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (172 ms)           | -0.2             | G     |
| DID \$31 Byte 360 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (174 ms) | 1.0              | G     |
| DID \$31 Byte 361 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (174 ms)           | -0.2             | G     |
| DID \$31 Byte 362 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (176 ms) | 1.0              | G     |
| DID \$31 Byte 363 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (176 ms)           | -0.2             | G     |
| DID \$31 Byte 364 | \$82             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (178 ms) | 1.0              | G     |
| DID \$31 Byte 365 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (178 ms)           | -0.2             | G     |
| DID \$31 Byte 366 | \$81             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (180 ms) | 0.6              | G     |
| DID \$31 Byte 367 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (180 ms)           | -0.2             | G     |
| DID \$31 Byte 368 | \$80             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (182 ms) | 0.2              | G     |
| DID \$31 Byte 369 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (182 ms)           | -0.2             | G     |
| DID \$31 Byte 370 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (184 ms) | -0.2             | G     |
| DID \$31 Byte 371 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (184 ms)           | -0.2             | G     |
| DID \$31 Byte 372 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (186 ms) | -0.2             | G     |
| DID \$31 Byte 373 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (186 ms)           | -0.2             | G     |
| DID \$31 Byte 374 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (188 ms) | -0.2             | G     |
| DID \$31 Byte 375 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (188 ms)           | -0.2             | G     |
| DID \$31 Byte 376 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (190 ms) | -0.2             | G     |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 377 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (190 ms)           | -0.2             | G     |
| DID \$31 Byte 378 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (192 ms) | -0.2             | G     |
| DID \$31 Byte 379 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (192 ms)           | -0.2             | G     |
| DID \$31 Byte 380 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (194 ms) | -0.2             | G     |
| DID \$31 Byte 381 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (194 ms)           | -0.2             | G     |
| DID \$31 Byte 382 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (196 ms) | -0.2             | G     |
| DID \$31 Byte 383 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (196 ms)           | -0.2             | G     |
| DID \$31 Byte 384 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (198 ms) | -0.2             | G     |
| DID \$31 Byte 385 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (198 ms)           | -0.2             | G     |
| DID \$31 Byte 386 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (200 ms) | -0.2             | G     |
| DID \$31 Byte 387 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (200 ms)           | -0.2             | G     |
| DID \$31 Byte 388 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (202 ms) | -0.2             | G     |
| DID \$31 Byte 389 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (202 ms)           | -0.2             | G     |
| DID \$31 Byte 390 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (204 ms) | -0.2             | G     |
| DID \$31 Byte 391 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (204 ms)           | -0.2             | G     |
| DID \$31 Byte 392 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (206 ms) | -0.2             | G     |
| DID \$31 Byte 393 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (206 ms)           | -0.2             | G     |
| DID \$31 Byte 394 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (208 ms) | -0.2             | G     |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 395 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (208 ms)           | -0.2             | G     |
| DID \$31 Byte 396 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (210 ms) | -0.2             | G     |
| DID \$31 Byte 397 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (210 ms)           | -0.2             | G     |
| DID \$31 Byte 398 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (212 ms) | -0.2             | G     |
| DID \$31 Byte 399 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (212 ms)           | -0.2             | G     |
| DID \$31 Byte 400 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (214 ms) | -0.2             | G     |
| DID \$31 Byte 401 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (214 ms)           | -0.2             | G     |
| DID \$31 Byte 402 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (216 ms) | -0.2             | G     |
| DID \$31 Byte 403 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (216 ms)           | -0.2             | G     |
| DID \$31 Byte 404 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (218 ms) | -0.2             | G     |
| DID \$31 Byte 405 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (218 ms)           | -0.2             | G     |
| DID \$31 Byte 406 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (220 ms) | -0.2             | G     |
| DID \$31 Byte 407 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (220 ms)           | -0.2             | G     |
| DID \$31 Byte 408 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (222 ms) | -0.2             | G     |
| DID \$31 Byte 409 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (222 ms)           | -0.2             | G     |
| DID \$31 Byte 410 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (224 ms) | -0.2             | G     |
| DID \$31 Byte 411 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (224 ms)           | -0.2             | G     |
| DID \$31 Byte 412 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (226 ms) | -0.2             | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 413 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (226 ms)           | -0.2             | G     |
| DID \$31 Byte 414 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (228 ms) | -0.2             | G     |
| DID \$31 Byte 415 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (228 ms)           | -0.2             | G     |
| DID \$31 Byte 416 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (230 ms) | -0.2             | G     |
| DID \$31 Byte 417 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (230 ms)           | -0.2             | G     |
| DID \$31 Byte 418 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (232 ms) | -0.2             | G     |
| DID \$31 Byte 419 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (232 ms)           | -0.2             | G     |
| DID \$31 Byte 420 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (234 ms) | -0.2             | G     |
| DID \$31 Byte 421 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (234 ms)           | -0.2             | G     |
| DID \$31 Byte 422 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (236 ms) | -0.2             | G     |
| DID \$31 Byte 423 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (236 ms)           | -0.2             | G     |
| DID \$31 Byte 424 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (238 ms) | -0.2             | G     |
| DID \$31 Byte 425 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (238 ms)           | -0.2             | G     |
| DID \$31 Byte 426 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (240 ms) | -0.2             | G     |
| DID \$31 Byte 427 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (240 ms)           | -0.2             | G     |
| DID \$31 Byte 428 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (242 ms) | -0.2             | G     |
| DID \$31 Byte 429 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (242 ms)           | -0.2             | G     |
| DID \$31 Byte 430 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (244 ms) | -0.2             | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 431 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (244 ms)           | -0.2             | G     |
| DID \$31 Byte 432 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (246 ms) | -0.2             | G     |
| DID \$31 Byte 433 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (246 ms)           | -0.2             | G     |
| DID \$31 Byte 434 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (248 ms) | -0.2             | G     |
| DID \$31 Byte 435 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (248 ms)           | -0.2             | G     |
| DID \$31 Byte 436 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (250 ms) | -0.2             | G     |
| DID \$31 Byte 437 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (250 ms)           | -0.2             | G     |
| DID \$31 Byte 438 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (252 ms) | -0.2             | G     |
| DID \$31 Byte 439 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (252 ms)           | -0.2             | G     |
| DID \$31 Byte 440 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (254 ms) | -0.2             | G     |
| DID \$31 Byte 441 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (254 ms)           | -0.2             | G     |
| DID \$31 Byte 442 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (256 ms) | -0.2             | G     |
| DID \$31 Byte 443 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (256 ms)           | -0.2             | G     |
| DID \$31 Byte 444 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (258 ms) | -0.2             | G     |
| DID \$31 Byte 445 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (258 ms)           | -0.2             | G     |
| DID \$31 Byte 446 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (260 ms) | -0.2             | G     |
| DID \$31 Byte 447 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (260 ms)           | -0.2             | G     |
| DID \$31 Byte 448 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (262 ms) | -0.2             | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 449 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (262 ms)           | -0.2             | G     |
| DID \$31 Byte 450 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (264 ms) | -0.2             | G     |
| DID \$31 Byte 451 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (264ms)            | -0.2             | G     |
| DID \$31 Byte 452 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (266 ms) | -0.2             | G     |
| DID \$31 Byte 453 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (266 ms)           | -0.2             | G     |
| DID \$31 Byte 454 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (268 ms) | -0.2             | G     |
| DID \$31 Byte 455 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (268 ms)           | -0.2             | G     |
| DID \$31 Byte 456 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (270 ms) | -0.2             | G     |
| DID \$31 Byte 457 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (270 ms)           | -0.2             | G     |
| DID \$31 Byte 458 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (272 ms) | -0.2             | G     |
| DID \$31 Byte 459 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (272 ms)           | -0.2             | G     |
| DID \$31 Byte 460 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (274 ms) | -0.2             | G     |
| DID \$31 Byte 461 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (274 ms)           | -0.2             | G     |
| DID \$31 Byte 462 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (276 ms) | -0.2             | G     |
| DID \$31 Byte 463 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (276 ms)           | -0.2             | G     |
| DID \$31 Byte 464 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (278 ms) | -0.2             | G     |
| DID \$31 Byte 465 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (278 ms)           | -0.2             | G     |
| DID \$31 Byte 466 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (280 ms) | -0.2             | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value | Units |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|------------------|-------|
| DID \$31 Byte 467 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (280 ms)           | -0.2             | G     |
| DID \$31 Byte 468 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (282 ms) | -0.2             | G     |
| DID \$31 Byte 469 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (282 ms)           | -0.2             | G     |
| DID \$31 Byte 470 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (284 ms) | -0.2             | G     |
| DID \$31 Byte 471 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (284 ms)           | -0.2             | G     |
| DID \$31 Byte 472 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (286 ms) | -0.2             | G     |
| DID \$31 Byte 473 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (286 ms)           | -0.2             | G     |
| DID \$31 Byte 474 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (288 ms) | -0.2             | G     |
| DID \$31 Byte 475 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (288 ms)           | -0.2             | G     |
| DID \$31 Byte 476 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (290 ms) | -0.2             | G     |
| DID \$31 Byte 477 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (290ms)            | -0.2             | G     |
| DID \$31 Byte 478 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (292 ms) | -0.2             | G     |
| DID \$31 Byte 479 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (292 ms)           | -0.2             | G     |
| DID \$31 Byte 480 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (294 ms) | -0.2             | G     |
| DID \$31 Byte 481 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (294 ms)           | -0.2             | G     |
| DID \$31 Byte 482 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (296 ms) | -0.2             | G     |
| DID \$31 Byte 483 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (296 ms)           | -0.2             | G     |
| DID \$31 Byte 484 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (298 ms) | -0.2             | G     |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                              | Translated Value   | Units   |
|-------------------|------------------|---------------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 485 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (298 ms)           | -0.2               | G       |
| DID \$31 Byte 486 | \$7F             | Longitudinal Acceleration (SDM Recorded Vehicle Longitudinal Acceleration for FSR Event) (300 ms) | -0.2               | G       |
| DID \$31 Byte 487 | \$7F             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (300 ms)           | -0.2               | G       |
| DID \$31 Byte 488 | \$FF             | SDM Recorded Vehicle Roll Rate (-700 ms)                                                          | Data Not Available | deg/sec |
| DID \$31 Byte 489 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-700 ms)     | Data Not Available | G       |
| DID \$31 Byte 490 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-700 ms)     | Data Not Available | G       |
| DID \$31 Byte 491 | \$FF             | SDM Recorded Vehicle Roll Rate (-690 ms)                                                          | Data Not Available | deg/sec |
| DID \$31 Byte 492 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-690 ms)     | Data Not Available | G       |
| DID \$31 Byte 493 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-690 ms)     | Data Not Available | G       |
| DID \$31 Byte 494 | \$FF             | SDM Recorded Vehicle Roll Rate (-680 ms)                                                          | Data Not Available | deg/sec |
| DID \$31 Byte 495 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-680 ms)     | Data Not Available | G       |
| DID \$31 Byte 496 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-680 ms)     | Data Not Available | G       |
| DID \$31 Byte 497 | \$FF             | SDM Recorded Vehicle Roll Rate (-670 ms)                                                          | Data Not Available | deg/sec |
| DID \$31 Byte 498 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-670 ms)     | Data Not Available | G       |
| DID \$31 Byte 499 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-670 ms)     | Data Not Available | G       |
| DID \$31 Byte 500 | \$FF             | SDM Recorded Vehicle Roll Rate (-660 ms)                                                          | Data Not Available | deg/sec |
| DID \$31 Byte 501 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-660 ms)     | Data Not Available | G       |
| DID \$31 Byte 502 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-660 ms)     | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 503 | \$FF             | SDM Recorded Vehicle Roll Rate (-650 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 504 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-650 ms) | Data Not Available | G       |
| DID \$31 Byte 505 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-650 ms) | Data Not Available | G       |
| DID \$31 Byte 506 | \$FF             | SDM Recorded Vehicle Roll Rate (-640 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 507 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-640 ms) | Data Not Available | G       |
| DID \$31 Byte 508 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-640 ms) | Data Not Available | G       |
| DID \$31 Byte 509 | \$FF             | SDM Recorded Vehicle Roll Rate (-630 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 510 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-630 ms) | Data Not Available | G       |
| DID \$31 Byte 511 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-630 ms) | Data Not Available | G       |
| DID \$31 Byte 512 | \$FF             | SDM Recorded Vehicle Roll Rate (-620 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 513 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-620 ms) | Data Not Available | G       |
| DID \$31 Byte 514 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-620 ms) | Data Not Available | G       |
| DID \$31 Byte 515 | \$FF             | SDM Recorded Vehicle Roll Rate (-610 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 516 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-610 ms) | Data Not Available | G       |
| DID \$31 Byte 517 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-610 ms) | Data Not Available | G       |
| DID \$31 Byte 518 | \$FF             | SDM Recorded Vehicle Roll Rate (-600 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 519 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-600 ms) | Data Not Available | G       |
| DID \$31 Byte 520 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-600 ms) | Data Not Available | G       |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 521 | \$FF             | SDM Recorded Vehicle Roll Rate (-590 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 522 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-590 ms) | Data Not Available | G       |
| DID \$31 Byte 523 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-590 ms) | Data Not Available | G       |
| DID \$31 Byte 524 | \$FF             | SDM Recorded Vehicle Roll Rate (-580 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 525 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-580 ms) | Data Not Available | G       |
| DID \$31 Byte 526 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-580 ms) | Data Not Available | G       |
| DID \$31 Byte 527 | \$FF             | SDM Recorded Vehicle Roll Rate (-570 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 528 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-570 ms) | Data Not Available | G       |
| DID \$31 Byte 529 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-570 ms) | Data Not Available | G       |
| DID \$31 Byte 530 | \$FF             | SDM Recorded Vehicle Roll Rate (-560 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 531 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-560 ms) | Data Not Available | G       |
| DID \$31 Byte 532 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-560 ms) | Data Not Available | G       |
| DID \$31 Byte 533 | \$FF             | SDM Recorded Vehicle Roll Rate (-550 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 534 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-550 ms) | Data Not Available | G       |
| DID \$31 Byte 535 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-550 ms) | Data Not Available | G       |
| DID \$31 Byte 536 | \$FF             | SDM Recorded Vehicle Roll Rate (-540 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 537 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-540 ms) | Data Not Available | G       |
| DID \$31 Byte 538 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-540 ms) | Data Not Available | G       |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 539 | \$FF             | SDM Recorded Vehicle Roll Rate (-530 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 540 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-530 ms) | Data Not Available | G       |
| DID \$31 Byte 541 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-530 ms) | Data Not Available | G       |
| DID \$31 Byte 542 | \$FF             | SDM Recorded Vehicle Roll Rate (-520 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 543 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-520 ms) | Data Not Available | G       |
| DID \$31 Byte 544 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-520 ms) | Data Not Available | G       |
| DID \$31 Byte 545 | \$FF             | SDM Recorded Vehicle Roll Rate (-510 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 546 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-510 ms) | Data Not Available | G       |
| DID \$31 Byte 547 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-510 ms) | Data Not Available | G       |
| DID \$31 Byte 548 | \$FF             | SDM Recorded Vehicle Roll Rate (-500 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 549 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-500 ms) | Data Not Available | G       |
| DID \$31 Byte 550 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-500 ms) | Data Not Available | G       |
| DID \$31 Byte 551 | \$FF             | SDM Recorded Vehicle Roll Rate (-490 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 552 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-490 ms) | Data Not Available | G       |
| DID \$31 Byte 553 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-490 ms) | Data Not Available | G       |
| DID \$31 Byte 554 | \$FF             | SDM Recorded Vehicle Roll Rate (-480 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 555 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-480 ms) | Data Not Available | G       |
| DID \$31 Byte 556 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-480 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 557 | \$FF             | SDM Recorded Vehicle Roll Rate (-470 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 558 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-470 ms) | Data Not Available | G       |
| DID \$31 Byte 559 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-470 ms) | Data Not Available | G       |
| DID \$31 Byte 560 | \$FF             | SDM Recorded Vehicle Roll Rate (-460 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 561 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-460 ms) | Data Not Available | G       |
| DID \$31 Byte 562 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-460 ms) | Data Not Available | G       |
| DID \$31 Byte 563 | \$FF             | SDM Recorded Vehicle Roll Rate (-450 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 564 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-450 ms) | Data Not Available | G       |
| DID \$31 Byte 565 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-450 ms) | Data Not Available | G       |
| DID \$31 Byte 566 | \$FF             | SDM Recorded Vehicle Roll Rate (-440 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 567 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-440 ms) | Data Not Available | G       |
| DID \$31 Byte 568 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-440 ms) | Data Not Available | G       |
| DID \$31 Byte 569 | \$FF             | SDM Recorded Vehicle Roll Rate (-430 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 570 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-430 ms) | Data Not Available | G       |
| DID \$31 Byte 571 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-430 ms) | Data Not Available | G       |
| DID \$31 Byte 572 | \$FF             | SDM Recorded Vehicle Roll Rate (-420 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 573 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-420 ms) | Data Not Available | G       |
| DID \$31 Byte 574 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-420 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 575 | \$FF             | SDM Recorded Vehicle Roll Rate (-410 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 576 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-410 ms) | Data Not Available | G       |
| DID \$31 Byte 577 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-410 ms) | Data Not Available | G       |
| DID \$31 Byte 578 | \$FF             | SDM Recorded Vehicle Roll Rate (-400 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 579 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-400 ms) | Data Not Available | G       |
| DID \$31 Byte 580 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-400 ms) | Data Not Available | G       |
| DID \$31 Byte 581 | \$FF             | SDM Recorded Vehicle Roll Rate (-390 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 582 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-390 ms) | Data Not Available | G       |
| DID \$31 Byte 583 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-390 ms) | Data Not Available | G       |
| DID \$31 Byte 584 | \$FF             | SDM Recorded Vehicle Roll Rate (-380 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 585 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-380 ms) | Data Not Available | G       |
| DID \$31 Byte 586 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-380 ms) | Data Not Available | G       |
| DID \$31 Byte 587 | \$FF             | SDM Recorded Vehicle Roll Rate (-370 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 588 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-370 ms) | Data Not Available | G       |
| DID \$31 Byte 589 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-370 ms) | Data Not Available | G       |
| DID \$31 Byte 590 | \$FF             | SDM Recorded Vehicle Roll Rate (-360 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 591 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-360 ms) | Data Not Available | G       |
| DID \$31 Byte 592 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-360 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 593 | \$FF             | SDM Recorded Vehicle Roll Rate (-350 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 594 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-350 ms) | Data Not Available | G       |
| DID \$31 Byte 595 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-350 ms) | Data Not Available | G       |
| DID \$31 Byte 596 | \$FF             | SDM Recorded Vehicle Roll Rate (-340 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 597 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-340 ms) | Data Not Available | G       |
| DID \$31 Byte 598 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-340 ms) | Data Not Available | G       |
| DID \$31 Byte 599 | \$FF             | SDM Recorded Vehicle Roll Rate (-330 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 600 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-330 ms) | Data Not Available | G       |
| DID \$31 Byte 601 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-330 ms) | Data Not Available | G       |
| DID \$31 Byte 602 | \$FF             | SDM Recorded Vehicle Roll Rate (-320 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 603 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-320 ms) | Data Not Available | G       |
| DID \$31 Byte 604 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-320 ms) | Data Not Available | G       |
| DID \$31 Byte 605 | \$FF             | SDM Recorded Vehicle Roll Rate (-310 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 606 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-310 ms) | Data Not Available | G       |
| DID \$31 Byte 607 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-310 ms) | Data Not Available | G       |
| DID \$31 Byte 608 | \$FF             | SDM Recorded Vehicle Roll Rate (-300 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 609 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-300 ms) | Data Not Available | G       |
| DID \$31 Byte 610 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-300 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 611 | \$FF             | SDM Recorded Vehicle Roll Rate (-290 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 612 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-290 ms) | Data Not Available | G       |
| DID \$31 Byte 613 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-290 ms) | Data Not Available | G       |
| DID \$31 Byte 614 | \$FF             | SDM Recorded Vehicle Roll Rate (-280 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 615 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-280 ms) | Data Not Available | G       |
| DID \$31 Byte 616 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-280 ms) | Data Not Available | G       |
| DID \$31 Byte 617 | \$FF             | SDM Recorded Vehicle Roll Rate (-270 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 618 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-270 ms) | Data Not Available | G       |
| DID \$31 Byte 619 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-270 ms) | Data Not Available | G       |
| DID \$31 Byte 620 | \$FF             | SDM Recorded Vehicle Roll Rate (-260 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 621 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-260 ms) | Data Not Available | G       |
| DID \$31 Byte 622 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-260 ms) | Data Not Available | G       |
| DID \$31 Byte 623 | \$FF             | SDM Recorded Vehicle Roll Rate (-250 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 624 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-250 ms) | Data Not Available | G       |
| DID \$31 Byte 625 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-250 ms) | Data Not Available | G       |
| DID \$31 Byte 626 | \$FF             | SDM Recorded Vehicle Roll Rate (-240 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 627 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-240 ms) | Data Not Available | G       |
| DID \$31 Byte 628 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-240 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 629 | \$FF             | SDM Recorded Vehicle Roll Rate (-230 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 630 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-230 ms) | Data Not Available | G       |
| DID \$31 Byte 631 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-230 ms) | Data Not Available | G       |
| DID \$31 Byte 632 | \$FF             | SDM Recorded Vehicle Roll Rate (-220 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 633 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-220 ms) | Data Not Available | G       |
| DID \$31 Byte 634 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-220 ms) | Data Not Available | G       |
| DID \$31 Byte 635 | \$FF             | SDM Recorded Vehicle Roll Rate (-210 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 636 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-210 ms) | Data Not Available | G       |
| DID \$31 Byte 637 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-210 ms) | Data Not Available | G       |
| DID \$31 Byte 638 | \$FF             | SDM Recorded Vehicle Roll Rate (-200 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 639 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-200 ms) | Data Not Available | G       |
| DID \$31 Byte 640 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-200 ms) | Data Not Available | G       |
| DID \$31 Byte 641 | \$FF             | SDM Recorded Vehicle Roll Rate (-190 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 642 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-190 ms) | Data Not Available | G       |
| DID \$31 Byte 643 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-190 ms) | Data Not Available | G       |
| DID \$31 Byte 644 | \$FF             | SDM Recorded Vehicle Roll Rate (-180 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 645 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-180 ms) | Data Not Available | G       |
| DID \$31 Byte 646 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-180 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 647 | \$FF             | SDM Recorded Vehicle Roll Rate (-170 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 648 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-170 ms) | Data Not Available | G       |
| DID \$31 Byte 649 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-170 ms) | Data Not Available | G       |
| DID \$31 Byte 650 | \$FF             | SDM Recorded Vehicle Roll Rate (-160 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 651 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-160 ms) | Data Not Available | G       |
| DID \$31 Byte 652 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-160 ms) | Data Not Available | G       |
| DID \$31 Byte 653 | \$FF             | SDM Recorded Vehicle Roll Rate (-150 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 654 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-150 ms) | Data Not Available | G       |
| DID \$31 Byte 655 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-150 ms) | Data Not Available | G       |
| DID \$31 Byte 656 | \$FF             | SDM Recorded Vehicle Roll Rate (-140 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 657 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-140 ms) | Data Not Available | G       |
| DID \$31 Byte 658 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-140 ms) | Data Not Available | G       |
| DID \$31 Byte 659 | \$FF             | SDM Recorded Vehicle Roll Rate (-130 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 660 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-130 ms) | Data Not Available | G       |
| DID \$31 Byte 661 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-130 ms) | Data Not Available | G       |
| DID \$31 Byte 662 | \$FF             | SDM Recorded Vehicle Roll Rate (-120 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 663 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-120 ms) | Data Not Available | G       |
| DID \$31 Byte 664 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-120 ms) | Data Not Available | G       |



| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                          | Translated Value   | Units   |
|-------------------|------------------|-----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 665 | \$FF             | SDM Recorded Vehicle Roll Rate (-110 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 666 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-110 ms) | Data Not Available | G       |
| DID \$31 Byte 667 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-110 ms) | Data Not Available | G       |
| DID \$31 Byte 668 | \$FF             | SDM Recorded Vehicle Roll Rate (-100 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 669 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-100 ms) | Data Not Available | G       |
| DID \$31 Byte 670 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-100 ms) | Data Not Available | G       |
| DID \$31 Byte 671 | \$FF             | SDM Recorded Vehicle Roll Rate (-90 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 672 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-90 ms)  | Data Not Available | G       |
| DID \$31 Byte 673 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-90 ms)  | Data Not Available | G       |
| DID \$31 Byte 674 | \$FF             | SDM Recorded Vehicle Roll Rate (-80 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 675 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-80 ms)  | Data Not Available | G       |
| DID \$31 Byte 676 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-80 ms)  | Data Not Available | G       |
| DID \$31 Byte 677 | \$FF             | SDM Recorded Vehicle Roll Rate (-70 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 678 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-70 ms)  | Data Not Available | G       |
| DID \$31 Byte 679 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-70 ms)  | Data Not Available | G       |
| DID \$31 Byte 680 | \$FF             | SDM Recorded Vehicle Roll Rate (-60 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 681 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-60 ms)  | Data Not Available | G       |
| DID \$31 Byte 682 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-60 ms)  | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                         | Translated Value   | Units   |
|-------------------|------------------|----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 683 | \$FF             | SDM Recorded Vehicle Roll Rate (-50 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 684 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-50 ms) | Data Not Available | G       |
| DID \$31 Byte 685 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-50 ms) | Data Not Available | G       |
| DID \$31 Byte 686 | \$FF             | SDM Recorded Vehicle Roll Rate (-40 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 687 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-40 ms) | Data Not Available | G       |
| DID \$31 Byte 688 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-40 ms) | Data Not Available | G       |
| DID \$31 Byte 689 | \$FF             | SDM Recorded Vehicle Roll Rate (-30 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 690 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-30 ms) | Data Not Available | G       |
| DID \$31 Byte 691 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-30 ms) | Data Not Available | G       |
| DID \$31 Byte 692 | \$FF             | SDM Recorded Vehicle Roll Rate (-20 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 693 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (-20 ms) | Data Not Available | G       |
| DID \$31 Byte 694 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (-20 ms) | Data Not Available | G       |
| DID \$31 Byte 695 | \$FF             | SDM Recorded Vehicle Roll Rate (10 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 696 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (10 ms)  | Data Not Available | G       |
| DID \$31 Byte 697 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (10 ms)  | Data Not Available | G       |
| DID \$31 Byte 698 | \$FF             | SDM Recorded Vehicle Roll Rate (0 ms)                                                        | Data Not Available | deg/sec |
| DID \$31 Byte 699 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (0 ms)   | Data Not Available | G       |
| DID \$31 Byte 700 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (0 ms)   | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                        | Translated Value   | Units   |
|-------------------|------------------|---------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 701 | \$FF             | SDM Recorded Vehicle Roll Rate (10 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 702 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (10 ms) | Data Not Available | G       |
| DID \$31 Byte 703 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (10 ms) | Data Not Available | G       |
| DID \$31 Byte 704 | \$FF             | SDM Recorded Vehicle Roll Rate (20 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 705 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (20 ms) | Data Not Available | G       |
| DID \$31 Byte 706 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (20 ms) | Data Not Available | G       |
| DID \$31 Byte 707 | \$FF             | SDM Recorded Vehicle Roll Rate (30 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 708 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (30 ms) | Data Not Available | G       |
| DID \$31 Byte 709 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (30 ms) | Data Not Available | G       |
| DID \$31 Byte 710 | \$FF             | SDM Recorded Vehicle Roll Rate (40 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 711 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (40 ms) | Data Not Available | G       |
| DID \$31 Byte 712 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (40 ms) | Data Not Available | G       |
| DID \$31 Byte 713 | \$FF             | SDM Recorded Vehicle Roll Rate (50 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 714 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (50 ms) | Data Not Available | G       |
| DID \$31 Byte 715 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (50 ms) | Data Not Available | G       |
| DID \$31 Byte 716 | \$FF             | SDM Recorded Vehicle Roll Rate (60 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 717 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (60 ms) | Data Not Available | G       |
| DID \$31 Byte 718 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (60 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                         | Translated Value   | Units   |
|-------------------|------------------|----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 719 | \$FF             | SDM Recorded Vehicle Roll Rate (70 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 720 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (70 ms)  | Data Not Available | G       |
| DID \$31 Byte 721 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (70 ms)  | Data Not Available | G       |
| DID \$31 Byte 722 | \$FF             | SDM Recorded Vehicle Roll Rate (80 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 723 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (80 ms)  | Data Not Available | G       |
| DID \$31 Byte 724 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (80 ms)  | Data Not Available | G       |
| DID \$31 Byte 725 | \$FF             | SDM Recorded Vehicle Roll Rate (90 ms)                                                       | Data Not Available | deg/sec |
| DID \$31 Byte 726 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (90 ms)  | Data Not Available | G       |
| DID \$31 Byte 727 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (90 ms)  | Data Not Available | G       |
| DID \$31 Byte 728 | \$FF             | SDM Recorded Vehicle Roll Rate (100 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 729 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (100 ms) | Data Not Available | G       |
| DID \$31 Byte 730 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (100 ms) | Data Not Available | G       |
| DID \$31 Byte 731 | \$FF             | SDM Recorded Vehicle Roll Rate (110 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 732 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (110 ms) | Data Not Available | G       |
| DID \$31 Byte 733 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (110 ms) | Data Not Available | G       |
| DID \$31 Byte 734 | \$FF             | SDM Recorded Vehicle Roll Rate (120 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 735 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (120 ms) | Data Not Available | G       |
| DID \$31 Byte 736 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (120 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                         | Translated Value   | Units   |
|-------------------|------------------|----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 737 | \$FF             | SDM Recorded Vehicle Roll Rate (130 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 738 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (130 ms) | Data Not Available | G       |
| DID \$31 Byte 739 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (130 ms) | Data Not Available | G       |
| DID \$31 Byte 740 | \$FF             | SDM Recorded Vehicle Roll Rate (140 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 741 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (140 ms) | Data Not Available | G       |
| DID \$31 Byte 742 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (140 ms) | Data Not Available | G       |
| DID \$31 Byte 743 | \$FF             | SDM Recorded Vehicle Roll Rate (150 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 744 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (150 ms) | Data Not Available | G       |
| DID \$31 Byte 745 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (150 ms) | Data Not Available | G       |
| DID \$31 Byte 746 | \$FF             | SDM Recorded Vehicle Roll Rate (160 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 747 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (160 ms) | Data Not Available | G       |
| DID \$31 Byte 748 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (160 ms) | Data Not Available | G       |
| DID \$31 Byte 749 | \$FF             | SDM Recorded Vehicle Roll Rate (170 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 750 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (170 ms) | Data Not Available | G       |
| DID \$31 Byte 751 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (170 ms) | Data Not Available | G       |
| DID \$31 Byte 752 | \$FF             | SDM Recorded Vehicle Roll Rate (180 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 753 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (180 ms) | Data Not Available | G       |
| DID \$31 Byte 754 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (180 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                         | Translated Value   | Units   |
|-------------------|------------------|----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 755 | \$FF             | SDM Recorded Vehicle Roll Rate (190 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 756 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (190 ms) | Data Not Available | G       |
| DID \$31 Byte 757 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (190 ms) | Data Not Available | G       |
| DID \$31 Byte 758 | \$FF             | SDM Recorded Vehicle Roll Rate (200 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 759 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (200 ms) | Data Not Available | G       |
| DID \$31 Byte 760 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (200 ms) | Data Not Available | G       |
| DID \$31 Byte 761 | \$FF             | SDM Recorded Vehicle Roll Rate (210 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 762 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (210 ms) | Data Not Available | G       |
| DID \$31 Byte 763 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (210 ms) | Data Not Available | G       |
| DID \$31 Byte 764 | \$FF             | SDM Recorded Vehicle Roll Rate (220 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 765 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (220 ms) | Data Not Available | G       |
| DID \$31 Byte 766 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (220 ms) | Data Not Available | G       |
| DID \$31 Byte 767 | \$FF             | SDM Recorded Vehicle Roll Rate (230 ms)                                                      | Data Not Available | 77      |
| DID \$31 Byte 768 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (230 ms) | Data Not Available | G       |
| DID \$31 Byte 769 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (230 ms) | Data Not Available | G       |
| DID \$31 Byte 770 | \$FF             | SDM Recorded Vehicle Roll Rate (240 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 771 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (240 ms) | Data Not Available | G       |
| DID \$31 Byte 772 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (240 ms) | Data Not Available | G       |

| Data Location     | Data Value (Hex) | Parameter Descriptor                                                                         | Translated Value   | Units   |
|-------------------|------------------|----------------------------------------------------------------------------------------------|--------------------|---------|
| DID \$31 Byte 773 | \$FF             | SDM Recorded Vehicle Roll Rate (250 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 774 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (250 ms) | Data Not Available | G       |
| DID \$31 Byte 775 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (250 ms) | Data Not Available | G       |
| DID \$31 Byte 776 | \$FF             | SDM Recorded Vehicle Roll Rate (260 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 777 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (260 ms) | Data Not Available | G       |
| DID \$31 Byte 778 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (260 ms) | Data Not Available | G       |
| DID \$31 Byte 779 | \$FF             | SDM Recorded Vehicle Roll Rate (270 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 780 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (270 ms) | Data Not Available | G       |
| DID \$31 Byte 781 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (270 ms) | Data Not Available | G       |
| DID \$31 Byte 782 | \$FF             | SDM Recorded Vehicle Roll Rate (280 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 783 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (280 ms) | Data Not Available | G       |
| DID \$31 Byte 784 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (280 ms) | Data Not Available | G       |
| DID \$31 Byte 785 | \$FF             | SDM Recorded Vehicle Roll Rate (290 ms)                                                      | Data Not Available | deg/sec |
| DID \$31 Byte 786 | \$FF             | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event) (290 ms) | Data Not Available | G       |
| DID \$31 Byte 787 | \$FF             | Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for Rollover Event) (290 ms) | Data Not Available | G       |



## Event Data General (part two)

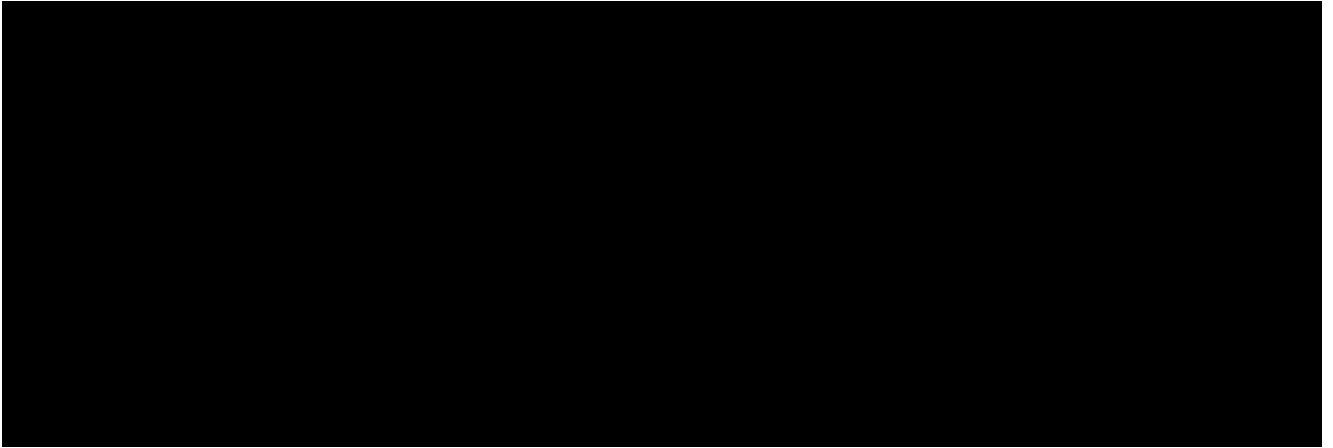
| Data Location       | Data Value (Hex)     | Parameter Descriptor                                        | Translated Value | Units |
|---------------------|----------------------|-------------------------------------------------------------|------------------|-------|
| DID \$90 Byte 0     | \$32                 | Vehicle Identification Number (VIN) Digit 1                 | 2                |       |
| DID \$90 Byte 1     | \$47                 | Vehicle Identification Number (VIN) Digit 2                 | G                |       |
| DID \$90 Byte 2     | \$31                 | Vehicle Identification Number (VIN) Digit 3                 | 1                |       |
| DID \$90 Byte 3     | \$31                 | Vehicle Identification Number (VIN) Digit 4                 | 1                |       |
| DID \$90 Byte 4     | \$32                 | Vehicle Identification Number (VIN) Digit 5                 | 2                |       |
| DID \$90 Byte 5     | \$35                 | Vehicle Identification Number (VIN) Digit 6                 | 5                |       |
| DID \$90 Byte 6     | \$53                 | Vehicle Identification Number (VIN) Digit 7                 | S                |       |
| DID \$90 Byte 7     | \$33                 | Vehicle Identification Number (VIN) Digit 8                 | 3                |       |
| DID \$90 Byte 8     | \$36                 | Vehicle Identification Number (VIN) Digit 9                 | 6                |       |
| DID \$90 Byte 9     | \$45                 | Vehicle Identification Number (VIN) Digit 10                | E                |       |
| DID \$90 Byte 10    | \$39                 | Vehicle Identification Number (VIN) Digit 11                | 9                |       |
| DID \$90 Byte 11    | \$31                 | Vehicle Identification Number (VIN) Digit 12                | 1                |       |
| DID \$90 Byte12     | \$32                 | Vehicle Identification Number (VIN) Digit 13                | 2                |       |
| DID \$90 Byte 13    | \$39                 | Vehicle Identification Number (VIN) Digit 14                | 9                |       |
| DID \$90 Byte 14    | \$38                 | Vehicle Identification Number (VIN) Digit 15                | 8                |       |
| DID \$90 Byte 15    | \$38                 | Vehicle Identification Number (VIN) Digit 16                | 8                |       |
| DID \$90 Byte 16    | \$35                 | Vehicle Identification Number (VIN) Digit 17                | 5                |       |
| DID \$9A Bytes 0-1  | \$0911               | System Type                                                 | N/A              |       |
| DID \$B4 Bytes 0-1  | \$3133               | Manufacturing Traceability Data, Component Identifier       | 13               |       |
| DID \$B4 Bytes 2-5  | \$31333230           | Manufacturing Traceability Data, Part Number/Broadcast Code | 1320             |       |
| DID \$B4 Byte 6     | \$33                 | Manufacturing Traceability Data, Supplier Code              | 3                |       |
| DID \$B4 Bytes 7-15 | \$303530313334353532 | Manufacturing Traceability Data, Traceability Number        | 050134552        |       |
| DID \$C1 Bytes 0-3  | \$00CF5CBD           | Software Module Identifier 1                                | 00CF5CBD         |       |
| DID \$C2 Bytes 0-3  | \$0160EA7E           | Software Module Identifier 2                                | 0160EA7E         |       |
| DID \$C3 Bytes 0-3  | \$0160EA7F           | Software Module Identifier 3                                | 0160EA7F         |       |
| DID \$CB Bytes 0-3  | \$00CF5CBC           | End Model Part Number                                       | 00CF5CBC         |       |

PE14-010

GM

6/6/2014

Q 3



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           | 2G1125S36E9[REDACTED]                    |
| User                       | RYAN JAHR ESIS/GM                        |
| Case Number                | [REDACTED]                               |
| EDR Data Imaging Date      | 10/02/2013                               |
| Crash Date                 | 09/03/2013                               |
| Filename                   | 2G1125S36E9[REDACTED].ACM.CDRDURAND.CDRX |
| Saved on                   | Wednesday, October 2 2013 at 11:37:11    |
| Collected with CDR version | Crash Data Retrieval Tool 11.1.1         |
| Reported with CDR version  | Crash Data Retrieval Tool 11.1.1         |
| EDR Device Type            | Airbag Control Module                    |
| Event(s) recovered         | Non-Deployment                           |

## Comments

CONNECTION: DLC. VEHICLE POWER SUPPLIED BY BATTERY PACK.

SIR: FLASHES ON AND STAYS ON DURING KEY POWER UP.

MILEAGE: 3243

LOCATION: IAA NEW KINGS RD JACKSONVILLE FL.

PRESENT: RENEE PICKREN GROUP VEHICLE REPAIR MANAGER ENTERPRISE HOLDINGS, MARTIN GARCIA P.E.  
KIMLEY-HORN ASSOCIATES,

DAN BARSHINGER ENGINEER KIMLEY-HORN ASSOCIATES.

## 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. Non-Deployment Events can be overwritten after 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, or roll bars:

- Pretensioner(s) only Deployment
- Head Rest Deployment
- Battery Cut-Off Deployment

The second type of SDM recorded crash event for FSR Events is the Deployment Event. It also contains Pre-Crash and Crash data. Deployment Events cannot be overwritten or cleared by the SDM.

There are also two types of recorded crash events for Rollover Events. The first is the Non-Deployment (Non-rollover) Event. A Non-Deployment Event records data but does not deploy the air bag(s). A Non-Deployment Event contains Pre-Crash and Crash data. Non-Deployment Rollover event follow the same rules as FSR Non-Deployment events.

The SDM can store up to three 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 300 milliseconds of data after time zero. The SDM will also record 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 Non-Deployment (Non-rollover) Events, the SDM will record 1 second of data before a calibrated angle threshold is reached. 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.

-Deployment loops may be displayed as being deployed in a Non-Deployment event record, if a Deployment event is qualified

- during the Non-Deployment event. That is, if two or more events are occurring at the same time and one is a Non-Deployment event and one of the others is a Deployment event, and the Deployment event is qualified while the Non-Deployment is still active, the deployed loops may be recorded in the Non-Deployment event record.
- Deployment loops can only be deployed once per module power cycle.
- 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.
- 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
- 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 record a maximum value of 253 cycles and can only be reset by a scan tool.
- Deployment Event Counter tracks the number of Deployment events that have occurred during the SDM's lifetime.
- Event Counter tracks the number of qualified events (either Deployments, Non-deploy, or Rollover events) that have occurred during the SDM's lifetime.
- The Time Zero to Deployment Command Criteria Met times for the following will be indicated for whichever occurs first:
  - Driver Thorax or Driver Curtain
  - Passenger Thorax or Passenger Curtain
  - Driver Pretensioner Loop #1 or Driver Pretensioner Loop #2
  - Passenger Pretensioner Loop #1 or Passenger Pretensioner Loop #2
- 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.
- 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 GM parameter name is displayed in parentheses after the NHTSA Part 563 parameter name.
- The reported range of the longitudinal and lateral acceleration values is approximately  $\pm 50$  g.
- 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                 | Positive Sign Notation |
|------------------------------|------------------------|
| 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.

01049\_SDM30-autoliv\_r006

## System Status at Time of Retrieval

|                                                             |             |
|-------------------------------------------------------------|-------------|
| Dynamic Deployment Event Counter                            | 0           |
| Multi-Event, Number of Events (Dynamic Event Counter)       | 1           |
| Dynamic OnStar Notification Event Counter                   | 1           |
| Vehicle Identification Number (VIN)                         | 2G1125S36E9 |
| Ignition Cycle, Download (Ignition Cycles at Investigation) | 280         |
| End Model Part Number                                       | 00CF5CBC    |
| System Type                                                 | N/A         |
| Software Module Identifier 1                                | 00CF5CBD    |
| Software Module Identifier 2                                | 0160EA7E    |
| Software Module Identifier 3                                | 0160EA7F    |
| Manufacturing Traceability Data, Component Identifier       | 13          |
| Manufacturing Traceability Data, Part Number/Broadcast Code | 1320        |
| Manufacturing Traceability Data, Supplier Code              | 3           |
| Manufacturing Traceability Data, Traceability Number        | 050134552   |
| ESS # 1 Traceability Data, Component Identifier             | AU          |
| ESS # 1 Traceability Data, Part Number/Broadcast Code       | 6422        |
| ESS # 1 Traceability Data, Supplier Code                    | E           |
| ESS # 1 Traceability Data, Traceability Number              | 0B55B47D0   |
| ESS # 2 Traceability Data, Component Identifier             | AT          |
| ESS # 2 Traceability Data, Part Number/Broadcast Code       | 6422        |
| ESS # 2 Traceability Data, Supplier Code                    | E           |
| ESS # 2 Traceability Data, Traceability Number              | 0106B47D0   |
| ESS # 3 Traceability Data, Component Identifier             | AH          |
| ESS # 3 Traceability Data, Part Number/Broadcast Code       | 4470        |
| ESS # 3 Traceability Data, Supplier Code                    | E           |
| ESS # 3 Traceability Data, Traceability Number              | 00F7A8D01   |
| ESS # 4 Traceability Data, Component Identifier             | AJ          |
| ESS # 4 Traceability Data, Part Number/Broadcast Code       | 4470        |
| ESS # 4 Traceability Data, Supplier Code                    | E           |
| ESS # 4 Traceability Data, Traceability Number              | 0497C8D01   |
| ESS # 5 Traceability Data, Component Identifier             | DA          |
| ESS # 5 Traceability Data, Part Number/Broadcast Code       | 4470        |
| ESS # 5 Traceability Data, Supplier Code                    | E           |
| ESS # 5 Traceability Data, Traceability Number              | 0E2668601   |
| ESS # 6 Traceability Data, Component Identifier             | DB          |
| ESS # 6 Traceability Data, Part Number/Broadcast Code       | 4470        |
| ESS # 6 Traceability Data, Supplier Code                    | E           |
| ESS # 6 Traceability Data, Traceability Number              | 011B18C01   |
| ESS # 7 Traceability Data, Component Identifier             | 00          |
| ESS # 7 Traceability Data, Part Number/Broadcast Code       | 0000        |
| ESS # 7 Traceability Data, Supplier Code                    | 0           |
| ESS # 7 Traceability Data, Traceability Number              | 000000000   |
| ESS # 8 Traceability Data, Component Identifier             | 00          |
| ESS # 8 Traceability Data, Part Number/Broadcast Code       | 0000        |
| ESS # 8 Traceability Data, Supplier Code                    | 0           |
| ESS # 8 Traceability Data, Traceability Number              | 000000000   |

## System Status at Event (Event Record 1)

|                                                                                                                       |                    |
|-----------------------------------------------------------------------------------------------------------------------|--------------------|
| Event Record Type                                                                                                     | Non-Deployment     |
| OnStar Deployment Status Data Sent                                                                                    | Yes                |
| Complete file recorded (Event Recording Complete)                                                                     | Yes                |
| Crash Record Locked                                                                                                   | Yes                |
| OnStar SDM Recorded Vehicle Velocity Change Data Sent                                                                 | Yes                |
| Deployment Event Counter                                                                                              | 0                  |
| Multi-Event, Number of Events (Event Counter)                                                                         | 1                  |
| OnStar Notification Event Counter                                                                                     | 1                  |
| Time From Event 1 to 2 (Time Between Events) (seconds)                                                                | Data Not Available |
| Ignition Cycle, Crash (Ignition Cycles at Event)                                                                      | 263                |
| Algorithm Active: Frontal                                                                                             | No                 |
| Algorithm Active: Side                                                                                                | No                 |
| Algorithm Active: Rollover                                                                                            | Yes                |
| Algorithm Active: Rear                                                                                                | Yes                |
| 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                                                                                     | No                 |
| Event Severity Status: Rear                                                                                           | Yes                |
| Event Severity Status: Rollover                                                                                       | No                 |
| Safety Belt Status, Driver (Driver Belt Switch Circuit Status)                                                        | Buckled            |
| Safety Belt Status, Right Front Passenger (Passenger Belt Switch Circuit Status)                                      | Not Buckled        |
| Center Front Row Belt Switch Circuit Status (If Equipped)                                                             | Data Not Available |
| Left Row 3 Belt Switch Circuit Status (If Equipped)                                                                   | Data Not Available |
| Center Row 3 Belt Switch Circuit Status (If Equipped)                                                                 | Data Not Available |
| Right Row 3 Belt Switch Circuit Status (If Equipped)                                                                  | Data Not Available |
| Passenger Seat Occupancy Status                                                                                       | Empty              |
| Passenger Classification Status                                                                                       | 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)                                                                   | 288180             |
| Number of Ignition Cycles SIR Warning Lamp was ON/OFF Continuously                                                    | 257                |
| 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]    | 19 [ 31]           |
| Time, Maximum Delta-V (Time From FSR Time Zero to Maximum Longitudinal SDM Recorded Vehicle Velocity Change)(msec)    | 182                |
| Maximum Delta-V, Lateral (Maximum Lateral SDM Recorded Vehicle Velocity Change for FSR Event) MPH [km/h]              | 0 [ 0]             |
| Time Maximum Delta-V, Lateral (Time From FSR Time Zero to Maximum Lateral SDM Recorded Vehicle Velocity Change)(msec) | 50                 |
| High Voltage Disable Notification Sent                                                                                | Yes                |
| Deployment Commanded in Energy Reserve Mode                                                                           | No                 |



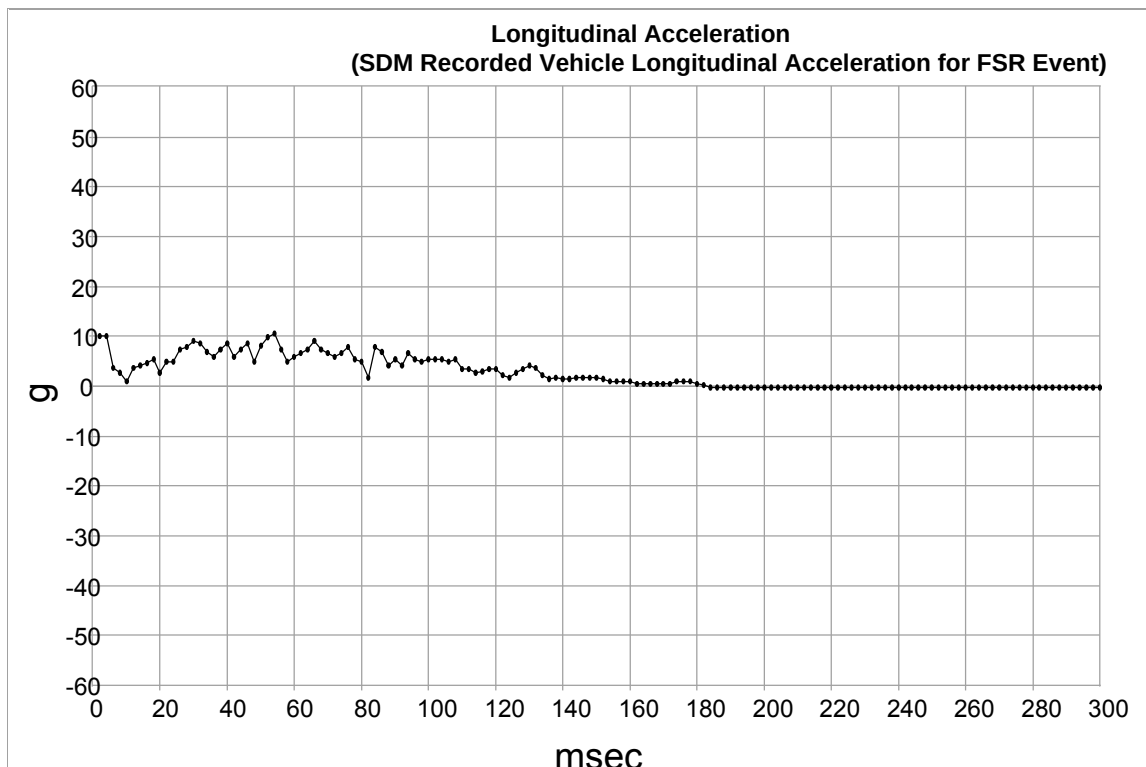
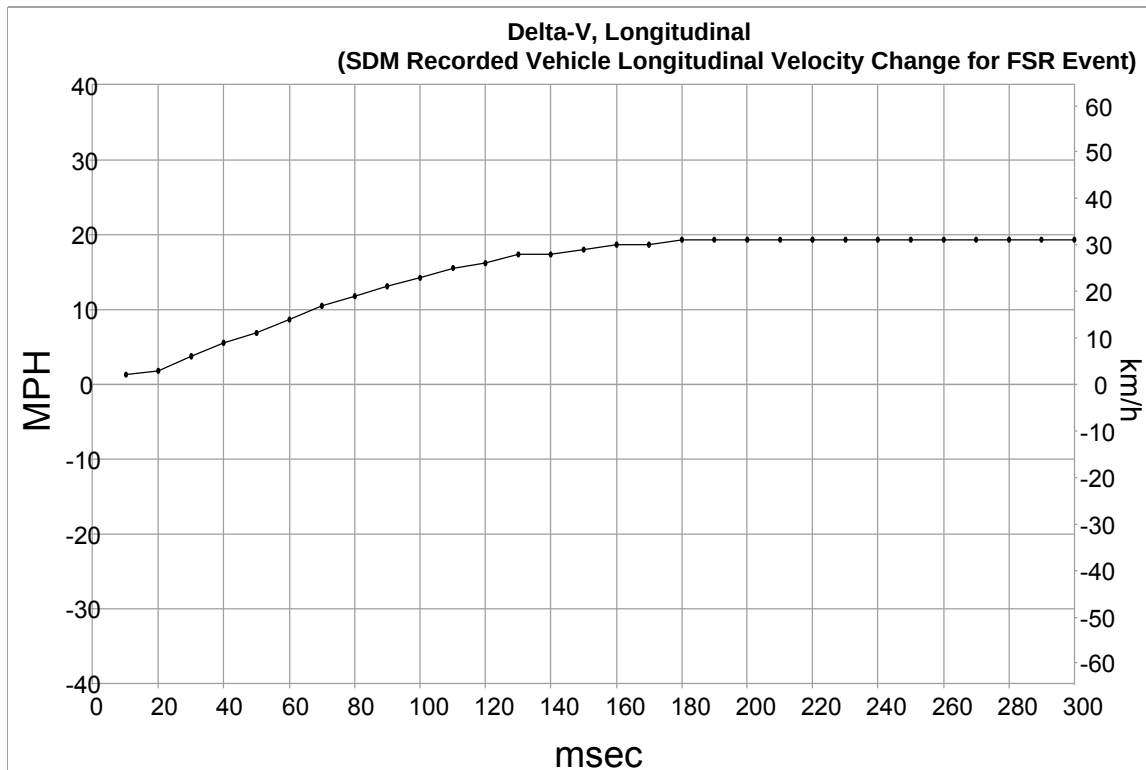
**DTCs Present at Time of Event (Event Record 1)**

|          |
|----------|
| B0052-00 |
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## Event Data (Event Record 1)

|                                                                                                                                                                        |                    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| 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                                                                                                                       | 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 (If Equipped)                                                                                                                             | No                 |
| Passenger Thorax Loop Commanded (If Equipped)                                                                                                                          | No                 |
| Left Row 2 Thorax Loop Commanded (If Equipped)                                                                                                                         | No                 |
| Right Row 2 Thorax Loop Commanded (If Equipped)                                                                                                                        | No                 |
| Driver Row 1 Roof Rail/Head Curtain Loop Commanded (If Equipped)                                                                                                       | No                 |
| Passenger Row 1 Roof Rail/Head Curtain Loop Commanded (If Equipped)                                                                                                    | No                 |
| Left Row 2 Roof Rail/Head Curtain Loop Commanded (If Equipped)                                                                                                         | No                 |
| Right Row 2 Roof Rail/Head Curtain Loop Commanded (If Equipped)                                                                                                        | No                 |
| Left Row 3 Roof Rail/Head Curtain Loop Commanded (If Equipped)                                                                                                         | No                 |
| Right Row 3 Roof Rail/Head Curtain Loop Commanded (If Equipped)                                                                                                        | No                 |
| Driver Knee Deployment Loop Commanded (If Equipped)                                                                                                                    | No                 |
| Passenger Knee Deployment Loop Commanded (If Equipped)                                                                                                                 | No                 |
| Left Row 2 Pretensioner Deployment Loop Commanded                                                                                                                      | No                 |
| Right Row 2 Pretensioner Deployment Loop Commanded                                                                                                                     | No                 |
| Center Row 2 Pretensioner Deployment Loop Commanded (If Equipped)                                                                                                      | No                 |
| Battery Cutoff Loop Commanded (If Equipped)                                                                                                                            | No                 |
| Driver Roll Bar Loop Commanded (If Equipped)                                                                                                                           | No                 |
| Passenger Roll Bar Loop Commanded (If Equipped)                                                                                                                        | No                 |
| Steering Column Energy Absorbing Loop Commanded (If Equipped)                                                                                                          | No                 |
| Driver Head Rest Loop Commanded (If Equipped)                                                                                                                          | No                 |
| Passenger Head Rest Loop Commanded (If Equipped)                                                                                                                       | No                 |
| Left Row 2 Head Rest Loop Commanded (If Equipped)                                                                                                                      | No                 |
| Right Row 2 Head Rest Loop Commanded (If Equipped)                                                                                                                     | No                 |
| Center Row 2 Head Rest Loop Commanded (If Equipped)                                                                                                                    | No                 |
| High Voltage Battery Cutoff loop commanded (If Equipped)                                                                                                               | 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 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 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, Right Front Passenger (Passenger 2nd Stage Time From Time Zero to Deployment Command Criteria Met) (msec)               | Data Not Available |
| Side air bag deployment, time to deploy, driver (Driver Thorax/Curtain 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/Curtain 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 or Loop #2 Command Criteria Met) (msec)                   | 65                 |
| Pretensioner Deployment, Time to Fire, Right Front Passenger (Passenger Pretensioner Time From Time Zero to Deployment Loop #1 or Loop #2 Command Criteria Met) (msec) | 65                 |

## Longitudinal Crash Pulse (Event Record 1)



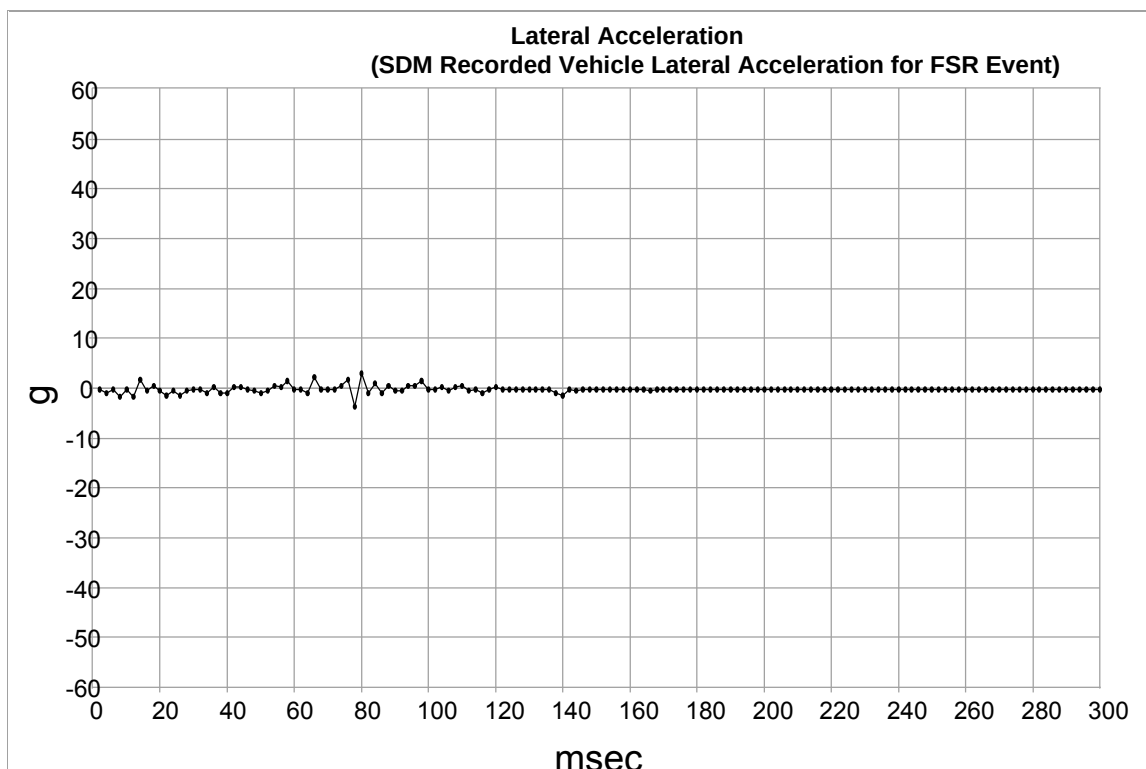
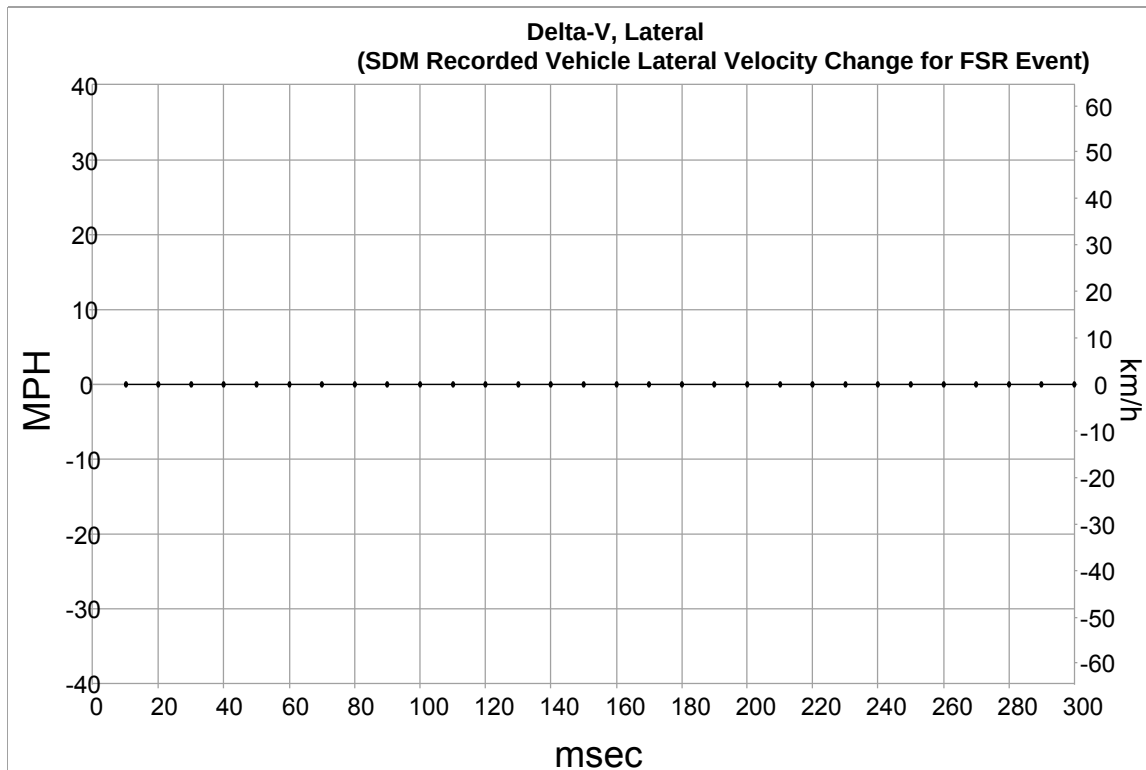
## Longitudinal Crash Pulse (Event Record 1)

| Time<br>(msec) | Delta-V, Longitudinal<br>(SDM Recorded Vehicle Longitudinal<br>Velocity Change for FSR Event)<br>(MPH) | Delta-V, Longitudinal<br>(SDM Recorded Vehicle Longitudinal<br>Velocity Change for FSR Event)<br>(km/h) |
|----------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
| 10             | 1.2                                                                                                    | 2.0                                                                                                     |
| 20             | 1.9                                                                                                    | 3.0                                                                                                     |
| 30             | 3.7                                                                                                    | 6.0                                                                                                     |
| 40             | 5.6                                                                                                    | 9.0                                                                                                     |
| 50             | 6.8                                                                                                    | 11.0                                                                                                    |
| 60             | 8.7                                                                                                    | 14.0                                                                                                    |
| 70             | 10.6                                                                                                   | 17.0                                                                                                    |
| 80             | 11.8                                                                                                   | 19.0                                                                                                    |
| 90             | 13.0                                                                                                   | 21.0                                                                                                    |
| 100            | 14.3                                                                                                   | 23.0                                                                                                    |
| 110            | 15.5                                                                                                   | 25.0                                                                                                    |
| 120            | 16.2                                                                                                   | 26.0                                                                                                    |
| 130            | 17.4                                                                                                   | 28.0                                                                                                    |
| 140            | 17.4                                                                                                   | 28.0                                                                                                    |
| 150            | 18.0                                                                                                   | 29.0                                                                                                    |
| 160            | 18.6                                                                                                   | 30.0                                                                                                    |
| 170            | 18.6                                                                                                   | 30.0                                                                                                    |
| 180            | 19.3                                                                                                   | 31.0                                                                                                    |
| 190            | 19.3                                                                                                   | 31.0                                                                                                    |
| 200            | 19.3                                                                                                   | 31.0                                                                                                    |
| 210            | 19.3                                                                                                   | 31.0                                                                                                    |
| 220            | 19.3                                                                                                   | 31.0                                                                                                    |
| 230            | 19.3                                                                                                   | 31.0                                                                                                    |
| 240            | 19.3                                                                                                   | 31.0                                                                                                    |
| 250            | 19.3                                                                                                   | 31.0                                                                                                    |
| 260            | 19.3                                                                                                   | 31.0                                                                                                    |
| 270            | 19.3                                                                                                   | 31.0                                                                                                    |
| 280            | 19.3                                                                                                   | 31.0                                                                                                    |
| 290            | 19.3                                                                                                   | 31.0                                                                                                    |
| 300            | 19.3                                                                                                   | 31.0                                                                                                    |

## Longitudinal Crash Pulse (Event Record 1)

| Time<br>(msec) | Longitudinal<br>Acceleration<br>(SDM Recorded Vehicle<br>Longitudinal<br>Acceleration for FSR<br>Event) (g) | Time<br>(msec) | Longitudinal<br>Acceleration<br>(SDM Recorded Vehicle<br>Longitudinal<br>Acceleration for FSR<br>Event) (g) | Time<br>(msec) | Longitudinal<br>Acceleration<br>(SDM Recorded Vehicle<br>Longitudinal<br>Acceleration for FSR<br>Event) (g) |
|----------------|-------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------|
| 2              | 10.2                                                                                                        | 102            | 5.4                                                                                                         | 202            | -0.2                                                                                                        |
| 4              | 10.2                                                                                                        | 104            | 5.4                                                                                                         | 204            | -0.2                                                                                                        |
| 6              | 3.8                                                                                                         | 106            | 5.0                                                                                                         | 206            | -0.2                                                                                                        |
| 8              | 2.6                                                                                                         | 108            | 5.4                                                                                                         | 208            | -0.2                                                                                                        |
| 10             | 1.0                                                                                                         | 110            | 3.4                                                                                                         | 210            | -0.2                                                                                                        |
| 12             | 3.8                                                                                                         | 112            | 3.4                                                                                                         | 212            | -0.2                                                                                                        |
| 14             | 4.2                                                                                                         | 114            | 2.6                                                                                                         | 214            | -0.2                                                                                                        |
| 16             | 4.6                                                                                                         | 116            | 3.0                                                                                                         | 216            | -0.2                                                                                                        |
| 18             | 5.4                                                                                                         | 118            | 3.4                                                                                                         | 218            | -0.2                                                                                                        |
| 20             | 2.6                                                                                                         | 120            | 3.4                                                                                                         | 220            | -0.2                                                                                                        |
| 22             | 5.0                                                                                                         | 122            | 2.2                                                                                                         | 222            | -0.2                                                                                                        |
| 24             | 5.0                                                                                                         | 124            | 1.8                                                                                                         | 224            | -0.2                                                                                                        |
| 26             | 7.4                                                                                                         | 126            | 2.6                                                                                                         | 226            | -0.2                                                                                                        |
| 28             | 7.8                                                                                                         | 128            | 3.4                                                                                                         | 228            | -0.2                                                                                                        |
| 30             | 9.0                                                                                                         | 130            | 4.2                                                                                                         | 230            | -0.2                                                                                                        |
| 32             | 8.6                                                                                                         | 132            | 3.8                                                                                                         | 232            | -0.2                                                                                                        |
| 34             | 7.0                                                                                                         | 134            | 2.2                                                                                                         | 234            | -0.2                                                                                                        |
| 36             | 5.8                                                                                                         | 136            | 1.4                                                                                                         | 236            | -0.2                                                                                                        |
| 38             | 7.4                                                                                                         | 138            | 1.8                                                                                                         | 238            | -0.2                                                                                                        |
| 40             | 8.6                                                                                                         | 140            | 1.4                                                                                                         | 240            | -0.2                                                                                                        |
| 42             | 5.8                                                                                                         | 142            | 1.4                                                                                                         | 242            | -0.2                                                                                                        |
| 44             | 7.4                                                                                                         | 144            | 1.8                                                                                                         | 244            | -0.2                                                                                                        |
| 46             | 8.6                                                                                                         | 146            | 1.8                                                                                                         | 246            | -0.2                                                                                                        |
| 48             | 5.0                                                                                                         | 148            | 1.8                                                                                                         | 248            | -0.2                                                                                                        |
| 50             | 8.2                                                                                                         | 150            | 1.8                                                                                                         | 250            | -0.2                                                                                                        |
| 52             | 9.8                                                                                                         | 152            | 1.4                                                                                                         | 252            | -0.2                                                                                                        |
| 54             | 10.6                                                                                                        | 154            | 1.0                                                                                                         | 254            | -0.2                                                                                                        |
| 56             | 7.4                                                                                                         | 156            | 1.0                                                                                                         | 256            | -0.2                                                                                                        |
| 58             | 5.0                                                                                                         | 158            | 1.0                                                                                                         | 258            | -0.2                                                                                                        |
| 60             | 5.8                                                                                                         | 160            | 1.0                                                                                                         | 260            | -0.2                                                                                                        |
| 62             | 6.6                                                                                                         | 162            | 0.6                                                                                                         | 262            | -0.2                                                                                                        |
| 64             | 7.4                                                                                                         | 164            | 0.6                                                                                                         | 264            | -0.2                                                                                                        |
| 66             | 9.0                                                                                                         | 166            | 0.6                                                                                                         | 266            | -0.2                                                                                                        |
| 68             | 7.4                                                                                                         | 168            | 0.6                                                                                                         | 268            | -0.2                                                                                                        |
| 70             | 6.6                                                                                                         | 170            | 0.6                                                                                                         | 270            | -0.2                                                                                                        |
| 72             | 5.8                                                                                                         | 172            | 0.6                                                                                                         | 272            | -0.2                                                                                                        |
| 74             | 6.6                                                                                                         | 174            | 1.0                                                                                                         | 274            | -0.2                                                                                                        |
| 76             | 7.8                                                                                                         | 176            | 1.0                                                                                                         | 276            | -0.2                                                                                                        |
| 78             | 5.4                                                                                                         | 178            | 1.0                                                                                                         | 278            | -0.2                                                                                                        |
| 80             | 5.0                                                                                                         | 180            | 0.6                                                                                                         | 280            | -0.2                                                                                                        |
| 82             | 1.8                                                                                                         | 182            | 0.2                                                                                                         | 282            | -0.2                                                                                                        |
| 84             | 7.8                                                                                                         | 184            | -0.2                                                                                                        | 284            | -0.2                                                                                                        |
| 86             | 7.0                                                                                                         | 186            | -0.2                                                                                                        | 286            | -0.2                                                                                                        |
| 88             | 4.2                                                                                                         | 188            | -0.2                                                                                                        | 288            | -0.2                                                                                                        |
| 90             | 5.4                                                                                                         | 190            | -0.2                                                                                                        | 290            | -0.2                                                                                                        |
| 92             | 4.2                                                                                                         | 192            | -0.2                                                                                                        | 292            | -0.2                                                                                                        |
| 94             | 6.6                                                                                                         | 194            | -0.2                                                                                                        | 294            | -0.2                                                                                                        |
| 96             | 5.4                                                                                                         | 196            | -0.2                                                                                                        | 296            | -0.2                                                                                                        |
| 98             | 5.0                                                                                                         | 198            | -0.2                                                                                                        | 298            | -0.2                                                                                                        |
| 100            | 5.4                                                                                                         | 200            | -0.2                                                                                                        | 300            | -0.2                                                                                                        |

## Lateral Crash Pulse (Event Record 1)



## Lateral Crash Pulse (Event Record 1)

| Time<br>(msec) | Delta-V, Lateral<br>(SDM Recorded Vehicle Lateral Velocity<br>Change for FSR Event)<br>(MPH) | Delta-V, Lateral<br>(SDM Recorded Vehicle Lateral Velocity<br>Change for FSR Event)<br>(km/h) |
|----------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| 10             | 0.0                                                                                          | 0.0                                                                                           |
| 20             | 0.0                                                                                          | 0.0                                                                                           |
| 30             | 0.0                                                                                          | 0.0                                                                                           |
| 40             | 0.0                                                                                          | 0.0                                                                                           |
| 50             | 0.0                                                                                          | 0.0                                                                                           |
| 60             | 0.0                                                                                          | 0.0                                                                                           |
| 70             | 0.0                                                                                          | 0.0                                                                                           |
| 80             | 0.0                                                                                          | 0.0                                                                                           |
| 90             | 0.0                                                                                          | 0.0                                                                                           |
| 100            | 0.0                                                                                          | 0.0                                                                                           |
| 110            | 0.0                                                                                          | 0.0                                                                                           |
| 120            | 0.0                                                                                          | 0.0                                                                                           |
| 130            | 0.0                                                                                          | 0.0                                                                                           |
| 140            | 0.0                                                                                          | 0.0                                                                                           |
| 150            | 0.0                                                                                          | 0.0                                                                                           |
| 160            | 0.0                                                                                          | 0.0                                                                                           |
| 170            | 0.0                                                                                          | 0.0                                                                                           |
| 180            | 0.0                                                                                          | 0.0                                                                                           |
| 190            | 0.0                                                                                          | 0.0                                                                                           |
| 200            | 0.0                                                                                          | 0.0                                                                                           |
| 210            | 0.0                                                                                          | 0.0                                                                                           |
| 220            | 0.0                                                                                          | 0.0                                                                                           |
| 230            | 0.0                                                                                          | 0.0                                                                                           |
| 240            | 0.0                                                                                          | 0.0                                                                                           |
| 250            | 0.0                                                                                          | 0.0                                                                                           |
| 260            | 0.0                                                                                          | 0.0                                                                                           |
| 270            | 0.0                                                                                          | 0.0                                                                                           |
| 280            | 0.0                                                                                          | 0.0                                                                                           |
| 290            | 0.0                                                                                          | 0.0                                                                                           |
| 300            | 0.0                                                                                          | 0.0                                                                                           |



## Lateral Crash Pulse (Event Record 1)

| Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) | Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) | Time (msec) | Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for FSR Event) (g) |
|-------------|------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|-------------|------------------------------------------------------------------------------------|
| 2           | -0.2                                                                               | 102         | -0.2                                                                               | 202         | -0.2                                                                               |
| 4           | -1.0                                                                               | 104         | 0.2                                                                                | 204         | -0.2                                                                               |
| 6           | -0.2                                                                               | 106         | -0.6                                                                               | 206         | -0.2                                                                               |
| 8           | -1.8                                                                               | 108         | 0.2                                                                                | 208         | -0.2                                                                               |
| 10          | -0.2                                                                               | 110         | 0.6                                                                                | 210         | -0.2                                                                               |
| 12          | -1.8                                                                               | 112         | -0.6                                                                               | 212         | -0.2                                                                               |
| 14          | 1.8                                                                                | 114         | -0.2                                                                               | 214         | -0.2                                                                               |
| 16          | -0.6                                                                               | 116         | -1.0                                                                               | 216         | -0.2                                                                               |
| 18          | 0.6                                                                                | 118         | -0.2                                                                               | 218         | -0.2                                                                               |
| 20          | -0.6                                                                               | 120         | 0.2                                                                                | 220         | -0.2                                                                               |
| 22          | -1.4                                                                               | 122         | -0.2                                                                               | 222         | -0.2                                                                               |
| 24          | -0.6                                                                               | 124         | -0.2                                                                               | 224         | -0.2                                                                               |
| 26          | -1.4                                                                               | 126         | -0.2                                                                               | 226         | -0.2                                                                               |
| 28          | -0.6                                                                               | 128         | -0.2                                                                               | 228         | -0.2                                                                               |
| 30          | -0.2                                                                               | 130         | -0.2                                                                               | 230         | -0.2                                                                               |
| 32          | -0.2                                                                               | 132         | -0.2                                                                               | 232         | -0.2                                                                               |
| 34          | -1.0                                                                               | 134         | -0.2                                                                               | 234         | -0.2                                                                               |
| 36          | 0.2                                                                                | 136         | -0.2                                                                               | 236         | -0.2                                                                               |
| 38          | -1.0                                                                               | 138         | -1.0                                                                               | 238         | -0.2                                                                               |
| 40          | -1.0                                                                               | 140         | -1.4                                                                               | 240         | -0.2                                                                               |
| 42          | 0.2                                                                                | 142         | -0.2                                                                               | 242         | -0.2                                                                               |
| 44          | 0.2                                                                                | 144         | -0.6                                                                               | 244         | -0.2                                                                               |
| 46          | -0.2                                                                               | 146         | -0.2                                                                               | 246         | -0.2                                                                               |
| 48          | -0.6                                                                               | 148         | -0.2                                                                               | 248         | -0.2                                                                               |
| 50          | -1.0                                                                               | 150         | -0.2                                                                               | 250         | -0.2                                                                               |
| 52          | -0.6                                                                               | 152         | -0.2                                                                               | 252         | -0.2                                                                               |
| 54          | 0.6                                                                                | 154         | -0.2                                                                               | 254         | -0.2                                                                               |
| 56          | 0.2                                                                                | 156         | -0.2                                                                               | 256         | -0.2                                                                               |
| 58          | 1.4                                                                                | 158         | -0.2                                                                               | 258         | -0.2                                                                               |
| 60          | -0.2                                                                               | 160         | -0.2                                                                               | 260         | -0.2                                                                               |
| 62          | -0.2                                                                               | 162         | -0.2                                                                               | 262         | -0.2                                                                               |
| 64          | -1.0                                                                               | 164         | -0.2                                                                               | 264         | -0.2                                                                               |
| 66          | 2.2                                                                                | 166         | -0.6                                                                               | 266         | -0.2                                                                               |
| 68          | -0.2                                                                               | 168         | -0.2                                                                               | 268         | -0.2                                                                               |
| 70          | -0.2                                                                               | 170         | -0.2                                                                               | 270         | -0.2                                                                               |
| 72          | -0.2                                                                               | 172         | -0.2                                                                               | 272         | -0.2                                                                               |
| 74          | 0.6                                                                                | 174         | -0.2                                                                               | 274         | -0.2                                                                               |
| 76          | 1.8                                                                                | 176         | -0.2                                                                               | 276         | -0.2                                                                               |
| 78          | -3.8                                                                               | 178         | -0.2                                                                               | 278         | -0.2                                                                               |
| 80          | 3.0                                                                                | 180         | -0.2                                                                               | 280         | -0.2                                                                               |
| 82          | -1.0                                                                               | 182         | -0.2                                                                               | 282         | -0.2                                                                               |
| 84          | 1.0                                                                                | 184         | -0.2                                                                               | 284         | -0.2                                                                               |
| 86          | -1.0                                                                               | 186         | -0.2                                                                               | 286         | -0.2                                                                               |
| 88          | 0.6                                                                                | 188         | -0.2                                                                               | 288         | -0.2                                                                               |
| 90          | -0.6                                                                               | 190         | -0.2                                                                               | 290         | -0.2                                                                               |
| 92          | -0.6                                                                               | 192         | -0.2                                                                               | 292         | -0.2                                                                               |
| 94          | 0.6                                                                                | 194         | -0.2                                                                               | 294         | -0.2                                                                               |
| 96          | 0.6                                                                                | 196         | -0.2                                                                               | 296         | -0.2                                                                               |
| 98          | 1.4                                                                                | 198         | -0.2                                                                               | 298         | -0.2                                                                               |
| 100         | -0.2                                                                               | 200         | -0.2                                                                               | 300         | -0.2                                                                               |

## **Rollover Crash Pulse (Event Record 1) SDM Recorded Vehicle Roll Rate**

Contains No Recorded Data

## **Rollover Crash Pulse (Event Record 1) Lateral Acceleration (SDM Recorded Vehicle Lateral Acceleration for Rollover Event)**

Contains No Recorded Data

**Vertical Crash Pulse (Event Record 1)  
Normal Acceleration (SDM Recorded Vehicle Vertical Acceleration for  
Rollover Event)**

Contains No Recorded Data

**Pre-Crash Data -5.0 to -0.5 sec (Event Record 1)**

| Times (sec) | Accelerator Pedal, % Full (Accelerator Pedal Position) | Service Brake (Brake Switch Circuit State) | Engine RPM (Engine Speed) | Engine Throttle, % Full (Throttle Position) | Speed, Vehicle Indicated (Vehicle Speed) (MPH [km/h]) |
|-------------|--------------------------------------------------------|--------------------------------------------|---------------------------|---------------------------------------------|-------------------------------------------------------|
| -5.0        | 27                                                     | Off                                        | 1856                      | 52                                          | 71 [ 114]                                             |
| -4.5        | 25                                                     | Off                                        | 1856                      | 39                                          | 71 [ 114]                                             |
| -4.0        | 19                                                     | Off                                        | 1792                      | 15                                          | 71 [ 114]                                             |
| -3.5        | 18                                                     | Off                                        | 1792                      | 13                                          | 70 [ 113]                                             |
| -3.0        | 0                                                      | Off                                        | 1664                      | 10                                          | 68 [ 109]                                             |
| -2.5        | 0                                                      | Off                                        | 1600                      | 10                                          | 63 [ 102]                                             |
| -2.0        | 0                                                      | On                                         | 1408                      | 8                                           | 57 [ 91]                                              |
| -1.5        | 0                                                      | Off                                        | 1216                      | 7                                           | 50 [ 81]                                              |
| -1.0        | 35                                                     | Off                                        | 1024                      | 7                                           | 43 [ 70]                                              |
| -0.5        | 0                                                      | Off                                        | 832                       | 2                                           | 37 [ 59]                                              |

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

| Times (sec) | Cruise Control Active | Cruise Control Resume Switch Active | Cruise Control Set Switch Active | Engine Torque (lb-ft [N-m]) | Reduced Engine Power Mode Indicator |
|-------------|-----------------------|-------------------------------------|----------------------------------|-----------------------------|-------------------------------------|
| -2.0        | No                    | No                                  | No                               | -5 [-6]                     | Off                                 |
| -1.5        | No                    | No                                  | No                               | -3 [-4]                     | Off                                 |
| -1.0        | No                    | No                                  | No                               | 3 [ 4]                      | Off                                 |
| -0.5        | No                    | No                                  | No                               | 2 [ 3]                      | Off                                 |

## 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.

DPID \$11

FF FD 40 FC C0 7C 00

DPID \$15

01 02 03 04 05 06 07

DPID \$16

08 09 0A 0D 0E 13 14

DPID \$17

00 0C 00 0B 00 00 00

DPID \$32

00 FD 01 18 00 00 00

DPID \$35

78 00 00 00 00 00 00

DID \$01

41 55 36 34 32 32 45 30 42 35 35 42 34 37 44 30

DID \$03

41 54 36 34 32 32 45 30 31 30 36 42 34 37 44 30

DID \$05

41 48 34 34 37 30 45 30 30 46 37 41 38 44 30 31

DID \$07

41 4A 34 34 37 30 45 30 34 39 37 43 38 44 30 31

DID \$09

44 41 34 34 37 30 45 30 45 32 36 36 38 36 30 31

DID \$0B

44 42 34 34 37 30 45 30 31 31 42 31 38 43 30 31

DID \$0D

30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30

DID \$0F

30 30 30 30 30 30 30 30 30 30 30 30 30 30 30 30

DID \$30

00 00 01 01

DID \$90

32 47 31 31 32 35 53 33 36 45 39 31 32 39 38 38 35

DID \$9A

09 11

DID \$B4

31 33 31 33 32 30 33 30 35 30 31 33 34 35 35 32

DID \$C1

00 CF 5C BD

DID \$C2  
01 60 EA 7E

DID \$C3  
01 60 EA 7F

DID \$CB  
00 CF 5C BC

DID \$31

|      |    |    |    |    |    |    |    |    |    |    |
|------|----|----|----|----|----|----|----|----|----|----|
| 0000 | A5 | 78 | 00 | 00 | 01 | 01 | 0C | 01 | 07 | FF |
| 0010 | FF | 00 | 00 | 00 | 40 | 03 | C0 | 00 | 00 | 00 |
| 0020 | 4C | FC | FC | F0 | 00 | 00 | C0 | 10 | 00 | 23 |
| 0030 | 00 | 00 | 00 | 00 | 12 | 13 | 19 | 1B | 01 | 00 |
| 0040 | 00 | 00 | 00 | 00 | 00 | 0D | 10 | 13 | 16 | 19 |
| 0050 | 1A | 1C | 1C | 1D | 1D | 06 | A6 | 06 | A8 | 06 |
| 0060 | 98 | 06 | 93 | 02 | 07 | 07 | 08 | 0A | 0A | 0D |
| 0070 | 0F | 27 | 34 | 3B | 46 | 51 | 5B | 66 | 6D | 71 |
| 0080 | 72 | 72 | 72 | 00 | 70 | 92 | 01 | 01 | FD | 00 |
| 0090 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0100 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 |
| 0110 | 00 | 00 | 00 | 80 | 52 | 00 | 9E | 5B | 7F | 19 |
| 0120 | FF | FF | FF | FF | FF | FF | 41 | 41 | 81 | 7F |
| 0130 | 82 | 7F | 85 | 7F | 88 | 7F | 8A | 7F | 8D | 7F |
| 0140 | 90 | 7F | 92 | 7F | 94 | 7F | 96 | 7F | 98 | 7F |
| 0150 | 99 | 7F | 9B | 7F | 9B | 7F | 9C | 7F | 9D | 7F |
| 0160 | 9D | 7F | 9E | 7F | 9E | 7F | 9E | 7F | 9E | 7F |
| 0170 | 9E | 7F | 9E | 7F | 9E | 7F | 9E | 7F | 9E | 7F |
| 0180 | 9E | 7F | 9E | 7F | 9E | 7F | 9E | 7F | 99 | 7F |
| 0190 | 99 | 7D | 89 | 7F | 86 | 7B | 82 | 7F | 89 | 7B |
| 0200 | 8A | 84 | 8B | 7E | 8D | 81 | 86 | 7E | 8C | 7C |
| 0210 | 8C | 7E | 92 | 7C | 93 | 7E | 96 | 7F | 95 | 7F |
| 0220 | 91 | 7D | 8E | 80 | 92 | 7D | 95 | 7D | 8E | 80 |
| 0230 | 92 | 80 | 95 | 7F | 8C | 7E | 94 | 7D | 98 | 7E |
| 0240 | 9A | 81 | 92 | 80 | 8C | 83 | 8E | 7F | 90 | 7F |
| 0250 | 92 | 7D | 96 | 85 | 92 | 7F | 90 | 7F | 8E | 7F |
| 0260 | 90 | 81 | 93 | 84 | 8D | 76 | 8C | 87 | 84 | 7D |
| 0270 | 93 | 82 | 91 | 7D | 8A | 81 | 8D | 7E | 8A | 7E |
| 0280 | 90 | 81 | 8D | 81 | 8C | 83 | 8D | 7F | 8D | 7F |
| 0290 | 8D | 80 | 8C | 7E | 8D | 80 | 88 | 81 | 88 | 7E |
| 0300 | 86 | 7F | 87 | 7D | 88 | 7F | 88 | 80 | 85 | 7F |
| 0310 | 84 | 7F | 86 | 7F | 88 | 7F | 8A | 7F | 89 | 7F |
| 0320 | 85 | 7F | 83 | 7F | 84 | 7D | 83 | 7C | 83 | 7F |
| 0330 | 84 | 7E | 84 | 7F | 84 | 7F | 84 | 7F | 83 | 7F |
| 0340 | 82 | 7F | 82 | 7F | 82 | 7F | 82 | 7F | 81 | 7F |
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| 0370 | 7F | 7F | 7F | 7F | 7F | 7F | 7F | 7F | 7F | 7F |
| 0380 | 7F | 7F | 7F | 7F | 7F | 7F | 7F | 7F | 7F | 7F |
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1190  FF FF FF FF FF FF FF FF FF FF
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| 1010 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
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| 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 | FF | FF | FF |
| 1140 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 1150 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 1160 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 1170 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 1180 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
| 1190 | FF | FF | FF | FF | FF | FF | FF | FF | FF | FF |
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## Disclaimer of Liability

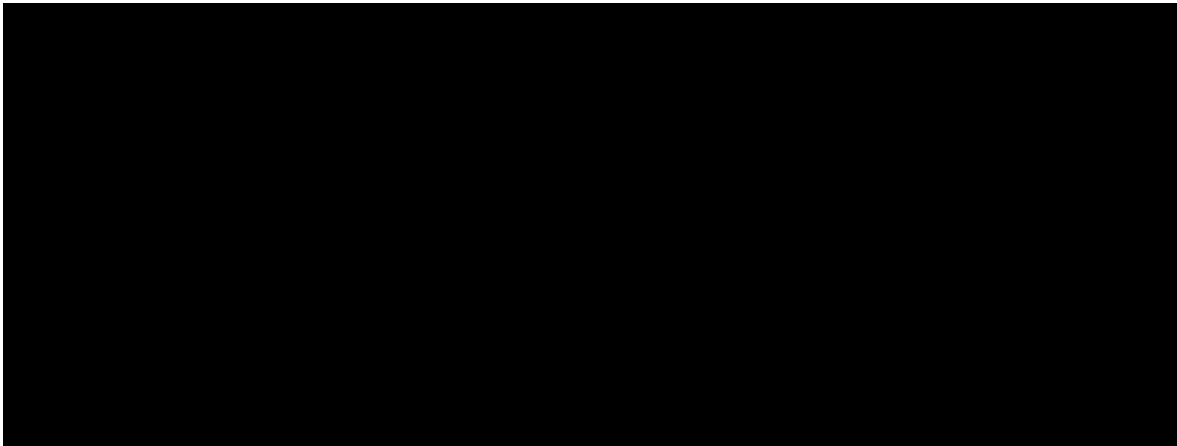
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PE14-010

GM

6/6/2014

Q 3



# FLORIDA TRAFFIC CRASH REPORT

LONG FORM ☒ SHORT FORM ☐ UPDATE ☐

(Electronic Version)

HIGHWAY SAFETY & MOTOR VEHICLES,  
TRAFFIC CRASH RECORDS  
NEIL KIRKMAN BUILDING, TALLAHASSEE, FL 32399-0537

|                                       |                                       |                                        |                                            |                                        |
|---------------------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|
| Date of Crash<br>03/Sep/2013 11:40 AM | Time of Crash<br>03/Sep/2013 11:40 AM | Date of Report<br>03/Sep/2013 12:22 PM | Invest. Agency Report Number<br>[REDACTED] | HSMV Crash Report Number<br>[REDACTED] |
|---------------------------------------|---------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|

## CRASH IDENTIFIERS

|                                       |                                            |                             |                                         |                          |                                       |                                         |
|---------------------------------------|--------------------------------------------|-----------------------------|-----------------------------------------|--------------------------|---------------------------------------|-----------------------------------------|
| County Code<br>29                     | City Code                                  | County of Crash<br>COLUMBIA | Place or City of Crash                  | Within City Limits<br>No | Time Reported<br>03/Sep/2013 11:44 AM | Time Dispatched<br>03/Sep/2013 11:44 AM |
| Time on Scene<br>03/Sep/2013 12:09 PM | Time Cleared Scene<br>03/Sep/2013 01:44 PM | Completed<br>Yes            | Reason (if Investigation NOT Completed) |                          | Notified By<br>Law Enforcement        |                                         |

## ROADWAY INFORMATION

|                                                       |          |                                  |                                                            |                                               |                    |                                       |
|-------------------------------------------------------|----------|----------------------------------|------------------------------------------------------------|-----------------------------------------------|--------------------|---------------------------------------|
| Crash Occurred On Street, Road, Highway<br>[REDACTED] |          | At Street Address#<br>[REDACTED] |                                                            | At Latitude<br>30.2452284/49.59699            |                    | and Longitude<br>-82.6746000/14052195 |
| At Feet<br>200                                        | Or Miles | Direction<br>West                | From Intersection With Street, Road, Highway<br>[REDACTED] |                                               | Or From Milepost # |                                       |
| Road System Identifier<br>1 Interstate                |          | Type Of Shoulder<br>1 Paved      |                                                            | Type Of Intersection<br>1 Not at Intersection |                    |                                       |

## CRASH INFORMATION (Check If Pictures Taken) ☐

|                                                   |                              |                                              |                            |                                                            |
|---------------------------------------------------|------------------------------|----------------------------------------------|----------------------------|------------------------------------------------------------|
| Light Condition<br>1 Daylight                     | Weather Condition<br>1 Clear | Roadway Surface Condition<br>1 Dry           | School Bus Related<br>1 No | Manner Of Collision<br>1 Front to Rear                     |
| First Harmful Event Type                          | First Harmful Event<br>14    | First Harmful Event Location<br>1 On Roadway | Within Interchange<br>No   | First Harmful Event Relation to Junction<br>1 Non-Junction |
| Contributing Circumstances: Road<br>1 None        |                              | Contributing Circumstances: Road             |                            | Contributing Circumstances: Road                           |
| Contributing Circumstances: Environment<br>1 None |                              | Contributing Circumstances: Environment      |                            | Contributing Circumstances: Environment                    |
| Work Zone Related<br>1 No                         | Crash In Work Zone           | Type Of Work Zone                            | Workers In Work Zone       | Law Enforcement In Work Zone                               |

## VEHICLE (Check If Commercial) ☒

|                                                                        |                                                                                                    |                                                   |                                  |                                                         |                                |                                                            |                                                 |
|------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|---------------------------------------------------|----------------------------------|---------------------------------------------------------|--------------------------------|------------------------------------------------------------|-------------------------------------------------|
| Vehicle<br>2                                                           | Motor Vehicle Type<br>1 Vehicle In Transport                                                       | Hit and Run<br>1 No                               | Veh License Number<br>[REDACTED] | State<br>PA                                             | Reg. Expires<br>31/May/2014    | Permanent Reg.<br>No                                       | VIN<br>1XKWD49X66J [REDACTED]                   |
| Year<br>2006                                                           | Make<br>KW                                                                                         | Model<br>SEMI                                     | Style<br>SEMI                    | Color<br>RED                                            | Extent of Damage<br>Minor      | Est. Damage<br>2500                                        | Towed Due To Damage<br>No                       |
| Insurance Company<br>GREAT WEST                                        |                                                                                                    |                                                   |                                  | Insurance Policy Number<br>[REDACTED]                   |                                |                                                            |                                                 |
| Name of Vehicle Owner (Check Box If Business) <input type="checkbox"/> |                                                                                                    | Current Address (Number and Street)<br>[REDACTED] |                                  |                                                         | City and State<br>MYERSTOWN PA |                                                            | Zip Code<br>[REDACTED]                          |
| Trailer One:                                                           | License Number<br>[REDACTED]                                                                       | State<br>PA                                       | Reg. Expires                     | Permanent Reg.<br>Yes                                   | VIN<br>1RNF48A207F [REDACTED]  | Year<br>2007                                               | Make<br>REIT                                    |
| Trailer Two:                                                           | License Number                                                                                     | State                                             | Reg. Expires                     | Permanent Reg.                                          | VIN                            | Year                                                       | Make                                            |
| Vehicle Traveling:                                                     | Direction<br>West                                                                                  | On Street, Road, Highway<br>[REDACTED]            |                                  |                                                         |                                | At Est. Speed<br>65                                        | Posted Speed<br>65                              |
| CMV Configuration<br>2                                                 |                                                                                                    | Cargo Body Type<br>7                              |                                  | Area of Initial Impact                                  |                                | Most Damaged Area                                          |                                                 |
| Gross GVWR/GCWR<br>3 More than 26,000 lbs (11,703 kg)                  |                                                                                                    | Trailer Type (trailer one)<br>Single Semi Trailer |                                  | Trailer Type (trailer two)                              |                                |                                                            |                                                 |
| Haz. Mat. Release<br>1                                                 | Haz. Mat. Placard<br>1                                                                             | Number                                            |                                  | Class                                                   |                                |                                                            |                                                 |
| Motor Carrier Name<br>SHREINER TRUCKING                                |                                                                                                    |                                                   | US DOT Number<br>870285          |                                                         |                                |                                                            |                                                 |
| Motor Carrier Address<br>[REDACTED]                                    |                                                                                                    |                                                   | City and State<br>MYERSTOWN PA   |                                                         |                                | Zip Code<br>[REDACTED]                                     | Phone Number                                    |
| Comm/Non-Commercial<br>1                                               | Vehicle Body Type<br>20 Medium/Heavy Trucks (more than 10,000 lbs (4,536 kg))                      | Vehicle Defects (one)<br>1 None                   |                                  | Vehicle Defects (two)                                   |                                | Emergency Vehicle Use<br>1 No                              | Special Function of MV<br>1 No Special Function |
| Vehicle Maneuver Action<br>1 Straight Ahead                            | Trafficway<br>4 Two-Way, Divided, Positive Median Barrier                                          | Roadway Grade<br>1 Level                          | Roadway Alignment<br>1 Straight  | Most Harmful Event<br>2 Collision with Non-Fixed Object |                                | Most Harmful Event Detail<br>14 Motor Vehicle In Transport |                                                 |
| Traffic Control Device For This Vehicle<br>1 No Controls               | First (1) Sequence of Events<br>2 Collision with Non-Fixed Object<br>14 Motor Vehicle In Transport |                                                   | Second (2) Sequence of Events    |                                                         | Third (3) Sequence of Events   |                                                            | Fourth (4) Sequence of Events                   |

## VEHICLE (Check If Commercial) ☐

|                                |                                              |                     |                              |                      |                               |                      |                              |
|--------------------------------|----------------------------------------------|---------------------|------------------------------|----------------------|-------------------------------|----------------------|------------------------------|
| Vehicle<br>1                   | Motor Vehicle Type<br>1 Vehicle In Transport | Hit and Run<br>1 No | Veh License Number<br>N956LW | State<br>FL          | Reg. Expires<br>30/Jun/2014   | Permanent Reg.<br>No | VIN<br>2G1125036E [REDACTED] |
| Year<br>2014                   | Make<br>CHEV                                 | Model<br>IMPALA     | Style<br>4D                  | Color<br>BLK         | Extent of Damage<br>Disabling | Est. Damage<br>7000  | Towed Due To Damage<br>Yes   |
| Vehicle Removed By<br>CREAMERS |                                              |                     |                              | Rotation<br>Rotation |                               |                      |                              |

|                                                                        |                                             |                                        |                              |                                            |     |                                         |                        |
|------------------------------------------------------------------------|---------------------------------------------|----------------------------------------|------------------------------|--------------------------------------------|-----|-----------------------------------------|------------------------|
| Date of Crash<br>03/Sep/2013 11:40 AM                                  |                                             | Date of Report<br>03/Sep/2013 11:40 AM |                              | Invest. Agency Report Number<br>[REDACTED] |     | IISMV Crash Report Number<br>[REDACTED] |                        |
| Insurance Company<br><b>SELF INSURED</b>                               |                                             |                                        |                              | Insurance Policy Number<br><b>NA</b>       |     |                                         |                        |
| Name of Vehicle Owner (Check Box If Business) <input type="checkbox"/> |                                             | Current Address (Number and Street)    |                              | City and State                             |     | Zip Code                                |                        |
| ALAMO FINANCING LP                                                     |                                             | 6929 N LAKEWOOD AVE STE 100            |                              | TULSA OK                                   |     | 74117-0000                              |                        |
| Trailer One:                                                           | License Number                              | State                                  | Reg. Expires                 | Permanent Reg.                             | VIN | Year                                    | Make                   |
| Trailer Two:                                                           | License Number                              | State                                  | Reg. Expires                 | Permanent Reg.                             | VIN | Year                                    | Make                   |
| Vehicle Traveling:                                                     | Direction                                   | On Street, Road, Highway               |                              |                                            |     | At Est. Speed                           | Posted Speed           |
|                                                                        | West                                        | STATE ROAD 8                           |                              |                                            |     | 25                                      | 70                     |
| CMV Configuration                                                      |                                             | Cargo Body Type                        |                              | Area of Initial Impact                     |     | Most Damaged Area                       |                        |
| Comm GVWR/GCWR                                                         |                                             | Trailer Type (trailer one)             |                              | Trailer Type (trailer two)                 |     |                                         |                        |
| Haz. Mat. Release                                                      |                                             | Haz. Mat. Placard                      |                              | Number                                     |     | Class                                   |                        |
| Motor Carrier Name                                                     |                                             | US DOT Number                          |                              |                                            |     |                                         |                        |
| Motor Carrier Address                                                  |                                             | City and State                         |                              | Zip Code                                   |     | Phone Number                            |                        |
| Comm/Non-Commercial                                                    | Vehicle Body Type                           | Vehicle Defects (one)                  |                              | Vehicle Defects (two)                      |     | Emergency Vehicle Use                   | Special Function of MV |
|                                                                        | 1 Passenger Car                             | 77 Other, Explain in Narrative         |                              |                                            |     | 1 No                                    | 1 No Special Function  |
| Vehicle Maneuver Action                                                | Trafficway                                  | Roadway Grade                          | Roadway Alignment            | Most Harmful Event                         |     | Most Harmful Event Detail               |                        |
| 14 Slowing                                                             | 4 Two-Way, Divided, Positive Median Barrier | 1 Level                                | 1 Straight                   | 2 Collision with Non-Fixed Object          |     | 14 Motor Vehicle in Transport           |                        |
| Traffic Control Device For This Vehicle                                | First (1) Sequence of Events                | Second (2) Sequence of Events          | Third (3) Sequence of Events | Fourth (4) Sequence of Events              |     |                                         |                        |
| 1 No Controls                                                          | 2 Collision with Non-Fixed Object           |                                        |                              |                                            |     |                                         |                        |
|                                                                        | 14 Motor Vehicle in Transport               |                                        |                              |                                            |     |                                         |                        |

#### PERSON RECORD

|                                          |                  |                                           |                     |                                    |                                 |                        |                |
|------------------------------------------|------------------|-------------------------------------------|---------------------|------------------------------------|---------------------------------|------------------------|----------------|
| Person#                                  | Description      | Vehicle #                                 | Name                | Date of Birth                      | Sex                             | Phone Number           | Re-Exam        |
| 1                                        | 1 Driver         | 1                                         | [REDACTED]          | [REDACTED]                         | 2 Female                        |                        | No             |
| Address                                  |                  | City                                      |                     | State                              |                                 | Zip Code               |                |
| [REDACTED]                               |                  | FRANKLIN                                  |                     | TN                                 |                                 | [REDACTED]             |                |
| Driver License Number                    | State            | Expires                                   | DL Type             | Req. End.                          | Injury Severity                 | Ejection               |                |
| [REDACTED]                               | TN               | 22/Mar/2017                               | 5 E/Operator        | 3 No Req Endorsement               | 2 Possible                      | 1 Not Ejected          |                |
| Restraint System                         | Air Bag Deployed | Helmet Use                                | Eye Protection      | Seating Location Seat              | Seating Location Row            | Seating Location Other |                |
| 3 Shoulder and Lap Belt Used             | 2 Not Deployed   |                                           | 3 Not Applicable    | 1 Left                             | 1 Front                         | 1 Not Applicable       |                |
| Drivers Actions at Time of Crash (first) |                  | Drivers Actions at Time of Crash (second) |                     | Driver Distracted By               |                                 | Vision Obstruction     |                |
| 77 Other Contributing Action             |                  |                                           |                     | 1 Not Distracted                   |                                 | 1 Vision Not Obscured  |                |
| Drivers Actions at Time of Crash (third) |                  | Drivers Actions at Time of Crash (fourth) |                     | Drivers Condition at Time of Crash |                                 |                        |                |
|                                          |                  |                                           |                     | 1 Apparently Normal                |                                 |                        |                |
| Suspected Alcohol Use                    | Alcohol Tested   | Alcohol Test Type                         | Alcohol Test Result | BAC                                | Suspected Drug Use              | Drug Tested            | Drug Test Type |
| 1 No                                     | 1 Test Not Given |                                           |                     |                                    | 1 No                            | 1 Test Not Given       |                |
| Source of Transport to Medical Facility  |                  | EMS Agency Name or ID                     |                     | EMS Run Number                     | Medical Facility Transported To |                        |                |
| 2 EMS                                    |                  | LIFEGUARD                                 |                     |                                    | LAKE CITY MEDICAL               |                        |                |

#### PERSON RECORD

|                                          |                  |                                           |                     |                                    |                                 |                        |                |
|------------------------------------------|------------------|-------------------------------------------|---------------------|------------------------------------|---------------------------------|------------------------|----------------|
| Person#                                  | Description      | Vehicle #                                 | Name                | Date of Birth                      | Sex                             | Phone Number           | Re-Exam        |
| 2                                        | 1 Driver         | 2                                         | [REDACTED]          | [REDACTED]                         | 1 Male                          |                        | No             |
| Address                                  |                  | City                                      |                     | State                              |                                 | Zip Code               |                |
| [REDACTED]                               |                  | JONESTOWN                                 |                     | PA                                 |                                 | [REDACTED]             |                |
| Driver License Number                    | State            | Expires                                   | DL Type             | Req. End.                          | Injury Severity                 | Ejection               |                |
| [REDACTED]                               | PA               | 03/Feb/2015                               | 1 A                 | 3 No Req Endorsement               | 1 None                          | 1 Not Ejected          |                |
| Restraint System                         | Air Bag Deployed | Helmet Use                                | Eye Protection      | Seating Location Seat              | Seating Location Row            | Seating Location Other |                |
| 3 Shoulder and Lap Belt Used             | 1 Not Applicable |                                           | 3 Not Applicable    | 1 Left                             | 1 Front                         | 1 Not Applicable       |                |
| Drivers Actions at Time of Crash (first) |                  | Drivers Actions at Time of Crash (second) |                     | Driver Distracted By               |                                 | Vision Obstruction     |                |
| 1 No Contributing Action                 |                  |                                           |                     | 1 Not Distracted                   |                                 | 1 Vision Not Obscured  |                |
| Drivers Actions at Time of Crash (third) |                  | Drivers Actions at Time of Crash (fourth) |                     | Drivers Condition at Time of Crash |                                 |                        |                |
|                                          |                  |                                           |                     | 1 Apparently Normal                |                                 |                        |                |
| Suspected Alcohol Use                    | Alcohol Tested   | Alcohol Test Type                         | Alcohol Test Result | BAC                                | Suspected Drug Use              | Drug Tested            | Drug Test Type |
| 1 No                                     | 1 Test Not Given |                                           |                     |                                    | 1 No                            | 1 Test Not Given       |                |
| Source of Transport to Medical Facility  |                  | EMS Agency Name or ID                     |                     | EMS Run Number                     | Medical Facility Transported To |                        |                |
| 1 Not Transported                        |                  |                                           |                     |                                    |                                 |                        |                |

#### NARRATIVE

|                                       |                                        |                                            |                                        |
|---------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|
| Date of Crash<br>03/Sep/2013 11:40 AM | Date of Report<br>03/Sep/2013 11:40 AM | Invest. Agency Report Number<br>[REDACTED] | HSMV Crash Report Number<br>[REDACTED] |
|---------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|

ID Number Rank Name Troop / Post Officer Agency Phone Number Date Created  
2500 TROOPER M.L. OGLESBY B FLORIDA HIGHWAY PATROL 386-758-0518 Sep 10, 2013

VEHICLE-1, VEHICLE-2 WERE TRAVELING WEST ON STATE ROAD 8 IN THE INSIDE LANE. AS V-1 TRAVELED THE DRIVER STATED THAT THE CAR STARTED SLOWING ON ITS OWN, AS IF THE BRAKES WERE BEING ENGAGED. V-2 WAS CRESTING A SMALL HILL WHEN V-1 BEGAN TO SLOW. V-2 WAS UNABLE TO SLOW IN TIME AND STRUCK THE REAR OF V-1 WITH THE FRONT OF V-2. BOTH VEHICLE BECAME DISABLED UPON IMPACT IN THE INSIDE LANE. DURING A POST CRASH INVESTIGATION OF THE VEHICLE THE CAR HAD SEVERAL CLUSTER LIGHTS ON ITS INSTRUMENT PANEL INDICATING THAT THERE WERE SEVERAL PROBLEMS. ALSO WHILE BEING DRIVEN OFF THE ROADWAY IT APPEARED THAT THE REAR BRAKES WERE ENGAGED.

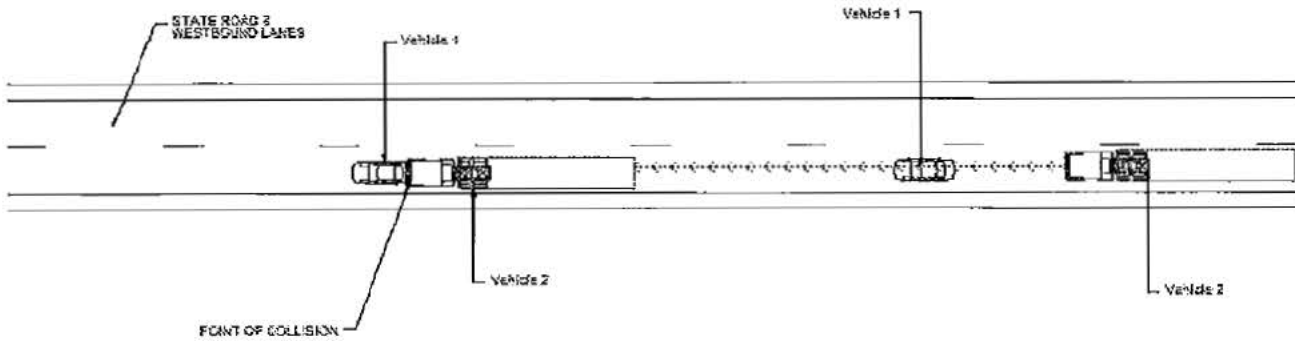
#### REPORTING OFFICER

|                    |                                       |                                      |                           |
|--------------------|---------------------------------------|--------------------------------------|---------------------------|
| ID/Badge #<br>2500 | Rank and Name<br>TROOPER M.L. OGLESBY | Department<br>FLORIDA HIGHWAY PATROL | Type of Department<br>FHP |
|--------------------|---------------------------------------|--------------------------------------|---------------------------|

|                                       |                                        |                                            |                                        |
|---------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|
| Date of Crash<br>03/Sep/2013 11:40 AM | Date of Report<br>03/Sep/2013 11:40 AM | Invest. Agency Report Number<br>[REDACTED] | HSMV Crash Report Number<br>[REDACTED] |
|---------------------------------------|----------------------------------------|--------------------------------------------|----------------------------------------|



NOT TO SCALE





----User Attributes----

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Racf Identifier = SGUTIE0  
User Identifier = SGUTIE0  
Email Address = [REDACTED]  
Web Key Type = IAD  
Web Key Code =  
Agency Name =  
Agent Number =  
Company Name =  
Web Operator Identifier =

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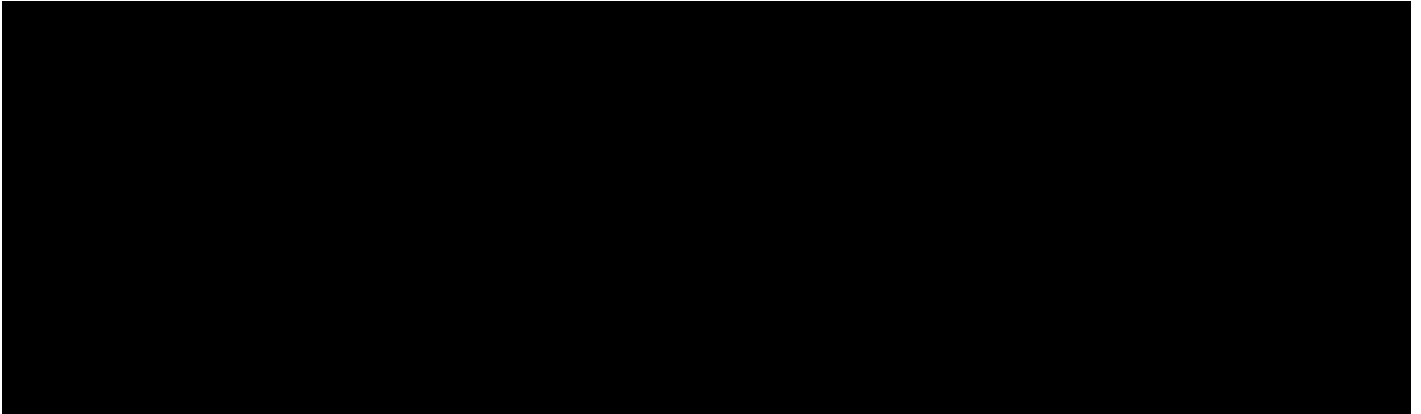
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claimRoot = /gwc/dwp1/uploads/ClaimDocumentUpload/was/  
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claimUserReference = GRW-0046A2  
fileContentType = application/pdf  
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fileOutputName = 001SGUTIE0-18-41-20-130.pdfascii  
fileOutputPath =  
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filePath =  
fileSize = 216131  
insuredName = [REDACTED]  
upload = Upload selected file

PE14-010

GM

6/6/2014

Q 3



**GREAT WEST** CASUALTY COMPANY2030 Falling Water Road, Suite 300  
Knoxville, TN 37922  
800-998-9288 • Claims fax: 800-833-1851*The Difference is...*

768745

Sean

**FAX TRANSMITTAL COVER SHEET**

Date: 1/7/14 #.Sheets: 9  
TO: Esis/GM CLAIMS UNIT Fax: 313-665-0911  
Attn: Claims Dept.  
RE: SUBROGATION DEMAND - \$10,228.37  
FROM: Hannah Reed, Subrogation Attorney, Southeastern  
Region  
Our G57045 Your Claim [REDACTED]  
Claim: Number:  
Our Shreiner Trucking Your General Motors  
Insured: Insured:

VOICE TEL: 865-670-6447(direct) / 800-998-9288 FAX: 800-833-1851

Great West Casualty Company ("Great West") is the insurer of Shreiner Trucking for physical damage to a tractor involved in an accident in Lake City, Florida, on September 3, 2013, caused by the negligence of your insured driver, [REDACTED]. Enclosed please find the related police report. Please confirm whether you are accepting liability on this matter.

Enclosed please find documents confirming that Great West has made the following payments related to this matter.

**SUBROGATION:**

\$ 9,228.37 - SHREINER TRUCKING AND JONESTOWN BANK  
1,000.00 - INSURED'S DEDUCTIBLE

\$ 10,228.37 - TOTAL SUBROGATION DEMAND

Based upon the foregoing, Great West respectfully demands \$10,228.37 to be paid within ten (10) days to resolve its subrogated interest in this matter. Please issue payment to Great West a/s/o Shreiner Trucking and mail to P. O. Box 94, South Sioux City, NE 68776.

Please be advised that Shreiner Trucking and driver, [REDACTED], may have uninsured losses.

Please contact me with any questions or concerns. I can be reached at the above number or by e-mail at h.reed@gwccnet.com.

HARD COPY WILL FOLLOW: \_\_\_\_\_

NO HARD COPY WILL FOLLOW: XXXX

Please Use Claim Numbers In All Communications

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ANY DISSEMINATION, DISTRIBUTION OR COPYING OF THIS COMMUNICATION IS PROHIBITED. YOU ARE  
REQUESTED TO IMMEDIATELY NOTIFY SENDER BY TELEPHONE CALL OF YOUR INADVERTENT RECEIPT.

**DENVER TRUCK PAINTING, INC.**

181 MUDDY CREEK CHURCH ROAD

DENVER, PA, 17517

Tel: 717-336-4941 Fax: 717-336-7422

www.denvertruckpainting.com

**Estimate - Preliminary**

Estimate Prepared by: Mark

Appraised for:

Accident Date:

Date of Loss:

Date: 9/10/2013

Arrival Date:

Estimate#: 09102013

Type of Loss:

Policy Number:

Claim Number: G57045

**Insured:**

Company: Shreiner Trucking

Contact: [REDACTED]

Address: 1021 Little Mountain Road

City, State, Zip Code: Myerstown, Pa. 17067

Telephone, Fax: 717-933-0205, 717-933-1113

Notes: ICCMC 569521

USDOT 870285

Rick's Cell # [REDACTED]

**Insurance Company:**

Company: Great West Casualty Comp.

Contact: Norm Ernest

Address: 2905 North Stone Caver Drive, PO Box 4555

City, State, Zip Code: Bloomington, IN 47402-4555

Telephone, Fax: 800-437-2699 800-833-1851

| Year        | Make            | Model      | Color                 | Trim |
|-------------|-----------------|------------|-----------------------|------|
| 2006        | KENWORTH        | W900 L/S/B | Red-Gray Intron Elite |      |
| Unit Number | License Plate # | Mileage    | Serial#/VIN#          |      |
| 4           | [REDACTED] a.)  | 932,279    | [REDACTED]            |      |

| Sup | Seq | Labor Type | Labor Op | Description                                  | Part Type       | Part Number  | Dollar Amount | Labor Units |
|-----|-----|------------|----------|----------------------------------------------|-----------------|--------------|---------------|-------------|
| 1   |     | Body       | Rem/Rep  | Bumper, Front Chrome                         | Aftermarket New | MA0510210-06 | \$299.75 T    | 1.2*        |
| 2   |     | Body       | Rem/Rep  | Bumper Strut R                               | New             | 401522       | \$16.00 T     | .2*         |
| 3   |     | Body       | Rem/Rep  | Bumper Strut L                               | New             | 401522       | \$16.00 T     | .2*         |
| 4   |     | Mech       | Rem/Rep  | Bracket, Front Spring Mtg                    | L New           | B11-1030MO1  | \$243.28 T    | 2.50**      |
| 5   |     | Body       | Rem/Ins  | R&I Leaf Spring L (To Replace Front Bracket) | Exist           |              |               | 1.7H*       |
| 6   |     | Body       | Rem/Ins  | R&I Hood Assy                                | Exist           |              |               | 1.5         |
| 7   |     | Body       | Rem/Rep  | Shell, Grille Side R                         | New             | RKGP008      | \$96.85 T     | 1.0*        |
| 8   |     | Body       | Rem/Rep  | Shell, Grille Side L                         | New             | RKGP009      | \$96.85 T     | 1.0*        |

| Sup Seq | Labor Type | Labor Op | Description                 | Part Type       | Part Number    | Dollar Amount | Labor Units |
|---------|------------|----------|-----------------------------|-----------------|----------------|---------------|-------------|
| 9       | Body       | Rem/Rep  | Shield, Lower Grille        | New             | RKGP005        | \$42.27 T     | *           |
| 10      | Body       | Rem/Rep  | Shield, Lower Extension     | Aftermarket New | MD1510         | \$76.14 T     | 1.0*        |
| 11      | Body       | Rem/Ins  | R&I Transfer Grille Lights  | Exist           |                | T             | 1.2*        |
| 12      | Body       | Rem/Rep  | Lower Hood Reinforcement    | New             | K046-1640      | \$210.83 T    | *           |
| 13      | Mech       | Rem/Rep  | Grilledenser                | New             | RKGP003        | \$285.65 T    | 1.0#*       |
| 14      | Body       | Rem/Rep  | Moulding, Grille Center     | New             | K167-286       | \$121.59 T    | .2*         |
| 15      | Body       | Rem/Rep  | (6) Moulding, Grille        | New             | K167-407       | \$531.90 T    | 1.2*        |
| 16      | Body       | Rem/Ins  | Recover Refrigerant         | Exist           |                |               | .3          |
| 17      | Mech       | Rem/Rep  | Condenser, A/C              | Aftermarket New | WESTSIDE       | \$186.25 T    | 1.0*        |
| 18      | Body       | Rem/Rep  | Receiver/Drier              | New             | GD11350        | \$33.13 T     | .5*         |
| 19      | Body       | Rem/Ins  | Evacuate & Recharge System  | Exist           |                |               | 1.4         |
| 20      | Mech       | Rem/Rep  | Cooler, Charge Air          | Aftermarket New | WESTSIDE       | \$618.75 T    | 1.0#*       |
| 21      | Body       | Rem/Rep  | Radiator                    | Aftermarket New | WESTSIDE       | \$1,493.75 T  | 4.0#*       |
| 22      | Body       | Rem/Rep  | Top Off Antifreeze (2 Gal.) | Aftermarket New | 3393768        | \$38.12 T     | *           |
| 23      | Body       | Rem/Rep  | S/S Fender Logo Shields     | Aftermarket New | MD1569         | \$86.74 T     | 1.2*        |
| 24      | Body       | Rem/Rep  | S/S Headlight Visor L       | Aftermarket New | MD1512         | \$35.56 T     | *           |
| 25      | Body       | Align    | Align Hood                  | Exist           |                | T             | 1.0*        |
| 26      | Body       | Chk/Adj  | Aim Headlamps               | Exist           |                | T             | .5*         |
| 27      | Body       | Rem/Ins  | R&I Dash As Needed          | Exist           |                | T             | 1.5*        |
| 28      | Body       | Rem/Rep  | Steering Column Assy.       | New             | J19-1046-1002S | \$3,603.34 T  | 3.0*        |
| 29      |            |          | Shop Materials              |                 |                | \$45.00 T     | *           |
| 30      |            |          | Hazardous Waste             |                 |                | \$2.50 T      | *           |

\* - Judgement Item

# - Labor Note Applies

**Labor**

|             |            |         |            |
|-------------|------------|---------|------------|
| Body        | 23.8 Hrs @ | \$75.00 | \$1,785.00 |
| Mechanical  | 5.5 Hrs @  | \$75.00 | \$412.50   |
| Labor Total |            |         | \$2,197.50 |

**Parts**

|                  |            |
|------------------|------------|
| Parts Subtotal   | \$8,132.75 |
| Less Adjustments |            |
| Parts Total      | \$8,132.75 |

**Additional Costs and Operations**

|                       |         |
|-----------------------|---------|
| Addl. Costs/Ops Total | \$47.50 |
|-----------------------|---------|

**Tax****Totals**

|                  |                    |
|------------------|--------------------|
| Sub Total:       | \$10,377.75        |
| Customer Resp.   | \$0.00             |
| <b>Net Total</b> | <b>\$10,377.75</b> |

2006 KENWORTH W900 L/S/B

| Sup | Seq | Labor<br>Type | Labor<br>Op | Description | Part<br>Type | Part Number | Dollar<br>Amount | Labor<br>Units |
|-----|-----|---------------|-------------|-------------|--------------|-------------|------------------|----------------|
|-----|-----|---------------|-------------|-------------|--------------|-------------|------------------|----------------|

---

*This is a preliminary estimate. Additional changes to the estimate may be required for the actual repair.*

*TruckEst does not automatically include items required by many business repair partners. This application allows the author to manually enter line items such as overlap deductions.*

2006 KENWORTH W900 L/S/B

Version 3.0  
Database Edition PHT 13-01

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Page 3 of 3

## ALL PAYEES MUST ENDORSE DRAFT AS DRAWN

INSURED: SHREINER TRUCKING  
OWNER:  
CLAIMANT: SHREINER TRUCKING  
VEHICLE: 2006 KENWORTH CONVENTION - 1XKWD49X66

DRAFT NO: 3856176  
DATE: 09/13/13  
CLAIM NO: [REDACTED]

PAY TO THE SHREINER TRUCKING  
ORDER OF AND JONESTOWN BANK & TRUST

AMOUNT: \*\*\*\*\*9,228.37

REMARKS: ENCLOSED IS A PROOF OF LOSS WHICH WE ASK YOU TO PLEASE SIGN AND  
RETURN TO OUR OFFICE AS SOON AS POSSIBLE.  
\*\*OVERNIGHT UPS\*\*

SEND TO: SHREINER TRUCKING  
653 KUTZTOWN RD  
MYERSTOWN PA 17067-2139

POLICY NO: [REDACTED]  
AGENT: 1893  
DATE OF LOSS: 09/03/13  
TYPE OF LOSS: COLLISION  
TRANS CODE: 210  
ADJ REGION: 00  
O.P.: GX99  
IMG

(PLEASE DETACH BEFORE ENDORSING)

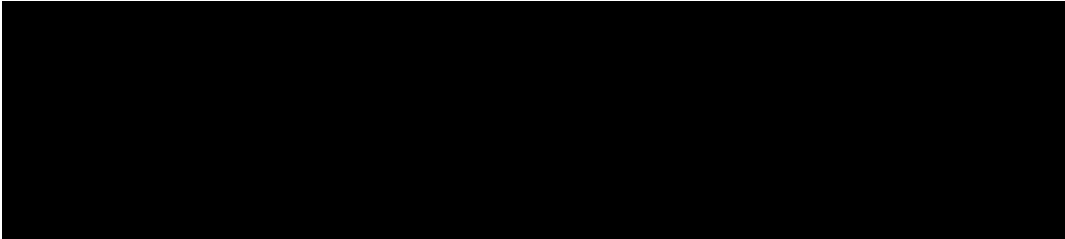
|                                                                                   |              |                                                        |                         |
|-----------------------------------------------------------------------------------|--------------|--------------------------------------------------------|-------------------------|
| GREAT WEST CASUALTY COMPANY<br>1100 WEST 29TH STREET<br>SOUTH SIOUX CITY NE 68776 |              | CHECK FOR<br>210                                       | CHECK NO.<br>[REDACTED] |
| PAY TO THE ORDER OF SHREINER TRUCKING<br>AND JONESTOWN BANK & TRUST               |              | DATE<br>09/13/13<br>AMOUNT<br>*****[REDACTED]          |                         |
| *****[REDACTED]*****                                                              |              |                                                        |                         |
| PAYABLE FOR CASH SETTLEMENT ON ESTIMATE, LESS DEDUCT, LESS BETTERM ENT            |              |                                                        |                         |
| POLICY NUMBER                                                                     | CLAIM NUMBER | INSURED                                                | DATE OF LOSS            |
| [REDACTED]                                                                        | [REDACTED]   | SHREINER TRUCKING                                      | 09/03/13                |
| U.S. BANK                                                                         |              | VALID ONLY WITHIN<br>SIX MONTHS OF ISSUE               |                         |
| b3856176b                                                                         |              | CLAIM FILE COPY<br><b>VOID</b><br>AUTHORIZED SIGNATURE |                         |

PE14-010

GM

6/6/2014

Q 3





## Howell, Rosa (NHTSA)

---

**From:** Sean Z Kelly  
**Sent:** Sunday, April 06, 2014 8:45 PM  
**To:** Liz  
**Subject:** RE [REDACTED] - DOA 9/3/2013. File: [REDACTED]

Liz,

That's ok. Thanks.

We have completed our investigation into [REDACTED] Sept. 3, 2013 accident.

Based on all documentation received and reviewed, ESIS, on behalf of General Motors LLC, will not be in a position to honor your request for damages. If you have any additional evidence that supports your claim of a product defect, please forward it to my attention for further review.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

---

**From:** Liz [<mailto:Liz@whibbsandstone.com>]  
**Sent:** Thursday, April 03, 2014 11:47 AM  
**To:** Sean Z Kelly  
**Subject:** Tracie Durard - DOA 9/3/2013

Mr. Kelly,

Our office is handling the claim for Ms. [REDACTED]. We were informed by Jack at National Car Rental that you would be our new contact regarding Ms. [REDACTED]'s claim. I do not believe that we have previously sent you a letter of representation from our office, so please let me know if you require one.

Thank you for your time.

Liz Plant  
Legal Assistant  
Whibbs & Stone, P.A.  
801 W. Romana Street  
Unit C  
Pensacola, FL 32502  
850.434.5395 Phone  
888.231.5326 Toll Free  
850.469.0043 Fax

[whibbsandstone.com](http://whibbsandstone.com)

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GM

6/6/2014

Q 3



## Howell, Rosa (NHTSA)

---

**From:** Lawrence Harrington  
**Sent:** Tuesday, December 03, 2013 9:55 AM  
**To:** Liz  
**Subject:** RE [REDACTED] Inspection

Good morning Liz,

All the data associated with the documentation of the subject vehicle, reports, etc., have been shared with Jack of ELCO/Enterprise. Jack would be the best resource to obtain information on the Enterprise rental unit.

There is no report created or shared.

Regards,

Lawrence L. Harrington, ARM  
ESIS/General Motors, LLC  
P.O. Box 300  
Mail Code 482 C19 B61  
Detroit, MI 48265 3000  
Tel: 313.665.3387  
Fax: 248.707.1653

---

**From:** Liz [<mailto:Liz@whibbsandstone.com>]  
**Sent:** Tuesday, December 03, 2013 9:50 AM  
**To:** Lawrence Harrington  
**Subject:** [REDACTED] Inspection

Hello Mr. Harrington,

Our office represents Ms. [REDACTED]. I was given your information by Jack at National Car Rental. He said that the inspection report should be ready on Ms. [REDACTED]'s vehicle and I should contact you. If the report is available, please let me know how I should obtain it from you. If there are charges involved with acquiring this report, please let me know this as well.

Thank you for your time Mr. Harrington.

Liz N. Plant  
Legal Assistant  
Whibbs & Stone, P.A.  
850.434.5395 Phone  
888.231.5326 Toll Free  
850.469.0043 Fax  
[whibbsandstone.com](http://whibbsandstone.com)

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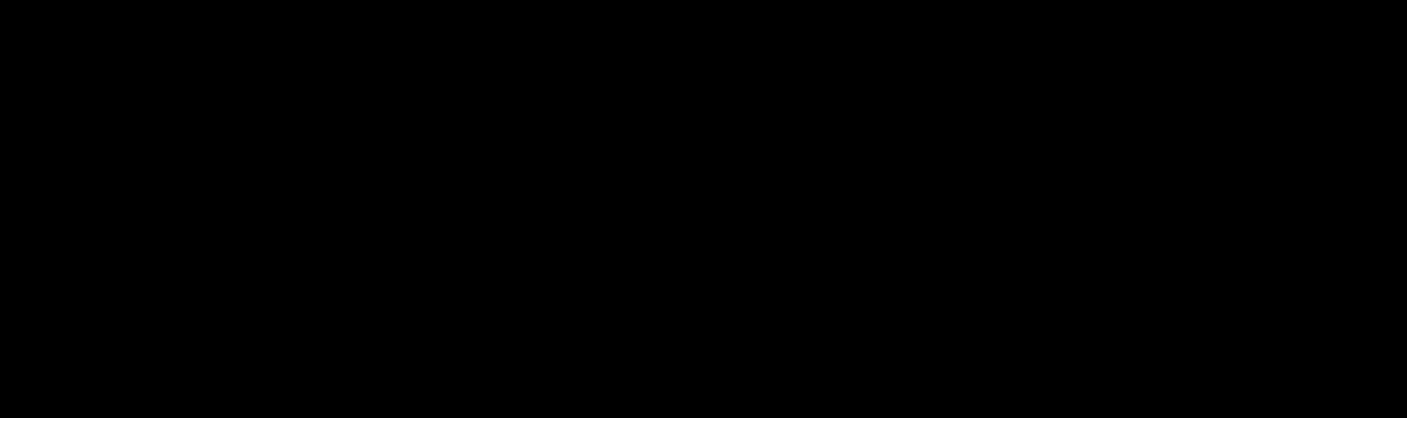
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PE14-010

GM

6/6/2014

Q 3



## Howell, Rosa (NHTSA)

---

**From:** Sean Z Kelly  
**Sent:** Sunday, April 06, 2014 8:34 PM  
**To:** Reed, Hannah  
**Subject:** RE: Your File: [REDACTED]. Your insured: Shreiner Trucking. Our file: [REDACTED]

Hannah,

We have completed our investigation into the Sept. 3, 2013 accident.

Based on all documentation received and reviewed, ESIS, on behalf of General Motors LLC, will not be in a position to honor your request for damages. If you have any additional evidence that supports your claim of a product defect, please forward it to my attention for further review.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

---

**From:** Reed, Hannah [<mailto:H.REED@gwccnet.com>]  
**Sent:** Tuesday, February 11, 2014 2:28 PM  
**To:** Sean Z Kelly  
**Subject:** RE: Your File: [REDACTED]. Your insured: Shreiner Trucking. Our file: [REDACTED]

I don't have a specific allegation. I was informed that if GM found an issue with the subject vehicle you would defend and indemnify National.

Thank you,

Hannah

---

**From:** Sean Z Kelly [<mailto:sean.z.kelly@gm.com>]  
**Sent:** Tuesday, February 11, 2014 12:37 PM  
**To:** Reed, Hannah  
**Subject:** RE: Your File: [REDACTED]. Your insured: Shreiner Trucking. Our [REDACTED]

Hannah,

What is your allegation against GM?  
Please submit all proofs to support your allegation.

Thank you.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300

---

**From:** Reed, Hannah [<mailto:H.REED@gwccnet.com>]  
**Sent:** Tuesday, February 04, 2014 1:32 PM  
**To:** Sean Z Kelly  
**Subject:** RE: Your File: [REDACTED]. Your insured: Shreiner Trucking. Our file: [REDACTED]

Hello Sean,

Thank you for clarification on this matter. I received this matter as a transfer and was informed that there was also potential subrogation against GM depending on some inspection and testing results performed by you. Thus, we forwarded our notice of subrogation to you as well. Please let me know if you have made a liability decision.

Thank you,

*J. Hannah Reed, CPCU*  
Senior Subrogation Attorney  
Great West Casualty  
P.O. Box 94  
South Sioux City, NE 68776-0094  
(865) 670-6447  
(F) (865) 670-6304

**PLEASE NOTE NEW CLAIMS MAILING ADDRESS ABOVE.**

---

**From:** Sean Z Kelly [<mailto:sean.z.kelly@gm.com>]  
**Sent:** Tuesday, February 04, 2014 11:37 AM  
**To:** Reed, Hannah  
**Subject:** Your File: G57045. Your insured: Shreiner Trucking. Our file: 768745

Hannah,

I received your subrogation notice dated Jan. 7, 2014.

You stated that the Sept. 3, 2013 accident was caused by "the negligence of your insured driver, [REDACTED]"

Please note GM does not insure Ms. [REDACTED] nor the 2014 Impala she was driving. Alamo owned the subject Impala and I believe it is self-insured.

Please let me know if you have any questions.

*Sean Kelly*



P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

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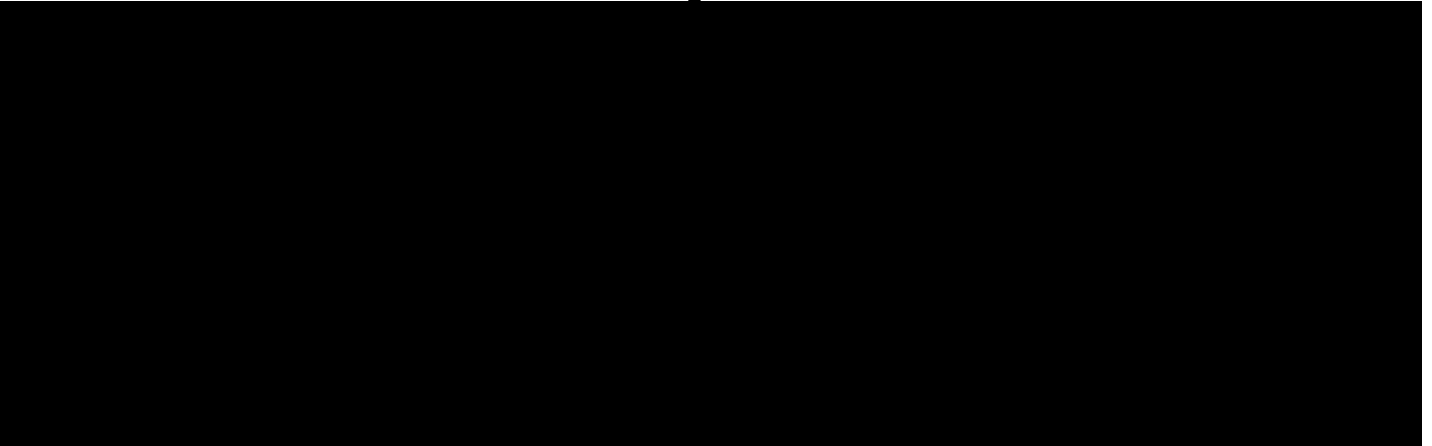
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PE14-010

GM

6/6/2014

Q 3



## Howell, Rosa (NHTSA)

---

**From:** Sean Z Kelly  
**Sent:** Tuesday, February 04, 2014 11:37 AM  
**To:** h.reed@gwccnet.com  
**Subject:** Your File: [REDACTED]. Your insured: Shreiner Trucking. Our file: [REDACTED]

Hannah,

I received your subrogation notice dated Jan. 7, 2014.

You stated that the Sept. 3, 2013 accident was caused by "the negligence of your insured driver, [REDACTED]"

Please note GM does not insure Ms. [REDACTED] nor the 2014 Impala she was driving. Alamo owned the subject Impala and I believe it is self-insured.

Please let me know if you have any questions.

*Sean Kelly*

P.O. Box 300  
Mail Code C19 B61  
Detroit MI 48265-300  
313.665.3500 (Phone)  
248.778.1748 (Fax)

PE14-010

GM

6/6/2014

Q 7



From A1xx PPC:

**Y65 includes:**

ATS and ATS V-Series: Package includes:

(AYF) RR Thorax Airbags (Not Avail for A1BL),

(UFL) Lane Depart Warning, Haptic Seat,

(UEU) Forward Collision Alert - Camera Based, EU requires (UVX) Traffic Sign Recognition,

(TQ5) Intellibeam (available MY14 & Beyond, only for markets that regulatory allow),

(CE1) Rainsense wipers (using LDW sensors),

Direct View Display,

(UFT) Side Blind Zone Alert w/

(UFG) Cross Traffic (ATS V-Series Only.

Includes (UV6) Heads Up Display for ATS V-Series Only.

(-Y66)

A1SL-S includes (UHX) Lane Keeping.

ATS V-Series: Requires Y91 Luxury Package.

**Y66 includes:**

ATS (MY13): Package includes:

(TQ5) Intellibeam (available MY14 & Beyond, only for markets that regulatory allow),

(CE1) Rainsense wipers (using LDW sensors),

(UV6) HUD Full Color Reconfigurable,

(UFT) Side Blind Zone Alert,

(UVZ)RR Virt Bumper,

RR Cross Traffic Collision Alert,

(UGN)Collision Preparation Syst,

FRT Virtual Bumper,

(KSG) Full Speed Range ACC (FSRACC) + Go Notifier,

(AYF) Rear thorax airbags,

(UFL) Lane Departure Warning, haptic seat,

(UEU) Camera based forward collision alert.

(-Y65)

ATS MY2013 only: Content not available for China, S. Korea, Israel for the 13 MY:

(UFT) Side Blind Zone Alert,

(UVZ)RR Virt Bumper, RR Cross Traffic Collision Alert,

(UGN) Collision Preparation Syst. FRT Virtual Bumper,

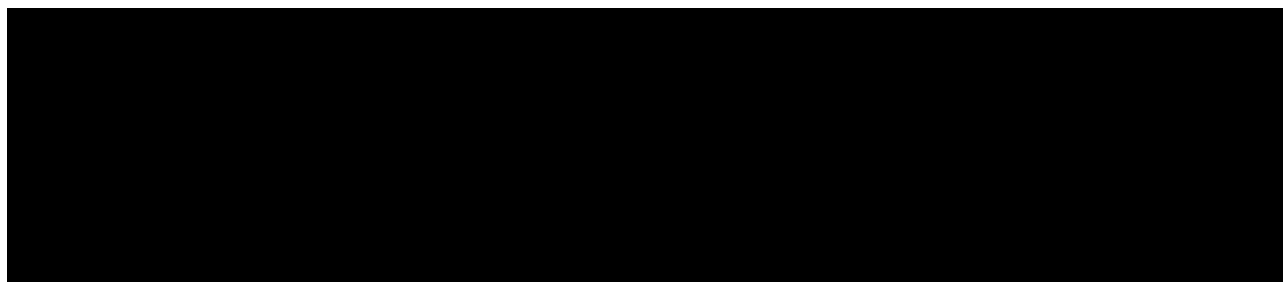
(KSG) Full Speed Range ACC (FSRACC) + Go Notifier,

PE14-010

GM

6/6/2014

Q 7



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## *Crash Avoidance (Active Safety) Feature Overview*

- Address proper customer expectations for crash avoidance/mitigation safety technology
- Provide overview of packages
  - Driver Awareness Package (“alert focused”)
  - Driver Assist Package (“adds automatic control-oriented” features)
    - Includes Driver Awareness Package features
- Explain each feature with 1- or 2- pager
  - Types of crashes addressed → System benefits to customer
  - Operating conditions
  - Displays , controls, and settings
- Provide tips for selling and demonstrating these systems

GM Confidential

## *Creating Proper Expectations*

- This systems “help” drivers avoid crashes or reduce impact speeds
- “Driver Awareness” package provides alert features – NO auto braking or control
- “Driver Assist” package adds:
  - Advanced “stop and go” Adaptive Cruise Control system
  - Automatic front braking (as part of “Collision Prep” feature) and automatic rear braking features
    - Approach is to Alert 1st, and then use front/rear automatic braking (if needed)
    - Automatic braking is ONLY for unusual emergency braking situations – and should NOT be used for normal driving. Customers should never depend on auto braking.
- Ideal for any XTS/ATS/SRX customer
  - The “unexpected” can happen to anyone, even good drivers can look away or be distracted at the wrong time
  - Multi-tasking professionals, parents, drivers that have reduced perceptual (e.g., vision and hearing) capabilities, such as some older drivers



GM Confidential

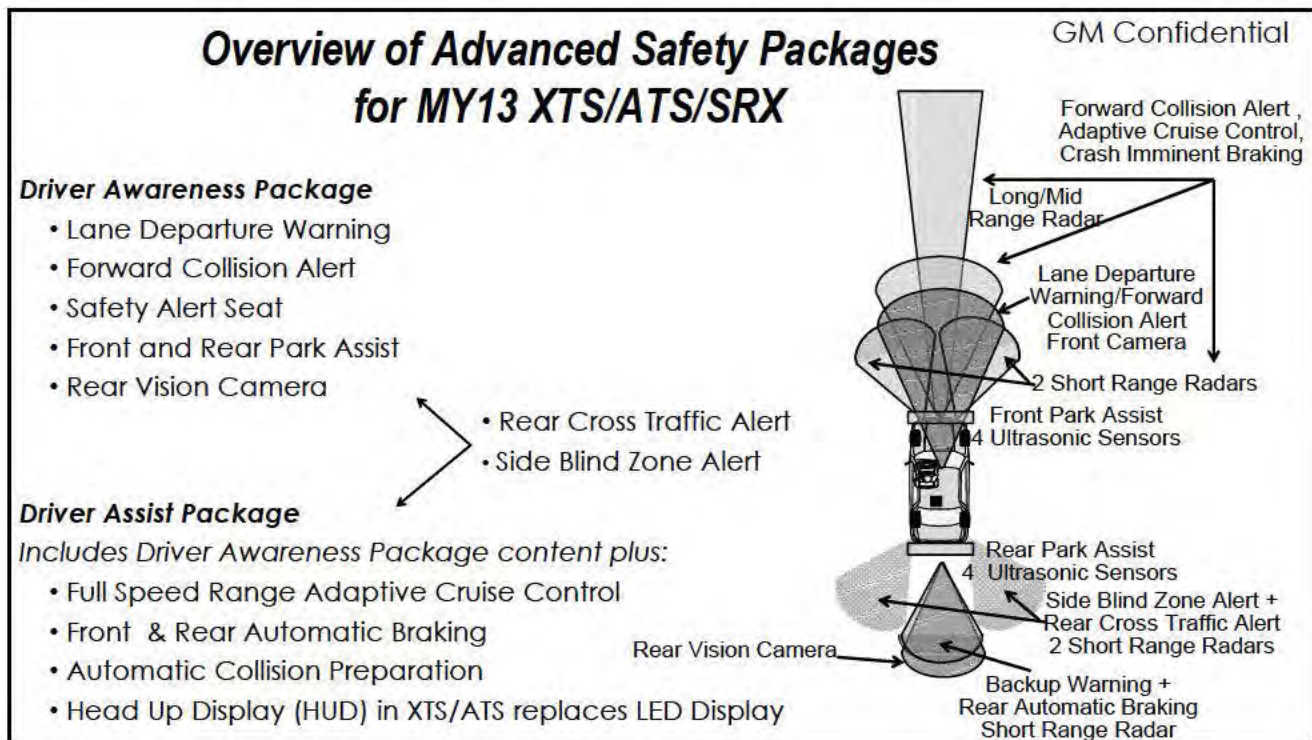
## *Creating Proper Expectations*

- Systems sometimes will trigger false alarms. This is normal operation.
- No guarantees these systems will always work to avoid crashes or reduce impact speeds – though these systems do work under many crash conditions.
- Alerts are suppressed in cases where driver is inferred to be paying attention (e.g., forward collision alerts are suppressed if foot is on brake, lane departure are suppressed if turn signal is active)
  - *Intelligent, smart systems trying to avoid presenting unnecessary alerts that may annoy drivers and lead to them turning systems off*
- Systems are designed to detect vehicles and large objects -- NOT people, bicyclists, or animals
- Current sensing technology cannot be expected to detect people, bicyclists, or animals
- Even with the systems, the drivers need to pay attention and drive safely
- Each system can be individually turned OFF

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## *Creating Proper Expectations*

- Sensors have limited coverage zones and cannot see around curves, over hills, and around objects
- Bad weather (rain, snow, ice, fog), poor visibility, dirty/blocked sensors, and suddenly appearing objects can reduce system performance
- Customer should keep car clean in sensor areas to ensure best system performance
  - front grill area, headlamps, windshield, rear bumper area, rear side panel, rear camera lens



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## Safety Alert Seat

- GM-patented Industry 1<sup>st</sup> alert approach used with ALL crash avoidance features (except Side Blind Zone Alert)
- “Haptic” seat pan vibration alerts occur on left side, right side, or both sides of the bottom of the driver’s seat to indicate direction of crash problem (e.g., left vibrations → left lane departure warning)
  - Visual alerts also occur to help explain alerts
- Simple and intuitive– cuts through visual and auditory “clutter” drivers experience
- Key advantages over alert beeping approach
  - Better communicates direction of crash problem (alert sounds hard to localize in a car)
  - Better detected by hearing-impaired drivers (such as older drivers) and when there are competing noises either inside and/or outside car
  - Less annoying for driver and passengers (some alerts, such as Park Assist and Lane Departure can occur on daily basis)
  - Private to driver (can avoid passengers judging driver, or interfere with other activities in car such as child sleeping)
- Default setting is Safety Alert Seat, but customer can select BEEPS to completely replace all seat vibrations via center stack Vehicle Personalization menu under “Collision/Detection Systems” (“Alert Type”)
  - Similar to choice customers have with their phones to choose vibrations rather than sounds

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## Forward Collision Alert

- Displays and Alerts
  -  indicates when vehicle ahead is detected and alerts can occur
  -  tailgating advisory (or “following much too closely” warning)
  - When rear-end crash may be only a few seconds away (“imminent crash alert”),
    - (1) Safety Alert Seat pulses 5 times on both sides of seat (or 8 high-pitched beeps occur)
    - and
    - (2) Red display flashes on windshield
- Driver Awareness package:
  - Camera technology only (197 foot range)
  - Operates at speeds above 25 mph
- Driver Assist package:
  - 3 radars in front grill + Camera (360 foot range)
  - Operates at all speeds
- Warning system only with Drivers Awareness Package!
- 2 distinct types of alerts: Tailgating and Imminent Crash Alert
- Will not generally trigger “Imminent Crash Alert” unless you are approaching a vehicle ahead rapidly



LED Reflective Display – 6 small red lights



Head-Up Display – Crash Symbol  
(This option is vehicle specific. SRX uses small red lights only)

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## Forward Collision Alert

- To set the timing of the Forward Collision Alert, press steering wheel button, which also simultaneously changes the ACC following gap (time) for vehicles equipped with ACC (in Driver Assist package)
- Each button press cycles gap through “Far,” “Medium” or “Near” settings,
- For FCA, adjustment is for “time to collision”  
For ACC, adjusting is for following or headway time (range/driver speed)
- Drivers are typically using the DEFAULT “Far” setting for FCA
- Setting is kept until driver changes it
- For Driver Awareness package,  
“OFF” setting available via steering wheel control (forward collision alert only)
- For Driver Alert package,  
“OFF” setting available via center stack Vehicle Personalization menu under “Collision/Detection Systems” → “Auto Collision Prep.”

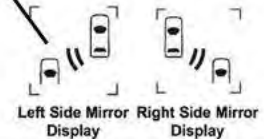
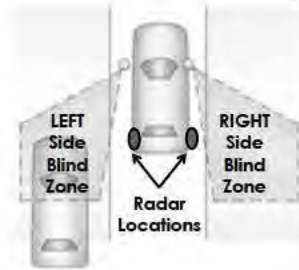




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## Side Blind Zone Alert

- Lane-change aid that helps drivers avoid crashes with vehicles in the left and right side blind zones (or spots) at all forward speeds
- Radar technology coverage is 1 lane over from middle of vehicle and \ extends back approximately 16 feet from side mirror
- Symbol lit in side mirror when vehicle is detected in side blind zone, which flashes if driver puts turn signal on in direction of detected vehicle to provide extra warning not to change lanes
  - No Safety Alert Seat or beeps
  - Visual Warning system only!
- Does not respond to vehicles outside blind zones that may be approaching fast → So before a lane change, driver still needs to check mirror, look over shoulder, and use turn signals
- Tells driver when NOT to change lanes – NOT when it is safe to change lanes
- Well-liked feature!



## Lane Departure Warning

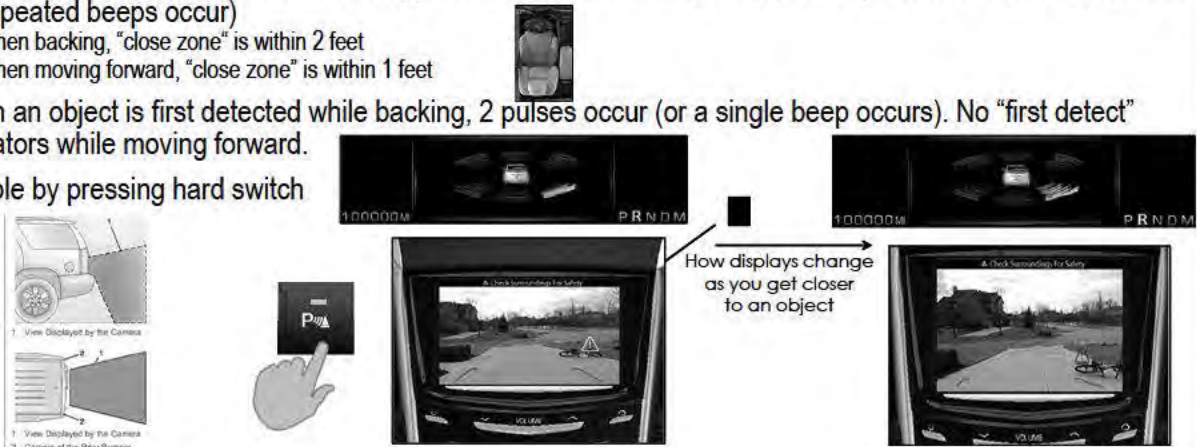
- Helps avoid unintentional "slow lane drift" departures that can lead to crashes → So will not always get alert if driver makes intentional lane change to trigger alert inferred from turn signal usage or if steering maneuvers suggests an intentional lane change (e.g., an abrupt input)
- Operates above 35 MPH
- Camera sensor detects visible lane markings. Works like human eyes. If eyes can't see lane markings – chances are system cannot.
- Display and Alerts
  -  indicates when lanes are detected and alerts can occur
  -  flashes when unsignalled lane departure occurs along with 3 left or 3 right pulses of Safety Alert Seat – depending on lane departure direction (or left- or right-side beeps)
- Disable by pressing hard switch  Light goes off for "OFF" setting
- Warning system only!



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## Ultrasonic Front and Rear Parking Assist Approach

- Instrument Cluster shows locations for both front and rear objects close to the vehicle when parking
- When backing, nearest object is highlighted with yellow or red warning triangle on Rear Vision Camera screen
- When in "close zone" (so it is time to stop), the Safety Alert Seat gives repeated pulses on both sides of seat (or repeated beeps occur)
  - When backing, "close zone" is within 2 feet
  - When moving forward, "close zone" is within 1 foot
- When an object is first detected while backing, 2 pulses occur (or a single beep occurs). No "first detect" indicators while moving forward.
- Disable by pressing hard switch



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## Rear Cross Traffic Alert

- Helps avoid backing crashes with rear cross traffic that can be difficult to see
- Detects crossing traffic behind car when backing up
- Radar technology coverage is up to 65 feet from left or right side of vehicle
- Alerts driver when rear cross traffic is detected when backing up
  - Warning triangles with left/right arrows shown in center console Rear Vision Screen
  - 3 left pulses or 3 right pulses of Safety Alert Seat, depending on side where cross traffic is detected (or 3 low-pitched left/right beeps)



- Turn off via center stack Vehicle Personalization menu under "Collision/Detection Systems"

- Warning system only!

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## Adaptive Cruise Control (ACC)

- Advanced cruise control system that works in conjunction with radar-based Forward Collision Alert
- If no traffic is detected ahead, system works just like regular cruise control
- If traffic is detected ahead, this advanced system provides extra convenience to the driver by automatically braking (up to moderate levels, .3G's) and accelerating vehicle to maintain a driver-selected following gap (or time) to the vehicle ahead
- Can work when traffic in freely moving traffic and under "stop and go" conditions. When stopped, driver may get flashing green "vehicle ahead" reminder and 3 Safety Alert Seat pulses on both sides of the seat (or 3 beeps) to notify driver to resume ACC. following by pressing the accelerator or RES+ control on the steering wheel.
- Driver selects both cruise control speed and desired following gap (near, medium, or far)—gap setting also changes FCA setting



- Forward Collision Alert system warnings (see Slide 13) issued when:
  - Approaching vehicle too quickly for ACC to brake sufficiently to avoid collision
  - ACC turns itself off because of a condition or malfunction

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## Adaptive Cruise Control (ACC)

- To turn ACC ON press steering wheel button
- To select cruise speed press steering wheel button
- To set the desired ACC following gap press steering wheel button
  - Only "New" button (relative to conventional cruise controls)
  - Changing ACC gap also changes Forward Collision Alert timing setting
  - Each button press cycles gap through "Far," "Medium" or "Near" following gap time settings
  - Following distances at each gap setting increase with driver speed
- If ACC is set and brakes are applied, ACC disengages w/o erasing set speed
  - Press "+RES" control to return to previous speed



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## Front (“Collision Prep”) and Rear Automatic Braking



Includes (see example Owner’s Manual text on following page)

- Intelligent Brake Assist
- Brake preparation
- Automatic Braking

- These systems use hard, emergency braking – and are NOT to be used for regular driving (e.g., to do normal parking)
  - Systems can help reduce crash damage and in some low speed situations may avoid the crash altogether
- Rear Automatic Braking uses radar and ultrasonic sensors in the rear bumper
  - When backing quickly, a “Backing Warning” may precede Rear Automatic Braking that consists of series of alert pulses on both sides of Safety Alert Seat (or a series of beeps), along with a brief short application of the brakes
- Front Automatic Braking uses Forward Collision Alert radar and camera sensors
  - Prior to Front Automatic Braking, a Forward Collision Alert system “imminent crash alert” typically occurs (see Slide 13)
- When Automatic Braking brings the vehicle to a stop, it may set the Electronic Parking Brake
- Driver should put their foot on the brake if Front or Rear Automatic Braking happens.
- Driver can also always override Automatic Braking with a firm press of the accelerator pedal.



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## “Collision Prep” = Active Emergency Braking in Owner’s Manual

Driving and Operating 9-59 9-60 Driving and Operating

### Active Emergency Braking System

Object ID: 2711379 Owner: Clark, Loren  
LMD: 07-Nov-2012 LMB: Clark, Loren

If the vehicle has Adaptive Cruise Control (ACC) it also has the Active Emergency Braking System, which includes Intelligent Brake Assist (IBA) and the Automatic Collision Preparation (ACP) System.

#### Intelligent Brake Assist (IBA)

IBA may activate when the brake pedal is applied quickly by providing a boost to braking based on the speed of approach and distance to a vehicle ahead.

Minor brake pedal pulsations or pedal movement during this time is normal and the brake pedal should continue to be applied as needed. IBA will automatically disengage when the brake pedal is released or brake pedal pressure is quickly decreased.

#### Warning

Object ID: 2711353 LMD: 23-Jan-2012

IBA may increase vehicle braking in situations when it may not be necessary. You could block the flow of traffic. If this occurs, take your foot off the brake pedal and then apply the brakes as needed.

#### Automatic Collision Preparation (ACP) System

ACP may help reduce crash damage by applying the vehicle’s brake system and has a detection range of approximately 60 m (197 ft). Braking can only occur if a vehicle is detected ahead. This is shown by the FCA vehicle-ahead indicator being lit. See *Forward Collision Alert (FCA) System* on page 9-56.

#### Warning

Object ID: 2711354 LMD: 12-Dec-2011

ACP is an emergency crash preparation feature and is not designed to avoid crashes. Do not rely on ACP to brake the vehicle.

ACP may not:

- Respond to stopped vehicles, pedestrians, or animals.
- Detect a vehicle ahead on winding or hilly roads.
- Detect a stopped or slow-moving vehicle or other object ahead.
- Detect a vehicle when weather limits visibility, such as in fog, rain, or snow. In these situations, ACP sensor performance is limited.

(Continued)

#### Warning (Continued)

Object ID: 2711354 LMD: 12-Dec-2011

Complete attention is always required while driving, and you should be ready to take action and apply the brakes and/or steer the vehicle to avoid crashes.

#### Brake Preparation

When quickly approaching a vehicle ahead, Brake Preparation reduces brake response time by having the brake system prepared for driver braking to occur more rapidly.

#### Automatic Braking

In some imminent front-end crash situations, if the driver has not applied the brakes, Automatic Braking applies the brakes to help reduce crash damage. It may even help avoid some crashes at very low speeds.

Automatic Braking may slow the vehicle to a complete stop to try to avoid a potential crash, if this

happens, Automatic Braking will engage the electric parking brake to hold the vehicle at a stop. A firm press of the accelerator pedal will release Automatic Braking.

#### Warning

Object ID: 2711357 LMD: 02-Dec-2011

Automatic Braking may automatically brake the vehicle in situations where it may be unnecessary. It could respond to a turning vehicle ahead, guardrails, signs, and other non-moving objects. This could be uncomfortable and startling. To override Automatic Braking, firmly press the accelerator pedal, if it is safe to do so.

Automatic Braking can be disabled or reduced through vehicle personalization. See the “Auto Collision Preparation” portion of “Collision/Detection Systems” under *Vehicle Personalization* on page 5-42.



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## ***Selling Safety Systems***

- The first time a system this comprehensive has been offered by Cadillac
- Adds the best kind of protection—the kind that helps drivers avoid a crash altogether or reduce impact speeds
- Multiple radar and camera sensors all work together to provide “surround” protection
- Industry 1<sup>st</sup> GM-patented Safety Alert Seat alert approach provides intuitive, effective, non-annoying approach
- Be familiar with how systems work → read Owner’s manual
- GM Strategy → Before/During/After protection

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## ***Selling Safety Systems- Guidance for Demonstrations***

- Do NOT demonstrate or encourage drivers to experiment with the following features – which could lead to a crash
  - Front/Rear Automatic Braking
  - Forward Collision Alert system alerts (but can point out “vehicle ahead” display in demo)
- With due care and proper understanding of features, can safely demonstrate following features to customers
  - Side Blind Zone Alert
  - Lane Departure Warning
  - Rear Cross Traffic Alert
  - Front and Rear Park Assist
  - Adaptive Cruise Control

} Use Safety Alert Seat

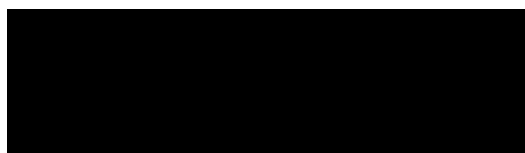


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[2013 Cadillac ATS](#) | [ATS VIN A Service Manual 3086](#) | [Safety and Security](#) | [Preliminary Information](#) |

Document ID: [REDACTED]

## **[REDACTED]: Diagnostic Tips for Adaptive Cruise Control Inoperative or Adaptive Cruise Control Temporarily Unavailable Message Displayed on DIC - (Oct 9, 2013)**

**Subject:** Diagnostic Tips for Adaptive Cruise Control Inoperative or Adaptive Cruise Control Temporarily Unavailable Message Displayed on DIC



**Models:** 2014 Buick LaCrosse, Regal  
2013-2014 Cadillac ATS, SRX, XTS  
2014 Cadillac CTS Sedan  
2014 Chevrolet Impala LTZ  
Equipped with Adaptive Cruise Control (RPO KSG)

This PI has been revised to add the XTS. Please discard [REDACTED]

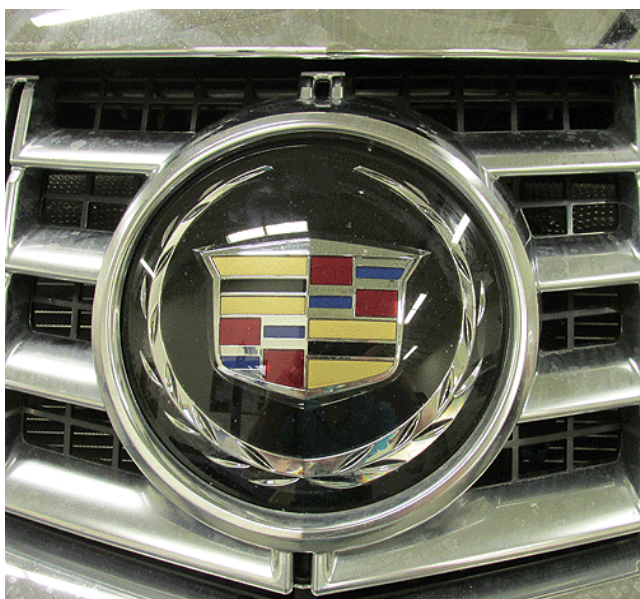
### Condition / Concern

Some customers may comment that the Adaptive Cruise Control Temporarily Unavailable message is displayed on the DIC.

This condition may be caused by the forward range radar module being blocked by the installation of an accessory or incorrect grille.

### Recommendation / Instructions

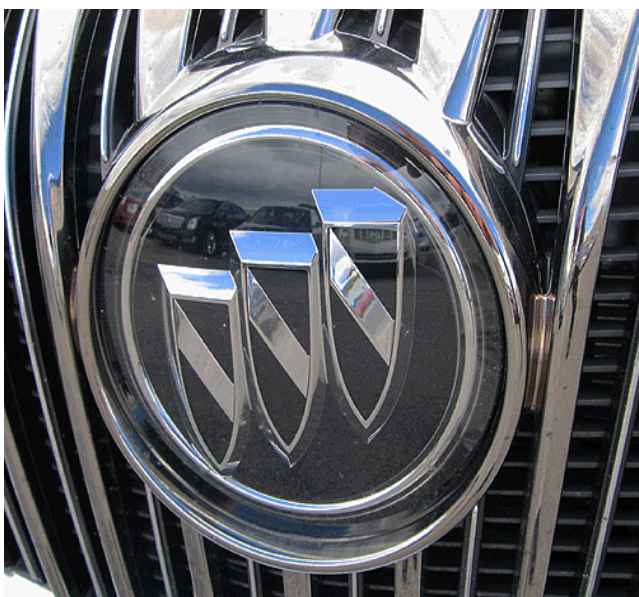
[ATS, CTS, SRX and XTS \(notice the lens appearance around the emblem\)](#)



[Impala LTZ](#)



**LaCrosse Shown, Regal Similar (notice the lens appearance around the emblem)**



Determine if the forward range radar module is blocked using the GDS2 or inspect for the installation of an accessory or incorrect grille. The pictures above show the correct grille for vehicles equipped with adaptive cruise control. If it is determined that the forward range radar module is blocked due to the installation of an accessory grille or incorrect grille, the grille should be removed.

### **Warranty Information**

If the root cause is determined to be the installation of an accessory or incorrect grille, a warranty claim should NOT be submitted against the repair, rather, this should be a customer pay item.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



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## #PI1242: Diagnostic Tip for Long Range Calibration Not Completing After Replacing the Forward Range Radar Module, "Service Driver Assist" Message Fails to Turn Off, DTC B390C 66 May or May Not be Set - (May 16, 2014)

**Subject:** Diagnostic Tip for Long Range Calibration Not Completing After Replacing the Forward Range Radar Module, "Service Driver Assist" Message Fails to Turn Off, DTC B390C 66 May or May Not be Set



**Models:** 2013-2014 Cadillac ATS, SRX, XTS  
2014 Cadillac CTS Sedan (VIN A)  
2015 Cadillac Escalade Models

### Condition / Concern

If the Radar Sensor Module - Long range Calibration will not complete and the "Service Driver Assist" message fails to turn off after operating the vehicle for 10-30 minutes of normal driving, the mounting bracket for the forward range radar module may be bent or out of position. DTC B390C 66 may or may not be set.

If the vehicle had previously been in a collision event this may contribute to the condition. The forward range radar module must be mounted at 90 degrees +/- 3 degrees.

### Recommendation / Instructions

Use a digital angle gauge to check the vertical alignment of the forward range radar module at the edge or on the bracket behind the module. The forward range radar module must be mounted at 90 degrees +/- 3 degrees. Digital angle gauges can be purchased online and at many tool supply stores. Digital angle apps are also available for many Smart Phones. Adjust the bracket to obtain 90 degree +/- 3 degrees.

Alignment of the forward range radar module is performed under the following vehicle conditions:

1. With an empty vehicle:
  - There shall not be any other person in the vehicle.
  - Specific equipment can remain in the vehicle.
  - Luggage must not exceed 5 kg (11 lb).
2. The vehicle must stand on a flat surface. Example, placed on an alignment rack.
3. The vehicle tires must have specified air pressure.

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[2014 Chevrolet Impala \(VIN 1\)](#) | [Impala Service Manual 5467744](#) | [Brakes](#) | [Preliminary Information](#) |

Document ID: [REDACTED]

## #PIC5428E: EBCM Wheel Speed Sensor Diagnostic Aid for ABS Message - Click Or Ratchet Noise - Service Traction Message - Service Stabilitrak Message - Service Steering Message - (May 10, 2013)

**Subject:** EBCM Wheel Speed Sensor Diagnostic Aid for ABS Message - Click Or Ratchet Noise - Service Traction Message - Service Stabilitrak Message - Service Steering Message

**Models:** 2008-2013 Buick Enclave  
2010-2013 Buick LaCrosse  
2011-2013 Buick Regal  
2012-2013 Buick Verano  
2008-2013 Cadillac CTS/CTS-V  
2010-2013 Cadillac CTS Wagon  
2011 2013 Cadillac CTS/CTS-V Coupe  
2010-2013 Cadillac SRX  
2013 Cadillac XTS - FWD Models (rear non-driven wheel bearings only)  
2010-2013 Chevrolet Camaro  
2011-2013 Chevrolet Camaro Convertible  
2009-2012 Chevrolet Colorado  
2011-2013 Chevrolet Cruze, Volt  
2010-2013 Chevrolet Equinox  
2014 Chevrolet Impala (New Body Style)  
2013 Chevrolet Malibu  
2009-2013 Chevrolet Traverse  
2009-2012 GMC Canyon  
2007-2013 GMC Acadia  
2010-2013 GMC Terrain  
2007-2010 Saturn Outlook  
with any of the following DTCs or Symptom codes C0035 C0040 C0045 C0050 with symptom bytes 18 5A 0F



**This PI was superseded to update concern and subject line. Please discard PIC5428D.**

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

### Condition/Concern

Some customers may comment on any of the following conditions:

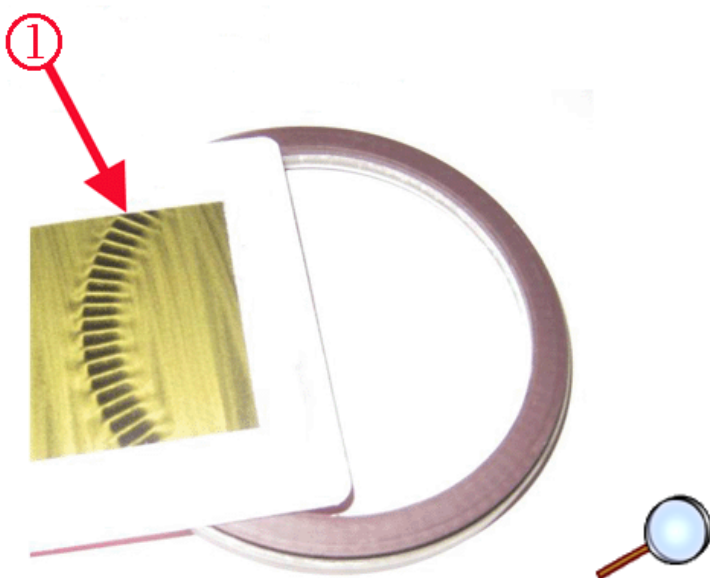
- The ABS, Service Traction Control System, and/or Service Stabilitrak telltale lights are on. During initial scan for EBCM module diagnostic codes you may find one or more of the following DTCs C0035-C0050 with specifically symptom bytes 18, 5A, 0F.

**Note:** For vehicles equipped with Electric Power Steering RPO NJ2 only - Operator may also notice a Service Steering Message displaying in the Driver Information Center (DIC) and will experience heavier steering feel at low speed or static steering maneuvers when this happens. This will be accompanied with the Power Steering Control Module setting DTC U0415. This is a normal default action with the loss of a Wheel Speed Sensor signal. If DTC U0415 remains after removal of the Wheel Speed Sensor debris refer to published diagnostics.

- A brief and intermittent noise, click, ratchet, grind, or ABS pump motor noises typically heard from the inside of the vehicle at parking lot speeds.
- A flashing Traction Control or Stabilitrak telltale at low speeds.
- The latter two conditions correspond with no reported EBCM / ABS / Stability DTCs set current or history.

These conditions may be caused by single or multiple pieces of ferrous metallic debris stuck to the wheel speed sensor magnetic encoder ring. This magnetic encoder ring is now part of the inboard bearing hub assembly.

Background Information:

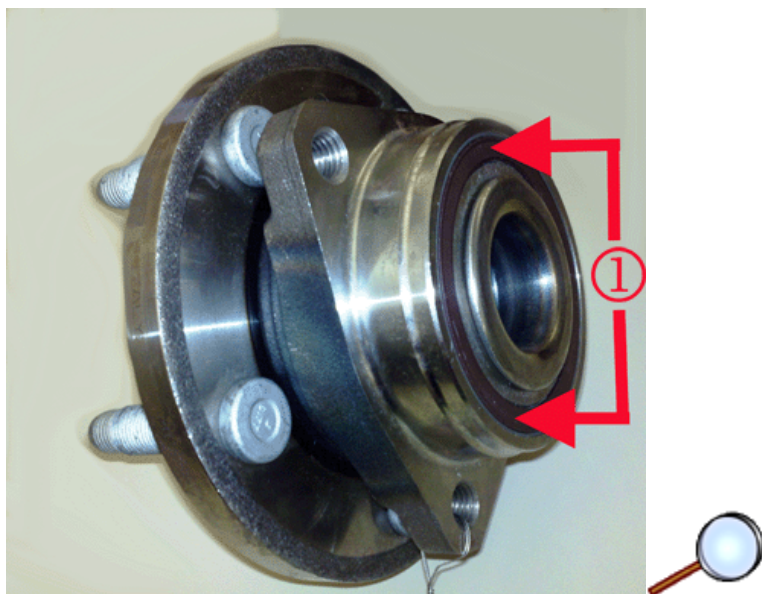


(1.) Wheel Speed Sensor

Magnetic Encoder Ring - North and South Poles are shown

New Bearing Design:





(1.) Magnetic Encoder Ring

Some new model vehicles today have begun to use a different type of wheel speed sensor encoder ring or tone wheel. Instead of a traditional mechanical type tooth tone wheel, the wheel speed sensor tone wheel is now made of a magnetized nitrile rubber ring, typically brown in color. This magnetic encoder consists of multiple North and South Pole pairs surrounding the outer circumference. When this magnetic encoder ring rotates and passes by the wheel speed sensor head; it generates a sign wave in the wheel speed sensor. The wheel speed sensor converts an analog signal to a digital square wave, and typical digital signal values switch between 7mA (Low) and 14mA (High) DC current.

### Recommendation / Instructions

Inspect and clean debris from the Encoder Ring.

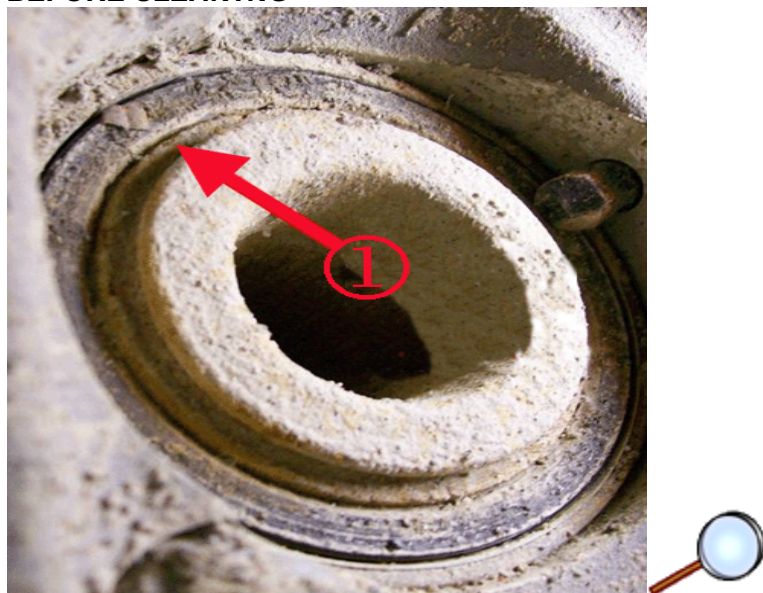
Inspection and Cleaning Procedure:

Below inspection and cleaning procedure is supporting information to the SI wheel speed sensor diagnostic mechanical fault table. In most cases the DTCs C0035-C0050 with symptom bytes 18, 5A, 0F can be repaired by removing and/or cleaning any accumulated debris on the magnetic encoder ring, which is located on the inboard side of the bearing hub.

**Important:** Most repairs can be performed without any replacement of the bearing hub assembly or wheel speed sensor.

**Caution:** Take care not to damage the bearing outer seal when brushing and/or cleaning the magnetic encoder debris.

Do not use any type of magnetic tool to remove the debris from the bearing magnetic encoder; an external magnet can damage the encoder.

**BEFORE CLEANING****(1.) Sample Debris**

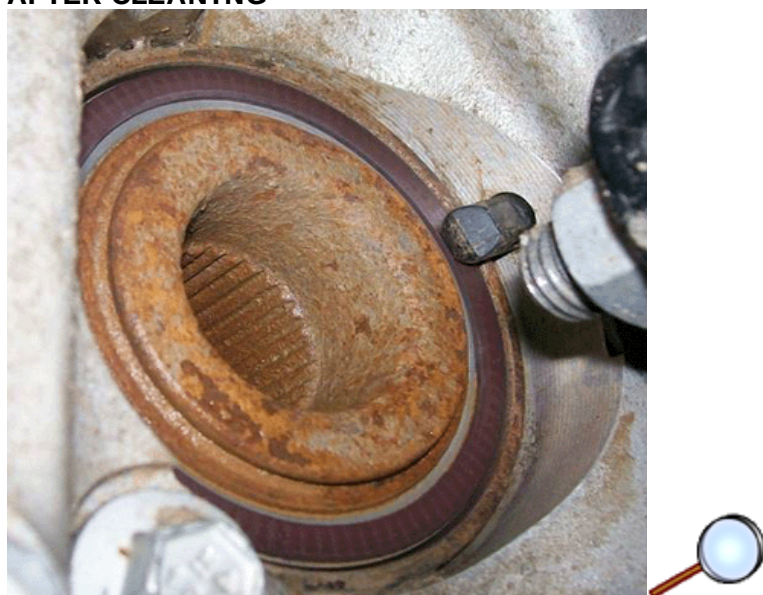
1. Based on the specific EBCM module Wheel Speed Sensor DTC code; inspect the appropriate corner magnetic encoder ring for possible debris.

- C0035 Left Front Corner
- C0040 Right Front Corner
- C0045 Left Rear Corner
- C0050 Right Rear Corner

2. If debris is found, perform the following cleaning recommendations.

**Important:** To properly clean the magnetic encoder ring, some applications may require removal of the bearing/hub assembly. Refer to the specific Wheel Bearing and Hub Replacement procedure in SI.

- 2.1. Gently using a dry nylon soft bristle brush, remove the foreign debris off the magnetic encoder ring. If debris was removed, proceed to step 3.
- 2.2. If debris still remains, wash the encoder ring using a mild soap detergent and wipe dry.

**AFTER CLEANING**

1. Connect a scan tool to the vehicle. Turn ON the ignition. Clear the DTCs.
2. Perform vehicle diagnostic repair verification procedure for DTC: C0035-C0050. Refer to SI.

### Warranty Information

For vehicles repaired under warranty use:

| Labor Operation                                                                                               | Description                                                                    | Vehicle(s) Involved                                                                                                                                         | Labor Time |
|---------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|
| * H9757                                                                                                       | Inspect and Clean Debris From Front Wheel Speed Sensor Encoder Ring (One Side) | Camaro, CTS (RWD), Colorado (RWD), Canyon (RWD)                                                                                                             | 0.4 hr     |
|                                                                                                               |                                                                                | SRX, Volt                                                                                                                                                   | 0.7 hr     |
|                                                                                                               |                                                                                | CTS (AWD), Acadia, Enclave, Outlook, Traverse, Equinox, Terrain, Cruze, Verano                                                                              | 1.0 hrs    |
|                                                                                                               |                                                                                | LaCrosse, Regal                                                                                                                                             | 0.9 hr     |
|                                                                                                               |                                                                                | Malibu                                                                                                                                                      | 0.8 hr     |
|                                                                                                               |                                                                                | Impala, XTS                                                                                                                                                 | 1.6 hr     |
|                                                                                                               |                                                                                | Colorado (4WD), Canyon (4WD)                                                                                                                                | 1.9 hr     |
| * H9758                                                                                                       | Inspect and Clean Debris From Rear Wheel Speed Sensor Encoder Ring (One Side)  | Acadia (FWD), Enclave (FWD), Outlook (FWD), Traverse (FWD), SRX (FWD), LaCrosse (FWD), Regal (FWD), Equinox (FWD), Terrain (FWD), Malibu, Impala, XTS (FWD) | 0.4 hr     |
|                                                                                                               |                                                                                | Camaro, CTS, Equinox (AWD), Terrain (AWD)                                                                                                                   | 0.9 hr     |
|                                                                                                               |                                                                                | SRX (AWD)                                                                                                                                                   | 1.1 hrs    |
|                                                                                                               |                                                                                | LaCrosse (AWD), Regal (AWD)                                                                                                                                 | 2.1 hrs    |
|                                                                                                               |                                                                                | Acadia (AWD), Enclave (AWD), Outlook (AWD), Traverse (AWD)                                                                                                  | 1.0 hrs    |
|                                                                                                               |                                                                                | Volt                                                                                                                                                        | 0.8 hr     |
|                                                                                                               |                                                                                | Cruze, Verano                                                                                                                                               | 0.6 hr     |
|                                                                                                               |                                                                                | XTS (AWD)                                                                                                                                                   | 1.4 hr     |
| *This is a unique labor operation number for PI use only. This will not be published in the Labor Time Guide. |                                                                                |                                                                                                                                                             |            |

**Additional SI Keywords:**

SYM18 SYM5A SYM0F 8 SYM 5A SYM 0F C003518 C00355A C00350F C004018 C00405A C00400F  
C004518 C00455A C00450 C005018 C00505A C00500F

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.

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Document ID: [REDACTED]

## #PIC5814: U023A SYM00 Set History For Loss Of Communication With Active Safety Control Module - (Apr 25, 2013)

**Subject:** U023A SYM00 Set History For Loss Of Communication With Active Safety Control Module



**Models:** 2013 Cadillac ATS with RPO Y66 / UGN  
2013 Cadillac XTS with RPO PCX / UGN  
2013 Cadillac SRX with RPO PCX / UGN

The following diagnosis might be helpful if the vehicle exhibits the symptom(s) described in this PI.

### Condition / Concern

While performing diagnostics on a vehicle it may be noticed that DTC U023A SYM00 (Lost Communication with Active Safety Control Module) (with UGN) may be set in one or all of the short range radars. The DTC(s) will be history and may reset history during an ignition cycle.

### Recommendation / Instructions

**Note:** Do NOT replace any parts for this issue.

All three Short Range Radar Sensor Modules may falsely set a DTC U023A SYM00 at every power down cycle. The Short Range Radar Sensor Modules continue to monitor communication of the Active Safety Control Module in the Off power mode and there is a brief moment where the Active Safety Control Module stops communicating prior to the Object Bus Communication Enable line going low. It is during this time that the Short Range Radar Sensor Modules trigger the U023A SYM00 DTC.

**Note:** The U023A SYM00 that resets History will NOT cause any Service Warning Display messages or impact any active safety functionality. There is no repair required for the Short Range Radar Sensor Modules.

Please follow this diagnostic or repair process thoroughly and complete each step. If the condition exhibited is resolved without completing every step, the remaining steps do not need to be performed.

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



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[2014 Chevrolet Impala \(VIN 1\)](#) | [Impala Service Manual 5467744](#) | [Preliminary Information](#) | Document ID: [REDACTED]

## #PIE0300: Engineering Information - Unwanted Braking - (May 20, 2014)

**Subject:** Engineering Information – Unwanted Braking

**Models:** 2014 Chevrolet Impala  
**NOT Equipped with RPO UEU and/or KSG**

**Attention:** Proceed with this PI ONLY if the customer has commented about this concern AND the PIE number is listed in the Global Warranty Management / Investigate History link (GWM/IVH). If the customer has not commented about this condition or the EI does not show in GWM/IVH, disregard the PI and proceed with diagnostics found in published service information. **THIS IS NOT A RECALL** — refer to the latest version of Service Bulletin 04-00-89-053 for more details on the use of Engineering Information PIs.



### Condition

**Important:** If the customer did not bring their vehicle in for this concern, DO NOT proceed with this EI.

Some customers may comment on one or more of the following conditions related to unwanted braking with or without any alerts prior to the event:

- The park brake does not always release or customer feels like it is dragging
- Feels like park brake is applied with no warning lights on
- The PARK brake or Service Park Brake light is on
- Service Parking Brake message is displayed in the DIC
- The vehicle unexpectedly decelerated on its own
- Unwanted activation of the brakes while driving

### Cause

GM Engineering is attempting to determine the root cause of the above condition. Engineering has a need to gather information on vehicles PRIOR to repair that may exhibit this condition. As a result, this information will be used to "root cause" the customer's concern and develop/validate a field fix.

### Instructions

**Important:** This request applies only to vehicles WITHOUT RPOs UEU and/or KSG.

Perform the following steps before calling GM engineering:

1. Obtain from the customer the driving conditions under which the event occurs: specific road/location, speed, cruise control on/off, traffic (stop/go, etc.), weather (temperature, sunny, cloudy, raining), time of day, the number of times this has happened, what did they do before, during and after the event, was there other electrical loads (cell phone chargers, GPS, bluetooth pairing, etc.).
2. Obtain from the customer if any audible or visual alerts were observed prior to, during or after the event.



3. Generate a GDS2 complete scan report PDF file from the "Read Vehicle Wide DTC & ID Information" area of Vehicle Diagnostics Module.
4. Please record the following:
  - Dealer Name, BAC and Technician Name
  - Does vehicle have any aftermarket accessories? If yes, please note what they are.
  - Number of day's vehicle was down, if any?
  - Was the vehicle towed to the dealer?
  - Is the vehicle a stock unit?
5. Please email the PDF file along with the above information to [brian.w.quinn@gm.com](mailto:brian.w.quinn@gm.com) and contact the engineer listed below for further instructions.

In the event the engineer is not able to take the call, please email the above information and leave a voicemail with the following information:

- Technician name
- Dealer name and phone number
- Complete VIN and repair order (R.O) number

On the repair order, document the date and time the call was placed (even if the engineer was not reached).

If engineering is unable to return the call within one hour, proceed with diagnosis and repair based on information found in SI.

#### Contact Information

| Engineer Name | Phone Number |
|---------------|--------------|
| Brian Quinn   | 248-534-9657 |

#### Warranty Information

If engineer was contacted or required information was provided, use:

| Labor Operation                                                                                            | Description                                | Labor Time |
|------------------------------------------------------------------------------------------------------------|--------------------------------------------|------------|
| 2480088*                                                                                                   | Engineering Information – Unwanted Braking | 0.6 hr     |
| *This is a unique Labor Operation for Bulletin use only. It will not be published in the Labor Time Guide. |                                            |            |

GM bulletins are intended for use by professional technicians, NOT a "do-it-yourselfer". They are written to inform these technicians of conditions that may occur on some vehicles, or to provide information that could assist in the proper service of a vehicle. Properly trained technicians have the equipment, tools, safety instructions, and know-how to do a job properly and safely. If a condition is described, DO NOT assume that the bulletin applies to your vehicle, or that your vehicle will have that condition. See your GM dealer for information on whether your vehicle may benefit from the information.



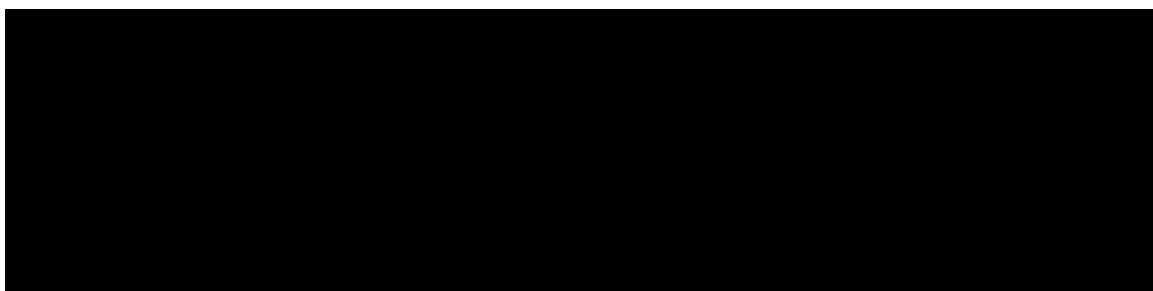
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# ESS2 Overview



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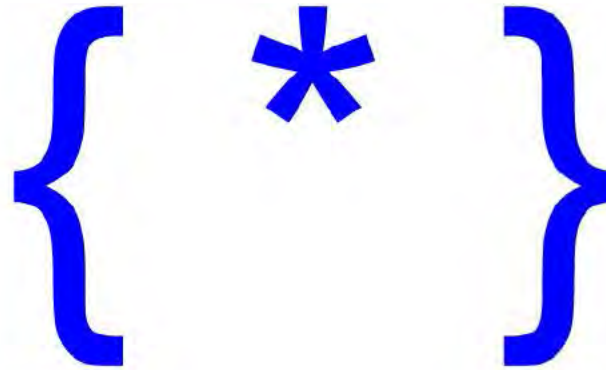
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09MR11

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## ESS2 Overview – Rear Features



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# Forward Collision Alert (FCA)

Evaluates collision threats in the vehicle's forward path and alerts the driver of a potential collision threat.

## How it Works:

- Uses forward-looking sensor(s) (RADAR, Camera, LIDAR).
- Determines the location, range, and relative speed of forward, in-path vehicles.
- Green telltale indicates a Target is Acquired.
- Tailgating causes a steady, red telltale.
- Red / Yellow Flashing telltale warns of potential collision.
- Audible tone/chime and/or haptic seat warning for potential collisions.

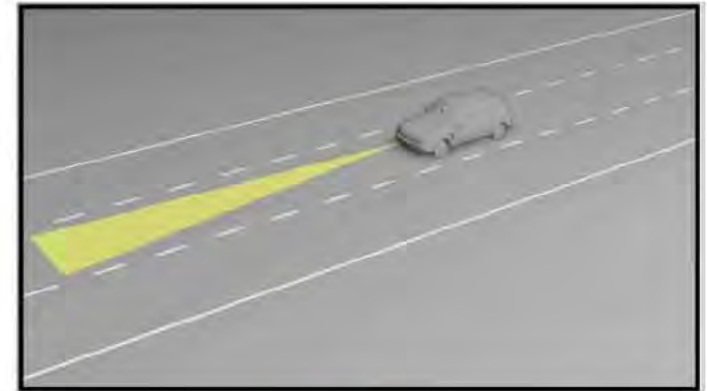
## Customer Benefits:

- Assists the driver to avoid rear-end collisions.
- Part of U.S. Collision Avoidance NCAP beginning 2010MY.

## GM Vehicle Intro:

2005 XLR

2008 STS, DTS



or



Active Safety Controls

# Integrated Brake Assist (IBA)

When frontal impact threat is high, the system augments the driver's commanded braking as much as is needed to avoid the impact.

## How it Works:

- Uses forward-looking sensor(s) (RADAR, Camera, LIDAR), brake control and engine control.
- Determines the driving scenario and probability of a collision with forward, in-path objects.
- Works in conjunction with Forward Collision Alert.
- When the driver presses the brake the system adds pressure above the driver's commanded level (if needed) to avoid the impact.
- The driver can override this behavior by releasing the brake pedal or pressing the accelerator pedal.

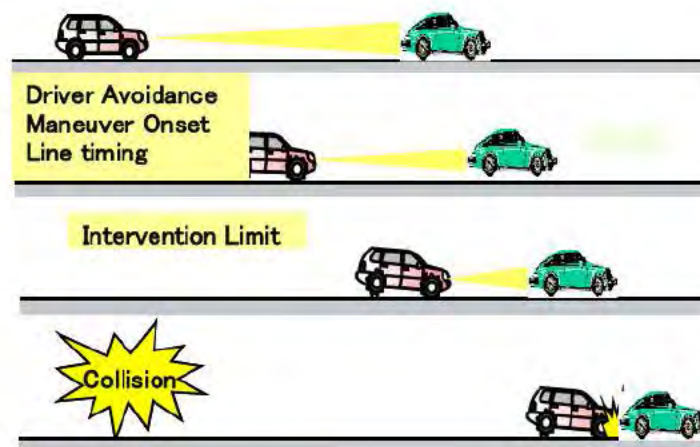
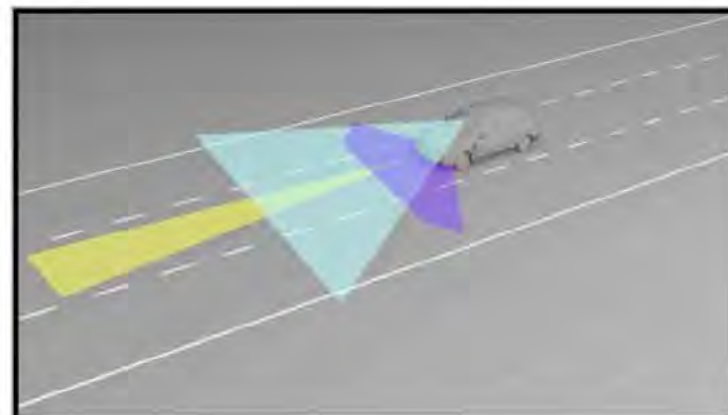
## Customer Benefits:

- Reduced severity of collision impact possibly resulting in lower injuries.

## GM Vehicle Intro:

2012 Insignia

2013MY Alpha, XTS, SRX



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# Autonomous Collision Mitigation Braking

When a collision is imminent, braking is automatically applied to reduce the impact speed. At lower speeds the collision may be avoided.

## How it Works:

- Uses forward-looking sensor(s) (RADAR, Camera, LIDAR), brake control and engine control.
- Determines the driving scenario and probability of a collision with forward, in-path objects.
- Works in conjunction with Forward Collision Alert.
- If the driver does not react, Collision Warning braking is automatically applied.
- Once the collision is deemed unavoidable, if the driver still does not react, more aggressive braking is applied automatically.

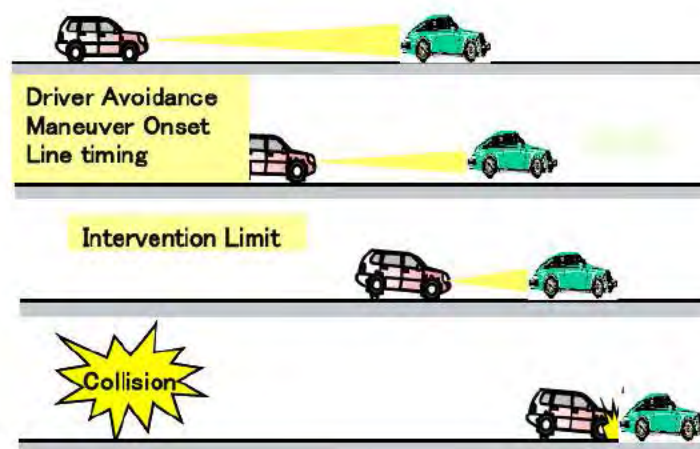
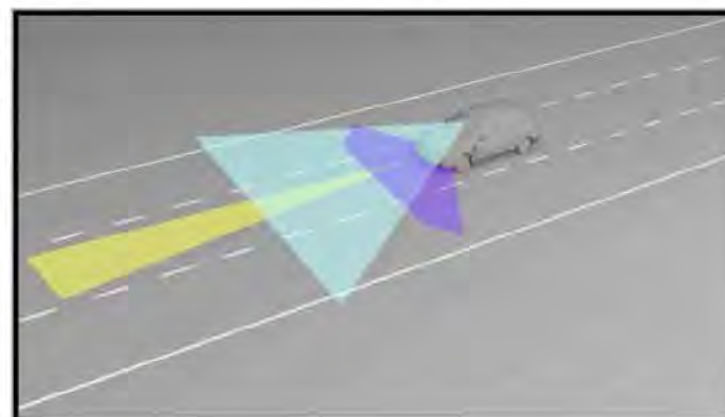
## Customer Benefits:

- Reduced severity of collision impact possibly resulting in lower injuries.

## GM Vehicle Intro:

2012 Insignia: Partial Auto Braking

2013MY Alpha, XTS, SRX: Up-to-full Auto Braking



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# Rear Emergency Automatic Braking (aka – Rear Virtual Bumper)

When backing, attempts to avoid imminent collision by automatically braking the vehicle (often to a stop).

## How it Works:

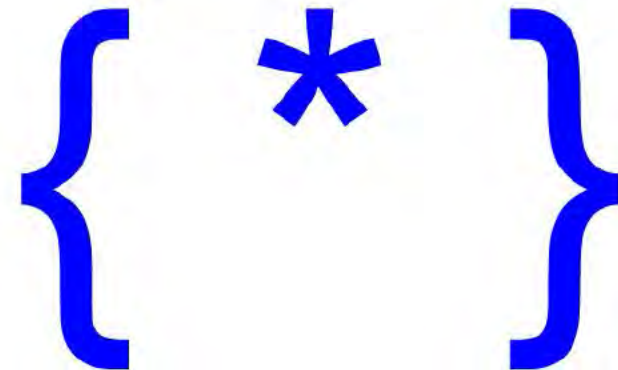
- Uses rearward-looking sensor(s) (RADAR, ultrasonic), brake control and engine control.
- Includes the rear park assist system and function.
- Determines the driving scenario and probability of a collision with rearward, in-path objects.
- Two levels of warning are used to encourage the driver to take control, including a brake pulse.
- If the driver does not react, aggressive braking is applied automatically.
- The system is designed to avoid most impacts.

## Customer Benefits:

- Assists drivers in avoiding or mitigating collisions with unexpected objects behind them while backing.

## GM Vehicle Intro:

2013MY Alpha, XTS, SRX

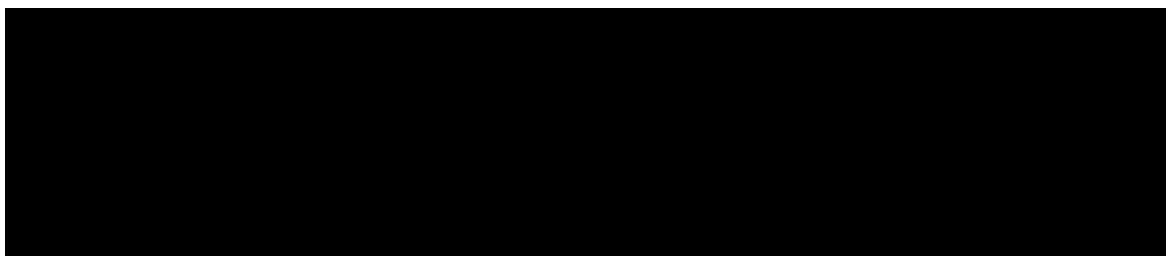


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|          | <u>MY13 XTS Driver Awareness Package</u> | <u>MY13 XTS Driver Assist Package</u> |
|----------|------------------------------------------|---------------------------------------|
| Base     | NA                                       | NA                                    |
| Luxury   | Optional (without HUD as option)         | NA                                    |
| Premium  | Standard and co-occurs with HUD          | Optional and co-occurs with HUD       |
| Platinum | Standard and co-occurs with HUD          | Optional and co-occurs with HUD       |

For ATS the relationship is as follows:

|             | <u>(Y65) Driver Awareness Package (aka ESS1)</u> | <u>(Y66) Driver Assist Package (aka ESS2)</u>                             |
|-------------|--------------------------------------------------|---------------------------------------------------------------------------|
| Base        | NA                                               | NA                                                                        |
| Luxury      | Optional (without HUD as option)                 | NA                                                                        |
| Performance | Standard (without HUD as option)                 | Optional and pulls in HUD as part of the package (HUD is always with Y66) |
| Premium     | Standard (HUD is also Std to Premium)            | Optional (HUD is already standard on Premium)                             |

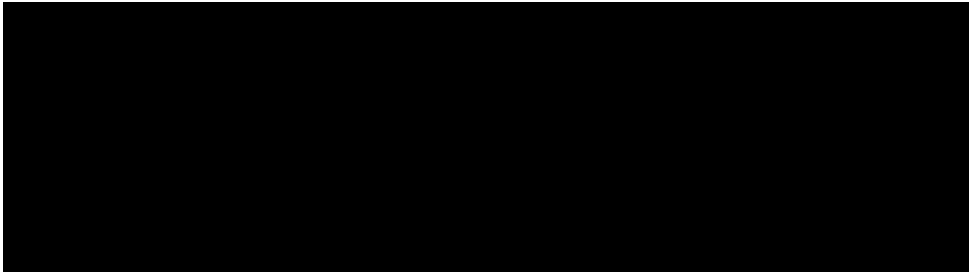


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# *Active Safety Verification Program Review*

**12/12/2013**

Douglas Donaldson & Verification Team  
EGM Active Safety Performance Validation

# Agenda

- Overview
- Methodology
- Execution & Analysis
- Findings
- Conclusions
- Next Steps

# VERIFICATION PROGRAM OVERVIEW

## Challenges, Objectives & Goals



# Verification Program Challenges

## CHALLENGES

- Significant new & active 'Safety Critical' content/operation
- Requirements, design & test procedures – all new
- High-level of subsystem control complexity, integration & situational/environmental interactions
- Little existing customer data & field exposure



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# Verification Program Objectives & Goals

## OBJECTIVES

- Comprehensive 'real-world' test overall Active Safety system
- Verify "False Positives" characteristics/rate-of-occurrence
- Verify System Integration of late software releases

## GOALS

- Verify production-intent Active Safety systems are commercially-ready
- Enhance confidence in the system
- Gain knowledge to enhance robustness of future Active Safety systems/features

# VERIFICATION PROGRAM METHODOLOGY

**Key Elements, Zones, Routes, Drivers/Drive  
Schedules, Instrumentation**



# Verification Methodology

## KEY ELEMENTS

- Acquire/schedule vehicles: PPV-to-MVB-NS level
- Equip vehicles with specialized data collection systems
- Identify critical test zones
- Define challenging in-zone test routes
- Manage vehicle zone assignments/rotation/logistics
- Create/manage in-zone GM Eng. support & S/W update processes
- Identify & onboard an engineering company for driver resources/data collection
- Train/manage drivers
- Transfer test data weekly from Vehicle-to-GM Servers for Dev-Val Eng. analysis
- Create GM processes to document, communicate, track & resolve anomalies
- Write PRCs to initiate the “anomaly discovery-to-resolution” process



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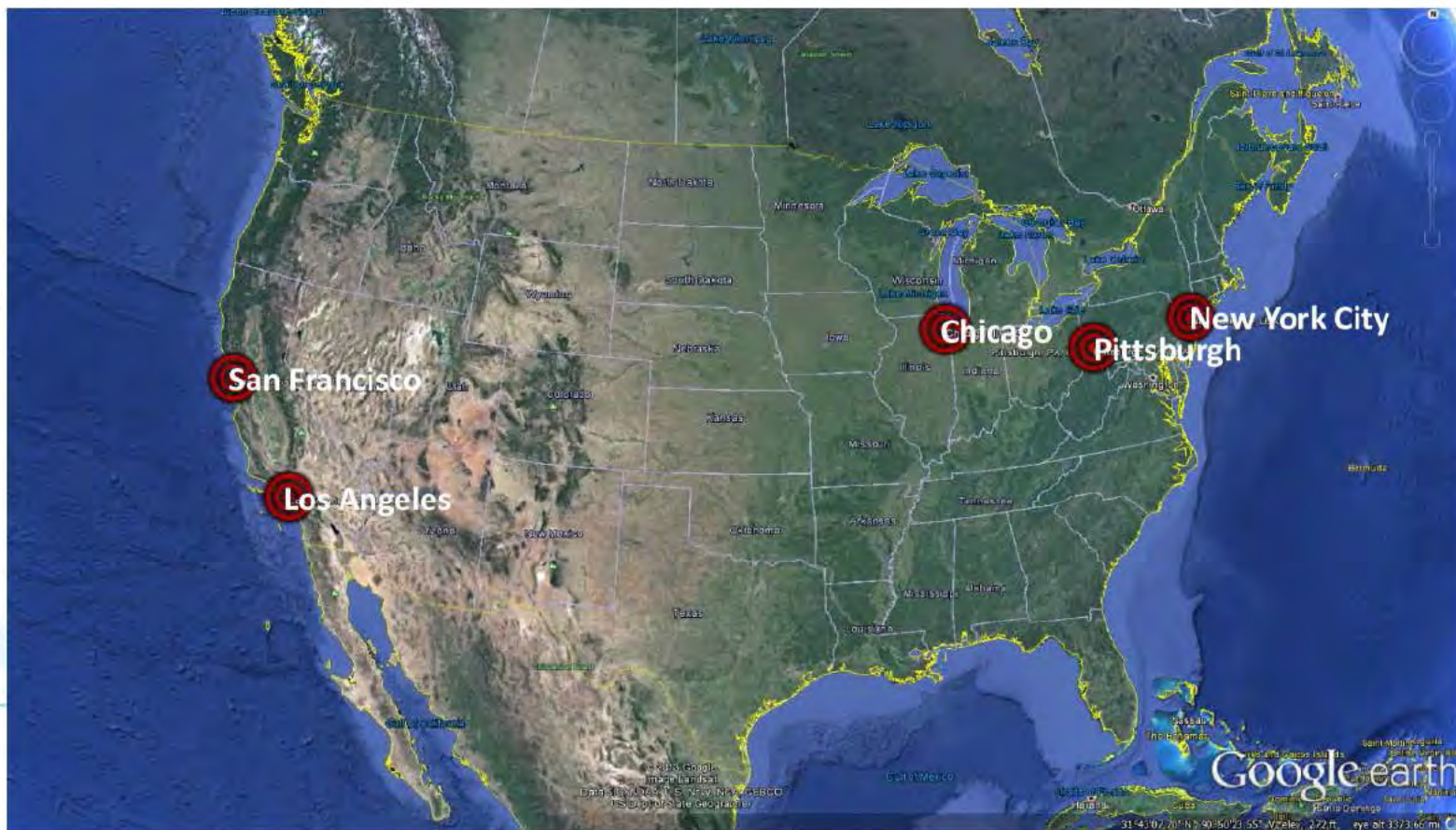
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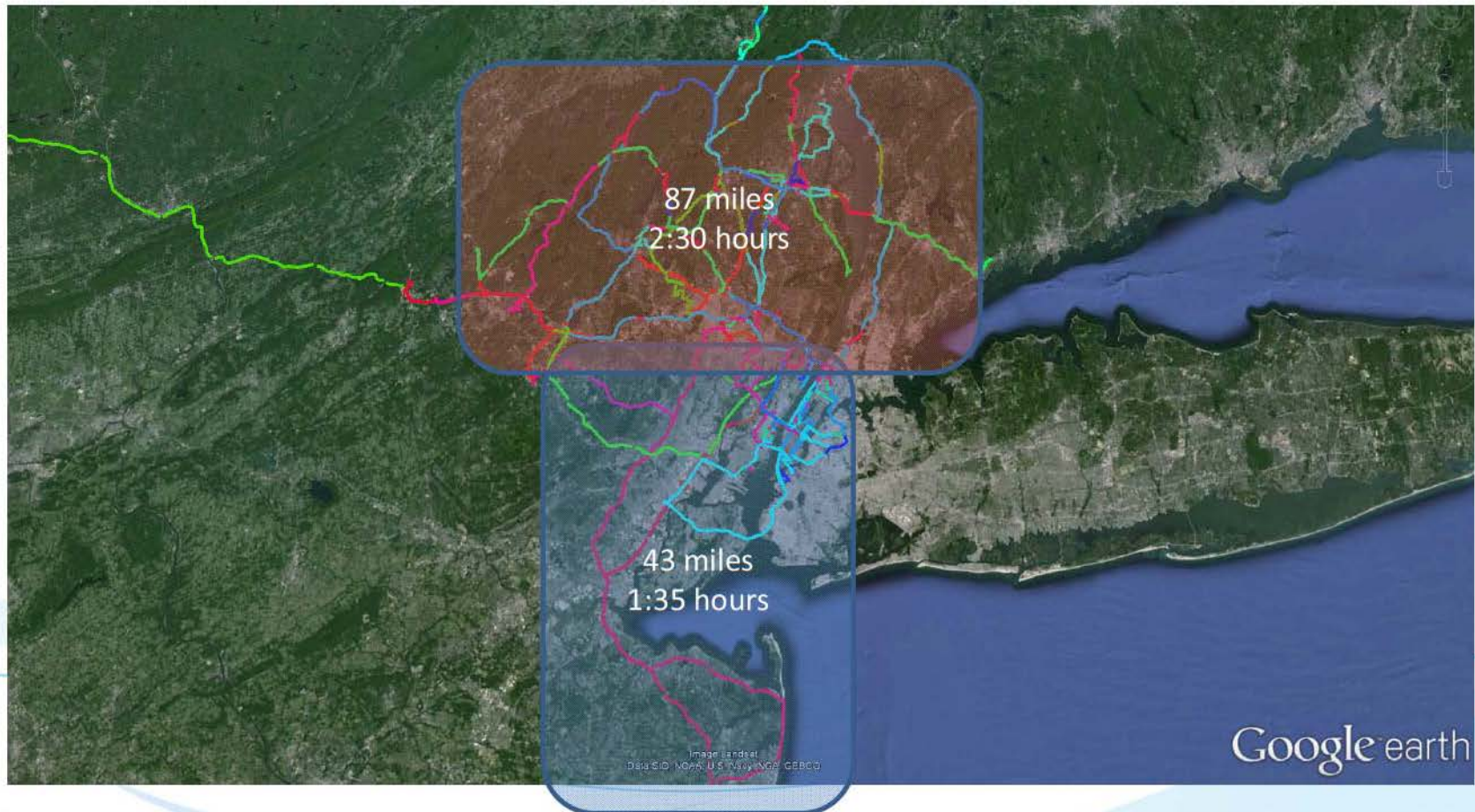
# Verification Test Regions

Selection criteria include: Known trouble spots & environmental factors –  
Incl. Weather, Topology & Infrastructure – that challenge Radars & Cameras



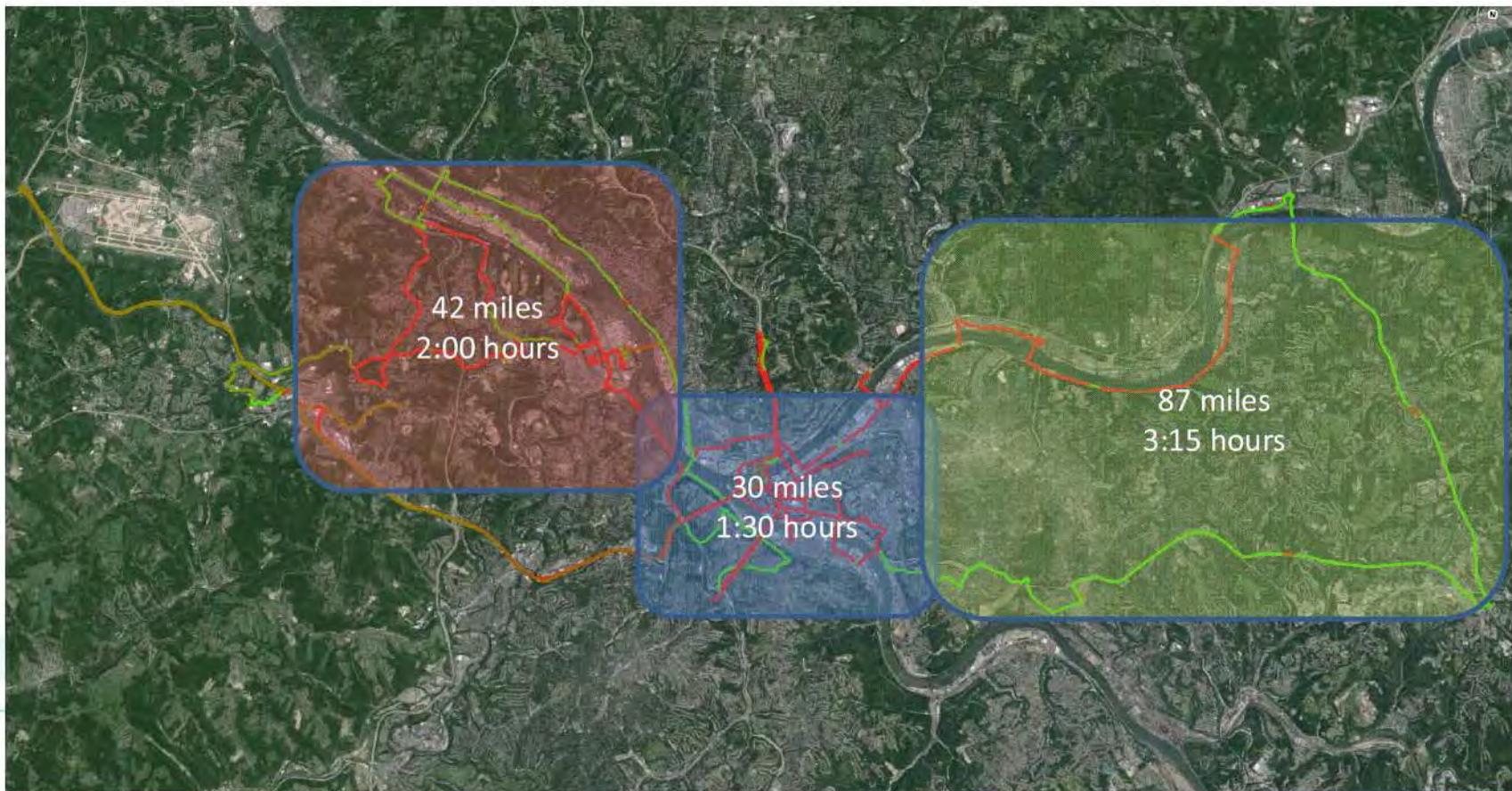


# North-East Region – New York City



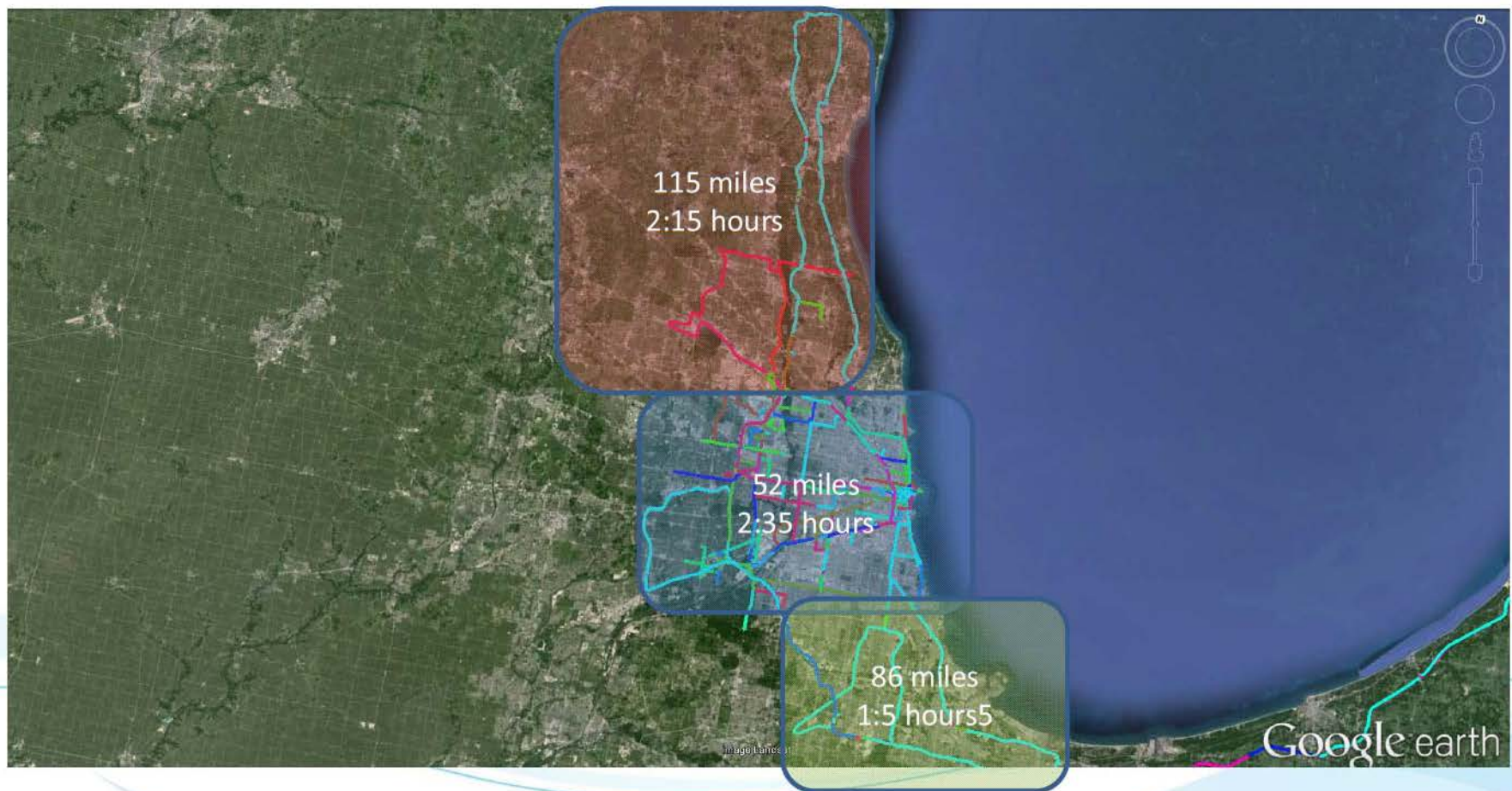


# Eastern Region - Pittsburgh

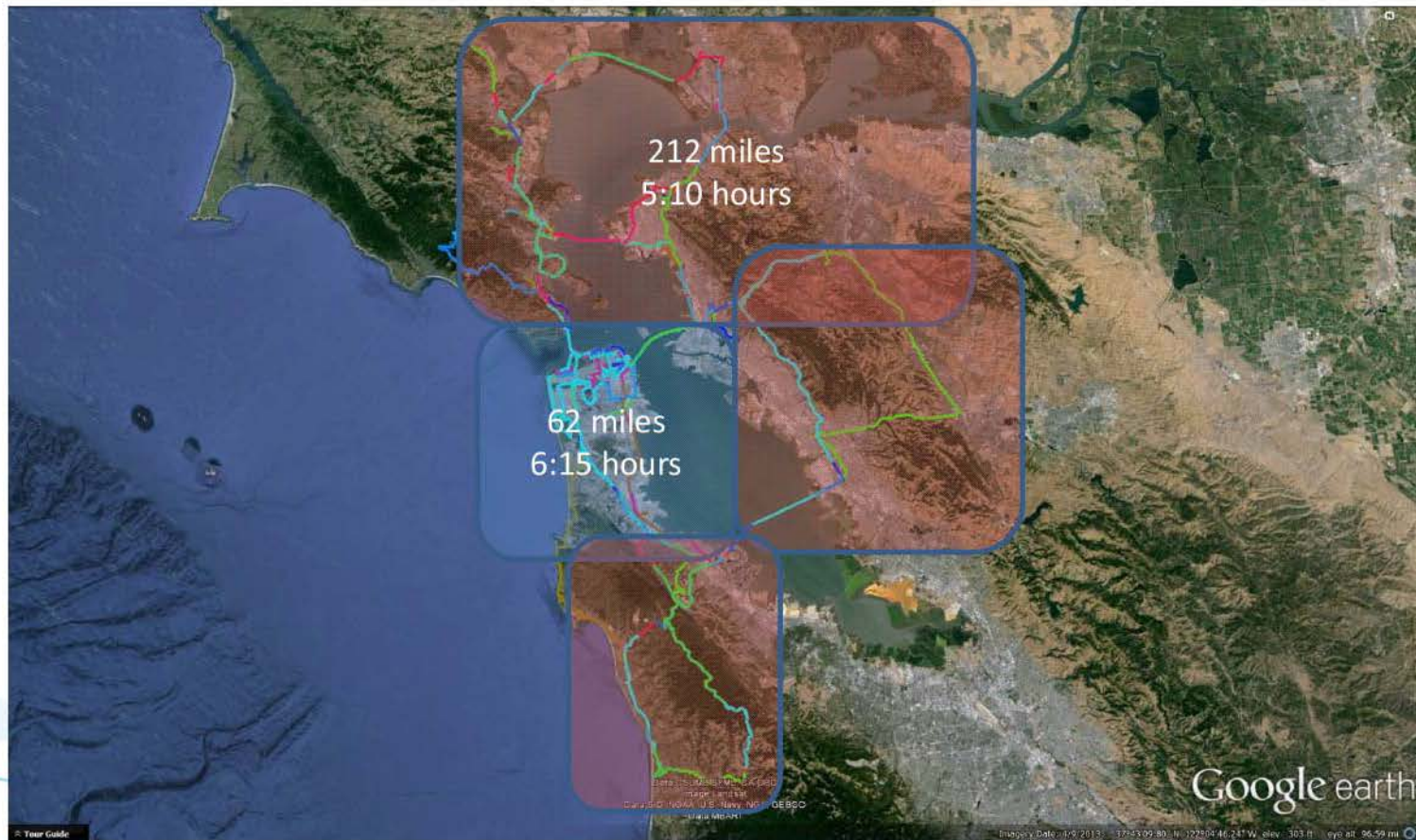




# Central Region - Chicago



# Western Region - San Francisco



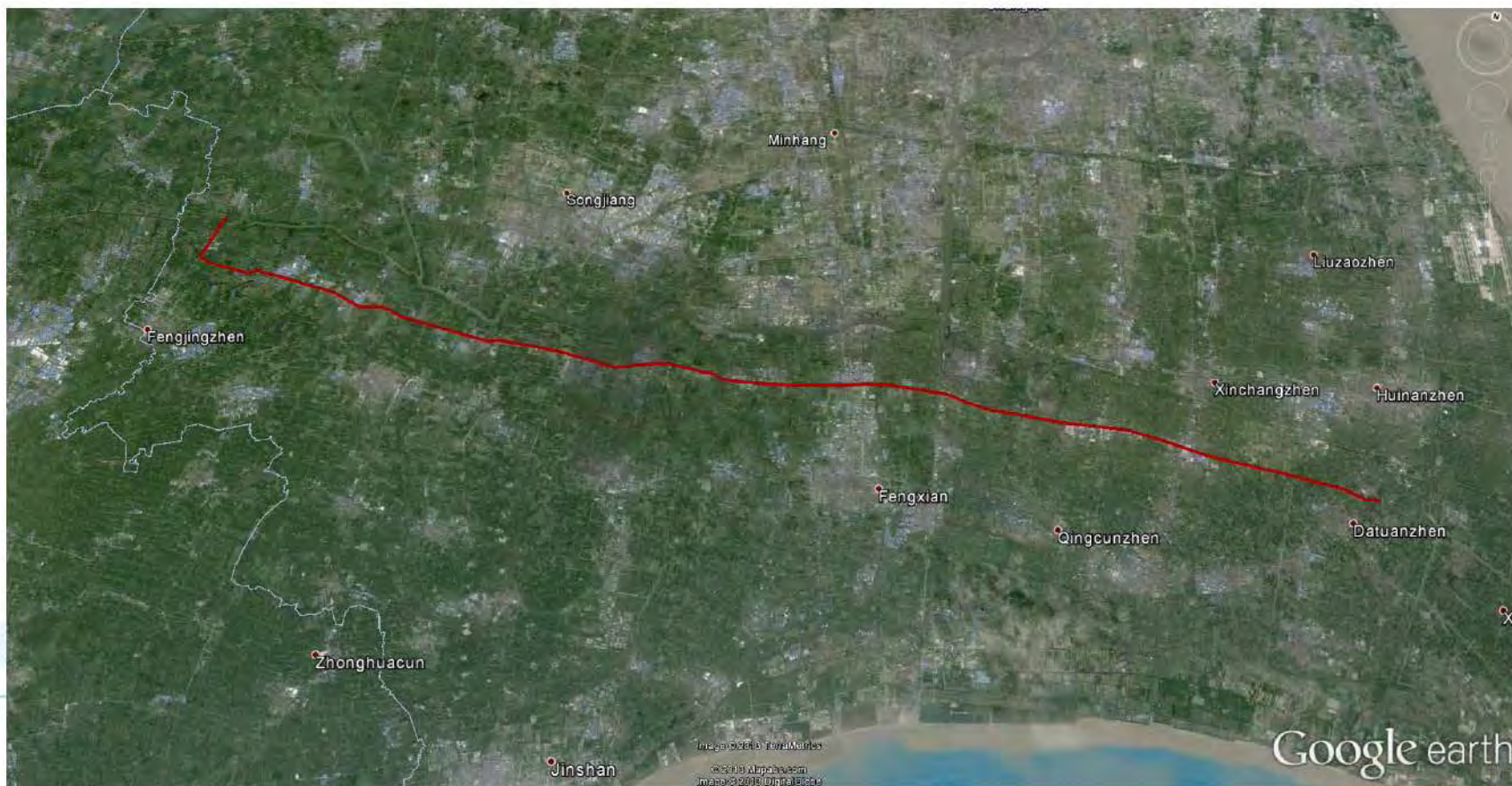


# Western Region - LA & San Diego





# China Region - Shanghai





# Verification Test Routes

## ROUTES

- Each zone has two or three routes
- Routes designed for Radar & Camera-challenging environments, including
  - Bridges, Tunnels/Trams/Trains (including over/underpasses, tracks & overhead power distribution), Busses, Parking structures, TV & Radio broadcast towers, Construction zones, Toll booths, Landscape, etc.
  - Road Geometries & Topographies/Road Materials /Roadside “RF clutter”
  - Visibility/Lighting/Weather (e.g. fog, rain, sun glare, night, shadows, etc.)
  - Speed ranges, traffic density, pedestrians, bikes, etc.
  - Included known ‘trouble-spots’ (e.g. ‘Infiniti Bridge’/NHTSA investigation)
  - TEST ROUTES DEVELOPED WITH SME & DEV. DRIVE INPUTS/PIER REVIEWED, THEN PRE-DRIVEN & OPTIMIZED BY DEV-VAL & EE SMT VAL ENGINEERS
  - ROUTE SEVERITY/COMPLEXITY ACCELERATED THE ANOMALY-YIELD



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# Verification Drivers & Schedule

## Drivers

- Kett Eng. selected to hire & manage driver teams
- At Verification Program launch (7/12), Kett hired 17 drivers
- Drivers trained at MPG
- Active drivers vary with GM test requirements & workload

## Drive Schedule

- One driver per shift per vehicle, two shifts per day & 6 Days per week
- Weekly mileage range: 2,000 to 2,500 miles, depending on zone, road construction, weather, traffic conditions, security requirements, etc.

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# VERIFICATION PROGRAM

## EXECUTION & ANALYSIS

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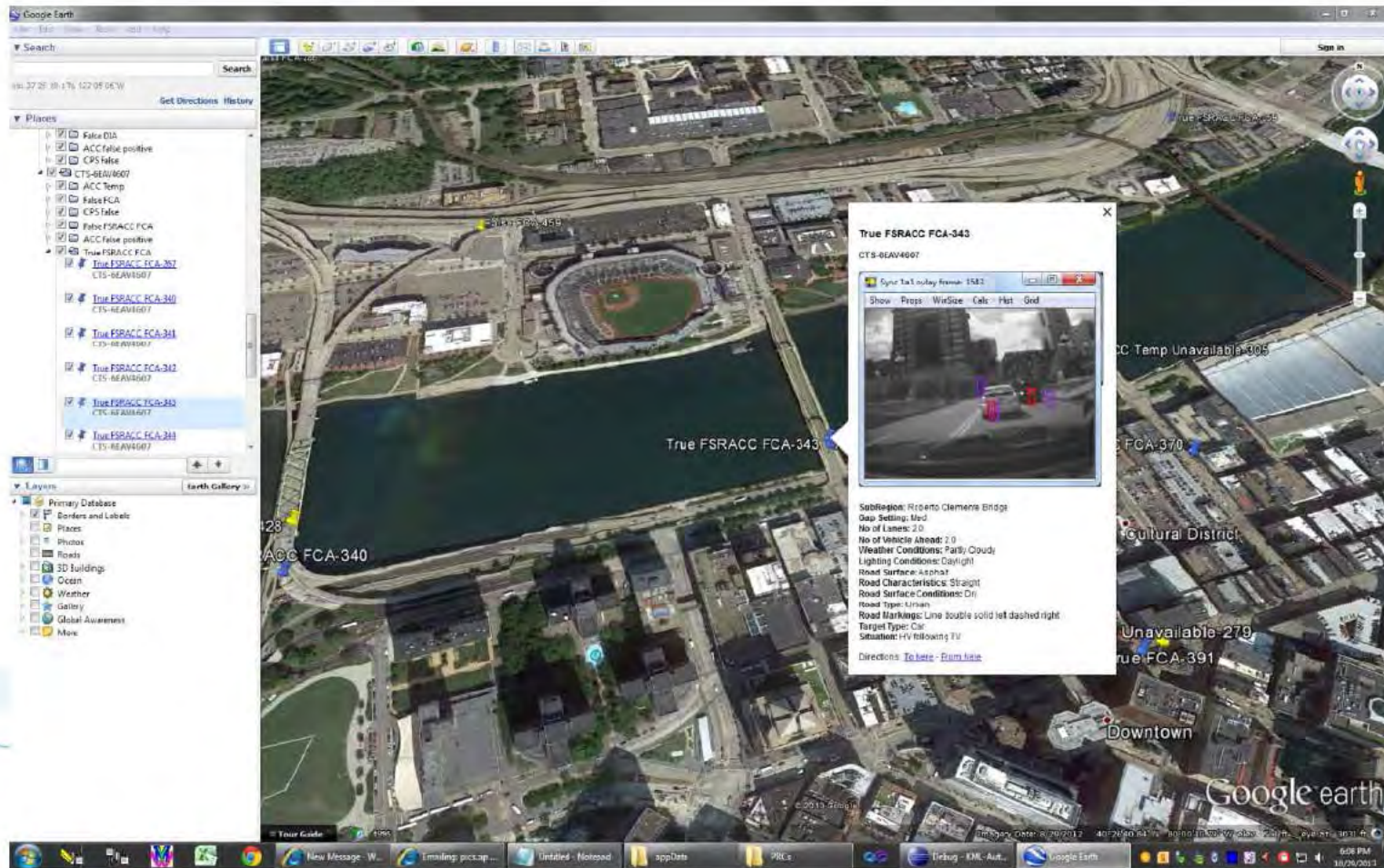


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# Auto KML Generator



# VERIFICATION PROGRAM FINDINGS



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# VERIFICATION PROGRAM CONCLUSIONS

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# VERIFICATION PROGRAM

## NEXT STEPS, NEW RULES & MY15 PLANS



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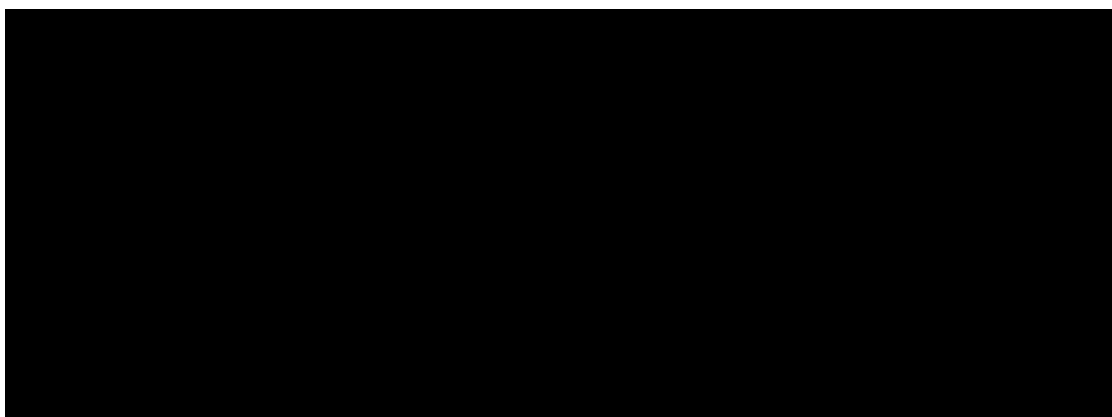
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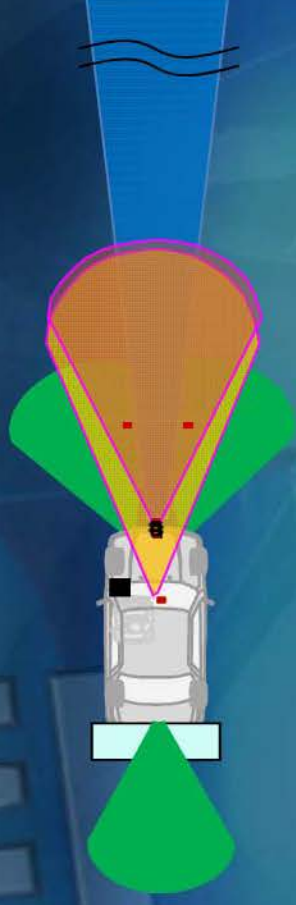
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# *Enhanced Safety System 2*

## *Verification Program Review*

11/30/2012



Douglas Donaldson & Verification Core Team  
EGM Vehicle Integration – Active Safety

# Agenda

## VERIFICATION PROGRAM OVERVIEW

- Verification Team Members
- Test Objective & Goals
- Pre-Verification Planning / Routes
- Verification Plan Overview & Timeline
- Data Collection/Transfer & Playback/Analysis Tools
- Data Analysis & PRC Process

## VERIFICATION PROGRAM TECHNICAL FINDINGS

- CPS Events/Analysis/Fixes
- FSRACC Disengagement Events/Analysis/Fixes
- EOT Driver Survey
- Conclusions



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# VERIFICATION PROGRAM OVERVIEW



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# Verification Program Core Team

## Vehicle Dev/Val/Integration – Active Safety

- Douglas Donaldson – EGM
- Aisha Vaqar – Lead Data Analyst /PRC
- Robert Sauvola – Data Collection Equipment & Vehicle S/W upgrades
- Arthur Daschke – Verification Program Lead Coordinator

## Global Validation

- Dean Degazio – Active Safety TIE

## Active Safety & Controls

- Paul Williams – EGM
- Jim Nickolaou – Sensor & Sensor Fusion
- Chad Zagorski – CIB

## Other Departments & Participants

- Fred Huntzicker – Global Veh. Electrical, S/W & Controls, EGM
- Jeff Clark - Active Safety Integrated Systems – Long Range Radar
- Chuck Green – Active Safety Driver Performance & Benefit Analysis
- Kett Engineering – 15 Drivers



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# Pre-Verification Test: Planning/Readiness Process

## KEY GM PLANNING & TASKS (5 Months):

spanning Prod. Eng, Dev/Val; S/W Eng, Program Teams, Purch, Legal, Conti, Kett Eng, etc.

- ☐ SOW/RASIC – Comprehensive document, specifying tasks & activities of 3<sup>rd</sup> party service provider (driver reqts, time line, mileage targets, routes, logistics, equipment, data, communications, security, emergency protocols, etc.
- ☐ Test Vehicle Acquisition & Maintenance Plans
- ☐ CLIR Test Equip: Purchase, assemble, debug, install
- ☐ Conti : MTS test equip, install, data transfer/mgt plan
- ☐ Hire & On-board Kett Eng (Drivers)
- ☐ Driver Training
- ☐ Test Zones & Driver In-Zone Route
- ☐ Vehicle Zone Assignments/Rotation/Logistics
- ☐ In-Zone GM Eng. Support & S/W Update Plan
- ☐ Data Collection/Transfer/Analysis /Mgt.
- ☐ Define GM-internal Processes/Systems : to document, communicate, track & resolve issues





# Verification Test Routes & Drivers

## ❑ Drive Routes: Designed for worst-case Radar & Camera-challenging environments, including a wide spectrum of ...

- Bridges, Tunnels/Trams/Trains (including over/underpasses, tracks & overhead power distribution), Busses, Parking structures, TV & Radio broadcast towers, Construction zones, Toll booths, Landscape, etc.
- Road Geometries & Topographies/ Road materials / Roadside “RF clutter”
- Visibility / Lighting / Weather (e.g. fog, rain, sun glare, night, etc.)
- Speed ranges, traffic density, pedestrians, bikes, etc.
- Included known ‘trouble-spots’ (e.g. ‘Infiniti Bridge’/NHTSA investigation)
- **ROUTE SEVERITY/COMPLEXITY ACCELERATED THE ISSUE-YIELD BY AN ESTIMATED 5 TIMES**
- **ALL TEST ROUTES DEVELOPED WITH SME INPUTS & DEVELOPMENT DRIVES/PIER REVIEWS, THEN PRE-DRIVEN & OPTIMIZED BY DASCHKE & DEGAZIO**

## ❑ Drivers & Drive Schedule

- Drivers: Hired & trained 17 drivers through Kett Eng.
- Drive Schedule: Two drivers per vehicle, for two shift/day drive schedule



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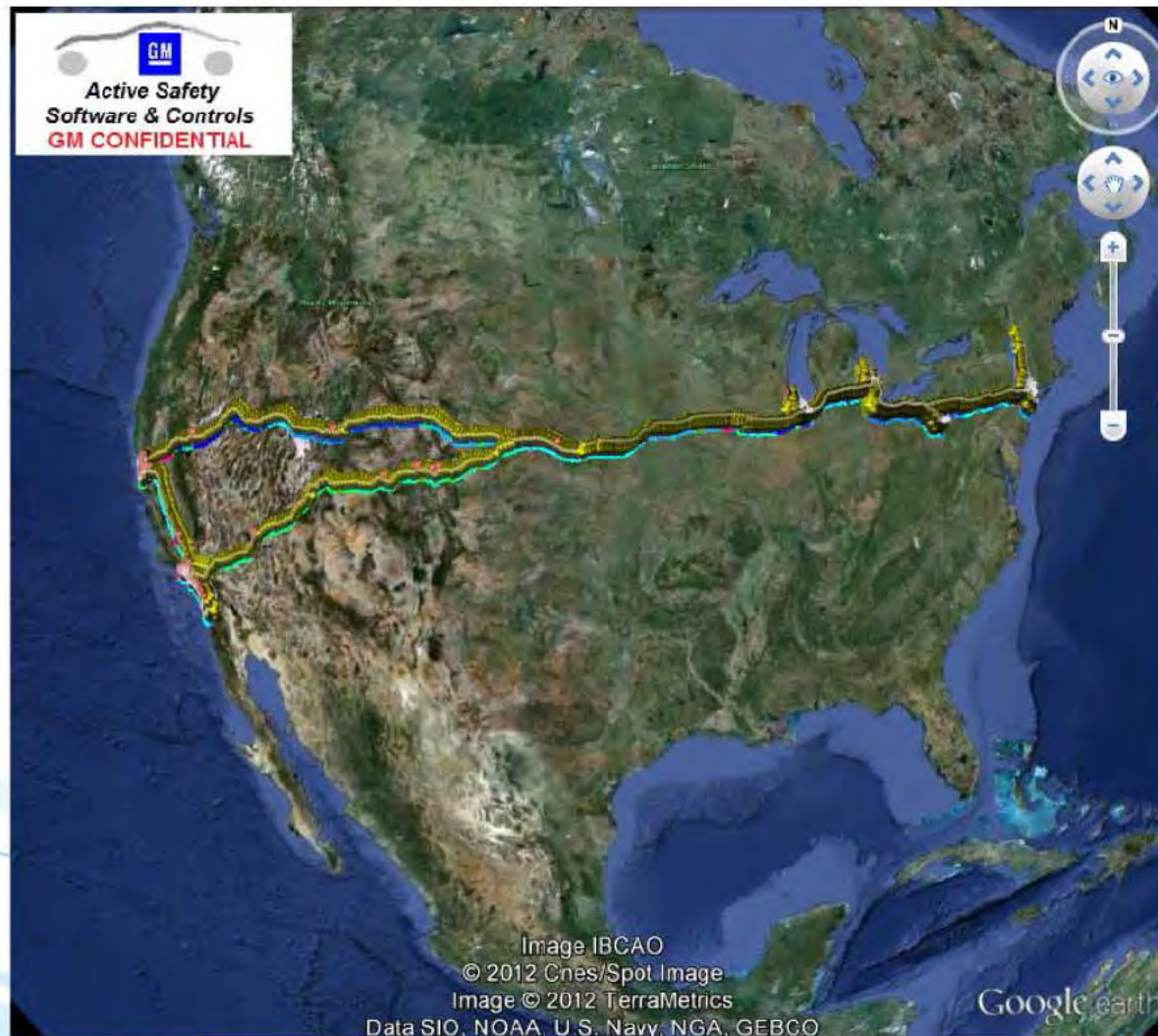


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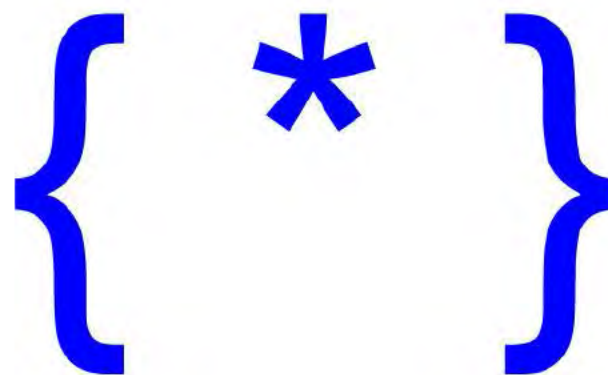


# Verification Test Routes Zones \*



\* Note: - EU vehicle without OnStar GPS. So unable to map locations

# Verification Plan Overview



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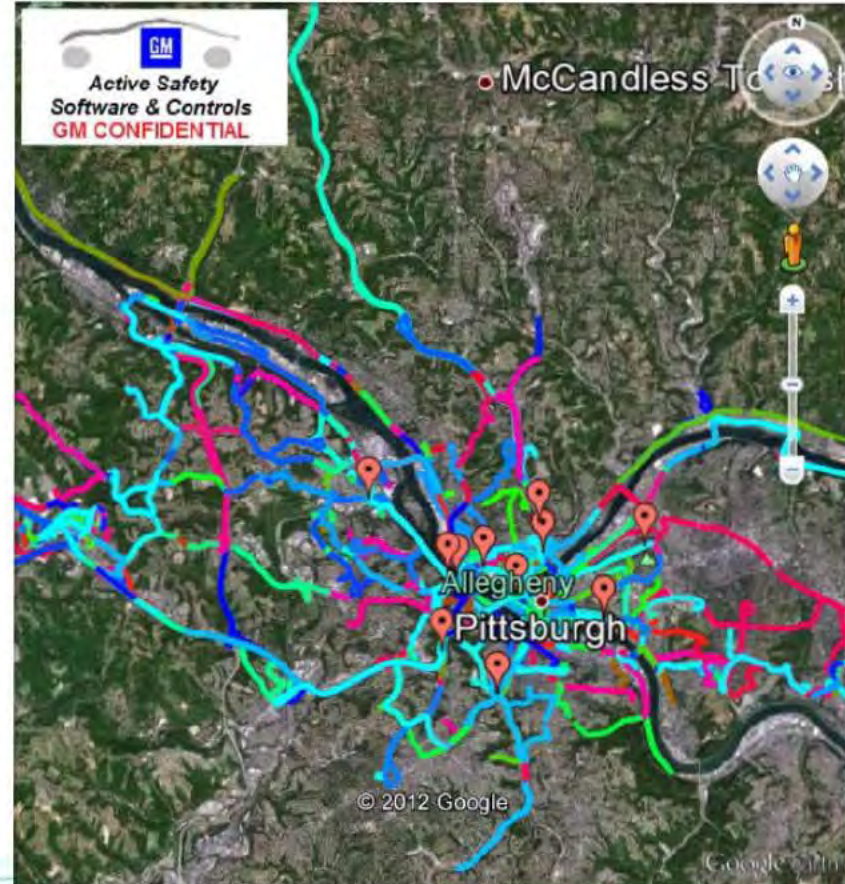


# Route Details by Region

New York Region



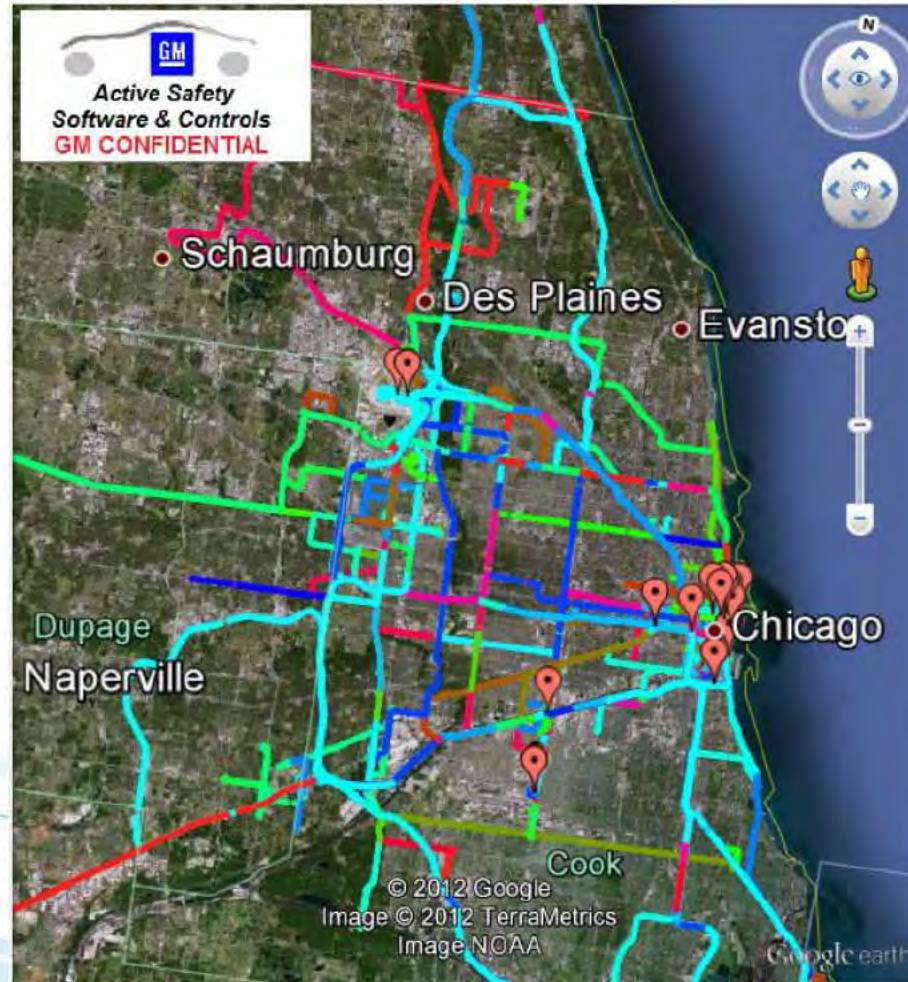
Pittsburgh Region





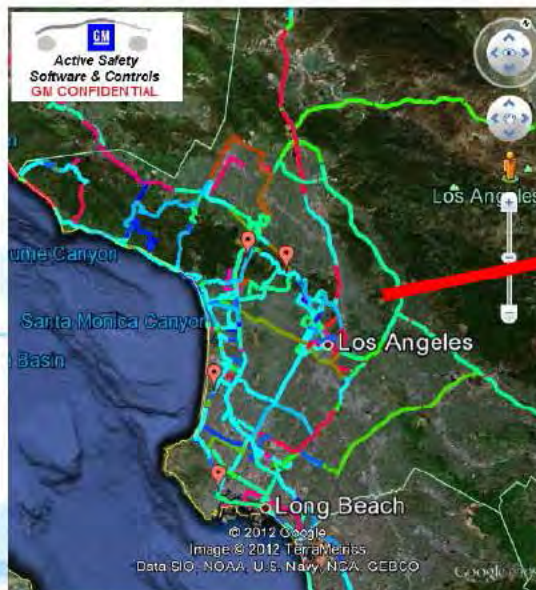
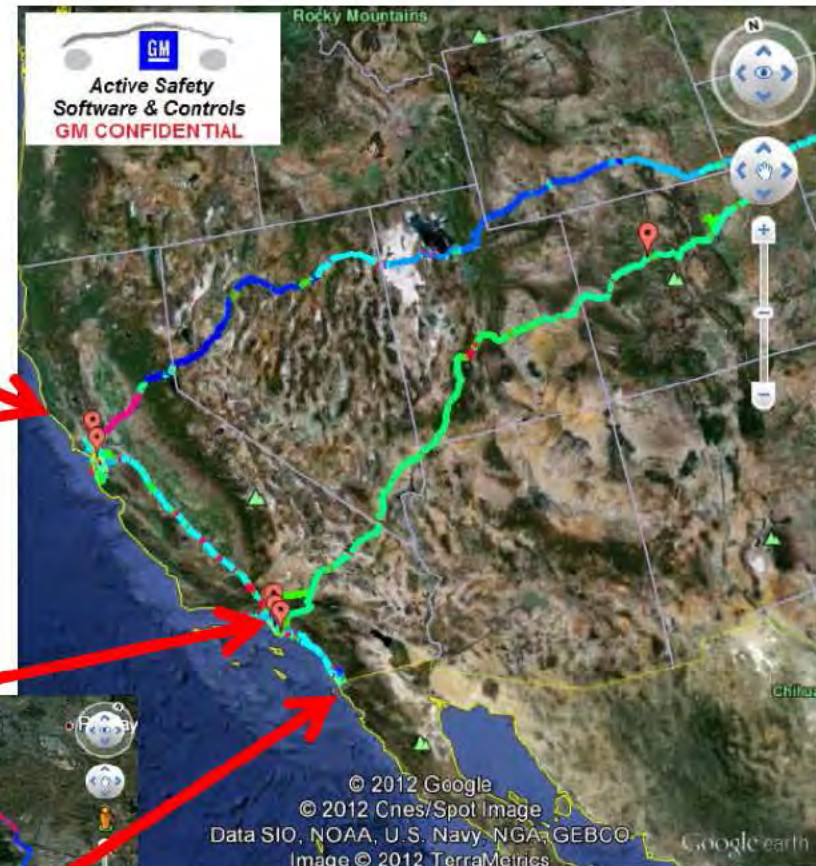
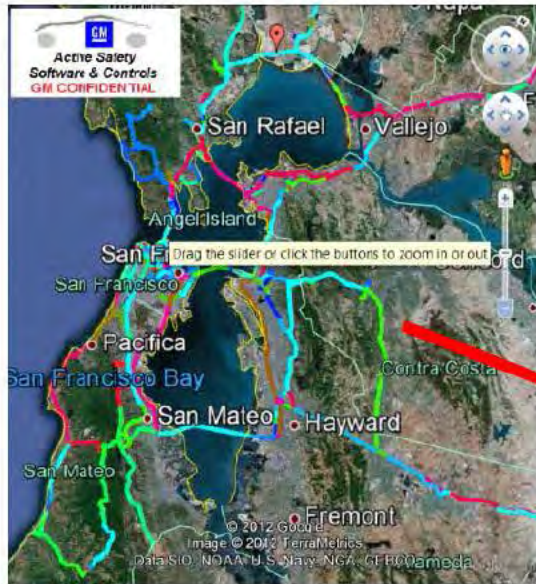
# MidWest Region

## Chicago Area





# West Region



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# VERIFICATION PROGRAM TECHNICAL FINDINGS



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## Relevant Design Principle of CIB

*By way of background, the following is taken from the 'CIB Fundamental Beliefs' document, which details the overall CIB strategy --*

**Ultimate objective for CIB is to avoid all frontal collisions under all circumstances.**

**Factors that limit the ability to achieve this objective.**

- Sensor technology
- Sensor fusion algorithm sophistication
- Type and number of sensors installed on vehicle
- Necessity to limit false and nuisance activations
- Necessity to limit activations perceived by the driver as unnecessary (i.e. driver was aware of situation but the system reacted earlier than the driver planned to react)

**Due to these factors, CIB will attempt to avoid a collision during certain events & mitigate a collision during other events. The balance between these determines when the system will attempt to avoid vs. mitigate the collision**

➤ ***CIB will balance the likelihood of unintended consequences associated with false, nuisance & unnecessary activations against the potential for safety benefits***

- In general, CIB will wait as long as possible to limit false/nuisance activations, but then its actions will be purposely harsh to maximize the benefit of the action and discourage reliance on the system



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# EOT Driver Survey

- ☐ **Subjective Impressions from professional drivers repeating planned route**
  - Verification drivers have substantial amount of experience
  - Very different participants from naïve drivers driving 'real routes' in the 'Field Operational Tests' (FOT)
- ☐ **Used questionnaires from 'Rear ESS2B' & 'Front ESS2B' FOTs**
  - These results can be directly compared to FOT driver questionnaire results



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# EOT Driver Survey – “Backing” Features Summary

## ☐ Terminology issues

- Verbatim suggest that ‘Parking Assist’ & ‘Rear Cross Traffic Alert’ (RCTA) were considered “Backing Warning”
- Unclear if any drivers experienced actual ‘Backing Warning’ with autonomous braking
- Note: RCTA was not explicitly part of the survey as it had not been provided in the FOT

## ☐ Drivers considered ‘Backing Features’ very well integrated (HMI)

- Similar result to FOT participants

## ☐ RCTA & Rear Vision perceived as most helpful

- Agreement with FOT participants
- Rear Auto Braking reported to have helped avoid some crashes (similar to FOT)

## ☐ Rear Automatic Braking

- No drivers indicated discomfort with the system (same as FOT participants)
- One driver had a false activation, and rated all questions negatively
- A third of FOT drivers had a similar negative experience, but it didn’t turn them against the system
- All other drivers rated all the questions positively, & some indicated actual crashes avoided
- Approx. half would feel comfortable letting system stop for them (similar to FOT)



# EOT Driver Survey – “FSRACC & CIB” Summary

## ☐ Strong positive feelings about FSRACC

- Drivers felt it was easy to learn & use, including displays & controls
- Verbatim show concerns with: use in city driving, refinement, slow acceleration from stop/slow, lack of ‘auto-go’, can’t completely trust, unnecessary disengagements, does not always respond to stationary vehicles/at high speeds, “McDonalds turn”
- When stopped, distance to vehicle ahead was perfect
- Responses to specific questions suggest that mental models about reaction to stationary vs. moving objects & low vs. high speeds were incorrect for many drivers; drivers just concluded that the system requires a fair level of supervision under all situations
- Most drivers would not use the system in city driving, residential areas or with snow or fog
- Some comments were incorrectly listed as CIB braking

## ☐ Most drivers reported on true and/or unhelpful CIB experiences

- Including some low-speed experiences
- Almost half of drivers indicated system helped them avoid a crash
- Again no reports of discomfort – all felt it was “safe”
- Most neutral or positive on benefit vs. discomfort tradeoff
- One report of an “urgent” situation due to an unhelpful activation, but driver provided accelerator input to resolve



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## EOT Driver Survey – “FCA & LDW” Summary

### ☐ FCA perceived positively by drivers despite many types of FCA unhelpful alerts

- Overall, easy to understand, & felt it increased “safety”
- Half of drivers indicated that FCA alerts helped prevent a crash
- ‘Helpful’ FCA alerts were timed correctly
- Flashing red light in windshield HUD highly liked
- Drivers’ satisfaction increased over time, no drivers would turn off system
- 2 of 12 drivers didn’t like vibrating seat
- No drivers felt green vehicle ahead symbol illuminated too often
- Except for snow/fog, drivers felt FCA worked well in all driving conditions

### ☐ ¾ drivers want LDW on their next vehicle, others neutral

- Timing of alert rated “just right”
- Most felt it was very intuitive, others neutral
- All but one driver felt alert was very ‘attention getting’, & 2 of 12 drivers felt it was annoying

### ☐ Overall...

- ‘Favorite’ features: RAB, RVC, FCA, LDW, HUD
- ‘Most disliked’: FSRACC slow acceleration, LDW & Bluetooth issues



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## Verification GM Core Team & Kett Eng Drivers (6) @ EOT



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# Discussion/Q & A

## Action Item Review

### Wrap-up



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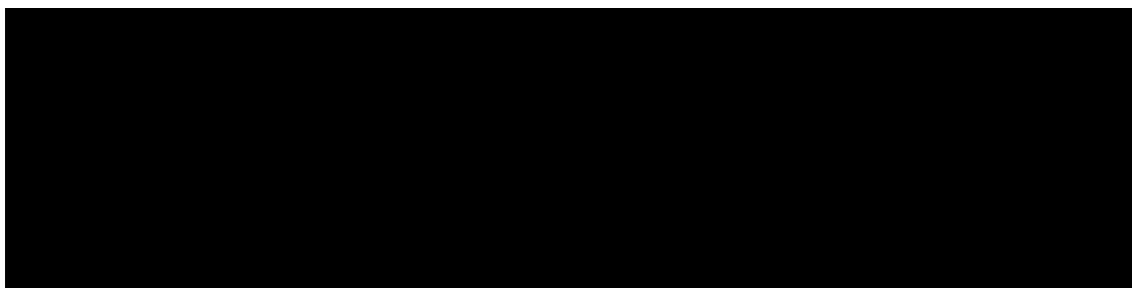
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Q 10





# ACTIVE SAFETY VERIFICATION SUMMARY - 1DGP4430



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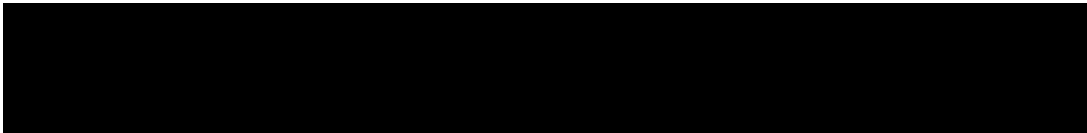
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### **Question 10 Introduction Statement**

General Motors is responding to Question 10 to describe the Driver Assistance System components, algorithms, and system validation for the subject vehicle (2014 MY Chevrolet Impala E) and the peer vehicle (2013 MY Cadillac ATS).

The Owner's Manual for these vehicles provides the following explanation of Forward Collision Alert and Adaptive Cruise Control:

Forward Collision Alert (FCA) System if equipped, may help to avoid or reduce the harm caused by front-end crashes. FCA provides a red flashing alert on the windshield, and beeps when approaching a vehicle directly ahead too quickly. FCA also provides a visual alert if following another vehicle much too closely. Adaptive Cruise Control (ACC), if equipped, allows the driver to select the cruise control set speed and following gap. The following gap is the following time between your vehicle and a vehicle detected directly ahead in your path moving in the same direction. If no vehicle is detected in your path, ACC works like regular cruise control.

The response below addresses the Collision Imminent Braking (CIB) autonomous braking feature.

**Subject Vehicle – 2014 MY Chevrolet Impala E**

***10.a. All active emergency braking systems function diagrams detailing system operation points such as Min/Max speed activation thresholds (mph), Min/Max braking g-force, brake pedal release threshold (mm or m/sec<sup>2</sup>), steering wheel release input threshold (0), acceleration pedal release threshold (mm or m/sec<sup>2</sup>), TTCs (audio/visual warning activation, restraint activation, brake activation), FORs (Field Occurrence Rates), and max brake pressure available on each wheel (FL, FR, RL, RR)***

#### **10.a. ACTIVE EMERGENCY BRAKING SYSTEMS FUNCTION DIAGRAMS:**

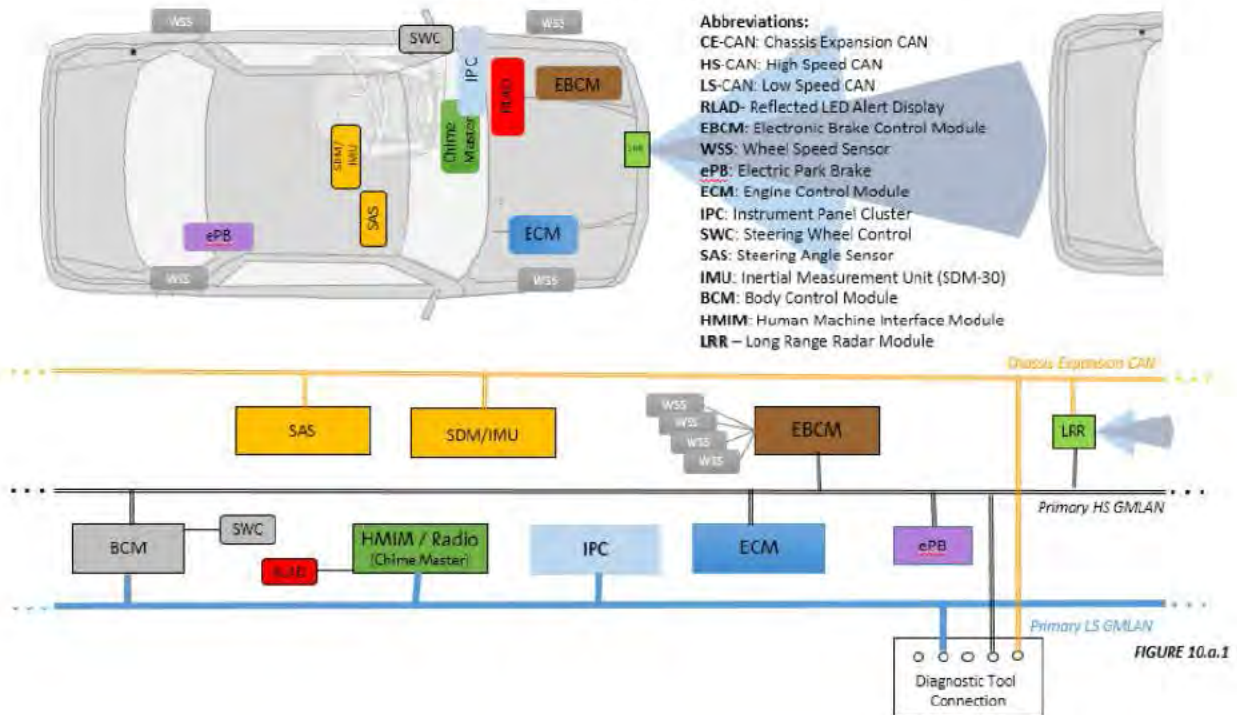
Figure 10.a.1 is an architecture diagram of the 2014 MY Chevrolet Impala E Long Range Radar Driver Assistance System. The primary module for this system is the Long Range Radar (LRR) and is represented by the green box slightly offset onto the driver side at the front of the vehicle shown in Figure 10.a.1. Major supporting components are also represented in the diagram at their approximate mounting position on the vehicle overlay.

Figure 10.a.2 provides a high level function description of the major supporting components that make up the 2014 MY Chevrolet Impala E Long Range Radar Driver Assistance System.

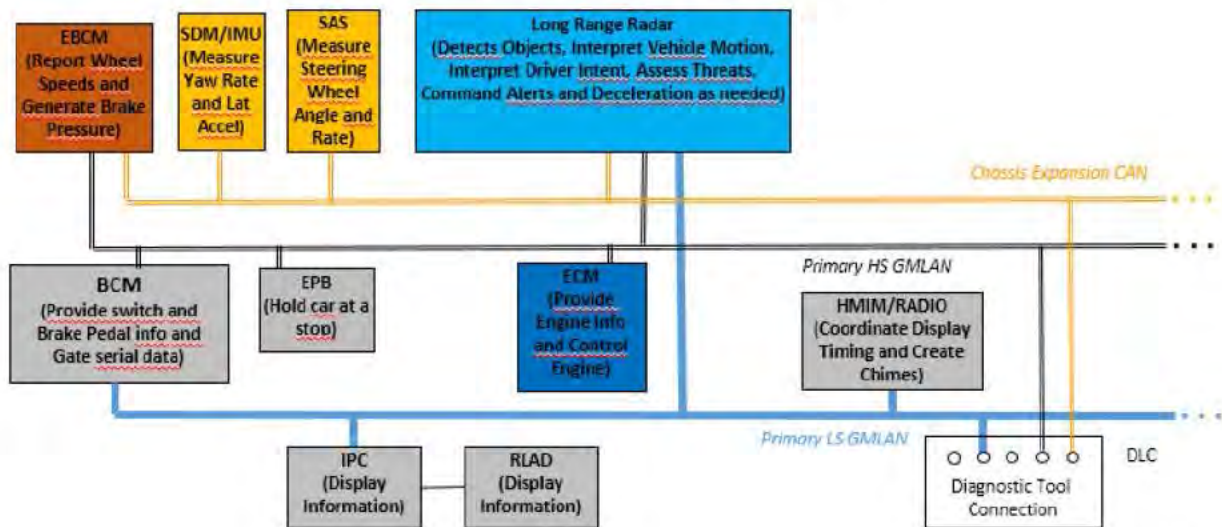
Figure 10.a.3 provides a high level major supporting components data flow for the 2014 MY Chevrolet Impala E Long Range Radar Driver Assistance System.



## 2014 Chevrolet Impala E – Long Range Radar Feature Architecture Diagram

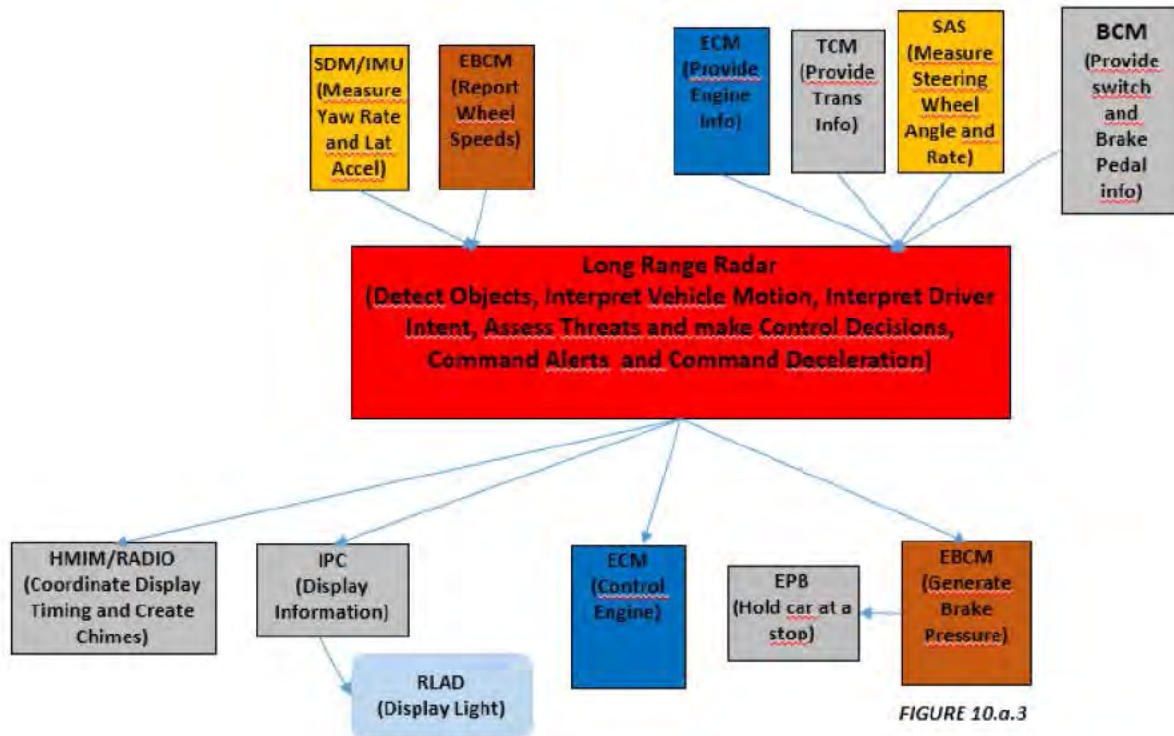


## 2014 Chevrolet Impala E – Long Range Radar Feature Component Major Functions





## 2014 Chevrolet Impala E– Long Range Radar Feature Data Flow



{ \* }

{ \* }

**10.a. BRAKE PEDAL RELEASE THRESHOLD (Driver Applied Brake Pressure kPa):** Prior to Collision Imminent Braking (CIB) starting an autonomous brake activation, the following driver actions will inhibit a CIB autonomous braking request from the LRR to the Electronic Brake Control Module (EBCM).

- { \* }
- { \* }

**10.a. STEERING WHEEL RELEASE INPUT THRESHOLD (Driver Applied Steering Angle Rate deg/sec):** Once CIB starts an autonomous brake activation the following driver actions will suppress the CIB autonomous braking request from the LRR to the EBCM.

- { \* }
- { \* }
- { \* }

**10.a. TTCs (audio/visual warning activation, restraint activation, brake activation):**

{ \* }

{ \* }

- The 2014 MY Chevrolet Impala E Long Range Radar Driver Assistance System provides Forward Collision Alerts (FCA) via audio (chime) and visual (Reflected LED Alert Display (RLAD)) alerts.
- { \* }
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## Peer Vehicle – 2013 MY Cadillac ATS

**10.a. All active emergency braking systems function diagrams detailing system operation points such as Min/Max speed activation thresholds (mph), Min/Max braking g-force, brake pedal release threshold (mm or m/sec<sup>2</sup>), steering wheel release input threshold (0), acceleration pedal release threshold (mm or m/sec<sup>2</sup>), TTCs (audio/visual warning activation, restraint activation, brake activation), FORs (Field Occurrence Rates), and max brake pressure available on each wheel (FL, FR, RL, RR)**

### **10.a. ACTIVE EMERGENCY BRAKING SYSTEMS FUNCTION DIAGRAMS:**

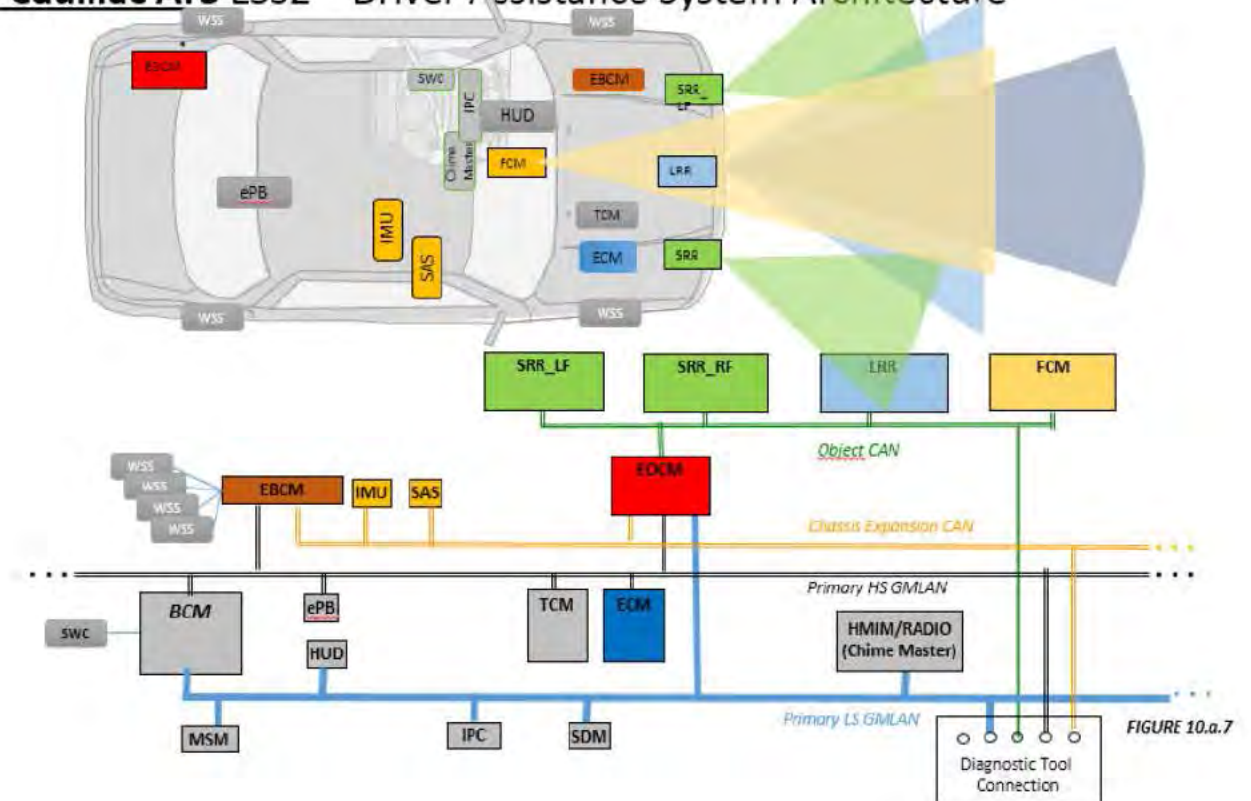
Figure 10.a.7 is an architecture diagram of the 2013 MY Cadillac ATS Driver Assistance System. The primary module for this system is the External Object Calculation Module (EOCM) and is represented by the red box positioned on the driver side in the trunk of the vehicle. Major supporting components are also represented in the diagram at their approximate mounting position on the vehicle overlay Figure 10.a.7.

Figure 10.a.8 provides a high level function description of the major supporting components that make up the 2013 Cadillac MY ATS Driver Assistance System.

Figure 10.a.9 provides a high level major supporting components data flow for the 2013 Cadillac ATS Driver Assistance System.



## 2013 Cadillac ATS ESS2 – Driver Assistance System Architecture



## 2013 Cadillac ATS ESS2 – Driver Assistance System

### Component Major Functions

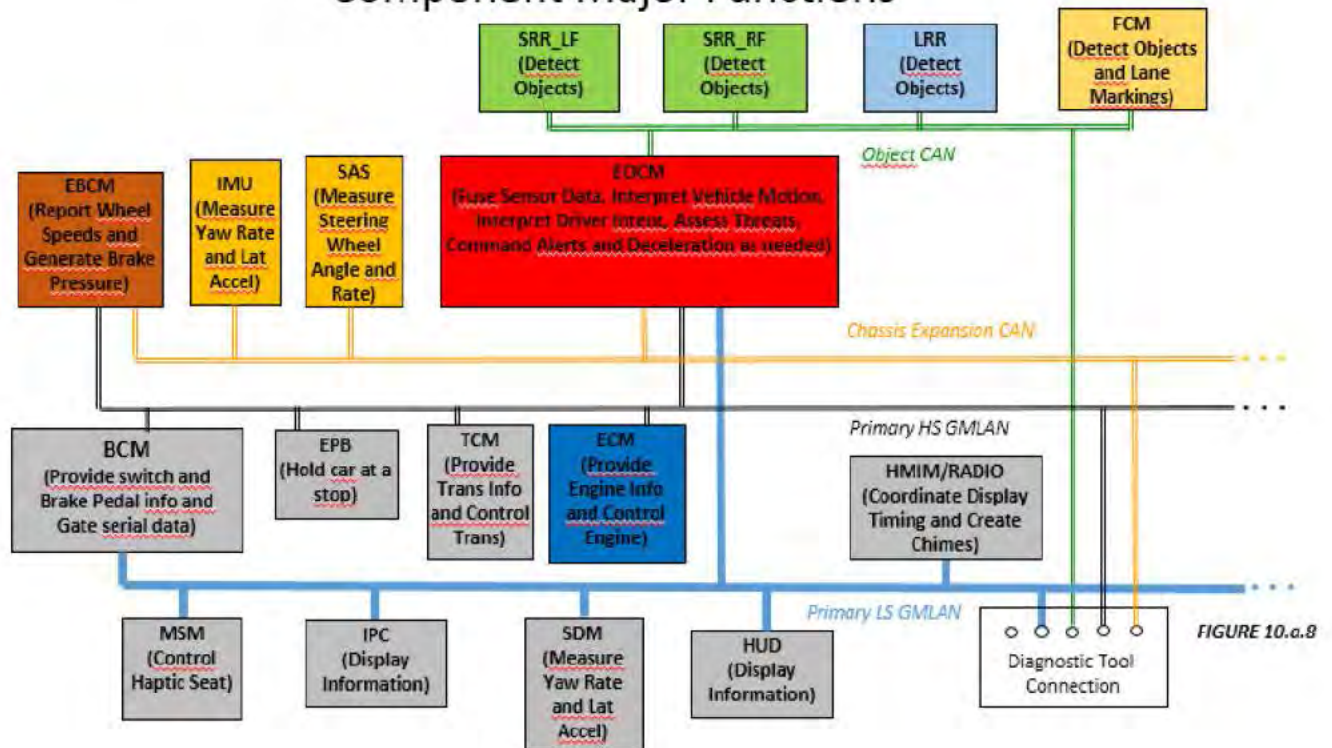


FIGURE 10.a.8

## 2013 Cadillac ATS ESS2 – Driver Assistance System Data Flow

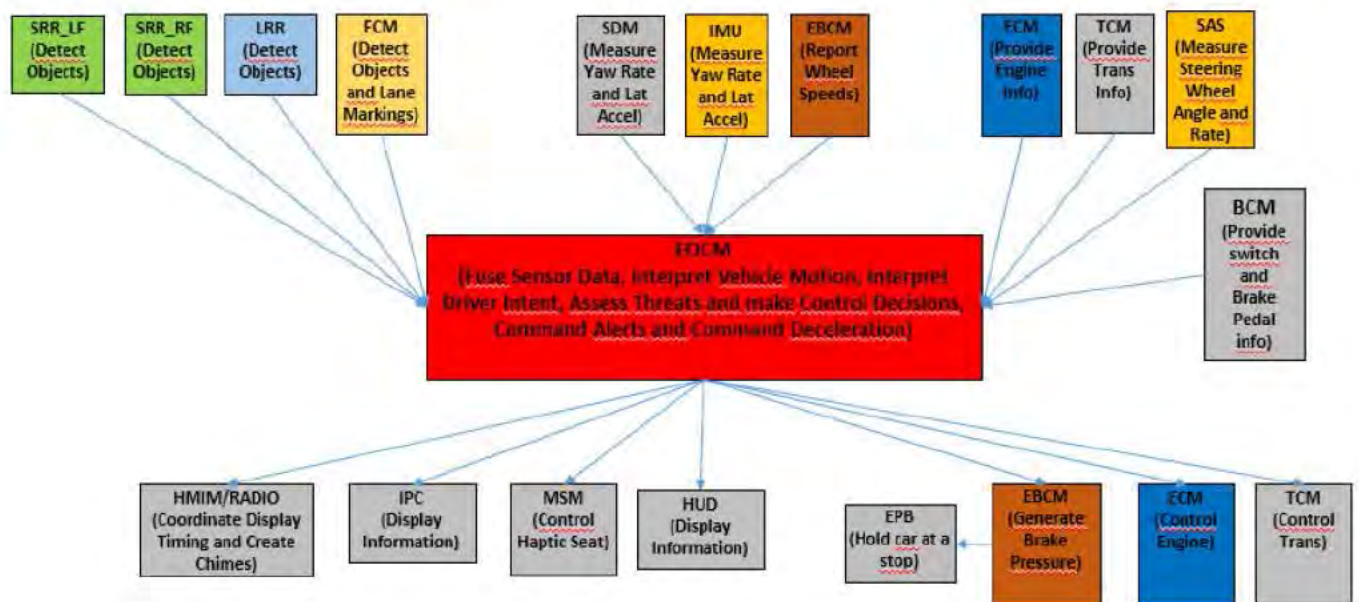
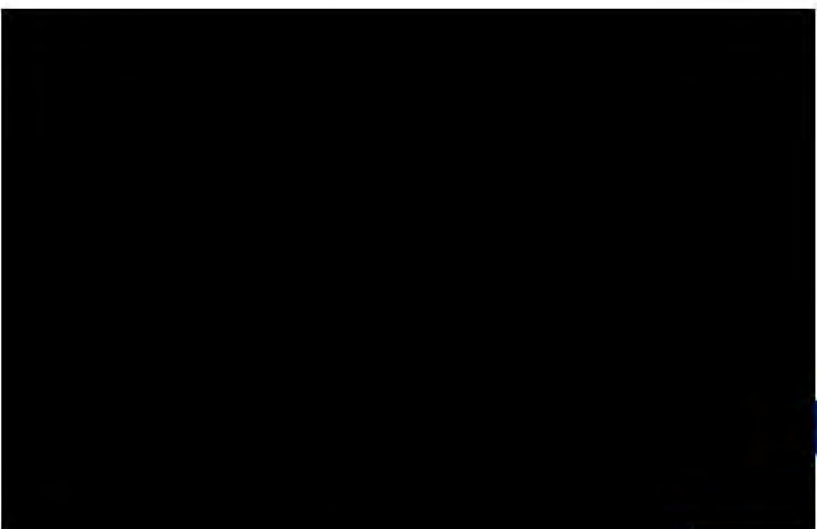


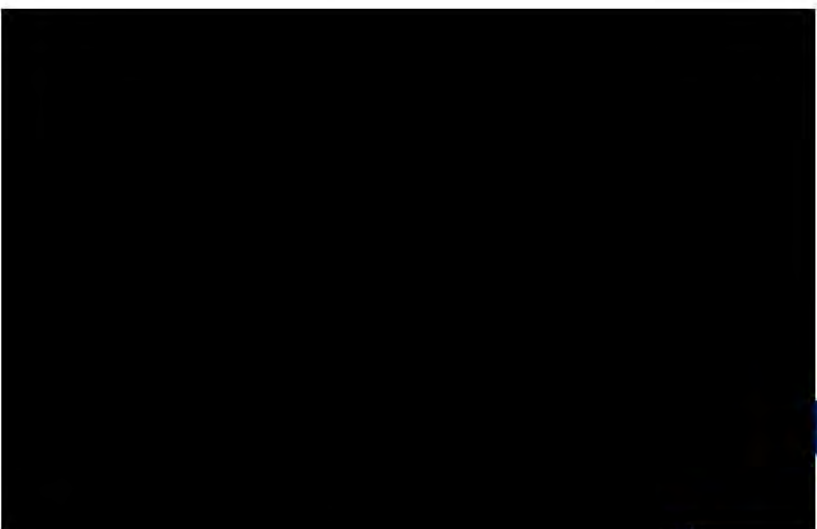
FIGURE 10.a.9

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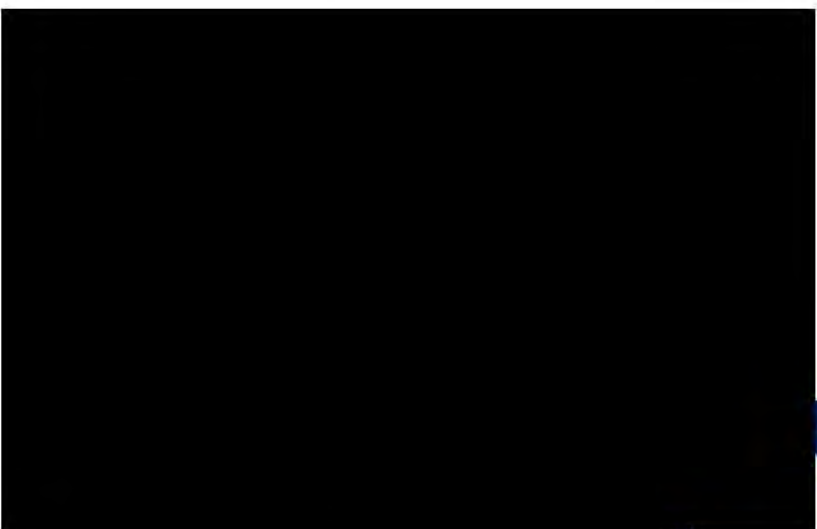
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**10.a. FORs (Field Occurrence Rates):**

General Motors is responding to the Field Occurrence Rates question 10.a. section with event data captured from Vehicle Verification Activity and Captured Test Fleet Mileage Accumulation Programs. The total number of False and True CIB autonomous braking events is normalized per thousand miles driven.

{ \* }

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**10.d. MAX BRAKE PRESSURE AVAILABLE ON EACH WHEEL (FL, FR, RL, RR):**

- The brake hydraulic pressure required to achieve a given deceleration will vary due to the tire Standard Reference Test Tire (SRTT), the road coefficient of friction, brake temperatures, etc.
- { \* }

*10.b. GM robustness testing related to road topology (e.g. metal bridges, Clothoid, S-shape curves ... etc.), vehicle driving fluctuations (e.g. frequent steering, pitch change ... etc.), vehicle direction (e.g. oncoming traffic, cross traffic, adjacent areas ... etc.), vehicle size (e.g. a motorbike or a tricycle), radar signal reflections characteristics (e.g. material and shape), interference (e.g. shadow patterns, horizon glare, other radar sources ... etc.), blockage (e.g. dirt, snow, heavy rain ... etc.), and small body detection (e.g. infants, animals ... etc.)*

#### **Subject Vehicle – 2014 Chevrolet Impala E**

The 2014 MY Chevrolet Impala E-Driver Assistance limits braking authority to 0.3g. The General Motors vehicle verification includes program rides, engineering tests trips, engineering vehicle usage during the vehicle development process. In summary, the verification activity exposed the system to mileage accumulation in locations within the United States specifically chosen to provide challenging and complex situations for the sensing system. See the file “Impala 2014 EOT - 1DGP4430.docx” provided on ATT\_2\_GM\_CONF in the folder labeled Q\_10 for additional details.

#### **Peer Vehicle – 2013 Cadillac ATS**

The 2013 MY Cadillac ATS Driver Assistance System is an ASIL C System with full braking authority (see FDIS ISO 26262-3 for ASIL rating details). The General Motors vehicle verification includes program rides, engineering tests trips, engineering vehicle usage during the vehicle development process. Real world mileage accumulation is done to confirm robustness of system function for road topology, vehicle driving fluctuations, vehicle direction, vehicle size, radar signal reflections characteristics, interference, blockage and small body detection. The objective for the vehicle validation process is to verify the false activation rate at which the unintended longitudinal deceleration hazard metric is exceeded. In summary, the verification activity exposed the system to mileage accumulation in locations within the United States specifically chosen to provide challenging and complex situations for the sensing system. See the attached files “Active Safety Verification - final.pptx” and “ESS2B Phase 1 Management Review 12-3 FINAL.pptx” provided on ATT\_2\_GM\_CONF in the folder labeled Q\_10 for additional details.



10.c. For each sensor and camera configuration, list end-to-end system suppliers, sensor type, camera type, specific vehicle locations, range, FOV (Field Of Vision) and all horizontal and vertical calibration procedures

Subject Vehicle – 2014 Chevrolet Impala E

**10.c. END TO END SYSTEM SUPPLIERS:**

|                 | MAKE      | MODEL    | MODEL YEAR | SYSTEM FEATURE      | SUPPLIER | MODULE PART NUMBER | SOFTWARE PART NUMBER (S) | CALIBRATION PART NUMBER(S)                   |
|-----------------|-----------|----------|------------|---------------------|----------|--------------------|--------------------------|----------------------------------------------|
| SUBJECT VEHICLE | CHEVROLET | IMPALA E | 2014       | Long Range Radar    | DELPHI   | 23176650           | 23176652, 23176653       | 23176654                                     |
|                 | CHEVROLET | IMPALA E | 2014       | Front Camera Module | MAGNA    | 22991221           | 22991222                 | 23106420<br>23106421<br>23106422<br>23106423 |

TABLE 1.6 (REVISED)\*: DRIVER AUTOMATIC COLLISION PREPARATION SYSTEMS/SUPPLIERS

\*NOTE: MAKE, MODEL YEAR, SYSTEM FEATURE & SUPPLIER DATA WAS PROVIDED IN TABLE 1-6 OF GM'S SUBMISSION ON MAY 5, 2014.

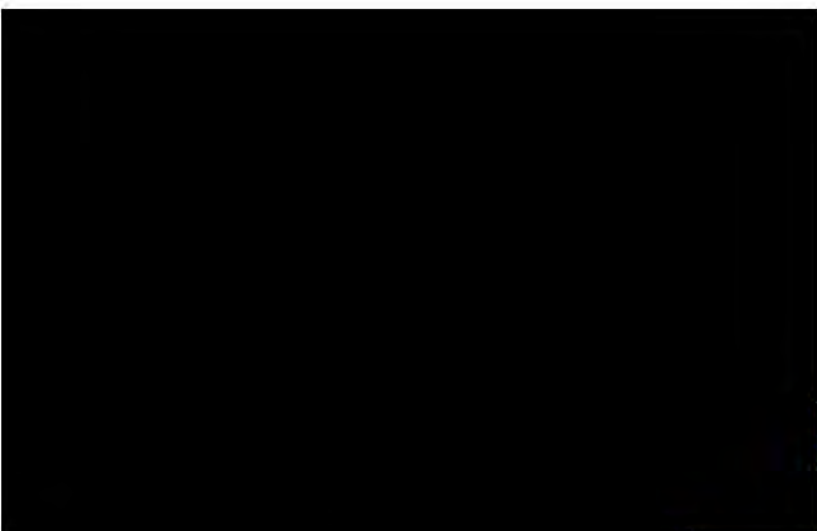
|                 | MAKE      | MODEL    | MODEL YEAR | COMPONENT                                            | SUPPLIER                   |
|-----------------|-----------|----------|------------|------------------------------------------------------|----------------------------|
| SUBJECT VEHICLE | CHEVROLET | IMPALA E | 2014       | SENSOR FARM BRACKET                                  | MOHR ENGINEERING           |
|                 | CHEVROLET | IMPALA E | 2014       | BODY CONTROL MODULE (BCM)                            | CONTINENTAL                |
|                 | CHEVROLET | IMPALA E | 2014       | ELECTRONIC BRAKE CONTROL MODULE (EBCM)               | TRW                        |
|                 | CHEVROLET | IMPALA E | 2014       | ENGINE CONTROL MODULE (ECM)                          | CONTINENTAL                |
|                 | CHEVROLET | IMPALA E | 2014       | ELECTRIC PARK BRAKE (EPB)                            | MANDO                      |
|                 | CHEVROLET | IMPALA E | 2014       | HUMAN MACHINE INTERFACE MODULE (HMIM)                | BOSCH                      |
|                 | CHEVROLET | IMPALA E | 2014       | INSTRUMENT PANEL CLUSTER (IPC)                       | NIPPON SEIKI INTERNATIONAL |
|                 | CHEVROLET | IMPALA E | 2014       | REFLECTED LED ALERT DISPLAY (RLAD)                   | NIPPON SEIKI INTERNATIONAL |
|                 | CHEVROLET | IMPALA E | 2014       | STEERING ANGLE SENSOR (SAS)                          | KOSTAL                     |
|                 | CHEVROLET | IMPALA E | 2014       | SENSING AND DIAGNOSTIC MODULE W/INTEGRATED IMU (SDM) | AUTOLIV                    |
|                 | CHEVROLET | IMPALA E | 2014       | RADIO/TUNER (SILVER BOX)                             | FUJITSU TEN                |
|                 | CHEVROLET | IMPALA E | 2014       | WHEEL SPEED SENSOR (WSS)                             | CONTINENTAL                |
|                 | CHEVROLET | IMPALA E | 2014       | WIRING HARNESSSES                                    | DELPHI                     |

**2014 MY Chevrolet Impala E Long Range Radar (LRR) - Delphi**

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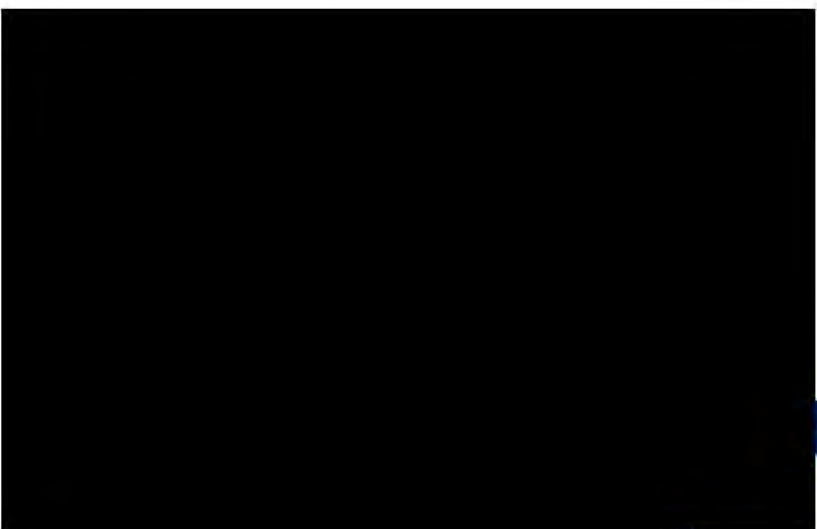
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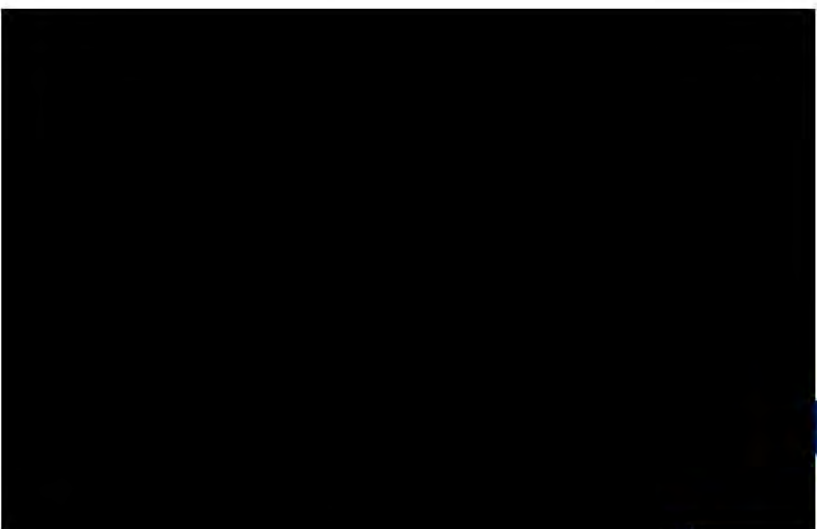
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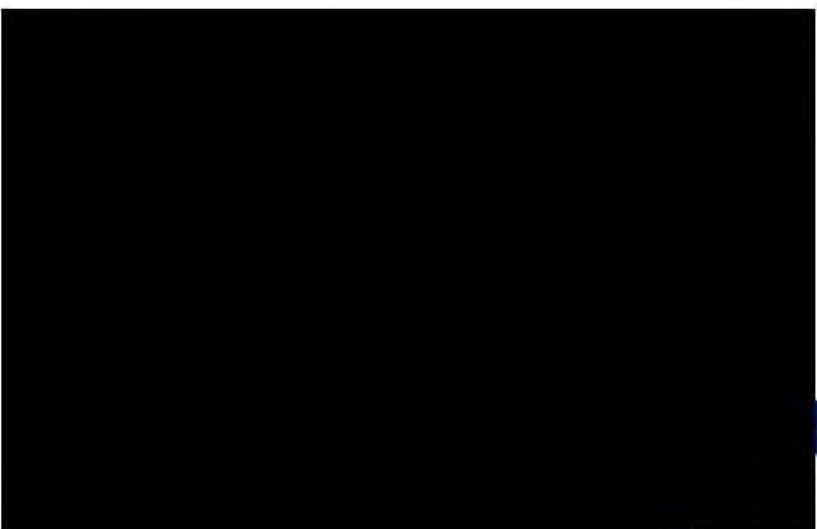


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***10.f. All system diagnostic fault detection and DTC setting routines performed at runtime and power-up including telltale signals, test cycle time, and fail-soft actions***

**2014 MY Chevrolet Impala E Long Range Radar (LRR) - Delphi**

See “10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description” provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

**2014 MY Chevrolet Impala E Front Camera Module (FCM) - Magna**

See “10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description” provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

***10.g. All system related controllers and sensors DRBFM, D-FMEA or IQ-FMEA***

General Motors requested assistance and documents from suppliers in responding to this question. This response includes information provided by suppliers, the referenced documents for the 2014 MY Chevrolet Impala are being submitted directly by each supplier.

**Delphi Long Range Radar – Design Failure Mode Effects Analysis (DFMEA)**

After joint review by GM and Delphi Corporation (Delphi), Delphi is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

**Magna Forward Camera Module - Design Failure Mode Effects Analysis (DFMEA)**

After joint review by GM and Magna International Inc. (Magna), Magna is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

Peer Vehicle – 2013 MY Cadillac ATS

10.c. For each sensor and camera configuration, list end-to-end system suppliers, sensor type, camera type, specific vehicle locations, range, FOV (Field Of Vision) and all horizontal and vertical calibration procedures

**10.c. END TO END SYSTEM SUPPLIERS:**

|              |          |     |      |                                          |             |          |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------|----------|-----|------|------------------------------------------|-------------|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PEER VEHICLE | CADILLAC | ATS | 2013 | EXTERNAL OBJECT<br>CALCULATION<br>MODULE | CONTINENTAL | 22996064 | 22993039 | CALID 1 OPERATING SOFTWARE<br>22993039<br>CALID 2 MANUFACTURING CALIBRATION<br>22993041<br>CALID 3 FSRACC CALIBRATION<br>22993042, 22993043<br>CALID 4 LDW CALIBRATION<br>22993044<br>CALID 5 VEHICLE ARCH CALIBRATION<br>22993046<br>CALID 6 BRAKES CALIBRATION<br>22993049<br>CALID 7 POWERTRAIN CALIBRATION<br>22993051<br>CALID 8 VEHICLE DYNAMICS CALIBRATION<br>22993053, 22993054, 22998326, 22993055<br>CALID 9 VEHICLE PARAMETER CALIBRATION<br>22993059, 22993060,<br>CALID 21 OPERATING SOFTWARE<br>22993040<br>CALID 22 MANUFACTURING CALIBRATION<br>22993045<br>CALID 23 VEHICLE ARCHITECTURE CALIBRATION<br>22993047, 22993048,<br>CALID 24 BRAKES CALIBRATION<br>22993050,<br>CALID 25 POWERTRAIN CALIBRATION<br>22993052<br>CALID 26 VEHICLE DYNAMICS CALIBRATION<br>22993056, 22993057, 22998327, 22993058<br>CALID 27 VEHICLE PARAMETER CALIBRATION<br>22993061, 22993062 |
|              | CADILLAC | ATS | 2013 | LONG RANGE<br>RADAR                      | CONTINENTAL | 22960873 | 22965937 | 22965938                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              | CADILLAC | ATS | 2013 | Short Range<br>Radar                     | AUTOLIV     | 22980117 | 22980118 | 22981624                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|              | CADILLAC | ATS | 2013 | Front Camera<br>Module                   | CONTINENTAL | 23137310 | 23137308 | 22961712                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

TABLE 1.6 (REVISED)\*: DRIVER AUTOMATIC COLLISION PREPARATION SYSTEMS/SUPPLIERS

\*NOTE: MAKE, MODEL YEAR, SYSTEM FEATURE & SUPPLIER DATA WAS PROVIDED IN TABLE 1-6 OF GM'S SUBMISSION ON MAY 5, 2014



|              | MAKE     | MODEL | MODEL YEAR | COMPONENT                              | SUPPLIER                   |
|--------------|----------|-------|------------|----------------------------------------|----------------------------|
| PEER VEHICLE | CADILLAC | ATS   | 2013       | BODY CONTROL MODULE (BCM)              | CONTINENTAL                |
|              | CADILLAC | ATS   | 2013       | ELECTRONIC BRAKE CONTROL MODULE (EBCM) | CONTINENTAL                |
|              | CADILLAC | ATS   | 2013       | ENGINE CONTROL MODULE (ECM)            | CONTINENTAL                |
|              | CADILLAC | ATS   | 2013       | ELECTRIC PARK BRAKE (EPB)              | MANDO                      |
|              | CADILLAC | ATS   | 2013       | HUMAN MACHINE INTERFACE MODULE (HMIM)  | BOSCH                      |
|              | CADILLAC | ATS   | 2013       | HEAD-UP DISPLAY (HUD)                  | NIPPON SEIKI INTERNATIONAL |
|              | CADILLAC | ATS   | 2013       | INERTIAL MEASUREMENT UNIT (IMU)        | CONTINENTAL                |
|              | CADILLAC | ATS   | 2013       | INSTRUMENT PANEL CLUSTER (IPC)         | DELPHI                     |
|              | CADILLAC | ATS   | 2013       | MEMORY SEAT MODULE (MSM)               | DENSO                      |
|              | CADILLAC | ATS   | 2013       | STEERING ANGLE SENSOR (SAS)            | KOSTAL                     |
|              | CADILLAC | ATS   | 2013       | SENSING AND DIAGNOSTIC MODULE (SDM)    | AUTOLIV                    |
|              | CADILLAC | ATS   | 2013       | RADIO/TUNER                            | FUJITSU TEN                |
|              | CADILLAC | ATS   | 2013       | WHEEL SPEED SENSOR (WSS)               | BOURNS                     |
|              | CADILLAC | ATS   | 2013       | WIRING HARNESSSES                      | YAZAKI                     |
|              | CADILLAC | ATS   | 2013       | Front Camera Module                    | MAGNA                      |
|              | CADILLAC | ATS   | 2013       | SENSOR FARM BRACKET                    | MOHR ENGINEERING           |

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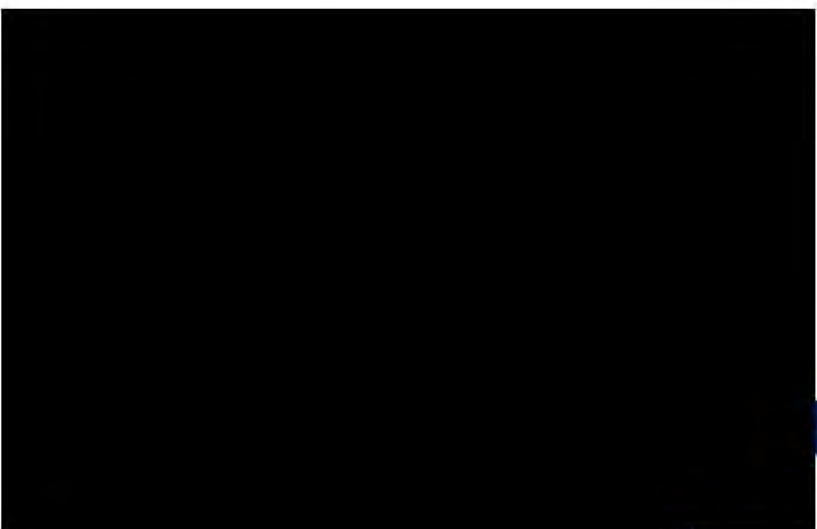
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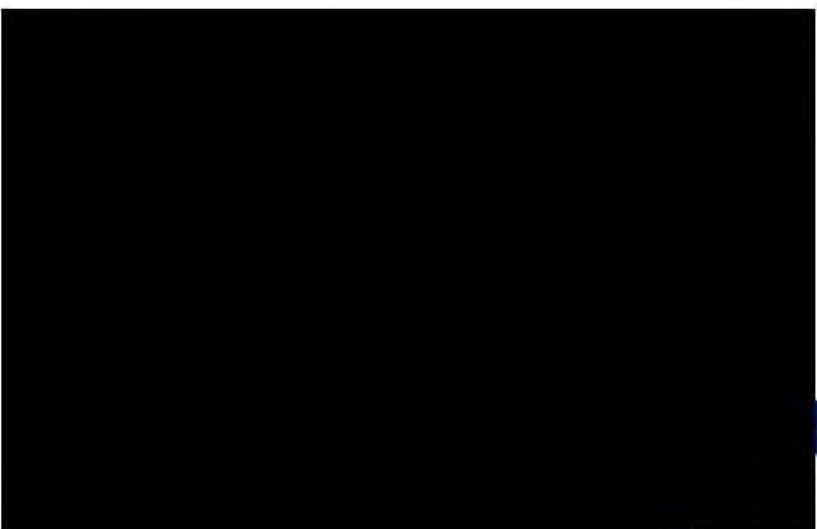


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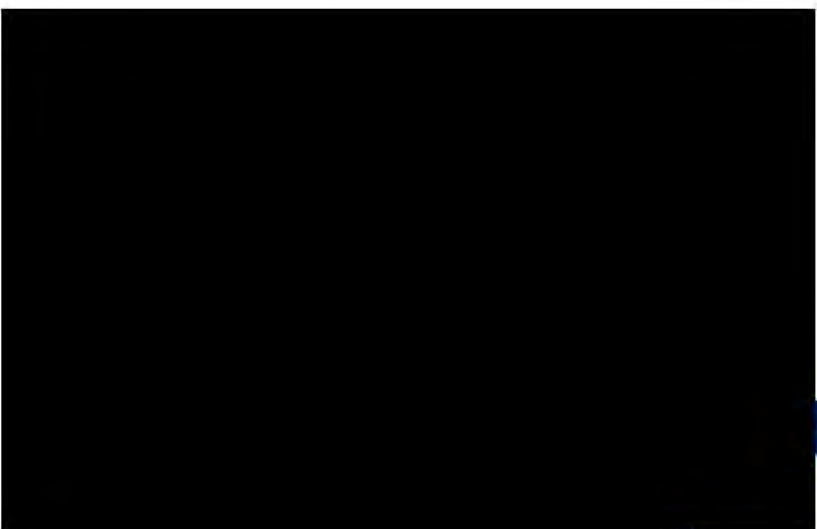
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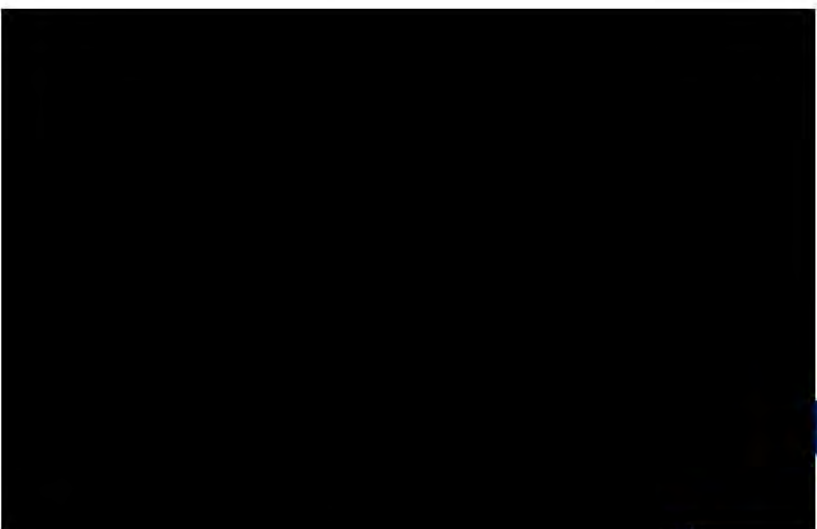
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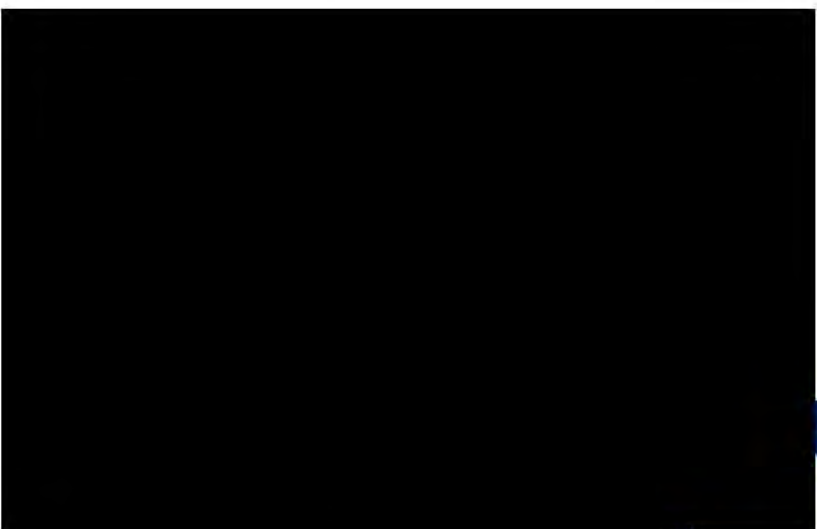
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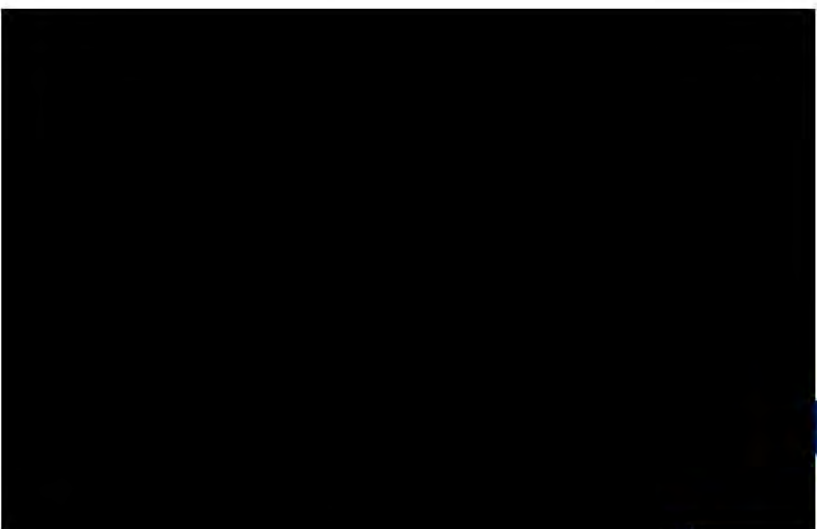
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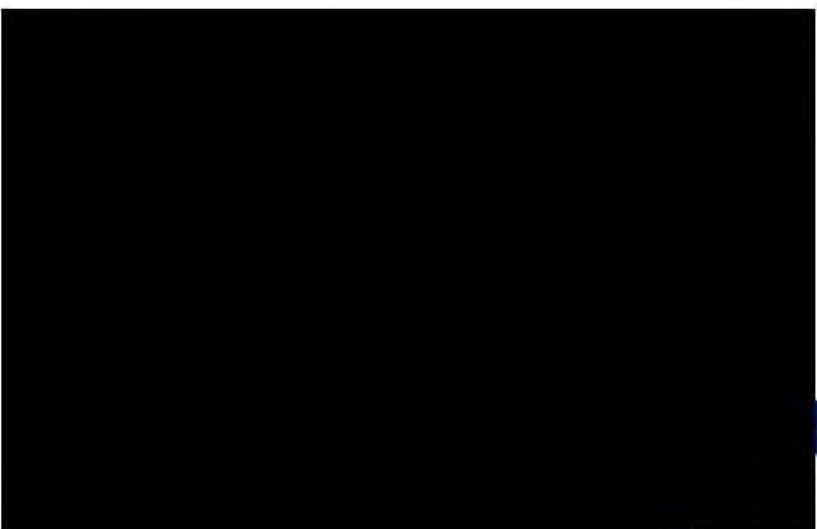


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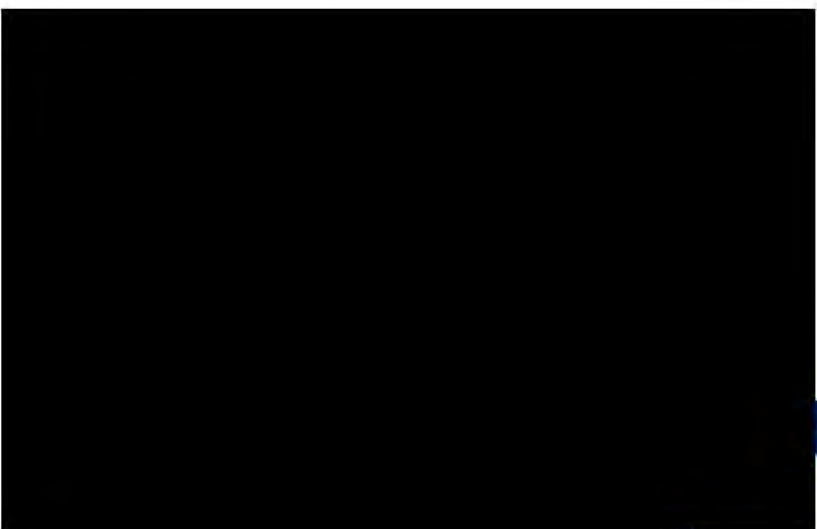
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### **2013 MY Cadillac ATS Front Camera Module (FCM) - Magna**

The question "Radar Cross Section (RCS) measurement techniques, models, and curve shapes respective to distance and object levels from the ground including reflection strength thresholds and any image rectification timings" is not applicable for the 2013 Cadillac ATS Front Camera Module (FCM) as it is not a radar.

### ***10.f. All system diagnostic fault detection and DTC setting routines performed at runtime and power-up including telltale signals, test cycle time, and fail-soft actions***

#### **2013 MY Cadillac ATS External Object Calculation Module (EOCM) - Continental:**

See "10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description" provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

#### **2013 MY Cadillac ATS Long Range Radar (LRR) - Continental**

See "10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description" provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

#### **2013 MY Cadillac ATS Front Camera Module (FCM) - Continental**

See "10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description" provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

#### **2013 MY Cadillac ATS Short Range Radar (SRR) - Autoliv**

See "10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description" provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

#### **2013 MY Cadillac ATS Front Camera Module (FCM) - Magna**

See "10f Diagnostic Trouble Code (DTC) and Failure Type (Symptom) Byte Detailed Description" provided by GM in attachments referenced ATT\_2\_GM\_CONF in folder Q\_10\_F.

### ***10.g. All system related controllers and sensors DRBFM, D-FMEA or IQ-FMEA***

General Motors requested assistance and documents from suppliers in responding to this question. This response includes information provided by suppliers, the responsive 2013 MY Cadillac ATS documents are being submitted directly by each supplier.

#### **Continental External Object Calculation Module – Design Failure Mode Effects Analysis (DFMEA)**

After joint review by GM and Continental Automotive Systems (Continental) at a Continental facility, Continental is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

#### **Continental Long Range Radar – Design Failure Mode Effects Analysis (DFMEA).**



After joint review by GM and Continental Automotive Systems (Continental) at a Continental facility, Continental is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

Continental Forward Camera Module – Design Failure Mode Effects Analysis (DFMEA).

After joint review by GM and Continental Automotive Systems (Continental) at a Continental facility, Continental is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

Autoliv Short Range Radar - Design Failure Mode Effects Analysis (DFMEA).

After joint review by GM and Autoliv Inc. (Autoliv), Autoliv is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

Magna Forward Camera Module - Design Failure Mode Effects Analysis (DFMEA).

After joint review by GM and Magna International Inc. (Magna), Magna is submitting the DFMEA directly to NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

Per discussion between the NHTSA and GM on May 14, 2014 (with a NHTSA confirmation email of May 19, 2014), GM will provide the following information in response to Q10 of PE14-010. In addition to sections 10.a. through 10.g., GM will add subpart (h.) as follows:

***10.h. Description of the electronic park brake system as well as description of the hill assist system and algorithm for the subject vehicles.***

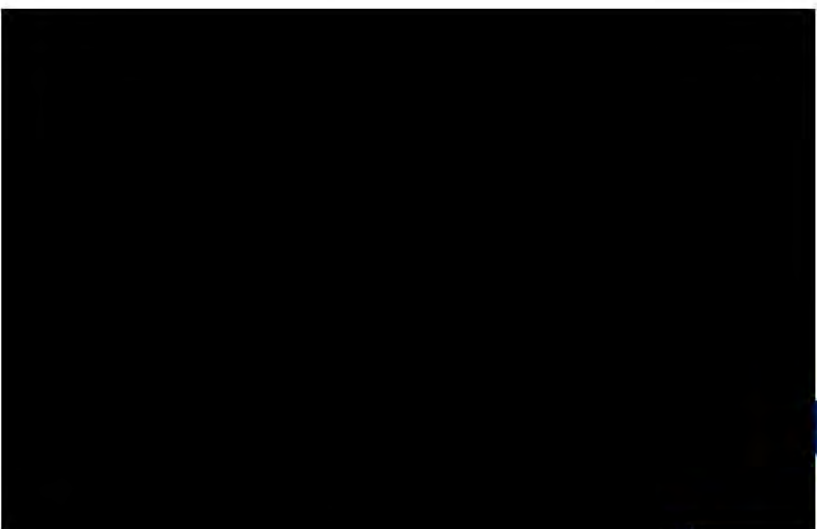
**10.h. Electric Park Brake (EPB) functional description for the subject 2014 MY Chevrolet Impala E vehicles is given below.**

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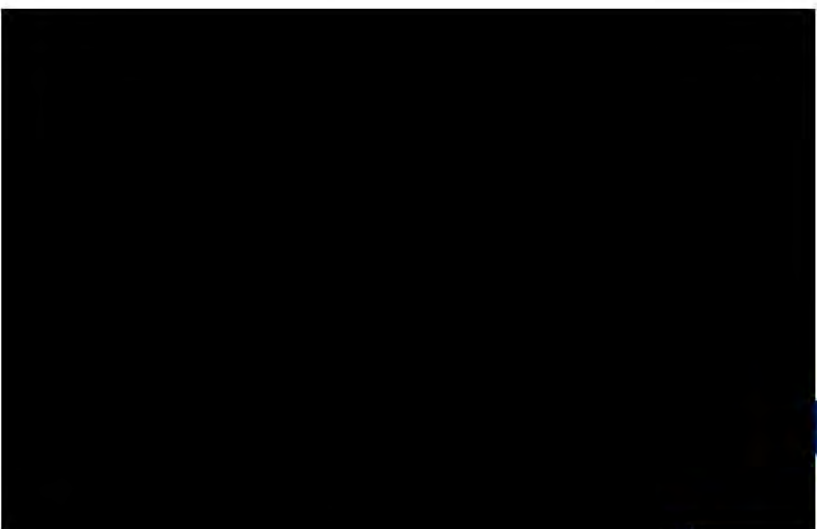
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# Active Safety Unintended Braking

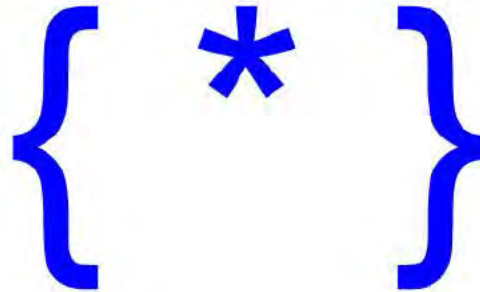
- Active Safety Braking Capable Systems Overview
- FTA / DFMEA Background
  - Most probable causes
- Safety Critical GSSLT Background
- Verification Activity
- Mike Carpenter – NHTSA discussions
- Competitive Information



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# Active Safety Braking Capable System Overview

- Active Safety Braking Features include
  - KSG - ACC/FSRACC
  - UGN – Collision Imminent Braking
  - UVZ – Rearward Collision Imminent Braking



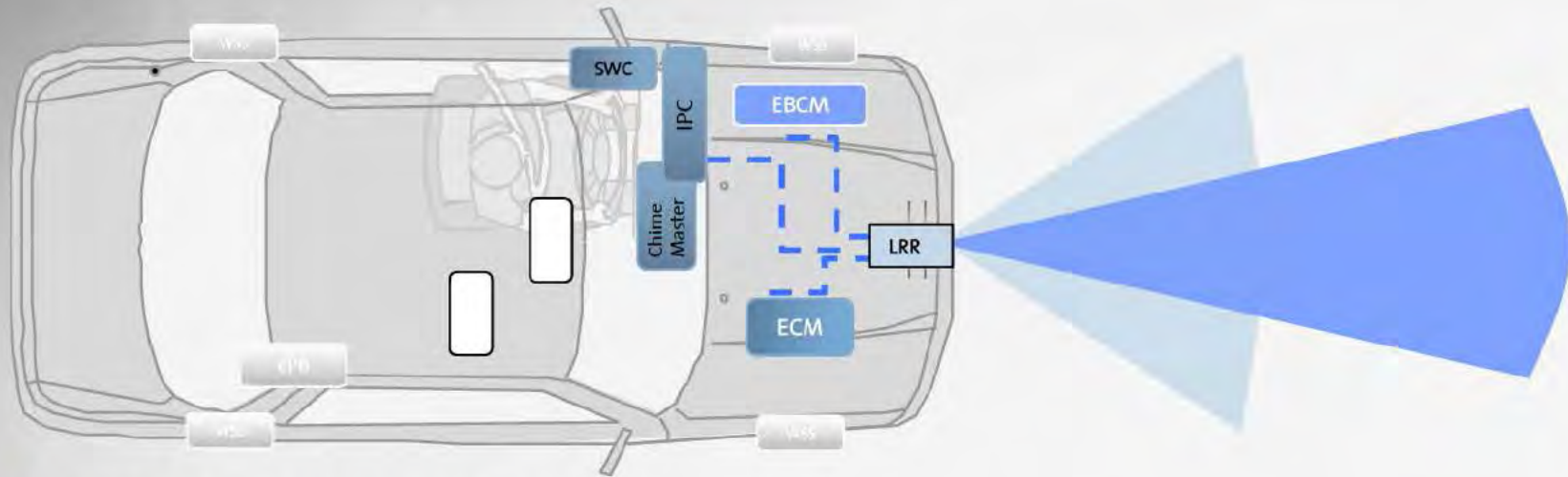
- “ESS2” Systems – Cadillac Driver Assistance System
  - Advanced system that uses a main processor (EOCM) to fuse information from various sensors to provide Active Safety features
  - First use 2013MY
  - ≈25K units globally, 23K units GMNA



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## 2014 Chevy Impala Delphi ESR 1.0 RFB Long Range Radar System Architecture



 System output requests

Production Programs with similar system  
GMX353/E16, GMX350/E15, ELR  
K2Ux Chevy/GMC  
Opel Insignia/Zafara/Astra

### Features

Forward Collision Alert  
Full Speed Range Adaptive Cruise Control  
Forward Active Emergency Braking

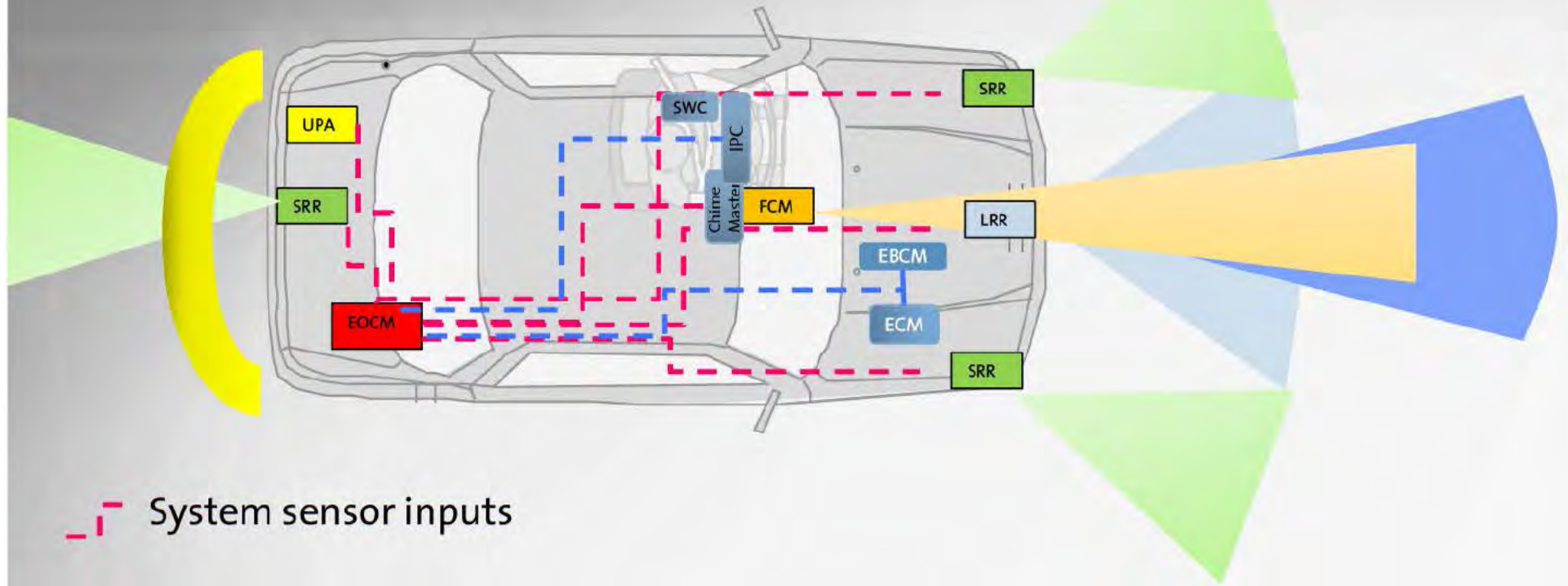
UEU  
KSG  
UGN

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# 2013 Cadillac ATS

## ESS2 – Driver Assistance System Architecture



— System sensor inputs

— System output requests

Production Programs with similar system  
SRX, XTS/E18,  
CTS, ATS  
K2xL

### Features

Forward Collision Alert  
Full Speed Range Adaptive Cruise Control  
Forward Collision Imminent Braking  
Rearward Collision Imminent Braking

UEU  
KSG  
UGN  
UVZ

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## GM/NHTSA Interactions on Potential CIB Unintended Activations

### Crash Avoidance Metrics Partnership – Crash Imminent Braking Consortium

- 2007 – 2010 cooperative research project w/ NHTSA for the development of CIB test procedures & minimum performance metrics
- Participants included GM, Ford, Mercedes, Continental & Delphi
- Principal Investigator – Mike Carpenter, GM Active Safety VPO
- Project final report was published on the US Federal Register Sept., 2011  
(<http://www.nhtsa.gov/Research/Crash+Avoidance/Light+Vehicle+Research+--+Advanced+Braking>)
- Included assessment of factors which could lead to unintended activations using real-world road data
  - ~22,000 continuous data miles from 2 vehicles over 6 weeks including 10 major US cities & various roadway types
  - Three main points emphasized w/ NHTSA:
    1. Expected CIB performance levels make understanding potential unintended activations in real world operation important to assess
    2. Mitigating potential for unintended activations can be a harder task than achieving desired pre-crash performance
    3. Implementing NHTSA test procedures which evaluate CIB performance without understanding the relationship to unintended activations could drive system designs which exhibit increased likelihood of unintended activations

### GM response to NHTSA Request for Comment on proposed CIB/DBS test procedures

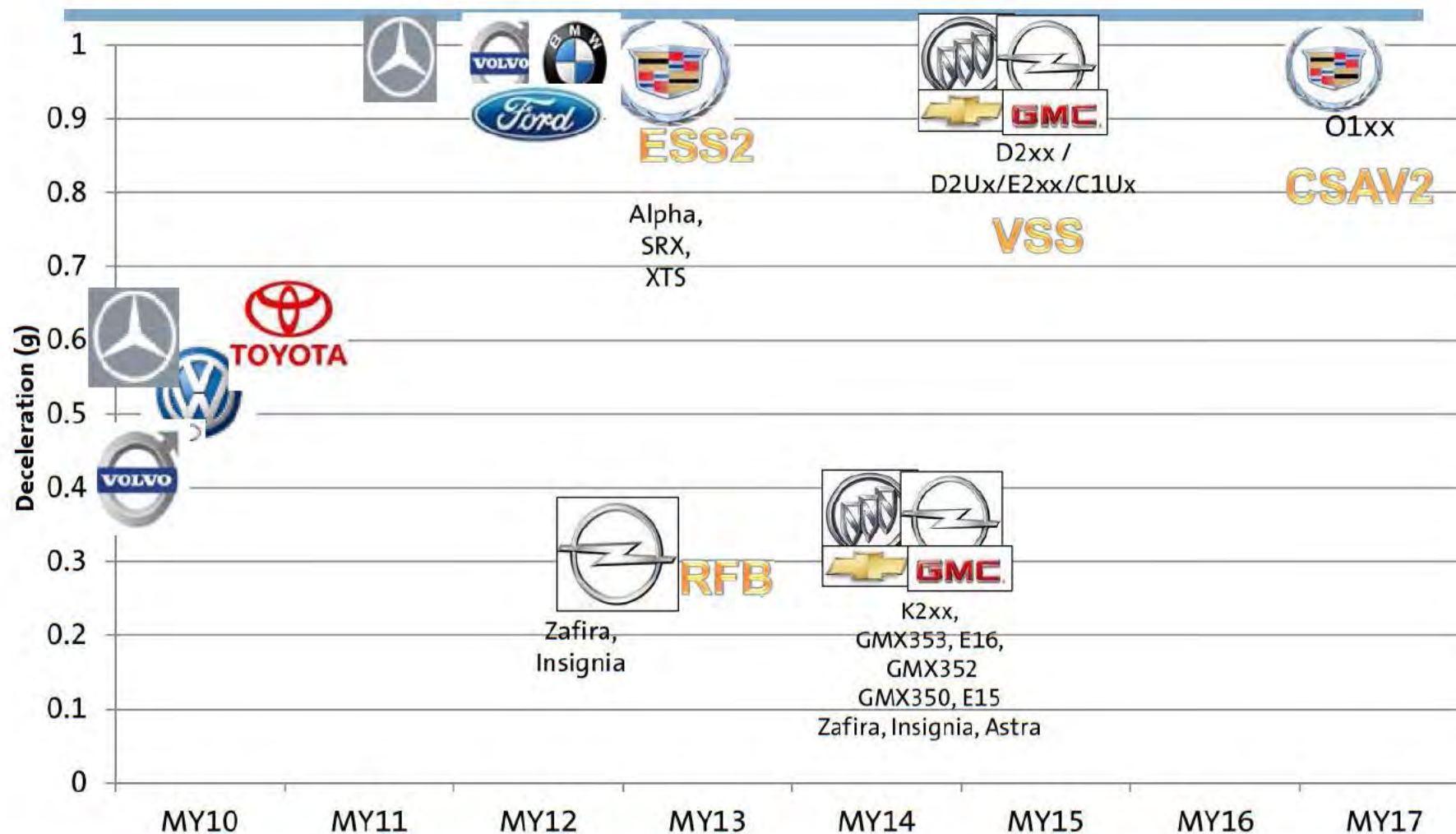
- GM response submitted through GM Safety Regulations & Certification Sept., 2012
- Includes paragraphs reinforcing the points made to NHTSA through the CAMP-CIB project
- <http://www.regulations.gov/#!documentDetail;D=NHTSA-2012-0057-0023>



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## Collision Imminent Braking SYSTEMS



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# FSRACC/CIB LRR-Sensor – Benchmark

|                                                                                                                                                                                                                                                                        | Radar Supplier                | Brand / Vehicle                     | No of radar | System Environmental<br>[Supported Features] | Comments                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------|-------------|----------------------------------------------|-------------------------------------------------------------------------------------------|
| <br><br><br>PORSCHE | TRW<br>(LRR-76/77GHz)         | VW Passat                           | 1           | Sensor Fusion w/ Camera<br>[FSRA, CIB, FCA]  | Newer vehicles show Radar mounted mounted low (lowest position observed ~300mm from road) |
|                                                                                                                                                                                                                                                                        | BOSCH<br>(LRR-76/77GHz)       | Audi A6/S6, A8/S8, Q7<br>VW Touareg | 2           |                                              |                                                                                           |
|                                                                                                                                                                                                                                                                        |                               | Porsche Panamera, Cayenne, Cayman   | 1           |                                              |                                                                                           |
|                                                                                                                                                                                                                                                                        | BOSCH<br>(MRR-76/77GHz)       | VW Golf VII                         | 1           | Stand alone radar<br>[FSRA, CIB, FCA]        |                                                                                           |
|                                                                                                                                                                                       | CONTINENTAL<br>(LRR-76/77GHz) | 3, 5, 7 Series                      | 1           | Sensor Fusion w/ Camera<br>[FSRA, CIB, FCA]  | Newer vehicles show Radar mounted mounted low (lowest position observed ~300mm from road) |
|                                                                                                                                                                                                                                                                        |                               | X6                                  | 1           |                                              |                                                                                           |
|                                                                                                                                                                                                                                                                        | BOSCH<br>(LRR-76/77GHz)       | 330d                                | 1           | tbd                                          |                                                                                           |
| <br>Mercedes-Benz                                                                                                                                                                    | CONTINENTAL<br>(LRR-76/77GHz) | B, C, M-Class                       | 1           | Sensor Fusion w/ Camera<br>[FSRA, CIB, FCA]  | Radar mounted behind emblem or in upper grill.                                            |
|                                                                                                                                                                                                                                                                        |                               | S-Class                             | 1           |                                              |                                                                                           |
|                                                                                                                                                                                     | DELPHI<br>(LRR-76/77GHz)      | S60/XC60, S70/XC70, S80/XC80        | 1           | Sensor Fusion w/ Camera<br>[ACC, FCA]        | Radar mounted behind upper grill.                                                         |
|                                                                                                                                                                                     | DELPHI<br>(LRR-76/77GHz)      | Ford Focus, Mondeo, Taurus, Fusion  | 1           | Sensor Fusion w/ Camera<br>[ACC, FCA]        | Radar mounted behind upper and lower grill.                                               |
|                                                                                                                                                                                     | DENSO<br>(LRR-76/77GHz)       | Prius, Avensis, Land Cruiser        | 1           | Tbd<br>[ACC & Pre-Crash-System]              | Radar mounted behind emblem.                                                              |

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## Back-up Information



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# MY14 Impala Active Safety Features and Availability

| <u>Feature</u>                           | <u>RPO</u> | <u>LS</u> | <u>Model</u> |            |   |
|------------------------------------------|------------|-----------|--------------|------------|---|
|                                          |            |           | <u>LT</u>    | <u>LTZ</u> |   |
| Rear Camera                              | UVC        |           | ---          | O          | S |
| Park Assist – Rear                       | UD7        |           | O            | O          | S |
| Side Blind Zone Alert                    | UFT        |           | ---          | O          | S |
| Rear Cross-traffic Alert                 | UFG        |           | ---          | O          | S |
| Lane Departure Warning                   | UFL        |           | ---          | O          | S |
| Forward Collision Alert                  | UEU        |           | ---          | O          | S |
| Full Speed Range Adaptive Cruise Control | KSG        |           | ---          | ---        | O |
| Forward Active Emergency Braking         | UGN        |           | ---          | ---        | O |

\* VDS error existed at SORP such that UGN was not included in the VDS. This was corrected in March 2014 via EWO 1844853. All vehicles with KSG also include UGN functionality.

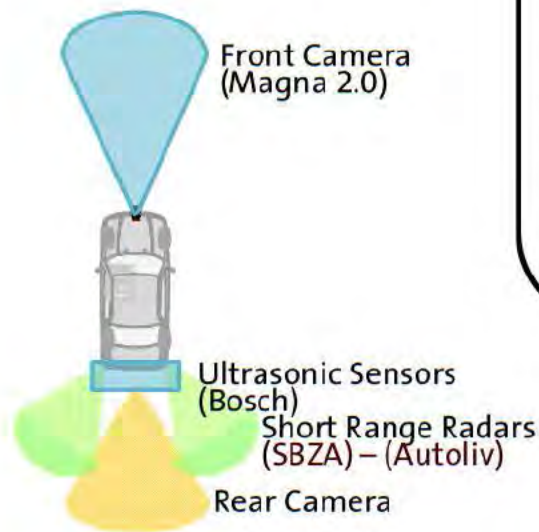


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# 2014 Impala Active Safety - Hardware Content

## Sales Package LT with optional UEU

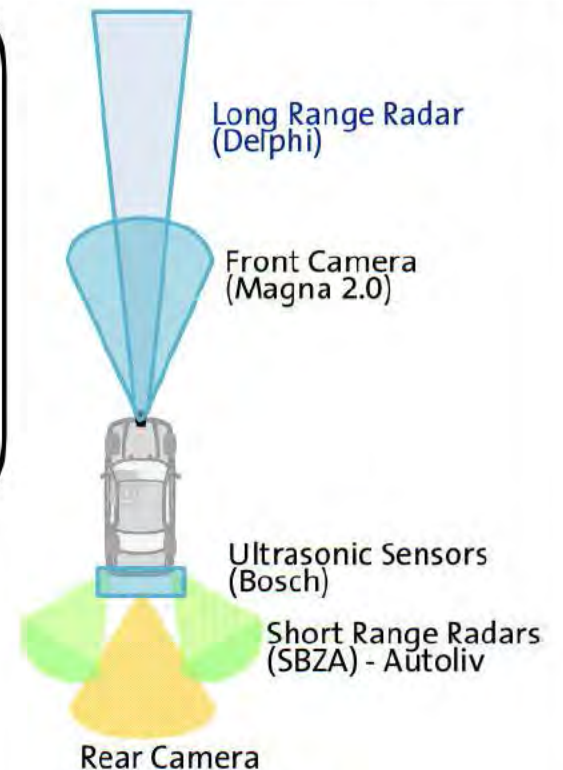


### Common Features Available

- Forward Collision Alert
- Lane Departure Warning
- Side Blind Zone Alert
- Rear Cross Traffic Alert
- Rear Camera
- Park Assist –Rear

### Features unique to LTZ with KSG/UGN

## Sales Package LTZ with standard UEU and KSG/UGN



- Forward CIB
- Full Speed Range Adaptive Cruise Control
- Forward Collision Alert (UEU) done via Long Range Radar module instead of Front Camera



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# MY13 ATS Active Safety Features

|                              |            |
|------------------------------|------------|
|                              | <u>RPO</u> |
| Rear Camera – Optional       | UVC        |
| Park Assist – Front and Rear | UD5        |

## **Sales Package ESS1**

|                            |     |
|----------------------------|-----|
| • Side Blind Zone Alert    | Y65 |
| • Rear Cross-traffic Alert | UFT |
| • Lane Departure Warning   | UFG |
| • Forward Collision Alert  | UFL |
|                            | UEU |

## **Sales Package ESS2**

|                                            |     |
|--------------------------------------------|-----|
| • Includes Sales Package ESS1              | Y66 |
| • Full Speed Range Adaptive Cruise Control | KSG |
| • Forward Active Emergency Braking         | UGN |
| • Rearward Active Emergency Braking        | UVZ |

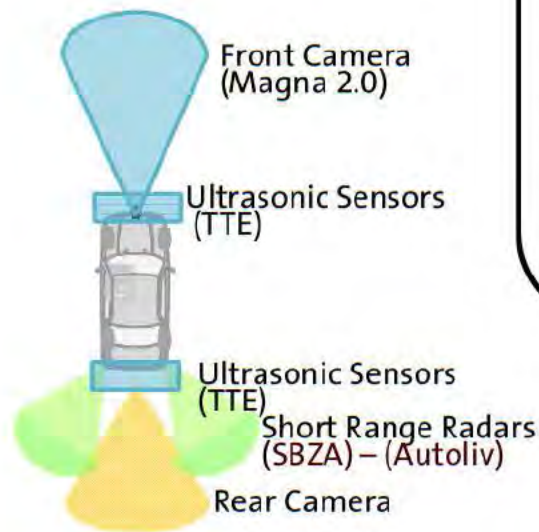


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# ATS Active Safety - Hardware Content

## Sales Package ESS1

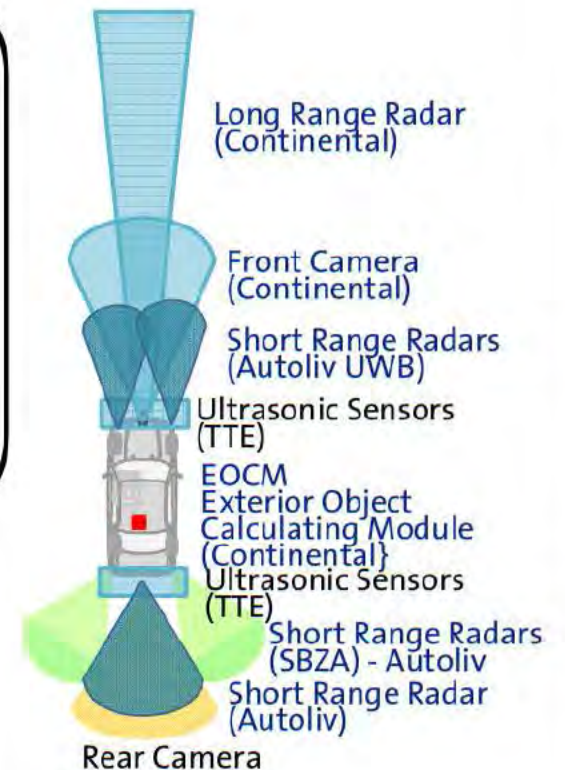


## Common Features Available

- Forward Collision Alert
- Lane Departure Warning
- Side Blind Zone Alert
- Rear Cross Traffic Alert
- Rear Camera
- Park Assist – Front and Rear

## Features unique to Sales Package ESS2

## Sales Package ESS2



- Forward CIB
- Full Speed Range Adaptive Cruise Control
- Rearward AEB



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# Topics for Discussion

- Overview of Production CIB Systems
- CIB Safety Benefits Opportunity & Field Effectiveness Results
- CIB IIHS Test Ratings
- CIB & NCAP Ratings
- CIB Owner Survey Data
- Safety Critical Analysis & Validation Work
- Status of Safety Data Logging Opportunities
- Active Safety VPO Role
- Other topics



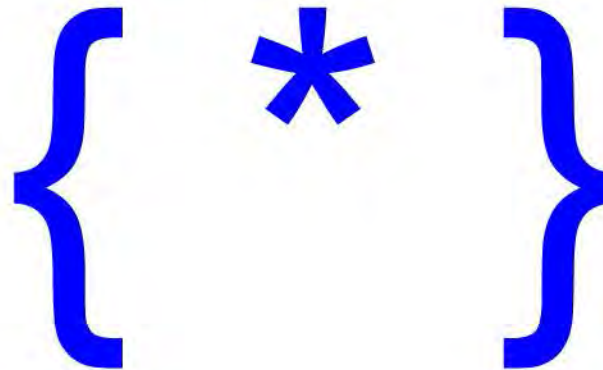
# Overview of Production CIB Systems



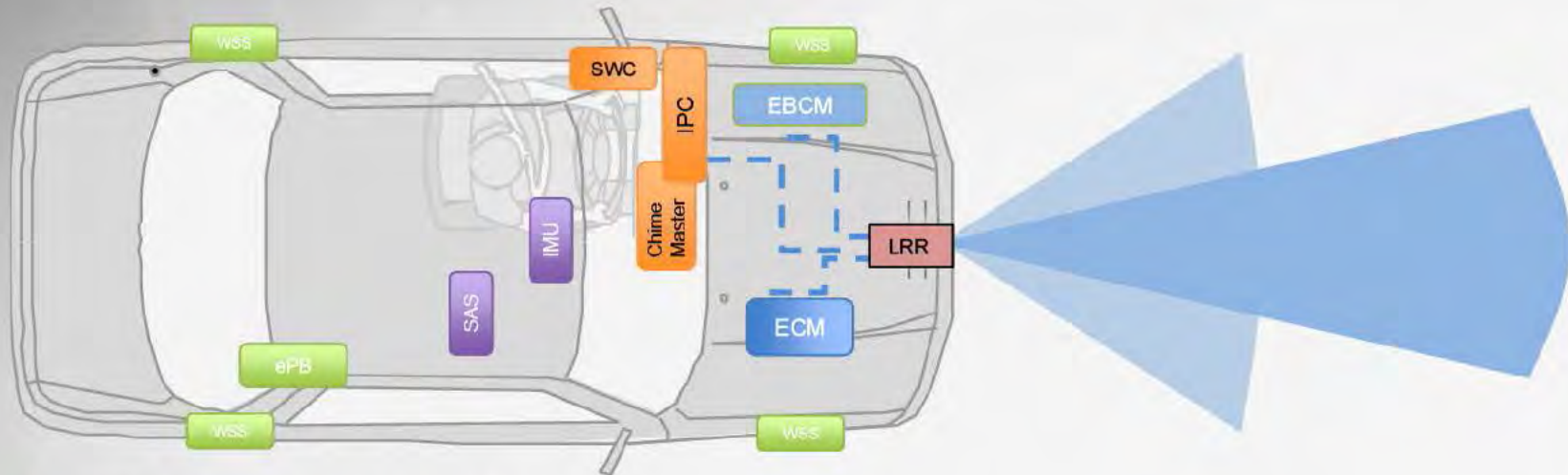
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# Active Safety Braking Capable System Overview

- Active Safety Braking Features include
  - KSG - ACC/FSRACC
  - UGN – Collision Imminent Braking
  - UVZ – Rearward Collision Imminent Braking



# 2014 Chevy Impala Delphi ESR 1.0 RFB Long Range Radar System Architecture



 System output requests

Production Programs with similar system  
GMX353/E16, GMX350/E15, ELR  
K2Ux Chevy/GMC  
Opel Insignia/Zafara/Astra

## Features

|                                          |     |
|------------------------------------------|-----|
| Forward Collision Alert                  | UEU |
| Full Speed Range Adaptive Cruise Control | KSG |
| Forward Active Emergency Braking         | UGN |

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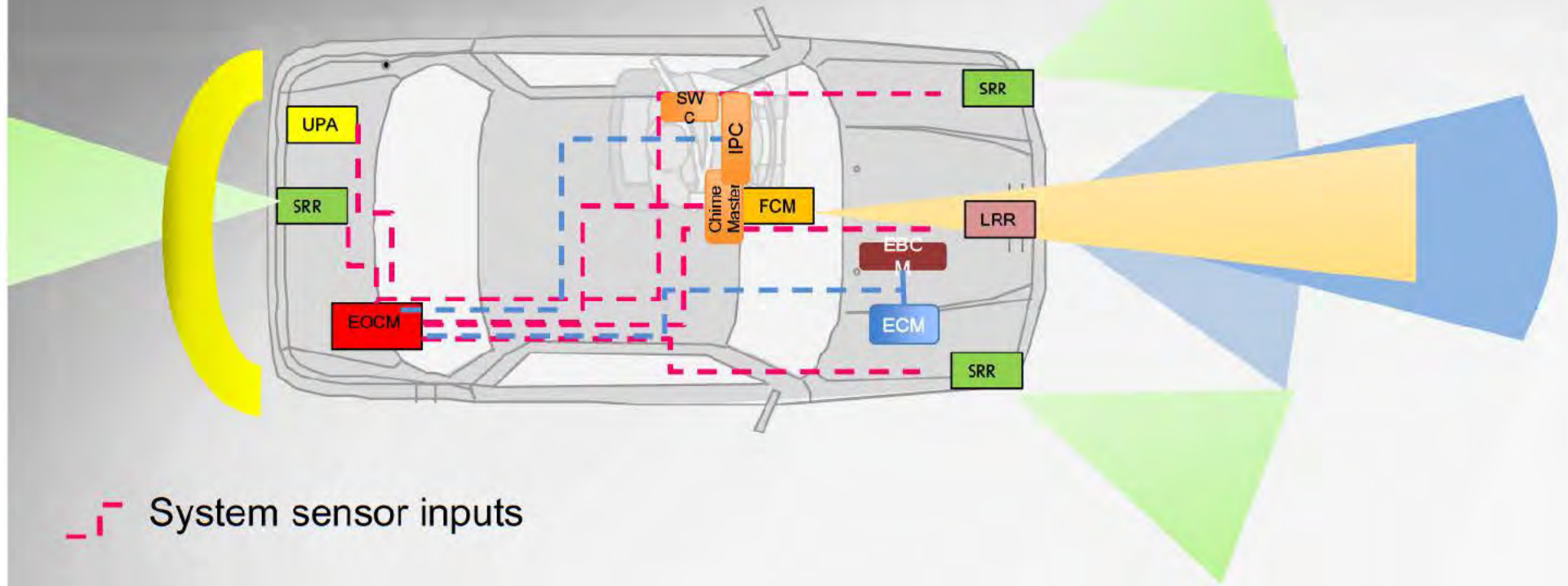
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# 2013 Cadillac ATS

## ESS2 – Driver Assistance System Architecture



 System sensor inputs

 System output requests

Production Programs with similar system  
SRX, XTS/E18,  
CTS, ATS  
K2xL

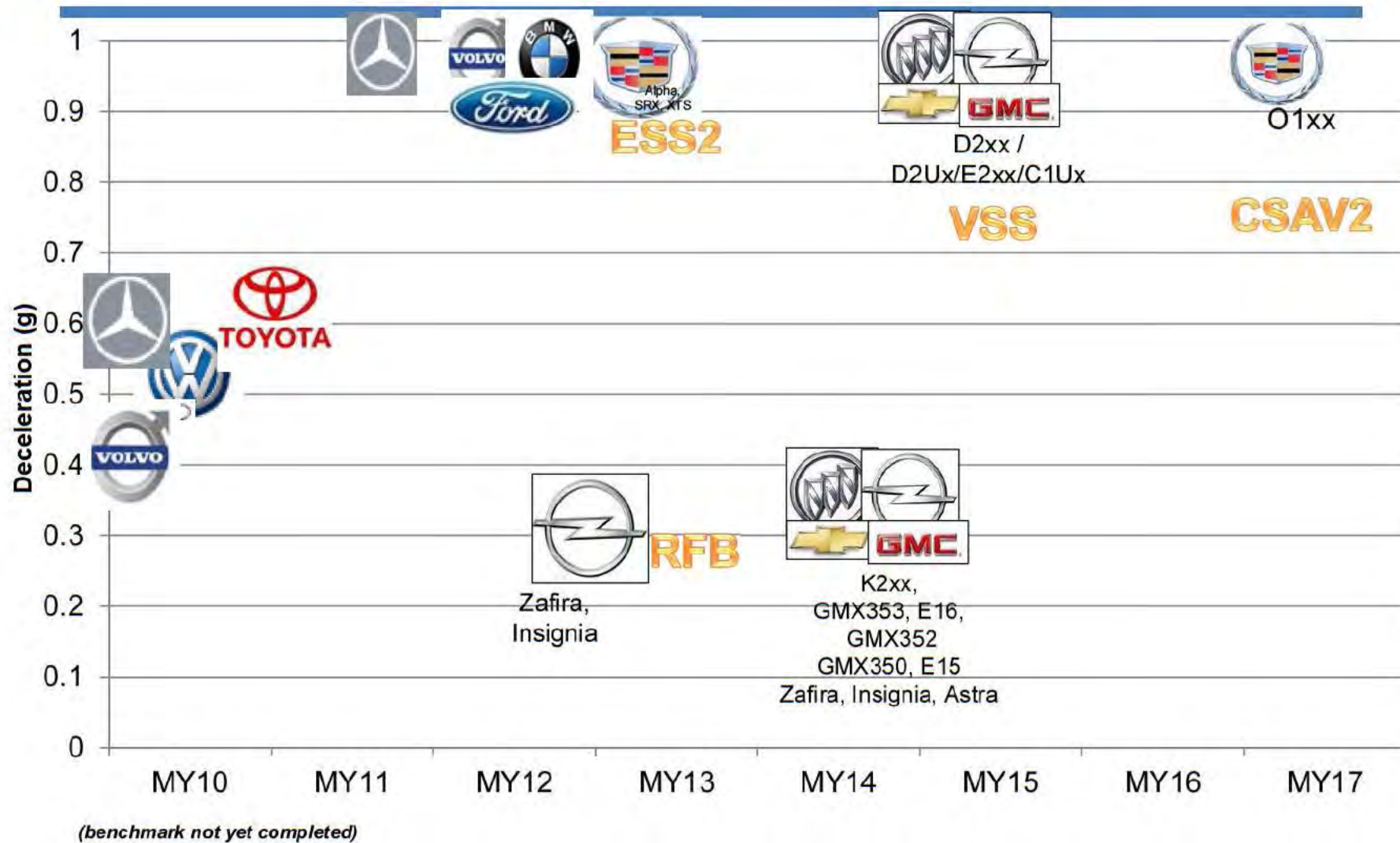
### Features

|                                          |     |
|------------------------------------------|-----|
| Forward Collision Alert                  | UEU |
| Full Speed Range Adaptive Cruise Control | KSG |
| Forward Collision Imminent Braking       | UGN |
| Rearward Collision Imminent Braking      | UVZ |

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# Competitive ClB Landscape



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# **CIB**

# **Safety Benefits Opportunity & Field Effectiveness Results**

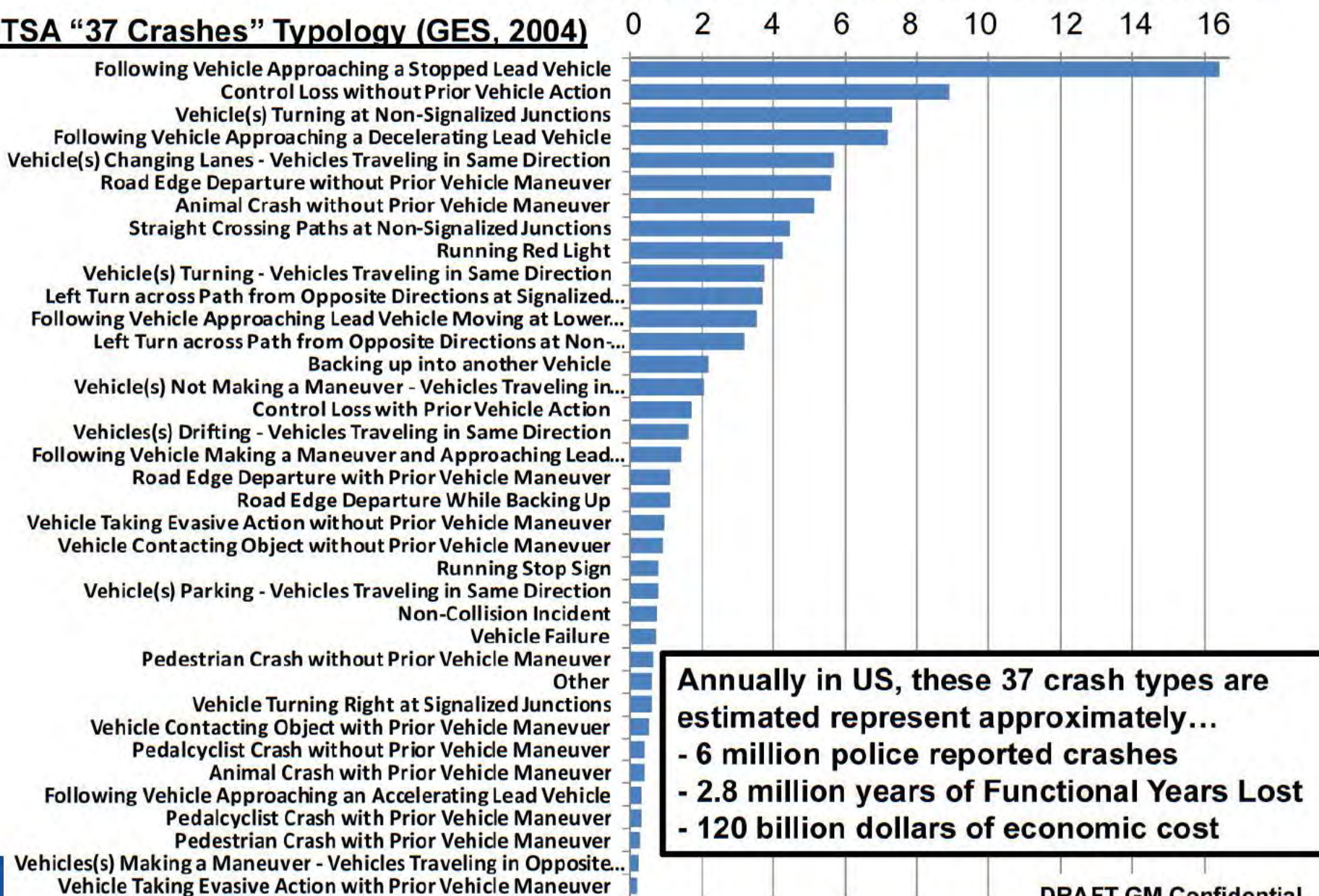


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# CIB Crash Reduction/Harm Reduction “Opportunity”

Estimated % of All US Police-Reported Crashes

## NHTSA “37 Crashes” Typology (GES, 2004)



Annually in US, these 37 crash types are estimated represent approximately...

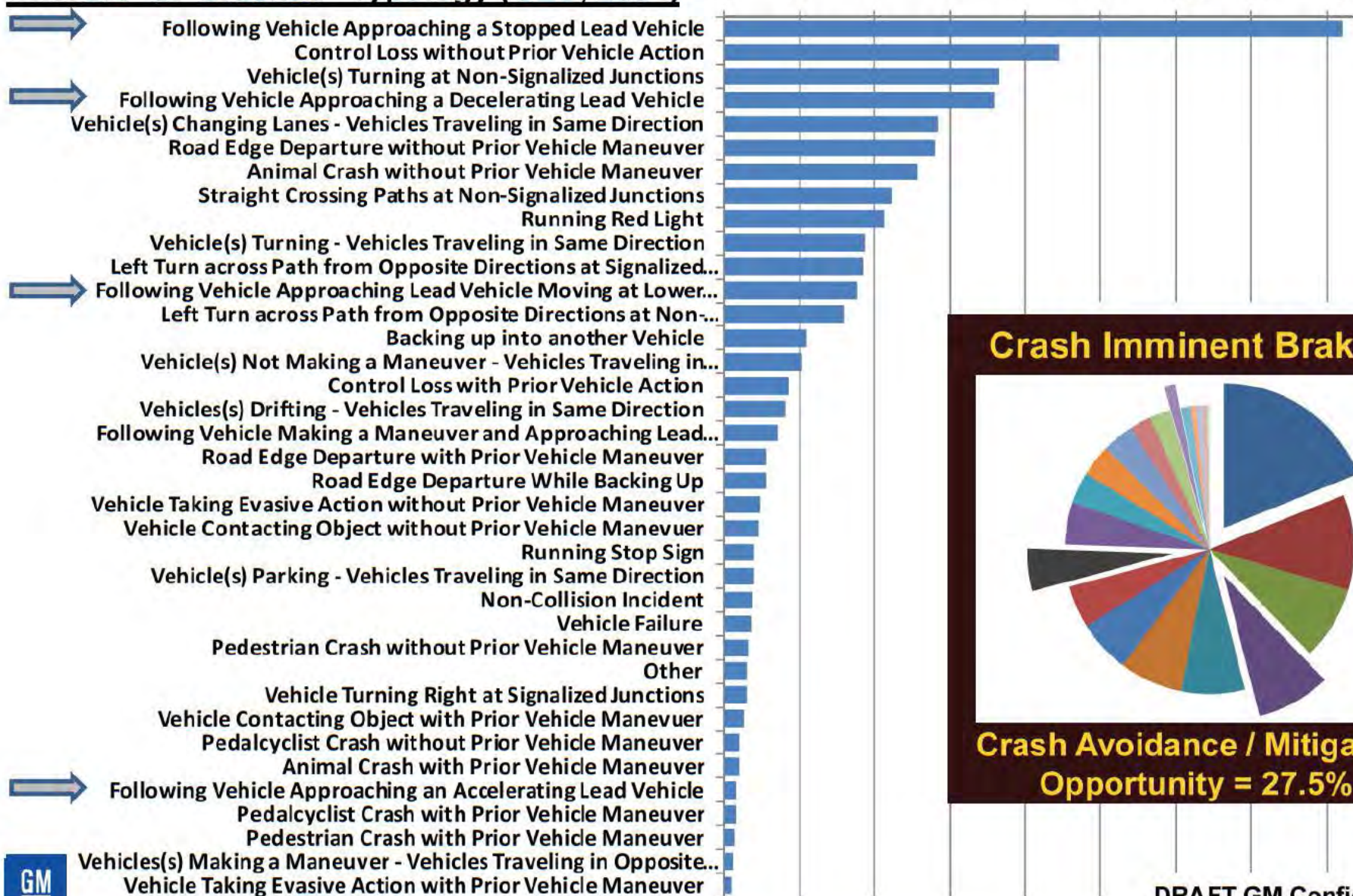
- 6 million police reported crashes
- 2.8 million years of Functional Years Lost
- 120 billion dollars of economic cost



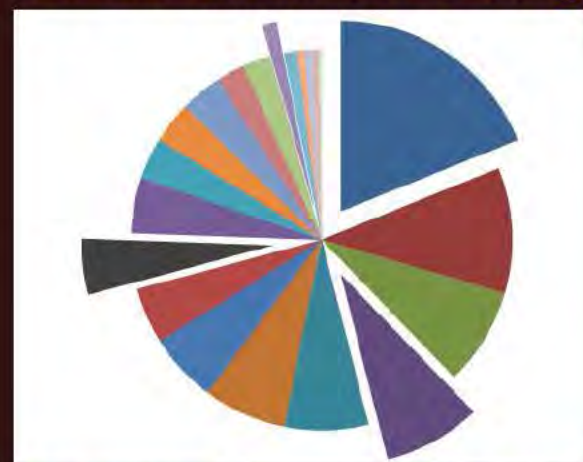
# CIB Crash Reduction/Harm Reduction “Opportunity”

Estimated % of All US Police-Reported Crashes

## NHTSA “37 Crashes” Typology (GES, 2004)



### Crash Imminent Braking



**Crash Avoidance / Mitigation Opportunity = 27.5%**

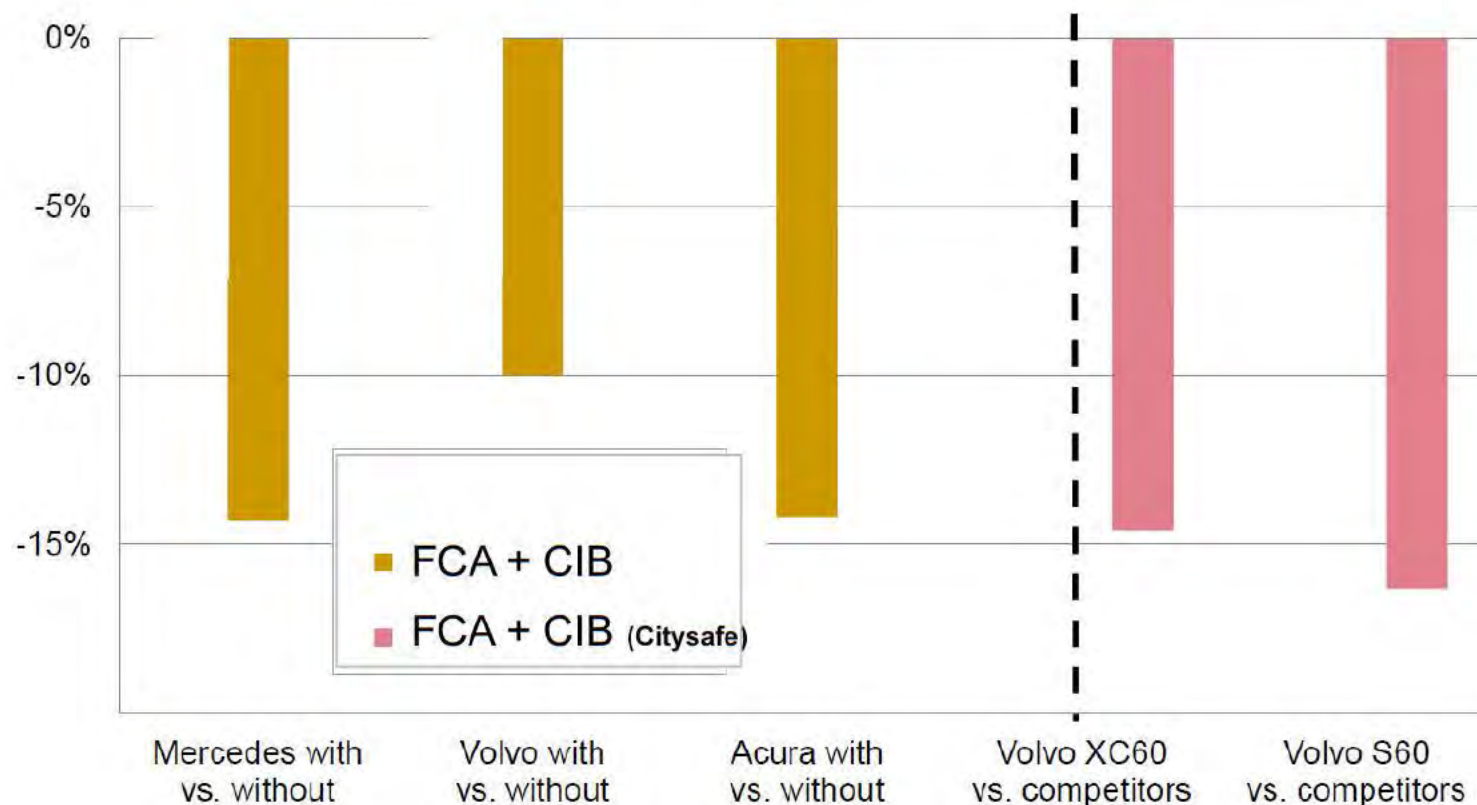
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# IIHS CIB Field Effectiveness Findings for Competitor Systems

Front crash prevention systems are helping drivers avoid crashes

Reductions in property damage liability claim frequency



[www.iihs.org](http://www.iihs.org)

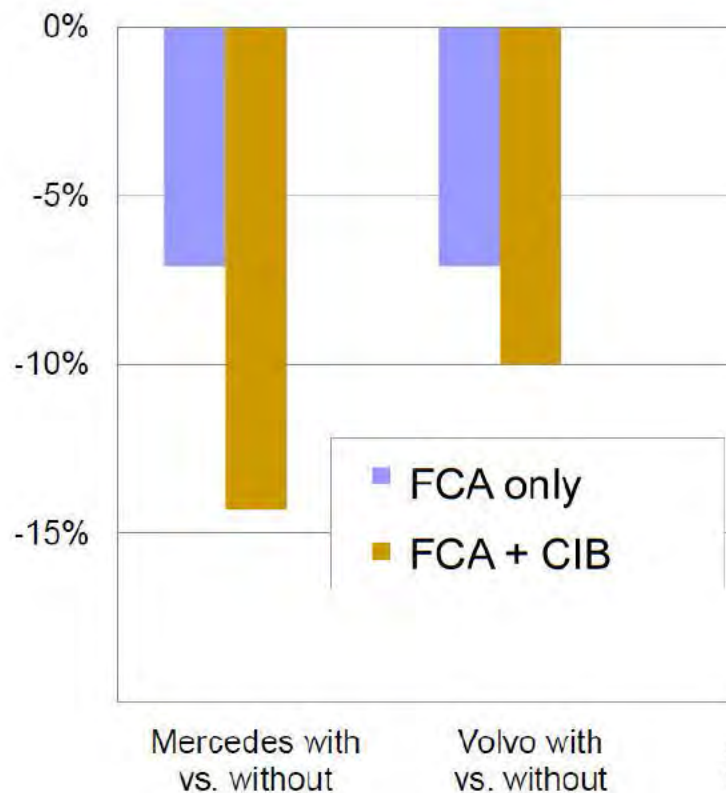
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Front crash prevention systems are helping drivers avoid crashes

Reductions in property damage liability claim frequency

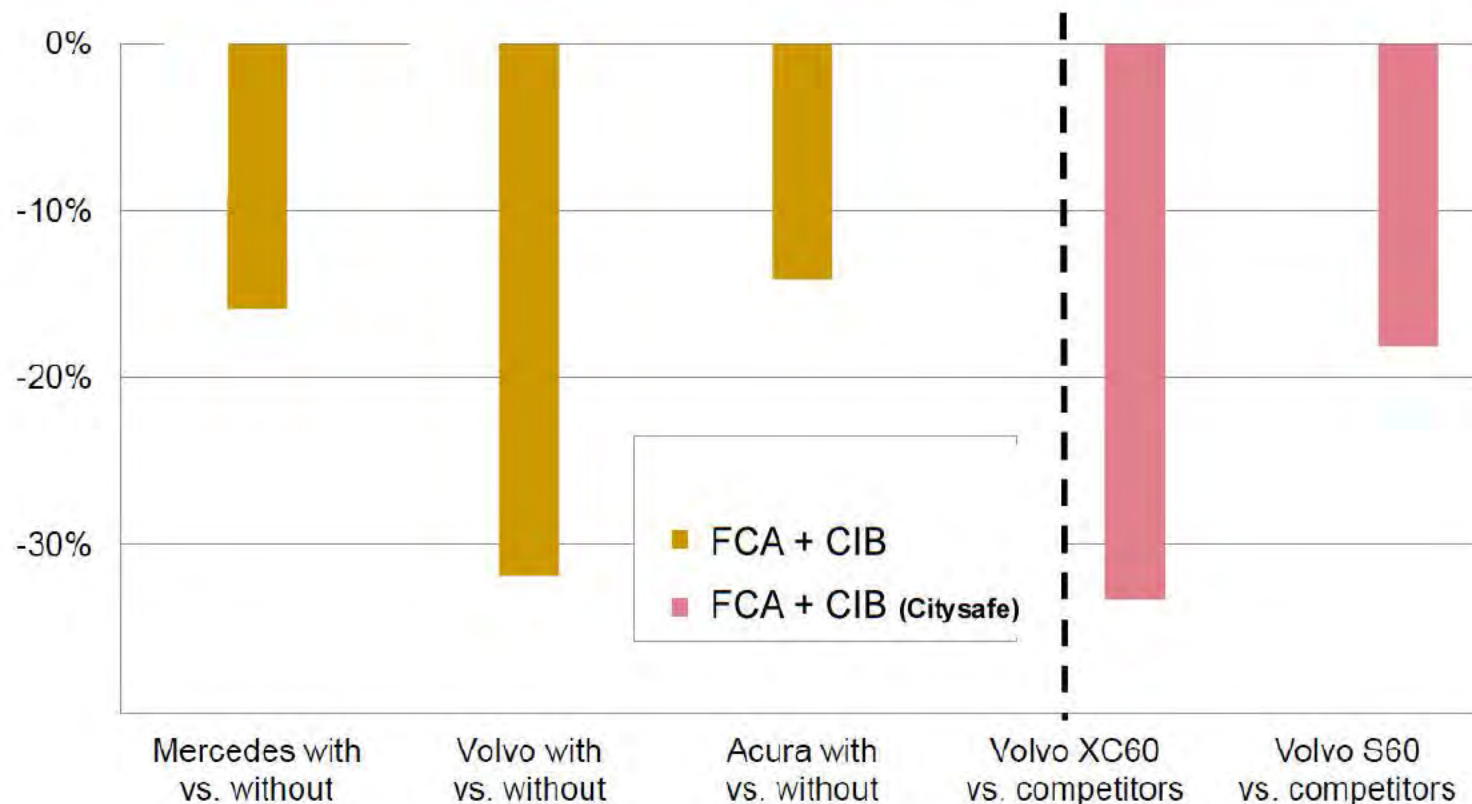




# IIHS CIB Field Effectiveness Findings for Competitor Systems

Front crash prevention systems are preventing injuries

Reductions in **bodily injury** liability claim frequency



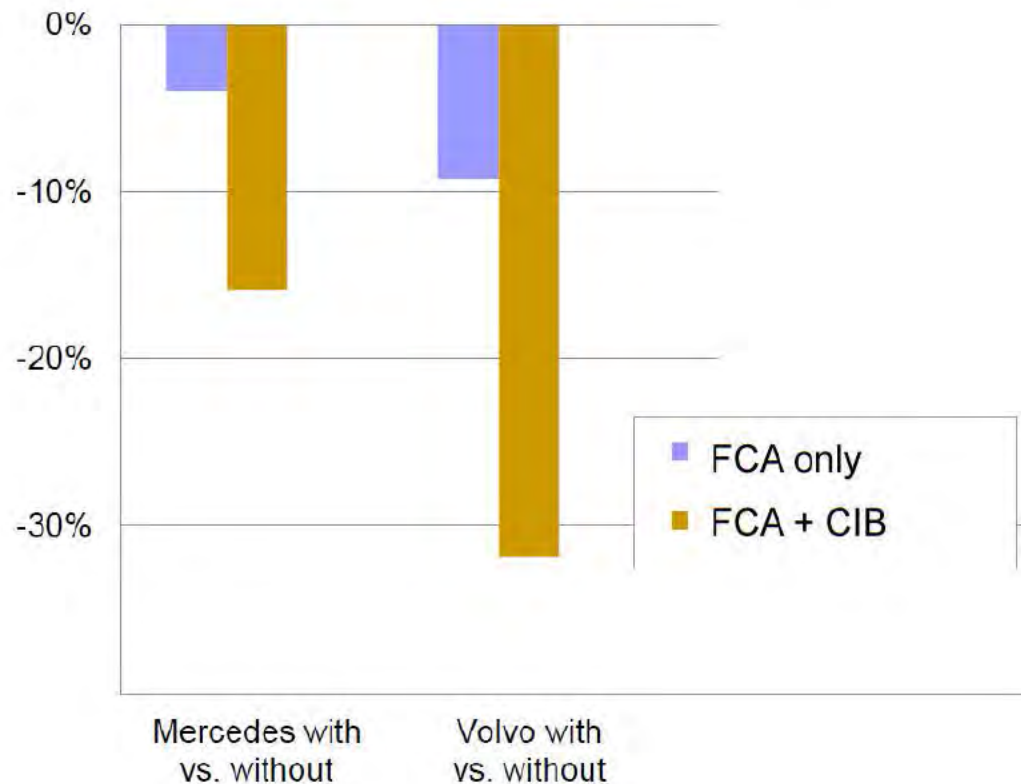
[www.iihs.org](http://www.iihs.org)

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# IIHS CIB Field Effectiveness Findings for Competitor Systems

Front crash prevention systems are preventing injuries

Reductions in **bodily injury** liability claim frequency

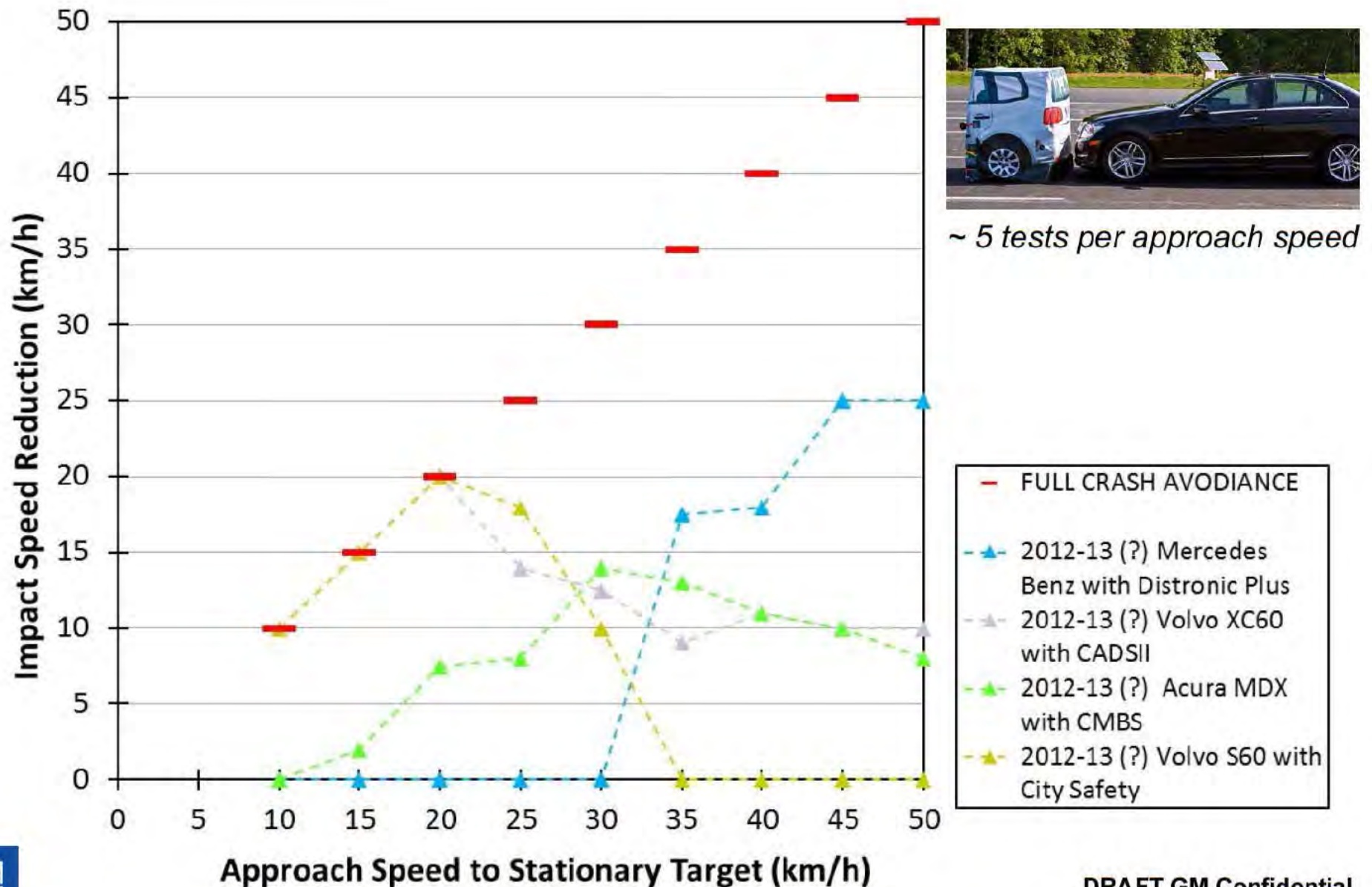


# CIB IIHS Test Ratings



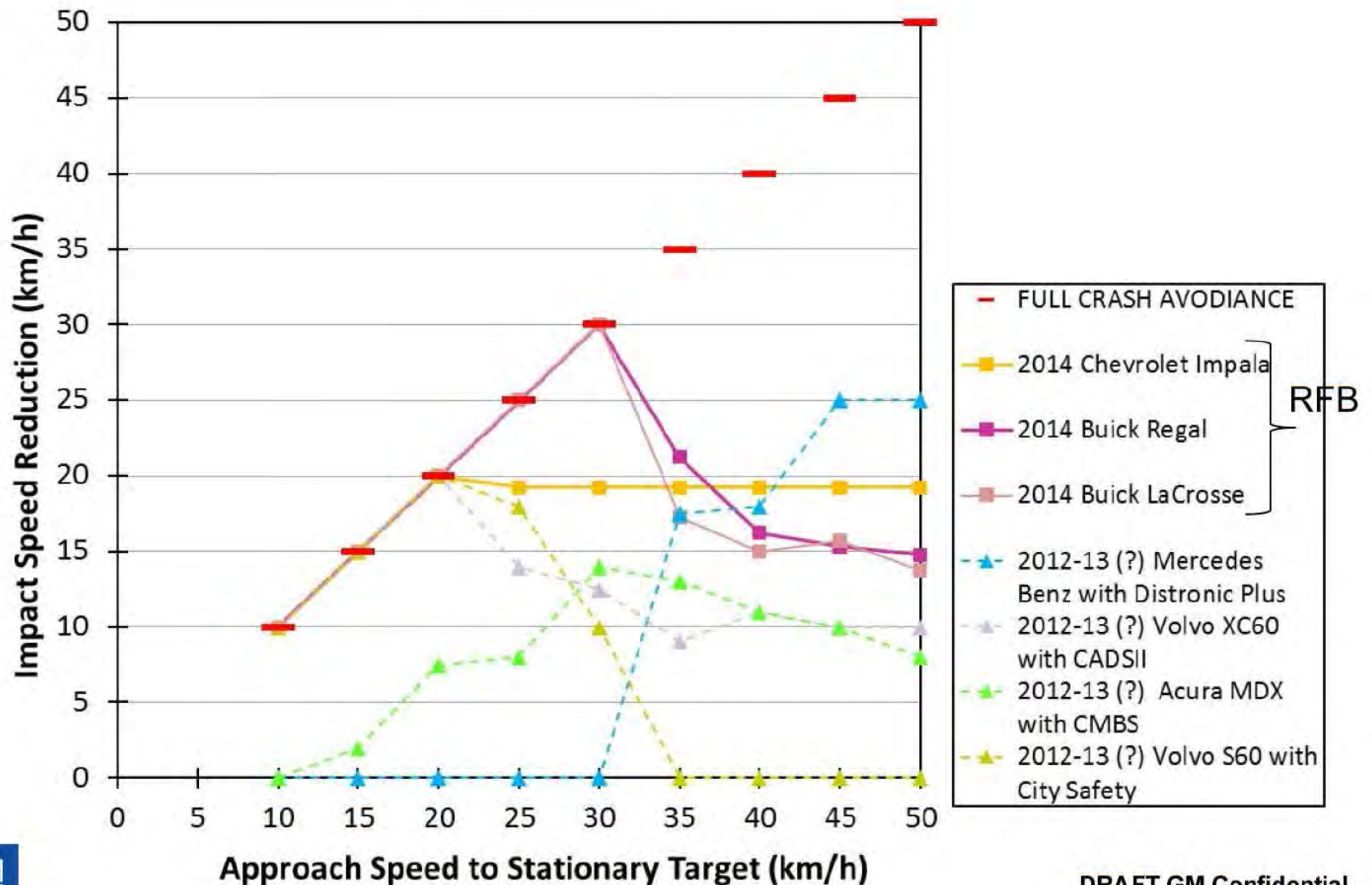
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# IIHS CIB Test Results for Competitor Vehicles





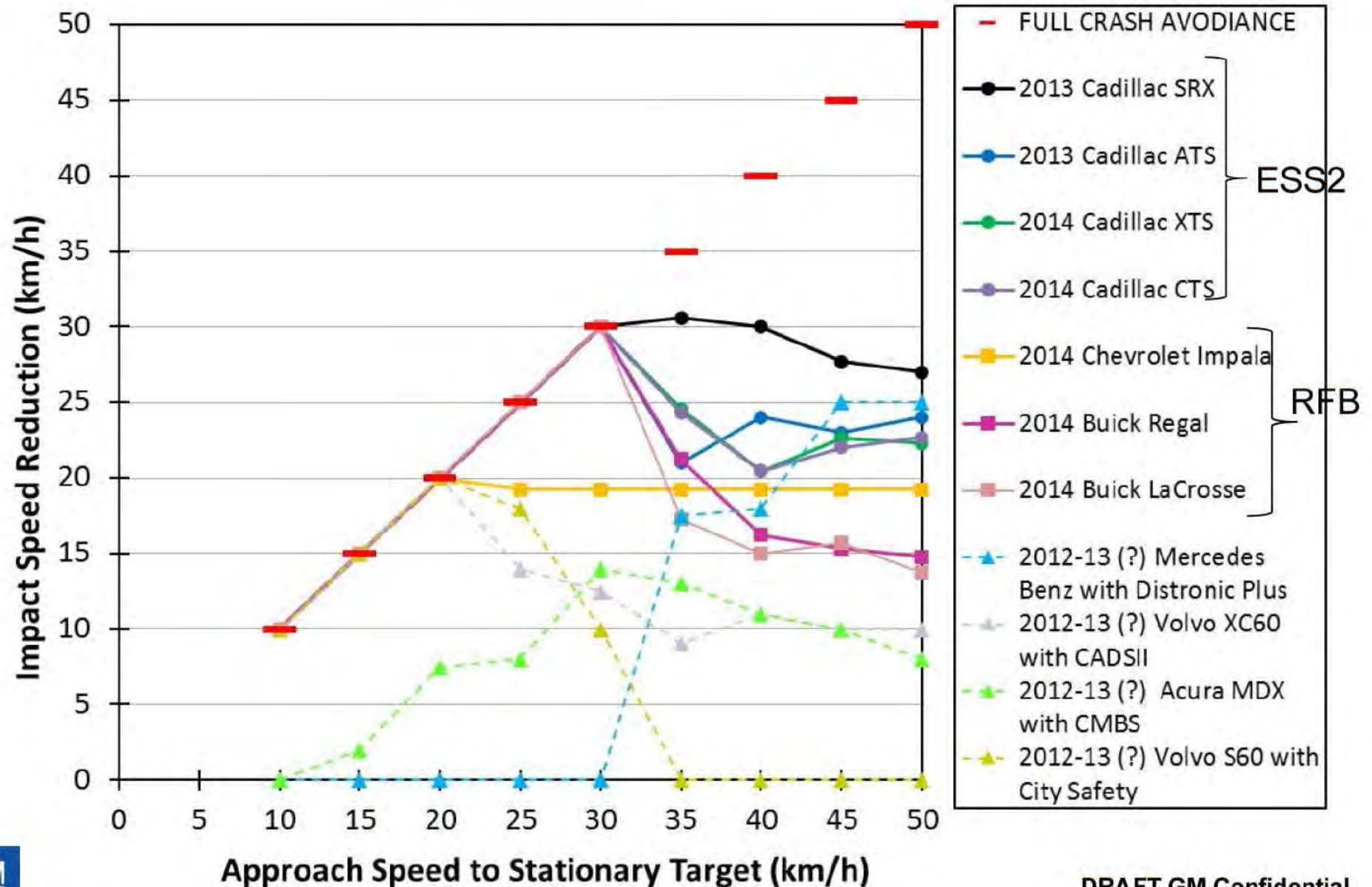
# IIHS CIB Test Results for GM & Competitor Vehicles



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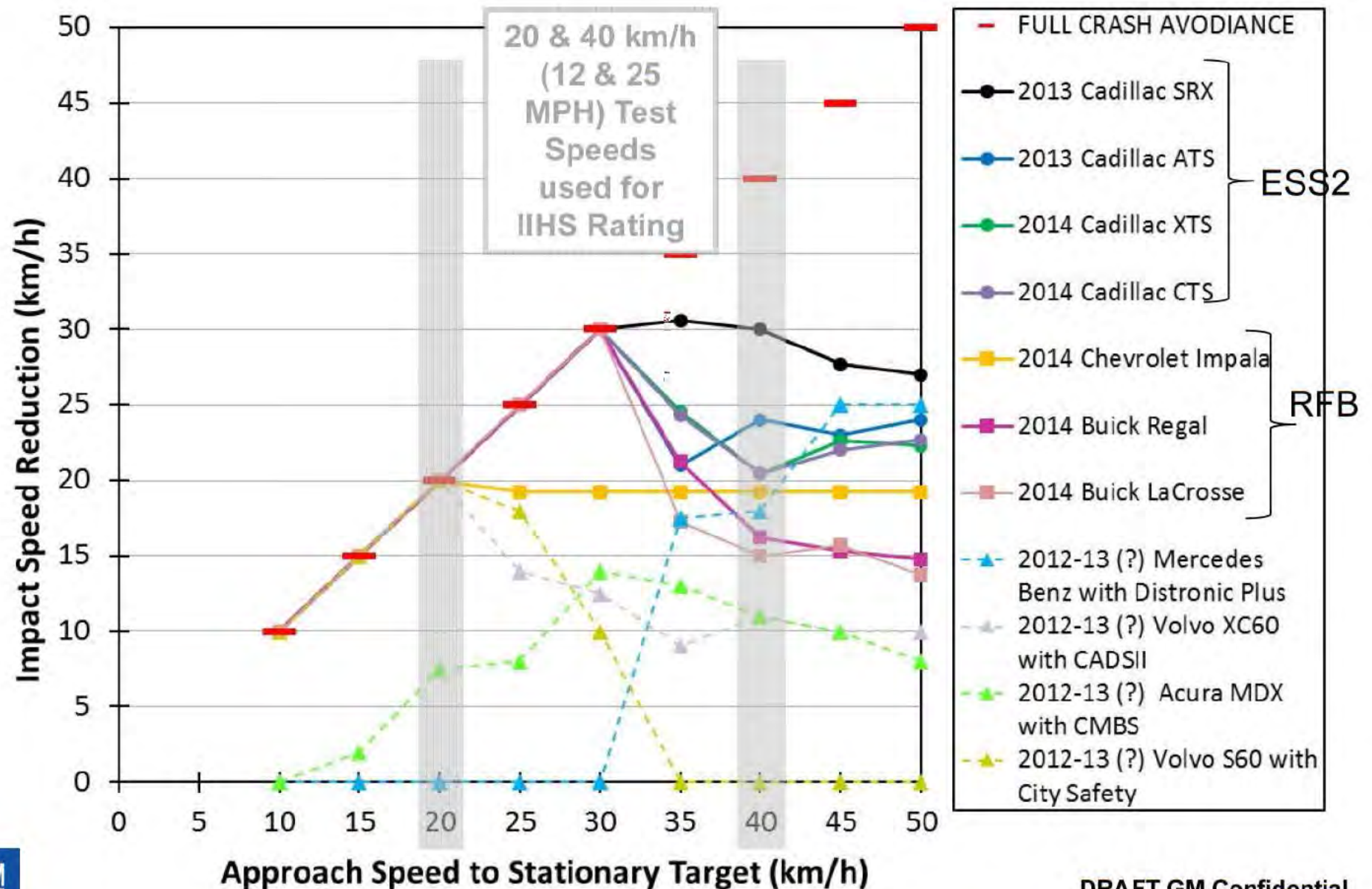


# IIHS CIB Test Results for GM & Competitor Vehicles



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# IIHS CIB Test Results for GM & Competitor Vehicles





# IIHS CIB Test Ratings for GM & Competitor Vehicles

Front crash prevention ratings, 2013-14 midsize cars and SUVs

|                                                                                                   |                                                                                                                                                                                                | 12 mph test        |        | 25 mph test        |        | Autobrake<br>total<br>points | Forward<br>collision<br>warning |
|---------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------|--------------------|--------|------------------------------|---------------------------------|
|                                                                                                   |                                                                                                                                                                                                | Speed<br>reduction | Points | Speed<br>reduction | Points |                              |                                 |
|  <b>SUPERIOR</b> |                                                                                                                                                                                                |                    |        |                    |        |                              |                                 |
|                  | Subaru Legacy<br><i>EyeSight</i>                                                                                                                                                               | 12 mph             | 2      | 25 mph             | 3      | 5                            | 1                               |
|                  | Subaru Outback<br><i>EyeSight</i>                                                                                                                                                              | 12 mph             | 2      | 25 mph             | 3      | 5                            | 1                               |
|                  | <b>Cadillac ATS</b><br><i>Forward Collision Alert, Automatic Collision Preparation</i><br>When the ATS is equipped with only<br><i>Forward Collision Alert</i> it earns a <b>BASIC</b> rating. | 12 mph             | 2      | 15 mph             | 2      | 4                            | 1                               |
|                                                                                                   | <b>Cadillac SRX</b><br><i>Forward Collision Alert, Automatic Collision Preparation</i><br>When the SRX is equipped with only<br><i>Forward Collision Alert</i> it earns a <b>BASIC</b> rating. | 12 mph             | 2      | 19 mph             | 2      | 4                            | 1                               |
|                | <b>Mercedes-Benz C-Class</b><br><i>Distronic Plus and Pre-Safe Brake</i>                                                                                                                       | 11 mph             | 2      | 13 mph             | 2      | 4                            | 1                               |
|                | <b>Volvo S60</b><br><i>City Safety/Collision Warning</i><br>with <i>Full Auto Brake and Pedestrian Detection</i>                                                                               | 12 mph             | 2      | 14 mph             | 2      | 4                            | 1                               |
|                | <b>Volvo XC60</b><br><i>City Safety/Collision Warning</i><br>with <i>Full Auto Brake and Pedestrian Detection</i>                                                                              | 12 mph             | 2      | 11 mph             | 2      | 4                            | 1                               |

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# **CIB & NCAP Ratings**



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# Current / Anticipated State of CIB NCAP Ratings

| CIB NCAP consideration                     | NHTSA NCAP                                                                                      | EURO NCAP                                                                               |
|--------------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Tied to vehicle 5-Star Safety rating?      | No                                                                                              | Yes                                                                                     |
| CIB currently included in NCAP rating?     | No; but CIB test procedures nearing final state for CA NCAP                                     | Yes; CIB (AEB) test procedures and ratings defined                                      |
| Anticipated CIB-related NCAP “next steps”? | CIB added into Crash Avoidance NCAP / Regulation; NHTSA CAMP pedestrian CIB research completed. | Pedestrian CIB added<br>→ CY16-daytime, CY18-nighttime<br>Bicyclist CIB added<br>→ CY18 |
| CIB fitment rates required?                | None                                                                                            | 2014/2015 (50%)<br>2016 (70%)<br>2017 (100%)                                            |



| EuroNCAP test scenarios for AEB-System                                   |                                                                                       |
|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Car drives into stationary vehicle (CCRs)                                |  |
| Car drives into slower moving vehicle (CCRM) (target vehicle at 20 km/h) |  |
| Car drives into braking vehicle (CCRB) (2 and 6m/s² decelerations)       |  |

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# **CIB**

# **Owner Survey Data**



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# Survey Data for GM North America & Competitor German CIB Owners

- Phone survey: 448 GM 2013 (ESS2: XTS, SRX, ATS) NA CIB owners  
Internet survey: 75 Competitor 2010-13 German CIB owners  
(e.g., Audi, BMW, VW, Mercedes)
- 26% of GM owners and 72% of Competitor German owners report experiencing CIB auto braking activations
- Of those owners reporting experiencing CIB braking activations
  - 88% of GM owners and 84% of German owners “Agree” (either strongly or somewhat) they would purchase (or want) the system in their next vehicle
  - 89% of GM owners and 80% of German owners “Agree” (either somewhat/strongly) that CIB activations were helpful
- In Competitor German owners study...
  - necessary activations reported by 36% surveyed
  - unnecessary activations reported by a 67% surveyed



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# **Safety Critical Analysis & Validation Work**



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# Status of Safety Data Logging Opportunities



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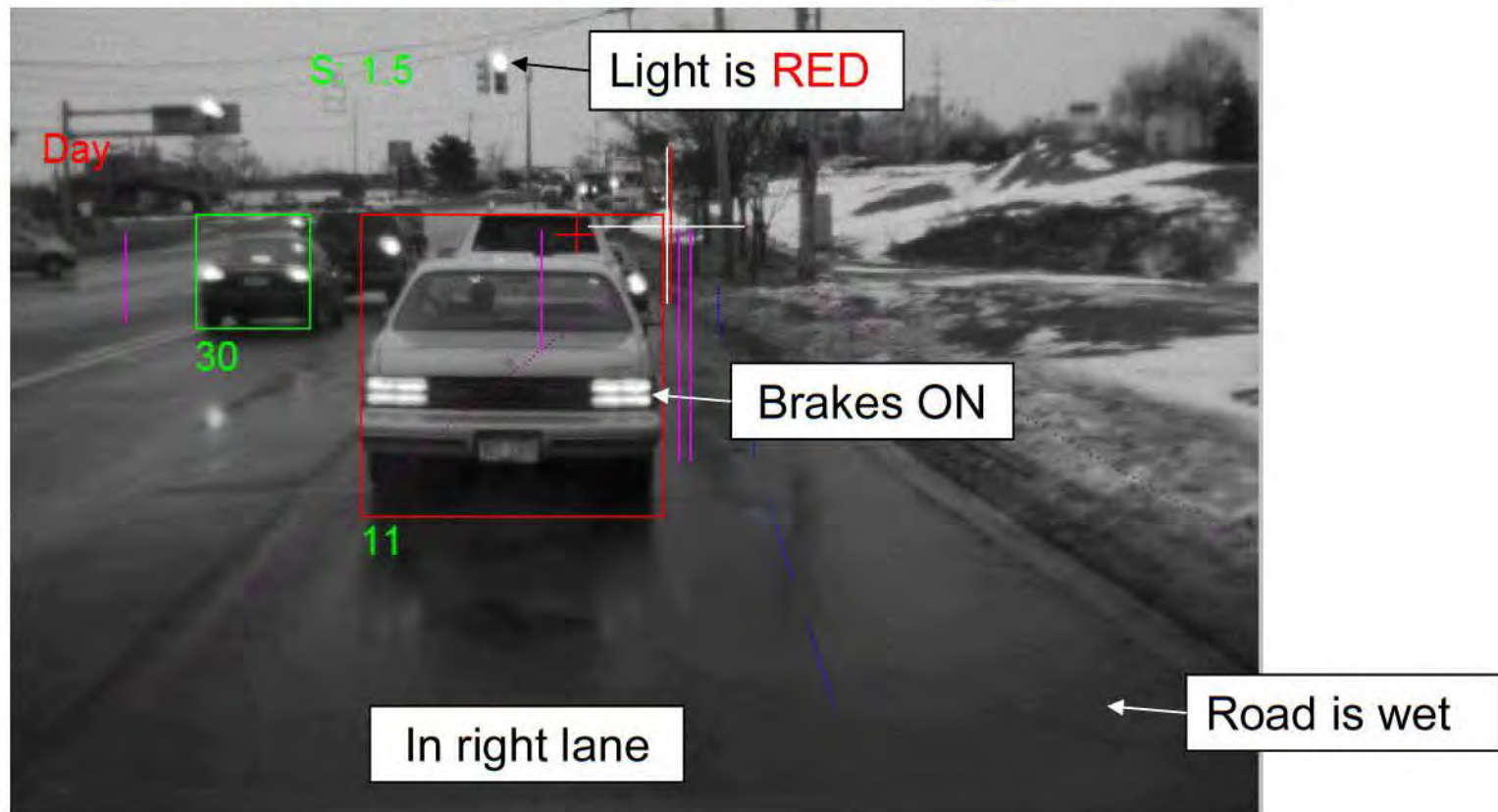
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# Engineering Logging Recorder - Image Capture -

## Details Available in Images



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# Active Safety VPO Role



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# Active Safety Global Vehicle Performance Owner (VPO)

- Role created & assigned to Mike Carpenter February, 2014
  - Active Safety & Safety Integration communication & strategy coordination
  - Broader feature/technology scope than Safety VPO's
- Coordination of Active Safety Roles:
  - GSSLT Lead – technology strategies & roll-out
  - VPO – regulation & consumer metric strategies; primary communication w/ Safety Integration; coordinate w/ Validation for new test methods; industry consortia
  - Feature Owners – feature-specific requirements & roll-outs; new technology; competitor assessment
- Current Issues
  - Integration of rapidly developing consumer metrics into technical specifications (e.g., US NCAP, EU-NCAP, IIHS, other regional NCAP's)
  - Execution to FMVSS 111 - Rear Video Camera





# Back-up Information



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