GENERAL MOTORS LLC
Global Vehicle Safety

October 3, 2014

D. Scott Yon, Chief
Vehicle Integrity Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave, SE, Room W46-409
Washington, DC 20590

N140328

NVS -212pco
DP14-001

Dear Mr. Yon:

This letter completes General Motors LLC's ("GM") response to your Information Request ("IR") dated August 26, 2014, regarding allegation that the Model Year ("MY") 2006 - 2008 Chevrolet Impala (except the special duty police interceptor vehicles) equipped with the PODS-B Occupant Classification System ("OCS") manufactured by GM improperly classified (or reclassified) an adult passenger occupant, which would thereby suppress the passenger frontal air bag moments prior to a frontal crash event that otherwise requires deployment of the air bag (i.e., resulting in an Air Bag Split Deploy or ABSD event). This Defect Petition (DP14-001) also requests information on 2006 – 2008 MY Chevrolet Cobalt (except Cobalt SS vehicles), Buick Lucerne, Cadillac DTS, and Cadillac XLR as peer vehicles.

In responding to NHTSA's questions, GM has used the definitions in the Defect Petition request dated August 26, 2014. Specifically, the Subject Component is defined as:

> "Passenger air bag PODS-B OCS used in the MY2008 Chevrolet Impala vehicles."

The alleged defect is defined as:

> "The improper classification (or reclassification) of an adult passenger occupant which would thereby suppress the passenger frontal air bag moments prior to a frontal crash event that otherwise requires deployment of the air bag (i.e., resulting in an ABSD event)."

Your requests and our corresponding replies are as follows:

1. **State within the body of the response letter in a summary table format, by make, model and model year, the number of subject vehicles and peer vehicles GM has manufactured for sale or lease in the United States. Separately, for each subject and peer vehicle manufactured to date by GM, state the following:**

Mail Code: 480-210-2V
30001 Van Dyke • Warren, MI 48090

a. Vehicle identification number (VIN);
b. Make;
c. Model;
d. Model Year;
e. Date of manufacture (in "yyyy/mm/dd" date format);
f. Date warranty coverage commenced (in "yyyy/mm/dd" date format);
g. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease); and
h. PODS-B OCS logic algorithm versions (and revision level if applicable); and
i. PODS-B OCS supplier.

Provide the detailed information in Microsoft Access 2010, or a compatible format, entitled "QI_PRODDATA.accdb." Multiple model vehicle data can be provided in separate tables within a single database file providing that the overall file size does not exceed 1GB.

General Motors provides the number of subject and peer vehicles produced for sale or lease in the United States by make, model and model year in Table 1-1 below:

		Model Year			
Make	Model	2006	2007	2008	Total
Chevrolet	Impala*	262827	267377	321475	851679
Chevrolet	Cobalt	211132	206598	176465	594195
Buick	Lucerne	85940	85922	66119	237981
Cadillac	DTS	65323	47399	40677	153399
Cadillac	DTS-Incomplete(Limo)	2058	1544	1803	5405
Cadillac	XLR	3963	1400	1478	6841
	Total	631243	610240	608017	1849500

Table 1-1: Subject* and Peer Vehicle Production

The production information requested in subparts 1a-1g is provided on the ATT_1_GM disk; folder labeled "Q_01." Refer to the Microsoft Access 2007 file labeled "Q_01_ PRODUCTION DATA."

The production information requested in subpart 1h (PODS-B OCS logic algorithm versions, and revision level if applicable) is provided in Table 1-2 through Table 1-5 below.

Chevrolet Impala Software Revisions	
MODULE ASM-AIRBAG FRT PASS PRESENCE	
Delphi Software Version	**Date Revision Implemented**
28014242	Production Release
28076148	August 18, 2005
28085008	April 1, 2007
28103185	March 19, 2008 - Service Release Only

Table 1-2 Chevrolet Impala Logic Algorithm

Buick Lucerne, and Cadillac DTS Software Revisions	
MODULE ASM-AIRBAG FRT PASS PRESENCE	
Delphi Software Version	**Date Revision Implemented**
28090103	Production Release
28103206	March 19, 2008 - Service Release Only

Table 1-3 Buick Lucerne, and Cadillac DTS Logic Algorithm

Chevrolet Cobalt Software Revisions	
MODULE ASM-AIRBAG FRT PASS PRESENCE	
Delphi Software Version	**Date Revision Implemented**
28024242	Production Release

Table 1-4 Chevrolet Cobalt Logic Algorithm

Cadillac XLR Software Revisions	
MODULE ASM-AIRBAG FRT PASS PRESENCE	
Delphi Software Version	**Date Revision Implemented**
28009193	Production Release

Table 1-5 Cadillac XLR Logic Algorithm

The information requested in 1i (the PODS-B OCS supplier) is:

Delphi Automotive Systems, LLC
5725 Delphi Drive
Troy, Michigan 48098-2815

2. State within the body of the response letter in summary table format, the number of each of the following reports, received by GM, or of which GM is otherwise aware, which relate to, or may relate to, the alleged defect (ABSD) in the subject and peer vehicles:

a. Consumer complaints, including those from fleet operators;

b. Field reports, including dealer field reports;
c. Reports involving a fire, crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
d. Property damage claims; and
e. Third-party arbitration proceedings where GM is or was a party to the arbitration; and
f. Lawsuits, both pending and closed, in which GM is or was a defendant or codefendant.

For subparts "a" through "f" provide within the body of the response letter a summary table containing the total number of each item (e.g., a. consumer complaints, b. field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

In addition, for items "c" through "f," provide a summary description of the alleged problem and causal and contributing factors and GM's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f" identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Tables 2-1, 2-2, 2-3, and 2-4 below summarize reports that may relate to the alleged defect in the subject and peer vehicles. GM has included reports of incidents in which the driver frontal airbag deployed, the passenger frontal airbag did not deploy, and there could have been a front-row passenger. For some of these reports, GM does not have clear information regarding: (1) the age, size, and/or weight of the passenger; (2) whether the passenger's seat belt was buckled; (3) whether the passenger was reclined or otherwise out of normal seating position; and (4) whether the passenger was seated in the front-row seat. Therefore, some of the reports included in the summary tables may not relate to the alleged defect.

Additional reports, not included in the summary tables, are included in the Access database. These reports include incidents in which the driver frontal airbag deployed, the passenger frontal airbag did not deploy, there could have been a front-row passenger, and data in the EDR shows there was a DTC (Diagnostic Trouble Code) in the airbag system. The DTC would have activated the SIR Lamp on the vehicle's instrument panel and a warning on the DIC (Driver Information Center). Occupant classification would not take place, since the AOS was either faulted or offline. In these incidents, the SDM would default to the suppressed state for the passenger airbag.

Therefore, these incidents could not have involved improper classification (or reclassification). These reports are indicated by "ABSD With DTC" in the Access database.

There were no reports of ABSD for the Cadillac XLR.

Refer to access database "Q_03_REQUEST NUMBER TWO DATA" for the reports in the summary tables, and the additional reports described above.

		Subcategories				
Type of Report	GM Reports	Corresponding to NHTSA Reports	Number with Property Damage	Fire	Number with Crash	Crashes with Injuries/ fatalities
Owner Reports	7	0	3	0	7	7/0
Field Reports	0	0	0	0	0	0/0
Not-In-Suit Claims	6	0	4	0	6	6/0
Subrogation Claims	0	0	0	0	0	0/0
Third Party Arbitration Proceedings	0	0	0	0	0	0/0
Product Liability Lawsuits	2	1	2	0	2	2/0
Total Reports (Including Duplicates)	15	1	9	0	15	15/0
Total Vehicles with Reports (Unique VIN)	**10**	**1**	**7**	**0**	**10**	**10/0**

Table 2-1 Chevrolet Impala with ABSD

		Subcategories				
Type of Report	GM Reports	Corresponding to NHTSA Reports	Number with Property Damage	Fire	Number with Crash	Crashes with Injuries/ fatalities
Owner Reports	9	0	4	0	9	9/1
Field Reports	0	0	0	0	0	0/0
Not-In-Suit Claims	8	0	5	0	8	8/1
Subrogation Claims	0	0	0	0	0	0/0
Third Party Arbitration Proceedings	0	0	0	0	0	0/0
Product Liability Lawsuits	1	0	1	0	1	1/0
Total Reports (Including Duplicates)	18	0	10	0	18	18/2
Total Vehicles with Reports (Unique VIN)	**10**	**0**	**7**	**0**	**10**	**10/1**

Table 2-2 Chevrolet Cobalt with ABSD

Type of Report	GM Reports	Subcategories				
		Corresponding to NHTSA Reports	Number with Property Damage	Fire	Number with Crash	Crashes with Injuries/ fatalities
Owner Reports	1	0	0	0	1	1/0
Field Reports	0	0	0	0	0	0
Not-In-Suit Claims	1	0	0	0	1	1/0
Subrogation Claims	0	0	0	0	0	0/0
Third Party Arbitration Proceedings	0	0	0	0	0	0/0
Product Liability Lawsuits	0	0	0	0	0	0/0
Total Reports (Including Duplicates)	2	0	0	0	2	2/0
Total Vehicles with Reports (Unique VIN)	**1**	**0**	**0**	**0**	**1**	**1/0**

Table 2-3 Cadillac DTS with ABSD

Type of Report	GM Reports	Subcategories				
		Corresponding to NHTSA Reports	Number with Property Damage	Fire	Number with Crash	Crashes with Injuries/ fatalities
Owner Reports	1	0	0	0	1	1/0
Field Reports	0	0	0	0	0	0/0
Not-In-Suit Claims	0	0	0	0	0	0/0
Subrogation Claims	0	0	0	0	0	0/0
Third Party Arbitration Proceedings	0	0	0	0	0	0/0
Product Liability Lawsuits	1	0	0	0	1	1/0
Total Reports (Including Duplicates)	2	0	0	0	2	2/0
Total Vehicles with Reports (Unique VIN)	**1**	**0**	**0**	**0**	**1**	**1/0**

Table 2-4 Buick Lucerne with ABSD

SOURCE SYSTEM	LAST DATE GATHERED
Customer Assistance Center	9/18/2014
Technical Assistance Center	9/8/2014
Field Information Network Database (FIND)	9/8/2014
Field Product Report Database (FPRD)	9/8/2014
Company Vehicle Evaluation Program (CVEP)	9/8/2014
Captured Test Fleet (CTF)	9/8/2014
Early Quality Feedback (EQF)	9/8/2014
Legal/Employee Self Insured Services (ESIS)/Product Liability Claims/Lawsuits	9/22/2014

TABLE 2-5 Data Sources

To date, GM's investigation of the alleged defect has not included an assessment of the cause(s) of each responsive incident. Some incident reports may not contain sufficient reliable information to accurately assess cause.

3. **Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No.2, state the following information:**

   a. **GM's file number or other identifier used;**
   b. **The category of the item, as identified in Request No.2 (i.e., a. consumer complaint, b. field report, f. lawsuits etc.);**
   c. **Vehicle owner or fleet name (and fleet contact person), address, and telephone number;**
   d. **Vehicle's VIN;**
   e. **Vehicle's make, model and model year;**
   f. **Vehicle's mileage at time of incident;**
   g. **Incident date (in "yyyy/mm/dd" date format);**
   h. **Report or claim date (in "yyyy/mm/dd" date format);**
   i. **Whether the vehicle driver was wearing a seat belt;**
   j. **Driver frontal air bag deployed?**
   k. **Age of right front passenger;**
   l. **Weight of right front passenger;**
   m. **Whether the right front passenger was wearing a seat belt;**
   n. **Passenger frontal air bag deployed?**
   o. **Whether an air bag system diagnostic trouble code (DTC) was retrieved from the vehicle;**
   p. **Whether the passenger air bag was determined to be suppressed by the OCS;**
   q. **Whether any electronic data was retrieved from the PODS-B system;**
   r. **Whether property damage is alleged;**
   s. **Number of alleged injuries, if any; and**
   t. **Number of alleged fatalities, if any.**

   Provide this information in Microsoft Access 2010 or a compatible format, entitled "Q3_ORDATA.accdb." Multiple model vehicle data can be provided in separate tables within a single database file providing that the overall file size does not exceed 1GB.

The requested information is provided on the ATT_1_GM disk; folder labeled "Q_03." Refer to the Microsoft Access 2007 file labeled "Q_03_REQUEST NUMBER TWO DATA." GM has included the information requested above where it was available. Not all reports contained information that is responsive to subparts a-t.

4. **Produce copies of all documents related to each item within the scope of Request No. 2. Provide copies of all electronic data and any associated**

reports collected from the air bag control module (i.e., event data recorder/EDR data), the PODS-B control module, any other electronic control module, and or any other onboard data storage device. Organize the documents separately by category (i.e., a. consumer complaints, b. field reports, f. lawsuits etc.) and describe the method GM used for organizing the documents.

Copies of the reports summarized in Table 2-1, Table 2-2, Table 2-3 and Table 2-4 are embedded in the file provided in ATT_1_GM disk; folder labeled "Q_03." Refer to the Microsoft Access file labeled "Q_03_REQUEST NUMBER TWO DATA." GM has organized the reports by the GM file number within each attachment.

5. **Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles, or to the incident described in ODI 10568388, that have been conducted, are being conducted, are planned, or are being planned by, or for, GM. provide the following information:**

   a. **Action title or identifier;**
   b. **The actual or planned start date;**
   c. **The actual or expected end date;**
   d. **Brief summary of the subject and objective of the action;**
   e. **Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and**
   f. **A brief summary of the findings and/or conclusions resulting from the action.**

   For each action identified, provide copies of all documents related to the action, regardless of whether the documents are in interim, draft, or final form. Organize the documents chronologically by action.

The information listed in Table 5-1 below is a summary of actions performed by GM regarding the subject condition on the MY 2006-2008 subject vehicles as of September 30, 2014. Documents and additional supporting information are included in the Attachments as noted in the table.

Action 5-A-1: Validation **Start Date: 4/27/2004** **End Date: 3/2/2008** **Engineering Group**: GM Engineering **Attachments:** ATT_1_GM and ATT_2_GM_Conf; folders labeled "Q_05_A_1" **Description:** Validation documentation **Summary:** Information related to the validation of the subject vehicles AOS system
Action 5-A-2: Testing **Start Date: 10/10/2004** **End Date:11/12/2005** **Engineering Group:** GM Engineering **Attachments:** ATT_1_GM and ATT_2_GM_Conf; folders labeled "Q_5_A_2" **Description:** Documentation of tests related to the subject vehicles AOS system **Summary:** Testing related to the subject vehicles AOS system
Action 5-A-3: Specifications and requirements **Start Date: 5/13/2003** **End Date: 4/9/2014** **Engineering Group**: GM Engineering **Attachments:** ATT_1_GM and ATT_2_GM_Conf; folders labeled "Q_5_A_3" **Description:** Component technical specifications, Common Architecture Occupant Protection tests, and other requirement/specification documents related to the AOS system. **Summary:** Documentation of the specifications and requirements related to the subject vehicles AOS system
Action 5-B: Defect Petition Investigation **Start Date: 4/23/2014** **End Date: 9/29/2014** **Engineering Group**: GM Engineering **Attachments:** ATT_1_GM and ATT_2_GM_Conf; folders labeled "Q_05_B" **Description:** Documents related to engineering studies, presentations, and assessments **Summary:** Information compiled for the Defect Petition (DP14001) investigation.

Table 5-1 Summary of Actions that Have Been Completed or Planned

Delphi Automotive Systems, LLC will be providing their AOS DFMEA Documents directly to the NHTSA Chief Counsel's Office with a request for confidential treatment.

6. **Describe within the body of the response letter, all modifications or changes made by, or on behalf of, GM in the design (including logic/software changes), material composition, manufacture, quality control, supply, or installation of the subject component, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. Provide a summary table outlining the changes as described above. For each such modification or change, provide the following information:**

a. The date or approximate date on which the modification or change was incorporated into vehicle production;
b. A detailed description of the modification or change and its effect (if any) on the alleged defect condition;
c. The reason(s) for the modification or change;
d. The part number(s) (service and engineering) of the original component;
e. The part number(s) (service and engineering) of the modified component;
f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
g. When the modified component was made available as a service component; and
h. Whether the modified component can be interchanged with earlier production components.

Also, provide the above information for any modification or change that GM is aware of which may be incorporated into vehicle production within the next 120 days.

GM has provided a summary table of the changes and associated Engineering Work Orders (EWOs) pertaining to the subject component provided on the ATT_1_GM disk; folder labeled "Q_06." Refer to the EXCEL file labeled "Q_06_Modifications_AOS 2006-2008 Impala FINAL." The subject vehicles are no longer being produced, so there are no production changes planned for the next 120 days.

7. Furnish GM's assessment of the alleged defect in the subject vehicles, including:

a. The causal or contributory factor(s);
b. The failure mechanism(s);
c. The failure mode(s);
d. The risk to motor vehicle safety that it poses;
e. What warnings (both visually and audibly), if any, the operator would have that the alleged defect was occurring or subject component was malfunctioning; and
f. The included report and its related incident.

GM has investigated the allegations contained in the November 14, 2013 Petition for Defect and Recall (the "Petition") submitted by David Friedman to the National Highway Traffic Safety Administration ("NHTSA"). GM's investigation and analysis demonstrates that the occupant classification system, or automatic occupant suppression ("AOS") system, in the subject vehicles: (i) does not contain a defect, as that term is defined in 49 U.S.C. § 30102(a); (ii) meets or exceeds the requirements of Federal Motor Vehicle Safety Standard ("FMVSS") 208; (iii) poses no additional risk to motor vehicle safety as compared to any other AOS system in a vehicle that satisfies FMVSS 208 with airbag suppression for 3yo and 6yo requirements; (iv) has been proven through extensive

testing and peer comparisons to accurately classify passenger-side occupants, even in extreme driving conditions, and to contain robust safeguards that prevent inadvertent reclassification; and (v) functioned as designed and in a safe manner during the incident identified in the Petition.

A. The AOS system classifies occupants based on estimated occupant weight

GM designed the AOS system in the subject vehicles to enable the front passenger airbag for adult passengers and suppress the front passenger airbag for child passengers. To classify the occupant, the AOS system estimates the weight of the seat occupant by subtracting: (i) the tension on the seat belt; from (ii) the pressure on the front passenger seat, which is measured by a pressure sensor located under the passenger seat foam.[1] If the estimated weight in the seat is greater than the vehicle's adult classification threshold, the AOS system sends a message to the vehicle's sensing and diagnostic module ("SDM") to enable the front passenger airbag. Conversely, if the estimated weight is less than the adult classification threshold, the AOS system sends a message to the SDM to suppress the front passenger airbag.

The adult classification threshold in the subject vehicles is 61 pounds. GM extensively tested this adult classification threshold, and determined that it would correctly classify adults and children:

[1] Seat-belt tension creates downward pressure on the seat, which can improperly influence occupant classification. For this reason, the AOS system subtracts any detected pre-crash seat-belt tension from the weight detected on the front passenger seat.

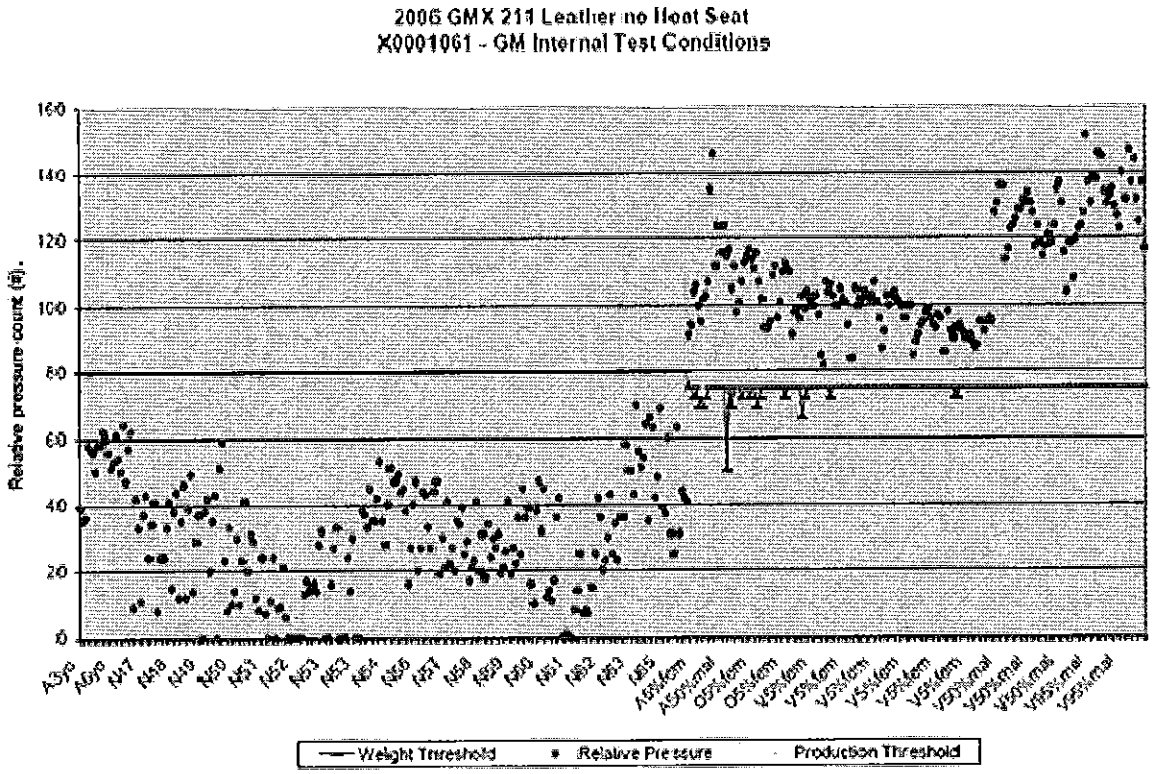


Figure 7.1. This figure displays adult classification threshold test results for a typical leather trimmed seat in the subject vehicles. The detected pressure on the front passenger seat is reflected on the vertical axis. The 61-pound adult-classification threshold is shown as a blue line on the chart; any test results above the blue line would cause the AOS system to send a message to the vehicle's SDM to enable the front passenger airbag. The type of test subject is reflected on the horizontal axis. Children are reflected on the chart as "A3yo" (a small child) on the far left of the axis and move left to right to "N65" (a large child). Adults begin at "A5%fem" (a small adult) and move left to right to "V95%mal" (a large adult). The tests with 50% male volunteers (170 pound weights, +/- 20 pounds) are denoted with "V50%mal." The chart indicates that the system correctly classifies adults and children, with a significant design margin.

B. <u>The AOS system stabilizes occupant classification using an "adult lock" system</u>

To help prevent certain out-of-position conditions (e.g., reclining the seat, inboard and outboard seating, or slouching) or vehicle maneuvering from causing the AOS to improperly reclassify occupants, the AOS system in the subject vehicles uses an "adult

lock" system. If the occupant satisfies the adult classification threshold for 60 seconds or more, the AOS system automatically lowers the adult classification threshold to 41 pounds. So once the system has classified the occupant as an adult for 60 seconds, the occupant's estimated weight must fall substantially before the AOS system will reclassify the occupant as a child and send a message to the SDM to suppress the front passenger airbag.

The natural latency of the AOS system in the subject vehicles reinforces the effectiveness of the adult-lock feature. In the subject vehicles, a weight reduction must be held for approximately 1.5 seconds before it will even register on the AOS's measurement systems. This natural latency helps prevent momentary weight reductions—even dramatic weight reductions—from temporarily reclassifying the occupant.

The effectiveness of the adult-lock feature in stabilizing occupant classification is documented in General Motors' static, dynamic, durability, environmental, and passenger-clinic testing. The subject vehicles were extensively tested in dynamic situations to verify that vehicle maneuvering would not cause a change in occupant classification. This testing included panic brakes, hard acceleration, lateral input through hard turns, lateral inputs from twist ditches, and driving over extremely rough roads. The clinic testing included testing with adults of various sizes in "normal" and "comfortable" positions. The testing demonstrated that the AOS system in the subject vehicles correctly classifies adult passengers, and is highly resistant to vehicle maneuvering, with a significant design margin.

C. The AOS system locks occupant classification once it detects a potential crash event

Additionally, to prevent crash forces from causing the AOS to improperly reclassify occupants, the SDM in the subject vehicles automatically locks the classification of the front occupant once it detects a potential crash event, and ignores any classification changes until the event is over. The event starts when the acceleration from any of the SDM accelerometers transition to a value exceeding 1.5 G's (plus or minus 0.4 G's) for a minimum of two milliseconds.

D. Airbag split-deployment events involving the subject vehicles and peer vehicles are extremely rare

The subject vehicles and the peer vehicles contain similar AOS systems. Like the subject vehicles, the AOS systems on the DTS and Lucerne use an adult-lock system and approximately 1.5 second natural measurement latency. The XLR and Cobalt's AOS system uses a similar adult-lock and natural measurement latency, but also has a two-second classification filter—i.e., a requirement that an estimated weight be held for an additional two seconds before it will cause a change to occupant classification.

GM's analysis of field and warranty data associated with the subject vehicles and the peer vehicles demonstrates that crash events in which the passenger seat was occupied, the driver airbag deployed, and the passenger airbag did not deploy (an airbag split-deployment event, or "ABSD") are extremely rare. And despite the slight design differences between the Cobalt and the other subject and peer vehicles, there is not a statistically significant difference between the rate of ABSD events among the subject and peer vehicles:

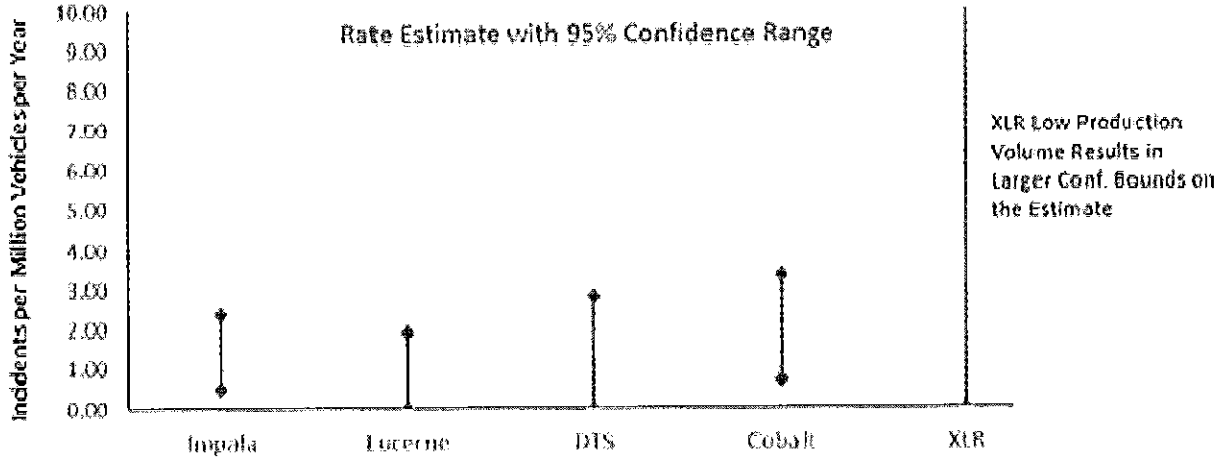


Figure 7.2. Plot of the range of the estimated rate of occurrence of ABSD events. There are no known incidents of ABSD for XLR. The low XLR volume results in large confidence bounds for this vehicle.

E. <u>The AOS system worked safely and as designed during the incident identified in the Petition</u>

The Petition alleged, among other things, that an AOS system in a subject vehicle improperly "inhibited airbag deployment of a properly belted front passenger seat passenger" during an accident that occurred on April 9, 2011 (the "Accident"). The Petition alleged that the AOS system at issue "used instantaneous weight to determine whether to inhibit the airbag deployment." The Petition further argued that the airbag's failure to deploy during the Accident, "resulted in severe injury and death."

GM has reviewed these claims and determined that they are without merit. The police report associated with the Accident states that the vehicle in question (a 2008 Chevrolet Impala) was traveling in the left lane of a smooth divided roadway when another vehicle merged into the lane and contacted the Impala's right front fender. This impact caused minor damage to the Impala. Shortly thereafter, the Impala made contact with the roadway center divider causing significant frontal damage. The rear of the Impala also hit the divider as it rebounded back into the roadway.

The data recorded by the Impala's AOS demonstrates that, for approximately 15 minutes before the Accident, the passenger seat occupant sensor detected an occupant with an estimated weight of 160 pounds. As shown in Figure 7.3, the passenger-seat occupant began moving off of the seat and straining against the seat belt about four seconds before the driver's-side airbag deployed. As seat belt tension increased, the detected weight on the seat—both actual and as adjusted by the seat-belt tension—fell precipitously. Approximately 2.3 seconds before the driver's-side airbag deployed, the passenger-seat sensor detected less than 61 pounds of adjusted weight on the seat. And 1.1 seconds later or about 1.2 seconds before the driver's-side airbag deployed, the weight on the seat was approximately 55 pounds, and the occupant was pulling away from the seat with about 13 pounds of tension on the seat belt. The compensated weight in the seat then went below the 41 pound adult-lock threshold and the AOS sent a message to the SDM to suppress the airbag.

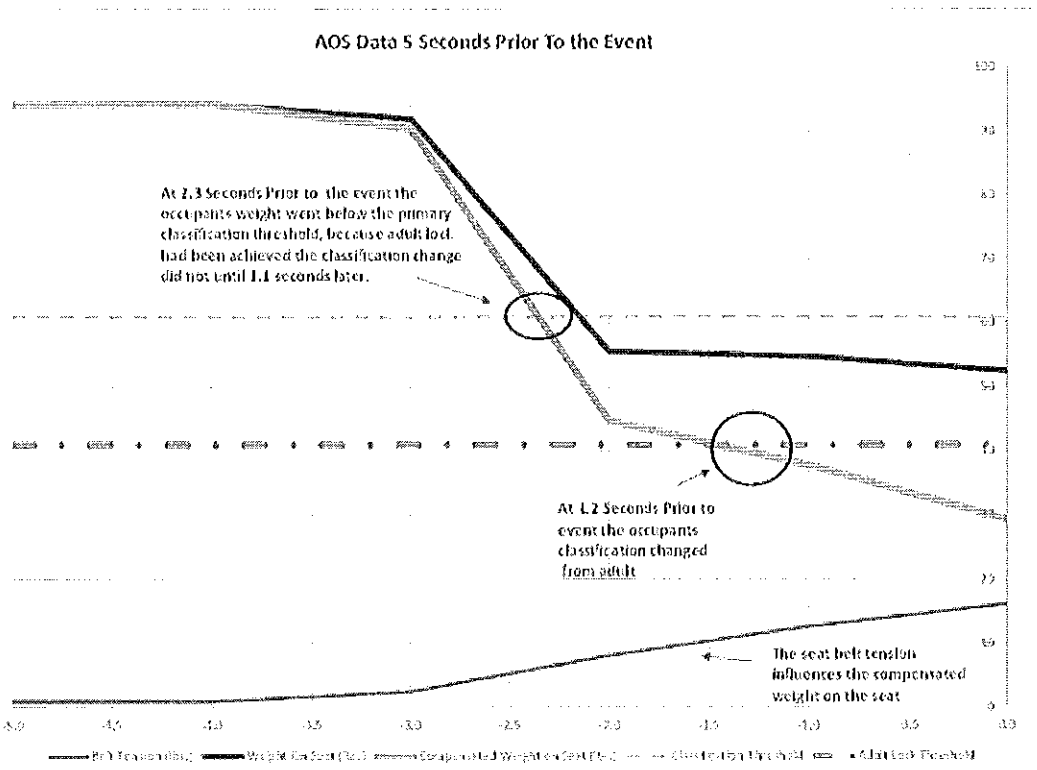


Figure 7.3. The AOS EDR shows the last 5 seconds of data from the system before the driver's side airbag deployed. The adult lock kept the airbag enabled approximately 1.1 seconds longer until the adult-lock threshold was crossed, which occurred approximately 2.8 seconds from the initial unloading of the seat and about 1.2 seconds before the driver's side airbag deployed.

At 1.5 seconds prior to deployment, there was a momentary change in the rate of deceleration recorded by the vehicle's SDM, which may indicate contact with the vehicle that caused the right-front damage. After the crash, the passenger had a severed right thumb. Post-crash photographs do not show visible blood on the passenger side. The only significant blood is on the driver airbag. The driver reported a sore neck and no lacerations.

Based on the recorded data and the physical evidence in GM's possession, GM concludes that the occupant of the front passenger seat had moved almost completely off of the seat well in advance of the crash event, and was actively straining against the seat belt, possibly in an attempt to steer the vehicle. This passenger was therefore likely not in normal passenger position when the driver's side airbag deployed, and the vehicle's AOS system worked as designed in suppressing the airbag. When the driver's airbag deployed, the passenger's right thumb sustained an injury that caused the blood stains on the driver's side airbag and headliner.

The petitioner's suggestion that the occupant would have benefited from passenger airbag deployment is not supported in the Petition and is pure speculation. The petitioner has not supplied—and GM is not aware of—any evidence or argument that supports the conclusion that a passenger side airbag should deploy in the conditions recorded by the vehicle's AOS, or that the full deployment of the passenger-side airbag would have mitigated—and not exacerbated—the injuries allegedly sustained by the occupant during the Accident.

F. The AOS system on the subject and peer vehicles is safe

To summarize, the AOS system used in the 2006 - 2008 Impala and in the peer vehicles:

- does not contain a defect, as that term is defined in 49 U.S.C. § 30102(a);
- meets or exceeds FMVSS 208 requirements, and poses no additional risk to motor vehicle safety as compared to any other AOS system in a vehicle that satisfies FMVSS 208 with airbag suppression for 3yo and 6yo requirements;
- has been proven through extensive testing and peer comparisons to accurately classify passenger-side occupants, even in extreme driving conditions, and to contain robust safeguards that prevent inadvertent reclassification; and
- worked safely and as designed during the Accident.

* * *

GM requested assistance and documents from supplier(s) in responding to item 5. The responsive supplier documents are being submitted directly by said suppliers to the NHTSA in a letter to the Office of Chief Counsel requesting confidential treatment.

GM claims that certain information, in documents that are part of lawsuit and claims files maintained by the GM Legal Staff, is attorney work product and/or privileged. That information includes notes, memos, reports, photographs, and evaluations by attorneys (and by consultants, claims analysts, investigators, and engineers working at the request of attorneys). GM is producing responsive documents from claims files that are neither attorney work product nor privileged, and withholding those that are attorney work product and/or privileged.

This response is based on searches of GM locations where documents determined to be responsive to your request would ordinarily be found. As a result, the scope of this search did not include, nor could it reasonably include, "including all of its divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of their headquarters, regional, zone and other offices and their employees, and all agents, contractors, consultants, attorneys and law firms and other persons engaged directly or indirectly (e.g., employee of a consultant) by or under the control of GM (including all business units and persons previously referred to), who are or, in or after January 1, 2000, were involved in any way with any of the following related to the alleged defect in the subject vehicles:

a. Design, engineering, analysis, modification or production (e.g. quality control);

b. Testing, assessment or evaluation;

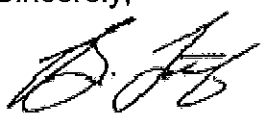
b. Consideration, or recognition of potential or actual defects, reporting, record-keeping and information management, (e.g., complaints, field reports, warranty information, part sales), analysis, claims, or lawsuits; or

d. Communication to, from or intended for zone representatives, fleets, dealers, or other field locations, including but not limited to people who have the capacity to obtain information from dealers."

This response was compiled and prepared by this office upon review of the documents produced by various GM locations, and does not include documents generated or received at those GM locations subsequent to their searches.

Please contact me if you require further information about this response or the nature or scope of our searches.

Sincerely,



Brian Latouf, Director
Field Product Investigations & Evaluations

Attachments