



GENERAL MOTORS LLC
Global Vehicle Safety

June 27, 2016

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

G204875

NEF-120sly
DP16-001

Dear [REDACTED]

General Motors LLC ("GM") hereby responds to NHTSA's May 18, 2016 inquiry relating to passenger sensing systems in certain of its vehicles.

GM's responses and documents produced in response to this inquiry reflect its current information and belief and are based upon a reasonable search for and review of relevant GM business records.

REQUEST 1:

State, by model and model year, the number of subject vehicles GM has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by GM, state the following:

- a. Vehicle identification number (VIN);
- b. Make;
- c. Model;
- d. Model Year;
- e. Subject component part number and design version installed as original equipment;
- f. Date of manufacture;
- g. Date warranty coverage commenced; and
- h. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the detailed information in Microsoft Access 2010, or a compatible format, entitled "PRODUCTION DATA."

GM RESPONSE:

The number of subject vehicles produced for sale or lease in the United States by make, model and model year are identified in Table 1-1 below:



MAKE	MODEL	MODEL YEAR					TOTAL
		2006	2007	2008	2009	2010	
PONTIAC	SOLSTICE	018721	21300	14084	4202	19	58326
SATURN	SKY	0	15546	12980	4078	8	32612
	TOTAL	18721	36846	27064	8280	25	90938

Table 1-1: Subject Vehicle Production

2006 – 2010 model year Pontiac Solstice and 2007-2010 Saturn Sky vehicles incorporated IEE S.A.-supplied Occupant Classification Systems (“OCS”) comprised of sensor mats and other assorted hardware and software components.

For each of the subject vehicles, IEE’s OCS were designed, assembled and calibrated to classify occupants seated within the vehicle model’s unique environment. The IEE OCS were integrated into seat assemblies manufactured by Lear Corporation according to specifications developed by GM’s Solstice and Sky program teams and distinct to those vehicles. The final seating assemblies were integrated into the subject vehicles by GM and validated for durability and performance, including in conjunction with the airbag system.

Owing to (1) the unique vehicle and seat configurations of the Solstice and Sky, and (2) GM’s suppliers’ execution of program-specific designs to create seat assemblies for the Solstice and Sky distinguishable from other GM vehicles, no other GM vehicles contain passenger sensing systems substantially similar to the MY 2006 – 2010 Pontiac Solstice and MY 2007-2010 Saturn Sky.

Although the passenger sensing systems in GM’s other vehicles are not substantially similar to those in the Solstice and Sky, GM recognizes NHTSA’s interest in determining which vehicles contain IEE Occupant Classification sensor mats. Table 1-2 below identifies all GM vehicles built prior to 2012 which contain IEE sensor mats.¹

Make	Model	Model Year(s)
Buick	Enclave	2008
Buick	Lacrosse	2010-2012
Buick	Regal	2011-2012
Cadillac	CTS	2006-2008
Cadillac	SRX	2007-2012
Cadillac	STS	2006-2011
Chevrolet	Aveo	2008-2012
Chevrolet	Captiva	2011-2012
Chevrolet	Equinox	2007-2009

¹ Per a June 22, 2016 phone conversation between Scott Yon and GM’s Larry Maugh, Senior Manager, External Investigations, NHTSA has limited its scope of inquiry to vehicles built prior to 2012.

Chevrolet	Express	2006-2012
Chevrolet	Malibu	2008-2012
Chevrolet	Sonic	2012
Chevrolet Pontiac	Wave	2008-2009
GMC	Acadia	2007-2008
GMC	Savana	2006-2012
Pontiac	G6	2008-2009
Pontiac	Torrent	2007-2009
Saab	9-4x	2011-2012
Saturn	Astra	2008-2009
Saturn	Aura	2008-2009
Saturn	Outlook	2007-2008
Saturn	Vue	2008-2009

Table 1-2: Vehicles with IEE OCS Mats by Make, Model, and Model Year

The production information requested in subparts 1a-1d and 1f-1h is provided on the enclosed ATT_1_GM disk; folder labeled “Q_01.” Refer to the Microsoft Access 2010 database labeled “Q_01_PRODUCTION DATA.”

The production information requested in subpart 1e is provided in Table 1-3 below. Part number 10345300 was used in the initial design in place at the start of production for 2006 MY Pontiac Solstice and 2007 MY Saturn Sky. That part underwent two design iterations: The first involved stiffening the plastic reinforcement layer of the section of the sensor mat that enters the ECU (Electronic Control Unit), resulting in a part number change to 25817110. The second involved adding a new calibration and manufacturing process, resulting in a part number change to 25828680. Both changes received final sign-off approval on May 11, 2007.

		MY		MY		MY		MY		MY	
Make	Model	2006	Date	2007	Date	2008	Date	2009	Date	2010	Date
Pontiac	Solstice	10345300	SOP ¹	10345300	C/O	25828680	SOP	25828680	C/O ²	25828680	C/O
				25817110	5/11/07						
				25828680	5/11/07						
Saturn	Sky			10345300	SOP	25828680	SOP	25828680	C/O	25828680	C/O
				25817110	5/11/07						
				25828680	5/11/07						

Table 1-3: Subject Component Part Number by Model and Model Year

¹Start Of Production

² Carryover

REQUEST 2:

State the number of each of the following, received by GM, or of which GM is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:

- a. Consumer complaints, including those from fleet operators;
- b. Field reports, including dealer field reports;
- c. Reports involving a crash, injury or fatality;
- d. Property damage claims;
- 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" state the total number of each item (e.g., consumer complaints, 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/f" 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.

GM RESPONSE:

In a June 17, 2016 phone conversation between Scott Yon and GM's Larry Maugh, Senior Manager, External Investigations, NHTSA clarified its definition of "alleged defect" to pertain to those situations in which a subject vehicle experienced either:

- (1) an asymmetrical deployment of the front airbags in a collision in which the driver air bag deploys but the front passenger air bag does not, and the front passenger seat is occupied by a passenger whose size falls within the occupant classification system's calibration for deployment; or
- (2) a malfunction indicator light ("MIL") indicating that the occupant classification system was not functioning as designed.

In response to subparts 2a-b, Table 2-1 below summarizes reports that may relate to the alleged defect in the subject vehicles:

TYPE OF REPORT	GM REPORTS	SUBCATEGORIES			
		CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/FATALITIES
Owner Reports	189	0	0	0	0/0
Field Reports	153	0	0	0	0/0
Not-In-Suit Claims	0	0	0	0	0/0
Subrogation Claims	0	0	0	0	0/0
Third Party Arbitration Proceedings	0	0	0	0	0/0
Product Liability Lawsuits	0	0	0	0	0/0
Total Reports (Including Duplicates)	342	0	0	0	0/0
Total Vehicles with Reports (Unique VIN)	316	0	0	0	0/0

Table 2-1 Summary of Complaints, Reports, and Claims

Per the above-referenced June 17, 2016 phone conversation between Mr. Yon and Mr. Maugh, NHTSA has clarified that it is particularly interested in data that relates to the long-term durability of the subject components. For that reason, in identifying and sorting the above data, GM has not included as responsive customer complaints, warranty claims or field report records in which the VIN (1) had its sensor mat replaced in the previous 30 days, and (2) the customer's complaint related only to the appearance of an airbag readiness light or a passenger airbag indicator light, indicating that the system was functioning and classifying the passenger as designed. Such instances would not likely be related to the long-term durability of the sensor mat.

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

There are zero reports or claims related to subparts 2c-f.

REQUEST 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., consumer complaint, field report, etc.);
- c. Vehicle owner or fleet name (and fleet contact person), street 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;
- h. Report or claim date;
- i. Was the air bag readiness light illuminated;
- j. Was the Passenger Air Bag Indicator light illuminated;
- k. Did an asymmetric deployment occur;
- l. Whether a crash is alleged;
- m. Whether property damage is alleged;
- n. Number of alleged injuries, if any; and
- o. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010 or a compatible format, entitled "REQUEST NUMBER TWO DATA."

GM RESPONSE:

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." For each item identified in response to subpart 3a, GM has included the information requested by subparts 3b-3o above where it was available. However, not all items have related data that is responsive to subparts 3a-3o.

REQUEST 4:

Produce copies of all documents related to each item within the scope of Request No. 2 that allege a crash, asymmetric deployment, injury or fatality. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method GM used for organizing the documents. Describe in detail the search methods and search criteria used by GM to identify the items in response to Request No. 2.

GM RESPONSE:

Copies of the reports summarized in Table 2-1 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. GM is providing the responsive confidential information on the ATT_2_GM_CONF disk; folder labeled "Q_03_CONF_Attachments".

GM managers responsible for maintaining the relevant data conducted searches utilizing the subject vehicles' model and model year, subject component description and alleged defect description to identify responsive documents.

REQUEST 5:

State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by GM to date that related to, or may relate to, the alleged defect in the subject vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.

Separately, for each such claim, state the following information:

- a. GM's claim number;
- b. Vehicle owner or fleet name (and fleet contact person), street address, email address and phone number;
- c. VIN;
- d. Repair date;
- e. Vehicle mileage at time of repair;
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number(s);
- h. Problem code(s);
- i. Diagnostic trouble code(s);
- j. Replacement part number(s) and description(s);
- k. Concern stated by customer;
- l. Did customer state that the air bag readiness light was illuminated;
- m. Did customer state that the Passenger Air Bag Indicator light was illuminated;
- n. Cause as stated on the repair order
- o. Correction as stated on the repair order; and
- p. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide the information in Microsoft Access 2010, or a compatible format, entitled "WARRANTY DATA."

GM RESPONSE:

To collect warranty data responsive to this request, GM searched its GM Global Analysis and Reporting Tool ("GART," relating to regular warranty claims) and requested information from both the Motorists Insurance Corporation ("MIC," a subsidiary of Ally Insurance, relating to extended service contract claims), and Universal Warranty Company ("UWC," an affiliate of MIC, relating to extended service contract claims) databases.

Table 5-1 summarizes the GART, MIC, and UWC claims which may relate to the alleged defect, using the search method criteria described in response to Request 6. A total of 2758 claims were categorized as responsive.

MAKE	MODEL	MODEL YEAR	NUMBER OF CLAIMS			TOTAL
			REGULAR	MIC	UWC	
PONTIAC	SOLSTICE	2006	428	126	0	554
		2007	688	138	0	826
		2008	292	63	0	355
		2009	116	27	1	144
SATURN	SKY	2007	440	123	0	563
		2008	155	45	0	200
		2009	99	17	0	116
		TOTAL	2218	539	1	2758

Table 5-1 Warranty Summary

GM has organized the records by the GM file number within each attachment. Refer to Microsoft 2010 Access database “Q_05_Warranty_Data” included on the ATT_1_GM disk.

GM’s warranty database does not contain the vehicle owner’s name or telephone number. Additionally, some replacement part numbers, part descriptions and customer concern code descriptions are not included in the GM warranty database.

In response to requests 5k and 5p, GM’s response includes all available verbatim text relating to a claim. The verbatim text is placed in an optional field in the GM warranty system by the dealer as they see fit – because those text fields are not required to be completed in order to submit a warranty claim, they may not be populated in every instance.

The warranty data responsive to this request presents limited analytical value in analyzing the field performance of the subject component. Warranty records do not in each instance contain information sufficient to establish the condition of the part at the time of the warranty correction, and service personnel GM’s may not consistently use appropriate labor and trouble codes. Instead, warranty numbers can most accurately be relied on to determine the volume of claims submitted by our dealers for reimbursement for parts and labor costs incurred in performing warranty service for its customers.

REQUEST 6:

Describe in detail the search methods and search criteria used by GM to identify the claims in response to Request No. 5, including the labor operations, problem codes, diagnostic trouble codes, part numbers and any other pertinent parameters used.

Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions, diagnostic trouble codes and diagnostic trouble code descriptions applicable to

the alleged defect in the subject vehicles. State whether the diagnostic trouble codes are automatically reported to the warranty database electronically or manually entered into the warranty database by a claims administrator.

State, by make and model year, the terms of the new vehicle warranty coverage offered by GM on the subject vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) that GM offered for the subject vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

GM RESPONSE

GM reviewed claims containing the labor codes listed in Table 6-1. The resulting claim verbatims were read to determine if they related to any malfunction of the front passenger seat Occupant Classification sensor mat which could cause the front passenger air bag to not operate as intended, including, but not limited to, an asymmetrical deployment of the front air bags in a collision. In particular, certain diagnostic trouble codes (“DTCs,” discovered through diagnostic evaluation by the servicing technician and manually entered into the warranty database’s verbatim field) known to be related to Occupant Classification sensor mat failures were identified within the verbatims, and those claims were considered responsive. These DTCs are listed in Table 6-2.

For those warranty claims without verbatim text, GM reviewed the labor operation codes and diagnostic trouble codes. GM is providing as responsive claims with code combinations that indicate the underlying issue may be related to the alleged defect. They can be found in the (ATT_1_GM); folder labeled (“Q_05”). Refer to the Microsoft Access 2010 file labeled (“Q_05_WARRANTY DATA”). Claims containing code combinations unrelated to the alleged defect have been excluded from this response.

Warranty claims for VINs which had previously had an Occupant Classification sensor mat replaced in the past 30 days are not identified as responsive here, as they would not reflect a problem with the long-term durability of the sensing mat.

Labor Code	Labor Code Description
6450890	Inflatable Restraint Front Passenger Mass Sensor Replacement
6450910	Airbag Front Passenger Presence Module Replacement
6450930	Airbag Passenger Seat Suppression Module Replacement
6450950	Airbag Front Passenger Presence Sensor Replacement
6550930	Inflatable Restraint Passenger Seat Suppression Module Replacement

Table 6-1 Labor Codes and Labor Code Descriptions

Diagnostic Trouble Code	Description
B0074	Supplemental Deployment Loop #1 Open
B0081	Incorrect RF/Passenger SIS Installed
B0091	Active Switch: Wrong State
B0092	PPS Passenger Detection Error

Table 6-2 Diagnostic Trouble Code and Diagnostic Trouble Code Description

Claims have been coded in GM's response "In" or "Out" as follows:

- In:** May be related to the alleged defect
- Out:** Not related to the alleged defect

Claims coded as "In" have been also been coded using subcategories to indicate the condition described in the warranty repair claim verbatim. The results are shown in Table 6-3. The subcategories were chosen based on their ability to aid the ODI in determining (1) the readiness of the passenger airbag, (2) whether the passenger seat was occupied, and (3) the size of the passenger. Taken in conjunction, this data can be interpreted to determine whether the passenger airbag operated as intended. The IEE OCS in the Solstice and Sky subject vehicles were designed and calibrated such that a seated passenger weighing 102 lbs. and greater should enable the passenger airbag.

The results of the "In" warranty claims subcategorization is in Table 6-3.

Airbag Readiness Light On		TOTAL
OFF	4	
ON	1793	
UNKNOWN	961	
		2758
Passenger Airbag Indicator Light		TOTAL
OFF	130	
ON	21	
ON and OFF	92	
UNKNOWN	2515	
		2758
Passenger Type		TOTAL
ADULT	18	
CHILD	2	
FEMALE ADULT	2	
UNKNOWN	2736	
		2758

Passenger Weight	TOTAL
101-120 lbs.	2
121-150 lbs.	3
OVER 151 lbs.	1
UNDER 80 lbs.	2
UNKNOWN	2750
	2758

Table 6-3 Warranty Claim Subcategorization

The subject vehicles are covered by a bumper-to-bumper new vehicle limited warranty for three years or 36,000 miles, whichever occurs first. Many different extended warranty options are available through GM dealerships. They are offered at different prices and for varying lengths of time, based on a customer's preference, up to 7 years from the date of purchase, or up to a total of 100,000 vehicle miles.

MAKE	MODEL	MODEL YEAR										TOTAL	
		2006		2007		2008		2009		2010		Mic	Uwc
POLICY DESCRIPTION		Mic	Uwc	Mic	Uwc	Mic	Uwc	Mic	Uwc	Mic	Uwc	Mic	Uwc
PONTIAC	SOLSTICE	3268	36	3978	50	2525	62	733	13	0	0	10504	161
SATURN	SKY	0	0	4708	25	4156	31	916	12	3	0	9783	68
TOTAL		3268	36	8686	75	6681	93	1649	25	3	0	20287	229

Table 6-4 Subject Vehicles: MIC and UWC Extended Service Coverage Contracts Sold
 (Regardless of Status: In-Force, Expired or Cancelled)

REQUEST 7:

Furnish GM's assessment of the alleged defect in the subject vehicle, 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, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and
- f. The reports included with this inquiry.

GM RESPONSE

- a. The printed conductor used in the OCS flexible sensor mats can crack or tear over time. Installation variability during the manufacture of the seat assembly can impact the durability of the sensor system.
- b. Repeated flexing of the printed conductor used in the flexible sensor mats – which occurs, among other times, during occupant entry and exit from the vehicle – can cause the conductive traces to crack or tear over time, leading to a loss in continuity.
- c. When loss of continuity is detected by the passenger presence electronics module, a fault is communicated to the Sensing Diagnostic Module (“SDM”) which will suppress the front passenger airbag when an active fault in the passenger presence system is detected. Specifically, a DTC is set, a MIL light will be displayed to the driver, the “Service Airbag” message will be displayed in the driver’s information center, a chime will sound, and the Passenger Airbag Status indicator will illuminate the “OFF” telltale.
- d. If an adult is occupying the passenger seat with a suppressed front airbag, the passenger airbag will not deploy in a collision. Additionally, if the system has an active fault, the passenger seat will appear to the system as unoccupied, in which case the passenger seat belt reminder will not be provided for the passenger.

It is important to note that GM has not received any reports of asymmetric deployment where a passenger air bag deployment would be required, nor have any injuries or fatalities been reported as a result of the alleged defect.

GM’s findings and analysis suggest that the passenger sensing system in the subject vehicles does not contain a defect and does not create an unreasonable risk to motor vehicle safety.

- e. The operator and persons inside the vehicle are alerted to the malfunction in the following ways:
 - a. the SDM commands the airbag telltale in the instrument panel to illuminate – a “Service Air Bag” message will be displayed in the driver’s information center (“DIC”);
 - b. a warning chime will sound; and
 - c. the passenger presence system will command the passenger airbag status indicator to illuminate the “OFF” telltale.
- f. GM has investigated the allegations contained in the April 20, 2016 Petition for Defect and Recall (the “Petition”) submitted by Troy Lyman to the National Highway Traffic Safety Administration (“NHTSA”).

* * *

Certain documents reviewed by GM in compiling this response are part of lawsuit and claims files maintained by the GM Legal Staff and 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 has produced only responsive documents from claims files that are neither attorney work product nor privileged and is 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, "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, after January 1, 2000, were involved in any way with" the activities identified by the ODI in subparts "a" through "d" of the "GM" definition and supplied in its letter.

Additionally, this response was compiled and prepared upon review of 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,

A solid black rectangular redaction box covering the signature area.

Brian Latouf, Executive Director
Global Safety and Field Investigations
Regulation and Certification

Attachments