



GENERAL MOTORS LLC
Global Vehicle Safety

June 6, 2014

Jeffrey L. Quandt, Chief
Vehicle Control Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave, SE, Room W48-312
Washington, DC 20590

N140165

NVS -213krh
PE14-010

Dear Mr. Quandt:

This letter completes General Motors (GM) response to your Information Request (IR), dated April 17, 2014, regarding allegations of inappropriate autonomous braking while driving in model year (MY) 2014 Chevrolet Impala manufactured by General Motors LLC and requesting information. This Preliminary Evaluation (PE14-010) also requests information on 2013 MY Cadillac ATS as peer vehicles.

As you requested in our April 24, 2014 telephone conversation, GM provided responsive information to request number 1(a-d and h-k) on May 5, 2014. Our response to request number 1(e-g) is included in this submission.

In responding to NHTSA's questions, GM has used the definitions in the Preliminary Evaluation request dated April 17, 2014, as amended in our April 24, 2014 email. Specifically, the subject system is defined as:

"Driver assistance systems that can automatically command application of the brakes and all associated sensors, control modules, software, actuators, wiring and other components manufactured for use as original equipment or service replacement parts in the subject and peer vehicles"

The alleged defect is defined as:

Any one or more of the following symptoms or conditions:

1. Active Emergency Braking system failure or malfunction, including all associated fault codes;
2. Automatic collision preparation system failure or malfunction, including all associated fault codes;
3. Allegations of driver warnings due to false forward sensing surveillance;
4. Allegations of missed emergency braking activations; or
5. Allegations of brakes activating without driver application.



Your requests and our corresponding replies are as follows:

1. State, by model, engine and model year, the number of subject and peer vehicles GM has manufactured for sale or lease in the United States and federalized territories. Separately, for each subject and peer vehicle manufactured to date by GM, state the following:
 - a. Vehicle identification number (VIN);
 - b. Model;
 - c. Engine (displacement and engine code);
 - d. Installed driver assistance system feature package or option;
 - e. Installed driver assistance system sensors types, part numbers and suppliers;
 - f. Installed driver assistance system controller part number and supplier;
 - g. Driver assistance system software release number;
 - h. Model Year;
 - i. Date of manufacture;
 - j. Date warranty coverage commenced; and
 - k. The State in the United States, or the federalized territory, where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2003, 2007, or a compatible format, entitled "PE14 010 PRODUCTION DATA."

GM provided responsive information to PE14-010 request number 1(a-d and h-k) on May 5, 2014. In summary, this May 5, 2014 response included:

- Tables 1-1 through 1-3: The number of subject and peer vehicles which were sold or leased in the United States and federalized territories.
- Tables 1-4 through 1-5: Descriptive information of Regular Production Option (RPO) codes for Engine and Collision Preparation System Options on subject and peer vehicles
- Table 1-6: List of the Driver Automatic Collision Preparation Systems and corresponding suppliers for the subject and peer vehicles.

As agreed, the remainder of the information requested in 1e, 1f and 1g is provided below. The production released driver assistance system identifying part numbers for the subject 2014 MY Chevrolet Impala and the peer 2013 MY Cadillac ATS vehicles have been appended to the above referenced Table 1.6 and detailed in the relabeled "Table 1-6 (REVISED)*" modification below.

	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 23106421 23106422 23106423
PEER VEHICLE	CADILLAC	ATS	2013	EXTERNAL OBJECT CALCULATION MODULE	CONTINENTAL	22996064	22993039	CALID 1 OPERATING SOFTWARE 22993039 CALID 2 MANUFACTURING CALIBRATION 22993041 CALID 3 FSRACC CALIBRATION 22993042, 22993043 CALID 4 LDW CALIBRATION 22993044 CALID 5 VEHICLE ARCH CALIBRATION 22993046 CALID 6 BRAKES CALIBRATION 22993049 CALID 7 POWERTRAIN CALIBRATION 22993051 CALID 8 VEHICLE DYNAMICS CALIBRATION 22993053, 22993054, 22998326, 22993055 CALID 9 VEHICLE PARAMETER CALIBRATION 22993059, 22993060, CALID 21 OPERATING SOFTWARE 22993040 CALID 22 MANUFACTURING CALIBRATION 22993045 CALID 23 VEHICLE ARCHITECTURE CALIBRATION 22993047, 22993048, 22993050, CALID 25 POWERTRAIN CALIBRATION 22993052 CALID 26 VEHICLE DYNAMICS CALIBRATION 22993056, 22993057, 22998327, 22993058 CALID 27 VEHICLE PARAMETER CALIBRATION 22993061, 22993062
	CADILLAC	ATS	2013	LONG RANGE RADAR	CONTINENTAL	22960873	22965937	22965938
	CADILLAC	ATS	2013	Short Range Radar	AUTOLIV	22980117	22980118	22981624
	CADILLAC	ATS	2013	Front Camera 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

2. State, by model, engine and model year, 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 and peer vehicles:
 - a. Consumer complaints, including those from fleet operators;

- b. Field reports, including dealer field reports;
- c. Reports involving a 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;
- 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 "d," 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" 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 through 2-4 and 2-5 through 2-7 summarize the records that relate to or may relate to the alleged defect in the subject and peer vehicles, respectively. The data on these tables is broken down into the following categories:

May be Related (with CIB, ACC or FSRACC) to collision preparation system failure or malfunction – While driving, vehicle may have had a missed brake application induced by a fault condition that disabled functionality of Collision Imminent Braking (CIB), Adaptive Cruise Control (ACC), Full Speed Range Adaptive Cruise Control (FSRACC).

May be Related (with CIB, ACC or FSRACC) to brakes activating without driver application – While driving, vehicle may have had brake application without driver application induced by Collision Imminent Braking (CIB), Adaptive Cruise Control (ACC), Full Speed Range Adaptive Cruise Control (FSRACC).

May be Related (other) to brakes activating without driver application –
While driving, vehicle may have had a brake application while driving induced by unknown reason other than CIB, ACC, and FSRACC.

May be Related (FCA) to allegations of driver warnings due to false forward sensing surveillance – While driving, vehicle may have had an inappropriate alert without braking induced by Forward Collision Alert (FCA).

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/FATALITIES
Owner Reports	0	0	0	0	0/0
Field Reports	6	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)	6	0	0	0	0/0
Total Vehicles with Reports (Unique VIN)	3	0	0	0	0/0

Table 2-1: May be Related to Collision Preparation System Failure or Malfunction in the Subject Vehicles with CIB, ACC or FSRACC

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/FATALITIES
Owner Reports	0	0	0	0	0/0
Field Reports	3	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)	3	0	0	0	0/0
Total Vehicles with Reports (Unique VIN)	3	0	0	0	0/0

Table 2-2: May be Related to Brakes Activating without Driver Application in the Subject Vehicles with CIB, ACC or FSRACC

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/ FATALITIES
Owner Reports	1	0	0	0	0/0
Field Reports	2	0	0	0	0/0
Not-In-Suit Claims	1	0	1	1	1/0
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)	4	0	1	1	1/0
Total Vehicles with Reports (Unique VIN)	4	0	1	1	1/0

Table 2-3: May be Related (other) to Brakes Activating without Driver Application in the subject vehicles.

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/ FATALITIES
Owner Reports	1	0	0	0	0/0
Field Reports	98	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)	99	0	0	0	0/0
Total Vehicles with Reports (Unique VIN)	77	0	0	0	0/0

Table 2-4: Related (FCA) to allegations of driver warnings due to false forward sensing surveillance in the Subject Vehicles

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/ FATALITIES
Owner Reports	1	0	0	0	0/0
Field Reports	22	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)	23	0	0	0	0/0
Total Vehicles with Reports (Unique VIN)	18	0	0	0	0/0

Table 2-5: May be Related to Collision Preparation System Failure or Malfunction in the Peer Vehicles with CIB, ACC or FSRACC

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/ FATALITIES
Owner Reports	0	0	0	0	0/0
Field Reports	5	1	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)	5	1	0	0	0/0
Total Vehicles with Reports (Unique VIN)	5	1	0	0	0/0

Table 2-6: May be Related to Brakes Activating without Driver Application in the Peer Vehicles with CIB, ACC or FSRACC

		SUBCATEGORIES			
TYPE OF REPORT	GM REPORTS	CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/ FATALITIES
Owner Reports	0	0	0	0	0/0
Field Reports	26	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)	26	0	0	0	0/0
Total Vehicles with Reports (Unique VIN)	24	0	0	0	0/0

Table 2-7: Related (FCA) to allegations of driver warnings due to false forward sensing surveillance in the Peer Vehicles

GM's search found no reports that fit the category "May be related (other) to brakes activating without driver application" in the peer vehicles.

Table 2-3 above references a Not in Suit Matter (NISM) which may be related to the alleged defect of brakes activating without driver application in the subject 2014 MY Chevrolet Impala. The NISM alleged the 2014 Chevrolet Impala VIN 2G1125S36E9 [REDACTED] stalled while driving and consequently was struck in the rear. The vehicle was examined as part of the NISM investigation and no causal or contributing factors were found indicating a vehicle stall. This matter is being re-examined as part of GM's ongoing investigation in connection with this NHTSA PE14-010 (ref: Action 8-W).

The sources of the requested information and the last date the searches were conducted are tabulated in Table 2-8 below.

SOURCE SYSTEM	LAST DATE GATHERED
Customer Assistance Center	4/25/14
Technical Assistance Center	4/25/14
Field Information Network Database (FIND)	4/30/14
Field Product Report Database (FPRD)	4/30/14
Company Vehicle Evaluation Program (CVEP)	4/30/14
Captured Test Fleet (CTF)	4/30/14
Early Quality Feedback (EQF)	4/30/14
Legal/Employee Self Insured Services (ESIS)/Product Liability Claims/Lawsuits	4/30/14

TABLE 2-8: DATA SOURCES

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 3, state the following information:
 - a. GM's file number or other identifier used;
 - b. The category of the item, as identified in Request No. 3 (i.e., consumer complaint, field report, etc.);
 - c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
 - d. Vehicle's VIN;
 - e. Vehicle's model and model year;
 - f. Vehicle's mileage at time of incident;
 - g. Incident date;
 - h. Report or claim date;
 - i. Whether a crash is alleged;
 - j. Whether property damage is alleged;
 - k. Number of alleged injuries, if any; and
 - l. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "PE14_010_REQUESTNUMBER THREE DATA."

The requested information is provided on the ATT_1_GM disk; folder labeled "Q_03". Refer to "Q_03_REQUEST_NUMBER_TWO_DATA".

4. Produce copies of all documents related to each item within the scope of Request No. 3. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method GM used for organizing the documents.

Copies of the records summarized in Tables 2-1 through 2-7 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 records by the GM file number within each attachment.

5. State, by model, engine and model year, total counts for all of the following categories of claims, collectively, that have been paid by GM to date that relate to, or may relate to, the alleged defect in the subject and peer 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) and telephone number;
- c. VIN;
- d. Repair date;
- e. Whether a claim for towing was made within five days of the claim date;
- f. Vehicle mileage at time of repair;
- g. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- h. Labor operation number and description;
- i. Problem code and description;
- j. Replacement part number(s);
- k. Replacement part supplier and description;
- l. Concern stated by customer;
- m. Cause and Correction stated by dealer/technician; and
- n. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "PE14 010 WARRANTY DATA."

General Motors is providing, for the subject and peer vehicles, the regular and goodwill warranty claims, as well as Motors Insurance Corporation (MIC) and Universal Warranty Corporation (UWC) service contract claims that may be related to vehicle brake application without driver application while driving induced by the subject system(s): Collision Imminent Braking (CIB), Adaptive Cruise Control (ACC), Full speed Range Adaptive Cruise Control (FSRACC) as defined by Regular Production Codes (RPO) KSG and/or UGN. General Motors included claims for

inappropriate Forward Collision Alert (FCA) activation without braking while driving as defined by RPO UEU.

These claims are summarized by model and model year in Tables 5-1 through 5-3 and 5-4 through 5-6 for the subject vehicles and peer vehicles, respectively. This data was analyzed and sorted into four categories based on review of the labor code descriptions, key word occurrence, customer complaint and meaningful information contained in the verbatim of those claims containing verbatim information. A detailed explanation of the criteria used to collect and sort the warranty data is provided in response to Question 6.

The definition of the four categories is as follows:

May be Related (with CIB, ACC or FSRACC) to collision preparation system failure or malfunction – While driving, vehicle may have had a missed brake application induced by a fault condition that disabled functionality of Collision Imminent Braking (CIB), Adaptive Cruise Control (ACC), Full Speed Range Adaptive Cruise Control (FSRACC).

May be Related (with CIB, ACC or FSRACC) to brakes activating without driver application – While driving, vehicle may have had brake application without driver application induced by Collision Imminent Braking (CIB), Adaptive Cruise Control (ACC), Full Speed Range Adaptive Cruise Control (FSRACC).

May be Related (other) to brakes activating without driver application – While driving, vehicle may have had a brake application while driving induced by unknown reason other than CIB, ACC, and FSRACC.

May be Related (FCA) to allegations of driver warnings due to false forward sensing surveillance – While driving, vehicle may have had an inappropriate alert without braking induced by Forward Collision Alert (FCA).

MODEL YEAR	MAKE	MODEL	NUMBER OF CLAIMS May be Related to Collision Preparation System Failure or Malfunction in the Subject Vehicles with CIB, ACC or FSRACC			
			REGULAR	MIC	UWC	TOTAL
2014	CHEVROLET	IMPALA E (SUBJECT)	2	0	0	2
		TOTAL	2	0	0	2

TABLE 5-1: REGULAR WARRANTY CLAIMS, MIC EXTENDED SERVICE CONTRACT CLAIMS, AND UWC EXTENDED SERVICE CONTRACT CLAIMS IN THE SUBJECT VEHICLES

MODEL YEAR	MAKE	MODEL	NUMBER OF CLAIMS May be Related to Brakes Activating without Driver Application in the Subject Vehicles with CIB, ACC or FSRACC			
			REGULAR	MIC	UWC	TOTAL
2014	CHEVROLET	IMPALA E (SUBJECT)	0	0	0	0
		TOTAL	0	0	0	0

TABLE 5-2: REGULAR WARRANTY CLAIMS, MIC EXTENDED SERVICE CONTRACT CLAIMS, AND UWC EXTENDED SERVICE CONTRACT CLAIMS IN THE SUBJECT VEHICLES

MODEL YEAR	MAKE	MODEL	NUMBER OF CLAIMS May be Related (FCA) to allegations of driver warnings due to false forward sensing surveillance in the Subject Vehicles			
			REGULAR	MIC	UWC	TOTAL
2014	CHEVROLET	IMPALA E (SUBJECT)	17	0	0	17
		TOTAL	17	0	0	17

TABLE 5-3: REGULAR WARRANTY CLAIMS, MIC EXTENDED SERVICE CONTRACT CLAIMS, AND UWC EXTENDED SERVICE CONTRACT CLAIMS IN THE SUBJECT VEHICLES

MODEL YEAR	MAKE	MODEL	NUMBER OF CLAIMS May be Related to Collision Preparation System Failure or Malfunction in the Peer Vehicles with CIB, ACC or FSRACC			
			REGULAR	MIC	UWC	TOTAL
2013	CADILLAC	ATS (PEER)	28	0	0	28
		TOTAL	28	0	0	28

TABLE 5-4: REGULAR WARRANTY CLAIMS, MIC EXTENDED SERVICE CONTRACT CLAIMS, AND UWC EXTENDED SERVICE CONTRACT CLAIMS IN THE PEER VEHICLES

MODEL YEAR	MAKE	MODEL	NUMBER OF CLAIMS May be Related to Brakes Activating without Driver Application in the Peer Vehicles with CIB, ACC or FSRACC			
			REGULAR	MIC	UWC	TOTAL
2013	CADILLAC	ATS (PEER)	4	0	0	4
		TOTAL	4	0	0	4

TABLE 5-5: REGULAR WARRANTY CLAIMS, MIC EXTENDED SERVICE CONTRACT CLAIMS, AND UWC EXTENDED SERVICE CONTRACT CLAIMS IN THE PEER VEHICLES

MODEL YEAR	MAKE	MODEL	NUMBER OF CLAIMS May be Related (FCA) to allegations of driver warnings due to false forward sensing surveillance in the Peer Vehicles			
			REGULAR	MIC	UWC	TOTAL
2013	CADILLAC	ATS (PEER)	3	0	0	3
		TOTAL	3	0	0	3

TABLE 5-6: REGULAR WARRANTY CLAIMS, MIC EXTENDED SERVICE CONTRACT CLAIMS, AND UWC EXTENDED SERVICE CONTRACT CLAIMS IN THE PEER VEHICLES

GM's search found no warranty claims or service contract claims that fit the category "May be related (other) to brakes activating without driver application" in the subject or peer vehicles.

SOURCE SYSTEM	LAST DATE GATHERED
GART - Regular Warranty	04/30/2014
Motors Insurance Corporation (MIC) - Service Contract Claims	05/06/2014
Universal Warranty Corporation (UWC) - Service Contract Claims	04/25/2014

TABLE 5-7: DATA SOURCES

GM searched the GM Global Analysis and Reporting Tool (GART-regular warranty), the Motors Insurance Corporation (MIC) service contract claims, and the Universal Warranty Corporation (UWT) databases to collect the warranty data for this response. The warranty data was last gathered on April 30, 2014.

A summary of the warranty claims, including the information requested in 5 (a, c – m), is provided on the Att_1_GM disk in the folder labeled "Q_05", refer to the Microsoft Access 2007 compatible file labeled "PE14 010 WARRANTY DATA."

For request 5b, GM's warranty database does not contain the vehicle owner's name or telephone number. For 5j through 5k, the replacement part numbers and part descriptions are not included in the GM warranty database. GM is providing the fields which are optional entries in the GM warranty system for the dealer to place any additional comments that may be applicable to warranty claims. These "verbatim" fields are not required to be completed for every warranty claim.

The warranty data provided has limited analytical value in analyzing the field performance of a motor vehicle component. The warranty records do not contain sufficient information to establish the condition of the part at the time of the warranty correction, and the service personnel may not consistently use the appropriate labor

codes. Warranty numbers represent claims from our dealers for reimbursement for parts and labor costs incurred in performing warranty service for our customers.

6. Describe in detail the search criteria used by GM to identify the claims identified in response to Request No.5, including the labor operations, problem 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 applicable to the alleged defect in the subject vehicles. 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).

To search for and collect the warranty data for this response, the GM Global Analysis and Reporting Tool (GART regular warranty) regular warranty database and the Motors Insurance Corporation (MIC) service contract claims database were searched using the labor codes and key words that may be related to the alleged defect. These codes are listed in tables 6-1 and 6-2. Universal Warranty Corporation (UWC) does not use labor codes.

LABOR CODE	DESCRIPTION
6459939	Customer Concern Not Duplicated (CCND) - Electronics/Safety/Seat/Lighting/Key
6420120	Front View Camera Replacement
6421400	Forward Range Radar Module Replacement
6421100	Active Safety Control Module Replacement
2810645	Radar Sensor Module - Long Range Reprogramming with SPS
2810655	Radar Sensor Module - Short Range Reprogramming with SPS
2810835	Front View Camera Reprogramming with SPS
2810435	Active Safety Control Module Reprogramming with SPS
R3112	Front View Camera Replacement
R4121	Active Safety Control Module Replacement
R4124	Forward Range Radar Module Replacement

TABLE 6-1: CIB, ACC OR FSRACC WARRANTY LABOR CODE DEFINITION

LABOR CODE	DESCRIPTION
6459939	Customer Concern Not Duplicated (CCND) - Electronics/Safety/Seat/Lighting/Key
6420120	Front View Camera Replacement
2810835	Front View Camera Reprogramming with SPS
R3112	Front View Camera Replacement

TABLE 6-2: FCA WARRANTY LABOR CODE DEFINITION

The subject 2014 MY Chevrolet Impala E vehicles are covered by a bumper-to-bumper new vehicle warranty for three years or 36,000 miles whichever occurs first. The peer 2013 MY Cadillac ATS vehicles are covered by a bumper-to-bumper new vehicle warranty for four years or 50,000 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 upon a customer's preference, up to seven (7) years from the date of purchase or up to a total of 100,000 vehicle miles.

MAKE	MODEL	MY	MIC	UWC
CHEVROLET	IMPALA	2014	6339	164

TABLE 6-3: SUBJECT VEHICLES: MIC AND UWC EXTENDED SERVICE COVERAGE CONTRACTS SOLD (REGARDLESS OF STATUS: IN-FORCE, EXPIRED OR CANCELLED)

MAKE	MODEL	MY	MIC	UWC
CADILLAC	ATS	2013	1276	16

TABLE 6-4: PEER VEHICLES: MIC AND UWC EXTENDED SERVICE COVERAGE CONTRACTS SOLD (REGARDLESS OF STATUS: IN-FORCE, EXPIRED OR CANCELLED)

7. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that GM has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletin, advisories, informational documents, training documents, or other documents or communications, with the exception of standard shop manuals. Also include the latest draft copy of any communication that GM is planning to issue within the next 120 days.

GM has issued the following service communications relating to the subject systems on the 2014 MY Impala (subject) and 2013 MY ATS (peer) vehicles that may relate to inappropriate autonomous braking while driving induced by the subject system(s): Crash Imminent Braking (CIB), Adaptive Cruise Control (ACC), Full speed Range Adaptive Cruise Control (FSRACC).

In April 2013, GM issued a Preliminary Information Communication (PIC) No. PIC5814: "U023A SYM00 - Set History for Loss of Communication with Active Safety Control Module". This communication outlines vehicle diagnostic procedures

that might be helpful if the vehicle exhibits the DTC U023A SYM00 (Lost Communication with Active Safety Control Module) (with UGN) which may be set in one or all of the short range radars. All three Short Range Radar Sensor Modules may falsely set a DTC U023A SYM00 at every power down cycle. The DTC(s) will be in history and may reset history during an ignition cycle. 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.

In May 2013, GM issued a Preliminary Information (PI) document No. PIC5428E: "EBCM Wheel Speed Sensor Diagnostic Aid for ABS Message - Click Or Ratchet Noise - Service Traction Message - Service Stabilitrak Message - Service Steering Message." This communication outlines diagnostic procedures for vehicles exhibiting:

- 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;
- 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; or
- 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. Procedures for inspecting and cleaning the wheel speed sensor magnetic encoder ring are provided.

In October 2013, GM issued a Preliminary Information (PI) document No. PI1036B: "Diagnostic Tips for Adaptive Cruise Control Inoperative or Adaptive Cruise Control Temporarily Unavailable Message Displayed on DIC". This communication outlines diagnostic tips to be followed if customers comment that the "Adaptive Cruise Control Temporarily Unavailable" message is displayed on the DIC. Service technicians are instructed to determine if the forward range radar module is blocked using the GDS2 or inspect for the installation of an accessory or incorrect grille. 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.

In May 2014, GM issued an Engineering Information document number PIE0300: "Engineering Information - Unwanted Braking". This communication explains that 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. This communication outlines steps to be followed if customers 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

In May 2014, GM issued 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." This communication outlines diagnostic tips to be followed 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. If this condition occurs, the mounting bracket for the forward range radar module may be bent or out of position. The document provides instructions for checking the forward range radar vertical alignment at the bracket mount and then for aligning the bracket mount.

In April and September of 2013, the Technical Assistance Center (TAC) staff was provided with summary sheets for the 2013 ATS Driver Awareness System (Y65) and Driver Assistance System (Y66) packages.

In February 2013, GM Engineering provided the Technical Assistance Center (TAC) staff with active safety feature functional documentation for use in consultation with service technicians.

The documents referenced above are provided on ATT_1_GM disk in the folder labeled Q_07.

In March 2011, GM Engineering provided Technical Assistance Center (TAC) staff with active safety feature functional documentation for use in consultation with service technicians. These documents are provided on ATT_2_GM_CONF in the folder labeled Q_07.

- 8. 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 that have been conducted, are being conducted, are planned, or are being planned by, or for, GM. For each such action, 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.

The response to this request should include a detailed description of all past, present and future actions by any and all engineering working groups (e.g., vehicle dynamics control task force) of which GM is an active member or is otherwise aware. This includes, at a minimum, all of the information requested in items "a" through "f."

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.

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 Q8 of PE14-010:

QUESTION 8:

- Summaries of the vehicle investigations that GM has conducted (subject, peer or other vehicles) as part of PE14-010. This will include each of the vehicle investigations and descriptions of what was done for each investigation. (e.g. vehicle inspections, driver interviews, modules interrogated, system and component testing, Red X analyses, etc.)
- Descriptions of the different areas of investigation to root cause and/or replicate the incidents
- Investigation/countermeasure(s) identified during development and validation of the subject systems for automatic braking events > 1 second duration or >10mph velocity change in situations where it was unexpected and undesired (also referred to as "false positive" or "nuisance" events)

Also, for each such action identified, GM will 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, the primary summary documentation (e.g. testing plans and results) done by or on the behalf of General Motors shall be provided.

Further information responsive to Question 8 as originally stated in PE14-010 will be provided upon the request of the NHTSA.

8-A through 8-B below describe actions taken for the subject and peer vehicles for issues identified during production development relating to the subject driver assistance systems (CIB, ACC and FCA).

Action 8-A Pre-Production 2013 MY Cadillac ATS Problem Resolution Tracking System (PRTS)

Start Date: 16-FEB-2012

End Date: 09-JAN-2013

Engineering Group: General Motors, Continental, Autoliv, Magna

Attachments: Provided on ATT_2_GM_CONF in folder Q_08_A

Description: Issue documentation, root cause and resolution of Collision Imminent Braking, Adaptive Cruise Control and/or Forward Collision Alerts from 2013 ATS vehicle development and validation.

Summary of Action: Reference PRTS documentation

Action 8-B Pre-production 2014 MY Chevrolet Impala E Problem Resolution Tracking System (PRTS)

Start Date: 21-MAY-2012

End Date: 02-APR-2013

Engineering Group: General Motors, TRW, Delphi, Magna

Attachments: Provided on ATT_2_GM_CONF in folder Q_08_B

Description: Issue documentation, root cause and resolution of Collision Imminent Braking, Adaptive Cruise Control and/or Forward Collision Alerts from 2014 Impala E vehicle development and validation.

Summary of Action: Reference PRTS documentation

8-C through 8-X below include summaries of the vehicle investigations that GM has conducted (subject, peer or other vehicles) as part of PE14-010 through the document collection date of Thursday, May 22, 2014. Action details include summaries of vehicle inspections as well as descriptions of the different areas of investigation to root cause and/or replicate the alleged incidents.

Action 8-C Inspection 2014 MY Chevrolet Impala VIN 2G1115SL8E9 [REDACTED] (ODI Vehicle – VOQ 10574799)

Start Date: April 26, 2014

End Date: April 28, 2014

Engineering Group: General Motors; ESIS investigator

Attachments: Provided on ATT_1_GM in folder Q_08_C

Description: Inspect Vehicle; gather module part numbers and data; 700+ mile drive evaluation with Neovi monitoring

Summary of Action: No unexpected or unwanted braking incident during the drive evaluation. No data or part inspection anomaly noted during the inspection. Data gathered for further analysis.

Action 8-D Inspection 2014 MY Chevrolet Impala VIN 2G1115SL4E9 [REDACTED] (Employee reported incident)

Start Date: April 26, 2014

End Date: ongoing

Engineering Group: General Motors; TRW; Magna

Attachments: Provided on ATT_1_GM in folder Q_08_D as well as ATT_2_GM_CONF in folder Q_08_D

Description: Inspect Vehicle; Vehicle system testing - GMLAN interfaces related to crash imminent braking and camera module. Code review of all of the Variables related to GMLAN decel requests through the EBCM software.

Summary of Action: No data or part inspection anomaly noted during the inspection. Data collected for use as needed in further investigation activities. Vehicle continues to be used in RED X evaluation (ref: Action 8-N).

Action 8-E Interviews with driver of 2014 MY Chevrolet Impala VIN 2G1155S30E9 [REDACTED]

Start Date: April 25, 2014

End Date: May 2, 2014

Engineering Group: General Motors

Attachments: Provided on ATT_1_GM in folder Q_08_E

Description: Two interviews conducted with GM employee that reported unexpected or unwanted braking incident in FEB 2013 via the GM Captured Test Fleet verbatim system

Summary of Action: Transcripts of interviews

Action 8-F Inspection 2013 MY Cadillac ATS VIN 1G6AM5S32D0 [REDACTED] (VOQ 10577322)

Start Date: May 5, 2014

End Date: May 5, 2014

Engineering Group: General Motors; ESIS investigator

Attachments: Provided on ATT_1_GM in folder Q_08_F

Description: Inspect Vehicle; gather software and calibration part numbers, Active Safety EDR data, and vehicle DTCs; 100+ mile drive evaluation in areas of customer reported incidents with Neovi monitoring.

Summary of Action: Vehicle inspection including check of software and calibration part numbers. Software and Calibration released part numbers installed by service found to be from different software releases. One unexpected and unwanted braking event observed under Exit 4 overpass headed southbound on I-25 in Colorado (High Plains Road). Incident appeared to be triggered by overpass. Drove route 2 more times and could not duplicate. No evidence that vehicle was not functioning as designed.

<p>Action 8-G Brake PRTS Analysis Start Date: April 28, 2014 End Date: April 30, 2014 Engineering Group: General Motors Attachments: Provided on ATT_1_GM in folder Q_08_G as well as ATT_2_GM_CONF in folder Q_08_G Description: PRTS search expanded to brake labor codes and filters. Summary of Action: Items identified for further investigation activities</p>
<p>Action 8-H 2014 MY Chevrolet Impala EBCM & EPB DFMEA reviews Start Date: April 28, 2014 End Date: April 29, 2014 Engineering Group: General Motors; TRW; Mando Attachments: Provided on ATT_2_GM_CONF in folder Q_08_H Description: Reviews of TRW and Mando DFMEAs. Fishbone and fault tree analysis for potential source of unexpected or unwanted braking initiation. Summary of Action: Completed fishbone and fault tree analysis</p>
<p>Action 8-I Inspection 2014 MY Chevrolet Malibu VIN 1G11H5SL1EU [REDACTED] (employee reported deceleration incident) Start Date: May 2, 2014 End Date: ongoing Engineering Group: General Motors; TRW Attachments: Provided on ATT_1_GM in folder Q_08_I Description: Vehicle inspection including check of software and calibration part numbers Summary of Action: In this inspection, the cause for the unexpected or unwanted deceleration incident was not found. Data collected for further investigation activities. Vehicle continues to be used in RED X evaluation (ref: Action 8-N)</p>
<p>Action 8-J 2014 MY Chevrolet Impala and 2014 MY Chevrolet Malibu ride event – Milford, MI to Chicago, Ill. Start Date: May 3, 2014 End Date: May 4, 2014 Engineering Group: General Motors Attachments: Provided on ATT_1_GM in folder Q_08_J Description: Engineering drive event to attempt to reproduce reported deceleration events. 23 vehicles were driven from Milford, Michigan to Warren, Michigan and then to Chicago, Illinois with Neovi monitoring on each vehicle to record data. The 23 vehicles drove a total of 10,750 miles over 525 hours. Summary of Action: No unexpected or undesired deceleration event occurred.</p>
<p>Action 8-K Aggravated Systems Testing – Electrical Bench Start Date: May 3, 2014 End Date: ongoing Engineering Group: General Motors; TRW; Mando Attachments: Provided on ATT_2_GM_CONF in folder Q_08_K Description: Aggravated electrical commands/ fault insertion Summary of Action: No unexpected or undesired deceleration event coincident with alert has occurred.</p>

<p>Action 8-L Aggravated Systems Testing – Vehicle Start Date: May 3, 2014 End Date: ongoing Engineering Group: General Motors Attachments: Provided on ATT_1_GM in folder Q_08_L as well as ATT_2_GM_CONF in folder Q_08_L Description: Aggravated electrical commands/ fault insertion Summary of Action: No unexpected or undesired deceleration event coincident with alert has occurred.</p>
<p>Action 8-M Vehicle System Testing/ analysis Start Date: May 2, 2014 End Date: ongoing Engineering Group: General Motors; Exponent; TRW; Mando Attachments: Provided on ATT_1_GM in folder Q_08_M as well as ATT_2_GM_CONF in folder Q_08_M Description: Investigation and analysis of unexpected and unwanted deceleration/ brake incidents Summary of Action: Investigation is ongoing</p>
<p>Action 8-N General Motors RED X Analysis (PRTS 1566612) Start Date: May 5, 2014 End Date: ongoing Engineering Group: General Motors Attachments: Provided on ATT_1_GM in folder Q_08_N as well as ATT_2_GM_CONF in folder Q_08_N Description: Identify the Red X of the events of unexpected or unintended deceleration coincident with alert. Summary of Action: RED X work continues. Root cause for an unexpected or unwanted deceleration event with accompanying alert undetermined.</p>
<p>Action 8-O Inspection 2014 MY Chevrolet Impala VIN 1G1155S33EU [REDACTED] (VOQ 10584485) Start Date: May 7, 2014 End Date: May 10, 2014 Engineering Group: General Motors; Delphi Attachments: Provided on ATT_1_GM in folder Q_08_O as well as ATT_2_GM_CONF in folder Q_08_O Description: Inspect Vehicle; gather software and calibration part numbers, Active Safety EDR data, and vehicle DTCs. 300+ mile drive evaluation in areas of customer reported incidents with system monitoring. Summary of Action: No visual issues found with the subject vehicle brake systems. No occurrences of unexpected or unwanted deceleration event on test drive from Grapevine, TX to Vernon, TX and back. Vehicle repurchased by GM and continues to be used in RED X evaluation (ref: Action 8-N)</p>

Action 8-P EMC SE Michigan, Indiana/Illinois Field Survey

Start Date: May 2, 2014

End Date: May 3, 2014

Engineering Group: General Motors

Attachments: Provided on ATT_1_GM in folder Q_08_P as well as ATT_2_GM_CONF in folder Q_08_P

Description: Two field surveys – the first one was performed on I-696 bounded by I-75 and Evergreen (SE Michigan) and the second performed on I-90 between Indiana and Illinois. The surveys used a combination of Low and High frequency Field Probes covering up to the 40GHz range and displaying the results on a Field Meter. Data was taken by reading the display on front of the Meter and recording the amplitudes manually. The data represents the maximum field level observed, independent of frequency.

Summary of Action: Data for the Southeast MI location is 5 – 7% of the GM vehicle EMC validation exposure test levels. Data for the Illinois field survey location is 15 – 22% of the GM vehicle EMC validation exposure test levels.

Action 8-Q: Active safety verification evaluation 2014 MY Chevrolet Impala (VIN 1G1115SL4EU [REDACTED])

Start Date: May 7, 2014

End Date: May 22, 2014

Engineering Group: General Motors

Attachments: Provided on ATT_1_GM in folder Q_08_Q

Description: Vehicle driven in locations in and around Pittsburgh, one of the verification locations within the United States specifically chosen to provide challenging and complex situations for the CIB and ACC systems. Data was logged with GM Data collection system CLIR.

Summary of Action: 6326 miles logged. No unexpected and undesired CIB or ACC braking events logged. 15 false positive FCA events logged.

Action 8-R: Cyber Security Analyses

Start Date: May 5, 2014

End Date: May 22, 2014

Engineering Group: General Motors

Attachments: Provided on ATT_1_GM in folder Q_08_R as well as ATT_2_GM_CONF in folder Q_08_R

Summary of Action: For reported instances of unexpected and undesired deceleration events while driving (for which there was date, time and location data), analysis of available information and test results shows no evidence of a cyber-incident.

Action 8-S: 2014 MY Chevrolet Impala and 2014 MY Chevrolet Malibu Drive Testing – Warren, Southfield and Detroit, MI

Start Date: May 8, 2014

End Date: ongoing

Engineering Group: General Motors; Roush Industries

Attachments: Provided on ATT_1_GM in folder Q_08_S

Description: Roush Industries drive event to attempt to reproduce the unexpected and undesired deceleration event. 14 vehicles being driven daily 10 hours, 7 days a week. Test loop from Warren I696, to the Southfield Fwy, to I94 Detroit Loop with Neovi monitoring on each vehicle to record all data. Loop is reversed in afternoon to maximize sunlight into camera. As of May 22nd, drivers logged 1960 hours and 70,360 miles.

Summary of Action: 4 driver reported unexpected or undesired deceleration events have occurred as of May 22nd, the date of this data summary. GM engineers have reviewed the Neovi event and module data and concluded that in each event the host vehicle was following a target vehicle and experienced expected ACC braking.

<p>Action 8-T: Inspection 2013 MY Cadillac ATS VIN 1G6AF5SXXD0 [REDACTED] (VOQ 1054726) Start Date: May 15, 2014 End Date: May 15, 2014 Engineering Group: General Motors Attachments: Provided on ATT_1_GM in folder Q_08_T Description: Inspect Vehicle; gather software and calibration part numbers, Active Safety EDR data, and vehicle DTCs. Spoke with customer on the phone to get details of locations where unexpected braking events occurred. 150+ mile drive evaluation in areas of customer reported incidents with Neovi monitoring. Summary of Action: No evidence that vehicle was not functioning as designed.</p>
<p>Action 8-U: 2014 MY Chevrolet Impala Park Brake switch Corrosion Testing Start Date: May 21, 2014 End Date: ongoing Engineering Group: General Motors; Mando; Omron Attachments: Provided on ATT_2_GM_CONF in folder Q_08_U Description: Corrosion testing with 2014 Impala park brake switch assemblies Summary of Action: Test definition and preparation in progress.</p>
<p>Action 8-V: Interview operator of 2014 MY Chevrolet Impala VIN 1G1125S30EU [REDACTED] VOQ 10592222) Start Date: May 20, 2014 End Date: May 20, 2014 Engineering Group: General Motors; ESIS Attachments: Provided on ATT_1_GM in folder Q_08_V Description: Driver Interview Summary of Action: Per customer interview, in all instances, the cruise control was engaged and cancelled after FCA event. Cancellation of cruise control with FCA option is per design intent.</p>
<p>Action 8-W: Inspection 2014 MY Chevrolet Impala VIN 2G1125S36E9 [REDACTED] Start Date: May 22, 2014 End Date: ongoing Engineering Group: General Motors; Mando; TRW Attachments: Provided on ATT_2_GM_CONF in folder Q_08_W Description: Inspection yet to be scheduled Summary of Action: Inspection planning complete and awaiting confirmation of as yet TBD inspection date</p>
<p>Action 8-X: Continuing PE14-010 Investigation Items Start Date: May 23, 2014 End Date: ongoing Engineering Group: General Motors; other entities as required Attachments: none to date Description: Continuing investigation activities related to the NHTSA PE14-010 Summary of Action: Ongoing</p>

Investigations and countermeasures identified during development and validation of the subject systems for automatic braking events > 1 second duration or >10mph velocity change in situations where it was unexpected and undesired (also referred to as "false positive" or "nuisance" events) are provided by GM in attachments referenced ATT_2_GM_CONF in folder Q_08_Y.

- 9. Describe all modifications or changes made by, or on behalf of, GM in the design, material composition, manufacture, quality control, supply, or installation of the subject system, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. 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;**
 - 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**

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 is providing modifications or changes made by, or on behalf of, GM in the design, material composition, manufacture, quality control, supply, or installation of the subject system. GM includes changes to associated sensors, control modules, software, and wiring that may affect the form, fit or function of the subject system. The information requested in 9 a – g is provided on the ATT_1_GM disk in the folder labeled Q_9.

- 10. For MY 2014 Chevrolet Impala and MY 2013 Cadillac ATS driver assist systems components, include in detail the following:**
- 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/sec²), steering wheel release input threshold (0), acceleration pedal release threshold (mm or m/sec²), 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);**
 - 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.);
- 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;
 - d. The algorithm strategy GM implemented relative to detected target position fluctuations, reflection points, monitoring time, modulation width of frequency, ghost objects, error correction, fusion architecture and overall system reaction planning and situation assessment specifically false positives and false negatives;
 - e. 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;
 - 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; and
 - g. All system related controllers and sensors DRBFM, D-FMEA or IQ-FMEA.

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 10a. through 10g., GM will add subpart (h.) as follows:

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

Replies to items 10a – h are provided on the ATT_2_GM_CONF disk in folder Q_10 and the reply to item 10f is on the ATT_2_GM_CONF disk in folder Q_10_F.

11. Furnish GM's assessment of the alleged defect in the driver assistance systems of the subject and peer vehicles. Provide separate responses for each condition that may result in unnecessary autonomous braking. Include the following information for each condition:

- a. The causal or contributory factor(s);
- b. The failure mechanism(s);
- c. The failure mode(s), including the specific operating conditions at which the unnecessary autonomous braking can occur (e.g., vehicle speed);
- d. GM's assessment of the safety risk of each condition, including all incidents alleging complete stopping in traffic lanes and all incidents alleging crashes;
- e. GM's assessment of factors affecting the operator's ability to resume safe operation of the vehicle, including reports alleging repeatable system malfunction after restarting the vehicle; and

f. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the system may be about to malfunction before the vehicle activates emergency braking.

The design, operation, and hardware content (components) of the subject driver assistance systems on the subject and peer vehicles are detailed in the response to Q10 on the ATT_2_GM_CONF disk in the folder labeled "Q_10".

This same attachment includes details of the subject system sensor technology limitations relative to casual/contributory factors, failure mechanisms and modes along with the associated risks.

As requested in Q2, GM is providing records that may be related to allegations of unexpected or unwanted braking incidents in the 2014 MY Impala E vehicles with Collision Imminent Braking (CIB), Adaptive Cruise Control (ACC) or Full Speed Range Adaptive Cruise Control (FSRACC). GM's review and analysis of those records, along with the VOQs provided by NHTSA, indicate that the subject system is operating to intended design. The subject system is a safety feature that when operating to design intent, applies the brakes autonomously under various circumstances to mitigate a potential collision. Some drivers may find this autonomous application of brakes to be unexpected, undesired or startling. However, the driver can override the autonomous braking with typical driver inputs such as steering, braking and acceleration which cancel autonomous braking.

Therefore, GM does not believe there is an unreasonable risk to safety created by the subject "driver assistance systems" on the subject 2014 MY Chevrolet Impala E and peer 2013 MY Cadillac ATS vehicles. Furthermore, the 2014 MY Chevrolet Impala E and the 2013 MY Cadillac ATS, both equipped with a driver assistance system, have received a "Superior" rating from the IIHS for front crash prevention. Additionally, GM has conducted a survey of 2013 MY Cadillac XTS, SRX and ATS customers with a CIB system and found (Reference information on the ATT_2_GM_CONF disk; in the folder labeled "Q_11"):

1. 26% of GM owners of the ATS report experiencing CIB events.
2. Of those owners that reported experiencing CIB braking activations:
 - 88% of GM owners "Agree" (either "strongly" or "somewhat") that they would purchase (or want) the system in their next vehicle.
 - 89% of GM owners "Agree" (either "strongly" or "somewhat") that CIB activations were helpful.

Subject Vehicle:

2014 MY Chevrolet Impala E with FSRACC/ACC/CIB:

- As of May 22, 2014, GM has identified three (3) reports in a query of GM records that may be related to allegations of "unnecessary autonomous braking" events.

- In addition, NHTSA provided one (1) VOQ 10584485 which does not match any of the vehicle VINs in the GM records.
- None of the GM records or the VOQ report indicates a crash.

GM's review of the three (3) reports and one (1) referenced VOQ indicates the following:

- The three (3) GM records appear to be consistent with a false positive FSRACC/ACC deceleration event resulting in the vehicle momentarily slowing down for something that the system detected to be in the path of the subject vehicle.
- The one (1) VOQ verbatim alleges two unexpected or unwanted braking incidents on April 2, 2014 within 5 miles of one another; the report also indicates that in both events the driver, while startled, was able to overcome the unexpected or unwanted braking incident by applying the accelerator pedal, as designed with the system. Further information regarding GM's investigation of this VOQ vehicle is provided in response to Q8.

As described in detail in Q10, GM has designed a balanced system with the understanding that there will be certain circumstances, such as overpasses (bridges) that can be reported as moving, etc., where the system may briefly activate the brakes due to system sensor technology limitations with the Long Range Radar. GM has calibrated and set the thresholds of the system to minimize the effect of these cases. GM believes that the safety benefits provided by these systems outweigh the downside of a rare false activation. Moreover, even if a false activation does occur, the driver can override the system. (Reference information on the ATT_2_GM_CONF disk; in the folder labeled "Q_11")

2014 MY Chevrolet Impala E without FSRACC/ACC/CIB:

While the 2014 MY Chevrolet Impala E can come equipped with the subject driver assistance system of FSRACC/ACC/CIB, there are variants of the 2014 MY Chevrolet Impala E that are not equipped with the subject system. GM has identified allegations of unexpected or unwanted braking on vehicles that do not have the subject system of FSRACC/ACC/CIB, including one of the VOQ vehicles that was provided in conjunction this information request. The following is a summary of current findings as of May 22, 2014 and GM is continuing to investigate.

- GM has identified allegations from GM records and VOQs of unexpected or unwanted braking incidents on eight (8) total non-subject system vehicle VINs (without FSRACC/ACC/CIB). Additionally, NHTSA has provided one (1) VOQ 10584487 with an unknown VIN. Of these eight (8) allegations with known VINs, four (4) are from GM records (ref: Q2 table 2-2); one (1) is a field report (ref: Q8 Action 8-D); and three (3) are NHTSA VOQs (10574799, 10586136 and 10592222).

GM's analysis of these allegations to date indicates:

- Five (5) (1 VOQ 10592222 and 4 GM records) appear to be a result of the cruise control disengaging or dropping-out. The cruise control drop-out and resulting deceleration appear to be perceived by some drivers as a braking event. By design, if an FCA alert is generated while the vehicle is in normal cruise control (vs. ACC), the cruise control system is disengaged.
- Two (2) (1 VOQ 10586136 with VIN and 1 VOQ 10584487 with an unknown VIN) appear to be related to false alerts with the FCA system as the verbatim descriptions only mention the FCA alert going off with no mention of vehicle braking without driver input.
- Two (2) vehicles (1 VOQ 10574799 and 1 GM record) allegedly applied the brakes and the vehicles came to a complete stop which apparently resulted in the vehicle being hit in the rear by a following vehicle. No injuries were reported. To date, GM has not determined a root cause and continues to investigate. Details are provided in response to Q8.

GM is continuing to investigate allegations of unexpected or unwanted braking incidents on the two vehicles involved in a crash. In addition, GM has issued an Engineering Information request bulletin to dealers (ref: Q7) looking for vehicles that may exhibit the alleged condition. As mentioned above, to date, GM has not determined a root cause of the alleged braking incidents. Details regarding the ongoing investigation are provided in the response to Q8.

Peer Vehicle:

2013 MY Cadillac ATS with FSRACC/ACC/CIB:

- GM has identified nine (9) GM records with seven (7) unique VINs in a query of GM records that may be related to allegations of "unnecessary autonomous braking" events. Five (5) of these are field reports and four (4) are from GM warranty claim records.
- In addition, NHTSA provided two (2) VOQs with complete VINs. VOQ 10574726 matches a VIN in one GM record and one GM warranty claim record. VOQ 10577322 matches a VIN in two GM warranty claim records.
- None of these GM records or VOQs indicate a crash.

GM has reviewed and analyzed the available information for each of the allegations and a summary of the analysis follows:

- Based on verbatim descriptions, data collection and analysis, seven (7) of the GM identified reports appear to be consistent with a false positive CIB event that can take place due to system technology design limitations. Two of (2) of these were the previously identified VOQs that had EDR information indicating the CIB events were <0.3g level of braking with a duration of <0.5 second.

- Based on verbatim descriptions, three (3) of the GM identified warranty claim reports appear to be consistent with a false positive FSRACC/ACC deceleration event that can take place due to system technology design limitations.
- Based on verbatim description in the GM warranty claims, one (1) of these reports described that the automatic brakes engaged five (5) times at the customer's home. The reference to at "home" suggests that these were braking events at low vehicle speed.

As described in detail in Q10, GM has designed a balanced system on the 2013 MY Cadillac MY ATS with the understanding that there will be certain circumstances where the system may briefly activate the brakes due to system sensor technology limitations with the Long Range Radar, Short Range Radar and Front Camera systems where some objects, such as overpasses (bridges) can be reported as moving, or objects in adjacent lanes as in-path, etc. GM has calibrated and set the thresholds of the system to minimize the effect of these cases. GM believes that the safety benefits provided by these systems outweigh the downside of a rare false activation. Moreover, even if a false activation does occur, the driver can override the system. (Reference information on the ATT_2_GM_CONF disk; in the folder labeled "Q_11")

2013 MY Cadillac ATS without FSRACC/ACC/CIB:

A GM record search did not show any allegations of unexpected or unwanted braking on the 2013 MY Cadillac ATS without the FSRACC/ACC/CIB system.

FSRACC/ACC/CIB System Functions, Faults, Warnings and Driver Control:

In the subject and peer vehicles, when a CIB event occurs, the rear brake lights of the vehicle are designed to illuminate, alerting any following vehicles that the vehicle is braking. The driver is also warned of the event via audible alert, visual telltale (flashing red light/LED) warning lights on the windshield and, in vehicles so equipped, a haptic alert in the driver's seat.

In the event of a hardware/software fault of the driver assistance system, the ACC or FSRACC and CIB system is designed to inform the driver, disable functionality and allow the driver to operate the vehicle normally. The system as designed, will set DTC codes and command a Driver Information Center (DIC) warning message so that the driver is aware the system needs to be serviced (reference, Q10 on the ATT_2_GM_CONF disk; in the folder labeled "Q_10_F"). Additionally, in the case of a malfunction of the driver assistance system, the "green" car indicator light will not illuminate if the system does not detect another vehicle ahead or the system is not on/functioning.

The CIB system can be customized via a driver menu option. The owner's manual details the settings in the Vehicle Personalization section and subsection titled Auto Collision Preparation. The driver can select from one of three settings;

- Off: This feature setting will turn off all Forward Collision Alert and Automatic Braking capabilities of the Auto Collision Preparation feature.
- Alert and Brake: With this feature setting both Forward Collision Alert as well as the Automatic Braking capability of the Auto Collision Preparation feature are available.
- Alert: This feature setting disables most automatic braking functions of the Auto Collision Preparation feature. Some last-second automatic braking capability is still provided with the Alert setting, but it is much less likely to be triggered by most driving conditions, when compared with the "Alert and Brake" setting.

Additionally, changing the FCA timing with the collision alert/following-gap button on the steering wheel (to Far, Medium, or Near), automatically changes the "following-gap" setting for the Adaptive Cruise Control (ACC) feature. The vehicle owner's manuals contain details regarding CIB and FCA system customization features.

Additionally, by system design, the driver can override autonomous braking events with typical driver inputs such as steering, braking and acceleration which cancel autonomous braking. These specific driver actions are explained in detail in response to Q10 on the "ATT_2_GM_CONF" disk; in the folder labeled "Q_10".

Summary

GM does not believe there is an unreasonable risk to safety created by the "driver assistance systems" on the subject 2014 MY Chevrolet Impala E and peer 2013 MY Cadillac ATS vehicles. The subject system is a safety feature that when operating to design intent, applies the brakes autonomously under various circumstances to mitigate a potential collision. The system is operating to intended design. Some drivers may find this autonomous application of brakes to be unexpected, undesired or startling. However, the driver can override the autonomous braking with typical driver inputs such as steering, braking and acceleration which cancel autonomous braking. The 2014 MY Chevrolet Impala E and the 2013 MY Cadillac ATS, both equipped with the driver assistance system, have received a "Superior" rating from the IIHS for front crash prevention.

GM continues to investigate the allegations of unexpected or unwanted braking incidents on 2014 MY Chevrolet Impala E vehicles without the subject system (FSRACC/ACC/CIB).

* * *

General Motors requested assistance and documents from suppliers in responding to items 8 and 10. 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 General Motors LLC (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;
- c. 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