GENERAL MOTORS LLC
Global Interior and Safety Center

December 14, 2012

Mr. Frank Borris, Director
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave, SE, Room W45-302
Washington, DC 20590

N120180

NVS-212eer

EA12-004

Dear Mr. Borris:

This letter is General Motors' (GM) partial response to your Engineering Analysis (EA), received on October 18, 2012, regarding allegations of driver door module (DDM) fires in model year (MY) 2005-2007 SAAB 9-7x and MY 2006-2007 Chevrolet Trailblazer, GMC Envoy, Buick Rainier, and Isuzu Ascender (GMT360/370) vehicles manufactured by General Motors LLC for sale or lease in the United States.

As agreed upon by Scott Yon in an email dated November 12, 2012, this final partial response contains the responsive information to request numbers 2-6, 8-13, 16, 18 and 19. Unless otherwise noted, it does not include data or records previously provided in GM's response to PE12-003 sent April 20, 2012. However, reports and claims that were submitted with the PE12-003 are counted in any rate calculations.

Isuzu Motors Limited (Isuzu) has provided responses to some of the requests where they had applicable information to provide. Isuzu's letter and responsive documents may be found on the disk ATT_1_GM.

Saab Automobile AB (Saab) was requested to provide responses to some of the requests. SAAB warranty data was provided and this is included in the requested "WARRANTY DATA" file. The information pertaining to the MY 2005-2007 Saab 9-7x that GM possesses is included as well.

Your requests and our corresponding replies are as follows:

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;**
   b. **Field reports, including dealer field reports;**
   c. **Reports involving an 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 component, 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 "c through 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.

Table 2-1 below summarizes records that may relate to the alleged defect in the subject vehicles. GM has organized the records by the GM file number within each attachment. Refer to access database "Q_03_REQUEST NUMBER TWO DATA" for categories prescribed by the NHTSA.

Type of Report	GM Reports	Subcategories			
		Corresponding to NHTSA Reports	Number with Property Damage	Number with Injuries	Number with Fatalities
Owner Reports	332	40	1	3	0
Field Reports	28	1	0	0	0
Not-In-Suit Claims	86	13	1	5	0
Subrogation Claims	9	1	1	0	0
Third Party Arbitration Proceedings	0	0	0	0	0
Product Liability Lawsuits	0	0	0	0	0
Total Reports (Including Duplicates)	455	55	3	8	0
Total Vehicles with Reports (Unique VIN)	372	41	2	6	0

TABLE 2-1: REPORT CLASSIFICATION – RECORDS THAT MAY RELATE TO THE ALLEGED DEFECT

The sources of the requested information and the last date the searches were conducted are in Table 2-2 below. Reports that GM already provided in PE12-003 are not included in Table 2-1. GM searched its available records for SAAB and Isuzu data. Note that Table 2-1 includes any responsive SAAB and Isuzu reports in GM's

possession. Isuzu provided additional information which can be found in ATT_1_GM. As of December 10, 2012, SAAB has not provided any reports as requested in question 2.

In response to requests 2c-2f, GM reviewed the incidents with their associated non-privileged records that may have been related to the alleged defect. GM is including those that may be related. GM is providing those non-privileged records and associated documentation that were reviewed in making that assessment which speak for themselves and may contain information regarding 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.

Source System	Last Date Gathered
Customer Assistance Center	10/22/12 to 11/1/12
Technical Assistance Center	10/22/12
Field Information Network Database (FIND)	10/25/12
Field Product Report Database (FPRD)	10/26/12
Company Vehicle Evaluation Program (CVEP)	10/24/12
Captured Test Fleet (CTF)	10/24/12
Early Quality Feedback (EQF)	10/24/12
Legal/Employee Self Insured Services (ESIS)/Product Liability Claims/Lawsuits	10/25/12

TABLE 2-2: DATA SOURCES

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), 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. Whether a fire and/or thermal event is alleged;
j. Whether a crash is alleged;
k. Whether property damage is alleged;
l. Number of alleged injuries, if any;
m. Number of alleged fatalities, if any;
n. Whether GM, or a GM dealer, assessed whether a fire and/or thermal event either occurred, or did not occur in the subject component; and,
o. If GM, or a GM dealer, assessed whether a fire occurred or did not occur, state GM's assessment and GM's reason for the assessment.

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

The requested information for subparts "a" through "m" is provided on the ATT_1_GM disk; folder labeled "Q_03". Refer to the Microsoft Access 2010 file labeled "Q_03_REQUEST NUMBER TWO DATA".

An assessment, if any, would be contained in the documents responsive to request 4. Some incident reports may not contain sufficient reliable information to accurately assess cause.

4. **Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.), describe the method GM used for organizing the documents, and the criteria GM used to determine whether a fire and/or thermal event occurred, which includes the definition(s) used to describe these events.**

   Copies of the records 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 records by the GM file number within each attachment.

   In answer to subpart 3.i., GM used the definition of fire as given in 49CFR 579.4 in an attempt to determine whether or not a fire and/or thermal event was alleged. All available documents were read with this definition in mind when making this determination. Refer to the column marked "49 CFR 579_4 definition of fire" in the Microsoft Access file labeled "Q_03_REQUEST NUMBER TWO DATA".

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, which included the replacement of the subject component in the subject vehicles, regardless of the reason for the replacement: 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, recall, 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 or replacement 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;
h. Problem code;
i. Replacement part number(s) and description(s);
j. Whether the claim occurred subsequent to a recall repair;
k. Concern stated by customer;
l. Comment, if any, by dealer/technician relating to claim and/or repair or replacement m. Whether GM, or a GM dealer, assessed whether a fire and/or thermal event either occurred, or did not occur in the subject component; and
n. If GM, or a GM dealer, assessed whether a fire occurred or did not occur, state GM's assessment and GM's reason for the assessment.

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

For the subject vehicles, regular warranty and extended service contract claims (where available) for the replacement of the DDM regardless of the reason for the replacement, are summarized by MY in Table 5-1. Those claims were reviewed and those that had evidence of a fire per 49CFR 579.4, are designated by an "X" in a column labeled "Evidence of a fire per 49CFR 579.4" in the "WARRANTY DATA" file.

MIC extended service contract claims with a replacement of the DDM are summarized by MY in Table 5-2. The UWC extended service contract claims with a replacement of the DDM are summarized by MY in Table 5-3.

MAKE	MODEL	2005MY	2006MY	2007MY	TOTAL
Chevrolet	Trailblazer/EXT	N/A	6,442	5,445	11,887
GMC	Envoy/XL	N/A	2,344	1,361	3,705
Buick	Rainier	N/A	291	141	432
SAAB	9-7x	2	322	484	808
Isuzu	Ascender	N/A	161	48	209
TOTAL	---	2	9,560	7,479	17,041

TABLE 5-1: REGULAR AND GOODWILL WARRANTY CLAIMS FOR THE REPLACEMENT OF THE DDM REGARDLESS OF THE REASON FOR THE REPLACEMENT IN THE SUBJECT VEHICLES

MAKE	MODEL	2005MY	2006MY	2007MY	TOTAL
Chevrolet	Trailblazer/EXT	N/A	1,363	1,062	2,425
GMC	Envoy/XL	N/A	559	286	845
Buick	Rainier	N/A	36	16	52
SAAB	9-7x	3	5	3	11
Isuzu	Ascender	N/A	5	0	5
TOTAL	---	3	1,968	1,367	3,338

TABLE 5-2: MIC EXTENDED SERVICE CONTRACT CLAIMS FOR THE REPLACEMENT OF THE DDM REGARDLESS OF THE REASON FOR THE REPLACEMENT IN THE SUBJECT VEHICLES

MAKE	MODEL	2005MY	2006MY	2007MY	TOTAL
CHEVROLET	Trailblazer/EXT	N/A	10	5	15
GMC	ENVOY/XL	N/A	5	1	6
BUICK	RAINIER	N/A	0	0	0
SAAB	9-7X	0	0	0	0
ISUZU	ASCENDER	N/A	0	0	0
TOTAL	---	0	15	6	21

TABLE 5-3: UWC EXTENDED SERVICE CONTRACT CLAIMS FOR THE REPLACEMENT OF THE DDM REGARDLESS OF THE REASON FOR THE REPLACEMENT IN THE SUBJECT VEHICLES

SOURCE SYSTEM	LAST DATE GATHERED
GART - regular warranty	10/22/12
MIC – extended service contract claims	10/25/12
UWC – extended service contract claims	10/22/12

TABLE 5-4: DATA SOURCES

GM searched the GM Global Analysis and Reporting Tool (GART-regular warranty), the Motors Insurance Corporation (MIC-extended service contract claims) and the Universal Warranty Corporation (UWC-extended service contract claims) databases to collect the warranty data for this response. SAAB and Isuzu were also requested to provide the responsive warranty data for their vehicles. All of this warranty information is contained in the "Q_05_WARRANTY DATA" file.

GM's warranty database does not contain the following information: vehicle owner's name and telephone number. In response to requests 5k and 5l, GM is providing all available verbatim text. The verbatim text are optional fields in the GM warranty system for the dealer to enter any additional comments that may be applicable to the warranty claim. The verbatim text 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 service personnel may not consistently use the appropriate labor and trouble codes. Warranty numbers represent claims by our dealers for reimbursement for parts and labor costs incurred in performing warranty service for our customers.

For request 5j, none of the warranty claims occurred subsequent to a recall repair as the recall bulletin has not been released as of this writing.

In response to requests 5l and 5n, GM's investigation of the alleged defect has not included an assessment of the cause(s) of each incident responsive to request 5. Some incident reports may not contain sufficient reliable information to accurately assess cause.

A summary of warranty claims which included the replacement of the subject component in the subject vehicles, regardless of the reason for the replacement are provided on the ATT_1_GM disk; folder labeled "Q_05": refer to the Microsoft Access 2010 file labeled "Q_05_WARRANTY DATA".

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 claims provided in this response, and or to the alleged defect in the subject vehicles. Describe the process and or criteria GM used to determine whether or not a fire and/or thermal event occurred in connection with the claim, and the definition(s) GM used to distinguish a fire from a thermal event. 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.**

The GM GART-regular warranty database and the MIC extended service contract claims database were searched using the labor code N2117 - Switch-Switch Module, Front Door-Left-Replace. Claims that contained this labor code are contained in Tables 5-1 and 5-2, even if they were provided for PE12-003. UWC does not use labor codes or trouble codes. SAAB and Isuzu were both asked to provide claims for the replacement of the driver door module. All claims are contained in ATT_1_GM disk; folder labeled "Q_5".

The MY 2006 & 2007 Chevrolet Trailblazer and GMC Envoy vehicles are covered by a bumper-to-bumper new vehicle limited warranty for 3 years or 36,000 miles, whichever occurs first. The MY 2005, 2006 & 2007 Saab 9-7x and the MY 2006 & 2007 Buick Rainier vehicles are covered by a bumper-to-bumper new vehicle limited warranty for 4 years or 50,000 miles, whichever occurs first. The MY 2006 & 2007 Isuzu Ascender vehicles are covered by a new vehicle limited warranty for 3 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 on customer's preference, up to 7 years from the date of purchase or up to a total of 100,000 vehicle miles.

The number of extended service contracts on the subject vehicles that have been sold by MIC as of October 25, 2012, and UWC as of October 22, 2012, regardless of status (in-force, expired, cancelled) are contained in Tables 6-4 and 6-5.

MAKE	MODEL	2005MY	2006MY	2007MY	TOTAL
Chevrolet	Trailblazer/EXT	N/A	32,823	25,208	58,031
GMC	Envoy/XL	N/A	16,513	9,352	25865
Buick	Rainier	N/A	1,600	674	2,274
SAAB	9-7x	79	385	387	851
Isuzu	Ascender	N/A	100	56	156
TOTAL	---	79	51,421	35,677	87,177

TABLE 6-4: SUBJECT VEHICLES - MIC EXTENDED SERVICE COVERAGE CONTRACTS SOLD (REGARDLESS OF STATUS; IN-FORCE, EXPIRED, CANCELLED)

MAKE	MODEL	2005MY	2006MY	2007MY	TOTAL
Chevrolet	Trailblazer/EXT	N/A	3,196	1,640	4,836
GMC	Envoy/XL	N/A	1,672	640	2,312
Buick	Rainier	N/A	279	76	355
SAAB	9-7x	44	115	107	266
Isuzu	Ascender	N/A	22	12	34
TOTAL	---	44	5,284	2,475	7,803

TABLE 6-5: SUBJECT VEHICLES - UWC EXTENDED SERVICE COVERAGE CONTRACTS SOLD (REGARDLESS OF STATUS; IN-FORCE, EXPIRED, CANCELLED)

8. **Describe in detail, and provide all available information, either in draft or final form, regarding the remedy repair procedure for recall 12V-406, and discuss in detail any alternate plans or procedures GM has considered or may be considering or evaluating as a potential remedy. For any remedy, either actual or under consideration, that involves a repair, rework, or other rectification (as opposed to a replacement) of the existing or original equipment DDM (such as reworking the printed circuit board to protect sensitive, exposed, or vulnerable areas), provide the testing and evaluation GM relied upon to conclude the repair could be adequately performed by a repair technician.**

Three alternatives were considered to address the condition. First, replacing the module top cover with a revised top cover which incorporated a water dam on the outboard side of the switch was considered as an alternative to replacing the switches. In order to determine if this proposal would be effective, a test was conducted with water containing ultraviolet dye to determine the leak path and effectiveness of the change. The conclusion of the testing was that the water was not entering in the switch from the outboard side of the switch but through the button openings on the top of the DDM so the proposal was dropped because the dam did not prevent liquid from entering the button openings. A copy of these test results are available on ATT_2_GM_CONF; folder labeled "Q_08"; file name GMT360.ppt.

Second, replacement of the DDM was also considered. This will be done in cases where the DDM is found by the service technician to be inoperative as described in the bulletin.

Vehicles with the Driver Door Module still functioning properly will be serviced using the service bulletin (draft) provided in the November 26, 2012, submission; ATT_1_GM disk; folder labeled "Q_07". The testing data that GM relied upon to conclude the repair could be adequately performed by a repair technician may be found in ATT_3_FORESITE_CONF disk; folder labeled "Q_08".

During the validation of the repair procedure, there was one instance where the repair was not properly performed. There was a lack of protective coating coverage on the pins due to improper application of the coating by the service technician. In order to ensure adequate coverage of the coating, the color of the coating was changed to a contrasting color with the circuit board. In addition, the applicator was changed from a syringe to a tube to provide better and more consistent coverage. This repair will be used in cases where the DDM is found to be functional by the service technician.

9. **Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to the alleged defect in the subject vehicles, and/or GM's decision to conduct recall 12V-406, including any tests which relate to the subject component's susceptibility to salt/foreign substance contamination and the short versus long term exposure effects of such contamination. 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. **The specific portion(s) of the action that involved or discussed exposure to salt and/or other foreign substances;**
   f. **Engineering group(s)/supplier(s) responsible for designing and for conducting the action;**
   g. **A brief summary of the assessments, findings and/or conclusions resulting from the action, including those specific to the exposure to salt and/or other foreign substances; and**
   h. **Whether GM considered or relied upon the assessments, findings and/or conclusions of the actions in deciding to recall some of the subject vehicles (i.e., to conduct a regional recall action) and not others pursuant to recall 12V-406.**

   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.

   Since GM's original response (PE12-003) on April 20, 2012, and GM's presentation sent to the NHTSA on August 24, 2012, one action has been identified and is described as follows:

Action 9-A: Conduct Internal Investigation
Start Date: 5/26/11
End Date: Ongoing
Engineering Group: GM
Attachments: ATT_1_GM disk; folder labeled "Q_09"
ATT_2_GM_Conf disk; folder labeled "Q_09_CONF"
Description: An Internal Investigation was opened to determine if the issue needed to be brought through the Field Performance Evaluation (FPE) process. Updated searches conducted for CAC, TAC, Field Reports and Owner Reports along with warranty claims and VOQs that may relate to the alleged condition to understand incident rate and effect of condition and whether vehicle was occupied at time.
Summary of Action: A summary of additional reports that could relate to the alleged condition, completed since the April 20, 2012, PE12-003 submission. Presentations made to Internal Investigations and FPE directors.
Relationship to 12V-406: GM considered the assessments in its decision to recall some of the subject vehicles.

10. Describe in detail all sources of electrical power that are available to the DDM both while the subject vehicle's ignition is powered on, and while it is powered off (i.e., the ignition switch is in either the on or the off position or state). For each power source, describe the entire circuit (from the battery to point of ground) and any circuit protection (current or power limiting device) that is in place for the DDM both when the ignition is powered on or off. For each protective device, describe the type (one-time fusible or self-resetting circuit breaker), provide the current and or power rating, provide its location on the vehicle, and state whether or not the device could be replaced by the consumer or service personnel with a device of a higher current or power rating, either intentionally or inadvertently.

There are two sources of power to the DDM. Both sources of power are active while the vehicle is powered on and off and are fed from the under hood battery.

The first source of power comes from the battery, to the rear electrical center under the second row seat, through a 10 amp fuse (circuit 4140) to the DDM. This circuit feeds all of the functions of the DDM except for the power window relay. This is a one-time fuse rated at 10 amps. The second source of power comes from the battery to the rear electrical center under the second row seat, through a 25 amp circuit breaker (circuit 1240). This circuit is fed into the power board only (the bottom board of the DDM) and is used to feed the power window relay contacts. This is a resettable circuit breaker (bi-metal) rated at 25 amps. The entire DDM is grounded through a circuit (1350) that is bolted to sheet metal in the left front kick-pad area of the vehicle.

The owner manuals specify the proper fuse rating/warning information.
However, it is possible for a consumer to replace the 10 amp fuse or the 25 amp breaker with a larger value if they chose to do so.

11. State whether or not a fire or thermal event, as defined in 49 CFR 579.4, can occur in the DDM while the subject vehicle's ignition is powered off (i.e., the ignition switch is in the off position or state). If a fire or thermal event can occur while the ignition is powered off, describe in detail how the fire or thermal event occurs (i.e., the expected cause and origin), including which circuits provide the electrical power, and where specifically the condition leading to the event (electrical short, or component overheating) occurs in the DDM and or it's printed circuit board. And similarly, if a fire or thermal event cannot occur, describe in detail why.

A fire or thermal event can occur with the ignition "off". Based on the review of returned parts, the origin of the fire is predominately on the PCB between pin 7, circuit 4140 (Battery, fed by the 10 amp fuse) and pin 6, circuit 1350 (ground) which may be caused by dendritic growth or other contamination bridge in the DDM. This short circuit can cause overheating of the PCB and/or the DDM plastic housing resulting in pyrolysis and potentially fire.

12. State whether the presence of, or any precursor to, the alleged defect in the DDM can cause the electrically operated windows in the subject vehicle to operate (i.e. to move up or down) by themselves and without any operator or occupant input, and describe in detail the failure mechanism and circumstances that would cause the windows to operate in this uncommanded manner. State whether this can occur when the vehicle's ignition is powered on, when it is powered off, or both. Identify the power source that allows the windows to operate without input when the ignition is powered on, and/or powered off. For each window that could potentially move without operator input, state what would happen if an occupant or person outside the vehicle were to get a body part or appendage trapped between an ascending window and the body of the vehicle. State whether or not the window system can detect such a condition, and if so, if it can take an action (such as reverse the window direction, or interrupt power to the window motor) to prevent or mitigate harm to the entrapped person. For each window that can move unexpectedly as a result of the alleged defect, provide information regarding the force and time duration the force could be exerted on an entrapped person. State whether it would be possible for the electric windows to lower themselves and remain in the lowered state when the vehicle is unoccupied and the ignition switch is in the off position (e.g., in the course of a fire incident, during a rain storm, or when valuables may be present in the vehicle).

Driver Door Control: There are two separate boards on the DDM: the power board and the control board. The control board reads the window switches and sends the window commands to the power board to move the windows. This investigation is focused on the control board. The control board will only operate the windows within the parameters defined by FMVSS 118. It uses the vehicle power mode data (ignition

switch status) and the door ajar switch status to determine when window operation would be allowed.

Input Failure Mode: It is improbable but possible for the driver window to move with the key out of the ignition, however, it would require multiple failure modes, i.e. the window switch input to indicate that a window switch is active (this is an analog input with a specific voltage range for each window switch state) and the microprocessor to receive the wrong power mode from the BCM. In any case the DDM will disable the window in 400ms if a stall is detected and will also disable the window if the output is activated greater than 9.0 seconds. GM is not aware of a failure mode that would cause any passenger window to move with the key out.

Output Failure Mode: It is rare but possible that a short circuit in the DDM between battery feed and the window up/down circuits could cause the driver window to operate without operator or occupant input. In this case, the movement would be independent of ignition key position.

However, if the driver window were to operate in an unintended manner in the up direction it would travel until the window achieves full stall force. The specification for the window regulator stall force is noted below.

Stall Force:
Stall force is measured under ambient conditions using an aged window seal load, with 10.5V at stall measured at the motor terminals.

	GMT360/370
The minimum stall force shall be:	176 N
The maximum stall force shall be:	350 N

This force is in addition to the system forces (seals, etc.).

The Stall Force is measured at a point on top of the glass, approximately over the center of gravity of the door glass. In the claims that were read in response to this inquiry, GM has not found any injuries related to the alleged defect causing a body part or appendage to be trapped between an ascending window and the body of the vehicle.

Theoretically, a short circuit in the DDM between battery feed and the window up/down circuits could cause the driver window to operate without operator or occupant input. In this case, the movement would be independent of ignition key position.

Theoretically, a resistive short circuit to battery on any of the passenger window switch inputs could cause the passenger windows to move up or down without operator or occupant input. In this case, movement would only occur as required by FMVSS 118. In all cases, the passenger (both front and rear) window switches will stop the commanded motion from the driver's door switch.

If an occupant or person outside the vehicle were to get a body part or appendage trapped between an ascending window and the body of the vehicle, the load will be subject to the stall force of the motor (see above) if the failure condition is present.

Under normal conditions, the DDM will de-power the window motor 400 ms after a stall is detected. The subject vehicle's window system does not have an auto reverse feature.

Under the alleged failure condition, when the key is out of the ignition and the vehicle is unoccupied, only the driver window can move uncommanded if any of the conditions above occurred.

13. **State whether the presence of, or any precursor to, the alleged defect in the DDM can cause the electric or central door locking functionality to become disabled, and describe in detail the failure mechanism that causes it to become disabled. State whether or not the subject vehicle door locks automatically lock (intentionally, as a customer convenience/safety feature) during normal vehicle operation (e.g., when the vehicle exceeds 5 MPH, etc.) and describe the specific conditions that cause the doors to auto-lock. State whether or not the auto-locking functionality, if it exists, can be overridden or disabled by the driver or other occupants, describe the steps that would be required to do so, and state the default configuration of the feature as manufactured (is it enabled or disabled). If the central door locking fails or becomes disabled due to the alleged defect, describe in detail the actions an occupant would need to take to unlock the driver's side specifically, and any other locked door. If these actions were ineffective, or if they were unknown to the occupants, or if the driver was unable to perform the actions due to the presence of fire at the door (i.e., the normal egress path), describe what other actions the driver or other occupants would need to take to exit the vehicle. State whether the interior door release lever (the handle the occupant mechanically actuates to open the door when it is unlocked) can override the door lock mechanism through multiple handle operations, either under normal conditions, or in the presence of a DDM failure, or in the presence of a door fire, and if so, state which door(s) this applies to and the number of handle operations needed to unlock the door. State whether the (mechanical) interior door lock release button can unlock the door lock when the DDM has failed, or when the driver's door is on fire, and explain how this is ensured (e.g., due to a mechanical linkage between the door latch and the lock button that cannot be affected by fire). State whether the presence or precursor to the alleged defect in the DDM can cause the doors to lock and or unlock without occupant intent (i.e., uncommanded), and whether this can occur with the ignition on, the ignition off, or both.**

The entire control board (top board of the DDM) is powered through a single battery feed. If that battery feed is removed (either due a blown fuse or an open circuit board trace) the electric door locks on the driver's door will be inoperative, however the door

can be unlocked mechanically by moving the lever above the inside door handle. Note in this case that the other three doors can be electrically unlocked by either using the passenger door unlock switch or the key fob unlock button.

Under normal operating conditions, all doors will electrically lock when the key is in the run position and the shifter is moved out of park and the driver's door will unlock when the shifter is put back into park (factory default condition). This feature can be customized by the operator to unlock all or unlock none of the doors through the driver information center.

If the DDM was failed due to the alleged defect the three passenger doors would lock and unlock with the automatic door locking system but the driver door may not unlock electrically. The driver door could be unlocked mechanically by activating the lever above the inside door handle. In the event that the occupant was not able to access the driver door he would be able to exit the vehicle though another door.

The inside door handle is disabled when the doors are electrically locked. In cases of DDM failure, use of the mechanical lock/unlock toggle followed by use of the door handle lever will override the electric door locks allowing egress. While it cannot be ensured that the plastic components of the door lock mechanism can withstand a fire, there will be significant warning (i.e. smoke, heat, etc.) to the occupant such that they can exit the vehicle before the fire has progressed to the point of significant damage to the mechanical locking mechanism.

Theoretically, it is possible for the DDM to unlock or lock the doors with either the key in or out of the ignition in the presence of the alleged defect if a short circuit occurs in either the door lock inputs or outputs.

16. **Describe in detail the subject component's susceptibility to contamination by salt and/or other foreign substances, and describe in detail the short and long term exposure effects of contamination of the subject component by salt and foreign substances, including GM's assessment of the minimal exposure conditions that can result in the occurrence of a fire or thermal event, as defined in 49 CFR 579.4. Identify, by production number the location in GM's production of each test performed which relates to the subject component's susceptibility to contamination by salt and foreign substances. Explain whether and in what manner the subject component is more susceptible to contamination by salt and foreign substances in the regions where recall 12V-406 was conducted, as opposed to the regions where recall 12V-406 was not conducted. Identify all tests, studies, and analyses which demonstrate that the subject component is more susceptible to contamination in the regions where recall 12V-406 was conducted when compared to the regions where recall 12V-406 was not conducted, and explain how each test, study, or analysis was factored into GM's decision to conduct recall 12V-406.**

General Motors is aware that the use of road salt results in a substantially higher conductivity when combined with water than water alone. This makes driver door modules exposed to salt and water more likely to have the dendrite growth that could eventually result in a short circuit.

GM has not conducted any testing to quantify the short or long term exposure effects of contamination.

18. Furnish GM's assessment of the defect in the subject vehicles which were recalled pursuant to recall 12V-406, 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 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.

The driver power window switch described in this document is an assembly consisting of: the power window switches, the power door lock switch, the heated seat switches (optional content), and supporting electronic circuitry. The module also controls the mirror switches and memory seat switches if applicable.

a. The causal or contributory factor(s);

Fluid with contaminants, particularly road de-icing chemicals, contacts the driver's power window system (DPWS) printed circuit board (PCB) by potentially wicking through the upper/lower housing interface. The proximity of the driver power window switch power and ground traces on top of the PCB are additional contributing factors.

b. The failure mechanism(s);

If excessive fluid enters the DPWS, it has the potential to contact the PCB. The area where short circuits have been observed is between the edge of the PCB and supporting base wall. The presence of fluid with contamination may trigger an electrical/chemical reaction between B+ and ground, which may cause leakage current and over time may result in a faulty circuit condition.

A review of twelve 2006 MY Trailblazer driver power window switch warranty returns conducted in October 2006 determined the modules were malfunctioning due to corroded B+ and ground traces on the PCB. Of the 12 units, 6 showed evidence of excessive current draw resulting in open circuit traces. At the time of that review there was no indication that a thermal event would extend beyond the PCB.

c. The failure mode(s);

The power windows, door locks, window lockout and optional heated seat switches may begin to function intermittently and then become inoperative. Based on the review of warranty parts returned to date, the switch shorts open and becomes non-functional. In rare circumstances, the short circuit may result in an overheating of the PCB and surrounding plastic. In these cases, an odor may be observed. If the short does not open the fuse, the DPWS plastic could continue to heat and smoke may be produced. In exceptionally rare circumstances, heating could continue until the plastic ignites.

d. The risk to motor vehicle safety that it poses;

GM has concluded the following regarding the condition in vehicles that were recalled pursuant to 12V-406:

1. **Review of Warranty Data.** All existing warranty claim verbatim for the replacement of the DDM (labor code N2117 - Switch-Switch Module, Front Door-Left-Replace) were read to determine whether or not they met the definition of "fire" according to 49 CFR 579.4. After reading the verbatim, warranty claims that did not meet the 49 CFR 579.4 definition of "fire" were reviewed to determine if a Customer Code Description or a Problem Code Description was indicative of a "fire" per 49 CFR 579.4 as some warranty claims had no verbatim information. These warranty claims were included in the 49 CFR 579.4 "fire" count as well, unless the codes were more clearly explained by an actual verbatim.

   The following Customer/Problem Code descriptions were used:

CUSTOMER/PROBLEM CODE DESCRIPTION
BLISTERED
FUMES
ODOR
OVERHEATING
SMOKE/STEAM
BURNED
WARPED/WAVEY/WRINKLED
MULTIPLE COMPONENT- WARPED/WAVEY/WRINKLED
WIRE BURNED – INTERNAL HEAT
WIRE BURNED – EXTERNAL HEAT

TABLE 18-1 CUSTOMER/PROBLEM CODES USED

   The predominant failure mode GM has seen in the warranty claims for replacement of the DDM is that the component becomes inoperative or was replaced for other conditions unrelated to the alleged defect (e.g. cosmetic issues). This represents 95.0% of warranty claims. Of the remaining 5.0% of warranty claims that fell within the 49 CFR 579.4 definition of "fire", the majority were limited to odor, smoke and/or melting of the DDM.

2. **Review of GM Reports, Warranty Data and VOQs.** All records (included in request 2 for both PE12-003 and EA12-004) that met the 49 CFR 579.4 definition of "fire" were reviewed to determine if there was an allegation of a fire with flame. For EA12-004, those records are designated by an "X" in the column labeled "Allegation of fire with flame" in the access database "Q_03_REQUEST NUMBER TWO DATA". These records were examined in greater detail by reviewing available information regarding repair orders, warranty records, photos, and in some cases returned parts to determine whether they were consistent with a flame having been present. The result is designated by an "X" in the column labeled "GM review of fire with flame". If the only repair was the replacement of the DDM, the record was not included in this count because a visible flame would have caused damage beyond the DDM. If reports were from someone other than the driver, more details were required on the report in order for it to be included in this count. A similar process was used for VOQs where the customer reported a DDM fire with flame. For example, in one VOQ the customer stated there was a fire, and the part was returned through PIE0212. While the DDM did have some minor melting that would have produced smoke, the damage was not consistent with a flame having been present (VOQ #10450202).

   Using this process to determine the number of GM reports and VOQs that have been determined to involve a "fire with flame", the risk of a fire is 2.9 incidents per 100,000 vehicles per year of exposure. GM is not able to confirm that a fire with flame was present in all cases.

e. What warnings, if any, the operator and other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and

The customer may first observe inoperative switch function. Less common are intermittent or uncommanded switch function. Many customers reported that they noticed an odor or overheated/hot switches. In the event of thermal damage, the module may initially smoke and emit an odor that would alert them to a malfunction.

f. The reports included with this inquiry.

Of the 183 VOQs provided with this inquiry, 120 were from the corrosion states and District of Columbia that are included in recall 12V-406. The VOQ list may be found in ATT_1_GM disk; folder labeled Q_18. A summary of this analysis may be found on ATT_2_GM_CONF disk; folder labeled "Q_18".

When the 120 VOQs were analyzed, the findings were as follows:

VOQ Allegation	Count	Notes
Fire	14	Have word "fire" in the verbatim. Flame was potentially present in 4. The other 10 state fire with no indication it was observed.
Smoke	31	Reported observing smoke related to DDM
Odor	34	Reported odor related to DDM
Melt	2	Reported melted DDM (only observable after DDM removed)
Function/Inop	36	Report only non-functional or intermittent function
Duplicates	2	Reported under another (VOQ 10471727 = 10473138 and 10229743 = 10260600)
Not applicable	1	Based upon verbatim, appears related to window regulator and not DDM (10471509)
Total VOQs	120	

In summary, of the 120 VOQs there are 117 that are potentially related to the alleged condition. Of these, 81 meet the NHTSA definition of a fire as outlined in 49 CFR 579.4. None of the VOQ reports allege the condition extended beyond the vehicle interior.

19. Furnish GM's assessment of the alleged defect in the subject vehicles which were not recalled pursuant to recall 12V-406, 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 other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning;
f. The reports included with this inquiry;
g. Whether it is possible for fluid to enter the driver's door module of the subject vehicles that were not recalled pursuant to recall 12V-406, and if so:
  i) Whether such fluid entry could cause corrosion that could result in a short circuit in the circuit board of the subject component;
  ii) Whether a short circuit in the circuit board of the subject component could cause the power door lock and power window switches to function intermittently, function unintentionally, or become inoperative; and
  iii) Whether a short circuit in the circuit board of the subject component could cause overheating, which could melt components of the door module, producing odor, smoke, or a fire;
h. A description of how the subject component in the subject vehicles which were not recalled pursuant to recall 12V-406 differs from the subject component in the subject vehicles that were recalled;
i. The technical or engineering basis for GM's decision not to recall all of the subject vehicles pursuant to recall 12V-406, including a list of any tests or analyses that were conducted and relied upon by GM in making a decision not to recall all of the subject vehicles pursuant to recall 12V-406, and

identification, by production number of the location in GM's production of each test identified in this subpart;

j. Any non-technical or non-engineering basis for GM's decision not to recall all of the subject vehicles pursuant to recall 12V-406; and

k. All information on how road salt caused the failures in the subject vehicles recalled pursuant to recall 12V-406.

a. The causal or contributory factor(s);

Fluid with contaminants, particularly road de-icing chemicals, contacts the driver's power window system (DPWS) printed circuit board (PCB) by potentially wicking through the upper/lower housing interface. The proximity of the driver power window switch power and ground traces on top of the PCB are additional contributing factors.

b. The failure mechanism(s);

If excessive fluid enters the DPWS, it has the potential to contact the PCB. The area where short circuits have been observed is between the edge of the PCB and supporting base wall. The presence of fluid with contamination may trigger an electrical/chemical reaction between B+ and ground, which may cause leakage current and over time may result in a faulty circuit condition.

A review of twelve MY 2006 Trailblazer driver power window switch warranty returns conducted in October 2006 determined the modules were malfunctioning due to corroded B+ and ground traces on the PCB. Of the 12 units, 6 showed evidence of excessive current draw resulting in open circuit traces. At the time of that review there was no indication that a thermal event would extend beyond the PCB.

c. The failure mode(s);

The power windows, door locks, window lockout and optional heated seat switches may begin to function intermittently and then become inoperative. Based on the review of warranty parts returned to date, the switch shorts open and becomes non-functional. In rare circumstances, the short circuit may result in an overheating of the PCB and surrounding plastic. In these cases, an odor may be observed. If the short does not open the fuse, the DPWS plastic could continue to heat and smoke may be produced. In exceptionally rare circumstances, heating could continue until the plastic ignites.

d. The risk to motor vehicle safety that it poses;

While GM continues to investigate the issue, the following conclusions have been made so far:

1. **Review of Warranty Data.** Using the process described in response 18.d.1. above to code the warranty records for the 49 CFR 579.4 definition of "fire", the predominant failure mode GM has seen in the warranty claims for replacement of the DDM is that the component becomes inoperative or was replaced for other conditions unrelated to the alleged defect (e.g. cosmetic issues). This represents 95.8% of warranty claims. Of the remaining 4.2% of warranty claims

that fell within the 49 CFR 579.4 definition of "fire", the majority were limited to odor, smoke and/or melting of the DDM.

The overall rate of warranty claims for replacement of the DDM in the non-corrosion states is 37% of the rate in the corrosion states. For those that meet the 49 CFR 579.4 definition of "fire", the rate in the non-corrosion states is 31% of the rate in the corrosion states.

2. **Review of GM Reports, Warranty Data and VOQs.** All records (included in request 2 for both PE12-003 and EA12-004) that met the 49 CFR 579.4 definition of "fire" were reviewed to determine if there was an allegation of a fire with flame. For EA12-004, those records are designated by an "X" in the column labeled "Allegation of fire with flame" in the access database "Q_03_REQUEST NUMBER TWO DATA". These records were examined in greater detail by reviewing available information regarding repair orders, warranty records, photos, and in some cases returned parts to determine whether they were consistent with a flame having been present. The result is designated by an "X" in the column labeled "GM review of fire with flame". If the only repair was the replacement of the DDM, the record was not counted because a visible flame would have caused damage beyond the DDM. If reports were from other than the driver, more details were required on the report in order for it to be included in this count. A similar process was used for VOQs where the customer reported a DDM fire or flame.

   Using this process to determine the number of GM reports and VOQs where the customer alleged a "fire" occurred, the risk of a fire in the subject vehicles is 0.6 incidents per 100,000 vehicles per year of exposure. GM is not able to confirm that a fire or flame was present in all cases.

   In addition, the reports provided in response 2, including those from PE12-003 that contained allegations of visible flames indicated that 87% were from those states included in 12V-406 or vehicles that were originally delivered to those states. 12V-406 includes all vehicles originally sold, currently registered or ever registered in those states.

e. What warnings, if any, the operator and other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and

The customer may first observe inoperative switch function. Less common are intermittent or uncommanded switch function. Many customers reported that they noticed an odor or overheated/hot switches. In the event of thermal damage, the module may initially smoke and emit an odor that would alert them to a malfunction.

f. The reports included with this inquiry;

Of the 183 VOQs provided with this inquiry, 63 were from states that were not included in recall 12V-406.

When the 63 VOQs were analyzed, the findings were as follows:

VOQ Allegation	Count	Notes
Fire	9	Have word "fire" in the verbatim. Flame was potentially present in 2. Other 7 state fire with no indication it was observed.
Smoke	13	Reported observing smoke related to DDM
Odor	12	Reported odor related to DDM
Function/Inop	28	Report only non-functional or intermittent function
Not applicable	1	Based upon verbatim, appears related to side mirror control grinding (10228514)
Total	63	

In summary, of the 63 VOQs, 62 are potentially related to the alleged condition. There are 34 that meet the NHTSA definition of a fire as outlined in 49 CFR 579.4. There are no confirmed reports in the VOQs of a thermal incident related to the driver power window switch that extended beyond the vehicle interior in non-corrosion states.

Eight of the VOQs were for vehicles that were originally delivered to corrosion states. These vehicles would have been included in this recall had they already not been repaired with revised parts. Three of the VOQs do not have a VIN, so it was not possible to determine where the vehicle was originally delivered. Refer to the VOQ analysis file on ATT_2_GM_CONF disk; folder labeled "Q_18".

g. Whether it is possible for fluid to enter the driver's door module of the subject vehicles that were not recalled pursuant to recall 12V-406, and if so:

i. Whether such fluid entry could cause corrosion that could result in a short circuit in the circuit board of the subject component;

Entry of fluid with contaminants, particularly road de-icing chemicals could result in a short circuit in the circuit board of the subject component. The short circuit may be the result of dendrite growth or other contamination.

ii. Whether a short circuit in the circuit board of the subject component could cause the power door lock and power window switches to function intermittently, function unintentionally, or become inoperative; and

A short circuit in the circuit board of the subject component could cause the power door lock and power window switches to become inoperative. Less common are intermittent or uncommanded switch function.

iii. Whether a short circuit in the circuit board of the subject component could cause overheating, which could melt components of the door module, producing odor, smoke, or a fire;

A short circuit that has been exposed to contaminants could result in the circuit board of the subject component overheating, which could melt components of the door module, producing odor, smoke or a fire.

h. A description of how the subject component in the subject vehicles which were not recalled pursuant to recall 12V-406 differs from the subject component in the subject vehicles that were recalled;

There are no design differences between the modules in the recalled vehicles and those that are subject to the special coverage. Vehicles in the non-corrosion states do not experience the same level of exposure to de-icing chemicals as vehicles in the corrosion states. This is further evidenced in the overall volume of reports and rates detailed in the warranty analysis.

i. The technical or engineering basis for GM's decision not to recall all of the subject vehicles pursuant to recall 12V-406, including a list of any tests or analyses that were conducted and relied upon by GM in making a decision not to recall all of the subject vehicles pursuant to recall 12V-406, and identification, by production number of the location in GM's production of each test identified in this subpart;

The basis for excluding certain states from recall 12V-406 included an analysis of reports and warranty claims in both corrosion and non-corrosion states as described in responses 18 and 19 above. In addition, it is well recognized that vehicles in the non-corrosion states do not have the same level of exposure to de-icing chemicals as vehicles in the corrosion states.

j. Any non-technical or non-engineering basis for GM's decision not to recall all of the subject vehicles pursuant to recall 12V-406; and

GM is including in the safety recall all vehicles that were originally sold, currently registered or ever registered in corrosion states. Therefore this increases the likelihood that a vehicle that spent time in a corrosion state will be included in the safety recall.

Customers in the non-corrosion states are included in the special coverage and will be made aware of the condition at the same time as the safety recall letters are sent out. In the rare instances where a customer may experience a DDM malfunction in a non-corrosion state, awareness of the condition will encourage them to take the vehicle to the dealer, even if there is no outward sign of the condition.

The vast majority of customers in non-corrosion states will not have this issue due to the low level of exposure to de-icing chemicals.

k. All information on how road salt caused the failures in the subject vehicles recalled pursuant to recall 12V-406.

General Motors is aware that the use of road salt results in a substantially higher conductivity when combined with water than water alone. This makes driver door modules exposed to salt and water more likely to have the dendrite growth that could eventually result in a short circuit as stated in 19 f. and i.

In summary, General Motors is continuing to investigate the alleged defect in the non-corrosion states including obtaining additional DDMs for analysis. However, GM's conclusion to date is that it does not present an unreasonable risk to motor vehicle safety for the following reasons:

- Vehicles in non-corrosion states have a much lower exposure to de-icing chemicals.
- Because of the lower exposure to de-icing chemicals, the overall rate of fires in the DDM is low, as described in 18D and 19D.
- 95% of the DDM warranty replacements in all states are related to the component being inoperative or other conditions unrelated to the alleged defect (e.g. cosmetic issues).
- The Driver Door Modules that demonstrate the alleged condition will likely provide warning signs prior to failure.
- General Motors will be sending a letter to all customers in the non-corrosion states, informing them of an on-going safety recall and advising them of symptoms, risks and warnings and further action as appropriate.
- GM's experience has been that increasing the level of consumer awareness of the condition results in a corresponding increase in the rate of repair.

* * *

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

This response is based on searches of GM locations where documents determined to be responsive to your request would ordinarily be found. As a result, the scope of this search did not include, nor could it reasonably include, "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 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,

M. Carmen Benavides, Director
Product Investigations and Safety Regulations

Attachments

November 6, 2012 DET-12-156

Linda Matusz
Product Investigations
General Motors LLC
30001 Van Dyke
Warren, MI 48090-9020

SUBJECT: NHTSA-IR: EA12-004 (GM investigation N120180)

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. Date of manufacture;
   f. Date warranty coverage commenced;
   g. The state in the United States where the vehicle was originally sold or leased (or delivered for sale or lease)

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

   ISUZU RESPONSE:
   Please see data file: "Ascender_PRODUCTION DATA.xlsx"
   There are two worksheets in this file.
   PRODUCTION DATA – US = GMT370 / Isuzu 7-Pass Ascender
   PRODUCTION DATA – UT = GMT360 / Isuzu 5-Pass Ascender

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;
   b. Field reports, including dealer field reports;
   c. Reports involving an 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 component, 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.

   ISUZU RESPONSE:
   a. Consumer Complaints = 96
   b. Field Reports = 0
   c. Reports = 0
   d. Property Damage Claims = 0
   e. Third-party arbitration = 0
   f. Lawsuits = 0

   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 "c through 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.

ISUZU RESPONSE: NO COMMENT

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), 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. Whether a fire and/or thermal event is alleged;
j. Whether a crash is alleged;
k. Whether property damage is alleged;
l. Number of alleged injuries, if any;
m. Number of alleged fatalities, if any;
n. Whether GM, or a GM dealer, assessed whether a fire and/or thermal event either occurred, or did not occur in the subject component; and,
o. If GM, or a GM dealer, assessed whether a fire occurred or did not occur, state GM's assessment and GM's reason for the assessment.

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

ISUZU RESPONSE:
Please see data file: "Ascender_REQUEST NUMBER TWO DATA.xlsx"

4. Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.), describe the method GM used for organizing the documents, and the criteria GM used to determine whether a fire and/or thermal event occurred, which includes the definition(s) used to describe these events.

ISUZU RESPONSE:
Consumer Complaints:
Please see file "Ascender_CATS CASES.pdf" for all customer complaints.

We performed a text string search of complaints in our CATS (Customer Assistance Tracking System). The electronic search was for series, model year, and APEC code (electrical), and manual review.

If customer indicated they experienced a thermal event, fire, saw smoke, crashed, property damaged occurred the complaint was marked as alleged. If the CATS report indicated an Isuzu dealer/tech mentioned the same, it was marked as assessed. Otherwise, no Isuzu assessment was made.

Field Reports: No documents

We performed a text string search of cases in our Technical Assistance Line database. The electronic search was for the words "melted", "smoke", or "fire" involving 2006 and 2007 US and UT models. There were **NO** cases that conformed to our search.

Reports, Property Damage Claims, Third Party arbitration, Lawsuits: No Documents

In our Legal Department's files/database, we do not have any death, injury or property damage suits or claims making the "alleged defect" as defined by NHTSA. Our Legal Department search also revealed **NO** reports, notices, claims, suits or third party arbitrations relating to the Alleged Defect as described in NHTSA's paragraph 2.c, d, e and f below (and not simply no suits or claims).

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, which included the replacement of the subject component in the subject vehicles, regardless of the reason for the replacement: 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, recall, 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 or replacement 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;
h. Problem code;
i. Replacement part number(s) and description(s);
j. Whether the claim occurred subsequent to a recall repair;
k. Concern stated by customer;
l. Comment, if any, by dealer/technician relating to claim and/or repair or replacement m. Whether GM, or a GM dealer, assessed whether a fire and/or thermal event either occurred, or did not occur in the subject component; and
n. If GM, or a GM dealer, assessed whether a fire occurred or did not occur, state GM's assessment and GM's reason for the assessment.

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

ISUZU RESPONSE:

Isuzu is providing data as a total.
2006 GMT360 = 111 repairs
2007 GMT 360 = 47 repairs
2006 GMT 370 = 50

Please see data file: "Ascender_WARRANTY DATA.xlsx"

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 claims provided in this response, and or to the alleged defect in the subject vehicles. Describe the process and or criteria GM used to determine whether or not a fire and/or thermal event occurred in connection with the claim, and the definition(s) GM used to distinguish a fire from a thermal event. 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.

ISUZU RESPONSE:

- Search Criteria: Based on model year, series, and labor operation code 04N2117D.
- Labor Operation Code: 04N2117D – Switch Module Front Door (Drivers Door Module)

- Trouble codes: See Ascender_WARRANTY DATA_Trouble codes.pdf
- Isuzu warranty system does not retain fire or thermal event information. Therefore, no determination is made.
- Isuzu Ascenders Warranty
  7-Year / 75,000-Mile Powertrain Limited Warranty
  3-Year / 50,000-Mile Basic Limited Warranty
  6-Year / 100,000-Mile Perforation from Corrosion Limited Warranty
- Extended Warranty Coverage
  Isuzu did not sell any extended warranty plans for the subject vehicles.

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, bulletins, advisories, informational documents, training documents, recall related documents (and specifically 12V-406 related 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.

ISUZU RESPONSE:

Isuzu does not have any documents to post at this time. Within the next 120 days, Isuzu does plan to post a bulletin to our service facilities in regards to 12V-406, but no draft is available at this time. This bulletin would be drafted from GM's own bulletin.

Questions 8. Thru 19.

ISUZU RESPONSE:

For questions [8] thru [19], Isuzu is not able to respond

If you have any questions or require additional information, please contact me at 734-582-9262 or Scott Crafard of my staff at 734-582-9250.

Sincerely,

Jeffery A. Marsee
Chief Representative
Emissions and Safety
Isuzu Manufacturing Services of America, Inc.

Enclosures

CC: Murono ISZJ RL3