



GENERAL MOTORS LLC
Global Interior and Safety Center

December 9, 2011

Frank Borris, Director
Office of Defects Investigation Enforcement
National Highway Traffic Safety Administration
1200 New Jersey Ave., SE, Room W46-302
Washington, DC 20590

N110299

NVS-213hkb
EA11-003

Dear Mr. Borris:

This letter is General Motors' (GM) response to your request for peer vehicle information from GM received on October 11, 2011, as part of your investigation of complaints of high-pressure fuel pump failure that resulted in loss of motive power or engine stall with no restart in certain model year ("MY") 2009 through 2012 Volkswagen and Audi vehicles equipped with common rail direct injection diesel engines.

Per GM's discussion with Jeff Quandt of the NHTSA on October 19, 2011, and an email dated October 21, 2011, GM is providing reports that may be related to the subject component: high-pressure fuel pump ("HPFP") assemblies manufactured for use as original equipment or service parts in any or all of the peer vehicles. The GM peer vehicles for which GM is providing information are the 2009-2012 MY Chevrolet Silverado and GMC Sierra heavy duty pickup trucks and Chevrolet Express and GMC Savana full-size vans built with Duramax 6.6L engines (engine RPOs LMM, LML and LGH) manufactured for sale or lease in the United States. Requests 1 and 13 also include all 2007-2012 vehicles using the subject HPFP, thus the addition of the Chevrolet Kodiak and GMC TopKick medium duty trucks.

GM understands that there is no alleged defect with respect to any of its vehicles and is providing this information as part of the agency's investigation of another manufacturer's vehicles.

Your requests and our corresponding replies are as follows:

1. **State, by peer vehicle model year, model, and engine the number of peer vehicles GM has manufactured for sale or lease in the United States. Separately, for each peer vehicle manufactured to date by GM, state the following:**
 - a. **Vehicle identification number (VIN);**
 - b. **Model;**



- c. Model Year;
- d. Date of manufacture;
- e. Date warranty coverage commenced; and
- f. 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 2007, or a compatible format, entitled "PRODUCTION DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

General Motors production information is retrieved through the Global Analysis Reporting Tool database (GART). The available information regarding the number of peer vehicles produced for sale or lease in the United States for the 2007 - 2012 MY are shown in Table 1-1.

MAKE	MODEL	2007MY	2008MY	2009MY	2010MY	2011MY	2012MY	TOTAL
Chevrolet	Express	4,763	4,490	4,522	3,887	3,515	466	21,643
GMC	Savana	962	888	579	315	613	85	3,442
Chevrolet	Silverado HD	112,382	76,625	33,577	11,410	56,058	6,488	296,540
GMC	Sierra HD	41,561	33,160	13,795	4,324	25,600	3,699	122,139
Chevrolet	Kodiak	8,312	6,382	3,303	0	0	0	17,997
GMC	TopKick	4,668	3,132	2,010	0	0	0	9,810
Total		172,648	124,677	57,786	19,936	85,786	10,738	471,571

TABLE 1-1 - GM PEER VEHICLE PRODUCTION

The GM production information requested in 1 a-f is provided on the "ATT_1_GM" disk in the folder labeled "Q_01"; refer to the Microsoft Access 2007 file labeled, "Q_01_PRODUCTION DATA" for the 2007-2012 MY peer vehicles.

2. State, by model 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, instances of the subject condition in the peer vehicles; including subtotals for the numbers alleging subject component failure and the numbers alleging engine stall occurred:
 - 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 peer 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.

Table 2-1 summarizes records that may relate to the subject condition in each of the subject peer vehicles. The search for responsive information for this request included all the peer vehicle model years, 2009-2012 with diesel engine RPO codes of LMM, LML and LGH. There were no reports involving a crash, no third-party arbitration proceedings or lawsuits related to the subject condition. 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.

Category	Model Year	Model	Total Q02	Component Failure	Stall
Owner Report	2011	GMC Sierra HD	1	1	0
Owner Report	2011	Chevrolet Silverado HD	1	1	1
Field Report	2009	Chevrolet Express	19	4	9
Field Report	2010	Chevrolet Express	3	0	2
Field Report	2011	Chevrolet Express	2	2	0
Field Report	2009	GMC Sierra HD	36	6	16
Field Report	2010	GMC Sierra HD	9	2	1
Field Report	2011	GMC Sierra HD	49	16	10
Field Report	2009	Chevrolet Silverado HD	62	7	25
Field Report	2010	Chevrolet Silverado HD	14	1	2
Field Report	2011	Chevrolet Silverado HD	99	30	30
Field Report	2012	Chevrolet Silverado HD	1	0	0
		Total	296	70	96

TABLE 2-1: REPORTS THAT MAY RELATE TO THE SUBJECT CONDITION

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

SOURCE SYSTEM	LAST DATE GATHERED
Customer Assistance Center	27OCT11
Technical Assistance Center	20OCT11
Field Information Network Database (FIND)	14 NOV11
Field Product Report Database (FPRD)	24OCT11
Company Vehicle Evaluation Program (CVEP)	21OCT11
Captured Test Fleet (CTF)	21OCT11
Early Quality Feedback (EQF)	21OCT11
Legal/Employee Self Insured Services (ESIS)/Product Liability Claims/Lawsuits	25OCT11

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:
- GM file number or other identifier used;
 - The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
 - Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
 - Vehicle's VIN;
 - Vehicle's model and model year;
 - Vehicle's mileage at time the subject condition was observed or occurred (incident);
 - Incident date;
 - Report or claim date;
 - Whether failure or malfunction of the subject component is alleged;
 - Whether fuel quality concerns are cited as an actual or potential issue;
 - Whether an engine stall is alleged;
 - Whether a crash is alleged;
 - Whether property damage is alleged;
 - Number of alleged injuries, if any; and
 - Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2007, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

The requested information is provided on the "ATT_1_GM" disk; folder labeled "Q_03". Refer to the Microsoft Access 2007 file labeled "Q_03_REQUEST NUMBER TWO DATA".

- 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.) and describe the method GM used for organizing the documents.**

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.

- 5. State, by peer vehicle model year, model, and engine the number of each of the following, received by GM, or of which GM is otherwise aware, which relate to, or may relate to, acknowledged incidents of misfuelling in the peer vehicles (e.g., requests for technical assistance related to repair procedures):**
 - a. Consumer reports, 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 peer vehicle, property damage claims, consumer complaints, or field reports; and**
 - d. Property damage claims.**

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).

Table 5-1 summarizes records that may relate to acknowledged incidents of misfuelling in each of the subject peer vehicles.

Category	Model Year	Model	Engine Code	Total Q05
Field Report	2009	Chevrolet Express	LMM	1
Field Report	2009	GMC Sierra HD	LMM	1
Field Report	2010	GMC Sierra HD	LMM	1
Field Report	2011	GMC Sierra HD	LML	5
Field Report	2009	Chevrolet Silverado HD	LMM	3
Field Report	2010	Chevrolet Silverado HD	LMM	1
Field Report	2011	Chevrolet Silverado HD	LML	5
Field Report	2011	Chevrolet Silverado HD	LGH	1
Field Report	2012	Chevrolet Silverado HD	LML	1
Total				19

TABLE 5-1: REPORTS THAT MAY RELATE TO MISFUELLING

6. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 5, state the following information:

- a. GM 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 model and model year;
- f. Vehicle's mileage at time of incident;
- g. Misfuelling incident date;
- h. Report or claim date;
- i. Whether failure or malfunction of the subject component is alleged;
- j. Whether an engine stall is alleged;
- k. Whether a crash is alleged;
- l. Whether property damage is alleged;
- m. Number of alleged injuries, if any; and
- n. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2007, or a compatible format, entitled "MISFUELLING DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

The requested information is provided on the ATT_1_GM disk; folder labeled "Q_06". Refer to the Microsoft Access 2007 file labeled "Q_06_MISFUELLING DATA".

- 7. Produce copies of all documents related to each item within the scope of Request No. 5. 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 Table 5-1 are embedded in the file provided in "ATT_1_GM" disk; folder labeled "Q_06"; refer to the Microsoft Access file labeled "Q_06_MISFUELLING DATA". GM has organized the records by the GM file number within each attachment.

- 8. State, by model, engine and model year the number of the following categories of claims, collectively, that have been paid by GM to date which relate to repair or replacement of the subject component in the 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 claim number;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. VIN;
- d. Repair date;
- e. Vehicle mileage at time of repair;
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number;
- h. Problem code;
- i. Replacement part number(s) and description(s);
- j. Concern stated by customer;
- k. Cause and correction of concern;
- l. Comment, if any, by dealer/technician relating to claim and/or repair;
- m. State whether there is a claim for towing expenses associated with the repair (i.e., filed within 5 days before or after the claim repair date); and
- n. GM's assessment of whether the incident involved an engine stall while driving using the following three categories: (1) stall while driving = "yes;" (2) stall while driving = no; and (3) stall while driving = "unknown."

Provide this information in Microsoft Access 2007, or a compatible format, entitled "WARRANTY DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

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.

For the peer vehicles, the regular warranty claims with repair or replacement of the HPFP are summarized by model and model year in Table 8-1. There were no MIC and UWC extended service contract claims with repair or replacement of the HPFP. A summary of all warranty claims, including those with towing expenses associated with the repair as well as engine stall data and the information requested in 8(a-n), is provided on the ATT_1_GM disk; folder labeled "Q_08": refer to the Microsoft Access 2007 file labeled "Q_08_WARRANTY DATA".

GM is providing a field labeled "Verbatim Text" in response to request 8I (dealer/technician comment). The verbatim text is a field available in the GM warranty system for the dealer to enter any additional comments that may be applicable to the 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.

MAKE	MODEL/ENGINE	2009MY	2010MY	2011MY	2012MY	TOTAL
Chevrolet	Express/LMM	12	4	N/A	N/A	16
Chevrolet	Express/LGH	N/A	0	1	0	1
GMC	Savana/LMM	0	0	N/A	N/A	0
GMC	Savana/LGH	N/A	0	1	0	1
Chevrolet	Silverado/LMM	81	20	N/A	N/A	101
Chevrolet	Silverado/LML	N/A	N/A	68	0	68
Chevrolet	Silverado/LGH	N/A	N/A	11	0	11
GMC	Sierra/LMM	27	2	N/A	N/A	29
GMC	Sierra/LML	N/A	N/A	35	0	35
GMC	Sierra/LGH	N/A	N/A	5	0	5
Total		120	26	121	0	267

TABLE 8-1 REGULAR WARRANTY CLAIMS WITH REPAIR OR REPLACEMENT OF THE HPFP FOR PEER VEHICLES

SOURCE SYSTEM	LAST DATE GATHERED
GART - regular warranty	24OCT11
Extended service contract claims (MIC & UWC)	18OCT11

TABLE 8-2: DATES LAST PULLED

9. Describe in detail the search criteria used by GM to identify the claims identified in response to Request No. 8, including the labor operations, problem codes, part numbers and any other pertinent parameters used and describe how the assessment regarding whether the repair condition resulted in an engine stall incident was made (e.g., analysis of problem codes or customer concern/technician comment text fields). Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to repair or replacement of the subject component and a separate list that are applicable to assessing whether the repair condition resulted in an engine stall while driving incident. State, by make and model year, the terms of the new vehicle warranty coverage offered by GM on the peer 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 peer vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

The regular warranty data from the GM GART database and the extended warranty service contract claims from the Motors Insurance Corp (MIC) database was collected by searching for claims with Labor Code **J5955 – Pump Fuel Injection (Diesel)-Replace**. Universal Warranty Corporation (UWC) does not use labor codes or trouble codes. Instead, the data was filtered on the Component Code: 10-Fuel Delivery, then on the subject vehicle with a diesel engine and finally on review of the claim notes. GM's assessment of whether the incident involved an engine stall was made based on the warranty claim verbatim and customer comments.

The subject vehicles are covered by a bumper-to-bumper new vehicle warranty for three years or 36,000 miles, whichever occurs first. The 6.6L Duramax Diesel engine is covered by a powertrain warranty for five years or 100,000 miles, whichever occurs first. As of October 18, 2011, the number of extended service contracts sold by MIC and UWC regardless of status (in force, expired, cancelled) on the peer vehicles is contained in Table 9-1.

MAKE	MODEL	2009MY	2010MY	2011MY	2012MY	TOTAL
Chevrolet	Express	25	1	23	0	49
GMC	Savana	2	0	9	0	11
Chevrolet	Silverado	2064	27	2694	3	4788
GMC	Sierra	4433	54	5216	4	9707
TOTAL		6524	82	7942	7	14555

TABLE 9-1 EXTENDED SERVICE COVERAGE CONTRACTS SOLD (MIC AND UWC)

Other 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.

- 10. Produce copies of all service, warranty, and other documents that GM has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities, which relate to or may relate to the subject condition in the peer vehicles. This includes, but is not limited to, technical service bulletins, special service messages, 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.**

Information that may relate to the subject condition and have been issued to dealers, regional or zone offices, field offices, fleet purchasers, or other entities are included in the ATT_1_GM disk; folder labeled "Q_10". The preceding information was collected from GM Service Operations and was completed on October 27, 2011.

- 11. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to HPFP drive train durability and performance with low lubricity fuels 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., pump/engine damage task force) of which VW and/or Audi are active members or are 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.

The information listed in Table 11-1 below is a summary of actions that have been conducted, are being conducted, are planned, or are being planned by or for GM regarding the subject condition on the subject vehicles as of November 22, 2011. Documents and additional supporting information are included in the attachments as noted in the table.

<p>Action 11-1: GM/DMAX CP3.3NH – Suction Valve Wear Start Date: 9/2006 End Date: 12/2006 Engineering Group: Robert Bosch Corporation Attachments: The document can be found on the "ATT_3_ BOSCH Conf" disk in the folder labeled Q_11, refer to the document labeled, "Q_11_1" Description: Summary, conclusions and analysis of 2 pump GED tests Summary of Action: Analysis of unsymmetrical wear around the suction valve seat</p>
<p>Action 11-2: System Endurance Test Start Date: 7/2007 End Date: 1/2008 Engineering Group: Robert Bosch Corporation Attachments: The document can be found on the "ATT_3_ BOSCH Conf" disk in the folder labeled Q_11, refer to the document labeled, "Q_11_2" Description: Test Report Summary of Action: Test Passed</p>
<p>Action 11-3: System Endurance Test Start Date: 11/2007 End Date: 6/2008 Engineering Group: Robert Bosch Corporation Attachments: The document can be found on the "ATT_3_ BOSCH Conf" disk in the folder labeled Q_11, refer to the document labeled, "Q_11_3" Description: Test Report Summary of Action: Test Passed</p>

TABLE 11-1 SUMMARY OF ACTIONS

12. 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 component, from the start of production to date, which relate to, or may relate to HPFP drive train durability and performance with low lubricity fuels. For each such modification or change, provide the following information:
- The date or approximate date on which the modification or change was incorporated into vehicle production;
 - A detailed description of the modification or change;
 - The reason(s) for the modification or change;
 - The part number(s) (service and engineering) of the original component;
 - The part number(s) (service and engineering) of the modified component;
 - Whether the original unmodified component was withdrawn from production and/or sale, and if so, when; and
 - When the modified component was made available as a service component.

There have been no changes implemented on either the CP3 or CP4 pumps that are related to HPFP drive train durability and performance with low lubricity fuels from the start of production to date.

13. For each month in which GM has sold the following components, state the number of the following components that GM has sold for use in the peer vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle(s) in which it is used and month/year of sale of the component (including the cut-off date for sales, if applicable).

- a. High-pressure fuel pumps;
- b. Fuel rails; and
- c. Fuel tanks.

For each component part number, provide the supplier's name, address, and appropriate point of contact (name, title, and telephone number). Also identify by make, model and model year, any other vehicles (that is, other than peer vehicles) of which GM is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

Per Jeff Quandt's email dated October 17, 2011, the part sales information requested in Item 13 is limited to high-pressure fuel pumps. Per Jeff Quandt's email dated October 21, 2011, GM has included data on all vehicles using the subject components, including the MY 2007-2010 TopKick and Kodiak. An electronic summary table of the requested service part information for the subject components is provided on the ATT_1_GM disk; folder labeled "Q_13".

These sales numbers represent sales to dealers in the United States. This data has limited analytical value in analyzing the field performance of a motor vehicle component because the records do not contain sufficient information to establish the reason for the part sale. It is not possible from this data to determine the number of these parts that have been installed in the subject vehicles or the number remaining in dealer or replacement part supplier inventory.

This table contains service part numbers, part description, part usage information including the GM vehicles that contain the identical component, part sales figures by month and calendar year, and the supplier's name and address, contact name and phone number.

14. Provide the following information for the common rail fuel systems used in the peer vehicles:

- a. Basic functional diagrams of each version of common rail system used in the peer vehicles, showing system components and flow paths;
- b. Ranges of operating pressures for the suction and discharge of the HPFP (i.e., low and high pressure systems);
- c. Range in operating temperatures for fuel used in the HPFP lubrication system and a description of how HPFP inlet temperature is controlled;
- d. Filter mesh size(s) and filter replacement criteria;
- e. Describe all scheduled maintenance requirements;
- f. A description of all warning lamps and driver information messages associated with the system;
- g. A description of all Diagnostic Trouble Codes by name and number and the conditions required to set each code; and
- h. A description of all limp-home operating modes, including the conditions required to implement each mode and the limits on vehicle operation.

Reference attachments "ATT_1_GM/Q_14", "ATT_2_GM_Conf/Q_14" and "ATT_3_BOSCH_Conf/Q_14" for responses to the appropriate subsection of request 14.

15. Separately for each peer vehicle, provide the following information for the subject component used in that vehicle:
- a. Specific supplier model name and model number;
 - b. Cross-sectional diagram of the pump showing basic operation of the drive train;
 - c. Ratio of pump speed to engine speed;
 - d. Pump maximum output/discharge pressure;
 - e. Pump minimum inlet/suction pressure;
 - f. Pump durability specifications;
 - g. The material composition and material specifications for all drive train components (e.g., plunger, plunger base, shoe, foot, rider, roller, roller shoe, cam); and
 - h. Copies of all failure mode and effects analyses.

Reference attachments "ATT_1_GM/Q_15", "ATT_2_GM_Conf/Q_15" and "ATT_3_BOSCH_Conf/Q_15" for responses to the appropriate subsection of request 15.

16. Provide the following information regarding the subject component from peer vehicles:
- a. Any information, reports, and analyses regarding returned parts that exhibited signs of wear or other deterioration of the drive train; and
 - b. A tabular summary of all field return analyses and reports.

Reference attachment "ATT_3_BOSCH_Conf/Q_16" for responses to request 16a. See the response to request 19b found on attachment "ATT_2_GM_Conf/Q_19" for the answer to 16b.

17. Provide the following information regarding diesel fuels sold in the United States, and test fuels used by or for GM in the design and development of the fuel system and subject component:

- a. Identify and provide copies of all studies and surveys conducted by or for GM and other documents in the possession of and reviewed by GM regarding diesel fuel quality or characteristics in the U.S., and/or diesel fuel delivery system performance concerns related to fuel quality in the United States market from 2004 to date;
- b. Describe the fuel properties GM considers in its evaluations of HPFP performance/durability and state the ranges in those properties that GM believes exist in the United States market, from fuel survey data or other sources (provide the means and standard deviations for all sampled data for the United States market);
- c. State the specifications for all reference fuels used by GM in testing the subject component, including an explanation of the basis for the lubricity specification;
- d. Describe how GM has ensured that the HPFP design in peer vehicles is compatible with diesel fuels sold in the United States and other markets;
- e. Describe all testing of the subject component conducted by, or for, GM with gasoline contaminated test fuels, including the purpose of the test, the amount of contamination, the test conditions and the test results;
- f. Provide GM's assessment of the amounts of gasoline contamination required to produce the following effects on engine performance: (1) driveability symptoms during city driving (describe symptoms); (2) driveability symptoms during highway driving (describe symptoms); (3) engine stall; and (4) pump damage; and (5) sudden/catastrophic pump failure;
- g. Provide GM's assessment of the effects of minor gasoline contamination on engine performance and HPFP performance/durability (provide assessments for contaminations of less than 3 percent and less than 1 percent); and
- h. Produce copies of all recommendations and warnings regarding diesel fuel quality that GM has provided to its customers.

The requested information for subsections a,b,d,e,f and g is provided on the "ATT_2_GM_Conf" disk; folder labeled "Q_17". The response to subsection c is provided on the "ATT_3_BOSCH_Conf" disk; folder labeled "Q_17". The response to subsection h is provided on the "ATT_1_GM" disk; folder labeled "Q_17".

- 18. Provide the following information regarding incidents/repairs in which misfuelling is not acknowledged but suspected in the peer vehicles (Note: the IR definitions for "misfuelling" and "fuel quality concern" do not apply to this request):**
- a. Does GM distinguish problems from misfuelling from problems involving poor fuel quality for the purposes of determining whether or not repairs to the subject component and/or vehicle are covered by warranty?
 - b. Describe how GM distinguishes incidents involving misfuelling from incidents involving poor fuel quality in resolving questions about warrantable repairs (e.g., describe test methods, qualitative analyses, performance symptoms or diagnostic codes that would indicate or suggest misfuelling);
 - c. State how GM resolves disputes concerning warranty coverage related to suspected fuel quality concerns;
 - d. Describe and provide copies of all guidance provided to dealers and/or zone offices related to diagnosing, documenting and repairing fuel system failures in which fuel quality is a suspected cause or contributor;
 - e. Describe the repair procedures for a peer vehicle that has been fueled with gasoline, for situations where (1) the engine was not started after a misfuel; and (2) the engine was started after a misfuel;
 - f. Describe the repair procedures for a peer vehicle that has experienced catastrophic HPFP drive train failure (i.e., metallic particles/debris in the fuel system); and
 - g. Describe all misfuel countermeasures that GM has implemented in the peer vehicles or is considering for future production light duty diesel vehicles in the United States market.

Reference attachment "ATT_1_GM/Q_18" for responses to the appropriate subsection of request 18.

- 19. Provide GM's assessment of the subject component failure experience in the peer vehicles, including:**
- a. The causal or contributory factors, including but not limited to misfuel and fuel quality concerns;
 - b. The approximate percentages of subject component failures associated with each of the causal/contributory factors identified in item "a;"
 - c. The failure mechanism for each causal condition identified;
 - d. The failure mode for each causal condition identified, including the effect on engine performance (e.g., driveability concern, engine stall); and
 - e. A comparison, by model and model year, of the HPFP warranty claim rates and part sales rates in the peer vehicles and HPFP failure rates for same/similar vehicles in other worldwide markets (e.g., Germany, France, United Kingdom, Russia, China, India, Japan, Brazil, and

Canada). [Please note any differences between vehicle designs and market fuel distribution/quality that GM believes may affect this analysis].

Per Jeff Quandt's email dated October 21, 2011, request 19e has been limited to a comparison of the sales, warranty and part sales data in the U.S. and Canada along with a comparison of the warranty terms in the two countries. Reference attachments "ATT_1_GM/Q_19" and "ATT_2_GM_Conf/Q_19" for responses to the appropriate subsection of request 19.

* * *

This response is based on searches of General Motors (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 divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of 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, on or after July 1, 1992, were involved in any way with any of the following related to the potential 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), analyses, 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 does not include surveys prepared by third parties to which GM subscribes that are the subject of agreements restricting our sharing of the information.

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,

A handwritten signature in black ink, appearing to read "M. Carmen Benavides". The signature is fluid and cursive, with a large, stylized initial "M" and a long, sweeping tail.

M. Carmen Benavides, Director
Product Investigations and Safety Regulations

Attachments