



November 21, 2008

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 1200 New Jersey Ave., S. E., Room W48-307  
 Washington, D.C. 20590

N080326

NVS-213wmc  
 PE08-056

Dear Mr. Quandt:

This letter is General Motors (GM) response to your information request (IR), dated September 30, 2008 regarding allegations of inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction in model year (MY) 2005 through 2006 Chevrolet Corvette vehicles manufactured by General Motors Corporation.

GM is providing information for the following subject vehicles: all MY 2005 through 2006 Chevrolet Corvette vehicles manufactured for sale or lease in the United States

Additionally, GM is providing information for the following peer vehicles: all MY 2004 through 2008 Cadillac XLR, MY 2006 through 2008 Cadillac DTS, and MY 2008 Buick Lucerne vehicles manufactured for sale or lease in the United States.

Your questions and our corresponding replies are as follows:

1. **State, by model and model year, the number of subject and peer vehicles GM has manufactured for sale or lease in the United States. Separately, for each subject and peer vehicle manufactured to date by GM, state the following:**
  - a. **Vehicle identification number (VIN);**
  - b. **Model Year;**
  - c. **Date of manufacture;**
  - d. **Date warranty coverage commenced;**
  - e. **If the vehicle is equipped with the telescoping/tilt steering wheel option: 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 2000, 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 is providing the number of subject and peer vehicles produced for sale or lease in the United States by make, model and model year in Tables 1-1 and 1-2 below:

MAKE/MODEL	2005 MY	2006 MY	TOTAL
Chevrolet Corvette	33,810	31,595	65,405

TABLE 1-1 SUBJECT VEHICLE PRODUCTION

MAKE/MODEL	2004 MY	2005 MY	2006 MY	2007 MY	2008 MY	TOTAL
Cadillac XLR	3,861	3,828	3,963	1,400	1,478	14,530
Cadillac DTS	N/A	N/A	65,335	47,396	40,674	153,405
Buick Lucerne	N/A	N/A	N/A	N/A	65,450	65,450
TOTAL	3,861	3,828	69,298	48,796	50,661	233,385

TABLE 1-2 PEER VEHICLE PRODUCTION  
 N/A – NOT APPLICABLE

The production information requested in 1a-1f is provided on the Att\_1\_GM disk in the folder labeled Q\_01 refer to the Microsoft Access 2000 file labeled, "Q\_01\_PRODUCTION DATA." GM is providing the state where the vehicle was shipped in response to request 1f. For some of the subject vehicles, which have incomplete warranty files, the GM warranty system does not contain a warranty start date or state where the vehicle was shipped and, therefore, these fields are blank in the Microsoft Access 2000 file.

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 (including but not limited to DTC code C0710 and its sub codes; Stabilitrak; and the Active Handling System) in the subject and peer vehicles:**
  - a. **Consumer complaints, including those from fleet operators;**
  - b. **Field reports, including dealer field reports;**
  - c. **Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;**
  - d. **Reports involving a fire, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;**
  - e. **Property damage claims; and**
  - f. **Third-party arbitration proceedings where GM is or was a party to the arbitration; and**
  - g. **Lawsuits, both pending and closed, in which GM is or was a defendant or codefendant.**

For subparts "a" through "e" 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 "g," 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 "f" and "g," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Tables 2-1 and 2-2 below summarize records that may relate to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction in the subject and peer vehicles. GM has organized the records by the GM file number within each attachment.

TYPE OF REPORT	GM REPORTS	SUBCATEGORIES				
		CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH*	NUMBER WITH INJURIES/FATALITIES	NUMBER WITH FIRES*
Owner Reports	7	0	0	0	0	0
Field Reports	35	1	0	1*	0	0
Not-In-Suit Claims	0	0	0	0	0	0
Subrogation Claims	0	0	0	0	0	0
Third Party Arbitration Proceedings	0	0	0	0	0	0
Product Liability Lawsuits	0	0	0	0	0	0
Total Reports (Including Duplicates)	42	1	0	1	0	0
Total Vehicles with Reports (Unique VIN)	39	1	0	1	0	0

TABLE 2-1: SUBJECT VEHICLE - MAY RELATE TO ALLEGED CONDITION - REPORT BREAKDOWN

\* DRIVER DROPPED ALLEGATION

TYPE OF REPORT	GM REPORTS	SUBCATEGORIES				
		CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/FATALITIES	NUMBER WITH FIRES*
Owner Reports	8	0	0	0	0	0
Field Reports	40	0	0	0	0	0
Not-In-Suit Claims	0	0	0	0	0	0
Subrogation Claims	0	0	0	0	0	0
Third Party Arbitration Proceedings	0	0	0	0	0	0
Product Liability Lawsuits	0	0	0	0	0	0
Total Reports (Including Duplicates)	48	0	0	0	0	0
Total Vehicles with Reports (Unique VIN)	47	0	0	0	0	0

TABLE 2-2: PEER VEHICLES - MAY RELATE TO ALLEGED CONDITION - REPORT BREAKDOWN

To date, GM's investigation of the alleged defect has not included an assessment of the cause(s) of each incident responsive to Request No. 2. Some incident reports may not contain sufficient reliable information to accurately assess cause.

The sources of the requested information and the last date the searches were conducted are tabulated in Table 2-3 below.

SOURCE SYSTEM	LAST DATE GATHERED
Customer Assistance Center	10/17/08
Technical Assistance Center	10/10/08
Field Information Network Database (FIND)	10/08/08
Field Product Report Database (FPRD)	10/07/08
Company Vehicle Evaluation Program (CVEP)	10/06/08
Captured Test Fleet (CTF)	10/06/08
Early Quality Feedback (EQF)	10/06/08
Legal / Employee Self Insured Services (ESIS)/Product Liability Claims/ Lawsuits	10/24/08

TABLE 2-3: 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's 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 year;
  - Vehicle's mileage at time of incident;
  - Incident date;
  - Report or claim date;
  - Whether a crash is alleged;
  - Whether a fire 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 2000, 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 in the folder labeled Q\_03, refer to the Microsoft Access 2000 file labeled, "Q\_03\_REQUEST NUMBER TWO DATA." Some incident reports may not contain sufficient reliable information to accurately answer all parts of question 3.

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 AND 2-2 are on the Att\_1\_GM disk embedded in the folder labeled Q\_03; refer to the Microsoft Access 2000 file labeled, "Q\_03\_REQUEST NUMBER TWO DATA." GM has organized the records by the GM file number within each attachment.

- 5 **State, by model year, a total count for all of the following categories of claims, collectively, that have been paid by GM to date that relate to, or may relate to, the alleged defect (including but not limited to DTC code C0710 and its sub codes; Stabilitrak; the Active Handling System; and all versions of the subject bulletin) in the subject and peer vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.**

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

- a. **GM's claim number;**
- b. **Vehicle owner or fleet name (and fleet contact person) and telephone number;**
- c. **VIN;**
- d. **Vehicle's model year;**
- e. **Repair date;**
- f. **Vehicle mileage at time of repair;**
- g. **Repairing dealer's or facility's name, telephone number, city and state or ZIP code;**
- h. **Labor operation number;**
- i. **Problem code;**
- j. **Replacement part number(s) and description(s);**
- k. **Concern stated by customer;**
- l. **Cause and correction as stated by repairing dealer; and**
- m. **Additional comment, if any, by dealer/technician relating to claim and/or repair.**

**Provide this information in Microsoft Access 2000, 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 is providing, for the subject and peer vehicles, the regular, goodwill and MIC service contract claims that may be related to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction. These claims are summarized by model and model year in Tables 5-1 through 5-4. This data was analyzed and sorted into two categories, as shown on the tables, based on review of the labor code descriptions, trouble code descriptions, customer complaint and meaningful information contained in the verbatim of those claims that contained verbatim information. A detailed explanation of the criteria used to collect, analyze and sort the warranty data is provided in response to item No. 6.

The definition of the two categories is as follows:

- **May be Related – Vehicle may have had inappropriate brake application of one or more wheels induced by an ESC system malfunction.**
- **Unknown – The warranty claim did not provide enough information to put the claim in any of the previous two categories, but there was no indication that the vehicle had an inappropriate brake application of one or more wheels induced by an ESC system malfunction.**

A summary of the warranty claims, including the information requested in 5(a-k), is provided on the Att\_1\_GM disk in the folder labeled "Q\_05," refer to the Microsoft Access 2000 file labeled, "Q\_05\_WARRANTY DATA."

TABLE 5-1: SUBJECT VEHICLE REGULAR WARRANTY CLAIMS

Model Year	Model	May be Related	Unknown	Total
2005	Chevrolet Corvette	16	1,006	1,022
2006	Chevrolet Corvette	9	478	487
Total		25	1,484	1,509

TABLE 5-2: SUBJECT VEHICLE MIC SERVICE CONTRACT CLAIMS

Model Year	Model	May be Related	Unknown	Total
2005	Chevrolet Corvette	0	40	40
2006	Chevrolet Corvette	0	0	0
Total		0	40	40

TABLE 5-3: PEER VEHICLE REGULAR WARRANTY CLAIMS

Model Year	Model	May be Related	Unknown	Total
2004	Cadillac XLR	6	213	219
	Cadillac DTS	N/A	N/A	N/A
	Buick Lucerne	N/A	N/A	N/A
2005	Cadillac XLR	4	237	241
	Cadillac DTS	N/A	N/A	N/A
	Buick Lucerne	N/A	N/A	N/A
2006	Cadillac XLR	1	111	112
	Cadillac DTS	12	1,376	1,388
	Buick Lucerne	N/A	N/A	N/A
2007	Cadillac XLR	1	28	29
	Cadillac DTS	7	375	382
	Buick Lucerne	N/A	N/A	N/A
2008	Cadillac XLR	0	8	8
	Cadillac DTS	0	107	107
	Buick Lucerne	1	103	104
Total		32	2,558	2,590

N/A – NOT APPLICABLE

TABLE 5-4: PEER VEHICLE MIC SERVICE CONTRACT CLAIMS

Model Year	Model	May be Related	Unknown	Total
2004	Cadillac XLR	0	2	2
	Cadillac DTS	N/A	N/A	N/A
	Buick Lucerne	N/A	N/A	N/A
2005	Cadillac XLR	0	0	0
	Cadillac DTS	N/A	N/A	N/A
	Buick Lucerne	N/A	N/A	N/A
2006	Cadillac XLR	0	0	0
	Cadillac DTS	0	1	1
	Buick Lucerne	N/A	N/A	N/A
2007	Cadillac XLR	0	0	0
	Cadillac DTS	0	0	0
	Buick Lucerne	N/A	N/A	N/A
2008	Cadillac XLR	0	0	0
	Cadillac DTS	0	0	0
	Buick Lucerne	0	0	0
Total		0	3	3

N/A – NOT APPLICABLE

GM searched the GM Global Analysis and Reporting Tool (GART-regular warranty), the Motors Insurance Corporation (MIC– service contract claims), and the Universal Warranty Corporation (UWC– service contract claims) databases to collect the warranty data for this response. The warranty data was last gathered on October 9, 2008.

GM's warranty database does not contain the vehicle owner's name or telephone number. Some of the replacement part numbers; part descriptions and customer concern code descriptions are not included in the GM warranty database. GM is providing a field labeled "Verbatim Text". The verbatim text is an optional field in the GM warranty system for the dealer to enter any additional comments that may be applicable to the warranty claim. The verbatim text field is not required to be completed for every warranty claim.

The MIC– service contract claims database does not contain the vehicle owner information. The UWC extended warranty system does not use the GM labor code or labor code description and it does not contain the repairing dealer code, trouble code or trouble code description.

- 6 Describe in detail the search criteria used by GM to identify the claims identified in response to Request No. 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the alleged defect in the subject vehicles. State, by 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 and model year, the number of vehicles that are covered under each such extended warranty.**

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

LABOR CODE	DESCRIPTION:
E7690	Sensor, Steering Wheel Rotation - Replace
E9664	Install Clip into Steering Wheel Position Sensor
N6600	Wiring &/or Connector Brake System
N6628	Wiring &/or Connector Steering/Suspension
H2505	Module Electric Brake &/or Traction Control
H2582	Yaw Rate Sensor replacement
Z1241	Personal Property Damage
Z1242	PAR – Repairs/Reimbursement (Goodwill)
Z1243	Inspection-Product Allegation Resolution

TABLE 6-1 LABOR CODES THAT MAY BE RELATED TO INAPPROPRIATE BRAKE APPLY DUE TO ESC MALFUNCTION

GM lists the trouble codes in Table 6-2 and customer complaint codes in Table 6-3, within the labor codes listed in Table 6-1 that may relate to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction.

TROUBLE CODE	DESCRIPTION:
1A	Bent
1D	Broken
2W	Loose
3A	Misadjusted
3C	Misrouted
3F	Not Connected
3L	Out of Calibration
6B	Component - Ground
6C	Component - Inoperative
6D	Component - Intermittent
6E	Component - Missing
6F	Component - Open
6G	Component - Shorted
6H	Component – Bent/Damaged
6J	Connector - Corroded
6L	Connector - Missing
6M	Connector - Disconnected
6N	Connector – Partial Connected
6P	Connector – Seal Damaged
7B	Terminal – Backed Out
7C	Terminal – Bent/Damaged
7D	Wire – Shorted to Ground
7J	Wire - Chaffed
7K	Wire - Crossed in Connector
7L	Wire – Cut/Broken/Open
7M	Wire - Misrouted
7R	Wire - Pinched
7S	Wire – Ring Terminal Disconnected
7T	Wire – Ring Terminal Loose
93	Technical Service Bulletin

TABLE 6-2 TROUBLE CODES THAT MAY BE RELATED TO INAPPROPRIATE BRAKE APPLY DUE TO ESC MALFUNCTION



CUSTOMER COMPLAINT CODE	DESCRIPTION:
AV	Visual: Unusual Gage Reading
MH	Miscellaneous: Technical Service Bulletin
OJ	Operation: Inoperative (Harsh)
OL	Operation: Intermittent
WT	Warning Lights: Traction Control
VP	Visual: Misaligned (Orange Peel)

TABLE 6-3 CUSTOMER COMPLAINT CODES USED IN WARRANTY SEARCH

GM included claims that may be related to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction and claims that did not contain enough detailed information to determine that they were not related to this alleged condition.

The analysis is based on review of the labor code descriptions, trouble code descriptions, customer complaint and meaningful information contained in the verbatim of those claims that contained verbatim information. Those claims that did not contain enough detailed information to categorize as "may be related" or "not related" have been categorized as "unknown" in the file labeled, "Q\_05\_WARRANTY DATA" provided in response to request No. 5.

The warranty analysis indicates that, for the subject vehicles, there are 4,744 claims that contain meaningful information and 1,437 unknown claims. For the Peer vehicles, analysis indicates that there are 2,223 claims that contain meaningful information and 2, 205 unknown claims.

For the subject vehicles the 4,744 claims with meaningful information were categorized as follows;

- 4719 of the meaningful information claims were not related to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction, these claims were categorized as unrelated and have not been provided.

(4719 unrelated meaningful information claims / 4744 meaningful information claims = 99.5%)

- 25 of the meaningful information claims may be related to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction. These claims were categorized as "may be related" and have been provided.

(25 related meaningful information claims / 4744 meaningful information claims = 0.5%)

- 1484 of the claims do not contain sufficient meaningful information to determine if they are related or unrelated. These claims were categorized as "unknown" and have been provided.

The same analysis was applied to the peer vehicles. For the peer vehicles, the 2,301 claims with meaningful information were categorized as follows;

- 2,266 of the meaningful information claims were not related to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction. These claims were categorized as unrelated and have not been provided.

(2,266 unrelated meaningful information claims / 2,301 meaningful information claims = 98.4%)

- 32 of the meaningful information claims may be related to inappropriate brake application of one or more wheels induced by an Electronic Stability Control (ESC) system malfunction. These claims were categorized as may be related and have been provided.

(32 related meaningful information claims / 2,301 meaningful information claims = 1.6%)

•2,590 of the claims do not contain sufficient meaningful information to determine if they are related or unrelated. These claims were categorized as “unknown” and have been provided.

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.

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

The General Motor’s warranty system does not contain information on the number of vehicles that have extended warranty coverage. The number of MIC Service contracts on the subject vehicle and peer vehicles that have been sold by MIC regardless of status (in-force, expired, cancelled) as of November 17, 2008 is contained in Table 6-1 and Table 6-2, respectively.

MAKE/MODEL	2005 MY	2006MY	TOTAL
CHEVROLET CORVETTE	15,709	11,079	26,788

TABLE 5-5: SUBJECT VEHICLE MIC SERVICE CONTRACTS SOLD

MAKE/MODEL	2004 MY	2005 MY	2006MY	2007 MY	2008 MY	TOTAL
CADILLAC XLR	5,153	4,556	4,608	1,454	1,165	16936
CADILLAC DTS	N/A	N/A	6,145	3,931	1,694	11770
BUICK LUCERNE	N/A	N/A	N/A	N/A	4,491	4491
TOTAL	5,153	4,556	10,753	5,385	7,350	33,197

TABLE 5-5: PEER VEHICLE MIC SERVICE CONTRACTS SOLD  
 N/A – NOT APPLICABLE

- 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 entitles. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, or other documents or communications, with the exception of standard shop manuals. Also include the latest draft copy of any communication that GM is planning to issue within the next 120 days.**

GM has issued the following service bulletins related to both the ESC system and the SWPS in the subject and peer vehicles. The bulletins issued were initiated based on replacement rates of the SWPS. None of the three bulletins mention the alleged defect. The bulletins were issued regarding the same condition, high resistance in the SWPS connector C202, which may

result in customers commenting on a Service Stability Message on the DIC. Diagnosis with a scan tool may reveal a DTC C0170.

In January 2006 GM issued Service Bulletin No. 06-02-35-002 Diagnostic Trouble Code (DTC) C0170 Steering Wheel Position Sensor (SWPS) Signal, Service Stability System Message on Driver Information Center (DIC) - (Inspect and Secure Wires in SWPS Connector). The bulletin informs dealers that some customers may comment on a Service Stability Message on the DIC. Diagnosis with a scan tool may reveal a DTC C0170. The bulletin identifies the most likely cause of a DTC C0170 on a vehicle with telescoping/tilt steering wheel is high resistance in SWPS connector C202 and instructs service dealers that the correction is to secure wires at the SWPS connector using electrical tape and a plastic strap.

In August 2006 GM issued Service Bulletin 06-02-35-002A Diagnostic Trouble Code (DTC) C0170 Steering Wheel Position Sensor (SWPS) Signal, Service Stability System Message on Driver Information Center (DIC) - (Inspect and Secure Wires in SWPS Connector). This bulletin was issued to revise Service Bulletin No. 06-02-35-002 to clarify connector numbers (step 3). Dealers were instructed to discard Corporate Bulletin Number 06-02-35-002.

In October 2007 GM issued Service Bulletin 06-02-35-002B Diagnostic Trouble Code (DTC) C0170 Steering Wheel Position Sensor (SWPS) Signal, Service Stability System Message on Driver Information Center (DIC) - (Inspect and Secure Wires in SWPS Connector). This bulletin was issued to revise Service Bulletin No. 06-02-35-002A to update the models and provide new correction information. The new correction information instructs dealers to install a clip Part Number (P/N) 19179794, into the connector. This clip will act as a terminal positive assurance (TPA) and prevent movement of the terminals.

These documents are provided on Att\_1\_GM disk; in the folder labeled: "Q\_07."

General Motors is not planning to issue in the next 120 days, any service, warranty or other technical documents or communications to its dealers, regional offices, zone offices or other entities regarding the subject condition in the subject vehicles.

The preceding information was collected from GM Service Operations. The data collection was completed on October 10, 2008.

**8 Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles 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.

**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 action 8-A and 8-B is background component design, validation and manufacturing information and not related to the alleged defect. The information listed in action 8-C was collected regarding the alleged defect. This information is provided as of November 14, 2008.

<p><b>Action 8-A:</b> GM ABS/TCS/ESC Chassis SSTS, GM ABS/TCS/ESC Electrical SSTS, GM ESC performance SSTS (and SOR supplement), 2005 and 2006 Performance validation reports <b>Start Date:</b> 01/1999 <b>End Date:</b> 06/2005 <b>Engineering Group:</b> General Motors <b>Attachments:</b> Documents can be found on the Att_2_GM_Conf disk in the folder labeled Q_08_A. <b>Description:</b> GM sub-system technical specifications and statement of requirements for the design and validation of the ESC/Traction Control System. Outlines engineering requirements; system definition, functions, characteristics, performance and validation. <b>Summary of Action:</b> The GM ABS/TCS/ESC system meets all specifications and requirements.</p>
<p><b>Action 8-B:</b> Delphi Corporation ESC system; Design Failure Mode Effects Analysis (DFMEA), Manufacturing Process Failure Mode Effects Analysis (PFMEA), Validation test plan, Design Validation Part Repeatability (DVP &amp; R), EBCM CTS, Diagnostic Trouble Code Verification Test Plan &amp; Report (DTC-VTP &amp; R), and Software Functional Test Plan &amp; Report, Component technical specification. <b>Start Date:</b> 01/2000 <b>End Date:</b> 07/2005 <b>Engineering Group:</b> Delphi Corporation <b>Attachments:</b> Documents can be found on the Att_3_Delphi_Conf disk in the folder labeled Q_08_B. <b>Description:</b> Documents used in the component design, validation plan and manufacturing process. <b>Summary of Action:</b> The Delphi SAS/SWPS meets all specifications, validation and manufacturing requirements.</p>
<p><b>Action 8-C:</b> Studies related to customer complaints of "Service Stability system" message in DIC. <b>Start Date:</b> 09/2005 <b>End Date:</b> 05/2006 <b>Engineering Group:</b> GM Engineering, Delphi Corporation <b>Attachments:</b> The Delphi documents can be found on the Att_3_Delphi_Conf disk in the folder labeled Q_08_C. The GM documents are on the Att_2_GM_Conf disk in the folder labeled Q_08_C <b>Description:</b> These actions were devoted to resolving customer complaints of "service stability system" messages displayed in the DIC, including a Delphi Red-X study, GM PRTS N201289, GM Warranty Analysis. <b>Summary of Action:</b> GM issued service bulletins to address complaints of "Service Stability system" messages.</p>
<p><b>Action 8-D:</b> GM Milford Proving Grounds Vehicle Demonstration – Corvette Dual Triangular Waveform (DTW) Sensor Simulation <b>Start Date:</b> 10/10/08 <b>End Date:</b> 11/07/08 <b>Engineering Group:</b> GM Engineering, Delphi Corporation <b>Attachments:</b> Documents can be found on the Att_3_Delphi_Conf disk in the folder labeled Q_08_D. <b>Description:</b> The objective of this testing was to simulate failure modes and evaluate the effect on vehicle performance. Data collected was provided to Delphi for further analysis. <b>Summary of Action:</b> The vehicle was controllable under all failure modes evaluated.</p>

9. Describe all modifications or changes made by, or on behalf of, GM in the design, material composition, manufacture, quality control, supply, or installation of the subject

**component, from the start of production to date, which relate to, or may relate to, the alleged defect in the subject vehicles. For each such modification or change, provide the following information:**

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

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

GM is providing a summary of the product engineering information requested in 9(a-h), on the Att\_1\_GM disk in the folder labeled "Q\_9," refer to the file labeled, "Q\_9\_A Modifications". The EWO documents referenced are provided on the Att\_2\_GM\_Conf disk in the folder labeled "Q\_9".

**10. Produce one of each of the following:**

- a. Exemplar samples of each design version of the subject component;**
- b. Field return samples of the subject component exhibiting the subject failure mode; and**
- c. Any kits that have been released, or developed, by GM for use in service repairs to the subject component/assembly which relate, or may relate, to the alleged defect in the subject vehicles.**

Enclosure 10a contains an exemplar sample of the latest version of the steering wheel position sensor (SWPS) and SWPS connector C202. The earlier versions of the SWPS and connector C202 are no longer manufactured and there are none in GM stock. This exemplar sample includes the terminal position assurance (TPA) clip released per service bulletin 06-02-35-002B.

GM does not have available field returned samples of the SWPS and SWPS connector C202 exhibiting the subject failure mode.

**11. State the number of each of the following that GM has sold that may be used in the subject vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of sale (including the cutoff date for sales, if applicable):**

- a. Subject component; and**
- b. Any kits that have been released, or developed, by GM for use in service repairs to the subject component/assembly.**

**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 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.**

An electronic summary table of the requested service part information for the subject components is provided on the Att\_1\_GM disk in the folder labeled "Q\_11," refer to the Microsoft Excel file labeled, "Q\_11\_Part Sales."

These sales numbers represent sales to dealers in the US and Canada. 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.

**12. Provide the following information regarding the subject bulletin:**

- a. A chronology of events related to the issuance of the bulletin, including a detailed description of when and how GM first recognized the concern described in the bulletin, what actions were taken to investigate the concern and all meetings conducted to review the concern and make the decision to issue the bulletin and each revision thereof;**
- b. Copies of all documents related to investigation and review of the concern addressed by the subject bulletin, including all material presented at all meetings conducted to review the investigation and analysis of field data (e.g., complaints, field reports, and warranty data), the development of the correction, predicted failure rates, and the potential safety consequences; and**
- c. An explanation of why GM decided to address the steering wheel position sensor connector failures with the subject bulletin rather than a safety recall.**

A Red-X study was initiated by Delphi in September 2005 based on 2005 MY Corvette SWPS warranty part returns (labor code E7690) associated with customer complaints of the "service stability system" message displayed in the DIC. This condition resulted in setting DTC C0710.42. Analysis of the returned parts indicated that more than 85% of the returned parts had no trouble found.

The Red X study concluded that fretting corrosion on the connector was the root cause and that the telescoping steering column was a contributor to the issue. Delphi investigated potential solutions. It was determined that stabilizing the connection of the SWPS to C202 would solve the problem.

In response to the Red-X study an immediate containment fix of tape and a wire strap was implemented at the assembly plant under EWO CGPJT in November 2005 and service bulletin 06-02-35-002 was approved and issued in January 2006.

Warranty data gathered in May of 2006 on Corvette vehicles indicated higher than expected warranty levels. Problem Resolution Tracking System (PRTS) N201289 was opened in May 2006. GM created a Problem Definition Tree and conducted an analysis of the warranty. As a

result there was a manufacturing process change and GM initiated service bulletin 06-02-35-002A in August 2006.

In November 2006 GM reviewed Technical Assistance Center (TAC) information regarding customer complaints of service stability system messages displayed in the DIC. In the same time frame, Delphi started to design a TPA for the SWPS connector. This TPA was released to production under EWO CTKSZ in April of 2007. Service bulletin 06-02-35-002B was issued to release the TPA in service in October of 2007.

All of these actions were devoted to resolving customer complaints of "service stability system" messages displayed in the DIC.

The related GM documentation is provided on the on the Att\_1\_GM disk in the folder labeled "Q\_12" and on the Att\_2\_GM\_Conf disk in the folder labeled Q\_08\_C. The related Delphi documentation is provided on the Att\_3\_Delphi\_Conf disk in the folder labeled Q\_08\_C.

**13. Provide a detailed description of the ESC system used in the subject vehicles, including:**

- a. A description of system operation;**
- b. Copies of all electrical schematics and circuit diagrams;**
- c. Copies of all failure modes and effects analyses;**
- d. A detailed description of the full range of braking and throttle control authorities of the ESC system during a stability control event;**
- e. Describe and provide copies of all documents related to any tests or other analyses by, or for, GM regarding the effects of inappropriate ESC activation on vehicle control in various driving conditions;**
- f. A description of all visual and audible indicators available to the vehicle operator to signal ESC activation or a fault in the ESC system;**
- g. A listing of all trouble/fault codes associated with the ESC system and a description of how each is detected;**
- h. A detailed description of the ESC system self diagnostics and all faults/conditions that will cause the system to deactivate;**
- i. The maximum time duration of an ESC activation event in the subject vehicles; and**
- j. All differences in ESC system hardware or control algorithms between the subject and peer vehicles.**

A detailed description of the ESC system used in the subject vehicles is provided on the Att\_3\_Delphi\_Conf disk in the folder labeled "Q\_13", refer to the file labeled, "Q\_13\_A System Overview".

The ESC system mechanization diagram is on the Att\_01\_GM disk in the folder labeled "Q\_13", refer to the file labeled, "Q\_13\_System Mechanization".

The DFMEA for the ESC system and the DFMEA and PFMEA for the Steering Angle Sensor/Steering Position Sensor (SAS/SWPS) are provided on the Att\_3\_Delphi\_Conf disk in the folder labeled "Q\_08".

The ESC system can generate up to 1900psi of brake pressure at one or two of the vehicle wheels. The ESC algorithm's pressure request is based on difference between the vehicles desired wheel speed and the vehicle reference speed. Desired wheel speed is dependent on the driving surface coefficient of friction. Pressure is built, held and released using feedback

from wheel speed sensors (wheel speed data). The maximum time duration of an ESC system activation event is 10 seconds.

A detailed description of the surface coefficient of friction to wheel speed delta is included on the Att\_3\_Delphi\_Conf disk in the folder labeled "Q\_13", refer to the file labeled, "Q\_13\_D\_Control Authority (CL08-016d).pdf". The ESC has no throttle control authority, however, it can request from minus 200 Nm to positive 823.75 Nm of throttle control from the engine control module which has absolute throttle authority.

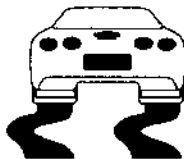
Documents related to any tests or other analyses by, or for, GM regarding the effects of inappropriate ESC activation on the subject vehicle control in various driving conditions are provided in response to item No. 8.

The vehicle owners manual contains the following information describing visual and audible indicators available to the vehicle operator to signal ESC activation or a system fault. A copy of the owners manual information is provided on the Att\_1\_GM disk in the folder labeled "Q\_13."

Telltale/Chime description:

### Active Handling System Light

The Active Handling System light comes on briefly as the engine is started. If the light does not come on then, have it fixed so it will be ready to warn if there is a problem. This light also comes on when the ACTIVE HANDLING CALIBRATING message is displayed in the DIC.



If the light stays on or comes on while driving, a chime sounds and a SERVICE ACTIVE HANDLING SYSTEM message appears on the DIC, there is a problem with the Active Handling System and the vehicle needs service.

The driver can acknowledge this message by pressing the RESET button. When the SERVICE ACTIVE HANDLING SYSTEM message is displayed in the DIC, the Active Handling System does not assist in controlling the vehicle. The system should be serviced as soon as possible.

When the system is working, an ACTIVE HANDLING message displays in the DIC.

If the driver turns off the Active Handling System by pressing the button on the console for five seconds, the Active Handling System light comes on, a chime sounds, and the TRACTION SYSTEM AND ACTIVE HANDLING - OFF message displays in the DIC. The Traction Control System also turns off.

If the Active Handling System and the Traction Control System are off, pressing the console button momentarily turns both systems on. The DIC displays the TRACTION



SYSTEM AND ACTIVE HANDLING - ON message, the instrument cluster light is off, and a chime sounds.

DIC Messages description

**ACTIVE HANDLING:** Your vehicle has a computer controlled system to assist the driver in controlling the vehicle in difficult driving conditions. You may feel or hear the system working and see the ACTIVE HANDLING message displayed in the DIC. This message will stay on for a few seconds following the active handling event. This is normal when the system is operating.

**SERVICE ACTIVE HANDLING SYSTEM:** If the SERVICE ACTIVE HANDLING SYSTEM message is displayed, there is a problem with your Active Handling System and your vehicle needs service. See your GM dealer. The instrument cluster light will also be on and a chime will sound. When this message is displayed, the system is not working. Adjust your driving accordingly.

A detailed description of all ESC trouble/fault codes, self diagnostics and all faults/conditions that will cause the system to deactivate is provided included, on the Att\_3\_Delphi\_Conf disk, in the folder labeled "Q\_13\_H".

The difference between subject and peer vehicle hardware in Table 13 below:

	Subject Vehicle	Peer Vehicles		
	05-06 Corvette	04-08 XLR	06-08 DTS	08 Lucerne
EBCM hardware	Delphi 7.2	Same	TRW 440	TRW 440
SAS Hardware	Delphi DTS	Same	Same	Same
Yaw Lat sensor	Panasonic	Same	Siemens Gen 2	Siemens Gen 2
WSS technology	Passive	Same	Same	Same
Wire routing		Similar	Very different	Very different
Steering column	Delphi	Same	Same	Same

TABLE 13

The difference between subject and peer vehicle control algorithms are as follows:

1. The Cadillac XLR and Chevrolet Corvette utilize identical control algorithms; however, the vehicle performance calibrations are different. The XLR has tighter vehicle performance calibrations.
2. Cadillac DTS and Buick Lucerne use a TRW algorithm which is completely different from the Delphi Algorithm. The systems function similarly. A detailed description of TRW's algorithm is included, titled "Q13j - TRW algorithm description.doc" in folder labeled Q\_13 on the Att\_1\_GM disk. Due to the difference in body style and expectations of vehicle owners, the DTS and Lucerne ESC systems are tuned quite differently for the Corvette.

**14. Furnish GM's assessment of the alleged defect in the subject vehicle, including:**

- a. The causal or contributory factor(s);
- b. The failure mechanism(s);
- c. The failure mode(s);

- d. Using statistical modeling of warranty data or other analytical methods give GM's assessment of the rates of subject component failure/malfunction at 1, 3, and 6 years in service – include a detailed description of the statistical method used and a copy of the input data and the results (e.g., if Weibull analysis is used, give the output shape and scale parameters);**
- e. The risk to motor vehicle safety that it poses;**
- f. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and**
- g. The reports included with this inquiry.**

a. Causal or contributory factors;

The Corvette ESC is a computer controlled system that helps the driver maintain directional control of the vehicle in difficult driving conditions. This is accomplished by selectively applying any one of the vehicle's brakes. The system's control actions are produced by an electro-hydraulic unit that is capable of regulating wheel brake pressures independent of the driver's brake pedal inputs.

The system employs the following sensors to determine the actual vehicle dynamics:

- Wheels Speed Sensors (WSS)
- Analog Inertial Sensor (AIS) that measures yaw rate and lateral acceleration.

The system employs the following sensors to determine the driver's desired path and intention:

- Dual Triangle Waveform (DTW) analog steering wheel position sensor (SWPS)
- Analog brake master cylinder pressure sensor.

All sensor inputs are subjected to a series of diagnostic checks. The first series of checks include low level input tests that evaluate analog voltages relative to expected operating ranges, and rate of changes diagnostics. The raw sensor signals are then subjected to signal conditioning processes. These processes include signal filtering and signal bias removal. Additional checks are performed by diagnostics that cross check sensor signals with other sensor measurements or estimates in an effort to identify potentially erroneous data. The ESC system is disabled if any of the diagnostic tests meet the fault condition criteria.

The Corvette ESC system measures wheel speeds, yaw rate, lateral acceleration, and master cylinder pressure and monitors various serial data messages. Using steering angle, master cylinder pressure, and engine torque, the system determines driver's desired vehicle response. The system determines actual vehicle response using yaw rate, lateral acceleration and wheel speeds.

If the system detects an oversteer condition, it activates valves and regulates pressure at the front wheel on the side of oversteer. If the system detects an understeer condition, it activates valves and regulates brake pressure to the rear wheel on the side the driver is steering toward.

Through activation of the traction control switch, the driver may select the competitive driving mode or the active handling disabled mode. For the selection of competitive driving mode the activation of ESC is more difficult to achieve. If the active handling disabled mode is selected it prevents inappropriate brake application since ESC is not active.

GM believes that inappropriate brake application induced by an ESC malfunction is a very rare event. The following four scenarios may potentially result in inappropriate brake application induced by an ESC malfunction. They are listed in order from most likely to occur to least likely to occur.

Scenario 1:

If there is a permanent interruption in either of the two signals that track steering wheel rotation in the SWPS, and the voltage of either signal is greater than 0.5V prior to the interruption, the conditions would be met to set DTC C0710.1F. DTC C0710.1F will set in 600ms. During the 600ms needed to set DTC C0710.1F, there may be an inappropriate brake application, however, the brake applications are minor and likely imperceptible to the driver and will not impact vehicle heading. After DTC C0710.1F is set, a message on the Driver Information Center (DIC) stating Active Handling Active is displayed, followed by a chime and the Vehicle Dynamics telltale is illuminated. ESC is disabled until the SWPS is repaired.

Scenario 2:

A. If there is a permanent interruption to the SWPS ground wire, there may be an inappropriate brake application during the 1.6 seconds that it takes the system to set DTC C0710.00. The brake applications are minor and not likely to impact vehicle heading. After 1.6 seconds, DTC C0710.00 will be set, a message on the Driver Information Center (DIC) stating Active Handling Active is displayed, followed by a chime and the Vehicle Dynamics telltale is illuminated. Under this scenario, ESC would be disabled until the SWPS is repaired.

B. If there is an intermittent interruption to the SWPS ground wire for less than 1.6 seconds (the time to set DTC C0710.00), there may be an inappropriate brake application. The brake applications are minor and not likely to impact vehicle heading. After the ground interrupt is restored, both SWPS sensor signals would return to the voltage that represents the current steering wheel position. This rapid transition back (50 ms) of both signals would set DTC C0710.1F. Once the DTC is set, a message on the Driver Information Center (DIC) stating Active Handling Active is displayed, followed by a chime and the Vehicle Dynamics telltale is illuminated. ESC would be disabled for the remainder of that key cycle.

Scenario 3 is dependent on the following three contributors occurring simultaneously:

- If there is a repetitive interruption to the power, ground, or yaw signal circuits to the AIS, and
- If the interruptions never occur long enough to set yaw rate of change DTC C0196 (the rate of change of the yaw rate must exceed  $390 \text{ deg/sec}^2$ ), and
- If the interruptions are close enough and consistent enough to create the yaw rate error of greater than approximately 4 degrees/sec.

If all three of the above contributors occur simultaneously, the ESC system may generate inappropriate brake applications until the above conditions are no longer met or DTC C0196 is set. The brake applications are minor and under normal driving maneuvers not likely to impact vehicle heading.

Scenario 4:

The likelihood of scenario 4 occurring is a function of the initial orientation of the SWPS when the steering column was built or serviced relative to the zero point of the steering column. Every position of the steering wheel has a combination of SWPS voltages. At a SWPS position of 180 degrees from 0 (top dead center), the design intent of signal 2 is equal to 5 V and signal 1 is equal to 2.5 V. The likelihood of scenario 4 is slightly increased the closer this SWPS voltage combination is to the 0 degree position of the steering wheel and can only happen when the following four contributors occur simultaneously:

- If there is an intermittent interruption in the signal 1 when signal 1 voltage is approximately 2.5V and signal 2 voltage is approximately 5V, and
- If the driver is turning the steering wheel at a rate greater than 80deg/sec (pauses the phase offset diagnostic counter from incrementing), and
- If an interruption occurs to the SWPS signal 1 connector long enough for the steering wheel to travel 90 degrees of rotation and then the signal recovers, and
- If the above conditions are met and the vehicle speed is greater than 15 kph, a steering wheel revolution can be falsely counted and ultimately result in corruption of the steering wheel position.

That means the ESC interprets steering inputs to be greater than they actually are. The ESC system may then make inappropriate brake applications if the steering wheel is turned until other conditions are met.

If the steering wheel is turned in one direction ESC will detect understeer and apply brakes to one rear wheel and the driver will feel a deceleration. If the steering wheel is turned in the other direction ESC will detect oversteer and apply the brake to one front wheel, the driver will notice deceleration, a slight change in vehicle heading and may hear tire noise. In either case the vehicle is controllable.

ESC will be deactivated once conditions are met to set DTC C0252.00 (sets if there is a stability event that lasts for more than 10 seconds). If the vehicle speed slows to between 8 and 15 kph, or the vehicle ignition is cycled the algorithm detects the incorrect steering angle and corrects it.

b. The failure mechanism(s);

The potential failure mechanisms for scenarios 1, 2 and 4 above are an intermittent or open connection between the male and female terminals at the SWPS to connector C202 due to fretting corrosion or intermittent or open connection between the C202 connector and the EBCM. The potential failure mechanism for scenario 3 is intermittent connection resulting in a loss of yaw signal circuits between the male and female terminals at the AIS or between the AIS and the EBCM.

c. The failure mode(s);

Potential failure modes for the scenarios above include repetitive telescoping of the steering column or improperly seated connectors at the EBCM.

d. Using statistical modeling of warranty data or other analytical methods give GM's assessment of the rates of subject component failure/malfunction at 1, 3, and 6 years in service – include a

detailed description of the statistical method used and a copy of the input data and the results (e.g., if Weibull analysis is used, give the output shape and scale parameters);

The requested Weibull analysis is included on the Att\_2\_GM\_Conf disk in the folder labeled "Q\_14", in the file labeled "Q\_14\_Weibull."

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

GM does not believe that the subject condition presents an unreasonable risk to motor vehicle safety for the following reasons:

- Low rate of occurrence  
Weibull Analysis projected incident rates are only 0.2 IPTV at 1 year, 0.6 IPTV at 3 years and 1.1 IPTV at 6 years
- The rare set of conditions that would need to be present
- The drivers' ability to maintain directional control of the vehicle if the alleged condition were to occur.
- No reports of injuries and only one alleged minor crash

f. Please refer to the four scenarios in question 14a for a description of the warnings the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning.

g. The reports included with this inquiry.

GM reviewed the 8 incident reports (VOQs) included with this inquiry. GM believes that VOQ 10241957 is related to the tire pressure monitoring system and not ESC. The other 7 incident reports may be related to the alleged condition. GM has not examined the components that are the subject of the VOQs; therefore, GM has not identified the specific contributory factors related to each of the alleged failures.

\* \* \*

General Motors requested assistance and documents from suppliers in responding to items 8, 9, 10, 12, 13 and 14 and this response includes those documents received from suppliers.

This response is based on searches of General Motors Corporation (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 January 1, 2000, were involved in any way with any of the following related to the alleged defect in the subject vehicles:

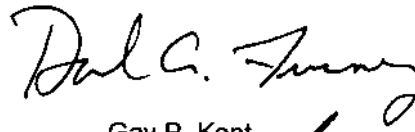
- a. Design, engineering, analysis, modification or production (e.g. quality control);
- b. Testing, assessment or evaluation;

- c. Consideration, or recognition of potential or actual defects, reporting, record-keeping and information management, (e.g., complaints, field reports, warranty information, part sales), analysis, claims, or lawsuits; or
- d. Communication to, from or intended for zone representatives, fleets, dealers, or other field locations, including but not limited to people who have the capacity to obtain information from dealers."

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

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

Sincerely,



Gay P. Kent  
Director  
Product Investigations

Attachments