



18 Sept 09

Jeffrey L. Quandt, Chief
Vehicle Control Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave., S. E., Room W48-307
Washington, D.C. 20590

N090188

NVS-213kmb
PE09-032

Dear Mr. Quandt:

This letter is General Motors' (GM) response to your information request (IR), dated 23 July 09, regarding allegations of engine compartment fire originating at or near the ignition coils in certain model year (MY) 2007 Saab 9-3 Aero vehicles equipped with the 2.8L V6 Turbo (LP9) engine manufactured by General Motors Corporation, and to request certain information about these vehicles. Engine compartment fires in this response include all reports and claims in which there were indications of a fire or flame. Engine compartment fires also include reports and claims when there was thermal damage to other underhood components, as well as the ignition coil and adjacent wiring. In this response, GM has also included allegations of non-fire thermal events defined as smoke/odor/melting originating in the ignition coil.

Your questions and our corresponding replies are as follows:

1. **State, by model and model year, the number of subject vehicles GM has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by GM, state the following:**
 - a. **Vehicle identification number (VIN);**
 - b. **Make;**
 - c. **Model;**
 - d. **Model Year;**
 - e. **Date of manufacture;**
 - f. **Date warranty coverage commenced; and**
 - g. **The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).**

Provide the table in Microsoft Access 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 vehicles produced for sale or lease in the United States by make, model and model year in Table 1 below:

Product Investigations

Mail Code: 480-210-G11 • 30001 Van Dyke • Warren, MI 48090
PE09032_N090188_Response.doc

MAKE/ MODEL	2007 MY
Saab 9-3 Aero	4,029

TABLE 1 VEHICLE PRODUCTION

The production information requested in 1a-1g is provided on the ATT_1_GM disk; folder labeled "Q_01". Refer to the Microsoft Access 2000 file labeled "Q_01_PRODUCTION DATA".

2. State the number of each of the following, received by GM, or of which GM is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:
- Consumer complaints, including those from fleet operators;
 - Field reports, including dealer field reports;
 - 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;
 - Property damage claims;
 - Third-party arbitration proceedings where GM is or was a party to the arbitration; and
 - Lawsuits, both pending and closed, in which GM is or was a defendant or codefendant.

For subparts "a" through "f," state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint). 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 below summarizes records that may relate to allegations of engine compartment fire originating at or near the ignition coils. GM has organized the records by the GM file number within each attachment. Refer to access database "Q_03_REQUEST NUMBER TWO DATA" for categories prescribed by the NHTSA.

Type of Report	GM Reports	Subcategories			
		Corresponding to NHTSA Reports	Number with Property Damage	Number with Crash	Number with Injuries/fatalities
Owner Reports	4	0	0	0	0
Field Reports	0	0	0	0	0
Not-In-Suit Claims	2	0	0	0	0
Subrogation Claims	1	0	0	0	0
Third Party Arbitration Proceedings	0	0	0	0	0
Product Liability Lawsuits	0	0	0	0	0
Total Reports (Including Duplicates)	7	0	0	0	0
Total Vehicles with Reports (Unique VIN)	4	0	0	0	0

TABLE 2-1: REPORT CLASSIFICATION - ALLEGATIONS OF ENGINE COMPARTMENT FIRE ORIGINATING AT OR NEAR THE IGNITION COILS

Table 2-2 summarizes claims containing information indicating smoke/odor/ melting originating at or near the ignition coil.

Type of Report	GM Reports	Subcategories			
		Corresponding to NHTSA Reports	Number with Property Damage	Number with Crash	Number with Injuries/fatalities
Owner Reports	1	0	0	0	0
Field Reports	1	0	0	0	0
Not-In-Suit Claims	0	0	0	0	0
Subrogation Claims	0	0	0	0	0
Third Party Arbitration Proceedings	0	0	0	0	0
Product Liability Lawsuits	0	0	0	0	0
Total Reports (Including Duplicates)	2	0	0	0	0
Total Vehicles with Reports (Unique VIN)	2	0	0	0	0

TABLE 2-2: REPORT CLASSIFICATION - ALLEGATIONS OF SMOKE/ODOR/ MELTING ORIGINATING AT OR NEAR THE IGNITION COIL

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	5 Aug 09
Technical Assistance Center	31 Jul 09
Field Information Network Database (FIND)	10 Aug 09
Field Product Report Database (FPRD)	5 Aug 09
Company Vehicle Evaluation Program (CVEP)	28 Jul 09
Captured Test Fleet (CTF)	28 Jul 09
Early Quality Feedback (EQF)	28 Jul 09
Legal / Employee Self Insured Services (ESIS)/Product Liability Claims/ Lawsuits	3 Aug 09

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:
- a. GM's file number or other identifier used;
 - b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
 - c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
 - d. Vehicle's VIN;
 - e. Vehicle's make, model and model year;
 - f. Vehicle's mileage at time of incident;
 - g. Incident date;
 - h. Incident location;
 - i. Report or claim date;
 - j. Whether a vehicle fire is alleged;
 - k. Whether a structure fire is alleged;
 - l. Whether property damage is alleged;
 - m. Number of alleged injuries, if any;
 - n. Number of alleged fatalities, if any;
 - o. Whether GM received a subrogation claim regarding the incident(If so, please provide the name of the business and/or person who submitted the claim, their address, and telephone number);
 - p. Whether a fire investigation was performed by any party, that GM is aware of, to determine the origin and cause (if so, please provide a copy of the report);
 - q. Alleged origin of the fire;
 - r. Alleged cause of the fire;
 - s. Whether the incident occurred with the engine "OFF" or the engine "ON";
 - t. Ignition key position at time of incident;

- u. Complaint summary;**
- v. Consumer comments; and**
- w. GM's assessment of the allegation, including causal and contributing factors and a summary of the significant underlying facts and evidence.**

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; folder labeled "Q_03". Refer to the Microsoft Access 2000 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 and 2-2 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.

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.

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

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

- a. GM's claim number;**
- b. Vehicle owner or fleet name (and fleet contact person) 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; and
- k. 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.

The regular warranty claims with allegations of engine compartment fire originating at or near the ignition coils on the subject vehicles are summarized in Table 5-1. The regular warranty claims with allegations of smoke/odor/melting originating at or near the ignition coil are summarized in Table 5-2. There were no goodwill warranty claims, MIC or UWC service contract claims with allegations of engine compartment fire or smoke/odor/melting originating at or near the ignition coils. A summary of the warranty claims, including the information requested in 5(a-k), is provided on the ATT_1_GM disk; folder labeled "Q_05". Refer to the Microsoft Access 2000 file labeled "Q_05_WARRANTY DATA". A list of the labor codes, customer complaint codes and trouble codes used to collect the warranty data is provided in response to item No. 6.

MAKE/ MODEL	Type	2007 MY
Saab 9-3 Aero	Regular	5

TABLE 5-1: REGULAR WARRANTY CLAIMS WITH ALLEGATIONS OF ENGINE COMPARTMENT FIRE ORIGINATING AT OR NEAR THE IGNITION COILS

MAKE/ MODEL	Type	2007 MY
Saab 9-3 Aero	Regular	29

TABLE 5-2: REGULAR WARRANTY CLAIMS WITH ALLEGATIONS OF SMOKE/ODOR/MELTING ORIGINATING AT OR NEAR THE IGNITION COIL

Source System	Last Date Gathered
Saab Cars USA - regular warranty	19 Aug 09
MIC - service contract claims	20 Jul 09
UWC - service contract claims	27 Jul 09

TABLE 5-3: LAST DATES GATHERED

GM searched the GM Global Analysis and Reporting Tool (GART-regular warranty), the Saab Cars USA, Inc. warranty database, 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 Saab Cars USA, Inc. and GART warranty databases do not contain the following information: vehicle owner's name or telephone number, replacement part number description or customer concern statement. GM is providing a field labeled "Verbatim Text" in response to request 5K (dealer/technician comment) when included in 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.

A summary of warranty claims that may relate to the subject condition is provided on the ATT_1_GM disk; folder labeled "Q_05". Refer to the Microsoft Access 2000 file labeled "Q_05_WARRANTY DATA".

- 6. Describe in detail the search criteria used by GM to identify the claims identified in response to Request No. 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the alleged defect in the subject vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by GM on the subject vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) that GM offered for the subject vehicles and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.**

The GM Global Analysis and Reporting Tool (GART-regular warranty) regular warranty database, the Saab Cars USA, Inc. warranty database and the Motors Insurance Corp (MIC) service contract claims database were searched using the labor codes listed in Table 6-1 and part numbers listed in table 6-2, that may be related to the alleged defect.

All of the claims included a customer, analysis and solution verbatim. All of the verbatim comments for these claims were read and used to sort the warranty data. Using these warranty claim verbatims, GM was able to identify claims of engine compartment fire originating at or near the ignition coils and smoke/odor/melting originating at or near the ignition coil.

Universal Warranty Corporation (UWC) does not use labor codes or trouble codes.

Some of the VINs have multiple entries for various labor codes. The warranty claims reflect the number of labor operations used by dealers, which is higher than the number of actual visits to dealers for repairs.

LABOR CODE	DESCRIPTION:
34111-1	IGNITION COIL-REPLACE DETAIL
34111-2	IGNITION COIL
34111-3	IGNITION COIL
34111-5	IGNITION COIL-ADJUST
34111-6	IGNITION COIL-REPLACE COMPLETE UNIT
34111-8	IGNITION COIL-CHECK TROUBLESHOOT
34111-10	IGNITION COIL
J4340	IGNITION COIL REPLACEMENT
J4345	COIL, ELECTRONIC IGNITION CONTROL (DIS/3CI) - REPLACE
Z1241	PRODUCT LIABILITY/INVESTIGATION REP PR (GOODWILL)
Z1242	PAR-REPAIRS/REIMBURSEMENT (GOODWILL)
Z1243	INSPECTION-PRODUCT ALLEGATION RESOLUTION

TABLE 6-1 LABOR CODES USED IN WARRANTY AND MIC SEARCH

PART NUMBER	DESCRIPTION:
12583514	IGNITION COIL
12613057	IGNITION COIL
12629037	IGNITION COIL

TABLE 6-2 PART NUMBERS USED IN WARRANTY AND MIC SEARCH

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

The number of extended service contracts on the subject vehicles that have been sold by MIC as of 29 Jul 09 and UWC as of 13 Sept 09 regardless of status (in-force, expired, cancelled) is contained in Tables 6-3 and 6-4.

MAKE	MODEL	2007
Saab	9-3 Aero	134

TABLE 6-3: MIC EXTENDED SERVICE COVERAGE CONTRACTS SOLD

MAKE	MODEL	2007
Saab	9-3 Aero	52

TABLE 6-4: UWC EXTENDED SERVICE COVERAGE CONTRACTS SOLD

7. Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that GM has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletins, advisories, informational documents, training documents, 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.

There are no Technical Service Bulletins (TSBs) that may relate to the subject condition.

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 Table 8-1 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 17 Sept 09. Documents and additional supporting information are included in the Attachments as noted in the table.

<p>Action 8-1: Design, Development and Validation of the ignition system Start Date: 10 Aug 98 End Date: 28 Nov 08 Engineering Group: GM Engineering Attachments: ATT_2_GM_Conf disk; folder labeled "Q_08 GM Validation" Description: GM's engineering documents Summary: The ignition system for the subject vehicles passed all validation tests.</p>
<p>Action 8-2: Design, Development and Validation of the ignition system Start Date: 10 Aug 98 End Date: 28 Nov 08 Engineering Group: Bosch Engineering Attachments: ATT_3_Bosch_Conf disk; folder labeled "Q_08 Bosch Validation" Description: Bosch's engineering documents Summary: The ignition system for the subject vehicles passed all validation tests.</p>
<p>Action 8-3: Engineering changes Start Date: 30 Mar 07 End Date: 22 Aug 08 Engineering Group: GM Engineering Attachment: ATT_2_GM_Conf disk; folder labeled "Q_08 GM Engineering changes" Description: GM's engineering changes of the ignition system on the subject vehicles. Summary: GM released information and engineering changes after start of production.</p>
<p>Action 8-4: GM Investigation Start Date: 16 Aug 08 End Date: Continuing Engineering Group: GM Engineering Attachment: ATT_2_GM_Conf disk; folder labeled "Q_08 GM Investigation" Description: Internal presentations and emails related to the alleged defect. Summary: GM's internal investigation of the ignition system and its operation.</p>
<p>Action 8-5: Bosch Investigation Start Date: 16 Aug 08 End Date: Continuing Engineering Group: Bosch Engineering Attachment: ATT_3_Bosch_Conf disk; folder labeled "Q_08 Bosch Investigation" Description: Bosch's internal investigation of the ignition system and its operation. Summary: Bosch is continuing its investigation of the alleged defect.</p>
<p>Action 8-6: GM Investigation Start Date: 16 Sept 09 End Date: Continuing Engineering Group: GM Engineering Attachment: None Description: GM's internal investigation of the ignition system and its operation. Summary: GM is continuing its investigation of the allegation of ignition coil fires.</p>

TABLE 8-1 SUMMARY OF ACTIONS THAT HAVE BEEN CONDUCTED

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 table of the changes and associated Engineering Work Orders (EWOs) that occurred to the subject vehicle's ignition system in the ATT_2_GM_Conf disk; folder labeled "Q_09".

10. Produce two 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 10 contains a sample of the latest service part for the ignition coil. This is representative of parts that GM has used in service. Some of the design versions installed in the subject vehicles are no longer produced for production or service. Refer to question 9 for a list of design versions of the subject component. GM does not have a field return sample of the subject component 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 cut-off 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; folder labeled "Q_12". Refer to the Microsoft Excel files labeled "Q_12_Part Sales". GM does not offer any kits for use in service repairs specifically related to the alleged defect.

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, contact name and phone number.

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

- a. The causal or contributory factor(s);**
- b. The failure mechanism(s);**
- c. The failure mode(s);**
- d. The risk to motor vehicle safety that it poses;**
- e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and**
- f. The reports included with this inquiry.**

The primary cause of thermal incidents at or near the coils in these vehicles is a crack in the capacitor on a circuit board in the top of the coil (see Figure Q_12_A in Attachment Q_12_A). In the 2007MY the electromagnetic noise circuit contained a single capacitor. The capacitor is comprised of layers of ceramic and metallic materials (see Figure Q_12_B in Attachment Q_12_B). The circuit boards were manufactured in large sheets with the capacitor and other components soldered to the printed circuit board. Those sheets were then scored and bent to break apart each individual circuit board for assembly into individual coils. Flexing of the printed

circuit board during manufacturing can bend and crack the ceramic capacitor in the ignition coil's electromagnetic noise filter. The resulting cracks created in this process can vary in size. If a ceramic layer is cracked, carbon could migrate into the crack and form a resistive short circuit to ground when the powertrain wiring harness relay is closed.

A cracked capacitor can result in a resistive short circuit. The heat from a resistive short circuit may melt the potting epoxy around the circuit board at the top of the coil assembly producing smoke/odor/melting and, in rare instances, a fire. Most incidents, 29 out of 35, or 83%, have resulted only in smoke and melting of the epoxy but there is a small possibility that the epoxy material could ignite due to the heat and the availability of oxygen. A hole melted through the potting epoxy at the top of the coil is characteristic of the failure mode. Analysis of warranty return parts, field reports and warranty records supports the conclusion that this is the failure mode causing the observed thermal incidents.

Incidents of both smoke/odor/melting and of fire have been observed at or near the coils. Statistical analysis of the data indicates that the two groups of incidents (smoke/odor/melting versus fire) are different.

Six fire incidents have been documented among 2007MY Saab 9-3 vehicles equipped with V6 engines that are believed to be due to cracked EMC capacitors. It is believed that the fire incidents involved small cracks that led to a low-resistance, high-current (up to 30A, based on the fuse value for the engine harness) short circuit. As of 1 Sept 09 there have been no unattended fires, all reported fires have been confined to the engine compartment, and none of the reported fires have occurred in vehicles older than 394 days in service per the chart shown in Figure Q_12_C in Attachment Q_12_C.

Furthermore, 3,942, or 97.9%, of the subject vehicles are beyond this 394-day exposure period in which fire incidents have been observed. Only 87 vehicles, or 2.1%, of the total subject population still have less than 394 days in service (see Figure Q_12_C in Attachment Q_12_C).

Because reports of fires occur early in the life of the vehicle and only 87 vehicles, or 2.1% of the population is still within the age range of fires observed in the field, the likelihood of any future safety-related incidents of fires is predicted to be low.

There are no VOQs for this subject issue.

As a capacitor short circuit develops the vehicle continues to operate normally until the capacitor short circuit degrades the functional performance of the individual coil. At that point a misfire may occur in that individual cylinder. A diagnostic code may be set in the engine controller, and as the misfire continues a 'Service Engine Soon' light may be illuminated. As the affected coil misfires, the other coils continue to

function, but the operator may notice reduced power from the engine and rough running. Over time, heat from the resistive short circuit may begin to melt the epoxy generating an odor and possibly some smoke.

In 23 out of the 29 cases of smoke/odor/melting the 'Service Engine Soon' light was illuminated and it prompted the customer to bring the vehicle into the dealership for service. Most of these customers also complained of poor engine performance or rough running.

Of the cases of actual fires reported, most do not indicate that the customer noticed a 'Service Engine Soon' light. Most of these customers first noticed the smoke and/or odor from the coil.

In summary:

- 1) The predominant failure mode is a crack in the capacitor on a circuit board in the top of the coil which produced smoke/odor/melting in 83% of the reports and claims.
- 2) In most cases of smoke/odor/melting there was warning to the customer via a diagnostic light and rough engine operation.
- 3) The rare incidents of reported fires occurred early in the life of the vehicle and the future risk of fire is minimal. GM is continuing to investigate the issue.
- 4) All incidents of both smoke/odor/melting and of fire have been attended and have been confined to the front of the engine compartment. There are no reports of death or injury and there are no VOQs for this subject issue.

* * * * *

General Motors requested assistance and documents from suppliers in responding to item 8 and this response includes those documents received from suppliers.

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

This response is based on searches of General Motors (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 their 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, 2006, 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