GENERAL MOTORS CORPORATION
Vehicle Structure & Safety Integration

9 Jan 09

Thomas Z. Cooper, Chief
Vehicle Integrity Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Ave., S. E., Room W46-409
Washington, D.C. 20590

N080374

NVS-212am
PE08-062

Dear Mr. Cooper:

This letter is General Motors' (GM) response to your information request (IR), dated 29 Oct 08, regarding allegations of loss of turn signal function in MY 2004 Chevrolet Malibu and Malibu Maxx vehicles manufactured by General Motors Corporation (GM). The alleged defect is the failure of the subject components, specifically all exterior turn signal, stop lamp, DRL, and tail lamp bulbs or sockets on the subject vehicles.

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."**

   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:

| MAKE/ MODEL | 2004 MY |
|---|---|
| 2004 Chevrolet Malibu and Malibu Maxx | 132,367 |

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:**

   a. **Consumer complaints, including those from fleet operators;**
   b. **Field reports, including dealer field reports;**

**c. Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;**
**d. Property damage claims; and**
**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" and "d," provide a summary description of the alleged problem and causal and contributing factors and GM's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.**

Tables 2-1 below summarizes records that may relate to the alleged defect. 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 |
| Owner Reports | 264 | 4 | 0 | 0 | 0 |
| Field Reports | 105 | 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) | 369 | 4 | 0 | 0 | 0 |
| Total Vehicles with Reports (Unique VIN) | 348 | 4 | 0 | 0 | 0 |

Table 2-1: Report Classification - Allegations of Loss of Function: Any Exterior Turn Signal, Stop Lamp, DRL, or Tail Lamp Bulbs

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

| SOURCE SYSTEM | LAST DATE GATHERED |
|---|---|
| Customer Assistance Center | 6 Nov 08 |
| Technical Assistance Center | 26 Nov 08 |
| Field Information Network Database (FIND) | 6 Jan 09 |
| Field Product Report Database (FPRD) | 10 Nov 08 |
| Company Vehicle Evaluation Program (CVEP) | 5 Nov 08 |
| Captured Test Fleet (CTF) | 5 Nov 08 |
| Early Quality Feedback (EQF) | 5 Nov 08 |
| Legal / Employee Self Insured Services (ESIS)/Product Liability Claims/ Lawsuits | 13 Nov 08 |

TABLE 2-2: DATA SOURCES

3. **Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:**

   a. **GM's file number or other identifier used;**
   b. **The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);**
   c. **Vehicle owner or fleet name (and fleet contact person), address, and telephone number;**
   d. **Vehicle's VIN;**
   e. **Vehicle's make, model and model year;**
   f. **Specific identification of the failed component (i.e. "left rear turn signal bulb", "right front, DRL socket")**
   g. **Vehicle's mileage at time of incident;**
   h. **Incident date;**
   i. **Report or claim date;**
   j. **Whether a crash is alleged;**
   k. **Whether property damage is alleged;**
   l. **Number of alleged injuries, if any; and**
   m. **Number of alleged fatalities, if any.**

   **Provide this information in Microsoft Access 2000, or a compatible format, entitled "REQUEST NUMBER TWO DATA."**

   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 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, or may relate to, the alleged defect 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."**

   For the subject vehicles, the regular warranty, goodwill warranty, and MIC service contract claims with loss of front turn signal function or failure of all exterior turn signal, stop lamp, DRL, and tail lamp bulbs or sockets are summarized by model and model year in Table 5-1 (front) and Table 5-2 (rear). Of the regular warranty claims, 6.8% of the total front and 6.7% of the total rear claims were socket replacement claims. The front and rear UWC service contract claims are summarized by model and model year in Table 5-3 and Table 5-4, respectively. 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 | 2004 MY |
|---|---|---|
| 2004 Chevrolet Malibu and Malibu Maxx | Regular | 25,675 |
| 2004 Chevrolet Malibu and Malibu Maxx | MIC | 372 |

TABLE 5-1: REGULAR WARRANTY AND MIC SERVICE CONTRACT CLAIMS WITH LOSS OF FRONT TURN SIGNAL/DRL FUNCTION

| MAKE/ MODEL | Type | 2004 MY |
|---|---|---|
| 2004 Chevrolet Malibu and Malibu Maxx | Regular | 21,634 |
| 2004 Chevrolet Malibu and Malibu Maxx | MIC | 208 |

TABLE 5-2: REGULAR WARRANTY AND MIC SERVICE CONTRACT CLAIMS WITH LOSS OF REAR STOP, TAIL, AND TURN SIGNAL FUNCTION

| MAKE/ MODEL | Type | 2005 MY |
|---|---|---|
| 2004 Chevrolet Malibu and Malibu Maxx | UWC | 8 |

TABLE 5-3: UWC SERVICE CONTRACT CLAIMS WITH LOSS OF FRONT TURN SIGNAL/DRL FUNCTION

| MAKE/ MODEL | Type | 2005 MY |
|---|---|---|
| 2004 Chevrolet Malibu and Malibu Maxx | UWC | 3 |

TABLE 5-4: UWC SERVICE CONTRACT CLAIMS WITH LOSS OF REAR STOP, TAIL, AND TURN SIGNAL FUNCTION

| SOURCE SYSTEM | LAST DATE GATHERED |
|---|---|
| GART - regular warranty | 13 Nov 08 |
| MIC - service contract claims | 13 Nov 08 |
| UWC - service contract claims | 4 Nov 08 |

TABLE 5-5: DATES PULLED

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.

GM's warranty database does not contain the following information: vehicle owner's name, telephone number, or customer concern statement. GM is providing a field labeled "Verbatim Text" in response to request 5K (dealer/technician comment). 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 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.**

All the labor codes listed in table 6-1 were searched, but only the labor codes listed in table 6-2 returned claims. From SOP (16 May 03) to Feb 04 the only codes related to bulb or socket replacement were N0528 and N0912. Additional labor codes N0680, N0681, N0760, and N0761 were added for bulb or socket replacement in Feb 04. Labor codes N9537 and N9538 were added on 10 Mar 06 with TSB 06-08-42-004.

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, listed in Table 6-1. Universal Warranty Corporation (UWC) does not use labor codes or trouble codes.

The warranty search identified claims only for the labor codes listed in Table 6-2. These claims were grouped into two sets of claims: one set of claims related to front lamps (consisting of claims with labor codes of N0680, N0681, and N9537) and another set of claims related to rear lamps (consisting of claims with labor codes of N0760, N0761, and N9538). Claims with labor codes N0528 (Bulbs, lamp – Exterior – replace) and N0912 (Socket, lamp – exterior – replace) were added to the front or rear lamp grouping based on part number association.

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: |
|---|---|
| N0528 | Bulbs, Lamp - Exterior - Replace |
| N0680 | Bulbs, Park and Turn Signal Lamp (Right) - Replace |
| N0681 | Bulbs, Park and Turn Signal Lamp (Left) - Replace |
| N0760 | Bulbs, Stop, Tail and Turn Lamp (Right) - Replace |
| N0761 | Bulbs, Stop, Tail and Turn Lamp (Left) - Replace |
| N0766 | Stop, Tail & Turn Bulb Replace |
| N0767 | Stop Signal Bulb Replace |
| N0912 | Socket, Lamp - Exterior - Replace |
| N0990 | Lamp Socket, RT Stop |
| N0991 | Lamp Socket, LT Stop |
| N0996 | Stop SIG Socket Replace |
| N0997 | Stop Signal Socket Replace |
| N1590 | RT Turn Signal Lamp Replace |
| N1591 | LT Turn Signal Lamp Replace |
| N1598 | 1PC Turn Signal Lamp Replace |
| N9537 | Socket, Lamp - Exterior (Front) - Replace |
| N9538 | Socket, Lamp - Exterior (Rear) - Replace |
| N0687 | Turn Signal Bulbs Replace |

Table 6-1 Labor Codes used in Warranty and MIC Search

| Labor Code | Description: |
|---|---|
| N0528 | Bulbs, Lamp - Exterior - Replace |
| N0680 | Bulbs, Park and Turn Signal Lamp (Right) - Replace |
| N0681 | Bulbs, Park and Turn Signal Lamp (Left) - Replace |
| N0760 | Bulbs, Stop, Tail and Turn Lamp (Right) - Replace |
| N0761 | Bulbs, Stop, Tail and Turn Lamp (Left) - Replace |
| N0912 | Socket, Lamp - Exterior - Replace |
| N9537 | Socket, Lamp - Exterior (Front) - Replace |
| N9538 | Socket, Lamp - Exterior (Rear) - Replace |

Table 6-2 Labor Codes with associated claims

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 is one Technical Service Bulletin (TSB) that may relate to the subject condition and has been issued to dealers, regional or zone offices, field offices, fleet purchasers or other entities. The TSB is included in the ATT_1_GM disk; folder labeled "Q_07." The preceding information was collected from GM Service Operations and was completed on 13 Nov 08.

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 9 Jan 09. Documents and additional supporting information are included in the Attachments as noted in the table.

| |
|---|
| **Action 8-1:** Design, Development, and Validation of the lighting system<br>**Start Date:** 31 Jul 98<br>**End Date:** 14 Apr 06<br>**Engineering Group:** GM Engineering<br>**Attachments:** ATT_2_GM_Conf disk; folder labeled "Q_08 GM Validation"<br>**Description:** GM's engineering documents<br>**Summary:** The lighting system for the subject vehicles passed all validation tests. |
| **Action 8-2:** Engineering changes<br>**Start Date:** 22 Jul 02<br>**End Date:** 25 Oct 06<br>**Engineering Group:** GM Engineering<br>**Attachment:** ATT_2_GM_Conf disk; folder labeled "Q_08 GM Engineering changes"<br>**Description:** GM's engineering changes of the lighting system on the subject vehicles.<br>**Summary:** GM released information and engineering changes after start of production. |

| |
|---|
| **Action 8-2:** Engineering changes<br>**Start Date:** 11 Apr 07<br>**End Date:** 11 Apr 07<br>**Engineering Group:** Federal Mogul Engineering<br>**Attachment:** ATT_3_SPLR_CONF disk; folder labeled "Q_08 Federal Mogul Engineering changes"<br>**Description:** Federal Mogul's engineering changes of the bulb on the subject vehicles.<br>**Summary:** Presentation of Federal Mogul engineering changes. |
| **Action 8-3:** GM Investigation<br>**Start Date:** 9 Jan 04<br>**End Date:** 10 Nov 06<br>**Engineering Group:** GM Engineering<br>**Attachment:** ATT_2_GM_Conf disk; folder labeled "Q_08 GM Investigation"<br>**Description:** GM's internal investigation of the Malibu lighting system and its operation.<br>**Summary:** GM's data analysis was completed. Warranty data indicated that the issue was primarily bulb life/replacement and only occasionally due to socket replacement. |

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 numbers (service and engineering) of the original component;**
   e. **The part number (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 lighting system in the ATT_2_GM_Conf disk; folder labeled "Q_09."

10. **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_10:" refer to the Microsoft Excel files labeled "Q_10_Part Sales" and "Q_10_Part Sales_Supplement." 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.

**11. Provide the following:**

**a. One sample of the original subject component,**
**b. One sample each of all modified subject components as identified in response to request number 9 above, and**
**c. Two samples of failed field returned subject components.**

Enclosure 11 contains a sample of the latest service part for the subject component. The sample of the latest service part is representative of parts that GM has used in the replacement of the subject component. Some of the design versions installed in the subject vehicles are no longer produced for production or service. Refer to question 10 for a list of design versions of the subject component. Enclosure 11 also contains a field returned socket and bulb.

**12. GM's Technical Service Bulletin (TSB) released on August 28, 2007 indicates to replace all nonfunctioning bulbs with a specific supplier made bulb (Osram 3057 P/N 15883346). Indicate the name of the manufacturer, the part number, and the number of OEM bulbs installed in the subject vehicles.**

The OEM bulbs installed for the two front turn signal/DRLs in the subject vehicles were GM part number 22729207 manufactured by Federal Mogul. The OEM bulbs installed for the two rear stop, tail, and turn signals, and two right and left rear tail lamps were GM part number 9441839 manufactured by Federal Mogul. For a graphic representation of these lamps as well as the sockets refer to the Microsoft PowerPoint file labeled "Q_12_Lamp Graphics" on the ATT_1_GM disk; folder labeled "Q_12."

**13. 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 failure modes have been identified as an intermittent or inoperative front park/turn/DRL or rear stop/tail/turn signal lamp on 2004 Chevrolet Malibu and Malibu Maxx vehicles.

Each headlamp assembly utilizes one park/turn/DRL bulb and one Zenite™ socket. The DRL is illuminated when the vehicle is in drive and the low beam or high beam is not activated, and the light sensor detects daytime light. The park/turn/DRL will flash when the turn signal or hazard switch is activated. The park/turn/DRL will also illuminate with the headlamp switch in the park position.

Each tail lamp assembly has a combination stop/tail/turn bulb and nylon socket. The bulb is illuminated during vehicle braking, when the headlamps are on, and when the turn signal or hazard switch is activated. The stop/tail/turn bulb will also illuminate with the headlamp switch in the park position.

Both bulbs have dual lighting elements (minor and major). Refer to the Microsoft PowerPoint file labeled "Q_12_Lamp Graphics" on the ATT_1_GM disk; folder labeled "Q_12." for detailed information.

The park/turn/DRL and stop/tail/turn bulbs are produced on the same assembly line, but they are not the same part number. Bulbs are standard commodity items that are not specific to any vehicle manufacturer. Bulbs are consumable, replaceable items that can burn out within the life of the vehicle. All lamps have some level of bulb burnout within the warranty period. Even low usage functions have bulb burnout warranty, regardless of the rated bulb life due to early failures and/or random failures. GM utilizes the industry's longest rated life bulbs for the park/turn/DRL and stop/tail/turn applications. The customer usage of a DRL is approximately twenty times the usage of a turn signal. Therefore, a bulb used as a park/turn signal/DRL will likely be replaced sooner and more often than one used as a park/turn signal. GM covers bulb replacements during the warranty period.

Contributory Factors:
An analysis of warranty part returns of stop, turn, DRL, and tail lamp bulbs and sockets has shown that the most significant contributor to the replacement of these bulbs is bulb quality. The most common quality issue is bulb "wobble". Wobble is the relative movement between the glass bulb and bulb base. A secondary quality issue is bulb sealing.

Bulb Wobble:
Review of bulbs returned for warranty discovered some could move as much as 3 mm within the bulb assembly (tolerance is +/- 1.0 mm). This relative movement results in impact vibrations for the bulb and also increases the potential for arcing between the bulb lead wires and socket terminals. Impacts and arcing result in reduced bulb life. This issue was most prevalent in vehicles built in February 2004.

Bulb Sealing:
If a bulb leaks and air enters it, the bulb will burn out prematurely. This is referred to as the "puffer" phenomenon. Warranty review of 2004 bulbs indicated there were instances of bulb seal failure. This was traced back to a supplier quality issue. During the manufacturing process some bulbs were not properly sealed. This issue was most prevalent in vehicles built in June 2004.

Warranty rates for park/turn/DRL bulbs are similar to that for stop/tail/turn bulbs when the bulbs without the above stated quality issues are present. This is true even with the higher duty cycle of the park/turn/DRL bulbs. During the months of build with the quality issues, the higher duty cycle of the park/turn/DRL bulbs results in higher warranty rates than the stop/tail/turn bulbs.

System voltage also contributes to bulb warranty. The park/turn/DRL and stop/tail/turn bulbs used for the subject vehicles have an operating voltage of 12.8 volts. System specifications are 12.8 +/-0.5 volts. While the headlamps and tail lamps were validated to the maximum system voltage of 13.3 volts, that voltage will reduce bulb life. The average operating voltage for the park/turn/DRL bulbs of 13.3 volts results in a bulb life of approximately 2,440 hours. The average operating voltage for the stop/tail/turn bulbs of 13.0 volts results in a bulb life of approximately 3,280 hours.

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

1) The replacement rate for the front park/turn/DRL is low for a single bulb at 42.8 IPTV at 12 months.
2) Although both rates are low, the replacement rate for the rear stop/tail/turn signal lamp is even lower than that of the front at 26.9 IPTV at 12 months.
3) The vast majority of warranty claims are only for bulb replacements. Bulbs represent 93.3% of all warranty claims.
4) There is indication to the driver of loss of front turn signal/DRL and rear turn signal/stop lamp function. When the turn signal bulb is non-functional, the driver is notified on activation of the turn signal indicator, as required by FMVSS 108. The turn signal indicator arrow flashes and the audible feedback cycles significantly faster than usual. This feature is described in the owner's manual.
5) There are no reports of crashes or injuries as a result of an alleged inoperative turn signal.
6) If the customer lost the front park/DRL lamp the other side of the vehicle will still be illuminated as an indicator for on-coming traffic.
7) Through the service bulletin GM has made available to its dealers service instructions that will assure that customers' vehicles are repaired effectively and minimize the likelihood of repeat failures.

The 27 VOQs included with this inquiry may have resulted from the contributory factors noted above. GM has not examined the parts that are the subject of the reports; therefore, GM has not identified the specific contributory factors related to each of the complaints.

* * *

General Motors requested assistance and documents from suppliers in responding to items 8, 9, and 11 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 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 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