



GENERAL MOTORS NORTH AMERICA
Structure & Safety Integration

May 14, 2007

Jeffrey L. Quandt, Chief
 Vehicle Control Division
 Office of Defects Investigation
 NHTSA Enforcement
 Room #5326
 400 Seventh Street, S.W.
 Washington, D.C. 20590

N07055

NVS-213dlr
 PE07-010

Dear Mr. Quandt:

This letter is General Motors (GM) response to your information request (IR), dated March 8, 2007, regarding alleged premature, excessive, or uneven front tire wear resulting from excessive negative camber and/or front strut to tire interference on 2004-2006 MY Pontiac GTO 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. Tire size
 - f. Date of manufacture;
 - g. Date warranty coverage commenced; and
 - h. 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 CD ROM titled "PE07-010", for a pre-formatted table which provides further details regarding this submission.

The number of subject vehicles GM has imported for sale or lease in the United States is shown in Table 1. The production information requested in 1a-1h is provided on the disc identified as ATT_1_GM; refer to the Microsoft Access 2000 file in the folder labeled "Q_01."

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	15,740	11,069	13,947	40,756

TABLE 1 VEHICLE PRODUCTION SUMMARY

This data was collected from the GM Claims Analysis Retrieval Database (CARD) on March 23, 2007.

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;

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 N070055 Response.doc



- 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" through "f" provide a summary description of the alleged problem and causal and contributing factors and GM's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "e" and "f," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

Table 2-1 below summarizes the records for the subject vehicles that could relate to the subject condition. Dealer Field Reports contain information from the Global Tire Warranty Claims (GTWC) database. The GTWC database is a repository of tire information from GM vehicle dealerships and tire suppliers about tires replaced under warranty and inspected by the tire suppliers. Each record is for one tire, so there may be four records for one vehicle. The database does not identify whether a particular tire was used on the front or rear of the vehicle.

TYPE OF REPORT	GM REPORTS	SUBCATEGORIES			
		CORRESPONDING TO NHTSA REPORTS	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/FATALITIES
Owner Reports	103	14	0	1	0
Field Reports	191	16	0	0	0
Dealer Field Reports*	911**	4**	N/A	N/A	N/A
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)	1,235**	34**	0	1	0
Total Vehicles with Reports (Unique VIN)	1,216**	27**	0	1	0

TABLE 2-1: REPORT CLASSIFICATION

N/A NOT APPLICABLE

* GLOBAL TIRE WARRANTY CLAIMS (GTWC) DATABASE UNIQUE VIN.

** THE COUNT OF TIRE REPLACEMENT REPORT INCLUDES REAR TIRES.

The data sources searched are shown in Table 2-2.

SOURCE SYSTEM	LAST DATE GATHERED
Customer Assistance Center	3/23/2007
Technical Assistance Center	3/15/2007
Early Quality Feedback (EQF)	3/15/2007
Field Information Network Database (FIND)	3/22/2007
Field Product Report Database (FPRD)	3/22/2007
Company Vehicle Evaluation Program (CVEP)	3/15/2007
Captured Test Fleet (CTF)	• 3/15/2007
Legal / Employee Self Insured Services (ESIS)	3/16/2007
Global Tire Warranty Claims (GTWC)	4/27/2007

TABLE 2-2: DATA SOURCES

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:
- GM'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 make, model and model year;
 - Vehicle's mileage at time of incident;
 - Incident date;
 - Report or claim date;
 - Whether a crash is alleged;
 - Whether property damage is alleged;
 - Number of alleged injuries, if any; and
 - Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2003, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure, CD ROM titled "PE07-010", for a pre-formatted table which provides further details regarding this submission.

GM is providing the requested information for 3a-e in ATT_1_GM Disc, folder labeled: "Q_03;" refer to Microsoft Access file named "Request Number Two Data." The information requested for 3f-m is also provided, where available, in the same Disc.

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 Disc; folder labeled: "Q_03;" refer to the Microsoft Access file. GM has organized the records by the GM file number within each attachment.

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 2003, or a compatible format, entitled "WARRANTY DATA." See Enclosure, CD ROM titled "PE07-010", for a pre-formatted table which provides further details regarding this submission.

For the subject vehicles, the regular warranty claims and extended warranty claims are summarized by model and model year in Tables 5-1A, 5-1B, 5-1C, 5-D, 5-2, and 5-3. A summary of these warranty claims is provided in ATT_1_GM Disc; folder labeled: "Q_05;" refer to the Microsoft Access file. The regular warranty claims include rear tires and rear wheel alignments.

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	211	52	12	275*

TABLE 5-1A: REGULAR WARRANTY CLAIMS: TIRE REPLACEMENT
 * THE COUNT OF TIRE REPLACEMENT CLAIM INCLUDES REAR TIRES.

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	14	3	8	25

TABLE 5-1B: REGULAR WARRANTY CLAIMS: STRUT REPLACEMENT

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	471	220	104	795**

TABLE 5-1C: REGULAR WARRANTY CLAIMS: WHEEL ALIGNMENT OR TOE ADJUSTMENT
 ** THE COUNT OF WHEEL ALIGNMENT CLAIM INCLUDES REAR WHEEL ALIGNMENTS.

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	0	0	0	0

TABLE 5-1D: REGULAR WARRANTY CLAIMS: GOODWILL

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	0	0	0	0

TABLE 5-2: EXTENDED WARRANTY CLAIMS: MIC

MAKE/ MODEL	2004 MY	2005 MY	2006 MY	TOTAL
Pontiac / GTO	0	0	0	0

TABLE 5-3: EXTENDED WARRANTY CLAIMS: UWC

GM searched the GM North America Claim Adjustment Retrieval Database (CARD-regular warranty), the Motors Insurance Corporation (MIC-extended warranty), and the Universal Warranty Corporation (UWC-extended warranty) databases to collect the warranty data for this response. The warranty data was last gathered on May 9, 2007.

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 extended warranty system does not contain the following information: repairing dealer code, vehicle owner information, trouble code, trouble code description, part number, part description or verbatim text. 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.

The General Motor's warranty system does not contain information on the number of vehicles that have extended warranty coverage. The number of extended warranty coverage contracts on the subject vehicles that have been sold by MIC and UWC for the subject vehicles regardless of status (in-force, expired, cancelled) are contained in Tables 5-4 and 5-5, respectively.

MAKE/ MODEL/ MODEL YEAR	2004	2005	2006	TOTAL
PONTIAC GTO	3,438	2,327	2,281	8,046

TABLE 5-4: MIC EXTENDED WARRANTY COVERAGE CONTRACTS SOLD BEFORE MARCH 19, 2007

MAKE/ MODEL/ MODEL YEAR	2004	2005	2006	TOTAL
PONTIAC GTO	100	32	44	176

TABLE 5-5: UWC EXTENDED WARRANTY COVERAGE CONTRACTS SOLD BEFORE MARCH 30, 2007

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.

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 regular warranty data was collected from the GM CARD database by searching for the labor operation codes listed in Table 6-1A and Table 6-1B, trouble codes listed in Table 6-2, and customer complaint codes listed in Table 6-3. The regular warranty data with the z-labor operation code were reviewed individually in verification of the alleged defect.

LABOR CODE	DESCRIPTION
E0421	TIRE, ONE-REPLACE
E0431	TIRE, GOODYEAR-REPLACE
E0432	TIRE, GENERAL-REPLACE
E0433	TIRE, MICHELIN-REPLACE*
E0434	TIRE, UNIROYAL-REPLACE
E0435	TIRE, B F GOODRICH-REPLACE*
E0436	TIRE, BRIDGESTONE-REPLACE**
E0437	TIRE, FIRESTONE-REPLACE**
E2000	TOE, FRONT - ADJUST
E2020	WHEEL ALIGNMENT-CHECK/ADJUST
E3850	STRUT, RIGHT FRONT - REPLACE
E3851	STRUT, LEFT FRONT - REPLACE
E3857	STRUT, BOTH FRONT - REPLACE
S0030	TIRE - REPLACE

TABLE 6-1A: LABOR CODES USED IN CARD & MIC SEARCH

* GTO 17 INCH TIRES
 ** GTO 18 INCH TIRES

LABOR CODE	DESCRIPTION
Z1241	PRODUCT LIABILITY/INVESTIGATION REP PR
Z1242	PAR-REPAIRS/REIMBURSEMENT

TABLE 6-1B: LABOR CODES USED IN CARD SEARCH

TROUBLE CODE	TROUBLE CODE DESCRIPTION
1A	Bent
1L	Cut
2F	Clearance-Too Tight
3A	Misadjusted/Misaligned
3K	Balance/Imbalance
3W	Punctured
3Z	Ruptured
4A	Scored
4H	Torn
4X	Worn

TABLE 6-2: REGULAR WARRANTY TROUBLE CODES

CUSTOMER CODE	CUSTOMER COMPLAINT CODE DESCRIPTION
CV	Visual: Wear
NF	Noise: Creak(Grind)
NG	Noise: Grind(Growl)
NK	Noise: Interference(Moan)
NS	Noise: Roar(Squeal)
NZ	Noise: Whine
O4	Operation: Vibration
O5	Operation: Wanders
OP	Operation: Odor
OQ	Operation: Pulls/Grabs
V9	Visual: Torn/Punctured(Wrinkled)

TABLE 6-3: REGULAR WARRANTY CUSTOMER COMPLAINT CODES

The MIC extended warranty data was also collected by searching for the labor codes listed in Table 6-1A except Labor Code S0030. MIC does not use labor code S0030. The UWC extended warranty data was collected by searching for the labor codes in Table 6-4.

LABOR CODE(S)	DESCRIPTION
0930	Strut
0930A	Strut-Front Left
0930B	Strut-Front Right
0930E	Struts-Front Both
0930G	Struts-Left Both
0930H	Struts-Right Both
0930I	Struts-All Four
0932	Shocks
1601	Tire Repair
1602	Tire Replace
0998	Misc. Components

TABLE 6-4: LABOR CODES USED IN UWC SEARCH

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 customers' preference, up to 7 years from the date of purchase or up to a total of 100,000 vehicle miles. The General Motors warranty system does not contain information on the number of vehicles that have extended warranty coverage.

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.

GM has not issued any service, warranty or other documents to dealers, regional or zone offices, that relates to or may relate to the subject condition in the subject vehicles.

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 March 30, 2007.

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 below is a summary of actions performed by GM regarding the alleged defect on the subject vehicles.

Copies of non-confidential documents related to each action are provided in ATT_1_GM Disc; folder labeled: "Q_08."

Copies of confidential documents related to the actions can be found in ATT_2_GM_CONF Disc; folder labeled: "Q_08." General Motors requests that this information, which has been stamped "GM Confidential" be afforded confidential treatment by NHTSA.

Copies of Supplier non-confidential documents related to each action are provided in ATT_3_SPLR Disc; folder labeled: "Q_08."

Copies of confidential documents related to the actions can be found in ATT_4_SPLR_CONF Disc; folder labeled: "Q_08". Suppliers request that this information, which has been stamped "Confidential" be afforded confidential treatment by NHTSA.

Action 8.1: Engineering tire tests.

Start Date: July 17, 2002

End Date: August 2, 2004

Engineering Group: GM Engineering, Michelin, and Bridgestone

Objective: Develop, perform, validate, and certify various sets of tires.

Summary of Action: The tests resulted in meeting the tire certifications of FMVSS 109 (new pneumatic tires for use on passenger car) and 110 (tire selection and rims).

<p>Action 8.2: Engineering tire studies. Start Date: February 6, 2002 End Date: March 26, 2007 Engineering Group: GM Engineering Objective: Study the clearance among the tire and interfacing components. Review engineering program issues for the tires. Summary of Action: Completed the study of the clearance among the tire and adjacent components via computer aided design. The profiles of 245/45-17 B F Goodrich tires and 225/50-17 Goodyear tire data were compared and studied.</p>
<p>Action 8.3: Component and vehicle test reports. Start Date: July 12, 2002 End Date: December 17, 2004 Engineering Group: GM Engineering Objective: Develop and validate front strut assembly and front wheel/tire assembly components as part of the front suspension system. Summary of Action: Validation sign off documents.</p>
<p>Action 8.4: Strut load studies Start Date: June 25, 2004 End Date: December 6, 2004 Engineering Group: GM Engineering Objective: Measure and study the front suspension strut loads for various vehicle operating conditions. Summary of Action: Strut loads and effects for extreme vehicle operating conditions were measured and understood.</p>
<p>Action 8.5: PRTS camber reports Start Date: February 12, 2003 End Date: April 29, 2006 Engineering Group: GM Engineering Objective: Document durability and production vehicle performance. Summary of Action: See attached documents.</p>
<p>Action 8.6: Manufacturing quality control process and measurements Start Date: December 29, 1999 End Date: October 3, 2006 Engineering Group: Dana Objective: Document manufacturing assembly quality control process. Summary of Action: The quality control plans exist and up to date.</p>
<p>Action 8.7: GM Engineering reviews Start Date: June 19, 2003 End Date: May 14, 2007 Engineering Group: GM Engineering Objective: Review investigation status. Summary of Action: GM reviewed the investigation status and concluded that the field reports are related to wheel alignment issue that causes tire wear out. GM's assessment is further described in response to question 13.</p>
<p>Action 8.8: GM internal investigations Start Date: March 17, 2006 End Date: On-going Engineering Group: GM Engineering Objective: Review investigation status Summary of Action: GM reviewed the investigation status and concluded that the field reports are related to wheel alignment issue that causes tire wear out. GM's assessment is further described in response to question 13.</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

components, 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. A drawing or graphic representation of the change
- d. The reason(s) for the modification or change;
- e. The part numbers (service and engineering) of the original component;
- f. The part number (service and engineering) of the modified component;
- g. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- h. When the modified component was made available as a service component; and
- i. 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.

The folder labeled "Q_09" on the Attachment 2 CD GM Confidential contains charts describing the changes and modifications on the tires, strut assembly and front corner modules in the subject vehicles, and components that relate or could relate to the alleged defect.

The Pontiac GTO is no longer in production. General Motors is not aware of any modifications or changes that may be incorporated into vehicle production within the next 120 days. The data was last gathered on March 30, 2007.

10. Furnish GM's assessment of the following:

- a. All factors that may contribute to premature tire wear due to the front camber wheel alignment settings;
- b. All factors that may contribute to tire contact between a front tire and front strut assembly; and
- c. All factors related to the camber readings and front tire to front strut contact that contribute to the potential for a tire air-loss failure to occur.

For the subject vehicle, subject components and alleged defect;

- a. Front wheel negative camber outside the specification may cause uneven tire loading that may contribute to premature wear on the inboard tire tread.
- b. Front wheel negative camber outside the specification may contribute to contact between a front tire and front strut assembly.

Non-OEM (Original Equipment Manufacturer) tires and/or wheels or other component modifications may contribute to contact between a front tire and front strut assembly.

Driving over a severe pothole or severe bump may result in wheel deformation and/or tire sidewall bulge. The same driving event may result in front suspension damage and/or misalignment. Any of these resulting conditions may contribute to contact between a front tire and front strut assembly.

- c. Front wheel negative camber outside the specification may contribute to contact between a front tire and front strut assembly. The contact can cause polishing on the tire sidewall and the strut; however, this does not cause a tire sudden air loss. GM has not observed any tires in which tire-strut contact caused sudden air loss.

11. Provide the following information:

- a. The service history information for each of the ODI complaints with a valid VIN, including all alignment data for the front wheels.
 - b. Provide the same information for all vehicles identified in GM complaints and field reports.
 - c. For each ODI and GM complaint and field report, state whether the vehicle has been inspected by, or for, GM and, if so, provide copies of all relevant documents.
 - d. State each of the factors identified in response to Question 10 that were identified in each of the complaint and field report vehicles.
 - e. For each vehicle identified in the ODI complaints and the GM complaints, provide the final alignment settings for the front wheels from the manufacturing plant.
-
- a. The service history information for each of the ODI complains with valid VINs is provided in ATT_1_GM Disc; refer to folder "Q_11". The wheel alignment data may be provided with the service history information.
 - b. The service history information identified in GM complaints, field reports and dealer field reports are provided in ATT_1_GM Disc; refer to folder "Q_11".
 - c. GM identified one Product Allegation Resolution vehicle record (GM file #1-397588239 and ODI VOQ #10155138) that was inspected.
 - d. For the vehicle identified in response to "c", GM has identified right front tire/wheel camber out of specification condition at the inspection of the vehicle. The condition at the time of accident is unknown.
 - e. GM is submitting final alignment settings for the front wheels from the manufacturing plant for vehicles identified in response to questions 2 through 4 and ODI complaints submitted with this information request. ATT_1_GM Disc; refer to folder "Q_11".

12. State the design clearances between the front tires and front strut assemblies in the subject vehicles through the full range of suspension adjustment and alignment specifications. Produce side, front and top view graphics showing the left and right front suspension components and tire/wheel assemblies with the clearances between the tires and front struts shown in each view for the full range of alignment specifications. Provide similar graphics for the following conditions:

- a. Static condition at curb weight and GVWR;
- b. Low speed cornering (closest position of tires to struts through full range of steering);
- c. High speed cornering (closest position of tires to struts during dynamic cornering/turning);
- d. Full jounce; and
- e. Any other conditions that may produce smaller clearances between the front tires and front strut assemblies than occur during the above conditions.

- a. Through the full range of suspension alignment specifications, the Computer Aided Design (CAD) clearance ranges are specified in documents "CAD alignment specifications.pdf", in response to question 8.2 Tire Studies.

The CAD design does not comprehend rubber suspension bushing elasticity. Therefore, in the vehicle, the king-pin to strut inclination is greater than that shown on the CAD design. Consequently, in the vehicle, a greater clearance exists between the tire and the strut for a given camber angle setting. Refer to document "img-3191206-0001.pdf" or "STRUT CLEARANCE DATA GOODYEAR 225 17.pdf" in response to question 8.2 Tire Studies.

- b-e. As the GTO front wheel suspension system incorporates a McPherson strut, the wheel/tire and strut travel and turn in unison. Consequently, the design clearance between the tire and the strut does not change through the combined range of suspension and steering travel, i.e., with vehicle weight change, with vehicle cornering speed, or with the amount of steering angle.

As the left and right front suspension components are mirror images of each other, there is no additional clearance information to be obtained from the provision of left and right view graphics.

Due to the McPherson strut design, there is no additional clearance information to be obtained from the provision of side and top view graphics.

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 likelihood of a tire failure in the event of tire to strut contact;**
- 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.**

GM has not observed any tires in which tire-strut contact caused sudden air loss.

The causal or contributory factor(s) for the alleged conditions are:

- Front wheel negative camber outside the specification may cause uneven tire loading that may contribute to premature wear on the inboard tire tread.
- Front wheel negative camber outside the specification may contribute to contact between a front tire and front strut assembly. The contact can cause polishing on the tire sidewall and the strut; however, this does not cause sudden air loss. GM has not observed any tires in which tire-strut contact caused sudden air loss.
- Non-OEM (Original Equipment Manufacturer) tires and/or wheels or other component modifications may contribute to contact between a front tire and front strut assembly.

- Driving over a severe pothole or severe bump may result in wheel deformation and/or tire sidewall bulge. The same driving event may result in front suspension damage and/or misalignment. Any of these resulting conditions may contribute to contact between a front tire and front strut assembly.

Tires require regular maintenance. The owner's manual "Tire Inspection and Rotation" section recommends that the tires should be rotated every 5,000 to 8,000 miles (8,000 to 13,000 km). The same section of the owner's manual also states the following:

"Any time you notice unusual wear, rotate your tires as soon as possible and check wheel alignment. Also check for damaged tires or wheels. See *When It Is Time for New Tires* on page 5-64 and *Wheel Replacement* on page 5-68 for more information. The purpose of regular rotation is to achieve more uniform wear for all tires on the vehicle. The first rotation is the most important. See *Scheduled Maintenance* on page 6-4."

The owner's manual, "When It Is Time for New Tires." section states that one way to tell when it's time for new tires is to check the tread wear indicators, which will appear when operator tires have only 1/16 inch (1.6 mm) or less of tread remaining. The same section of the owner's manual also states the following:

"You need a new tire if any of the following statements are true:

- You can see the indicators at three or more places around the tire.
- You can see cord or fabric showing through the tire's rubber.
- The tread or sidewall is cracked, cut or snagged deep enough to show cord or fabric.
- The tire has a bump, bulge or split.
- The tire has a puncture, cut or other damage that can't be repaired well because of the size or location of the damage."

Out of specification wheel camber may lead to uneven tire tread wear, but is unlikely to lead to sudden air loss. Sudden air loss is most likely caused by a road hazard (e.g. punctured tire, bent wheel rim flange, or damaged tire valve).

Driving a vehicle with a tire that is gradually losing pressure from a road hazard will cause the tire to become over-loaded and over-heated resulting in sidewall inner liner deterioration. Eventually, the sidewall becomes so weak that the tire rapidly loses air. The tire damage is the result of the road hazard, not the result of the tire contacting the strut.

Certain field reports suggest excessive negative camber may cause uneven tire tread wear without air loss. Other field reports suggest that certain customers are dissatisfied with their tire tread life. The GTO high speed rated performance tires have a shorter tread life when compared to standard all-season radial tires.

In the event of excessive negative camber or tire and strut contact, the operator may notice unusual noise, steering wheel vibration, generation of smoke, and smell of tire rubbing. The vehicle may pull to either side due to increased rotational resistance of the rubbing tire assembly.

GM believes there is no substantial risk to motor vehicle safety associated with tire-strut contact because: (1) tire-strut contact is infrequent and GM has not observed any tires in which tire-strut contact caused sudden air loss (2) proper maintenance would likely identify unusual tire wear and (3) a driver is unlikely to ignore all of the warnings associated with excessive negative camber or tire-strut contact that would precede gradual or sudden air loss.

In review of the reports that NHTSA provided, there are 9 unique vehicles that allege air loss. Only one VOQ (10169324) had sufficient information to perform an assessment. GM's assessment of this incident is that the right front tire ran under-inflated. This type of tire failure is usually due to road hazard.

* * *

General Motors requested assistance and documents from suppliers in responding to items 2, 3, 4, 8 and 9 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.

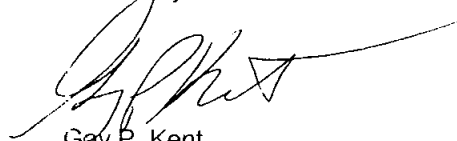
This response is based on searches of General Motors Corporation (GM) locations where documents determined to be responsive to your request would ordinarily be found. As a result, the scope of this search did not include, nor could it reasonably include, "all of its divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and 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, 2003, 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

**N070055
PE07-010**

GM CONFIDENTIALITY LETTER

**GM CONFIDENTIALITY LETTER
HAS BEEN REMOVED FROM THIS
ATTACHMENT AND SUPPLIED TO
THE OFFICE OF THE CHIEF COUNSEL**

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PE07-010**

SUPPLIER CONFIDENTIAL LETTER

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ATTACHMENT "2"

GM CONFIDENTIAL MATERIAL

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**ATTACHMENT "4"
SUPPLIER CONFIDENTIAL MATERIAL**

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