



GENERAL MOTORS NORTH AMERICA
Structure & Safety Integration

October 31, 2003

Kathleen C. DeMeter, Director
Office of Defects Investigation
NHTSA Safety Assurance
Room #5926
400 Seventh Street, S.W.
Washington, D.C. 20590

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OFFICE OF DEFECTS
INVESTIGATION
NVS-213cla
EA03-004

Dear Ms. DeMeter:

This letter is General Motors (GM) response to your information request (IR) dated September 3, 2003, for comparative information to support your investigation of alleged wheel stud fracture and potential wheel separation in model year 1997 through 2000 Ford Windstar vehicles manufactured by Ford Motor Company. For the purpose of this response, the subject GM vehicles are model year 1997 through 2003 Chevrolet Venture, Pontiac Tran Sport / Montana, and Oldsmobile Silhouette vehicles.

Your questions and our corresponding replies are as follows. Please note the attachments are numbered according to their corresponding request.

1. State by model, wheel type, and model year, the number of peer vehicles GM has manufactured for sale or lease in the United States. Separately, for each peer vehicle manufactured to date by GM, state the following:
 - a. Vehicle identification number (VIN);
 - b. Make;
 - c. Model;
 - d. Wheel type;
 - e. Model Year;
 - 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, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

GM is providing the number of subject vehicles produced for sale or lease in the United States by make, model, model year, and wheel type in Table 1 below. The electronic summary of items 1a-h is provided in Attachment 1 CD; refer to the Microsoft Access 2000 file folder labeled "Response for Q1".

The source of the requested information, current as of September 19, 2003, is the GM North America (NA) Claim Analysis Retrieval Database (CARD).

Product Investigations
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Model Year	Wheel Type	MODEL			TOTAL	
		Chevrolet Venture	Oldsmobile Silhouette	Pontiac Tran Sport / Montana	Total	Grand Total
1997	PG1	28208	8445	11316	45969	140143
	PH3	43378	14482	36314	94174	
1998	PG1	44493	8995	8337	60825	183021
	PH3	47882	28832	45502	122196	
1999	PG1	29403	8015	11321	46739	183652
	PH3	66238	92115	46780	137113	
2000	PG1	28989	9474	21401	57864	204406
	PH3	73067	32233	41241	146541	
2001	PG1	22266	8691	8088	39045	172077
	PH3	83102	0	42339	105441	
	PH8	0	3882	0	3882	
	PY0	0	16373	0	16373	
	PY1	0	7382	14	7378	
2002	PG1	27401	4871	10212	42584	183493
	PH3	51801	0	32189	83970	
	QD1	4967	1893	2515	9065	
	PY0	0	11902	0	11902	
	PY1	0	5308	663	5871	
	###	1	0	0	1	
2003	PG1	80283	0	4615	24998	180992
	PH3	72875	0	38869	111744	
	QD1	3681	548	1874	6083	
	PY0	0	13048	0	13048	
	PY1	0	4737	884	5421	
		617885	215064	388034	1197983	1197983

Table 1: Production for Sale or Lease in the United States by Make and Model Year

Wheel Type	Wheel Description
PG1	15"x6", Steel
PH3	15"x6", Aluminum Cast, 115mm Bolt Circle
PH8	15"x6", Aluminum
PY0	18"x6.5", Aluminum
PY1	18"x6.5", Aluminum, Chrome
QD1	18"x6.5", Aluminum, Styled
###	Wheel data missing

2. State the number of each of the following, received by GM, or of which GM is otherwise aware for the peer vehicles, 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 the alleged 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.

Table 2-1 below summarizes records that could relate to the alleged defect. A summary of the non-privileged information related to the product liability lawsuit case is provided in Attachment 2F.

TYPE OF REPORT	COUNT (INCLUDING DUPLICATES)	GM REPORTS	GM REPORTS CORRESPONDING TO NHTSA REPORTS	LOCATION OF REPORTS (ATTACHMENT)	NUMBER WITH PROPERTY DAMAGE	NUMBER WITH CRASH	NUMBER WITH INJURIES/FATALITIES*
Owner Reports	6	6	0	2A	0	0	0
Field Reports and Technical Assistance System Reports	4	4	0	2B	0	0	1
Not-in-Suit Claims	0	0	0	N/A	0	0	0
Subrogation Claims	0	0	0	N/A	0	0	0
Third Party Arbitration Proceedings	0	0	0	N/A	0	0	0
Product Liability Lawsuits	1	1	0	2F	0	0	1
Total (Including Duplicates)	11	11	0	N/A	0	0	2
Total (Excluding Duplicates)	10	10	0	N/A	0	0	1

Table 2-1: Report Breakdown

N/A Not Applicable

* GM is not aware of any fatalities related to the subject condition.

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
Corporate Central File	10/17/2003
Customer Assistance Center	10/28/2003
Technical Assistance Center	10/02/2003
Field Information Network Database (FIND)	09/22/2003
Company Vehicle Evaluation Program (CVEP)	09/19/2003
Captured Test Fleet (CTF)	09/19/2003
Early Quality Feedback (EQF)	10/01/2003
Field Product Report Database (FPRD)	09/22/2003
Legal / Employee Self Insured Services (ESIS)	10/02/2003

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. Vehicle's mileage at time of incident;
- g. Incident date;
- h. Report or claim date;
- i. Whether a crash is alleged;
- j. Whether property damage is alleged;
- k. Number of alleged injuries, if any; and
- l. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2000, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

Produce copies of all documents related to each item within the scope of Request No. 3. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method GM used for organizing the documents.

An electronic summary of the records included in request 2 is provided in Attachment 1 CD; refer to the Microsoft Access 2000 file in the folder labeled "Response for Q3". GM has organized the records by the GM file number within each attachment.

4. 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 for the peer vehicles 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." See Enclosure, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

GM is providing the total number of warranty and extended warranty claims by model and model year for the subject vehicles related to the subject condition.

There are 1,598 regular and 13 extended warranty claims for the subject vehicles that may be related to the subject condition.

These warranty claims are provided in Attachment 1 CD; refer to the Microsoft Access 2000 file in the folder labeled "Response for Q4".

Source System	Last Date Gathered
GM North America (NA) Claim Analysis Retrieval Database (CARD)	10/08/2003
Motors Insurance Corporation (MIC) extended warranty	10/14/2003
Universal Warranty Corporation (UWC) extended warranty	08/29/2003

Table 4: Data Sources

5. Describe in detail the search criteria used by GM to identify the claims identified in response to Request No. 4, 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 that GM offers for new vehicle warranty coverage on the peer vehicles (i.e., the number of months and mileage for which coverage is provided and the vehicle systems that are covered). Describe any extended warranty coverage option(s) related to the alleged defect 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 following labor operation and trouble codes were used in searching the CARD.

Labor Codes (4)	Description
E0474	Stud, right front wheel mounting - replace
E0475	Stud, left front wheel mounting - replace
E0484	Stud, right rear wheel mounting - replace
E0485	Stud, left rear wheel mounting - replace

Trouble Codes	Description
1D	BROKEN
1K	CRACKED
3D	MISSING
3F	NOT CONNECTED
4D	SHEARED
4G	STRIPPED
8C	COMPONENT-INOPERATIVE

The following labor codes were used in searching for extended warranty claims in MIC:

Labor Codes (4)	Description
E0474	Stud, right front wheel mounting - replace
E0475	Stud, left front wheel mounting - replace
E0484	Stud, right rear wheel mounting - replace
E0485	Stud, left rear wheel mounting - replace

UWC does not provide extended warranty coverage for wheel stud fractures.

The labor operation codes and trouble codes listed above may be applicable to the alleged defect, but may also be related to other issues.

The warranty data provided has limited analytical value in evaluating 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. 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 for the peer vehicles 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.

GM has not identified any service bulletins, advisories, or other communications to dealers, zone offices, or field offices that pertain to the alleged defect in the subject vehicles.

The preceding information was collected from GM Service Operations. The data collection was completed on September 22, 2003.

7. State the number of each of the following, components that GM has sold for use or possible use in the peer vehicles by part 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:
 - a. Wheel studs;
 - b. Wheel nuts;
 - c. Front wheel hubs; and
 - d. 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.

The source of the requested information, current as of October 29, 2003, is GM Service Parts Operations.

An electronic summary of the part sales data is provided in Attachment 1 CD; refer to the Microsoft Excel and Word files in the folder labeled "Response for Q7."

8. **Furnish copies of all engineering standards, performance specifications, quality assurance specifications, and documents related to validation testing for the subject components and for stud/nut fasteners in general.**

GM is providing stud/nut fastener information applicable to alleged defects in the subject vehicles. GM is not providing information for other vehicle applications or for "stud/nut fastener in general".

The source of the requested information, current as of October 23, 2003, is GM Product Engineering.

Table 8 below summarizes the engineering standards, specifications, and documents related to validation testing for stud/nut fasteners in this vehicle application.

The electronic copies of documents for engineering standards, performance specification, and quality assurance specification are provided in Attachment 1 CD; refer to the Adobe Acrobat and Image files in the folder labeled "Response for Q8."

The electronic copies of documents for validation test procedure are provided in Attachment 2 CD GM CONFIDENTIAL; refer to the file in the folder labeled "Response for Q8 GM CONFIDENTIAL"

Type	Standards / Specifications	Corresponding Document Number
Engineering Standard	GM Bolt/Screw Finish Specification	GM6173M
Engineering Standard	GM Bolt/Screw Material Standards	GM6177M
Engineering Standard	GM Nut Material Engineering Standards	GM6215M
Engineering Standard	GM Nut Finish Specification	GM4252M and GM4345M
Quality Assurance Specification	Fastener Source Performance Evaluation	GM9050P
Performance Specification	Common wheel print requirements for torque tension - U-van M12 fastener - GM CONFIDENTIAL	9592808
Performance Specification	Nut Engineering Drawings - GM CONFIDENTIAL	10194314 and 9583552
Performance Specification	Bolt/Screw (Stud) Engineering Drawings - GM CONFIDENTIAL	9581821, 9591976, and 9585176
Validation Test Procedure	Torque Tension Procedure New - GM CONFIDENTIAL	MTL 0633

Validation Test Procedure	Torque Tension Procedure Reuse - GM CONFIDENTIAL	MTL 0834
Validation Test Procedure	Wheel Attachment Torque Tension Test and Criteria - GM CONFIDENTIAL	PG52770
Validation Test Procedure	Wheel Attachment Loosening Test Procedure - GM CONFIDENTIAL	R-10B-7

Table 8: Standards and Specifications

9. State the basis for each specification and performance standard related to durability and provide the following additional information regarding the durability of the subject components:
- State whether and how the specification addresses the effect of torque relaxation;
 - State how the specification addresses factors related to removal and reinstallation of wheels; and
 - Identify the significant aging effects acting on the subject components in field service, including environmental and use factors, and state how GM's testing and specifications addresses each.

The basis for the specifications and performance standards related to durability is GM's years of engineering experience and knowledge related to fastener engineering and wheel attachment applications. The documents provided in response to question 8 include hundreds of dimensional, material, and other specifications.

10. Provide a table showing the following information for each wheel type used as original equipment in the peer vehicles:
- The part numbers for the wheel, stud, and nut;
 - The number of vehicles sold with the wheel type by model year;
 - The number of incidents identified from all sources that involve (1) wheel stud failure and (2) wheel separation due to stud failure, by model year and age interval (use the following age intervals: 0 to 15,000 miles, 15,000 to 30,000 miles, and greater than 30,000 miles);
 - The failure rates and GM's assessment of which, if any, of the wheel types used in the peer vehicles show significantly greater rates of field failure experience than any of the other wheel types overall or in any of the stated age intervals; and
 - GM's assessment of the reasons why any of the peer vehicle wheel types exhibit greater failure rates than others and why any of the wheel types may experience higher rates of wheel stud failure than wheel studs in peer minivans of similar age.
- The part numbers for the wheel, stud, and nut are provided in response to question number 7.
 - The number of vehicles produced for sale or lease in the United States with the wheel type by model and model year is provided in response to question number 1 with the Table 1.
 - The number of incidents identified from incident and warranty reports by model year and age intervals are reported in responses to question numbers 3 and 4, respectively.
 - For the subject condition in the 1.2 million subject vehicles, there are only 10 unique reports. There are 9 reports of PH3 (15"x6", Cast aluminum) for a population of 801,179 vehicles and 1 report of PG1 (15"x6", steel) for a population of 317,884 vehicles. Based on these low numbers, none of these wheel types have significant failure rates.
 - See response to question 10-d.

11. Provide the following information regarding wheel nut/stud torque requirements for the peer vehicles by wheel type and model year:
- State the torque specifications;
 - State the minimum clamping load for each nut to adequately secure the wheel to the vehicle;
 - State the minimum torque necessary to achieve and maintain the clamping load stated in 16.b;
 - State the maximum torque that the parts can receive without stud damage;
 - Data regarding torque retention vs. time and wheel cycles for each combination of wheel, stud, and nut used in the subject vehicles;
 - Describe the effect of dirt, corrosion, or other use factors on the nut torque required for item 16.c.; and
 - Provide copies of all documents related to items 16.a through 16.f.

Per a telephone discussion with Chris Lash of NHTSA-ODI on September 16, 2003, all references to question 16 are intended to refer to question 11.

- Torque Specification for the subject vehicles
 - Dynamic: 125 ± 15 Nm.
 - Static: 120 ± 25 Nm (in plant audit).
 - Service: 140 Nm.
- GM has not determined the minimum clamp load (bolt tension).
- Since GM has not determined the minimum clamp load, the minimum torque has not been determined.
- GM does not specify or tabulate maximum torque without stud damage (yielding point).
- GM does not perform this type of testing.
- GM service torque stated above compensates for the effects of dirt, corrosion and other factors.
- All documents related to question 11 are provided in response to question 8.

* * *

General Motors requests that the documents stamped "GM Confidential" included in Electronic Attachment 2 CD: "Response for 8" folder be afforded confidential treatment by the NHTSA. This information is not customarily made public by General Motors and, because it is submitted voluntarily, is subject to confidential treatment under the *Critical Mass* decision. Alternatively, GM requests confidential treatment because these documents contains trade secrets and commercial information which is privileged or confidential under 5 U.S.C. Section 552(b)(4), 49 CFR Part 512 and 49 U.S.C. Section 30167(a).

Electronic Attachment 2 CD: "Response for 8" folder contains engineering drawings, performance specifications, and test procedures having commercial value that can only be obtained independently at considerable cost. This information can be used by competitors to identify quality and performance problems or differences, thereby enabling them to improve their own products, without the expenditures associated with the evaluation of products, all at the expense of General Motors. Electronic Attachment 2 CD: "Response for 8" folder contains

commercial information the disclosure of which would likely result in substantial competitive harm.

General Motors treats the above material as confidential proprietary information available only to authorized General Motors and supplier personnel and not otherwise available to the public. The document is maintained under a record-keeping system which is intended to control dissemination of this material within General Motors, and to assure that it is not disseminated outside the Corporation, except as described in the attached certification made pursuant to 49 CFR Part 512.4(e).

To the best of our knowledge, no prior determinations of the confidentiality of these documents have been made by the NHTSA, other Federal Agencies, or the Federal Courts. Documents such as the ones contained in Electronic Attachment 2 CD: "Response for 8" folder, however, have, to the best of our knowledge, normally been granted confidential treatment by the NHTSA in the past. The drawings in Electronic Attachment 2 CD: "Response for 8" folder are of a type for which a class determination of confidentiality has been made under 49 CFR Part 512, Appendix B.

The corresponding electronic copies of these documents are being provided on a CD labeled "GM CONFIDENTIAL". If a request for disclosure of any or all of this information is received by the NHTSA, General Motors requests notification of receipt of each such request and, if necessary, an opportunity to further explain the reasons why such material is trade secret and commercial information which should not be disclosed under the applicable statutes and regulations.

GM claims that certain information, in documents that are part of 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 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 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, 1998, 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."

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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,



Lyndon R. Lie
Director
Product Investigations

Attachments

CERTIFICATE IN SUPPORT OF REQUEST FOR CONFIDENTIALITY

1, Lyndon R. Lie, pursuant to the provisions of 49 CFR Part 512 state as follows:

- (1) I am the Director of Product Investigations, and I am authorized by General Motors Corporation (GM) to execute documents on its behalf;
- (2) The information stamped "GM Confidential" contained in Electronic Attachment 2 CD: "Response for 8" folder to this document is confidential and proprietary data and is being submitted with the claim that it is entitled to confidential treatment of 5 USC §552(b)(4), 49 U.S.C. Section 30167(a) and implemented in 49 CFR Part 512;
- (3) I, or members of my staff, have personally inquired of the responsible GM personnel who have authority in the normal course of business to release the information for which a claim of confidentiality has been made to ascertain whether such information has ever been released outside GM or its suppliers;
- (4) Based upon such inquiries to the best of my knowledge, information and belief, the information for which GM has claimed confidential treatment has never been released or become available outside GM or its suppliers, except as hereinafter specified: None.
- (5) I make no representations beyond those contained in this certificate and in particular, I make no representations as to whether this information may become available outside GM and its suppliers because of unauthorized or inadvertent disclosure except as stated in Paragraph 4; and,
- (6) I certify under penalty of perjury that the foregoing is true and correct. Executed on this the thirty-first day of October 2003.



Lyndon R. Lie
Director
Product Investigations