



**GENERAL MOTORS NORTH AMERICA**  
Structure & Safety Integration

October 27, 2003

Kathleen C. DeMeter, Director  
Office of Defects Investigation  
NHTSA Enforcement  
Room #5328  
400 Seventh Street, S.W.  
Washington, D.C. 20590

GM-822C

NVS-213cat  
EA02-031

Dear Ms. DeMeter:

This letter is General Motors (GM) response to your information request (IR), dated September 8, 2003, regarding alleged lockup of the steering column in 1997-2004 model year (MY) Chevrolet Corvette vehicles.

Your questions and our corresponding replies are as follows:

1. State, by 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. Model Year;
  - c. Transmission;
  - d. Date of manufacture;
  - e. Date warranty coverage commenced; and
  - f. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2000, or a compatible format, entitled "PRODUCTION DATA EA02-031." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

The total number of subject vehicles GM has manufactured for sale or lease in the United States is shown in Table Q1. An electronic summary of the production data is provided on the CD in Attachment 1; refer to the Microsoft Access 2000 file in the folder labeled "Response for Q1." This data was collected from GM Claims Analysis Retrieval Database (CARD) on September 9, 2003.

TABLE Q1									
CHEVROLET CORVETTES	1997 MY	1998 MY	1999 MY	2000 MY	2001 MY	2002 MY	2003 MY	2004 MY*	TOTAL
W/ Man. Transmission	2,662	6,565	12,818	12,489	14,953	15,822	16,123	1,919	83,331
W/ Auto. Transmission	6,386	22,126	17,026	18,721	18,255	17,768	16,995	4,050	121,325
Total	9,048	28,691	29,844	31,190	33,208	33,588	33,118	5,969	204,656

\* Production through September 3, 2003

**Product Investigations**

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

For subparts "a" through "f," state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

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

Table Q2 summarizes the reports to GM that could relate to the subject condition. These reports include claims previously provided in GM's September 13, 2002 and March 28, 2003 responses. Copies of all reports are provided in response to Question 4, and are organized as requested in Question 4.

TABLE Q2						
REPORT TYPE	COUNT (INCLUDING DUPLICATES)	UNIQUE GM REPORTS	GM REPORTS THAT CORRESPOND NHTSA VOCs	NUMBER OF CRASH INCIDENT REPORTS	NUMBER OF REPORTED INJURIES	NUMBER OF REPORTED FATALITIES
Owner Reports	1,823	1,649	74	14	2	0
Field Reports	821	813	8	31	15	0
Not-in-Suit Claims	8	8	0	7	5	0
Lawsuits	1	1	0	1	0	0
Subrogation Claims	0	0	0	0	0	0
3rd Party Arbitration	0	0	0	0	0	0
Total (Including Duplicates)	2,553	2,471	82	63	22	0
Total (Excluding Duplicates)	2,498	2,420	78	38	15	0

GM has searched the following sources to collect the data for this response: Corporate Central File, Customer Assistance Center, Technical Assistance Center, ESIS, Field Information Network Database, Company Vehicle Evaluation Program, Captured Test Fleet Program, Early Quality Feedback, and Legal. The collection of the reports was completed on October 17, 2003.

3. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:
- GM's file number or other identifier used;
  - The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
  - Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
  - Vehicle's VIN;
  - Vehicle's model year;
  - Vehicle's mileage at time of incident;
  - Incident date;
  - Report or claim date;
  - Whether a crash is alleged;
  - Whether property damage is alleged;
  - Number of alleged injuries, if any;
  - Number of alleged fatalities, if any; and
  - Whether the report includes allegations of "Inadvertent Locking;"
  - Whether the report includes allegations of "Failure to Unlock;"
  - Whether the allegations were investigated by, or for, GM (this includes any inspections and other analyses of the vehicle);
  - Whether the vehicle was involved in a "Buy Back" from the customer;
  - A summary of the allegations; and
  - A summary of GM's assessment of the allegations.

Provide this information in Microsoft Access 2000, or a compatible format, entitled "REQUEST NUMBER TWO DATA EA02-031." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

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

4. Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by the following categories:
- Allegation of "Inadvertent Locking" and a crash;
  - Allegation of "Inadvertent Locking" and an injury;
  - Allegation of "Inadvertent Locking" and a fatality;
  - Allegation of "Inadvertent Locking" without a crash, an injury, or a fatality;
  - Allegation of "Failure to Unlock" and a crash;
  - Allegation of "Failure to Unlock" and an injury;
  - Allegation of "Failure to Unlock" and a fatality; and
  - Allegation of "Failure to Unlock" without a crash, an injury, or a fatality.

Table Q4 below summarizes the number of unique incidents referenced in response to Question 2 that could relate to the subject condition. All reports relating to each incident are provided in the attachments referenced in the table. The reports have been organized as requested.

TABLE Q4		
REPORT TYPE	NUMBER OF ALLEGED INCIDENTS	LOCATION OF REPORTS
"Inadvertent Locking" allegation and a crash without an injury	24	Attachment 4a
"Inadvertent Locking" allegation and a crash with an injury	12	Attachment 4b
"Inadvertent Locking" allegation and an injury without crash	1	Attachment 4c
"Inadvertent Locking" allegation and a fatality	0	N/A
"Inadvertent Locking" allegation without crash, an injury, or fatality	214	Attachment 4d
"Failure to Unlock" allegation and a crash without injury	2	Attachment 4e
"Failure to Unlock" allegation and a crash with an injury	0	N/A
"Failure to Unlock" allegation and an injury without a crash	0	N/A
"Failure to Unlock" allegation and a fatality	0	N/A
"Failure to Unlock" allegation without a crash, an injury, or fatality	2,245	Attachment 4f

N/A - Not Applicable

Many of the reports coded as "Inadvertent Locking" appear to be consistent with "Failure to Unlock." These reports allege the column locked shortly after the vehicle is started and the vehicle is shifted into a drive gear. GM believes that these reports are actually "Failure to Unlock" incidents; however, based on the information provided in each report, we cannot substantiate the allegation, and therefore have included them as "Inadvertent Locking". Other reports claim the "column locked while driving" but provide no other information to verify the allegation. GM believes that many of these reports are also "Failure to Unlock" incidents; however, because there is no other information beyond the base allegation, we have coded them as "Inadvertent Locking".

5. State, by model year, a total count for all of the following categories of claims, collectively, that have been paid by GM to date that relate to, or may relate to, the alleged defect 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:

- GM's claim number;
- Vehicle owner or fleet name (and fleet contact person) and telephone number;
- VIN;
- Repair date;
- Vehicle mileage at time of repair;
- Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- Labor operation number;
- Problem code;
- Replacement part number(s) and description(s);
- Concern stated by customer; and
- 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 EA02-031." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

A summary of warranty claims that may relate to the subject condition on vehicles for sale or lease in the U.S. is provided on the CD in Attachment 1; refer to the Microsoft Access 2000 file in the folder labeled "Response for Q5." The summary includes claims provided in GM's previous submissions on September 13, 2002, October 23, 2002 and March 28, 2003. GM searched CARD (warranty database), Motors Insurance Corporation (MIC) and Universal Warranty Corporation (UWC) extended warranty databases. Searches were completed on October 3, 2003.

GM's warranty database does not contain the following information: vehicle owner's name or telephone number, replacement part number description, or customer concern statement. GM is providing fields labeled "Customer Code", "Customer Code Description" and "Verbatim Text" in response to requests 5j and 5k. The verbatim text is an optional field, not required to be completed for every warranty claim. It is for the dealer to enter any additional comments that may be applicable to the warranty claim.

The warranty data provided has limited analytical value in analyzing the field performance of a motor vehicle component. The warranty records do not contain sufficient information to establish the condition of the part at the time of the warranty correction; and service personnel may not consistently use the appropriate labor and trouble codes. Warranty numbers represent claims by our dealers for reimbursement for parts and labor costs incurred in performing warranty service for our customers.

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

The warranty data was collected from the GM CARD database and the MIC database by searching for the labor codes listed in Table Q6a. A list of warranty trouble codes and trouble code descriptions associated with the labor operations are provided on the CD in Attachment 1; refer to the Microsoft Excel 2000 file in the folder labeled "Response for Q6." Some of these trouble codes do not seem appropriate for a description of the alleged defect. Labor code E7501 is used for the replacement of the steering column locking parts for any reason.

TABLE Q6A	
LABOR CODE	DESCRIPTION
E7501	Locking Parts, Steering Column - Replace
V0743*	ECL Relay Harness Replace

\* Labor code dedicated to performing product campaigns 01044 and 01044A.

The warranty data was collected from UWC database by searching for any repair involving a 1997 - 2004 MY Corvette using the UWC repair codes listed in Table Q6b.

TABLE Q6b	
LABOR CODE	DESCRIPTION
12098	Enhanced Electrical Miscellaneous - bumper to bumper
05098	Front Wheel Steering Miscellaneous - bumper to bumper

The subject vehicles are covered by a bumper-to-bumper new vehicle warranty for three years or 36,000 miles whichever occurs first. Many extended warranty options are available through GM dealerships. They are offered at different prices and for varying lengths of time, based on customer's preference, up to 7 years from the date of purchase or up to a total of 100,000 vehicle miles. The GM warranty system does not contain information on the number of vehicles that have extended warranty coverage.

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.

7. 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:
- Action title or identifier;
  - The actual or planned start date;
  - The actual or expected end date;
  - Brief summary of the subject and objective of the action;
  - Engineering group(s)/supplier(s) responsible for designing and for conducting the action; and
  - 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.

Include in your response to this request all material related to GM's inspections and other analyses of incident vehicles (e.g., copies of all checklists, service history research, interviews, and notes.) Also, provide a detailed description of all efforts by GM to identify and investigate incidents of inadvertent Locking of the ECL while driving. Coordinate with Ms. Cheryl Tuosto of my staff to agree on a process for promptly notifying ODI whenever GM learns of a new incident of inadvertent Locking of the ECL while driving.

In January 2003, GM requested dealers to notify GM of allegations of columns locking while the vehicle is in motion. Once notified, GM investigated cases that appear to be allegations of steering column locking while the vehicle is in motion. GM provided its findings in its March 28, 2003 response. Since March 28, 2003, GM has investigated 3 more allegations of column

locking while the vehicle was in motion. The reports are provided on the CD in Attachment 1; refer to the files in the folder labeled "Response for Q7." None of the inspections revealed evidence of a failure that could cause the column to lock while the vehicle was in motion. GM is continuing to request dealers contact us if they receive a report of inadvertent column locks while the vehicle is in motion.

One of the reports referenced above involved an incident in Ypsilanti, Michigan. GM has repurchased this vehicle. On September 26, 2003 GM began testing the vehicle to determine if and how the column locks while the vehicle is in motion. As of October 23, 2003 the column on this vehicle has not locked while the vehicle is in motion. GM plans to conduct further testing on this vehicle. A summary of this test is also provided on the CD in Attachment 1; refer to the files in the folder labeled "Response for Q7."

8. Describe how the Powertrain Control Module (PCM) determines if the subject vehicle is moving when the subject component experiences a failure to unlock, and the Passenger Zone Module (PZM) commands the PCM to inhibit vehicle motion by stalling the engine when the vehicle speed reaches 1 to 2 mph. Describe how the PCM handles failures in the sensors or parameters that are used to determine vehicle motion, and what redundancies for detecting vehicle motion are designed into the system.

The Powertrain Control Module (PCM) determines vehicle speed by reading and interpreting the signal from the Transmission Output Speed Sensor (TOSS.) The PCM has primary vehicle responsibility for this signal, and contains diagnostic software to confirm its reliability. Should it determine that the TOSS signal is no longer reliable, the PCM uses Wheel Speed information supplied by the Antilock Braking System (ABS) via the Class 2 vehicle data buss to determine vehicle speed. Wheel speed information is conditioned by the ABS controller, and the reliability of this data is communicated on the Class 2 data buss as a part of the message containing the wheel speed information. Should the ABS controller determine that Wheel Speed information is not valid, it will continue to provide its best estimate of wheel speed, but will flag that data as invalid.

If requested by the PZM, the PCM will disable fuel delivery if either a valid TOSS signal or valid ABS Wheel Speed data exceed a calibrated value. This value is set to 1.5 mph in the subject vehicles. The PCM will also disable fuel delivery if the TOSS signal is not valid and either the ABS Wheel Speed data is flagged as invalid or the ABS controller stops transmitting Class 2 messages. The use of both TOSS information and ABS Wheel Speed data provide sensor and communication path redundancy for detecting vehicle motion.

9. Describe how the subject component would respond to a permanent or semi-permanent "Short to Ground" in the "Key Out of Ignition Switch" circuit (see connections J2-C6 and J3-B8). The circuit in question includes any and all electrical circuits or wiring internal or external to the PZM. Include the following information in the description:
- Any fault codes that are set or stored,
  - Any warning messages that are displayed on the DIC, and
  - An explanation as to whether or not the ECL will continue to function normally and why.

Provide separate responses for each model year and version of the PZM hardware/software if they are different.

TABLE Q10			
VIN	Location	Key-Out Switch Tested For Short To Ground Condition?	Results of Key-Out Switch check for short to ground
1G1YY22G4W5128666	Dubai, Saudi Arabia	No	N/A
1G1YY22G7X5105865	West Palm Beach, Florida	No	N/A
1G1YY22G8V5102482	Louisville, Kentucky	No	N/A
1G1YY22G8X5129173	Wenatchee, Washington	No	N/A
1G1YY32G7X5118883	Salt Lake City, Utah	No	N/A
1G1YY22G3Y5122005	Austin, Texas	No	N/A
1G1YY22G7X5115185	San Diego, California	No	N/A
1G1YY22G0W5123464	Randallstown, Maryland	No	N/A
1G1YY32G4W5102838	Austin, Texas	No	N/A
1G1YY12S415102351	Ypsilanti, Michigan	Yes, via serial data scan tool.	Key-out Switch functioned properly
1G1YY32G5X5111480	Stroudsburg, Pennsylvania	Yes, via serial data scan tool. Key-out switch did not change state, while Key-In switch did change state.	Short to ground indicated when ohm meter applied to circuit. BCM and Ignition Switch checked ok.

N/A - Not Applicable

GM has not found any evidence of failures in any of the vehicles that could cause the column to lock while the vehicle is in motion.

\* \* \*

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, 1982, were involved in any way with any of the following related to the alleged defect in the subject vehicles:

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

A handwritten signature in black ink, appearing to read "Lyndon R. Lie". The signature is fluid and cursive, with a prominent initial "L".

Lyndon R. Lie  
Director  
Product Investigations

attachments

**GM622C**  
**EA02-031**

**ATTACHMENT "1"**