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November 9, 2012

Mr. Frank S. Borris, Director
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Avenue SE, Room W45-302
Washington, DC 20590

Dear Mr. Borris:

Subject: PE12-025:NVS-213dlr

The Ford Motor Company (Ford) response to the agency's September 20, 2012 letter concerning reports of alleged steering column lower bearing separation in 2005 through 2008 model year Ford Crown Victoria Police Interceptor vehicles is attached.

Ford is investigating the circumstances associated with reports of steering column lower bearing separation in these vehicles, and the potential contributing factors. Based on our preliminary analysis, it appears that a combination of at least three factors must be present for a steering system to collapse sufficiently for a disengagement to occur. At this point, it is unclear how these factors interact, and whether any may relate to or be influenced by a prior vehicle impact or service.

The claims and reports provided herein support that a steering disengagement associated with this failure mode is very unusual, and those few reports of disengagement have occurred at lower speeds. While lower bearing displacement is an abnormal condition it alone does not result in steering disengagement. Ford continues its investigation into this subject and will continue to work with the agency to better understand the circumstances associated with these reports.

If you have any questions concerning this response, please feel free to contact me.

Sincerely,

for Steven M. Kenner

Attachment



FORD MOTOR COMPANY (FORD) RESPONSE TO PE12-025

Ford's response to this Preliminary Evaluation information request was prepared pursuant to a diligent search for the information requested. While we have employed our best efforts to provide responsive information, the breadth of the agency's request and the requirement that information be provided on an expedited basis make this a difficult task. We nevertheless have made substantial effort to provide thorough and accurate information, and we would be pleased to meet with agency personnel to discuss any aspect of this Preliminary Evaluation.

The scope of Ford's investigation conducted to locate responsive information focused on Ford employees most likely to be knowledgeable about the subject matter of this inquiry and on review of Ford files in which responsive information ordinarily would be expected to be found and to which Ford ordinarily would refer. Ford notes that although electronic information was included within the scope of its search, Ford has not attempted to retrieve from computer storage electronic files that were overwritten or deleted. As the agency is aware, such files generally are unavailable to the computer user even if they still exist and are retrievable through expert means. To the extent that the agency's definition of Ford includes suppliers, contractors, and affiliated enterprises for which Ford does not exercise day-to-day operational control, we note that information belonging to such entities ordinarily is not in Ford's possession, custody or control.

Ford has construed this request as pertaining to vehicles manufactured for sale in the United States, its protectorates, and territories.

In a September 25, 2012 telephone conversation, Derek Rinehardt of the agency informed Ford personnel that for purposes of this investigation, Ford did not need to provide reports or claims where there were allegations of increased effort or binding or popping that were associated with components other than the subject components. However, it was agreed that any reports or claims that alleged increased effort or binding or popping, where the involved component(s) was unknown, would be provided.

Ford notes that some of the information being produced pursuant to this inquiry may contain personal information such as customer names, addresses, telephone numbers, and complete Vehicle Identification Numbers (VINs). Ford is producing such personal information in an unredacted form to facilitate the agency's investigation with the understanding that the agency will not make such personal information available to the public under FOIA Exemption 6, 5 U.S.C. 552(b)(6).

Answers to your specific questions are set forth below. As requested, after each numeric designation, we have set forth verbatim the request for information, followed by our response. Unless otherwise stated, Ford has undertaken to provide responsive documents dated up to and including September 20, 2012, the date of your inquiry. Ford has searched within the following offices for responsive documents: Sustainability, Environment and Safety Engineering, Ford Customer Service Division, Global Core Engineering, Vehicle Operations, and North American Product Development.

Request 1

State, by model and model year, the number of subject vehicles Ford has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Ford, state the following:

- a. Vehicle identification number (VIN);
- b. Make;
- c. Model;
- d. Model Year;
- e. Date of manufacture;
- f. Part number of the steering column as originally equipped;
- g. Part number of the upper intermediate shaft as originally equipped;
- h. Part number of the lower intermediate shaft as originally equipped;
- i. Date warranty coverage commenced; and
- j. 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 2007, or a compatible format, entitled "PE12-025 SUBJECT PRODUCTION DATA." See Enclosure A, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Answer

Ford records indicate that the approximate total number of 2005 through 2008 model year Ford Crown Victoria Police Interceptor (CVPI) vehicles sold in the United States, (the 50 states and the District of Columbia) protectorates, and territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and Virgin Islands) is 194,012.

The number of subject vehicles sold in the United States by model and model year is shown below:

Model	2005 MY	2006 MY	2007 MY	2008 MY
CVPI	50,710	42,355	46,266	54,681

The available data for each subject vehicle is provided in Appendix A in a separate table labeled "2005-2008 CVPI". Refer to the parts change log for information pertaining to the part numbers of the components as originally equipped.

Request 2

State, by model and model year, the number of peer vehicles Ford has manufactured for sale or lease in the United States. Separately, for each peer vehicle manufactured to date by Ford, state the following:

- a. Vehicle identification number (VIN);
- b. Make;
- c. Model;
- d. Model Year;
- e. Date of manufacture;
- f. Part number of the steering column as originally equipped;
- g. Part number of the upper intermediate shaft as originally equipped;
- h. Part number of the lower intermediate shaft as originally equipped;
- i. Date warranty coverage commenced; and
- j. 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 2007, or a compatible format, entitled "PE12-025 PEER PRODUCTION DATA." See Enclosure A, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Answer

Ford records indicate that the approximate total number of all other 2005 through 2011 model year Ford Crown Victoria and Mercury Grand Marquis vehicles sold in the United States, (the 50 states and the District of Columbia) protectorates, and territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and Virgin Islands) is 436,765.

The number of peer vehicles sold in the United States by model and model year is shown below:

Model	2005 MY	2006 MY	2007 MY	2008 MY	2009 MY	2010 MY	2011 MY
Ford Crown Victoria	18,771	10,952	7,385	9,300	36,073	32,469	59,433
Mercury Grand Marquis	69,875	49,570	39,763	44,071	21,097	27,956	10,050

The available data for each peer vehicle is provided in Appendix A in a separate table labeled "Peer Vehicles". Refer to the parts change log for information pertaining to the part numbers of the components as originally equipped.

Request 3

State the number of each of the following, received by Ford, or of which Ford 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 Ford is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which Ford 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 Ford'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.

Answer

For purposes of identifying reports of incidents that may be related to the alleged defect and any related documents, Ford has gathered "owner reports" and "field reports" maintained by Ford Customer Service Division (FCSD), and claim and lawsuit information maintained by Ford's Office of the General Counsel (OGC).

Descriptions of the FCSD owner and field report systems and the criteria used to search each of these are provided in Appendix B.

The following categorizations were used in the review of reports located in each of these searches:

Category	Allegation
A1	Complete separation of the steering column lower bearing resulting in steering disengagement
A2	Partial separation of the steering column lower bearing
A3	Increased effort/binding/notchy feeling with the intermediate shaft or steering column replaced
A4	Popping/Noise with the intermediate shaft or steering column replaced
B1	Loss of steering directional control – unknown cause or not caused by steering column lower bearing separation
B2	Increased effort/binding/notchy feeling in the steering – unknown cause
B3	Popping/Noise in the steering – unknown cause

We are providing electronic copies of reports categorized as "B" as "non-specific allegations" for your review because of the broad scope of the request. Based on our engineering judgment, the information in these reports is insufficient to support a determination that they pertain to the alleged defect.

Owner Reports: Records identified in a search of the Master Owner Relations Systems (MORS) database, as described in Appendix B, were reviewed for relevance and sorted in accordance with the categories described above. The number and copies of relevant owner reports identified in this search that may relate to the agency's request are provided in the MORS III portion of the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

When we were able to identify that responsive (i.e., not ambiguous) duplicate owner reports for an alleged incident were received, each of these duplicate reports was marked accordingly, and the group counted as one report. In other cases, certain vehicles may have experienced more than one incident and have more than one report associated with their VINs. These reports have been counted separately.

Legal Contacts: Ford is providing, in Appendix B, a description of Legal Contacts and the activity that is responsible for this information. No responsive or ambiguous owner reports were identified as Legal Contacts.

Field Reports: Records identified in a search of the Common Quality Indicator System (CQIS) database, as described in Appendix B, were reviewed for relevance and sorted in accordance with the categories described above. The number and copies of relevant field reports identified in this search that may relate to the agency's request are provided in the CQIS portion of the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

VOQ Data: This information request had an attachment that included 13 Vehicle Owner Questionnaires (VOQs), 3 of which were duplicative of reports received by Ford that are provided in Appendix C. Ford made inquiries of its MORS database for customer contacts, and its CQIS database for field reports regarding the vehicles identified on the VOQs. Ford notes that in some instances where the VOQ does not contain the VIN or the owner's last name and zip code, it is not possible to query the databases for owner and field reports specifically corresponding to the VOQs.

Crash/Injury Incident Claims: For purposes of identifying allegations of accidents or injuries that may have resulted from the alleged defect, Ford has reviewed responsive owner and field reports, and lawsuits and claims. Ford has not identified any allegations of accidents or injuries.

Claims, Lawsuits, and Arbitrations: For purposes of identifying incidents that may relate to the alleged defect in a subject vehicle, Ford has gathered claim and lawsuit information maintained by Ford's OGC. Ford's OGC is responsible for handling product liability lawsuits, claims, and consumer breach of warranty lawsuits and arbitrations against the Company.

Lawsuits and claims gathered in this manner were reviewed for relevance and sorted in accordance with the categories described above.

We are providing the requested detailed information, where available, on the responsive lawsuit in our Log of Lawsuits and Claims, provided in Appendix C in the Legal Claim/Lawsuits tab. To the extent available, information related to the matter shown on the log is provided in Appendix D. Documents that are protected by attorney-client privilege and that are not being provided with this response are listed in the privilege log provided in Appendix E.

Request 4

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

- a. Ford's file number or other identifier used;
- b. The category of the item, as identified in Request No. 3 (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. Vehicle's speed at time of incident;
- h. Incident date;
- i. Report or claim date;
- j. Whether a crash is alleged;
- k. Whether a fire is alleged;

- l. Whether property damage is alleged;
- m. Number of alleged injuries, if any; and
- n. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2007, or a compatible format, entitled "PE12-025 REQUEST NUMBER THREE DATA(SUBJECT)," See Enclosure A, Data Collection Disc, for a preformatted table which provides further details regarding this submission.

Answer

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 3. To the extent information sought in Request 4 is available for owner and field reports, it is provided in the database. To the extent information sought in Request 4 is available for the legal matter, it is provided in Appendix C in the Legal Claim/Lawsuits tab.

Request 5

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 Ford used for organizing the documents.

Answer

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 3. A copy of the complaint related to the matter shown in the Log of Lawsuits and Claims is provided in Appendix D. To the extent information sought in Request 4 is available, it is provided in the referenced appendices.

Request 6

State the number of each of the following, received by Ford, or of which Ford is otherwise aware, which relate to, or may relate to, the subject condition in the peer 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 Ford is or was a party to the arbitration; and
- f. Lawsuits, both pending and closed, in which Ford 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 Ford'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.

Answer

For purposes of identifying reports of incidents that may be related to the subject condition and any related documents, Ford has followed the process described in response to Request 3. The categorization of reports is identical to that provided in response to Request 3. The search criteria used to locate reports is provided in Appendix B and copies of the reports are provided in Appendix C. Ford notes that one Legal Contact file could not be located, however the corresponding MORS report is included in the database provided in Appendix B.

Ford has identified three ambiguous MORS reports that include an allegation of an accident. All of the alleged accidents were single vehicle crashes without any alleged injuries. We have included these reports for your review because of the broad scope of the request. Based on our engineering judgment, the information in these reports are insufficient to support a determination that it pertains to the subject condition.

Request 7

Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 6, state the following information:

- a. Ford's file number or other identifier used;
- b. The category of the item, as identified in Request No. 6 (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. Vehicle's speed at time of incident;
- h. Incident date;
- i. Report or claim date;
- j. Whether a crash is alleged;
- k. Whether a fire is alleged;
- l. Whether property damage is alleged;
- m. Number of alleged injuries, if any; and
- n. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2007, or a compatible format, entitled "PE12-025 REQUEST NUMBER SIX DATA(PEERS)," See Enclosure A, Data Collection Disc, for a preformatted table which provides further details regarding this submission.

Answer

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 6. To the extent information sought in Request 7 is available for owner and field reports, it is provided in the database.

Request 8

Produce copies of all documents related to each item within the scope of Request No. 6. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Ford used for organizing the documents.

Answer

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 6. To the extent information sought in Request 7 is available, it is provided in the referenced appendices.

Request 9

State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Ford 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. Ford'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 2007, or a compatible format, entitled "PE12-025 SUBJECT WARRANTY DATA." See Enclosure A, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Answer

Records identified in a search of the AWS database, as described in Appendix B, were reviewed for relevance and sorted in accordance with the categories described in the response to Request 3. The number and copies of relevant warranty claims identified in this

search that may relate to the agency's request are provided in the AWS portion of the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

Warranty claims that are duplicative of owner and field reports are provided in Appendix C but are not included in the report count above.

Requests for "goodwill, field, or zone adjustments" received by Ford to date that relate to the alleged defect that were not honored, if any, would be included in the MORS reports identified above in response to Request 3. Such claims that were honored are included in the warranty data provided.

Request 10

Describe in detail the search criteria used by Ford to identify the claims identified in response to Request No. 9, 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 Ford 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 Ford 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.

Answer

Detailed descriptions of the search criteria, including all pertinent parameters, used to identify the claims provided in response to Request 9 are described in Appendix B.

For 2005 through 2008 model year Ford Crown Victoria Police Interceptor vehicles, the New Vehicle Limited Warranty, Bumper-to-Bumper Coverage begins at the warranty start date and lasts for three years or 36,000 miles, whichever occurs first. Optional Extended Service Plans (ESPs) are available to cover various vehicle systems, time in service, and mileage increments, and only those ESPs that cover the subject components are included. As of the date of the information request, 2,382 new vehicle ESP policies had been purchased on subject vehicles. Refer to Appendix G for the ESP details.

Request 11

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Ford 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 Ford is planning to issue within the next 120 days.

Answer

For purposes of identifying communications to dealers, zone offices, or field offices pertaining, at least in part, to separation of the steering column lower bearing, increased efforts while

turning the steering wheel associated with either the steering column or the i-shafts, or binding or popping in the steering column or steering wheel while turning the steering wheel associated with either the steering column or the i-shafts, Ford has reviewed the following FCSD databases and files: The On-Line Automotive Service Information System (OASIS) containing Technical Service Bulletins (TSBs) and Special Service Messages (SSMs); Internal Service Messages (ISMs) contained in CQIS; and Field Review Committee (FRC) files. We assume this request does not seek information related to electronic communications between Ford and its dealers regarding the order, delivery, or payment for replacement parts, so we have not included these kinds of information in our answer.

A description of Ford's OASIS messages, ISMs, and the Field Review Committee files and the search criteria used are provided in Appendix B.

OASIS Messages: Ford has not identified any SSMs or TSBs that may relate to the agency's request.

Internal Service Messages: Ford has not identified any ISMs that may relate to the agency's request.

Field Review Committee: Ford has not identified any field service action communications that may relate to the agency's request.

A copy of a communication that Ford sent on November 2, 2012, to its Police Advisory Board members is provided as Appendix H.

Request 12

State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Ford to date that relate to, or may relate to, the subject condition in the peer 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. Ford'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 2007, or a compatible format, entitled "PE12-025 PEER WARRANTY DATA." See Enclosure A, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Answer

Records identified in a search of the AWS database, as described in Appendix B, were reviewed for relevance and sorted in accordance with the categories described in the response to Request 3. The number and copies of relevant warranty claims identified in this search that relate to the subject condition in a peer vehicle are provided in the AWS portion of the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

When we were able to identify that duplicate claims for an alleged incident were received, each of these duplicate claims was marked accordingly and the group counted as one report. In other cases, certain vehicles may have experienced more than one incident and have more than one claim associated with their VINs. These claims have been counted separately. Warranty claims that are duplicative of owner and field reports are provided in Appendix C but are not included in the report count.

Requests for "goodwill, field, or zone adjustments" received by Ford to date that relate to the subject condition that were not honored, if any, would be included in the MORS reports identified above in response to Request 6. Such claims that were honored are included in the warranty data provided.

Request 13

Describe in detail the search criteria used by Ford to identify the claims identified in response to Request No. 12, 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 [sic] in the subject vehicles [sic]. State, by make and model year, the terms of the new vehicle warranty coverage offered by Ford on the subject vehicles [sic] (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 Ford offered for the subject vehicles [sic] and state by option, model, and model year, the number of vehicles that are covered under each such extended warranty.

Answer

Detailed descriptions of the search criteria, including all pertinent parameters, used to identify the claims provided in response to Request 12 are described in Appendix B.

For all other 2005 through 2011 model year Ford Crown Victoria and Mercury Grand Marquis vehicles, the New Vehicle Limited Warranty, Bumper-to-Bumper Coverage begins at the warranty start date and lasts for three years or 36,000 miles, whichever occurs first. Optional Extended Service Plans (ESPs) are available to cover various vehicle systems, time in service, and mileage increments, and only those ESPs that cover the subject components are included. As of the date of the information request, 38,640 new vehicle ESP policies had been purchased on peer vehicles. Refer to Appendix G for the ESP details.

Request 14

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the subject condition in the peer vehicles, that Ford 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 Ford is planning to issue within the next 120 days.

Answer

Ford has not identified any communications to dealers, zone offices, or field offices pertaining to the subject condition in the peer vehicles. For further description and details of Ford's databases refer to Request 11 and Appendix B.

Request 15

Identify all subject component(s) failure modes that Ford has identified, including those alleged by consumers or third parties, that may result in a separation of the upper intermediate shaft from the steering column and provide the following information about each:

- a. A detailed description of all aspects of the design and operation of the subject components that relate to crash performance, including those related to mechanical energy management (e.g., collapsible steering column) and those related to electronic activation (e.g., deployable steering column);
- b. A detailed description of the manufacturing processes used to assemble each segment of the assembly prior to installation at the vehicle assembly plant and during vehicle assembly
- c. A detailed description of how retention is maintained between the splined male and female sections within the steering column housing and all mechanisms may result in relative movement between those sections;
- d. A description of all performance requirements and copies of all related test procedures and test results related to "15.a;"
- e. Copies of all failure mode and effects analyses that may relate to the alleged defect;
- f. Ford's assessment of the known or suspected cause(s) of the condition;
- g. The loads under which each component may fail during an impact (or otherwise) and the hierarchy each component may fail within the steering system;
- h. A representative sample of field return components displaying the condition (if sample components are not available, provide photographs showing the condition);
- i. Describe in detail the function of the Restraint Control Module (RCM) as it relates to the function of the "deployable" or "collapsible" steering column; and
- j. An Excel file entitled, "PE12-025 FAILURE MODE ANALYSIS", listing all incidents that have been confirmed or alleged, with the following information: (1) vehicle identification number; (2) incident date; (3) whether the subject component(s) was returned to Ford for inspection, testing or analysis; (4) whether photographs of the failure were taken; (5) summary of allegations regarding failure mode, cause(s) and incident severity; and (6) Ford assessment of failure mode, cause(s) and incident severity;

Answer

- a. A detailed description of the steering column and upper i-shaft, including the loads required to initiate collapse of the upper i-shaft plunge joint are provided in Confidential Appendix I, Bates Nos. 397-405.

The upper i-shaft plunge joint is designed to collapse and absorb relative movement between the body and chassis in the event of a frontal crash; reducing any load transfer up the column to the occupant. Collapse of the upper i-shaft can occur at speeds as low as 11 mph (frontal barrier collision) in a normally functioning system (swing link not seized) and 8 mph in a system where the swing link is seized.

The steering column incorporates an internally collapsing design that includes a pyrotechnic feature that, when activated, reduces the load necessary to collapse or internally stroke the steering column. The restraints control module (RCM) provides the signal to activate or "deploy" the steering column. The design of the system is such that the steering column will deploy, lowering the required load to stroke the column, in all frontal crash modes except when the seat is positioned rearward of the seat track switch and the buckle status is "unbelted". The seat track switch enables differentiation between shorter stature occupants, such as the 5th percentile female and taller occupants, such as the 50th percentile male. A switch in the safety belt buckle determines whether the safety belt is buckled or unbuckled.

For occupants forward of the seat track switch, column deployment coincides with airbag deployment, and this threshold is met in a 14 mph frontal barrier collision. Refer to Appendix J, test number 13823, for photographs and test summary of a 14 mph frontal barrier threshold test. For occupants rearward of the seat track switch, column deployment may not coincide with airbag deployment. In this case the threshold for column deployment is met in a 14 mph frontal barrier collision but, in the case where an occupant is belted, the airbag deployment threshold is not met until a 16.8 mph frontal barrier collision. Therefore, it is possible to have a steering column deployment without an airbag deployment in this narrow case. Refer to Appendix J, test number 14141, for photographs and test summary of a 16.8 mph frontal barrier threshold test.

When any deployable device (e.g., steering column, airbag, etc.) activates, a code is set in the RCM and the supplemental restraint system light on the dash is illuminated indicating that the vehicle needs servicing.

For all cases, regardless of belt status or seat position, a "gray zone" for deployment exists below the deployment thresholds. A gray zone is a range of speeds where the RCM may determine that the deceleration is sufficient to command a deployment, but not necessarily in all cases or speeds. For example, two vehicles could experience a change in velocity of 13 mph, but for one vehicle the RCM determines a deployment is warranted and in the other vehicle the RCM determines that a deployment is unwarranted. The bottom range of the gray zone for the subject vehicle is a 10.9 mph Thatcham offset frontal barrier collision, which is a non-deployment threshold test, meaning that the restraint system should not deploy in this type of crash. Refer to Appendix J, test number 13745, for photographs and test summary of a 10.9 mph Thatcham test.

Note: The crash test speed is a surrogate for deceleration with respect to time. The vehicle sensors measure deceleration with respect to time, not speed, when determining if a deployment is required.

- b. Delphi was the original supplier of the steering column. Nexteer subsequently took over this business from Delphi. Nexteer provided their process flow sheets for the steering column assembly; refer to Confidential Appendix I, Bates No. 16. TK Presta, the supplier of both the upper and lower i-shafts declined to provide their process sheets. Ford's assembly plant process sheets are provided in Appendix K.
- c. A description of how retention is maintained between the splined tube and shaft sections, is provided in Confidential Appendix I, Bates Nos. 397-405.
- d. The crash performance of the subject components in the subject vehicles is designed as part of the occupant protection system. The measure of the system is the occupant performance.

In designing the vehicle for crash performance, the vehicle and the components related to crash performance were subjected to test modes that included those specified in FMVSS 208 for both the 5th percentile and 50th percentile dummies. Ford is not providing copies of the tests that were conducted to establish Ford's basis for compliance with FMVSS 208. Ford is providing copies of three tests that were conducted to establish deployment and non-deployment thresholds (refer to 15.a). These tests were selected because they provide insight into the degree of physical damage the vehicle experiences in lower speed crashes. Please advise if the agency requires additional information.

- e. Refer to Confidential Appendix I, Bates Nos. 1-11, 12-15, 17-141, and 335-396.
- f. Refer to Ford's response to Request 19.
- g. Refer to Confidential Appendix I, Bates Nos. 397-405.
- h. Ford is aware that the agency has exemplar parts from a complaint vehicle that displays the alleged defect and, accordingly, is not providing additional parts to the agency. Ford has not received any field return parts that appear to display a condition that is unique from what the agency has already seen.
- i. Refer to 15.a.
- j. Any alleged incident report or claim that was received by Ford on or before September 21, 2012, is provided in Appendix C. Ford's assessment of the allegations, causes, and severity is provided in response to Request 19.

Request 16

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, Ford. 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.

Answer

Ford is construing this request broadly and is providing not only studies, surveys, and investigations related to the alleged defect, but also notes, correspondence, and other communications that were located pursuant to a diligent search for the requested information. Ford is providing the responsive non-confidential Ford documentation in Appendix L.

To the extent that the information requested is available, it is included in the documents provided. If the agency should have questions concerning any of the documents, please advise.

Ford is submitting additional responsive documentation in Appendix I with a request for confidentiality under separate cover to the agency's Office of the Chief Counsel pursuant to 49 CFR Part 512. Redacted copies of the confidential documents will be provided under separate cover, on separate media, to the agency's Office of Chief Counsel as Appendix I – Redacted.

Ford is not producing documents responsive to this request that are protected from disclosure by attorney-client privilege, work-product doctrine, or other applicable immunity. Documents protected from disclosure on these bases are described in a privilege log contained in Appendix E.

In the interest of ensuring a timely and meaningful submission, Ford is not producing materials or items containing little or no substantive information. Examples of the types of materials not being produced are meeting notices, raw data lists (such as part numbers or VINs) without any analytical content, duplicate copies, non-responsive elements of responsive materials, and draft electronic files for which later versions of the materials are being submitted. Through this method, Ford is seeking to provide the agency with substantive responsive materials in our possession in the timing set forth for our response. We believe our response meets this goal. If the agency would like additional materials, please advise.

Request 17

Describe all modifications or changes made by, or on behalf of, Ford 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 or subject component in the subject vehicles or peer 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. The applicable models (e.g. CVPI, LX);
- c. A detailed description of the modification or change;
- d. The reason(s) for the modification or change;

- e. The part number(s) and a description (service and engineering) of the original components;
- f. The part number(s) and a description (service and engineering) of the modified components;
- 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;
- i. A photograph of graphic showing each component, highlighting the design features that may relate to the alleged defect or subject condition; and
- j. Whether the modified component can be interchanged with earlier production components.

Also, provide the above information for any modification or change that Ford is aware of which may be incorporated into vehicle production within the next 120 days.

Answer

A table of the requested changes is provided in Appendix M.

Request 18

State the number of subject components that Ford has sold that may be used in the subject and peer 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 the sale (*including the cut-off date for sales, if applicable*).

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 Ford is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

Answer

As the agency is aware, Ford service parts are sold in the U.S. to authorized Ford and Lincoln dealers. Ford has no means to determine how many of the parts were actually installed on vehicles, the vehicle model or model year on which a particular part was installed, the reason for any given installation, or the purchaser's intended use of the components sold.

Ford is providing the total number of Ford service replacement steering columns, lower i-shafts, and upper i-shafts by part number (both service and engineering) and month and year of sale, where available, in Appendix N. Information pertaining to production and service usage for each part number, and supplier point of contact information, is also included in Appendix N.

Request 19

Furnish Ford'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.

Answer

The agency's investigation encompasses 2005 through 2008 model year Ford CVPI vehicles and names peer vehicles as 2005 through 2011 model year Ford Crown Victoria vehicles (other than the subject vehicles) and Mercury Grand Marquis vehicles. As the agency is aware, through discussions and the information provided herein, the lower i-shaft, upper i-shaft, and the lower (green) bearing, splined tube and splined shaft internal to the steering column are identical in the subject and peer vehicles. Accordingly, the following discussion applies to both subject and peer vehicles.

Analysis of field return parts

Ford was contacted in March of 2012 by the Ontario Provincial Police (OPP) after one of their vehicles was alleged to have experienced a steering disengagement. The vehicle was a 2010 model year marked cruiser that was reportedly being driven on surface streets under normal conditions (not pursuit or high-speed) when the driver turned the vehicle left to enter a side street and then a parking lot when the steering disengaged. The upper and lower i-shafts and steering column were returned for Ford's analysis. Review of the parts found that the swing link on the lower i-shaft was corroded and seized, the upper i-shaft was partially collapsed (post vehicle removal), and the steering column lower bearing had separated from the steering column jacket. At that time, a review of Ford's data systems found no other similar reports on 2010 model year CVPIs. The conclusion at that time was that some unidentified factor (no indication of a prior collision) caused the collapse of the upper i-shaft, introducing sufficient slack in the system to allow the lower bearing to displace a sufficient amount such that the steering disengaged.

In September 2012, Ford was contacted regarding two police cruisers from the Montgomery County police fleet that allegedly experienced a steering disengagement. Ford and NHTSA jointly reviewed these vehicles. The first vehicle (VIN: 2FAFP71W26X143856) had reportedly experienced a steering disengagement in early-September 2012. A review of the parts from this vehicle ("September vehicle") revealed that the swing link was corroded and seized, the upper i-shaft was partially collapsed (post vehicle removal), and the steering column lower bearing had separated from the steering column jacket. A review of Carfax information on the vehicle indicates that it had been in at least four collisions previously; possibly explaining the collapse in the upper i-shaft.

Montgomery County had another vehicle ("July vehicle") that had experienced an alleged steering disengagement in July 2012. The county garage staff gathered some parts that they believed to be from the vehicle, however, it is uncertain if the parts that were collected were the actual parts from the vehicle. The upper i-shaft that was presented as being from the July vehicle is not the original equipment i-shaft or a Ford service i-shaft for this particular model year of vehicle. It could be an upper i-shaft from a pre-2005 model year CVPI vehicle that is approximately 20 millimeters longer than the appropriate upper i-shaft for this vehicle. The outcome of installing the incorrect, longer i-shaft in the vehicle is that the swing link is forced to its lowest or fully collapsed position, in effect, seizing the joint. Additionally, the lower i-shaft was not available for review. Without knowing for certain that the parts presented were

the parts installed in the vehicle when the separation was reported to have occurred, it was impossible to identify the root cause of the alleged disengagement.

At the Montgomery County inspection, a third vehicle was presented that had experienced a partial separation of the lower bearing but no steering disengagement. The swing link on the lower i-shaft was functioning as designed and there was no apparent collapse in the upper i-shaft. The root cause of the partial separation of the lower bearing is unknown.

In October, after the agency opened its investigation, Ford's early concern identification group located a VOQ (ODI No. 10479893) ("VOQ vehicle") alleging a steering disengagement in a 2008 model year CVPI in Rhode Island. Ford was able to obtain parts from that vehicle for evaluation. Our inspection found that the swing link was corroded and seized, the upper i-shaft was partially collapsed (post vehicle removal) and the steering column lower bearing had separated from the steering column jacket. A review of Carfax information did not indicate the vehicle had experienced a collision. These component characteristics are consistent with the parts from both the OPP vehicle and the Montgomery County September vehicle.

Ford has also received some additional field return steering columns and a few i-shafts from police fleets that have conducted vehicle inspections and identified vehicles where the lower bearing was partially separated. While these vehicles exhibited partial lower bearing separation, there were no alleged steering disengagements.

In-vehicle testing

Just prior to submitting this response, Ford conducted two vehicle drive evaluations using field returned parts. The first evaluation was performed on a vehicle with a field returned steering column where the lower bearing had two retaining tabs broken off and normally functioning lower and upper i-shafts. A series of aggressive driving maneuvers were completed; the relative motion of the lower bearing was less than 1 mm axially and we were unable to cause a steering disengagement. The second drive evaluation was performed on the same vehicle equipped with a field returned seized lower i-shaft, a partially collapsed upper i-shaft (which we would normally only expect to occur in a collision) and the same steering column and lower bearing with two broken retaining tabs as in the first evaluation. During this evaluation, Ford was able to recreate a steering disengagement while performing aggressive slalom maneuvers on a cobblestone surface. At the time of this submission, Ford plans to conduct additional testing to better understand this data, potential contributing factors, and alleged field reports.

Summary

Ford is investigating the circumstances associated with reports of steering column lower bearing separation in these vehicles, and the potential contributing factors. Based on our preliminary analysis, it appears that a combination of at least three factors must be present for a steering system to collapse sufficiently for a disengagement to occur. At this point, it is unclear how these factors interact, and whether any may relate to or be influenced by a prior vehicle impact or service.

The claims and reports provided herein support that a steering disengagement associated with this failure mode is very unusual, and those few reports of disengagement have occurred at lower speeds. While lower bearing displacement is an abnormal condition it alone does not result in steering disengagement. Ford continues its investigation into this subject and will

continue to work with the agency to better understand the circumstances associated with these reports.

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