

Ford Motor Company

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James P. Vondala, Director
Automotive Safety Office
Environmental & Safety Engineering

OFFICE OF DEFECTS
INVESTIGATION

April 8, 2004

Ms. Kathleen C. DeMeter, Director
Office of Defects Investigation Safety Assurance
National Highway Traffic Safety Administration
400 Seventh Street, S.W.
Washington, DC 20590

Dear Ms. DeMeter:

Subject: PE04-010:NVS-214jry

Attached is the Ford Motor Company (Ford) response to the agency's March 3, 2004 letter concerning reports of alleged rear axle shaft wear and/or allegations of axle shaft fracture at the outer bearing interface on 2003 model year Ford Crown Victoria, Mercury Grand Marquis and certain Lincoln Town Car vehicles.

Ford is providing reports claiming to be related to the alleged defect, as well as reports alleging a malfunction of the rear axle assembly that do not specify axle shaft wear or fracture. We consider these latter reports to be ambiguous as to whether they are related in any way to the alleged defect. The responsive reports indicate that abnormal axle wear is primarily occurring on fleet and long wheel base vehicles due to the high loads and severe driving conditions experienced on those vehicles. In fact, vehicles used in fleet applications account for the majority of the responsive claims and reports alleging axle wear, while that same population of vehicles accounts for only 25% of total subject vehicle volume.

Based upon analysis of the information and data provided in this response, we believe customers are likely to become aware of axle wear when they notice the obvious symptoms, including rear end noise, vibration and/or axle lubricant leaks that typically accompany abnormal axle wear. Continued axle wear can eventually cause the wheel tone ring to contact the ABS sensor, which will cause the ABS warning light in the instrument cluster to illuminate.

If the typical symptoms of noise, vibration, and/or lubricant leaks are not observed or are ignored and vehicle operation continues, fracture of the axle shaft may eventually occur. In the event of axle fracture, the wheel and axle flange is expected to be retained to the vehicle by the brake calliper, allowing the driver to maintain vehicle control.

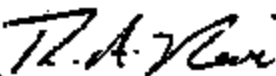


Telephone conversations with dealership service personnel has revealed that at least 14 of 30 allegations that appear to describe axle fracture are actually axle wear without axle shaft fracture, or are not related to the alleged defect (axle fracture caused by an accident or fracture that did not occur at the bearing interface).

Ford is presently in the process of gathering axles from the subject vehicle population to further understand their performance in the many types of usage to which the vehicles are subjected and we will advise the agency of our findings.

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

Sincerely,



James P. Vondale

Attachment

FORD MOTOR COMPANY (FORD) RESPONSE TO PE04-010

Ford's response to this Preliminary Evaluation (PE) 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 every effort to provide thorough and accurate information and we would be pleased to meet with agency personnel to discuss any aspect of this inquiry.

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, as more fully described in this response. Ford notes that although electronic information was included within the scope of its search, Ford has not attempted to retrieve from computer storage media 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.

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 March 3, 2004, the date of your inquiry. Ford has searched business units and/or affiliates within the following divisions for responsive documents: Environmental and Safety Engineering, Ford Customer Service Division, Marketing and Sales Operation, Quality, Global Core Engineering, Office of the General Counsel, and North American Car Product Development and Lincoln Mercury 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. Model;
- c. Model Year;
- d. Intended Purpose (i.e., civilian, taxi cab, limousine, police interceptor, etc);
- e. Date of manufacture;
- f. Date warranty coverage commenced; and
- g. Selling dealer identification (dealer name, address, and Ford's dealer identification number).

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

Answer

Ford does not maintain records of a customer's intended purpose of a vehicle (subpart "g" above). Mr. Young, of your office, stated in a telephone conversation on March 25, 2004 that in lieu of providing the intended purpose of each vehicle, an explanation of each vehicle type, as specified by the Body Code is sufficient. Body Codes are comprised of characters five, six and seven of the VIN. Body Code definitions for the subject vehicles are provided below. Mr. Young also indicated that the selling dealer name, address and identification number is not required if Ford identifies the state where the vehicle was sold, as is typically requested in NHTSA preliminary evaluations.

Ford records indicate that the approximate total number of subject vehicles sold in the United States (the 50 states and the District of Columbia) and its protectorates and territories (American Samoa, Guam, Northern Mariana Islands, Puerto Rico, and Virgin Islands) is 168,835.

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

Model	Body Code	Volume
Ford Crown Victoria	P70 - Long Wheel Base	3301
	P71 - Police Interceptor	35407
	P72 - Regular Wheel Base Fleet	730
	P73 - Base Sedan	6925
	P74 - LX Sedan	15018
Mercury Grand Marquis	M74 - GS Sedan	21691
	M75 - LS Sedan (Includes Marauder)	35358
Lincoln Town Car	M81 - Executive	14480
	M82 - Signature	21882
	M83 - Cartier	8055
	M84 - Long Wheel Base Executive	1850
	M85 - Long Wheel Base Cartier	1180

The requested data for each subject vehicle is provided electronically in Appendix A (filename: 2004-04-08_Appendix_A) on the enclosed CD.

Request 2

State the number of each of the following, received by Ford, or of which it is otherwise aware, which relate to, or may relate to, the alleged defect:

- 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;
 - 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", separately state the total number of each item Ford has identified (e.g., consumer complaints, field reports, etc.). 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 potentially involving the alleged defect and any related documents, Ford has gathered "owner reports" and "field reports" maintained by Ford Customer Service Division (FCSD), Intensified Customer Concern Definition (ICCD) data maintained by Ford's Quality Office, fleet reports maintained in a Fleet Test Database, and claim and lawsuit information maintained by Ford's Office of the General Counsel (OGC).

Descriptions of the FCSD owner and field report systems, the ICCD and the Fleet Test Database systems, and the criteria used to search each of these are provided electronically in Appendix B (file: 2004-04-08_Appendix_B) on the enclosed CD.

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

<u>Category</u>	<u>Allegation</u>
A1	Alleged axle fracture including indication of wheel separation from the vehicle
A2	Alleged axle fracture without indication of wheel separation from the vehicle
B	Axle/bearing replacement with a noise, vibration or fluid loss symptom
C	Ambiguous* - No reason or unclear reason for axle/bearing replacement

*We are providing electronic copies of these reports 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: The search and review of the Ford Master Owner Relations Systems (MORS) database records, as described in Appendix B, identified the following number of owner reports in accordance with the categories described above:

Category	A1	A2	B
Reports	1	0	30

Copies of both the responsive owner reports and ambiguous owner reports are provided in the MORS III portion of the electronic database contained in Appendix C (file: 2004-04-08_Appendix_C) on the enclosed CD. 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 is marked accordingly, and the group is 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 the term Legal Contacts, and the activity that is responsible for this information, Litigation Prevention. To the extent that responsive (i.e., not ambiguous) owner reports reflect that they are Legal Contacts, Ford has gathered the related files from the Litigation Prevention group. Based on this search, Ford has located one file involving a Mercury Grand Marquis Marauder [VIN: 2MEHM75V93X835341], which is provided in Appendix D. Additionally, the incident involving this vehicle is referenced in the Crash/Injury Incident Claim section, and in the Claims, Lawsuits, and Arbitrations section below. Further, the incident involving this vehicle is discussed more thoroughly in response to Request 11.

ICCD Information: A search of the ICCD database as described in Appendix B identified no responsive reports. Ford is providing other reports that are ambiguous as to whether they relate to the alleged defect in Appendix E (file: 2004-04-08_Appendix_E) on the enclosed CD.

Fleet Reports: In addition to fleet reports that may be contained in the owner reports or field reports identified in this response, Ford conducted a search of its Fleet Test Database as described in Appendix B for reports that may relate to the alleged defect in the subject vehicles. No responsive or ambiguous fleet reports were identified in the search.

Field Reports: The search and review of the Ford Common Quality Indicator System (CQIS) and Unified Database (UDB) records, as described in Appendix B, identified the following number of field reports, excluding duplicates, in accordance with the categories described above:

CQIS

Category	A1	A2	B
Reports	1	5	224

Copies of these field reports and ambiguous field reports are provided in the CQIS portion of the electronic 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 field reports for an alleged incident were received, each of these duplicate reports is marked accordingly, and the group is 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. In addition, 11 category B CQIS reports are duplicative of owner reports and are provided in Appendix C but are not reflected in the count above.

Unified Database: The Unified Database (UDB) was created to facilitate parts availability by tracking part sales and is not intended as a problem reporting system. However, because a small percentage of the records may contain verbatim comments that could potentially relate to the agency's inquiry, we are including these in response to Request 2. A search of UDB, as described in Appendix B, was conducted. Copies of potentially relevant reports and ambiguous reports are provided in the UDB portion of the electronic database contained in Appendix C on the enclosed CD.

UDB

Category	A1	A2	B
Reports	0	0	50

The categorization of each report is identified in the "Category" field. When we were able to identify that responsive (i.e., not ambiguous) duplicate UDB reports for an alleged incident were received, each of these duplicate reports is marked accordingly, and the group is 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. In addition, 68 UDB reports are duplicative of warranty claims, 4 UDB reports are duplicative of CQIS reports and 1 UDB report is duplicative of a MORS report, and are provided in Appendix C but are not reflected in the report count above.

Crash/Injury Incident Claims: For purposes of identifying alleged accidents or injuries potentially related to the alleged defect, Ford has reviewed responsive (i.e., not ambiguous) owner and field reports, lawsuits and claims, and warranty claims. Based on a reasonable and diligent search, Ford located one owner (MORS) report [VIN: 2MEHM75V93X635341], no field (CQIS/UDB) reports and no warranty claims alleging an accident that may be related to the alleged defect. The owner report is included in the MORS portion of the electronic database provided in Appendix C. Additionally, the incident involving this vehicle is included as a Legal Contact in the Crash/Injury Incident Claim section, and in the Claims, Lawsuits, and Arbitrations section below. Further, the incident involving this vehicle is discussed more thoroughly in response to Request 11. Lawsuit and claim information is provided as described below.

Claims, Lawsuits, and Arbitrations: For purposes of identifying incidents potentially related to the alleged defect, 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.

Based on a reasonable and diligent search, Ford has located one consumer lawsuit that appears to relate to the alleged defect in the subject vehicles (VIN: 2MEHM75V93X635341), also listed as a Legal Contact and Crash/Injury Incident Claim and addressed further in response to Request 11. We are providing the requested detailed information regarding the responsive lawsuit, where available, in our Log of Lawsuits and Claims as Appendix F1 (file:2004-04-08_Appendix_F1) on the enclosed CD. To the extent available, copies of complaints, or first notices relating to matters shown on the Log are provided as Appendix F2. A copy of the MORS report is included in Appendix M. With regard to this lawsuit, Ford has not undertaken to contact outside law firms to obtain additional documentation.

Request 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. Ford'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 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 "COMPLAINT DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

Answer

The requested information, to the extent available, is provided in Appendix C as discussed in response to Request 2.

Request 4

Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Ford used for organizing the documents.

Answer

Copies of reports and claims identified in our response to Request 2 are provided electronically, as identified below.

Category	Method of Organization
Owner Reports	Appendix C (electronic)
Field Reports	Appendix C (electronic)
Unified Database Reports	Appendix C (electronic)
Legal Contacts	Appendix D
ICCD Reports	Appendix E (electronic)
Non-privileged Lawuit and Claim Information	Appendix F1 (electronic) & F2

Request 5

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; warranty claims or repairs made in accordance with TSB 03-6-5; and warranty claims or repairs made in accordance with TSB 02-25-3.

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, including, but not limited to 030505A;
- 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 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

Answer

In responding to this information request, Ford electronically searched its Analytical Warranty System (AWS) for all claims meeting the criteria described in Appendix B. The resulting claims were then reviewed individually for allegations that may relate to the alleged defect. This search and review of the Ford AWS database records identified the following number of non-duplicative warranty claims in accordance with the categories described above:

Category	A1	A2	B
Reports	0	23	6776

Electronic copies of these claims and ambiguous claims are provided in the AWS portion of the electronic database contained in Appendix C. The categorization of each report is identified in the "Category" field. When we were able to identify that responsive duplicate claims for an alleged incident were received, each of these duplicate claims is marked accordingly and the group is 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. Ford has also identified 81 warranty claims that are duplicative of CQIS reports, and 11 warranty claims that are duplicative of MORS reports. These claims are provided in Appendix C but are not reflected in the report count above.

Ford assumes that providing the warranty claims in the electronic database format meets the requirements of this request, because the agency can review or order the claims as desired. As discussed with Mr. Young in a telephone conference on March 31, 2004, the Labor Operation Code is not indicative of the reason for repairs. For example, some axle repairs using the TSB service kit (3W1Z-4A109-AA) do not specify Labor Operation code 030305A. As a result, the labor operation code is not included in this response.

The requested customer concern codes and the warranty condition codes are provided in Appendix B.

Requests for "goodwill, field, or zone adjustments" received by Ford to date that relate to the alleged defect in the subject vehicles that were not honored, if any, would be indicated in the MORS reports identified above in response to Request 2. Requests for goodwill that were honored, if any, are contained in the warranty data provided.

Request 6

Describe in detail the search criteria used by Ford to identify the claims identified in response to Request No. 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the alleged defect in the subject vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by 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

The search criteria used by Ford to identify responsive claims is described in the AWS section of Appendix B.

All 2003 model year Ford and Mercury passenger cars include the following warranty coverages:

- 36 month/36,000 mile bumper-to-bumper
- 60 month/50,000 mile safety restraint system
- 60 month/unlimited mile corrosion (perforation only)

All 2003 model year Lincoln passenger cars include the following warranty coverages:

- 48 month/50,000 mile bumper-to-bumper
- 60 month/50,000 mile safety restraint system
- 60 month/unlimited mile corrosion (perforation only)

No extended coverages related to the alleged defect in the subject vehicles have been issued.

Request 7

Please provide a complete chronology listing all activities or events, including, but not limited to, incidents involving a subject component, which led Ford to release TSB 02-25-3 and 03-5-5. Also include the latest draft copy of any communication that Ford is planning to issue within the next 120 days.

Answer

The scope of Ford's investigation conducted to respond to this request focused on Ford employees most likely to be knowledgeable about the subject matter of this inquiry. Ford notes that Visteon is the supplier of the axle assembly for the subject vehicles.

Ford Engineering first became aware of a potential concern with the subject components in Crown Victoria Police Interceptor and Town Car long wheel base fleet (livery) vehicles in September 2002 when the Wixom Assembly Plant Customer Service Manager alerted Visteon and Ford product development engineering to a higher than expected number of field reports in the Ford Customer Quality Indicator System (CQIS) involving the Lincoln Town Car long wheel base axle. As of September 11, 2002, the Assembly Plant was aware of approximately eight field reports alleging abnormal axle wear on Town Car long wheel base fleet vehicles and one report on a Crown Victoria Police Interceptor. A higher than expected number of axle service part sales was also reported. Analysis at that time projected that axle/bearing life could be less than expected and abnormal wear would likely result in reduced customer satisfaction. No reports of axle fracture related to abnormal axle wear were identified during this analysis. This analysis led to initiation of a Quicker Service Fix (QSF) project on September 27, 2002. A QSF project is initiated to expedite development of a service fix.

Analysis of field return parts in September and October 2002 indicated that axles that demonstrated wear at the bearing interface had sufficient surface hardness and depth to indicate that wear was likely due to excessive load, temperature and/or inadequate lubrication and not due to a metallurgical issue. The QSF team identified a Controlled Stress bearing that reduces bearing roller edge loading and better distributes loads on the axle shaft as a design solution to increase axle durability.

The QSF project resulted in release of a new axle service kit and TSB 02-25-3 on December 6, 2002 to address abnormal axle wear on Town Car livery and Crown Victoria Taxi and Police vehicles. The TSB instructed technicians to service these vehicles using the new axle service kit containing the new Controlled Stress bearings, replacement axles and synthetic lubricant. The Controlled Stress bearing also replaced the crowned roller bearing for all Crown Victoria, Grand Marquis and Town Car production vehicles starting in early December 2002.

TSB 03-5-5 superseded 02-25-3 on February 28, 2003 to update the scope to include all 2003 Crown Victoria, Grand Marquis and Town Car vehicles built before January 1, 2003, except Town Car limo and hearse chassis vehicles which use a different axle design.

Ford currently has no plans with respect to any communications that may be issued within the next 120 days.

Request 8

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, 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 groups/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 has conducted a diligent search for information and documents requested, and for other documents that may assist in the agency's analysis of this matter.

For a number of years, Ford has had procedures in place that allow it to manage the investigation and analysis of potential production vehicle concerns. Included as a subset within the broader scope of the actions undertaken pursuant to these procedures are all of the activities that Ford would construe as being encompassed within the scope of this request. Documents reflecting such activities, for which Ford is requesting confidential treatment on the grounds that such items contain commercially sensitive business information and/or trade secrets, are being submitted under separate cover to the agency's Office of Chief Counsel as Appendix G1 and Appendix G2. No other such actions are being conducted, or planned to be conducted, within the next 120 days.

In addition, Ford has located documents reflecting other activities not within the scope of the above-referenced appendices. Other documents located pursuant to Ford's search that may assist in the agency's analysis of this matter are being voluntarily submitted. Documents reflecting such activities that are not customarily disclosed outside of Ford are being submitted under separate cover with a request for confidentiality to the agency's Office of Chief Counsel as Appendix H1 and Appendix H2.

Ford is providing the responsive non-confidential documentation in Appendix I1 and Appendix I2 (file: 2004-04-06_Appendix_I2) on the enclosed CD.

In the process of conducting its duly diligent search, Ford reviewed a collection of documents specifically gathered in response to litigation regarding the Crown Victoria Police Interceptor fuel tank. This collection of documents contains materials that in Ford's opinion are only tangentially relevant to the subject of this Preliminary Evaluation. Upon request, however, Ford is willing to make this collection available for further review by the agency.

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, if any, are described in the privilege log contained in Appendix J (file: 2004-04-08_Appendix_J) on the enclosed CD.

Request 9

Describe all modifications or changes made by, or on behalf of, Ford in the design, material composition (including material hardening), manufacture, quality control, supply, or installation (including lubricant) of a subject component, from the start of production to date, which relate to, or may relate to, the alleged defect. For each such modification or change, provide the following information:

- a. The date or approximate date on which the modification or change was incorporated into vehicle production;
- b. A detailed description of the modification or change;
- c. The reason(s) for the modification or change;
- d. The part numbers (service and engineering) of the original component;
- e. The part number (service and engineering) of the modified component;
- f. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- g. When the modified component was made available as a service component; and
- h. Whether the modified component can be interchanged with earlier production components.

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

Answer

A table of the requested changes potentially related to the alleged defect is provided electronically as Appendix K (file: 2004-04-08_Appendix_K) on the enclosed CD. Other changes that involve the rear axle assembly (but not related to the axle shaft or bearing) have been reviewed and determined not to relate to the alleged defect.

Ford is not planning any modification or change to the subject components on the subject vehicles within the next 120 days.

Request 10

By month/year of sale, state the number of axle kits, part number 3W1Z-4A109-AA, that Ford has sold.

Answer

As the agency is aware, Ford service parts are sold in the U.S. to authorized Ford and Lincoln-Mercury dealers. Ford has no means by which to determine how many of the parts were actually installed on vehicles, the vehicle model on which a particular part was installed, or the reason that the installation was made.

Ford is providing in electronic form in Appendix L (file: 2004-04-08_Appendix_L) on the enclosed CD the total number of Ford service replacement Rear Axle Service Kits by part number (both service and engineering) and calendar month and year of sale where available. In addition, Appendix L lists the number of service replacement controlled stress bearings, crowned roller bearings (note - both bearings are used on multiple vehicle lines) and axle shafts by calendar month and year of sale because some vehicles were serviced using component parts instead of the service kit.

Request 11

Furnish Ford's assessment of the alleged defect in the subject vehicle, including:

- a. The causal or contributory factor(s) (including the vehicles intended use);
- b. The failure mechanism(s);
- c. The failure mode(s);
- d. The risk to motor vehicle safety that it poses; and
- 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.

Answer

Based upon analysis of warranty data, Ford identified abnormal rear axle wear reports on 2003 model year Crown Victoria Police and Town Car long wheel base fleet vehicles in September 2002. By December 2002, a TSB and service kit had been developed and released to effectively service vehicles experiencing wear, and a bearing redesign was implemented to extend the expected life of axles in vehicle production beginning December 2002. Although analysis of warranty data indicates that abnormal axle wear is primarily occurring on fleet and long wheel base vehicles likely due to the heavier loading and severe driving conditions on these vehicles, the TSB and associated production change to the bearing were implemented on all Crown Victoria, Grand Marquis and Town Car vehicles except Limo and Hearse Town Cars, which use a different axle design.

Analysis of field return parts and internal testing indicates that axle wear in the subject vehicles has several causal factors, but is primarily related to the type of vehicle use, loaded weight and driving conditions. Investigation found that wear of the axle shaft in warranty return parts is typically a yield failure of the axle material caused by rolling contact fatigue resulting from excessive stress from bearing roller end loading. Bearing roller end loading occurs if vehicle loads during cornering cause the outboard end of the axle shaft to bend in one direction while the axle housing bends in the other, causing excessive shaft slope through the bearing. (See Figure One, page 15). The rear axle bearing in use at the start of 2003 model year vehicle production incorporates a crowned roller with a flat outer race. The crowned roller design accommodates the shaft slope condition, but can result in high stress concentration on the axle shaft (which also acts as the inner bearing race) at the bearing location. The controlled stress bearing released in December 2002 for production vehicles and in service, accommodates shaft slope by incorporating a crowned surface on the outer bearing race with flat rollers. The controlled stress bearing reduces stress on the axle shaft (inner race).

Based upon analysis of the information and data provided in this response, we believe the vast majority of customers usually become aware of axle wear when they notice the typically obvious symptoms from this type of condition, including rear end noise (usually described as roaring,

growing or humming), vibration and/or axle lubricant leaks. Continued axle wear can eventually cause the wheel tone-ring to contact the ABS sensor, which will cause the ABS warning light in the instrument cluster to illuminate. Ford is aware of approximately 7,080 reports and claims that appear to allege abnormal axle and/or bearing wear (category B). Virtually all these claims and reports were precipitated by symptoms of noise, vibration, fluid loss, and/or illumination of the ABS warning light, although some fleets have reported that axle wear is being discovered during recommended wheel and play inspection at 15,000 mile intervals as recommended by the Ford Universal Service Guide provided with each vehicle.

If the typical symptoms of noise, vibration, lubricant leaks and/or wheel end play are not observed or ignored and vehicle operation continues, fracture of the axle shaft may eventually occur. In the event of axle fracture, the wheel and axle flange is expected to be retained to the vehicle by the brake caliper, allowing the driver to maintain vehicle control. Ford is aware of two reports alleging axle fracture that led to wheel separation from the vehicle. In one we believe the axle fracture was the result of a significant lateral impact, which caused sufficient damage to cause the wheel to detach. The cause of wheel detachment in the second is unknown. A brief summary of those incidents is provided below:

VIN 2MEHM75V93X635341 – Mercury Grand Marquis Marauder serviced by J C Johnson Ford in Minden, Louisiana. The owner of this vehicle alleges he was traveling at forty miles per hour, heard a loud "popping" sound and the vehicle did a 360-degree skid. The service technician at J C Johnson Ford commented that he "... found right rear axle broken, also found upper and lower control arms on both sides bent, also center stabilizer rods bent." The technician also commented that damage to the axle and related parts likely came from apparent lateral damage.

The rear axle assembly was shipped to Ford's axle supplier in August 2003 for further analysis. The supplier examined the parts and noted that control arms and linkages were deformed and the axle was bent. The axle fractured approximately 0.75 inches inboard of the bearing interface area indicating that this incident is unrelated to axle wear at the bearing interface. The supplier concluded the axle shaft was likely fractured by lateral impact at the rim. Subsequent metallurgical analysis indicated that the axle surface hardness, case depth and core hardness was within metallurgical specifications.

Documents associated with this incident are included in Appendix M.

VIN 2FAHP71WX3X144094 – Crown Victoria Police Interceptor owned by the city of Philadelphia. This vehicle reportedly experienced left rear wheel separation from the vehicle with no prior warning. A Ford engineer inspected the parts and provided the following analysis in a tear down report dated November 2003:

Upon inspection, the axle shaft (bearing inner race) had a deep wear pattern and the portion of the outer race that axially retains the bearing was missing. The bearing cage had also broken apart with only two rings of material found. The rollers had worked down the axle shaft towards the differential housing, and had generated a separate wear pattern on the shaft away from the original bearing location. The rollers also had wear marks indicative of sliding. The ends of the axle shaft at the fracture had evidence of rubbing against each other prior to separation. The axle fracture occurred at the right hand wheel bearing wear pattern.

Subsequent material analysis on the axle shaft conducted by the axle assembly supplier in September 2003 concluded the surface hardness and case depth were within design

specification, although it was noted that there existed evidence of significant frictional heat generated at the bearing journal. The teardown and metallurgical analysis conducted on these parts suggests the vehicle continued to be driven not only after severe wear to the axle shaft occurred, but also continued to be driven after the bearing outer race became dislodged and the rollers traversed along the axle shaft and began grooving the axle shaft at a second location. We would expect this type of extensive damage to produce noise, vibration, fluid loss and ABS warning light symptoms typically associated with severe axle wear. A second failure mode was experienced on this vehicle when the emergency drum portion of the disc brake hub fractured, which may have allowed the alleged separation of the wheel and portion of the emergency brake drum from the vehicle.

Documents associated with this incident are included in Appendix N.

During the searches conducted to respond to this information request, Ford located 28 reports and claims that appear to allege axle shaft fracture near the bearing interface in the subject vehicles. These reports and claims do not include allegation of wheel separation from the vehicle. After discussing specific vehicle incidents with dealership service personnel and Ford Service Representatives, Ford determined that eight of the twenty eight alleged axle fractures were actually axle wear with no shaft fracture. Additionally, one alleged axle fracture report was found to involve an axle fracture that occurred as a result of lateral impact (accident), and four occurred near the differential assembly and were not related to axle wear at the bearing interface. Of the remaining 18 reports, three are unverified because the dealer has no information in addition to that contained in the report; and one is unknown because we have not yet been able to talk to the repairing technician. The remaining 11 reports and claims include incidents which, based on service personnel descriptions, appear to be axle shaft fracture at the bearing interface.

Ford believes that axle wear in the subject vehicles is related to vehicle loading and/or aggressive driving characteristics to which some of the vehicles are subjected. Even in instances where the axle wears, the operator typically reports easily recognizable symptoms of noise, vibration or fluid loss, giving a clear indication that service is required. Any instances of excessive axle grooving would also be identified during wheel end-play inspections during the recommended 15,000 mile service intervals.

In a rare instance in which the axle shaft does fracture, the brake calipers should retain the wheel and hub assembly, preventing the wheel from separating from the vehicle. Ford is not aware of any reports or claims alleging loss of vehicle control caused by axle wear other than the Marauder incident described above, which was found to have a bent axle and fracture some distance from the bearing and was likely the result of lateral impact to the wheel - not axle wear. Ford is presently in the process of gathering axles from the subject vehicle population to further understand their performance in the many types of usage to which the vehicles are subjected, and will advise the agency of our findings.

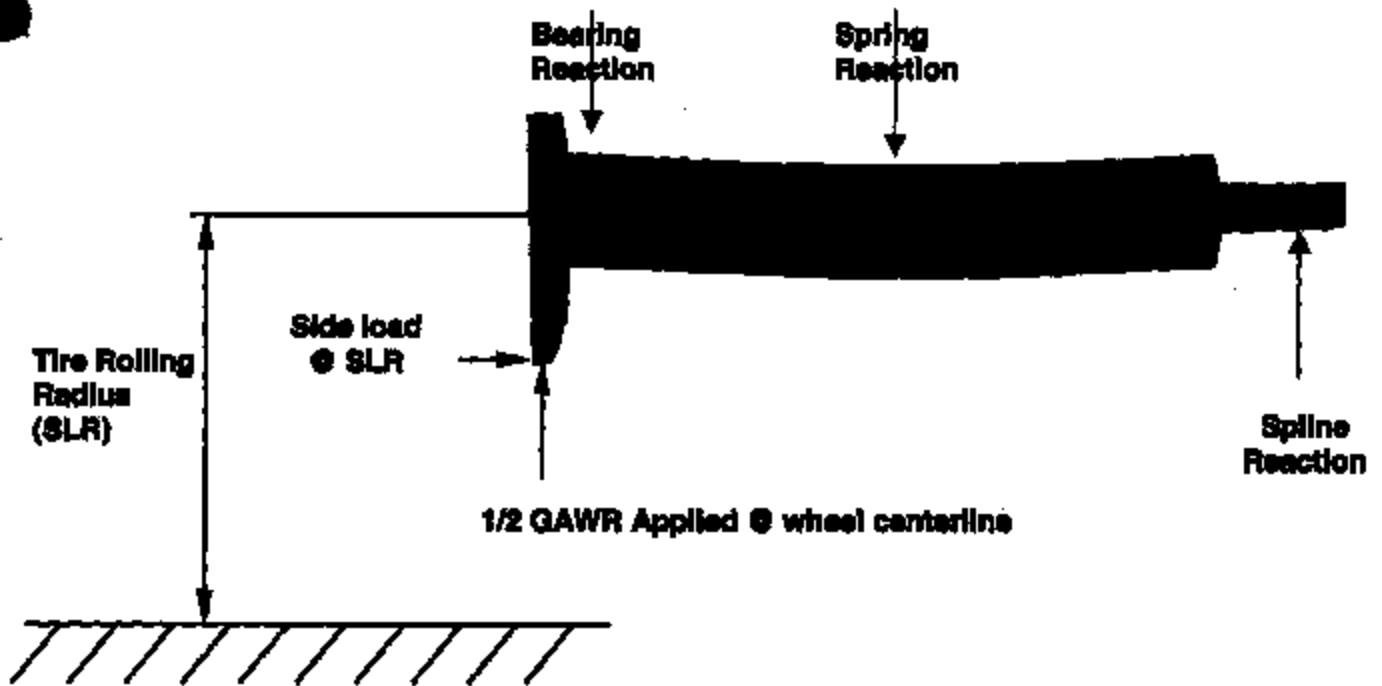


Figure 1, Axle Bending Under Cornering Load

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