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OFFICE OF DEFECTS &
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May 19, 2011

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: EA09-013:NVS-213dlr

The Ford Motor Company (Ford) response to the agency's April 5, 2011, letter concerning reports of alleged unintended vehicle movement with a vehicle in Park in 2002 through 2005 model year Ford Explorer and Mercury Mountaineer and 2003 through 2005 model year Lincoln Aviator vehicles is attached.

Ford's review of information pertaining to this subject is consistent with Ford's previous analysis that was provided to the agency in our July 17, 2009, response to PE09-020. The complaint rate remains low; very few additional reports relating to this subject have been received by Ford or the agency since the opening of the PE/EA.

Ford has conducted an extensive investigation into allegations of vehicle movement after the operator has attempted to shift into Park or allegedly had difficulty shifting into Park in these vehicles. The vast majority of responsive reports relate to increased efforts, as compared to a very low percentage (less than 2%) alleging unintended movement after an attempt to shift into Park. Ford data indicate there are overt and progressive indicators if a vehicle's shift mechanism is not operating properly. The reports of increased shift efforts into Park on the subject Explorer and Mountaineer vehicles relate primarily to swing arm contact with the BSI solenoid pin. In some cases this contact may result in an overt, progressive increase in effort that is noted by vehicle operators who have their vehicle serviced. Additionally, there are a number of obvious indicators to the driver that the transmission is not in Park. First, the gear position indicator needle will not line up with the "P" for Park; rather, the needle will be somewhere between "P" and "R." Second, the shift lever is not in its natural fore/aft position and will be closer to the driver due to the design of the shift gates. The driver must always pull the shift lever closer to themselves to negotiate the gates for any gear. Third, as described in FMVSS 114 S5.2.1 addressing Rollaway Prevention, "the starting system required by S5.1 must prevent key removal when tested according to the procedures in S6, unless the transmission or gear selection control is locked in "park" or becomes locked in "park" as a direct result of key removal." Ford notes a number of drivers who have alleged unintended vehicle movement mentioned that they could not remove their keys from the ignition. This indicates to the customer that corrective action should be taken to ensure their vehicle is indeed in the Park position before attempting to leave their vehicle unattended. In the vehicle's Owner Guide, Ford instructs drivers to come to a complete stop before shifting into Park,



provides a diagram showing the correct position of the gear position indicator under the "P" when the vehicle is parked, cautions to always set the parking brake fully, and remove the key whenever you leave the vehicle.

Drivers can easily avoid unintended vehicle rollaway due to any cause by following simple and common sense actions as mentioned in the agency's Closing Resume and Summary Report for EA04-025:

"When exiting any automatic transmission equipped vehicle, ODI strongly advises all drivers to verify the shifter has been fully placed in the gated park position, to turn off the engine, to fully set the park brake, and to remove the key from the ignition and from the vehicle. ODI notes that following these simple, common sense, procedures would have prevented the SV rollaway incidents and the injuries that resulted."

Ford has provided drivers with instructions in the Owner Guide to confirm the proper alignment of the gear indicator needle centered over the "P" and to properly set the parking brake before turning off the engine and exiting the vehicle. We believe that virtually all other manufacturers' Owner Guides contain similar instructions. These procedures are considered to be "universal" in the industry and apply to all vehicles equipped with automatic transmissions.

With respect to those reports alleging an accident or injury, and even those alleging only unintended vehicle movement, a thorough investigation is necessary to discern the complete facts and circumstances involved in such reports. Without vehicle inspections or other specific details, it is difficult to determine if these reports meet the definition of the alleged defect. Most of these events occurred several years ago; obtaining detailed information about the exact circumstances of the reports or the condition of the vehicles is not possible. Based on our investigation into other similar reports of vehicle movement, it is clear that there are a variety of causes of vehicle rollaway reports other than the alleged defect condition. In the absence of vehicle inspections, it cannot be reasonably concluded that any given reported vehicle rollaway is related to the alleged defect.

Drivers of 2002 through 2005 Ford Explorer and Mercury Mountaineer vehicles have observed increased shift efforts or a "notchy" feel to the shift lever when moved from Reverse to Park. In September, 2004, Ford initiated a 6-Sigma project based on customer dissatisfaction with the steering column shift assembly on these vehicles. An engineering evaluation of parts returned from customers' vehicles found that the retraction time of the BSI solenoid pin was causing some customers that shifted more quickly from a drive gear into Park to use the swing arm ramp feature to manually depress the BSI solenoid pin before the pin was electrically retracted. The more rapidly the shift lever is moved from the Drive position to the Park position, the less time the pin has to retract before contact with the swing arm. Repeated contact between the stainless steel pin and the zinc swing arm ramp can create a groove on the surface of the swing arm ramp. To address customer satisfaction, the BSI solenoid circuit was redesigned to enable the pin to fully retract within 30 ms. At this pin retraction speed, the swing arm is much less likely to contact the BSI solenoid pin even during more rapid customer shifts. The redesigned BSI solenoid with quicker pin retraction was released for production as a running change during the 2005 model year, and reports and complaints relating to this subject continue to decline.

2003-2005 Lincoln Aviator

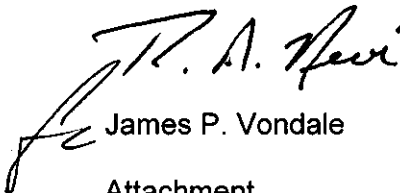
The agency's EA information request expanded the scope of the subject vehicles to include 2003 through 2005 model year Lincoln Aviator vehicles. These vehicles share the same five speed automatic transmission (5R55S) with the 2002 through 2005 model year Ford Explorer and Mercury Mountaineer, but equipped with console mounted floor shifters. While both systems incorporate a BSI system, the designs and componentry of these systems are substantially different. In addition, the floor mounted gear shift lever has a shifter release button on the front of the lever that needs to be depressed in order for the lever to move between gears.

Consistent with the analyses provided in Ford's July 17, 2009 response to PE09-020, Ford has conducted an extensive investigation into the reports of high shift efforts into Park on the subject vehicles and found that the vast majority of these reports relate to swing arm contact with the BSI solenoid pin. This contact may result in a progressive increase in effort that is noted by vehicle operators who then have their vehicle serviced. This is supported by the large percentage (approximately 98%) of customer reports of increased shift efforts as compared to the low percentage (approximately 2%) of allegations of unintended vehicle movement after attempting to shift into Park. Very few recent reports relating to this subject have been received by Ford or by the agency. In fact, in the nearly two years following Ford's July 17, 2009 response to the PE, Ford has received only 11 customer complaints and eight lawsuits or claims pertaining to this subject on approximately 1.49 million 2002 through 2005 Explorer and Mountaineer vehicles, and the agency appears to have only received two VOQs in the past year.

We also again note that the specific circumstances necessary for unintended vehicle movement require that the driver not follow basic, common sense vehicle driving instructions, consistent with safe vehicle operation. These include: ignoring any preceding changes to the shift system behavior or feel, ignoring the fact that the shift indicator is not in the Park position, ignoring the fact that the key could not be removed from the ignition switch, and/or ignoring the Owner's Guide instructions and agency's recommendations to always apply the parking brake before exiting the vehicle. Ford believes that consideration of all of the factors relating to this subject continue to support a conclusion that this condition does not present an unreasonable risk to safety in these vehicles.

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 EA09-013

Ford's response to this Engineering Analysis 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 Engineering Analysis.

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.

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 information dated up to and including April 5, 2011, the date of your inquiry. The agency revised the definition of the "alleged defect" used in the Preliminary Evaluation (PE09-020), and expanded the scope of the subject components to include not only the brake shift interlock (BSI) system, but also all transmission assembly components related to the Park function. The agency also added an additional subject vehicle and two peer vehicles. In order to permit accurate comparison of data between our PE response and current responses, Ford updated its search for reports that had been received prior to the July, 2009 PE response, in addition to conducting a corresponding similar search for reports received between then and the time of this response, in accordance with the revised scope and definition of the alleged defect. Based on these changes, this response includes reports previously submitted and, therefore, supersedes and replaces our prior responses and subsequent communications with the agency. Ford has searched within the following offices for responsive documents: Sustainability, Environment and Safety Engineering, Ford Customer Service Division, Global Core Engineering, Operations, and North American Product Development.

Request 1

State, by model and model year, the number of (1) MY 2001 and MY 2006 Ford Explorer and Mercury Mountaineer vehicles, and (2) MY 2003-2005 Lincoln Aviator vehicles manufactured for sale or lease in the United States. Separately, for each of these vehicles 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. Assembly Plant;
- g. Engine (cylinders, displacement, and Ford engine code);
- h. Transmission Code;
- 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).

Answer

Ford records indicate that the approximate total number of 2001 and 2006 model year Ford Explorers and Mercury Mountaineer 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 105,016 for the 2001 model year and 207,446 for the 2006 model year.

Ford records indicate that the approximate total number of 2003 through 2005 model year Lincoln Aviator 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 72,893.

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

Model	2001 MY	2006 MY
Ford Explorer	90,554	176,746
Mercury Mountaineer	14,462	30,700

Model	2003 MY	2004 MY	2005 MY
Lincoln Aviator	27,051	26,992	18,850

The requested data for each vehicle are provided in Appendix A.

The corresponding engines and transmissions codes are provided below.

Engine Codes						
Vehicle	8	E	H	K	P	W
Aviator			4.6L DOHC V-8			
Explorer/ Mountaineer	4.6L SOHC V-8	4.0L SOHC V-6		4.0L SOHC V-6 EFI FFV	5.0L V-8	4.6L SOHC V-8 EFI (R)

Transmission Codes						
Vehicle	D	J	R	U	V	X
Aviator					5R55S 5 Speed Auto	
Explorer/ Mountaineer	5R55E 5 Speed Auto	M5OD- R1 Speed Manual	5R55E 5 Speed Auto	4R70W 4 Speed Auto	5R55S 5 Speed Auto	6R60 6 Speed Auto

Request 2

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 MY 2002-2005 Ford Explorer and Mercury Mountaineer, MY 2003-2005 Lincoln Aviator, and peer vehicles MY 2001 and MY 2006 Ford Explorer and Mercury Mountaineer manufactured for sale or lease in the United States segregating the counts by model and model year:

- 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," 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	Unintended vehicle movement while in Park
A2	Difficulty shifting into Park
A3	Broken shift lever (not moving out of Park) – Explorer Only
B1	Unintended vehicle movement – unknown if in Park
B2	Difficulty shifting – unknown if into or out of Park

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. To the extent that responsive (i.e., not ambiguous) owner reports indicate that they are Legal Contacts, Ford has gathered the related files from the Office of General Counsel (OGC). Non-privileged documents for files that were located that are related to the responsive owner reports are provided in Appendix D. Ford notes that it was unable to locate seven files.

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.

When we were able to identify that responsive duplicate field 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. In addition, field reports that are duplicative of owner reports are provided in Appendix C but are not included in the field report count.

VOQ Data: This information request had an attachment that included 65 Vehicle Owner Questionnaires (VOQs). Ford notes that 31 of these VOQs related to broken shift levers. While reports of broken shift levers were within the of the scope of the Preliminary Evaluation, shift levers that are broken when trying to get the vehicle out of Park are not within the scope of this Engineering Analysis. We also note that one of the VOQs related to an Explorer Sport and another related to an Explorer Sport Trac, which are not subject or peer vehicles. 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. Any reports located on a vehicle identified in the VOQs related to the alleged defect are included in the MORS and CQIS portions of the database provided in Appendix C.

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. A table identifying potentially relevant allegations is being provided in Appendix E. Copies of reports corresponding to these alleged incidents are provided in the MORS, CQIS, and Analytical Warranty System (AWS) portions of the database provided in Appendix C.

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. Ford has also located other lawsuits, claims, or consumer breach of warranty lawsuits, each of which is ambiguous as to whether it meets the alleged defect criteria. We have included these lawsuits and claims as "non-specific allegations" for your review because of the broad scope of the request. Based on our engineering judgment, the information in these lawsuits and claims is insufficient to support a determination that they pertain to the alleged defect.

We are providing the requested detailed information, where available, on the responsive and ambiguous lawsuits and claims in our Log of Lawsuits and Claims, provided in Appendix C in the Legal Claim/Lawsuits tab. The number of relevant lawsuits and claims identified is also provided in this log. To the extent available, copies of complaints, first notices, or MORS reports relating to matters shown on the log are provided in Appendix F. With regard to these

lawsuits and claims, 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. 3 (i.e., consumer complaint, field report, etc.);
- c. Vehicle owner or fleet name (and fleet contact person);
- d. Vehicle owner address,
- e. Vehicle owner telephone number;
- f. Vehicle's VIN;
- g. Vehicle's make, model and model year;
- h. Vehicle's engine model (cylinders, displacement, an Ford engine code);
- i. Vehicle's transmission model;
- j. Vehicle's mileage at time of incident;
- k. Incident date;
- l. Report or claim date;
- m. Whether a crash is alleged;
- n. Whether a fire is alleged;
- o. Whether property damage is alleged;
- p. Number of alleged injuries, if any;
- q. Number of alleged fatalities, if any;
- r. Whether the item involves unintended vehicle movement while the vehicle is in park (or the vehicle is such that is perceived by the driver as being in park), or difficulty shifting the steering column shift lever into the park position; and
- s. Whether the item is related to the Parking gear, Park Pawl, and/or Park Pawl linkage.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 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 2. To the extent information sought in Request 3 is available for owner and field reports, it is provided in the database. To the extent information sought in Request 3 is available for lawsuits and claims, it is provided in the Log of Lawsuits and Claims provided in Appendix C in the Legal Claim/Lawsuits tab. In response to sub-part "r" of Request 3, the item's category, as defined in response to Request 2, indicates whether the item is related to an allegation of unintended vehicle movement while the vehicle is in Park, or to an allegation of difficulty shifting into the park position. With respect to sub-part "s" of Request 3, Ford notes that it is often difficult to accurately assess the causal component of a customer's concern, and has not undertaken to identify whether a particular customer complaint specifically relates to the parking gear, the park pawl, and/or the park pawl linkage.

Request 4

Produce electronic 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

Ford is providing owner and field reports in the database contained in Appendix C in response to Request 2. Copies of complaints, first notices, or MORS reports relating to matters shown on the Log of Lawsuits and Claims provided in Appendix C in the Legal Claim/Lawsuits tab are provided in Appendix F. To the extent information sought in Request 4 is available, it is provided in the referenced appendices.

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 MY 2002-2005 Ford Explorer and Mercury Mountaineer, 2003-2005 Lincoln Aviator vehicles MY 2001 and MY 2006 Ford Explorer and Mercury Mountaineer, and MY: 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's or fleet name (and fleet contact person);
- c. Vehicle owner address;
- d. Vehicle owner telephone number;
- e. VIN;
- f. Model
- g. Model Year
- h. Vehicle's engine model (cylinders, displacement, and Ford engine code);
- i. Vehicle's transmission code;
- j. Repair date;
- k. Vehicle mileage at time of repair;
- l. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- m. Labor operation number;
- n. Problem code;
- o. Replacement part number(s) and description(s);
- p. Concern stated by customer;
- q. Comment, if any, by dealer/technician relating to claim and/or repair; and
- r. Whether there was an assessment or comment by Ford. If there was, produce a copy of that assessment.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "WARRANTY DATA." See Enclosure 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 2. 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.

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 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 2. Such claims that were honored are included 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

Detailed descriptions of the search criteria, including all pertinent parameters, used to identify the claims provided in response to Request 5 are described in Appendix B.

The requested terms of the new vehicle warranty coverage for 2002 through 2005 model year Ford Explorer and Mercury Mountaineer vehicles was previously provided in Ford's July 17, 2009, response to PE09-020.

For 2003 through 2005 model year Lincoln Aviator vehicles, the New Vehicle Limited Warranty, Bumper-to-Bumper Coverage begins at the warranty start date and lasts for four years or 50,000 miles, whichever occurs first. Optional Extended Service Plans (ESPs) are available to cover various vehicle systems, time in service, and mileage increments. The details of the various plans are provided in Appendix G. As of the date of the information

request, 28,868 new vehicle ESP policies had been purchased on 2003 through 2005 model year Lincoln Aviator vehicles.

Request 7

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that 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 the agency's request, 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 identified no new SSMs or TSBs since the July 17, 2009, response that may relate to the agency's request.

Internal Service Messages: Ford has identified one ISM that may relate to the agency's request and is providing a copy in Appendix H.

Field Review Committee: Ford identified one field service action that pertained to the shift cable in a small number of 2003 model year Lincoln Aviator vehicles. Information pertaining to this action is provided in Appendix J – Engineering Review (Bates # EA09013 000175 – 000222).

Ford currently has no plans to issue communications related to the subject of NHTSA's investigation.

Request 8

Describe, and provide copies of all documents relating to, all internal communications within Ford that relate to the alleged defect in the subject vehicles. Provide a chronological summary of the communications and organize the documents accordingly.

Answer

Ford's response to Request 8 is contained in our response to Request 9.

Request 9

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 J.

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 K 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 to the agency's Office of Chief Counsel as Appendix K – Redacted.

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. Should the agency request additional materials, Ford will cooperate with the request.

Ford is not producing materials that relate to the development of an alternative service part for the BSI system. The development of this alternative service part is related to supply chain issues. It does not change the intended function of the system, and does not relate to actions or analyses associated with the alleged defect. Ford would be pleased to provide these materials should the agency request.

Request 10

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 in the subject vehicles. This includes, but is not limited to changes between MY 2001 and MY 2002 and between MY 2005 and MY 2006 involving the brake shift interlock system, the BSI solenoid pin, the BSI solenoid pin interaction with the swing arm, or the park pawl, as well as running changes between MYs 2002, 2003, 2004, and 2005 on the BSI and transmission (including the park pawl). For each such modification or change, provide the following information with regard to the alleged defect and transmission assemblies:

- 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 is provided in Appendix L.

Ford is not aware of any forthcoming modifications related to the subject components in the subject vehicles.

Request 11

Produce exemplar samples of each design version of the following components related to the park system of the subject vehicles:

- a. Park gear;
- b. Park Pawl (and Park Pawl linkages, springs);
- c. Detent Spring;
- d. Rooster Comb;
- e. Manual Lever; and the
- f. Transmission Shift Cable.

Answer

Ford is providing exemplars of the following parts:

<u>Description</u>	<u>Part Number</u>
Pawl Shaft	1L2P-7D071-AB
Parking Pawl	1L2P-7A441-AC
Manual Control Valve Inner Lever	XW4P-7C494-AB
Parking Pawl Actuating Rod	1L2P-7D410-AB
Parking Gear	6L2P-7M167-AA
Parking Pawl Return Spring	1L2P-7D070-BA
Detent Spring	XW4P-7E332-AB
Extension Housing w/Abutment Abutment (separate)	90GT-7D419-AB

A 2003 through 2005 model year Lincoln Aviator floor mounted shift lever and shift cables were not available as of the date of this response. If the agency still desires exemplar parts, we will forward samples when they become available from the suppliers.

Request 12

Produce warranty returns or field samples of the following:

- a. Park gear;
- b. Park Pawl Assemblies (Including the Park Pawl, linkages, springs, etc.);

Answer

Ford is providing the following field return parts:

<u>Description</u>	<u>Part Number</u>
Pawl Shaft	97GT-7D071-AA
Parking Pawl	1L2P-7A441-AB
Parking Pawl	1L2P-7A441-AC
Manual Control Valve Inner Lever	1L2P-7C494-BA
Manual Control Valve Outer Lever	1L2P-7A257-AB
Manual Control Valve Lever Shaft	1L2P-7A308-AA
Parking Pawl Actuating Rod	1L2P-7D410-AB
Parking Gear	1L2P-7M167-AB

Parking Pawl Return Spring	1L2P-7D070-BA
Detent Spring	XW4P-7E332-AB
Extension Housing w/Abutment	90GT-7D419-AB
Abutment (separate)	

A 2003 through 2005 model year Lincoln Aviator floor mounted shift lever and shift cables were not available as of the date of this response. If the agency still desires exemplar parts, we will forward a sample when available.

Request 13

For each of the alleged crashes noted in VOQs produce or state the following:

- Whether Ford has done an inspection of the vehicle;
- Ford's assessment of the causal or contributory factor(s) of the alleged crash;
- Ford's assessment of the root cause(s) of the alleged crash;
- Any reports, summaries, analyses, or presentation related to the alleged crash.

Answer

Ford is providing an accident/injury report summary table in Appendix E. Vehicle inspection reports in Appendix J – Engineering Review (Bates #: EA09-013 00432 – 00454.4).

A number of these reports allege vehicle behavior that is inconsistent with the subject of this investigation. Some allege unintended vehicle movement that occurred when children were left unattended in the front seat, potentially in a position to take the vehicle out of Park on their own. Some allege unintended vehicle movement despite the parking or service brake reportedly being applied, and others allege the vehicle "surged" or "accelerated forward" despite being in Park.

Vehicle inspection reports concerning the following legal matters were previously submitted to the agency in Ford's July 17, 2009, response in Appendix H – Engineering Review.

<u>OGC Case/Matter Number</u>	<u>Bates Number</u>
488736	PE09020 1792 - 1795
538315	PE09020 2049 - 2052

Request 14

For each of the alleged crashes provided in Ford's response to request numbers 2 of this letter produce or state the following:

- Whether Ford has done an inspection of the vehicle;
- Ford's assessment of the causal or contributory factor(s) of the alleged crash;
- Ford's assessment of the root cause(s) of the alleged crash;
- Any reports, summaries, analyses, or presentation related to the alleged crash.

Answer

See Ford's response to Request 13.

Request 15

For each of the alleged crashes provided in Ford's response to request number 5 of this letter produce or state the following:

- a. Whether Ford has done an inspection of the vehicle;
- b. Ford's assessment of the causal or contributory factor(s) of the alleged crash;
- c. Ford's assessment of the root cause(s) of the alleged crash;
- d. Any reports, summaries, analyses, or presentation related to the alleged crash.

Answer

See Ford's response to Request 13.

Request 16

Describe, and provide copies of all documents relating to all communications between Ford and subject component suppliers that relate to the alleged defect in the subject vehicles. Provide a chronological summary of the communications and organize the documents accordingly.

Answer

Ford's response to Request 16 is provided in response to Request 9

Request 17

Provide a detailed technical assessment of potential unintended vehicle movement associated with the interaction of the Brake Shift Solenoid Pin and the Swing Arm issue with regards to a powered vs. non powered rollaway.

Answer

Based on analysis of reports and evaluation of parts from complaint vehicles, Ford believes that interaction of the BSI solenoid pin and the swing arm does not result in a powered rollaway in these vehicles.

In a January 14, 2011, response to a request from the agency, Ford obtained parts from complaint vehicles to better understand this condition; specifically to evaluate the potential for powered vehicle movement if the swing arm is restricted by BSI solenoid pin interaction. Ford's analysis has found that repeated contact between the stainless steel BSI solenoid pin and the zinc swing arm ramp may create a groove or divot on the surface of the swing arm ramp. Depending on several factors (e.g., shift lever rotation speed, the force exerted on the lever during rotation, and the wear pattern on the face of the swing arm ramp), the ability of the ramp to manually depress the BSI solenoid pin may be inhibited to the point where the

ramp will no longer depress the pin and allow the shift lever to be rotated into the Park position.

Using parts obtained from complaint vehicles where the BSI solenoid pin prohibited the swing arm from fully rotating into the park position, Ford found that restricted swing arm movement due to BSI solenoid pin contact results in the detent spring roller being positioned on the Park side of the rooster comb peak. In this position, the transmission is either in a hydraulic neutral condition or in a position that results in partial park pawl engagement in the transmission parking gear. Figures 1 and 2 show two complaint vehicles exhibiting this condition. In the first example, where the swing arm is restricted by the BSI solenoid pin, the roller pin is on the Park side of the rooster comb, and the transmission is in a hydraulic neutral state. In the second sample, where the swing arm is restricted by the BSI solenoid pin, the roller is on the Park side of the rooster comb, and there is partial engagement with the transmission parking gear.

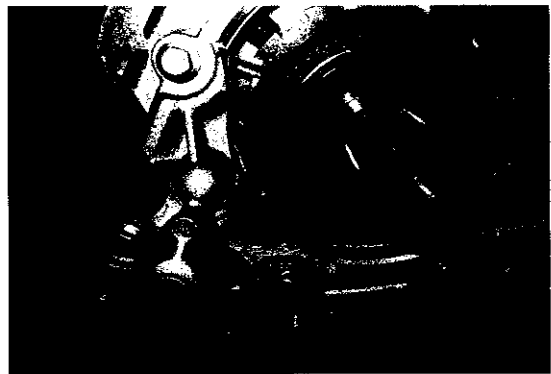
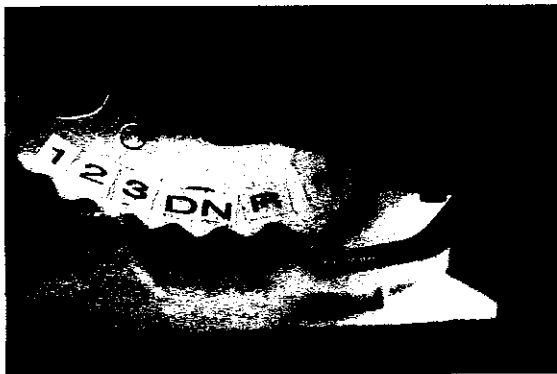


Figure 1: Complaint vehicle example with Swing Arm interacting with BSI Solenoid Pin – in Neutral



Figure 2: Complaint vehicle example with Swing Arm interacting with BSI Solenoid Pin – in Park

Under these conditions, any movement by the vehicle would be unpowered. In order for the vehicle to experience a powered rollaway, the roller position would need to be on the Reverse side of the rooster comb peak. On vehicles with a divot in the swing arm that may inhibit movement of the shift lever from rotating fully into the Park position, Ford's analysis found that

the corresponding roller pin position was on the Park side of the rooster comb peak. The natural design of the rooster comb peak would preclude the roller from moving over the rooster comb peak onto the Reverse side. Therefore, it is highly unlikely that the interaction between the BSI solenoid pin and the swing arm could result in a powered rollaway condition.

Ford's belief is further supported by a review of the reports provided in this response in which a large number of those that allege some type of vehicle movement characterize it as a "rolling" condition and not a powered movement.

Request 18

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 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

2002-2005 Explorer and Mountaineer

Ford's review of information pertaining to this subject is consistent with Ford's previous analysis that was provided to the agency in our July 17, 2009, response to PE09-020. The complaint rate remains low; very few additional reports relating to this subject have been received by Ford or the agency since the opening of the EA.

As previously discussed, the agency revised the definition of the "alleged defect" from the Preliminary Evaluation, and also expanded the scope of this investigation from the Preliminary Evaluation to include not only the BSI system, but also components associated with the Park function. Despite the expanded scope of the agency's request, analysis finds that very few additional responsive reports have been received subsequent to the PE submission, in spite of significant publicity associated with the agency's ongoing investigation. In fact, in the nearly two years following Ford's July 17, 2009 response to the PE, Ford has received only 11 customer complaints and eight lawsuits or claims pertaining to this subject on approximately 1.49 million 2002 through 2005 Explorer and Mountaineer vehicles; insofar as we can determine, the agency has only received two VOQs in the past year.

As stated in Ford's PE response, Ford has conducted an extensive investigation into allegations of vehicle movement after the operator has attempted to shift into Park or alleged difficulty shifting into Park in these vehicles. The vast majority of responsive reports relate to increased efforts, as compared to a very low percentage (less than 2%) alleging unintended movement after attempting to shift into Park. Ford data indicate there are overt and progressive indicators that a vehicle's shift mechanism is not operating properly. The reports of increased shift efforts into Park on these vehicles primarily relate to swing arm contact with the BSI solenoid pin. In some instances such contact has no effect on shift efforts. In other cases it may result in an overt, progressive increase in effort that is noted by vehicle operators who have their vehicle serviced. Additionally, there are a number of obvious indicators to the driver that the transmission is not in Park. First, the gear position indicator needle will not line

up with the "P" for Park; rather, the needle will be somewhere between "P" and "R." Second, the shift lever is not in its natural position and will be closer to the driver due to the design of the shift gates. The driver must always pull the shift lever closer to themselves to negotiate the gates for any gear. Third, as described in FMVSS 114 S5.2.1 addressing Rollaway Prevention, "the starting system required by S5.1 must prevent key removal when tested according to the procedures in S6, unless the transmission or gear selection control is locked in "park" or becomes locked in "park" as a direct result of key removal." Ford notes a number of drivers who have alleged unintended vehicle movement mentioned that they could not remove their keys from the ignition. This indicates to the customer that corrective action should be taken to ensure their vehicle is indeed in the Park position before attempting to leave their vehicle unattended. In the vehicle's Owner Guide, Ford instructs drivers to come to a complete stop before shifting into Park, provides a diagram showing the correct position of the gear position indicator under the "P" when the vehicle is parked, cautions to always set the parking brake fully, and remove the key whenever you leave the vehicle.

There is no technical basis to conclude that the readily identifiable symptoms recognized by the vast majority of operators did not also occur in the vehicles with unintended movement allegations as well. Drivers can easily avoid unintended vehicle rollaway due to any cause by following simple and common sense actions as mentioned in the agency's Closing Resume and Summary Report for EA04-025:

"When exiting any automatic transmission equipped vehicle, ODI strongly advises all drivers to verify the shifter has been fully placed in the gated park position, to turn off the engine, to fully set the park brake, and to remove the key from the ignition and from the vehicle. ODI notes that following these simple, common sense, procedures would have prevented the SV rollaway incidents and the injuries that resulted."

Ford has provided drivers with instructions in the Owner Guide to confirm the proper alignment of the gear indicator needle centered over the "P" and to properly set the parking brake before turning off their engine and exiting the vehicle. We believe that virtually all other manufacturers' Owner Guides contain similar instructions. These procedures are considered to be "universal" in the industry and apply to all vehicles equipped with automatic transmissions.

With respect to those reports alleging an accident or injury, and even those alleging only unintended vehicle movement, a thorough investigation is necessary to discern the complete facts and circumstances involved in such reports. Without vehicle inspections or other specific details, it is difficult to determine if these reports meet the definition of the alleged defect. For example, one claimant (OGC Case #: 538315) alleged that their 2002 model year Ford Explorer inadvertently moved after shifting their vehicle into Park. Yet, component inspection by Ford at the time of the claim found no evidence of BSI solenoid pin contact with the swing arm of this vehicle. Ford's conclusion is that the operator simply had not properly placed the shift lever fully in the Park position.

Most of these events occurred several years ago; and obtaining detailed information about the exact circumstances of the reports or the condition of the vehicles is not possible. Based on our investigation into other similar reports of vehicle movement, it is clear that there are a variety of causes of vehicle rollaway reports other than the alleged defect condition. In the absence of vehicle inspections, it cannot be reasonably concluded that any given reported vehicle rollaway is related to the alleged defect.

Drivers of 2002 through 2005 Ford Explorer and Mercury Mountaineer vehicles have observed increased shift efforts or a "notchy" feel to the shift lever when moved from Reverse to Park. In September, 2004, Ford initiated a 6-Sigma project based on customer dissatisfaction with the steering column shift assembly on these vehicles. An engineering evaluation of parts returned from customers' vehicles found that the retraction time of the BSI solenoid pin was causing some customers that shifted more quickly from a drive gear into Park to use the swing arm ramp feature to manually depress the BSI solenoid pin before the pin was electrically retracted. The more rapidly the shift lever is moved from the Drive position to the Park position, the less time the pin has to retract before contact with the swing arm. Repeated contact between the stainless steel pin and the zinc swing arm ramp can create a groove on the surface of the swing arm ramp. To address customer satisfaction, the BSI solenoid circuit was redesigned to enable the pin to fully retract within 30 ms. At this pin retraction speed, the swing arm is much less likely to contact the BSI solenoid pin even during more rapid customer shifts. The redesigned BSI solenoid with quicker pin retraction was released for production as a running change during the 2005 model year, and reports and complaints relating to this subject continue to decline.

2003-2005 Lincoln Aviator

The agency's EA information request expanded the scope of the subject vehicles to include 2003 through 2005 model year Lincoln Aviator vehicles. These vehicles share the same five speed automatic transmission (5R55S) with the 2002 through 2005 model year Ford Explorer and Mercury Mountaineer, but are equipped with console mounted floor shifters. While both systems incorporate a BSI system, the designs and componentry of these systems are substantially different. In addition, the floor mounted gear shift lever has a shifter release button on the front of the lever that needs to be depressed in order for the lever to move between gears.

Peer Vehicles

The agency also included two peer vehicle populations in its EA information request, the 2001 model year and 2006 model year Ford Explorer and Mountaineer vehicles. The 2001 model year Ford Explorer and Mercury Mountaineer vehicles are based on the prior body style, while the 2006 model year vehicles are based on the subsequent body style.

2001 Ford Explorer and Mercury Mountaineer Vehicles

Steering Column/Gear Selection

Model Year 2001 Ford Explorer and Mercury Mountaineer vehicles are equipped with the Passive Restraint (PR) steering column, which provides gear selection via a shift lever attached to the right side of the column. The PR steering column incorporates a BSI system, although it is significantly different compared to the system used in the 2002 through 2005 model year Ford Explorer and Mercury Mountaineer vehicles.

Transmissions

Model Year 2001 Ford Explorer and Mercury Mountaineer vehicles are equipped with E4OD four speed automatic transmissions, 5R55W five speed automatic transmissions, or M5OD-R five speed manual transmissions.

2006 Ford Explorer and Mercury Mountaineer Vehicles

Steering Column/Transmission Gear Selection

Model Year 2006 Ford Explorer and Mercury Mountaineer vehicles are equipped with a floor mounted gear shift lever. Like the Lincoln Aviator, the lever has a shifter release button on the

front of the lever that needs to be depressed to move the lever between the gears. Although the gear shift lever is manufactured by a different supplier from the 2003 through 2005 model year Lincoln Aviator, the operation and logic of the BSI system for the 2006 model year Ford Explorer and Mercury Mountaineer is consistent with the Aviator system.

Transmissions

The 2006 model year Ford Explorer and Mercury Mountaineer vehicles are equipped with either 5R55W five speed automatic transmissions or 6R60 six speed automatic transmissions.

Conclusion

Consistent with the analyses provided in Ford's July 17, 2009 response to PE09-020, Ford has conducted an extensive investigation into the reports of high shift efforts into Park on the subject vehicles and found that the vast majority of these reports relate to swing arm contact with the BSI solenoid pin. This contact may result in a progressive increase in effort that is noted by vehicle operators who then have their vehicle serviced. This is supported by the large percentage (approximately 98%) of customer reports of increased shift efforts as compared to the low percentage (approximately 2%) of allegations of unintended vehicle movement after attempting to shift into Park. While there are many causes for a vehicle rollaway report, if such a report were related to the BSI solenoid pin contact condition, it would be preceded by progressive, noticeable increasing shift efforts. Ford believes that the 400 ms cycle time designed into the BSI solenoid in the subject vehicles increased the potential for the BSI solenoid pin to contact the swing arm and resulted in customer dissatisfaction with the shift quality. This condition was addressed with the release of a redesigned part for service and production, as previously discussed. Very few recent reports relating to this subject have been received by Ford or by the agency. In fact, in the nearly two years following Ford's July 17, 2009 response to the PE, Ford has received only 11 customer complaints and eight lawsuits or claims pertaining to this subject on approximately 1.49 million 2002 through 2005 Explorer and Mountaineer vehicles, and the agency appears to have only received two VOQs in the past year.

We also again note that the specific circumstances necessary for unintended vehicle movement require that the driver not follow basic, common sense vehicle driving instructions, consistent with safe vehicle operation. These include: ignoring any preceding changes to the shift system behavior or feel, ignoring the fact that the shift indicator is not in the Park position, ignoring the fact that the key could not be removed from the ignition switch, and/or ignoring the Owner Guide instructions and agency's recommendations to always apply the parking brake before exiting the vehicle. Ford believes that consideration of all of the factors relating to this subject continue to support a conclusion that this condition does not present an unreasonable risk to safety in these vehicles.

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