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May 10, 2013

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: PE13-003:NVS-213krh

The Ford Motor Company (Ford) response to the agency's March 25, 2013 letter concerning reports of alleged Electronic Throttle Body Malfunction in 2010 through 2011 Ford Fusion vehicles is attached.

As with most electronic control systems on modern vehicles, the Electronic Throttle Control (ETC) systems in these vehicles are complex and are designed to provide optimal operation and efficiency while constantly monitoring system and vehicle performance. In the event a system fault is detected, Ford's three ETC FMEM modes (described in detail in Ford's December 14, 2012 response to DP12-006) provide the driver with three levels of powertrain operation to either continue driving or to safely maneuver their vehicle out of traffic. In each of these modes, the engine remains operational in order to maintain vehicle mobility, power-assisted steering, power-assisted braking, and to provide electrical function for directional signals, hazard lights, etc. Additionally, drivers are alerted that a fault has been detected by the illumination of a wrench light or MIL.

Ford does not believe that a vehicle experiencing a throttle body issue that results in an FMEM mode presents an unreasonable risk to motor vehicle safety. Ford's electronic throttle control strategy allows the engine to operate and provides the driver with some amount of vehicle mobility to maneuver their vehicle to a safe location, even in the most severe FMEM mode.

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

Sincerely,

  
Steven M. Kenner

Attachment

FORD MOTOR COMPANY (FORD) RESPONSE TO PE13-003

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

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

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

In an April 2, 2013 telephone conversation, Kareem Habib of the agency informed Ford personnel that the subject vehicles should be defined as vehicles equipped with engines specifically listed in TSB 10-21-6. Additionally he provided clarification for the peer vehicle population, where "corporate twin" Ford and Lincoln vehicles exist, that Ford need only provide consumer complaints, field reports, warranty claims, and lawsuit and claims for the Ford model only.

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

Answers to your specific questions are set forth below. As requested, after each numeric designation, we have set forth verbatim the request for information, followed by our response. Unless otherwise stated, Ford has undertaken to provide responsive documents dated up to and including March 25, 2013, the date of your inquiry. Ford has searched within the following offices for responsive documents: Sustainability, Environment and Safety Engineering, Ford Customer Service Division, Office of the General Counsel, North American Product Development.



Request 1

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

- a. Vehicle identification number (VIN);
- b. Model;
- c. Engine (displacement and engine code);
- d. Model Year;
- e. Date of manufacture; Date warranty coverage commenced; and
- f. The State in the United States, or the federalized territory, where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2003, 2007, or a compatible format, entitled "PE13\_003\_PRODUCTION DATA."

Answer

Ford records indicate that the approximate total number of 2010 through 2011 Ford Fusion and Fusion Hybrid 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 491,000.

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

Model	Engine	2010 MY	2011 MY
Ford Fusion	2.5L 4V I-4 Duratec	178,114	149,249
	3.0L 4V V-6 Duratec	53,144	39,537
	3.5L 4V V-6 Duratec	17,392	9,037
Ford Fusion Hybrid	2.5L 4V I-4 Atkinson	31,341	13,496

Ford records indicate that the approximate total number of peer 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 713,860.

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

Model	Engine	2010 MY	2011 MY
Ford Focus	2.0L 4V I-4 Duratec	175,719	91,506
Ford Taurus	3.5L 4V V-6 Duratec	56,060	72,431
Ford Flex	3.5L 4V V-6 Duratec	29,757	29,224
Lincoln MKS	3.7L 4V V-6 Duratec	10,676	9,758
Lincoln MKT	3.7L 4V V-6 Duratec	5,377	2,120
Ford E-150	4.6L 2V V-8 Triton	11,505	<b>Not Requested</b>
Ford E-250	4.6L 2V V-8 Triton	14,364	
Ford F-150	4.6L 2V V-8 Triton	64,749	
Ford Edge	3.5L 4V V-6 Duratec	119,455	
Lincoln MKX	3.7L 4V V-6 Duratec	21,163	

Engine codes for subject and peer vehicles are provided below:

Model	Engine	Code
Ford Focus	2.0L 4V I-4 Duratec	N
Ford Fusion	2.5L 4V I-4 Duratec	A
	3.0L 4V V-6 Duratec	G
	3.5L 4V V-6 Duratec	C
	2.5L 4V I-4 Atkinson Cycle with AC synchronous motor	3
Ford Taurus	3.5L 4V V-6 Duratec	W
Ford Flex	3.5L 4V V-6 Duratec	C
Lincoln MKS	3.7L 4V V-6 Duratec	R
Lincoln MKT	3.7L 4V V-6 Duratec	R
Ford E-150/250	4.6L 2V V-8 Triton	W
Ford F-150	4.6L 2V V-8 Triton	W
Ford Edge	3.5L 4V V-8 Duratec	C
Lincoln MKX	3.5L 4V V-8 Duratec	C

The requested data for each subject and peer vehicle is provided in Appendix A.

## Request 2

State, by model, engine and model year, the number of each of the following, received by Ford, or of which Ford is otherwise aware, which relate to, or may relate to, the alleged defect in the subject and peer vehicles:

- a. Consumer complaints, including those from fleet operators;
- b. Field reports, including dealer field reports;
- c. Reports involving a crash, injury, or fatality, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
- d. Property damage claims;
- 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	Engine Stall - Throttle Body Replaced
A2	Reduced Power - Throttle Body Replaced
A3	Drivability Issue - Throttle Body Replaced
A4	Check Engine Light - Throttle Body Replaced
A5	Unknown Symptom - Throttle Body Replaced
A6	Throttle Body Replaced Under TSB 10-21-6
A7	Throttle Body Replaced Under TSB 09-23-5 (Ford Fusion Only)
B1	Engine Stall - Throttle Body & Another Component Replaced
B2	Reduced Power - Throttle Body & Another Component Replaced
B3	Drivability Issue - Throttle Body & Another Component Replaced
B4	Check Engine Light - Throttle Body & Another Component Replaced
C1	Engine Stall - Ambiguous or Unknown Cause
C2	Reduced Power - Ambiguous or Unknown Cause
C3	Drivability Issue - Ambiguous or Unknown Cause

We are providing electronic copies of reports categorized as "C" 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 FMC360 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 allege engine stall, loss of power, or throttle malfunction related to TSB 10-21-6 in a subject or peer vehicle are provided in the FMC360 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 duplicate report 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 two peer vehicle 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 allege engine stall, loss of power, or throttle malfunction related to TSB 10-21-6 in a subject or peer vehicle 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 duplicate report 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 123 Vehicle Owner Questionnaires (VOQs); 56 VOQs involve Ford Fusion vehicles, 49 VOQs involve Ford Escape or Escape Hybrid vehicles, 11 VOQs involve Mercury Milan vehicles, and 7 VOQs involve Mercury Mariner vehicles, , and. The agency did not supply any VOQs involving the peer vehicles.

Ford made inquiries of its FMC360 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.

For the 56 VOQs pertaining to 2010 through 2011 model year Ford Fusion (subject) vehicles, 17 VOQs did not include VIN information and could not be matched with corresponding Ford reports. Ford identified 15 VOQs that were duplicative of an FMC360 report, three VOQs that were duplicative of a CQIS report, and six VOQs that were duplicative of a warranty claim. None of the 56 Ford Fusion VOQs contained an allegation of an accident or injury.

The agency also provided 49 VOQs involving 2009 through 2010 model year Ford Escape or Escape Hybrid vehicles, for which data was not requested in this Information Request. Six of these VOQs do not appear to relate to engine stall, loss of power, or throttle malfunction related to TSB 10-21-6 (the alleged defect): two involve an concern pertaining to flat towing their vehicle, two involve a transmission issue, one involves a radiator seal, and one involves an issue with the lower control arm. One VOQ alleges an accident was caused by the vehicle lunging over a parking divider while the customer attempted to park their car, which also does not appear to pertain to the alleged defect.

The agency also provided 11 VOQs on 2010 through 2011 model year Mercury Milan vehicles. One VOQ states they had brought their vehicle in for service six times for loss of power. The same report alleges an accident was caused when "I was pulling into a parking space and the electrical system failed. I could not stop. I crashed into a cement wall," While the cause of the electrical failure is unclear, this vehicle symptom (electrical system failure



while pulling into a parking space resulting in brake failure) is inconsistent with the subject of this investigation.

The agency also provided seven VOQs on 2009 through 2010 model year Mercury Mariner vehicles. One VOQ involves an issue with their transmission, another VOQ involves a concern pertaining to flat towing their vehicle. These appear to be unrelated to the subject of this investigation.

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 chart identifying potentially relevant allegations is being provided in Appendix E. Copies of reports corresponding to these alleged incidents are provided in the FMC360, 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 FMC360 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. Ford notes that it was unable to locate two claim files and, therefore, is unable to determine if the cases are related to the alleged defect.

### Request 3

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

- a. Ford's file number or other identifier used;
- b. The category of the item, as identified in Request No. 3 (i.e., consumer complaint, field report, etc.);
- c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
- d. Vehicle's VIN;
- e. Vehicle's make, model and model year;
- f. Vehicle's mileage at time of incident;
- g. Incident date;

- h. Report or claim date;
- i. Whether a crash is alleged;
- j. Whether smoke is alleged;
- k. Whether property damage is alleged;
- l. Number of alleged injuries, if any; and
- m. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "PE13\_003\_REQUESTNUMBER THREE DATA."

#### 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.

#### 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 FMC360 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, engine and model year, total counts 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 and peer vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; and warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign.

Separately, for each such claim, state the following information:

- a. Ford's claim number;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. VIN;
- d. Repair date;



- e. Whether a claim for towing was made within five days of the claim date;
- f. Vehicle mileage at time of repair;
- g. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- h. Labor operation number and description;
- i. Problem code and description;
- j. Replacement part number(s) and description(s);
- k. Concern stated by customer;
- l. Cause and correction stated by dealer/technician; and
- m. Comment, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "PE13\_003\_WARRANTY DATA."

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).

#### 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 allege engine stall, loss of power, or throttle malfunction related to TSB 10-21-6 in a subject or peer vehicle are provided in the AWS portion of the database contained in Appendix C. The categorization of each report is identified in the "Category" field.

When we were able to identify that duplicate claims for an alleged incident were received, each duplicate claim 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 FMC360 reports identified above in response to Request 2. Such claims that were honored are included in the warranty data provided. 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.

Additionally, the agency has requested information related to claims for vehicle towing within three days of the subject component repair claim. Ford provides roadside assistance as part of the new vehicle limited warranty and certain optional extended service plans. The roadside assistance program is administered by an outside supplier and Ford does not have access to claims made for vehicle towing through this service. Recently, Ford has begun importing

roadside assistance claims into its FMC360 database. However, the claims do not indicate what type of assistance was required, only that assistance was requested. The customer and technician comments provided with warranty claims provide the best source of information regarding possible incident-related vehicle towing.

For 2010 and 2011 model year Ford Fusion and Fusion Hybrid vehicles, the New Vehicle Limited Warranty, Bumper-to-Bumper Coverage begins at the warranty start date and lasts for three years or 36,000 miles, whichever occurs first. For owners who live in areas that conduct EPA approved inspection and maintenance programs or where owners would be subject to a penalty or sanction under local, state, or federal standards, the Emissions Performance Warranty Coverage begins at warranty start date and lasts for two years or 24,000 miles, whichever occurs first.

For owners who live in those states that have adopted California emission and warranty regulations (Connecticut, Maine, Massachusetts, Oregon, Rhode Island, Vermont, and Washington), the Emissions Defect Warranty Coverage begins at warranty start date and lasts for 15 years or 150,000 miles, whichever comes first. The Emissions Performance Warranty Coverage begins at warranty start date and lasts for three years or 50,000 miles, whichever occurs first.

#### Request 6

Produce copies of all service, warranty, and other documents that relate to, or may relate to, the alleged defect in the subject vehicles, that Ford has issued to any dealers, regional or zone offices, field offices, fleet purchasers, or other entities. This includes, but is not limited to, bulletin, 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 engine stall, loss of power, or throttle malfunction related to TSB 10-21-6 in a subject vehicle, 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 five SSMs and two TSBs that may relate to the agency's request and is providing copies of them in Appendix G.

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



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

Ford is not planning on issuing any communication within the next 120 days.

#### Request 7

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. Indicate which extended service plans would cover components listed in the subject system.

#### Answer

Detailed descriptions of the search criteria, labor operation codes, part numbers, and diagnostic troubleshooting codes, and the terms of the new vehicle warranty coverage offered on the subject vehicle are provided in response to Request 5.

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 H. As of the date of the information request, 84,996 new vehicle ESP policies had been purchased on 2010 through 2011 model year Ford Fusion and Fusion Hybrid vehicles.

#### 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 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.

The response to this request should include a detailed description of all past, present and future actions by any and all engineering working groups (e.g., engine stall task

force) of which Ford is an active member or is otherwise aware. This includes, at a minimum, all of the information requested in items "a" through "f."

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 I.

To the extent that the requested information 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 J with a request for confidentiality under separate cover to the agency's Office of the Chief Counsel pursuant

to 49 CFR Part 512. Redacted copies of the confidential documents will be provided under separate cover, on separate media, to the agency's Office of Chief Counsel as Appendix J – Redacted. Ford has identified supplier documents that relate to or may relate to the alleged defect in the subject vehicles. As of the date of this response, Ford is still in the process of obtaining supplier confidentiality certificates and will provide these documents once the certificates have been received.

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

#### Request 9

Provide the following information regarding the subject bulletin:

- a. A chronology of events related to the issuance of the bulletin, including a detailed description of when and how Ford first recognized the concerns described in the bulletin, what actions were taken to investigate the concern and all meetings conducted to review the concerns and make the decision to issue the bulletins and each revision thereof;
- b. All related 8-D reports or any equivalent technical investigations and final reports; and;
- c. Copies of all documents related to investigations and review of the concerns addressed by the subject bulletin, including all material presented at all meetings



conducted to review the investigation and analysis of field data (e.g., complaints, field reports, and warranty data), the development of the correction, predicted failure rates, and the potential safety consequences.

#### Answer

During the late summer of 2010, as part of Ford's ongoing and routine analysis of field performance, an increase in electronic throttle body warranty claims with Diagnostic Troubleshooting Codes (DTC) P2111 and P2112, (throttle response not equal to that requested at the accelerator pedal) was identified. These data indicated that throttle bodies produced by Delphi Corporation for the 2.0L 4V I-4 Duratec engine and throttle bodies produced by Continental Automotive for the 3.5L 4V V-6 Duratec, 3.7L 4V V-6 Duratec, and 4.6L 2V V-8 Triton engines between March through July 2010 were affected. A Stop Ship was issued on July 30, 2010, to allow Engineering time to investigate and determine the cause of the throttle body issue.

An analysis of throttle body assemblies identified a manufacturing variability issue in the throttle position sensor gaskets produced by United Rubber, a Tier-Four supplier. A portion of these gaskets, which are molded using a silicone based compound, were not cured properly. In the presence of underhood temperatures experienced during normal vehicle operation, improperly cured throttle position sensor gaskets could emit silicone volatiles, which could oxidize during throttle body operation. These localized non-conductive silicon dioxide deposits could collect on the motor's commutator, and if a sufficient volume of these deposits collected, such deposits could prevent electrical connectivity between the motor brush and commutator. If this occurred, it could result in slight anomalies in the throttle body response, which in-turn could either a P2111 or P2112 DTC and enable the appropriate Electronic Throttle Control (ETC) Failure Mode Effect Management (FMEM) mode. (Note: FMEM modes for these vehicles were described in detail in Ford's December 14, 2012 response to DP12-006.)

An interim containment action was implemented on August 2, 2010, to rework the throttle position sensor assemblies with new seals before being shipped to respective electronic throttle body suppliers. At the same time, Delphi and Continental established rework centers to replace the improperly cured seals before shipping any additional potentially affected throttle body assemblies to Ford Engine Plants. With respect to any potentially affected throttle bodies that had already been shipped to Ford engine or vehicle assembly plants, all affected engines were reworked using updated throttle body assemblies. As a permanent corrective action, the gasket supplier revised their curing process and additional quality control monitoring processes were instituted.

Analysis of reports from the field found that some technicians were having difficulty properly diagnosing complaint vehicles. As a consequence, Ford published the TSB in October 2010 to aid in the proper diagnosis and repair associated with this condition.

Ford is providing responsive non-confidential documents related to the investigation addressed by TSB 10-21-6 in Appendix I. Ford is submitting additional responsive documentation in Appendix J and Appendix J – Redacted with a request for confidentiality under separate cover to the agency's Office of the Chief Counsel pursuant to 49 CFR Part 512.

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. 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 number(s) (service and engineering) of the original component;
- e. The part number(s) (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 K.

Request 11

Produce two samples of subject components returned from the field for analysis, which are representative of the subject TSB condition.

Include the following information about the parts provided in response to this request: (1) the vehicle identification number; (2) the repair claim number; and (3) copies of all documents related to the analysis of the part.

Answer

Ford is providing two sample components returned from the field for analysis:

- 2010 Ford Focus - VIN: 1FAHP3FN0AW [REDACTED] (AWS – Claim Key: 993753)
- 2010 Ford Edge – VIN: 2FMDK4KCXAB [REDACTED] (AWS – Claim Key: 1156223)

The corresponding warranty claims can be found in the appropriate databases provided in Appendix C.

Documents related to Electronic Throttle Body Correlation data from bench test performed on the analysis of these Assemblies are provided in Appendix L. The blue curve represents the



electronic throttle control commanded (target) signal and the red curve represents the measured throttle angle (output). Deviations observed between the two signals were found to be caused by the throttle position sensor gasket silicone volatile emission issue.

#### Request 12

For the subject vehicles, provide a list of throttle body part numbers by vehicle model year including:

- a. Throttle body assembly supplier and revision numbers;
- b. Throttle sensor printed circuit board (PCB) and assembly gasket suppliers; and
- c. Hall sensor ASIC supplier and part numbers.

#### Answer

Ford has provided throttle body supplier information, part numbers, throttle sensor printed circuit board and gasket suppliers, and hall sensor ASIC supplier and part numbers in its response to Request 10.

#### Request 13

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), including Ford's assessment of the risk of engine stall from the conditions addressed by the subject TSB, the conditions in which an engine stall may occur and an estimate of the approximate percentage of related failures that may result in engine stall;
- d. Ford's statistical analysis of rates of ETB failures that will occur in the affected vehicle populations due to the subject TSB condition at the following service intervals: 1, 3, 6 and 10 years in service (include a description of the statistical model used and the model parameters);
- e. The risk to motor vehicle safety posed by the subject TSB condition and faults resulting in limited limp mode operation; and
- f. What warnings, if any, the operator and the other persons both inside and outside vehicle would have that the alleged defect was occurring or subject component was malfunctioning.

#### Answer

##### Introduction

Electronic throttle control (ETC) was introduced for Escape vehicles (2009 model year) and Fusion vehicles (2010 model year) on Ford's 2.5L 4V I-4 Duratec, 3.0L 4V V-6 Duratec, and 2.5L 4V Atkinson Cycle (Hybrid) engines. By replacing a mechanically based system, ETC improves fuel economy and helps to meet emissions requirements by allowing the powertrain control strategy to optimize fuel control and transmission shift schedules while delivering the requested torque. Ford's ETC system incorporates torque-based hardware and software

strategies that deliver engine output torque (based on throttle plate angle) in response to driver demand (determined from accelerator pedal position).

### **Engine Failure Mode Effects Management (FMEM) Modes**

As with most electronic control systems on modern vehicles, the ETC systems in these vehicles are designed to provide optimal operation and efficiency while constantly monitoring system and vehicle performance. In the event a system fault is detected, Ford's three ETC FMEM modes (described in detail in Ford's December 14, 2012 response to DP12-006) provide the driver with three levels of powertrain operation to either continue driving or to safely maneuver their vehicle out of traffic. In each of these modes, the engine remains operational in order to maintain vehicle mobility, power-assisted steering, power-assisted braking, and to provide electrical function for directional signals, hazard lights, etc.

### **Service Publications for Subject and Peer Vehicle Populations**

#### **TSB 09-23-5 - VIA Hole Plating Variation**

In its December 14, 2012 response, Ford addressed TSB 09-23-5 that had been published in November 2009 to assist service technicians attempting to diagnose vehicles exhibiting drivability symptoms such as intermittent rough idle, idle speed below specifications, and/or reduced power (limp home). This TSB applied to Escape/Mariner and Fusion/Milan vehicles produced from June 22, 2009 through October 15, 2009. Vehicles manufactured during this timeframe may contain throttle bodies built with printed circuit board containing a plating variation due to dust particle contamination.

It is Ford's experience that when printed circuit boards containing plating variation due to dust contamination are exposed to thermal cycling, for e.g., normal engine operation, a crack will form in the area of the plating that could lead to an electrical discontinuity. As a result, Ford's assessment is that any related quality issues in these dust-contaminated circuit boards would surface at an early time in service. In fact, this issue was first identified at end-of-line testing performed on vehicles while still in the assembly plant at Hermosillo, Mexico. As a consequence, Ford believes that affected vehicles produced during this time period may have already experienced throttle body issues and been repaired.

#### **TSB 10-21-6 – Silicone Gasket Outgassing**

As part of its March 25, 2013 information request, the agency defined the peer vehicle population as vehicles included in TSB 10-21-6. As described in response to Request 9, Ford published this TSB in October 2010 to aid service technicians in the proper diagnosis and repair of certain vehicles that were brought in for service with DTCs P2111 or P2112, or were experiencing drivability issues such as low idle speed or idle fluctuation. Analysis of warranty claim data at that time found vehicles equipped with 2.0L 4V I-4 Duratec, 3.5L & 3.7L 4V V-6 Duratec, and 4.6L 2V V-8 Triton engines were experiencing elevated repair rates. Ford's investigation into the issue identified improperly cured throttle position sensor cover gaskets at a Tier Four supplier. With exposure to elevated temperatures experienced during normal vehicle operation, the improperly cured gaskets could emit silicone volatiles ("outgassing") that could form localized non-conductive silicon dioxide deposits on the throttle body motor commutator. Over time, if sufficient deposits accumulated, they could prevent electrical connectivity between the motor brush and commutator, and resulting in a high resistance fault. If this were to occur, it would enable the appropriate FMEM mode.



Not all vehicles built within the subject timeframe contain throttle bodies with improperly cured gaskets. If a particular throttle body were to contain an improperly cured gasket, it would continue to outgas until the volatiles were exhausted, after which the material would stabilize. Because the gasket "outgassing" is triggered by elevated engine temperatures seen during normal driving, Ford believes that vehicles manufactured with throttle bodies containing improperly cured gaskets would experience any associated issue earlier in their lifecycle.

The agency requested statistical analysis of reports associated with this subject at certain time intervals. Ford is providing the requested statistical analysis and method description in Appendix M. Ford notes that warranty claim data was used to generate this information, as it provides the most complete information for each repair. As previously described, warranty coverage for these vehicles is generally 3 years/36,000 miles. Equivalent information is not generally available for vehicle repairs outside of warranty coverage. Based on the nature of this particular issue, Ford expects that the outgassing phenomena is most likely to occur within this earlier time period of a vehicles useful life and, accordingly, projections based on these data may not completely and accurately predict future field performance at elevated time-in-service intervals.

While there are other potential root causes of ETC system malfunctions in these vehicles, as previously described, the system is designed with FMEM modes maintain powertrain operation, enabling the driver to either continue driving or to safely maneuver their vehicle out of traffic while mitigating any potential safety risk associated with the system fault.

### **Customer Characterizations**

Some of the customer reports provided in this response allege an actual vehicle or engine "stall". Ford does not believe that engines will stall unexpectedly under these conditions, although customers may describe what they believe is a "stall" because the engine may not respond in a typical manner to accelerator pedal. The condition that drivers are describing may in fact either be the "RPM Guard with Default Throttle" FMEM mode or "Limited RPM Guard with Default Throttle" FMEM mode.

In an attempt to better evaluate driver characterizations, Ford attempted to contact customers who recently alleged a vehicle stall and had their throttle bodies replaced under warranty. One customer allegation in a warranty claim for their 2011 model year Ford Fusion [AWS Claim Key: 6811944] stated "driveability[sic] concern wrench lite on and car cuti[sic] while driving." In actuality, when Ford contacted the driver, they admitted the engine did not stall, but that they could not achieve a speed greater than 5 mph, which is consistent with the Limited RPM Guard with Default Throttle" FMEM mode.

If a vehicle enters an FMEM mode resulting in limited motive power, the driver might naturally attempt to reset the system by turning the ignition key off and restarting the engine. If the fault is no longer present, the engine will in fact restart and the vehicle will return to normal operation. This might leave the driver with the mistaken impression that they had experienced a stall when the vehicle was actually still operating, just in a reduced performance mode. If the fault is still present when the driver attempts to restart, the vehicle will simply remain in FMEM reduced performance mode. The ETC strategy is designed to illuminate a wrench light for the first key cycle where a malfunction is detected and a MIL only after the second consecutive key-on cycle where the fault is present.

Additionally, several customers indicate that they had their vehicle towed subsequent to their vehicle entering a reduced performance mode. Ford notes that this is not an indicator that the vehicle stalled. Rather, it simply indicates that the consumer elected not to drive their vehicle to the dealership in the reduced performance (FMEM) mode for service.

### **Accidents Allegations**

#### **Subject Vehicles**

Ford reviewed reports provided in this response and identified a total of two that allege throttle malfunction resulting in an accident.

The first report involves a 2011 Ford Fusion (VIN: 3FAHP0JGXB[REDACTED]) where the customer had mentioned that the wrench light would illuminate, followed by the vehicle going into "Limp Home" (FMEM) mode intermittently over the prior few weeks. There was no mention of a repair attempt during that time. The customer's daughter reportedly experienced the vehicle entering "Limp Home" mode on one occasion, claiming that it caused the vehicle to "run up on curb damaging the skirt in front of veh" because of a throttle body malfunction. Reports of loss of vehicle control are inconsistent with how a vehicle behaves while in an FMEM mode. While entering an FMEM mode will limit vehicle speed, the engine will still continue to run allowing the driver to either continue driving or to safely maneuver their vehicle out of traffic. In each of these modes, vehicle mobility is maintained, as is power-assisted steering, power-assisted braking, and electrical function for directional signals, hazard lights, etc.

The second report involves a 2010 Ford Fusion (VIN: 3FAHP0JA1AR[REDACTED]) where the customer alleges the throttle body caused an accident six months prior to their contact with Ford. The customer noted scratches to the door handle and door. Again, loss of vehicle control is inconsistent with vehicle operation in an FMEM mode.

#### **Peer Vehicles**

Ford identified one report on a 2010 model year Ford Edge (VIN: 2FMDK3JC4AB[REDACTED]) that alleged an accident caused by throttle body malfunction. The associated police report indicated that the customer's daughter was attempting to park the car when the engine suddenly turned off, causing the vehicle to slide into a pole adjacent to the side of the road. Again, loss of vehicle control is inconsistent with vehicle operation in an FMEM mode.

### **Conclusion**

Electronic throttle control systems are complex and sophisticated, designed to optimize vehicle performance, engine emissions, and fuel efficiency while also ensuring safe vehicle operation in the event a potential fault is detected. Ford's electronic throttle control strategy provides the driver with three FMEM modes that allow varying degrees of vehicle mobility depending on the severity of the fault detected. All three modes allow the engine to continue to operate thereby affording some level of vehicle mobility. Vehicles are unlikely to experience engine stall as a result of this condition. Ford's contact with customers where there has been an allegation of a stall due to throttle body malfunction indicates customers may misinterpret an FMEM mode for engine shut down, since the engine can be restarted and even return to normal function.

With respect to the peer vehicles, Ford published TSB 10-21-6 to assist service technicians in the proper diagnosis and repair of vehicles experiencing a low or fluctuating engine idle speed



that could be intermittent with or without DTCs P2111 or P2112. This condition affected 2.0L 4V I-4 Duratec, 3.5L and 3.7L 4V V-6 Duratec, and 4.6L 2V V-8 Triton engines that were built with throttle position sensor cover gaskets that were not properly cured. Ford's analyses of the gasket outgassing issue and warranty claims indicate that repairs attributable to silicone volatile outgassing occur early in the lifecycle of a vehicle and that there is a notable declining trend of reports pertaining to this condition.

In summary, Ford does not believe that a vehicle experiencing a throttle body issue that results in an FMEM mode presents an unreasonable risk to motor vehicle safety. Ford's electronic throttle control strategy allows the engine to operate and provides the driver with vehicle mobility to maneuver their vehicle to a safe location, even in the most severe FMEM mode. For all FMEM modes related to this issue, engine operation is maintained providing full power steering assist, brake assist, and electrical functions. Additionally, drivers are alerted that a fault has been detected by the illumination of a wrench light or MIL.

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