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July 17, 2015

Ms. Jennifer Timian, Acting Director  
Office of Defects Investigation  
National Highway Traffic Safety Administration  
1200 New Jersey Avenue SE, Room W45-302  
Washington, DC 20590

Dear Ms. Timian:

Subject: PE15-020:NVS-213cnl

The Ford Motor Company (Ford) response to the Agency's May 29, 2015, letter concerning a report of an alleged wheel fracture in 2014 Edge vehicles with 22" cast aluminum wheels is attached.

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

Sincerely,

A handwritten signature in black ink, appearing to read "Wayne E. Bahr".

*for* Wayne E. Bahr

Attachment

FORD MOTOR COMPANY (FORD) RESPONSE TO PE15-020

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.

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 May 29, 2015, the date of your inquiry. Ford has searched within the following offices for responsive documents: Sustainability, Environment and Safety Engineering, Ford Customer Service Division, Marketing and Sales Operations, Purchasing, Quality, Research, Global Core Engineering, Office of the General Counsel, Vehicle Operations, and North American Product Development.

Request 1

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

- a. Vehicle identification number (VIN);
- b. Make;

- c. Model;
- d. Model Year;
- e. Original Equipment Wheel;
- f. Date of manufacture;
- g. Date warranty coverage commenced.; and
- h. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2007, or a compatible format, entitled "PE15-020 PRODUCTION DATA." See Enclosure I, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

Answer

Ford records indicate that the approximate total number of **2014 MY Ford Edge vehicles equipped with a 22" cast aluminum wheel** 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 **6,937**.

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

Model	Original Equipment Wheel	2014 MY
Ford Edge	DT43-1007-AA	6937

The 22" cast aluminum wheel was implemented as a running change near the middle of the 2013 model year. The number of peer vehicles sold in the United States by model and model year is shown below:

Model	Original Equipment Wheel	2013 MY	2014 MY	2015 MY
Ford Edge	DT43-1007-AA	8107	(Subject)	0
Lincoln MKX	DA13-1007-BA	1244	642	273

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

Request 2

State, by model, model year and original equipment wheel, 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
A	Wheel Fracture
B	Ambiguous Wheel Damage

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 FMC360 Owner Relations System, 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 wheel fracture in a subject 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 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. Ford has not identified any Legal Contacts that are responsive to the agency's request.

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 wheel fracture in a subject 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 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.

VOQ Data: This information request had an attachment that included one Vehicle Owner Questionnaire. 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. Ford found a contact in our CQIS data base for the VOQ supplied by the agency and has included it 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. Ford has not found any allegations of accidents or injuries resulting from the alleged defect.

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 found no relevant or ambiguous lawsuits and claims that are allegedly related to the subject of this investigation.

### Request 3

Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 2, state the following information:

- a. Ford's file number or other identifier used;

- b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
- c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
- d. Vehicle's VIN;
- e. Vehicle's make, model and model year;
- f. Vehicle's mileage at time of incident;
- g. Vehicle's speed at time of incident;
- h. Incident date;
- i. Report or claim date;
- j. Whether a wheel separation is alleged;
- k. Whether a crash is alleged;
- l. Whether property damage is alleged;
- m. Number of alleged injuries, if any; and
- n. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2007, or a compatible format, entitled "PE15-020 REQUEST NUMBER THREE DATA," See Enclosure 1, Data Collection Disc, for a preformatted table which provides further details regarding this submission.

#### Answer

Ford is providing owner and field reports in the databases contained in Appendix C in response to Request 2 for both the subject and peer vehicles. To the extent information sought in Request 3 is available for owner and field reports, it is provided in the database.

#### Request 4

Produce copies of all documents related to each item within the scope of Request No. 3. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Ford used for organizing the documents.

#### Answer

Ford is providing owner and field reports in the databases contained in Appendix C in response to Request 2 for both subject and peer vehicles. To the extent information sought in Request 4 is available, it is provided in the referenced appendices. Ford notes that one field report was found that is for the same VIN as the VOQ supplied by The Agency. Photographs that were attached to this field report are included in Appendix C1.

#### Request 5

State, by model, model year and original equipment wheel, 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. Vehicle mileage at time of repair;
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number;
- h. Problem code;
- i. Replacement wheel part number(s) and description(s);
- j. Whether the failure resulted in wheel separation;
- k. Whether there was a tow in charge associated with the repair;
- l. Concern stated by customer; and
- m. Comment, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2007, or a compatible format, entitled "PE15-020 WARRANTY DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table which provides further details regarding this submission.

### Answer

Records identified in a search of the AWS database, as described in Appendix B, were reviewed for relevance and sorted in accordance with the categories described in the response to Request 2. The number and copies of relevant warranty claims identified in this search that allege wheel fracture in either 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 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, tow-in, 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.

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.

#### 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 and describe the circumstances, if any, under which impact related wheel fracture would be covered under warranty. 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.

For 2014 model year Edge vehicles equipped with 22" cast aluminum wheels, 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. This warranty only covers cosmetic damage or manufacturing defects on the wheel and would not cover road damage.

Ford does not offer any extended services plans that pertain to the wheels on the subject vehicle.

#### 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 wheel fracture, 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 SSMs and no TSBs that may relate to the agency's request.

Internal Service Messages: Ford has identified no ISMs that may relate to the agency's request.

Field Review Committee: Ford has identified no field service action communications that may relate to the agency's request.

#### Request 8

Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations (including field inspections), inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject and peer 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 has not performed any assessments, analyses, tests, studies, surveys, simulations, investigations (including field inspections), inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject or peer vehicles up to this point.

Upon receipt of the wheel from the Agency for the vehicle mentioned in VOQ 10661278, Ford will verify material properties to the specification to which the wheel was designed. Ford will also use the NHTSA supplied 3D scan of the complainant wheel to overlay the deformed pieces of the wheel with the CAD data to try to observe the amount of deformation in the inner flange and other areas of the part.

Request 9

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 wheels, from the start of production to date, which relate to, or may relate to, the alleged defect or subject condition 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. The applicable models;
- c. A detailed description of the modification or change;
- d. The reason(s) for the modification or change;
- e. The part numbers (service and engineering) of the original component;
- f. The part number (service and engineering) of the modified component;
- g. Whether the original unmodified component was withdrawn from production and/or sale, and if so, when;
- h. When the modified component was made available as a service component; and
- i. A photograph or graphic showing each component, highlighting the design features that may relate to the alleged defect or subject condition; and
- j. Whether the modified component can be interchanged with earlier production components.

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

Answer

Ford notes that all of the design changes listed on the drawing were made before the vehicles were released for production as part of the normal product development and verification process and were incorporated at the time of initial production. All subject and peer vehicles referenced in Request 1 were built with the same 22" cast aluminum wheel.

Request 10

State the number of subject components that Ford has sold that may be used in the subject and peer vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of the sale (including the cut-off date for sales, if applicable).

For each component part number, provide the supplier's name, address, and appropriate point of contact (name, title, and telephone number). Also, identify by make, model and model year, any other vehicles of which Ford is aware that contain the identical component, whether installed in production or in service, and state the applicable dates of production or service usage.

Answer

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

Ford is providing the total number of Ford service 22" cast aluminum wheels by part number (both service and engineering) and year of sale, where available, in Appendix F. Information pertaining to production and service usage for each part number, and supplier point of contact information, is included in Appendix D.

Request 11

Provide the following information regarding the subject wheels:

- a. Provide detailed descriptions of the design, material composition, and manufacturing process;
- b. Provide copies of all design requirements and material properties specifications for the subject wheels that may relate to the alleged defect and/or the impact resistance of the wheels;
- c. Describe all quality control processes related to the manufacture of the subject wheels that may relate to the alleged defect and/or the impact resistance of the wheels;
- d. Describe and provide copies of all documents relating to all Ford design and test requirements relating to wheel impact performance;
- e. Describe and provide copies of all documents relating to all Ford design and test requirements relating to wheel separation due to the alleged defect (i.e., excluding fastener failures);
- f. Describe and provide copies of all documents relating to all tests or computer aided analyses of the subject wheels related to each of the following: 1) fatigue failure (and changes in properties induced by fatigue); 2) impact resistance; 3) separation of the center section of the wheel from the rim; and 4) stress analysis of the wheel under normal driving conditions and during all forms of impact analyzed by Ford (state conditions for each type of impact included in such analyses);
- g. Describe all analyses conducted by, or for, Ford on subject wheels returned from the field for failures related to the alleged defect and/or wheel separation and provide copies of all related documents; and
- h. Provide Ford's assessment of the conditions necessary to cause the failure mode that occurred in the failure reported in VOQ 10661278.

Answer

Ford is providing the requested information in Appendix E: CONFIDENTIAL BUSINESS DOCUMENTS with a request for confidentiality under separate cover to the agency's Office of the Chief Counsel pursuant to 49 CFR Part 512.

The file folders named "Question 11a" in Appendix E contain documents regarding Design, Material, and Manufacturing processes.

The file folder named "Question 11b" in Appendix E refers to the Wheel Functional Specification (FS); Section IV-D 1 & 3.

The file folder named "Question 11c" in Appendix E contains the suppliers control plan.

The file folder named "Question 11d" in Appendix E refers the Wheel Functional Specification; section IV-B-1&2, and Ford's Corporate Engineering Test Procedures.

Request e: Ford does not have a test for wheel separation as observed in the subject part.

Request f: Information for each of the sub-questions can be found in Appendix E in file folders entitled "Question 11f". Note that Ford does not have a test for wheel separation as observed in the subject part. Ford does not conduct stress analysis for the wheel under normal driving conditions. The supplied FEA report is for available stress analysis based on the radial, rotary, and impact loads as defined in section IV-A of the FS and stated on the engineering drawing.

Request g: Ford has not conducted any analysis on the subject wheel since we have not received any parts from the field with the observed separation.

Request h: It is Ford's theory that the vehicle most likely struck an object or curb in such a way that the inboard flange of the wheel took absorbed a large portion of the energy transferred to the vehicle as a result of the impact. The inboard flange would have likely deflected to the point of exceeding the elastic limit of the material, and the crack would have initiated and propagated almost instantly around the drop well.

#### Request 12

Furnish Ford's assessment of the alleged defect resulting in complete wheel separation in the subject and peer vehicles, including:

- a. The causal or contributory factor(s);
- b. The failure mechanism(s);
- c. The failure mode(s);
- d. The risk to motor vehicle safety that it poses;
- e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and
- f. The reports included with this inquiry.

#### Answer

Ford has reviewed all available data on the alleged defect in both the subject and peer vehicles. Based on an examination of photos that were attached to the VOQ 10661278 and photos for the same vehicle that were contained in our CQIS system, there is evidence of impacts and multiple deformation points on the inboard wheel flange. We theorize that the vehicle struck an object or curb in such a way that the wheel absorbed a large portion of the energy transferred to the vehicle during the impact. The inboard flange of the vehicle would have likely deflected to the point of exceeding material limits of the wheel, and the crack could have initiated and

propagated almost instantly. The photos from Ford's CQIS system indicate little or no damage to the rest of the vehicle, and neither the CQIS report, nor the VOQ indicate injuries to the occupants of the vehicle. The photos imply that the outer section of the wheel remained attached to the wheel hub, preventing the hub from contacting the road surface while the driver brought the vehicles to a stop.

Ford has reviewed our design and development specification and test reports, the supplier's manufacturing quality control plans, processes and data, and specific production material testing for the time period when the incident wheel was manufactured and has found nothing to indicate any design, manufacturing, or material issues.

In summary, based on our assessment of the only known report on a population of 17,203 subject and peer vehicles, a review of supplier quality control data, and Ford's internal development testing, Ford does not believe that there is any design or manufacturing defect in the subject wheels.

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