[redacted]

INFORMATION REDACTED PURSUANT TO THE FREEDOM OF INFORMATION ACT (FOIA), 5 U.S.C. 552(B)(6)

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June 9, 2021

Mr. Stephen Ridella, Director
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National Highway Traffic Safety Administration
1200 New Jersey Avenue SE, W45-302
Washington, DC 20590

[redacted]

The Ford Motor Company (Ford) response to the Agency's letter (received April 28, 2021) concerning reports of allegations of loss of power steering assist in certain 2010 Ford Fusion vehicles is attached.

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

Sincerely,

[redacted]

ATTACHMENT
June 9, 2021

FORD MOTOR COMPANY (FORD) RESPONSE TO EA17-004 (NEF-103DK)

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.

As noted in our December 8, 2016 response to PE16-011, in an October 24, 2016 telephone conversation, Mr. Evan Frings of the agency informed Ford personnel that the scope of the investigation would be limited to 2010 model year Ford Fusions built with electric power steering assist. As noted in our December 19, 2014 response to PE14-030, hydraulic power steering assist was used in 2010 model year Ford Fusions built with 3.5L engines.

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 April 28, 2021, the date of your inquiry. For some requests, the responsive documents may be divided into time periods dated up to and including December 17, 2017 and a second time period dated December 18, 2017 up to and including April 28, 2021. This division is necessary because of a change in the electronic data system collection method now utilized. Ford has searched within the following offices for responsive documents: Sustainability, Environment and Safety Engineering, Ford Customer Service Division, Marketing and Sales Operations, Quality, Research, Global Core Engineering, Office of the General Counsel, and North American Product Development.

Request 1

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

a. Vehicle identification number (VIN);
b. Date of manufacture;
c. Date warranty coverage commenced; and
d. 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 2010, or a compatible format, entitled "PRODUCTION DATA."

Answer

Ford records indicate that the approximate total number of 2010 Ford Fusion vehicles equipped with electric power assist steering (EPAS) 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 262,599.

The requested data for each subject vehicle are provided in Appendix A, entitled: "PRODUCTION DATA_2016-12-8 Appendix A"

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 the subject vehicles:

a. Consumer complaints, including those from fleet operators;
b. Field reports, including dealer field reports;
c. Reports involving a crash, injury or fatality;
d. Reports involving a fire;
e. Property damage claims;
f. Third-party arbitration proceedings where Ford is or was a party to the arbitration; and
g. Lawsuits, both pending and closed, in which Ford is or was a defendant or codefendant.

For subparts "a" through "f, / g," 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, / g,” 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/f” and “f, / g,” 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	Loss of Power Steering Assist
B	Ambiguous Steering Issue

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 Global Contact Center Technology (GCCT) System (formerly 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 loss of power steering assist in a subject vehicle and occurred after those provided in our December 8, 2016 response to PE16-011 are provided in the GCCT/FMC360 portions of the database and Excel file contained in Appendix C. The categorization of each report is identified in the "Category" field. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April 28, 2021.

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.

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 loss of power steering assist in a subject vehicle and occurred after those provided in our December

8, 2016 response to PE16-011 are provided in the CQIS portions of the database and Excel contained in Appendix C. The categorization of each report is identified in the "Category" field. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April 28, 2021.

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.

Legal Contacts: Ford is providing, in Appendix D, a description of Legal Contacts and the activity that is responsible for this information. We are providing the requested detailed information, where available, on the responsive and ambiguous lawsuits and claims since our December 8, 2016 response to PE16-011. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April 28, 2021. 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.

VOQ Data: This information request had an attachment that included 677 Vehicle Owner Questionnaires (VOQs). Ford made inquiries of its GCCT/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, it is not possible to query the databases for owner and field reports specifically corresponding to the VOQs.

Crash/Injury Incident Claims: For purposes of identifying allegations of accidents or injuries that may have resulted from the alleged defect, Ford has reviewed responsive owner and field reports, and lawsuits and claims. Charts identifying potentially relevant allegations that occurred after those provided in our December 8, 2016 response to PE16-011 and are provided in Appendix D. October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April 28, 2021. Copies of reports corresponding to these alleged incidents are provided in the GCCT/FMC360, CQIS, and Analytical Warranty System (AWS) portions of the database provided in Appendix C, and in Appendix D for lawsuits and claims.

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

Lawsuits and claims gathered in this manner were reviewed for relevance and sorted in accordance with the categories described above. We are providing the requested detailed information, where available, on the responsive lawsuits and claims since our December 8, 2016 response to PE16-011 as Appendix D. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April

28, 2021. The number of relevant lawsuits and claims identified is also provided in this log. To the extent available, copies of complaints, first notices, or GCCT/FMC360 reports relating to matters in Appendix D are provided in Appendix C. 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. 2 (i.e., consumer complaint, field report, etc.);
c. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;
d. Vehicle's VIN;
e. Vehicle's mileage at time of incident;
f. Incident date;
g. Report or claim date;
h. Allegations that the alleged defect caused the vehicle to leave it's intended lane of travel (i.e., a lane departure);
i. Whether a crash is alleged;
j. Whether property damage is alleged;
k. Number of alleged injuries, if any; and
l. Number of alleged fatalities, if any.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA."

Answer

Ford is providing owner and field reports that occurred after those provided in our December 8, 2016 response to PE16-011. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April 28, 2021 in the database contained in Appendix C in response to Request 3. To the extent information sought in Request 3 is available for owner and field reports, it is provided in the database or Excel files. We are providing the requested detailed information, where available, on the responsive lawsuits and claims since our prior submission in our Log of Lawsuits and Claims, as Appendix D.

Request 4

Produce copies of all documents related to each item within the scope of Request No. 2. that involve an allegation of a lane departure, crash, property damage, injury or fatality (i.e. items h through l above). Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Ford used for organizing the documents. Describe in detail the search methods and search criteria used by Ford to identify the items in response to Request No. 2.

Answer

Ford is providing owner and field reports that occurred after those provided in our December 8, 2016 response to PE16-011 in the database contained in Appendix C in response to Request 2. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a second grouping corresponding to reports between December 15, 2017 through April 28, 2021. We are providing the requested detailed information, where available, on the responsive lawsuits and claims since our prior submission in Appendix D. To the extent information sought in Request 4 is available, it is provided in the referenced appendices. A detailed description of the search methods and search criteria used by Ford to identify the items in response to Request No. 2 is provided in Appendix B.

Request 5

State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Ford to date that relate to, or may relate to, the alleged defect in the subject vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field, zone, or similar adjustments and reimbursements; 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), street address, email address 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(s);
h. Problem code(s);
i. EPAS related diagnostic trouble code(s);
j. Replacement part number(s) and description(s);
k. Concern stated by customer;
l. Cause as stated on the repair order;
m. Correction as stated on the repair order; and
n. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2010, or a compatible format, entitled "WARRANTY DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

Answer

Records identified in a search of the AWS-Warranty 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 loss of power steering assist in a subject vehicle and occurred after those provided in our December 8, 2016 response to PE16-011 are provided in the AWS portion of the database contained in Appendix C. The reports are separated into two groups, one corresponding to reports between October 21, 2016 through December 14, 2017 and a

second grouping corresponding to reports between December 15, 2017 through April 28, 2021. 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 GCCT/FMC360 reports identified above in response to Request 2. Such claims that were honored are included in the warranty data provided.

Ford notes that causal and corrective information requested in subparts “l” and “m” can be construed from the customer comments, technician comments, diagnostic trouble codes (DTCs), and part replacement information provided with each claim in Appendix C. The service technician follows the diagnostic and repair routines specified in the workshop manual and does not have the means to perform detailed internal analysis of the subject component to obtain additional root cause information.

Request 6

> Describe in detail the search methods and search criteria used by Ford to identify the claims in response to Request No. 5, including the labor operations, problem codes, diagnostic trouble 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, diagnostic trouble codes and diagnostic trouble code descriptions applicable to the alleged defect in the subject vehicles. State whether the diagnostic trouble codes are automatically reported to the warranty database electronically or manually entered into the warranty database by a claims administrator.
>
> State 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 DTCs noted in the warranty claims provided in Appendix C were manually entered into the warranty claims database. Ford has another database that may contain vehicle diagnostic information, potentially including DTCs, that is electronically captured, but transient in nature. This system is not related to the payment of warranty claims and was not searched in response to Request 5. Additional information regarding diagnostic trouble codes was provided in Appendix M in Ford’s response to PE14-030 on December 19, 2014, but is re-included in Appendix B of this response.

For 2010 model year Fusion vehicles, the New Vehicle Limited Warranty, Bumper-to-Bumper Coverage begins at the warranty start date and lasts for three years or 36,000 miles, whichever occurs first. Optional Extended Service Plans (ESPs) are available to cover various vehicle systems, time in service, and mileage increments. The details of the various plans are provided in Appendix E. As of the date of this response, 65,835 new vehicle ESP policies were purchased on 2010 model year Fusion 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 loss of power steering assist, and occurred after those provided in our December 8, 2016 response to PE16-011, Ford has reviewed the following FCSD databases and files: The On-Line Automotive Service Information System (OASIS) containing Technical Service Bulletins (TSBs), Special Service Messages (SSMs) and Global Service Bulletins (GSBs); 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 or TSBs that may relate to the agency's request issued since our December 8, 2016 response to PE16-011. For convenience Ford is re-providing a listing of SSMs, TSBs, and GSBs related to this request in Appendix I.

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, 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. For convenience, Ford is re-providing the responsive non-confidential Ford documentation previously provided in our December 8, 2016 response to PE16-011 and our February 16, 2018 response to EA17-004 in Appendix F.

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.

For convenience, Ford is re-submitting responsive confidential documentation previously provided in our December 8, 2016 response to PE16-011 and our February 16, 2018 response to EA17-004 in Appendix G 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 newly provided confidential documents will be provided under separate cover, on separate media, to the agency's Office of Chief Counsel as Appendix H – Public.

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

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

No design changes occurred after any changes previously identified in our December 8, 2016 response to PE16-011 or in our February 16, 2018 response to EA17-004. For convenience, Ford is re-submitting information regarding design changes previously provided from our December 19, 2014 response to PE14-030 and our December 8, 2016 response to PE16-011. This information is located in Appendix J.

Request 10

State the number of each of the following that Ford has sold that may be used in the subject 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 sale *(including the cut-off date for sales, if applicable)*:

a. Subject component;
b. Any kits that have been released, or developed, by Ford for use in service repairs to the subject component/assembly.

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

Answer

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

Ford is providing the total number of Ford service replacement subject components by part number (both service and engineering), month and year of sale, where available. For convenience, Ford is re-submitting the information previously submitted in our December 8, 2016 response to PE16-011 and in our February 16, 2018 response to EA17-004 in Appendix K. Part sales recorded between December 15, 2017 to approximately May 21, 2021 are also included in Appendix K. Information pertaining to production and service usage for each part number, and supplier point of contact information, is also included in Appendix K.

Other than the subject component released for service, there are no other kits released or in development for use in service repairs to the subject component.

Request 11

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; and
e. What warnings, if any, the operator and the other persons both inside and outside the vehicle would have that the alleged defect was occurring or subject component was malfunctioning; and
f. The reports included with this inquiry.

Answer

Consistent with the conclusions in PE14-030 and PE16-011, Ford does not believe the reports provided in this response related to loss of power steering assist are indicative of a defect pattern. Additionally, Ford does not believe the reports provided present an unreasonable risk to safety due to the low rate, the low severity of symptoms related to the loss of assist, the assist ramp-down strategy which can aid in control of the vehicle during a steering gear fault, and the differences between the components used in the subject vehicles and those used in vehicles included in our Field Service Action 15S18. In the event of system detected conditions which may lead to reduced or removed steering assist, Ford's engineering evaluations determined the vehicle can still be reasonably controlled.

Low rate and severity

Ford's analysis of the reports reviewed in the preparation of this response indicate the customer complaint rate for allegations of loss of power steering assist on the subject vehicles remains at a low two complaints per 1,000 vehicles per year in service. The rate for the subject vehicles is lower than those from subsequent model years explained by the manufacturing related electrical connector contamination root cause described in PE14-030. Furthermore, based on the available warranty data and the VOQ analysis discussed below, the majority of the reports in this rate are believed to be related to high friction in the steering system. Higher friction is expected as the steering and suspension system ages and components experience natural wear. A detection of high friction by the system would result in a reduced level of assist during the drive cycle of the high friction fault warning, followed by audible and visual warnings for the remainder of the drive, and removal of assist at the next vehicle ignition start-up. A loss of assist at start-up would not pose a risk to safety as the vehicle is not moving, and the driver immediately receives visual and audible warnings, along with the obvious sensation of increased steering efforts as soon as the driver turns the wheel at the very start of the drive (when the vehicle speed is at or near zero).

By design, steering efforts are greater at lower speeds and tighter turning radiuses as compared to higher speeds and larger turning radiuses. Additionally, braking functionality is maintained, affording the driver adequate opportunity to slow or stop the vehicle in a safe manner. These factors contribute to the low number and the low severity of accident and injury allegations due to the alleged loss of power steering assist.

Vehicle control can be maintained with assist ramp-down strategy

The power steering system is self-monitoring. The Power Steering Control Module (PSCM) can detect internal and external mechanical issues with the system by monitoring the assist required for moving the gear. If the amount of friction in the steering and suspension system exceeds an allowable threshold, a friction related DTC will be set and the system will implement a failure management mode. During the ignition cycle when the DTC is set, the message center will chime and display "SERVICE POWER STEERING" and the steering assist is ramped-down to a lower calibration level. The transition from full to reduced assist can take up to 5 seconds, depending on vehicle speed (lower speeds having a longer transition time). The increase in steering wheel torque input needed by the driver at reduced assist can range from approximately zero to 15%, depending on the initial effort required for the desired turn (lower effort turns requiring less additional input). During subsequent ignition cycles after the DTC sets, the message center will chime and display "SERVICE POWER STEERING NOW" and the PSCM removes steering assist.

Ford believes the vehicle remains controllable during the period of reduced assist based on the driver's comments in the reports and our engineering vehicle evaluations. Ford's engineering evaluations included an assessment of a driver's reasonable ability to maintain lane position or controllably steer the vehicle to exit out of a lane of travel. By design the power steering system allows for reduced assist during the drive if a friction related DTC is set, while also communicating that system service is required.

High friction detected by the steering gear can come from internal or external system sources, such as:

- Internal to the steering gear
    - Steering gear internal failure
    - Damaged steering gear bellows boot
    - Contaminated gear/rack
    - Damaged inner tie rods

- External to the steering gear
    - A flat front tire
    - Damaged front suspension
    - Lower Control Arm high friction (out of specification)
    - Other steering or suspension components experiencing natural wear

In some cases, a source of friction outside of the steering gear can be addressed and the friction DTC can be cleared, returning the steering gear to normal operation. The diagnostic steps outlined in the workshop manual direct the technician to inspect for and address sources of friction in the steering and suspension system prior to replacing the steering gear.

Ford analyzed the VOQs submitted since PE16-011 using related service information and/or driver's comments. The majority of the VOQs where a cause could be determined or deduced suggest they are events when high friction is detected in the steering and suspension system while driving and would result in visual and audible warnings prior to the Electric Power Assist Steering (EPAS) system entering a mode with a lower calibration of steering assist. Power steering assist would not be removed until the next start-up. Again, Ford believes the vehicle would remain fully controllable during the period of reduced assist based on the driver's

comments in the reports reviewed and our vehicle evaluations, and that the subsequent removal of assist at the next vehicle ignition start-up, accompanied by additional visual and audible warnings, would be overt and not pose a risk to safety as the vehicle is not moving.

Ford noticed many complaints mentioned a high cost of repairs. Due to the age of the subject vehicles, the complaints indicate that a repair was required after the expiration of the vehicle warranty, thus requiring the customer to pay for the repair. As many repairs typically involve replacement of the steering gear, costing approximately $1,500, we believe that some customers may file complaints to request compensation for the repair cost. A friction-related steering gear repair will likely result in some customer dissatisfaction, but due to the partial assist provided during the drive cycle, still allows the driver to control the vehicle in a safe manner.

Difference from similar systems

As discussed in our response to Request 10 of PE16-011, the EPAS system in the subject vehicle is similar in design to the system used in 2011 and 2012 model year vehicles included in our Field Service Action 15S18 (NHTSA number 15V-340). However, the Field Service Action addressed issues from some components used in the steering gears for these 2011 and 2012 model year vehicles that contained a condition resulting from manufacturing quality issues that affected the long-term performance of some of the steering gears. Though the design of the systems is similar, the steering gear produced for the subject vehicles were not affected by the manufacturing quality related defects and the field performance data continues to show this.

In summary, Ford believes that reports of reduced or loss of power steering assist in the subject vehicles does not present an unreasonable safety risk based on the following reasons:

1) The majority of the reports are related to high friction in the steering system, initially resulting in only reduced assist while driving, with loss of assist at the next start-up, not while driving,
2) Friction-related faults initially result in a ramp down to a reduced steering assist calibration mode while driving, allowing the driver to continue to control the vehicle in a safe manner,
3) A significant number of the responsive reports are likely for loss of assist at start-up, when the vehicle is not moving and the driver immediately receives visual and audible warnings,
4) Drivers are clearly informed of a change in the status of the steering system via both an audible chime and the display of a power steering assist fault message in the instrument cluster,
5) The steering gears manufactured for the subject vehicles are not affected by the manufacturing process related issues found in steering gears manufactured for the vehicles that were subject to field service action 15S18 (15V-340),
6) The loss of power steering assist is unlikely to be associated with accidents at higher speeds because the amount of steering assist supplied is inversely proportional to vehicle speed and, therefore, greatest at low speeds, such as during parking lot maneuvers. In addition, the vehicle's power brakes continue to function and would be effective at mitigating issues at low vehicle speeds. The reports included with this response support this conclusion.

In addition, the cause of many of the friction related faults is likely to be external to the subject component, requiring replacement of aging suspension components, not the subject component.

The Agency first investigated this condition beginning in 2014 in PE14-030. During that investigation Ford identified a manufacturing quality issue at the steering gear supplier that affected not only certain Fusion vehicles but other platforms as well and issued a safety recall 15S18/15V340.

In the closing resume for PE14-030 the Agency included:

“ODI's analysis of failure data for this PE identified a total of 2,584 complaints to ODI and Ford and 9,967 Ford warranty claims related to the alleged defect. The recalled vehicles account for 1,634 of the complaints and 7,311 of the warranty claims. ODI's analysis identified 40 complaints alleging crashes that may be related to loss of steering assist while driving, 20 of which involved vehicles included in Ford's recall. The information available for the alleged crashes were not sufficient to assess specific causes of the incidents or to verify EPAS malfunctions in each case. Most of the crashes were low-speed impacts with curbs or roadside objects resulting in wheel or minor body damage. None of the injury claims indicated medical attention was required. In addition, statistical modeling of the failure data by NHTSA's National Center for Statistics and Analysis projected 10-year failure rates of approximately 8-14 percent for the recalled vehicles and approximately 1 percent for the non-recalled subject vehicles.”

As the Agency is aware, Ford, in addition to the National Center for Statistics and Analysis, performed statistical analysis of the vehicle populations with the subject steering gear and Ford’s analysis projected 10-year failure rates of 13% – 22% for the recalled vehicle population (compared to approximately 8% - 14% for the recalled vehicles projected by the Agency) and 2.2% for the 2010 MY vehicles that were not recalled since they did not contain the manufacturing quality defect (compared to approximately 1% projected by the Agency).

Ford believes that combining all of the data identified to date on the non-recalled 2010 MY Fusion vehicles, for the vehicles that are currently in excess of ten years in service, the failure rate is approximately 1.7% (below the previously projected estimate of 2.2% at ten years in service). If the count of VOQs is included in the analysis Ford believes the failure rate to be approximately 2% which compares very well to the projected failure rates for the population completed in 2015 by both Ford and the Agency. The performance of the 2010MY Fusion population has been consistent and predictable since PE14-030 was closed. Reports alleging a crash or injury remain at a very low rate of less than 0.01% of the population.

A review of the Ford reports as well as the VOQs provided by the Agency did not identify any change in the nature of the reports from the description the Agency provided in the closing resume for PE14-030.

With this most recent inquiry the Agency included VOQs received since Ford’s last response on this subject that included reports through December 14, 2017. From the VOQs received as part of this inquiry Ford identified 13 VOQs that were marked as reporting a crash, and seven VOQs marked as reporting an injury.

Of the 13 VOQs marked as reporting a crash (three of those were also marked as containing an injury allegation) Ford was able to identify contacts to Ford for four of the VOQs.

- VOQ 11299549: There is no report of a crash or injury in the contact to Ford.
- VOQ 11119968: There is no mention of a crash, only seeking financial assistance.
- VOQ 11331524: Reported to Ford the driver “almost got into an accident.”
- VOQ 11097230: Reported to Ford contact with a curb causing damage to a wheel and body panel.

Of the seven VOQs marked as reporting an injury Ford was able to identify contacts to Ford for two.

- For VOQ 1299549: The contact to Ford requested information on the costs of diagnostics and made no mention of either a crash or injury.
- For VOQ 11242000: The contact to Ford reported that there was no damage to the vehicle and there were no injuries.

Additionally, Ford did not identify an injury mentioned in VOQs 11302426 and 11242000. The injury mentioned in VOQ 11405664 is described as ‘sore arms’ from the increased steering efforts rather than a crash. Of the VOQs marked as including an injury allegation, one (11081825) indicates that medical treatment was sought, and that was for injuries to the neck and lower back reportedly received when the vehicle was struck from behind. That VOQ also reported that no police report was filed.

Based on the factors discussed above and the information provided with this response, Ford’s assessment is consistent with what we previously reviewed with the Agency. Ford is not aware of a defect in the steering systems installed in the subject vehicles, and believes that the low rate of reports and DTC management calibration, including reduced assist while driving with overt audible and visual warnings, does not present an unreasonable risk to safety in these vehicles that has now been in service for more than ten years.

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ATTACHMENT
June 9, 2021