U.S. Department
of Transportation
**National Highway
Traffic Safety
Administration**

1200 New Jersey Avenue SE.
Washington, DC 20590

VIA EMAIL

Ms. Emily Frascaroli, Global Director
Automotive Safety Office
Ford Motor Company
Fairlane Plaza South
330 Town Center Drive, Suite 400
Dearborn, MI 48126-2738

NEF-103jmw
RQ23-004

Dear Ms. Frascaroli:

This letter is to inform you that the Office of Defects Investigation (ODI) of the National Highway Traffic Safety Administration (NHTSA) has opened a Recall Query (RQ23-004) to investigate allegations of high voltage battery main contactor failure in certain model year (MY) 2021-2022 Ford Mustang Mach-E vehicles manufactured by Ford Motor Company (Ford), and to request certain information.

This office has received 12 reports of high voltage battery main contactor failure in certain MY 2021-2022 Ford Mustang Mach-E vehicles. Consumer are alleging the software update remedy per Recall 22V-412 was not sufficient in preventing the failure, and further hardware replacements were required per TSB23-2020 or TSB22-2178 to properly remedy the failure. Some of the reports allege a loss of motive power when the failure occurred. A copy of the reports will be provided to you electronically for your review and information.

Unless otherwise stated in the text, the following definitions apply to these information requests:

- **Subject vehicles:** all MY 2021-2022 Ford Mustang Mach-E manufactured for sale or lease in the United States, including, but not limited to, the District of Columbia, and current U.S. territories and possessions. This should include any other model year Ford Mustang Mach-E vehicles that are equipped with the same subject component as the 2021-2022 Ford Mustang Mach-E.

- **Subject TSB's: 22-2178 –** Ford Technical Service Bulletin 22-2178, issued on August 01, 2022, including all revisions.
  23-2020 - Ford Technical Service Bulletin 23-2020, issued on January 26, 2023, including all revisions.

- **Subject Recall: 22V-412 –** NHTSA Recall 22V-412/Ford 22S41, issued on January 10, 2022, including all revisions.

- **Subject component:** All high voltage battery main contactors and corresponding Secondary On-Board Diagnostic Control Module (SOBDCM) and Battery Energy Control Module (BECM) software versions manufactured on the subject vehicles.

- **Alleged defect:** High voltage battery main contactor failure after completion of Subject Recall.

- **Ford:** Ford Motor Company, all of its past and present officers and employees, whether assigned to its principal offices or any of its field or other locations, including all of its divisions, subsidiaries (whether or not incorporated) and affiliated enterprises and all of their headquarters, regional, zone and other offices and their employees, and all agents, contractors, consultants, attorneys and law firms and other persons engaged directly or indirectly (e.g., employee of a consultant) by or under the control of Ford (including all business units and persons previously referred to), who are or were involved in any way as of January 1st, 2016, with any of the following related to the alleged defect in the subject vehicles:

  a. Design, engineering, analysis, modification or production (e.g. quality control);
  b. Testing, assessment or evaluation;
  c. Consideration, or recognition of potential or actual defects, reporting, record-keeping and information management, (e.g., complaints, field reports, warranty information, part sales), analysis, claims, lawsuits or arbitrations; or
  d. Communication to, from or intended for zone representatives, fleets, dealers, or other field locations, including but not limited to people who have the capacity to obtain information from dealers.

- **Document:** "Document(s)" is used in the broadest sense of the word and shall mean all original written, printed, typed, recorded, or graphic matter whatsoever, however produced or reproduced, of every kind, nature, and description, and all non-identical copies of both sides thereof, including, but not limited to, papers, letters, memoranda, correspondence, communications, electronic mail (e-mail) messages (existing in hard copy and/or in electronic storage), faxes, mailgrams, telegrams, cables, telex messages, notes, annotations, working papers, drafts, minutes, records, audio and video recordings, data, databases, other information bases, summaries, charts, tables, graphics, other visual displays, photographs, statements, interviews, opinions, reports, newspaper articles, studies, analyses, evaluations, interpretations, contracts, agreements, jottings, agendas, bulletins, notices, announcements, instructions, blueprints, drawings, as-builts, changes, manuals, publications, work schedules, journals, statistical data, desk, portable and computer calendars, appointment books, diaries, travel reports, lists, tabulations, computer printouts, data processing program libraries, data processing inputs and outputs, microfilms, microfiches, statements for services, resolutions, financial statements, governmental records, business records, personnel records, work orders, pleadings, discovery in any form, affidavits, motions, responses to discovery, all transcripts, administrative filings and all mechanical, magnetic, photographic and electronic records or recordings of any kind, including any storage media associated with computers, including, but not limited to, information on hard drives, floppy disks, backup tapes, and

zip drives, electronic communications, including but not limited to, the Internet and shall include any drafts or revisions pertaining to any of the foregoing, all other things similar to any of the foregoing, however denominated by Ford, any other data compilations from which information can be obtained, translated if necessary, into a usable form and any other documents. For purposes of this request, any document which contains any note, comment, addition, deletion, insertion, annotation, or otherwise comprises a non-identical copy of another document shall be treated as a separate document subject to production. In all cases where original and any non-identical copies are not available, "document(s)" also means any identical copies of the original and all non-identical copies thereof. Any document, record, graph, chart, film or photograph originally produced in color must be provided in color. Furnish all documents whether verified by Ford or not. If a document is not in the English language, provide both the original document and an English translation of the document.

- **Other Terms:** To the extent that they are used in these information requests, the terms "claim," "consumer complaint," "dealer field report," "field report," "fire," "fleet," "good will," "make," "model," "model year," "notice," "property damage," "property damage claim," "rollover," "type," "warranty," "warranty adjustment," and "warranty claim," whether used in singular or in plural form, have the same meaning as found in 49 C.F.R. § 579.4.

In order for my staff to evaluate the alleged defect, certain information is required. Pursuant to 49 U.S.C. § 30166, please provide numbered responses to the following information requests. Insofar as Ford has previously provided a document to ODI, Ford may produce it again or identify the document, the document submission to ODI in which it was included and the precise location in that submission where the document is located. When documents are produced, the documents shall be produced in an identified, organized manner that corresponds with the organization of this information request letter (including all individual requests and subparts). When documents are produced and the documents would not, standing alone, be self-explanatory, the production of documents shall be supplemented and accompanied by explanation.

Please repeat the applicable request verbatim above each response. After Ford's response to each request, identify the source of the information and indicate the last date the information was gathered.

1. State, by model and model year, the number of subject vehicles Ford has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Ford, state the following:
   a. Vehicle identification number (17-character VIN);
   b. Make;
   c. Model;
   d. Model Year;
   e. Subject component part number and design version installed as original equipment;
   f. Date of manufacture (MM/DD/YYYY);
   g. Date warranty coverage commenced (MM/DD/YYYY); and

h. The State in the United States where the vehicle was originally sold or leased, or delivered for sale or lease (postal abbreviation).

Provide the table in Microsoft Access 2010, or a compatible format, entitled "PRODUCTION DATA." A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

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 loss of motive power;
   e. Property damage claims; and
   f. Third-party arbitration proceedings, both pending and closed, 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 "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 "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 "f" and "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.

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), email address and telephone number (please use distinct fields for each data type);
   d. Vehicle owner or fleet street address, city, state (postal abbreviation), and ZIP code (please use distinct fields for each data type);
   e. Vehicle's 17-character VIN;
   f. Vehicle's make, model and model year (please use distinct fields for each data type);
   g. Vehicle's mileage at time of incident (numeric data type);
   h. Incident date (MM/DD/YYYY);
   i. Report or claim date (MM/DD/YYYY);
   j. Whether a crash is alleged;
   k. Whether a loss of motive power 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 2010, or a compatible format, entitled "REQUEST NUMBER TWO DATA." A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

4. Produce copies of all documents related to each item within the scope of Request No. 2. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Ford used for organizing the documents. Describe in detail the search methods and search criteria used by Ford to identify the items in response to Request No. 2.

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), email address and telephone number (please use distinct fields for each data type);
   c. Vehicle owner or fleet street address, city, state (postal abbreviation), and ZIP code (please use distinct fields for each data type);
   d. 17-character VIN;
   e. Repair date (MM/DD/YYYY);
   f. Vehicle mileage at time of repair (numeric data type);
   g. Repairing dealer's or facility's name, telephone number, city and state or ZIP code (please use distinct fields for each data type);
   h. Labor operation number(s);
   i. Problem code(s);
   j. Diagnostic trouble code(s);
   k. Replacement part number(s) and description(s);
   l. Whether the vehicle was repaired under a Subject TSB or Subject Recall, and if so, specify which campaign(s);
   m. If the HVBJB or related components was previously repaired on the vehicle, and if so, specify date(s) of previous repairs;
   n. Concern stated by customer;
   o. Cause as stated on the repair order;
   p. Correction as stated on the repair order; and
   q. 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." A pre-formatted data collection file, which provides further details regarding this submission, will be provided to you.

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.

7. 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.

8. 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.

9. 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.

10. 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.

11. 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.

12. 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; and
    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.

13. Furnish Ford's assessment of the alleged defect in the subject 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;
    f. What is Ford's assessment of the cause of failure in the VOQs alleging a loss of motive power after completion of the Subject Recall? If Ford's assessment is that this failure is **not** a result of the alleged defect, please provide the cause(s) of failure;
    g. Furnish Ford's criteria and process for evaluating whether a loss or reduction of motive power is a safety related defect, and whether Ford utilizes a risk-based evaluation tool to make safety determinations on loss or reduction of motive power;

h. The reports included with this inquiry.

14. Provide responses to each item below:
    a. Explain the differences between TSB 22-2178 and TSB 23-2020, including changes in part numbers and corresponding software updates included in the TSBs;
    b. Explain what prompted Ford to issue both Subject TSB's;
    c. Explain why the remedy in 22V-412 was a software only update and did not include the post-remedy hardware repairs as outlined in the subject TSB's;
    d. Explain why the remedies in the Subject TSB's were not issued as updates to the remedy in the Subject Recall;
    e. Provide details on the Subject Recall software remedy logic in terms of amount of reduction of both vehicle power and battery power, changes to high voltage battery charging speeds, and any other vehicle changes enacted by the recall;
    f. A summary of the tests performed that validated the remedy in the Subject Recall was sufficient in preventing the alleged defect from occurring. If the remedy was sufficient in preventing the failure, explain why both Subject TSB's address a failure in the same subject component identified in the Subject Recall;
    g. Provide all relevant information, testing, research, and communications at Ford that identified that the alleged defect, which may result in a loss of motive power event, may still occur after remedy by the Subject Recall. Describe what countermeasures were employed to mitigate and/or correct issues; and
    h. A summary of the tests and analyses performed to determine contactor failure temperature, and the maximum contactor temperature threshold allowed by the remedy in the Subject Recall.

Legal Authority for This Request

This letter is being sent to Ford pursuant to 49 U.S.C. § 30166, which authorizes NHTSA to conduct any investigation that may be necessary to enforce Chapter 301 of Title 49 and to request reports. It constitutes a new request for information.

Civil Penalties

Ford's failure to respond promptly and fully to this letter could subject Ford to civil penalties pursuant to 49 U.S.C. § 30165 or lead to an action for injunctive relief pursuant to 49 U.S.C. § 30163. (Other remedies and sanctions are available as well.) The Vehicle Safety Act, 49 U.S.C. § 30165(a)(3), provides for civil penalties of up to $26,315 per violation per day, with a maximum of $131,564,183 for a related series of daily violations, for failing or refusing to perform an act required under 49 U.S.C. § 30166. See 49 C.F.R. § 578.6(a)(3). This includes failing to respond completely, accurately, or in a timely manner to ODI information requests.

If Ford cannot respond to any specific request or subpart(s) thereof, please state the reason why it is unable to do so. If on the basis of attorney-client, attorney work product, or other privilege, Ford does not submit one or more requested documents or items of information in response to this information request, Ford must provide a privilege log identifying each document or item withheld, and stating the date, subject or title, the name and position of the person(s) from, and

the person(s) to whom it was sent, and the name and position of any other recipient (to include all carbon copies or blind carbon copies), the nature of that information or material, and the basis for the claim of privilege and why that privilege applies.

Confidential Business Information

If Ford's response contains any information that you claim is confidential business information, Ford must request two secure electronic file transfer links from Jayson Winick at jayson.winick@dot.gov. One secure electronic file transfer link is for your request for confidential treatment and will be directed to NHTSA's Office of the Chief Counsel. Please see enclosure 2 for additional instructions on submitting a request for confidential treatment that is compliant with 49 C.F.R. Part 512 (specifically, a request for confidential treatment must include the four required parts that are discussed in enclosure 2). The second secure electronic file transfer link is for your non-confidential response to this letter. Do not submit any confidential business information along with your non-confidential submission. Please refer to RQ23-004 in Ford's response to this letter and in a request for confidential treatment that Ford may submit.

Due Date

Ford's response to this letter must be submitted to this office by October 30, 2023. If Ford finds that it is unable to provide all of the information requested within the time allotted, Ford must request an extension from me at (202) 366-6178 no later than five business days before the response due date. If Ford is unable to provide all of the information requested by the original deadline, it must submit a partial response by the original deadline with whatever information Ford then has available, even if an extension has been granted.

If you have any technical questions concerning this matter, please call Jayson Winick of my staff at (202) 366-6275.

Sincerely,

Peter Kivett

Peter Kivett, Chief
VDD C Division
Office of Defects Investigation

Enclosure 1, The subject reports referenced in the introduction of this letter may be viewed at the NHTSA.gov website using the following ODI reference numbers: 11472202, 11475350, 11477025, 11479095, 11479421, 11485995, 11493140, 11510437, 11511316, 11517977, 11525550, 11526050.

Enclosure 2, Information for Requests for Confidential Treatment.

ENCLOSURE – INFORMATION FOR REQUESTS FOR CONFIDENTIAL TREATMENT

If you believe that your response contains any material that you claim is confidential business information, submit these materials to NHTSA's Office of the Chief Counsel in accordance with 49 C.F.R. Part 512. **All requests for confidential treatment must be submitted directly to the Office of the Chief Counsel. Upon request, ODI will provide you with a secure file transfer link for your submission to the Office of the Chief Counsel.**

Requests for confidential treatment are governed by Part 512. A current version of this regulation is available on the internet at http://www.ecfr.gov by selecting Title 49 "Transportation," selecting "Parts 500 – 599" and then selecting Part 512 "Confidential Business Information."

How to request confidential treatment:

NHTSA is currently treating electronic submission as an acceptable method for submitting confidential business information to the agency under Part 512. If you claim that any of the information or documents provided in your response constitutes confidential business information within the meaning of 5 U.S.C. § 552(b)(4), or are protected from disclosure pursuant to 18 U.S.C. § 1905, you must request a secure file transfer link from the ODI contact listed in your Information Request. ODI will copy a representative from the Office of the Chief Counsel on the secure file transfer link for your request for confidential treatment. You must submit supporting information together with the materials that are the subject of the confidentiality request, in accordance with Part 512, to the Office of the Chief Counsel. Do not send a hardcopy of a request for confidential treatment to NHTSA's headquarters.

Your request must include a request letter that contains supporting information, pursuant to Part 512.8. Your request must also include a certificate, pursuant to Part 512.4(b) and Part 512, Appendix A.

You are required to submit one unredacted "confidential version" of the information for which you are seeking confidential treatment. Pursuant to Part 512.6, the words "ENTIRE PAGE CONFIDENTIAL BUSINESS INFORMATION" or "CONFIDENTIAL BUSINESS INFORMATION CONTAINED WITHIN BRACKETS" (as applicable) must appear at the top of each page containing information claimed to be confidential. In the latter situation, where not all information on the page is claimed to be confidential, identify each item of information for which confidentiality is requested within brackets: "[ ]."

You are also required to submit one redacted "public version" of the information for which you are seeking confidential treatment. Pursuant to Part 512.5(a)(2), the redacted "public version" should include redactions of any information for which you are seeking confidential treatment (i.e., the only information that should be unredacted is information for which you are **not** seeking confidential treatment).

For questions about a request for confidential treatment, please contact Dan Rabinovitz in the Office of the Chief Counsel at Daniel.Rabinovitz@dot.gov or (202)366-8534.