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

NHTSA

July 2, 2026

Eddie Gates
Tesla, Inc.
45500 Fremont Blvd
Fremont, CA 94538

Subject: Information Request ID EA26002-01

Dear Mr. Gates,

This letter is to inform you that the Office of Defects Investigation (ODI) of the National Highway Traffic Safety Administration (NHTSA) has upgraded PE24031 to an Engineering Analysis (EA26002) and is requesting additional information from Tesla, Inc. (Tesla). This added information will support ODI's continued investigation of FSD-equipped vehicles manufactured by Tesla and FSD's potential failure to detect and alert the driver with sufficient time to respond in specific situations where the vehicle encounters reduced roadway visibility that degrades FSD's performance. This investigation and information request also aim to gather information on and assess relevant system capabilities, design strategies, testing activities, and implementation timelines.

To ensure the completeness of the agency's ongoing defect investigation, ODI seeks clarification, additional information, and supporting documentation on the adequacy of FSD's ability to detect and alert the driver to reduced visibility conditions stemming from environmental conditions relatively common during vehicle operation, such as glare, fog, and airborne dust. This information and material are necessary to evaluate the effect of any FSD updates on degradation detection and driver alerts, Tesla's basis for and circumstances of developing these updates, and the design changes' relevance to the nine crashes currently under investigation. Circumstances reported in the nine crashes indicate that the drivers may have been unaware that the vehicles they were operating had encountered conditions that inhibited FSD's ability to detect and respond to potential hazards or that they were responsible for intervention to avert those hazards. This investigation will continue to consider the adequacy of the feedback and information that Tesla and FSD provide to drivers to enable them to make timely driving decisions at all times and, particularly, when FSD's capability has been exceeded.

This letter lists the SGO reference numbers when available, corresponding to the nine known related crashes and requests certain information from Tesla.

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

- **OEDR:** Object and event detection and response or the subtasks of the dynamic driving task (DDT)[1] that include monitoring the driving environment (detecting, recognizing, and classifying objects and events and preparing to respond as needed) and executing an appropriate response to such objects and events (i.e., as needed to complete the DDT and/or DDT fallback).[2]

- **Subject System:** All versions of Tesla's "Full Self-Driving"-Beta and "Full Self-Driving"-Supervised partial automation system (hardware and software), also referred to as FSD or Autosteer on City Streets, deployed for use in Tesla-manufactured vehicles on public roadways within the United States, including its possessions and territories.

- **Subject Vehicles:** All Tesla vehicles manufactured for sale or lease that have ever had the subject system activated in the United States, including, but not limited to, the District of Columbia, and current U.S. territories and possessions.

- **Crash:** Incidents in which there is a physical impact between a vehicle and another road user (vehicle, pedestrian, cyclist, etc.) or property that results or allegedly results in any property damage, injury, or fatality. For purposes of this Information Request, a subject vehicle is involved in a crash if it physically impacts another road user or if it contributes or is alleged to contribute (by steering, braking, acceleration, or other operational performance) to another vehicle's physical impact with another road user or property involved in that crash.

- **Reduced Visibility Conditions:** Circumstances that the vehicle cannot clear[3] such as airborne obscurants or light sources that inhibit the vehicle partial automation system from properly classifying objects or the pathway ahead.

- **Subject Crashes:** Incidents in which subject vehicles are involved in a crash in the United States (including any of its territories) where reduced visibility conditions are present (including those detected by the subject vehicle, those identified in post-incident assessments, and/or allegations made by consumers) with the subject system engaged at any time during the period beginning 15 seconds immediately prior to the commencement of the crash through the conclusion of the crash event.

- **Alleged Defect:** Failure of FSD's degradation detection system, when encountering reduced roadway visibility conditions, to detect a degraded state and to warn the driver appropriately.

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[1] "DDT" means the same as and is coterminous with the definition of "Dynamic Driving Task" in SAE J3016, Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles § 3.13 (April 2021).

[2] "OEDR" means the same as and is coterminous with the definition of "Object and Event Detection and Response" in SAE J3016, Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles § 3.20 (April 2021).

[3] Some conditions such as general rain and darkness may be cleared by the vehicle with use of windshield wipers and headlights respectively. Light sources into the camera sensor may be addressed with exposure compensation.

- **Tesla:** Tesla, Inc., 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 Tesla (including all business units and persons previously referred to), who are or were involved in any way as of or after January 1, 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 Tesla, 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 Tesla 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.

For my staff to be able 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.

Provide copies of all documents responsive to the requests, regardless of whether the documents are in interim, draft, or final form, and organize the documents chronologically.

For all documents submitted in Tesla's response, ensure that the metadata is submitted, including (at minimum) the original creation date, author(s), modification history, file path, and associated project/version tags. If such metadata is not preserved in PDF or image renderings, include a separate metadata index file listing these details for each document.

For certain requests, a pre-formatted data collection file will be provided for use in your listing of relevant metadata for each responsive document submitted.

Insofar as Tesla has previously provided a document to ODI, Tesla 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 Tesla'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 Tesla has manufactured for sale or lease in the United States. Separately, for each Subject Vehicle manufactured to date by Tesla, state the following:

   a. Vehicle identification number (17-character VIN);
   b. Model;
   c. Model Year;
   d. Date of manufacture (MM/DD/YYYY);
   e. Date warranty coverage commenced (MM/DD/YYYY);
   f. The State in the United States where the vehicle was originally sold or leased or delivered for sale or lease (postal abbreviation);
   g. Whether the vehicle has an active FSD-Supervised subscription as of June 1, 2026; and
   h. The Subject System Hardware version as of June 1, 2026.

2. Provide the cumulative mileage covered by Tesla vehicles by month starting on the first day of each month, since July 1, 2024, based on the following criteria:

   a. Total mileage by each driving mode (FSD, Autopilot, Navigate on Autopilot, TACC, manual driving) and vehicle model.

3. Provide the following on Tesla's development, integration, evaluation, and deployment of the Direct Photon-Count Capability update the Subject Vehicles as referenced in Q1 2025 Tesla Earnings Call by a Tesla representative:

   a. A technical description of the Direct Photon-Count Capability system including the extent to which it mitigates or eliminates conditions that affect the camera-based OEDR system, such as glare;
   b. The specific hardware versions that:
      i. Have this update active;
      ii. Are capable of utilizing this update; and/or
      iii. Are intended for future deployment of the update;

   c. The specific FSD release versions that:
      i. Have this update active;
      ii. Are capable of utilizing this update; and/or
      iii. Are intended for future deployment of the update;

   d. Differences in the update's capability corresponding to differing vehicle hardware versions;
   e. Copies of all projects, assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations related to direct photon-counting capability in reduced visibility conditions, including titles, dates (both start and completion), and responsible engineering teams;
   f. Copies of all documentation, including but not limited to, internal communications generated in the development of direct photon-counting as a strategy to mitigate known or anticipated limitations in perception under reduced visibility conditions;
   g. A list of any software or firmware updates in which direct photon-counting was activated, tested or otherwise deployed in the field with FSD version numbers, deployment dates and applicable vehicle configurations.

4. In Tesla's response to Information Request PE24031-01, Tesla submitted a document titled ["Radar Saves Us"]. This document appears particularly relevant to related design changes to the degradation detection system and Tesla's understanding of the limitations imposed by a vision-only OEDR system and how they relate to the reduced visibility conditions that the Subject Vehicles encountered in each of the nine (9) countable crashes included in this investigation. Provide copies of all materials related to the ["Radar Saves Us"] document including but not limited to:

   a. All internal communications referencing or discussing the justification for, the development of, or the review of the ["Radar Saves Us"] document, including but not limited to emails, meetings, meeting notes, Teams conversations, JIRA tickets;
   b. All supporting technical documentation, internal reports, or safety assessments associated with the information described in the ["Radar Saves Us"] document;
   c. All test records and validation work that related to the information included in the ["Radar Saves Us"] document;

i. If any data or records were sourced from a separate system or dataset, identify the original source and provide the associated context; and

d. An explanation of the document's relationship to any design changes affecting the alleged defect.

Each document submitted should be clearly labeled and accompanied by a brief summary describing it relevance and relationship to the ["Radar Saves Us"] document.

5. Tesla uses the term "regressions" frequently as a metric in its internal documentation in reference to system performance in contexts relevant to the degradation detection system. Details on how the term is defined and how it relates to Tesla's testing and validation processes will provide information on the performance of Tesla's degradation detection system. Provide the following:

   a. The definition of "regressions" within the context of the Subject System in the Subject Vehicles:
      i. Clarify whether the definition or formula used to identify or measure "regressions" has evolved over time;
      ii. Provide the current definition or criteria used to identify "regressions" in system performance; and
      iii. Provide, if any exist, prior definitions used to historically of the term or metric;

   b. Any documentation or internal validation efforts conducted before or after the transition to a vision-only system in 2021, specifically in reduced visibility conditions;
   c. Provide comparisons of system performance, if they exist, across versions or configurations;
   d. Provide definitions and the means to calculate any metric used for these comparisons.

6. The OEDR strategy employed, and the related sensor modalities used, relate to the degradation detection system's ability to detect reduced visibility conditions. For each version of the Subject System's OEDR strategies from 2020 through 2026, describe the role that the Subject System's hardware (including but not limited to cameras and other sensors) plays in the Subject System's OEDR.

7. To provide an understanding of the triggering conditions for the degradation detection system, describe the Subject System's expected capabilities and limitations regarding reduced visibility conditions. Provide the following for each OEDR strategy identified in your response to Request No. 6:

   a. Describe what, if any, reduced visibility conditions may diminish the Subject System's ability to detect and project a path forward;
   b. Describe what, if any, reduced visibility conditions the system will recognize and maintain system engagement;
   c. Describe what, if any, reduced visibility conditions the system will recognize and disengage the system, handing over control to the driver. If the response differs based on the severity of the identified condition, provide the known differentiating factors or environmental parameters that contribute to the response determination. For each condition and condition severity identified, provide the following:
      i. The time interval between when an obscurity first comes into view and when the system recognizes the presence of the reduced visibility condition that may degrade sensing conditions. Include a description of how the system identifies the obscurity (confidence scores, sensor status monitoring, etc.);

ii. The time interval between when the system recognizes the presence of the reduced visibility condition that may degrade sensing conditions and the system's decision to maintain engagement or to disengage;
iii. The time interval between initial detection of a reduced visibility condition that may degrade the performance of the system and any corresponding system generated alerts to the driver;
iv. The time interval between the issuance of an alert and the system disengagement;
v. A description of any vehicle control actions initiated at or before disengagement, including but not limited to deceleration, braking, or steering;

d. Describe what, if any, reduced visibility conditions the system cannot recognize.

8. For the Subject System and the hardware item(s) identified in Request No. 6, provide the following performance metrics in each of the environmental conditions listed below to illustrate the system's operating envelope and its alignment with reduced visibility conditions. If such performance metrics do not exist, provide any comparable testing or validation data used to assess system or sensor performance in these conditions. If no such comparable data is available, describe in detail how the system's detection and measurement performance is expected to differ from the baseline (ideal) condition, including the basis for that understanding.

   For conditions that may vary in severity level of obscurity, provide the known environmental parameters for which the requested performance metrics are available (e.g. visibility range, fog density, etc.).

   a. Operating range (wavelength, frequency);
   b. Maximum detection distance;
      i. Nominal conditions (Clear, well-lit);
      ii. Fog;
      iii. Smoke;
      iv. Glare / direct sunlight;

   c. Maximum classification distance;
      i. Nominal conditions (Clear, well-lit);
      ii. Fog;
      iii. Smoke;
      iv. Glare/direct sunlight;
   d. Relative velocity measurement accuracy;
      i. Nominal conditions (Clear, well-lit);
      ii. Fog;
      iii. Smoke;
      iv. Glare/direct sunlight.

9. For all Subject Crashes in which the Subject System was engaged at any time during the period beginning 15 seconds immediately prior to the commencement of the crash through the conclusion of the crash event, provide the following information;

   a. Vehicle Identification Number (17-character VIN);
   b. Incident date and time;
   c. Location of the crash (city, state, latitude, longitude);
   d. Road class type;
   e. SGO Number, if any;
   f. FSD version number of each Subject Vehicle at the time of the incident;

g. Firmware at the time of the incident;
h. Indicate whether the following updates / capabilities were installed on the Subject Vehicle at the time of the crash;
   i. ‘Vision Failsafe Ranker’;
   ii. ‘Direct Photon Count Capability’;
i. Provide an assessment as to whether the 'Direct Photon Count Capability' would have improved object detection and the system's response;
   i. If this is not possible, provide an explanation;
j. Number and types of alerts related to degraded visibility in the drive cycle that included the Subject Crash organized by the following types:
   i. Visual;
   ii. Visual + Audible;
   iii. Non-Driver Facing;
k. Time interval between last alert related to degraded visibility and crash detection;
l. Subject Vehicle speed at impact; and
m. List and provide the available documents related to this incident including but not limited to:
   i. EDR;
   ii. CAN logs;
   iii. Video/imagery;
   iv. PAR;
   v. Consumer complaints;
   vi. Any other data source containing fields that may include relevant information pertaining to vehicle control, driver engagement, OEDR performance, and the system’s projected or intended path forward.

Videos requested include vehicle videos (annotated and non-annotated), simulated recreations of the visualization that would have been displayed on the in-vehicle UI immediately prior to and during the incident, and graphical renderings of the subject system’s planned path including relevant road users

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10. Provide copies of 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 Tesla. Additionally, include any other such actions not previously submitted to the agency in accordance with Information Request ID PE24031-01. This includes those involving the development, implementation, or evaluation of direct photon counting techniques referenced publicly by Tesla in Q1 of 2025. 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. A brief summary of the subject and objective of the action;
    e. Engineering group(s) / supplier(s) responsible for designing and for conducting the action;
    f. A brief summary of the findings and/or conclusions resulting from the action and the source or cause that lead to the initiation of the action (e.g. internal performance concern, post-crash analysis, filed reports, safety review, or management directive).

11. Describe all modifications, changes, and updates made by, or on behalf of Tesla in the design, firmware, software, material composition, manufacture, quality control, supply, function, or installation of the Subject System that relates to or may relate to the Alleged Defect in the Subject Vehicles. Additionally, include any other such modifications, changes, or updates that have not previously been submitted to the agency in accordance with Information Request ID PE24031-01. This includes those involving the development, implementation, or evaluation of direct photon-counting techniques and the improved camera cleaning handling of occlusions referenced in FSD update public release notes by Tesla in December 2024 (FSD Version 13.2.1). For each such modification, change, or update provide, the following information:

    a. Action title or identifier;
    b. The date or approximate date on which the modification, change, or update was incorporated into vehicle production;
    c. A detailed description of the modification, change, or update;
    d. The reason(s), and their origin, for the modification, change, or update;
        i. Provide supporting documentation, including any internal analyses, recommendations, meeting notes, communications, or approvals that contributed to or justified the modification, change, or update;
    e. A detailed description of how the modification, change, or update relates to the Subject Crashes and the Alleged Defect;
    f. Tesla's assessment regarding the safety implications of the modification, change, or update including supporting engineering and safety assessment, evidence and any other information;
        i. Describe in detail Tesla’s assessment regarding any safety implications;
        ii. The expected crash rate reduction related to the modification, change, or update;
        iii. The actual crash rate reduction, if any, resulting from the modification, change, or update;
    g. The hardware, firmware, and software names and numbers of the original version of the Subject System;
    h. The hardware, firmware, and software names and numbers of the modified, changed, or updated version of the Subject System;
    i. Primary distribution method of related firmware and software updates (e.g. over the air or in person service);
    j. When the modified version / update was made available as a service component; and
    k. State whether Tesla intends to file a safety recall pursuant to 49 U.S.C. § 30118 covering each modification, change, and update. If not, please furnish Tesla's technical and/or legal basis for declining to do so.

    Also, provide the above information for any modification or change that Tesla is aware of which may be incorporated into vehicle production or pushed into Subject Vehicles in the field within the next 120 days.

12. To understand the interaction between the driver and the degradation detection system, including that the driver is prepared and supported by the system to respond when necessary, ODI has identified the following examples for clarification, sourced from Tesla's website, public statements, videos created and posted by Tesla, and other publicly available content. For each representative example identified in the subset below, respond to each of the following subrequests;

a. Is this example accurate and consistent with the system's intended capabilities as designed?
b. Is this example accurate and consistent with the system's demonstrated capabilities in testing or deployment?
c. Does this example imply a higher level of capability or automation than the system currently has?
d. Have steps been taken, or are steps planned, to revise or clarify this example in order to reduce the potential for misunderstanding or misuse?

Examples for Request 12:

1. Tesla.com – "FSD (Supervised) – Drives for You[3]" referencing a footnote in smaller print at the bottom of the page that states active supervision is required and that FSD (Supervised) does "not make the vehicle autonomous"
    - *https://www.tesla.com/fsd*
2. Tesla on X.com: "FSD Supervised is effectively point-to-point autonomous transport in your own car"
    - *https://x.com/Tesla/status/1989904779133567298*
3. Tesla on X.com: "Imagine never stressing about rush hour traffic, random construction or annoying detours ever again – what if your car drove you … not the other way around – That's what FSD Supervised does – It works *anywhere* it's available – (not just on one highway at noon in July in perfect conditions)"
    - *https://x.com/Tesla/status/1953719615525151191*
4. Elon Musk on X.com: "Depending on context of surrounding traffic, yes" – In response to another post that states "Wait… am I able to text and drive on FSD v14.2.1??? I've been on my phone for an extended period of time…"
    - *https://x.com/elonmusk/status/1996631421449072754*
5. Tesla on X.com: "FSD Supervised can drive in whiteout conditions" – in response to another post with a video showing FSD Supervised in use in a reduced visibility condition where the driver records the roadway with a camera or phone inside the cabin.
    - *https://x.com/Tesla/status/2014166644721926654*
6. Tesla on X.com: "FSD Supervised isn't limited to select highways or specific conditions – it works wherever it's available"
    - *https://x.com/Tesla/status/2038379200760156279*
7. Elon Musk on X.com: "Tesla FSD can operate in all conditions" – In response to another post accompanied by a video that states FSD struggles in fog, rain, and direct sunlight.
    - *https://x.com/elonmusk/status/1934634683792515473*

8. Tesla on X.com: “Over 50 years, you might drive half a million miles – our global fleet collectively does that every 3.5 minutes – This means FSD can react safely to whatever strange scenario you encounter, no matter how rare”

    - *https://x.com/Tesla/status/1844579073223246029*

9. Tesla on X.com: “Using FSD Supervised where available makes it even safer”

    - *https://x.com/Tesla/status/1937470661896868133*

10. Tesla on X.com: “FSD” – with an image that states “A computer can never get sleepy therefore a computer must make all driving decisions” – followed by another post from Tesla listing FSD Supervised statistics.

    - *https://x.com/Tesla/status/1988798150317076623*

11. Elon Musk on X.com: “This will substantially reduce the need for driver attention…” in reference to a FSD Supervised update.

    - *https://x.com/elonmusk/status/1953775671723147570*

12. Tesla on X.com: “FSD Supervised gives you back time & energy…” – Accompanied by a video featuring drivers utilizing FSD supervised while dancing, interacting with coffee makers or other objects within the vehicle, and moving the seat back putting the steering wheel out of reach.

    - *https://x.com/Tesla/status/1940775728452456829*

13. Elon Musk on X.com: “This is so cool – Make your espresso on the road while your Tesla drives itself” – Accompanied by a video showing a disengaged driver utilizing an espresso machine, drinking the espresso, sitting with legs crossed away from the accelerator and brake pedals, leaning the seat back putting the steering wheel out of reach and stating “I think I can even take a nap” while FSD Supervised is engaged.

    - *https://x.com/elonmusk/status/1924836661440962603*

14. Tesla on X.com: “For $99/month, your Tesla becomes your own @Robotaxi under your supervision” – Citing the FSD Supervised price point while stating that the vehicle will become a ‘robotaxi’ and providing a link to Tesla’s “Robotaxi” profile devoted to its FSD Unsupervised system.

    - *https://x.com/Tesla/status/1940775967179657650*

15. Tesla on X.com: “Real-world AI means that FSD Supervised can interpret & adapt to unexpected scenarios in real-time” – In response to a video showing FSD Supervised navigate around an emergency vehicle.

    - *https://x.com/Tesla/status/1920837091958640986*

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13. Provide a detailed description of the driver engagement strategy employed by the subject system as it relates to the driver’s readiness to intervene when necessary, during reduced

visibility conditions. Include previous iterations of the driver engagement strategy as related to reduced visibility conditions leading up to and including the current strategy.

a. Provide a list of driver-facing alerts and include:
    i. Type (e.g. visual, audible, haptic);
        1. If the alert is presented visually or audibly, include an image or audio file of the alert;

    ii. Conditions that trigger the alert;
    iii. System decision threshold on the confidence value that triggers the alert;
    iv. Alert specifications (font size, color, decibels, frequency, location, duration);
    v. Whether the alert can be suppressed (e.g. swiped away, turned off);
        1. If so, include the motivation and all internal documents or studies that support that motivation;

b. For each alert identified in Request 13a, list any human factors studies or considerations that contributed to the design; and
c. For each driver engagement strategy iteration, include the motivation for the change.

Include copies of all related internal communications, studies, assessments, analyses, evaluations, and tests

14. For each change made to the alerts or warnings related to the degradation detection system, including but not limited to the update in 2024 that changed the "FSD Degraded" alert coloring from red to yellow and removed the audible chime, provide the contributing factors that led to that decision including any metrics used and any associated studies, testing, or assessments conducted on the impact to safety and the driver's ability to recognize and respond to the need for intervention.

15. For the updates listed below, provide the following information regarding their development and any related testing or training:

    a. Legacy Vision Failsafe:
        i. Include the following information on the dataset and its characteristics:
            1. The training, test and validation dataset size;
            2. The number of instances in the training, validation and test datasets that represent environmental conditions or scene tags linked to the known crash scenarios (fog, glare, airborne dust);
            3. Dates where the dataset was expanded or changed;

        ii. Include the following performance characteristics. Provide dates and rationale (including target performance metrics) if adjustments were made;
            1. Counts of true positives, false positives, true negatives, false negatives;
            2. Classification threshold / cutoff point;
            3. Whether the failsafe triggers / classification thresholds / cutoff points were adjusted as a result of the photon count development / deployment;

        iii. Provide a sample of the training data;
            1. Include 10 randomly selected examples of each condition / scene tag that results in a failsafe trigger;

    b. Vision Failsafe Ranker

i. Include the following information on the dataset and its characteristics:
   1. The training, test and validation dataset size;
   2. The number of instances in the training, validation and test datasets that represent environmental conditions or scene tags linked to the known crash scenarios (fog, glare, airborne dust);
   3. Dates where the dataset was expanded or changed;

ii. Include the following performance characteristics. Provide dates and rationale (including target performance metrics) if adjustments were made;
   1. Counts of true positives, false positives, true negatives, false negatives;
   2. Classification threshold / cutoff point;
   3. Whether the failsafe triggers / classification thresholds / cutoff points were adjusted as a result of the photon count development / deployment;

iii. Provide a sample of the training data;
   1. Include 10 randomly selected examples of each condition / scene tag that results in a failsafe trigger;

16. For updates to the subject system released to public on or after April 1, 2023, provide detailed information on any changes, modifications, or improvements implemented to reduce false positive detections and associated false positive braking or slowdown events related to reduced visibility conditions. For each update, provide the following:

    a. FSD Version;
    b. Field release date;
    c. Description of the change, modification, or improvement;
    d. Description of the technical approach used (threshold tuning, dataset expansion, improved labeling, etc.);
    e. Validation metrics (true positive, false positive, false negative, true negative counts);
    f. Evaluation conditions used to validate the changes;
    g. Describe any tradeoffs observed resulting from these modifications (changes in false negative or true positive rates); and
    h. Documentation of any internal or external studies or assessments supporting the effectiveness of these changes.

17. Describe in detail the software logic and/or algorithms utilized in the detection and classification of degraded visibility for the subject vehicle when the subject system is engaged.

18. Provide a list of all manners, including all written materials, in which subject system capabilities and limitations, as it relates to reduced visibility conditions, are communicated to the consumer, both prior to and during vehicle ownership, and both prior to and during operation of the subject system. Separately, provide all documents related to each listed manner of communication with appropriate subsections and/or page numbers identified.

19. Furnish Tesla's assessment of the degree to which consumers' expectations and understanding of subject system capabilities and limitations in reduced visibility conditions meet actual subject system capabilities and limitations in reduced visibility conditions. Separately, provide all documents pertaining to analysis, research, data, and testing used by Tesla to evaluate consumers' understanding of subject system capabilities and limitations, both prior to and during vehicle ownership.

20. Identify all acceptable positions where drivers can place their hands and all acceptable activities that drivers may participate in while operating the subject system.

21. Furnish Tesla's assessment of the effect of the placement of a driver's hands and the participation in listed activities on their ability to intervene when required and take action when reduced visibility conditions are encountered. Separately, provide all analysis (whether in interim, draft, or final form), research, data, and testing used to evaluate driver reaction times when intervention is required while operating the subject system. For all provided human factors studies, identify the human subject recruitment criteria.

22. Furnish Tesla's assessment of the subject system's impact on the human perception action loop and how driver engagement is supported, encouraged, and assessed via system design, including but not limited to the driver monitoring system (including both assessment and alerting metrics).

23. Furnish Tesla's assessment of the subject system's ability to support and maintain driver engagement within the human perception-action loop, independent of the driver monitoring system. Specifically, describe how system design considerations and features provide implicit and explicit feedback that support and encourage driver engagement when the driver monitoring system is not actively alerting the driver.

24. Furnish a list of all forms of potential misuse or abuse that were considered in the development of the subject system. Separately, for all listed forms of potential misuse or abuse, provide all mitigation strategies implemented to encourage appropriate driver behavior.

Legal Authority for This Request

This letter is being sent to Tesla 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

Tesla's failure to respond promptly and fully to this letter could subject Tesla 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 $27,874 per violation per day, with a maximum of $139,356,994 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 Tesla 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, Tesla does not submit one or more requested documents or items of information in response to this information request, Tesla 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 Tesla's response contains any information that you claim is confidential business information (CBI), you will need to upload a "confidential version" file and a redacted "public version" file of each file for which Tesla is requesting confidential treatment to NHTSA's Safety Defect Investigations (SDI) Portal. For each file submitted through the SDI Portal for which Tesla is requesting confidential treatment, Tesla must check the "Contains CBI" box. Once all Tesla's files have been uploaded in the SDI Portal, Tesla will need to click on the "Finalize CBI Submission" button in the SDI Portal and then submit its request letter for confidential treatment and Part 512 certification directly to the Office of the Chief Counsel in NHTSA's Confidential Business Information (CBI) Portal.

After Tesla submits its request for confidential treatment and certificate in NHTSA's CBI Portal, the CBI Portal will assign a package identification number for your future reference and all "confidential version" and "public version" files submitted as part of the CBI request will be accessible by both NHTSA's Office of the Chief Counsel and NHTSA's Office of Defects Investigation.

Please refer to EA26002-01 in Tesla's response to this letter and in any request for confidential treatment that Tesla may submit in response to this letter.

Please see enclosure 1 for additional instructions on submitting a request for confidential treatment that is compliant with 49 CFR Part 512 (specifically, a request for confidential treatment must include the required parts that are discussed in enclosure 1).

Due Date

Tesla's response to this letter must be submitted to this office by August 12, 2026. If Tesla finds that it is unable to provide all of the information requested within the time allotted, Tesla must request an extension from me through the Safety Defects Investigation Portal no later than five business days before the response due date. If Tesla 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 Tesla then has available, even if an extension has been granted.

If you have any technical questions concerning this matter, please email Joseph Geissler of my staff at joseph.geissler@dot.gov.

Sincerely,

Tanya Topka

Tanya Topka, Director
Office of Defects Investigation

ENCLOSURE 1 - 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 should be submitted directly to the Office of the Chief Counsel via NHTSA's Confidential Business Information (CBI) Portal. If you do not currently have a user account in the CBI Portal, you may send a registration request to the CBI Portal's Help Desk at** cbi-helpdesk@dot.gov.

Prior to directly submitting your request for confidential treatment to the Office of the Chief Counsel in the CBI Portal, you will need to upload all "confidential version" and "public version" files in NHTSA's Safety Defect Investigations (SDI) Portal.

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," next selecting "Parts 500 - 599," and finally selecting Part 512 "Confidential Business Information."

How to request confidential treatment:

NHTSA is 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 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. Requests for confidential treatment should be submitted to the Office of the Chief Counsel in NHTSA's CBI Portal. 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.

Enclosure 2, The subject reports referenced in the introduction of this letter may be viewed at the NHTSA.gov website using the following SGO Report Numbers: 13781-8004, 13781-7181, 13781-7381, 13781-7767, 13781-7964, 13781-8977, 13781-9267