



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

MAR 1 2011

1200 New Jersey Avenue SE.
Washington, DC 20590

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Vinnie Venugopal,
General Manager-Quality Control
Toyota Motor North America, Inc
601 Thirteen Street, NW, Suite 910
Washington, DC 20005

NVS-213krh
PE11-005

Dear Mr. Venugopal:

This letter is to inform you that the Office of Defects Investigation (ODI) of the National Highway Traffic Safety Administration (NHTSA) has opened a Preliminary Evaluation (PE11-005) to investigate allegations of inverter/converter failure causing a stalling condition in MY 2006 Toyota Highlander HEV vehicles manufactured by Toyota Motor North America, Inc, and to request certain information.

This office has received 32 reports of inverter/converter failures in MY 2006 Toyota Highlander HEV vehicles. All the complaints allege incidents of engine stall while driving and without warnings. Approximately two-third (21) of the incidents occurred at speeds of 40 miles per hour or more. A Preliminary Evaluation has been opened to assess the scope, frequency and potential safety consequences associated with the alleged defect. A copy of each of the reports is enclosed for your information.

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

- **Subject vehicles:** all MY 2006 Toyota Highlander HEV vehicles manufactured for sale or lease in the United States and federalized territories.
- **Subject component:** all inverters and converters systems and supporting systems (e.g., cooling, software, etc.) manufactured on the subject vehicles.
- **Subject bulletins:** Technical Service Bulletin T-SB-0386-08.
- **Toyota:** Toyota Motor North America, Inc, Toyota Motor Corporation, 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 Toyota (including all business units and persons previously referred to), who are or, in or after January 1, 2000, were involved in any way 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, or lawsuits; 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.
- **Alleged defect:** Hybrid propulsion system failure causing a vehicle stall.
 - **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 Toyota, 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 Toyota 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 CFR 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 Toyota has previously provided a document to ODI, Toyota 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 Toyota’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 Toyota has manufactured for sale or lease in the United States and federalized territories. Separately, for each subject vehicle manufactured to date by Toyota, state the following:
 - a. Vehicle identification number (VIN);
 - b. Model;
 - c. Model Year;
 - d. Date of manufacture;
 - e. Date warranty coverage commenced; and
 - f. The State in the United States, or the federalized territory, where the vehicle was originally sold or leased (or delivered for sale or lease).

Provide the table in Microsoft Access 2003, 2007, or a compatible format, entitled “PRODUCTION DATA.”

2. State, by model and model year, the number of subject vehicles Toyota has manufactured for sale or lease in the United States and federalized territories for which Toyota has sold an extended service plan. For vehicles with more than one extended service plan, list the vehicle separately for each plan. Separately, for each vehicle, state the following:
 - a. Vehicle Identification number (VIN);
 - b. Model;
 - c. Model Year;

- d. Name of extended service plan;
- e. Mileage at which the extended service plan expires; and
- f. Number of months from the warranty start date at which the extended service plan expires.

Provide the table in Microsoft Access 2003, 2007, or a compatible format, entitled "SERVICE PLAN DATA."

3. State the number of each of the following, received by Toyota, or of which Toyota 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, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
 - d. Reports involving a fire, based on claims against the manufacturer involving a death or injury, notices received by the manufacturer alleging or proving that a death or injury was caused by a possible defect in a subject vehicle, property damage claims, consumer complaints, or field reports;
 - e. Property damage claims;
 - f. Third-party arbitration proceedings where Toyota is or was a party to the arbitration; and
 - g. Lawsuits, both pending and closed, in which Toyota is or was a defendant or codefendant.

For subparts "a" through "e," 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 Toyota'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.

4. Separately, for each item (complaint, report, claim, notice, or matter) within the scope of your response to Request No. 3, state the following information:
 - a. Toyota's file number or other identifier used;
 - b. The category of the item, as identified in Request No. 3 (i.e., consumer complaint, field report, etc.);
 - c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
 - d. Vehicle's VIN;
 - e. Vehicle's model and model year;
 - f. Vehicle's mileage at time of incident;

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

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "REQUEST NUMBER THREE DATA."

- 5. Produce copies of all documents related to each item within the scope of Request No. 3. Organize the documents separately by category (i.e., consumer complaints, field reports, etc.) and describe the method Toyota used for organizing the documents.
- 6. State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Toyota 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. Toyota's claim number and total cost per claim;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. VIN;
- d. Repair date;
- e. Vehicle mileage at time of repair;
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number;
- h. Problem code;
- i. Replacement part number(s) and description(s);
- j. Concern stated by customer;
- k. Cause and Correction stated by dealer/technician; and
- l. Additional comments, if any, by dealer/technician relating to claim and/or repair.

Provide this information in Microsoft Access 2003 or 2007, or a compatible format, entitled "WARRANTY DATA."

Describe in detail the search criteria used by Toyota to identify the claims identified in response to Request No. 6, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the alleged defect in the subject vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by Toyota 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 Toyota 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. Describe any extended warranty coverage option(s) that Ford offered for the subject vehicles..

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 Toyota 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 Toyota is planning to issue within the next 120 days.
8. Provide the following information regarding the subject bulletin:
 - a. A chronology of events related to the issuance of the bulletin, including a detailed description of when and how Toyota first recognized the concerns described in the bulletins, what actions were taken to investigate the concern and all meetings conducted to review the concerns and make the decision to issue the bulletins and each revision thereof;
 - b. All 8-D reports or any equivalent technical investigations and final reports associated with TSB-0386-08; and
 - c. Copies of all documents related to investigation and review of the concerns addressed by the subject bulletins, including all material presented at all meetings conducted to review the investigation and analysis of field data (e.g., complaints, field reports, and warranty data), the development of the correction, predicted failure rates, and the potential safety consequences.
9. Describe all modifications or changes made by, or on behalf of, Toyota 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

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

10. Produce the following:
 - a. One sample of a new inverter/converter assembly; and
 - b. One field return sample of the subject component exhibiting the subject failure mode.

11. Provide a graphical overview of the Toyota highlander hybrid propulsion system detailing gasoline and electric motor engagement relative to vehicle speed, acceleration, and battery state of charge (SOC). Describe electric motor failure modes effect on overall vehicle propulsion systems. Also describe the effect of engine limb or corresponding modes on overall vehicle propulsion systems.
12. For MY2006 inverter and converter integrated system architecture, provide the following:
 - a. Toyota complete system specification requirements document;
 - b. Supplier system specification requirements and software requirements documents;
 - c. Toyota system vehicle test requirements document;
 - d. Supplier system test requirements document;
 - e. System DRBFM and fault tree for inverter/converter in PDF or Microsoft excel;
 - f. System DRBFM and fault tree for inverter/converter for MY2009 if modified from MY2006; and
 - g. System DV and PV test plan, DV/PV test matrix and final DV and PV test report for MY 2006.
13. Provide complete hardware architecture and complete PDF schematics for the inverter/converter system. List and briefly describe all software diagnostics routines performed. Also provide the following:
 - a. A Bill of Material (BOM) including part numbers, component description, component quantity in system, and supplier names for each and every component in the inverter/converter system; and
 - b. List all silicon ICs including ASIC (application specific integrated circuits) in the system including part numbers and suppliers. Proprietary and non-proprietary IC specifications for all system power supplies and power regulators must be submitted.
14. Describe in detail inverter/converter cooling architecture including cooling pump, cooling fluid, thermal exchanges, pump control...etc. List and detail all software fault diagnostics routines. Also provide the following:
 - a. Describe cooling fluid characteristics, selection criteria and ionization properties; and
 - b. Pump datasheet and specifications must be submitted.
15. For the traction motor(s)/generator(s) control module, provide the following:
 - a. A Bill of Material (BOM) including part numbers, component description, component quantity in system, and supplier names for each and every component in the system;
 - b. A hardware block diagram architecture and PDF schematics including IC function, part numbers and suppliers;
 - c. List and briefly describe all diagnostics routines performed in the motor control module including diagnostics performed on the traction motor(s)/generator (s);
 - d. Pertinent electric traction motor/generator datasheets; and
 - e. Toyota system specification requirements document for motor/generator control module.

16. Provide a synopsis comparing MY 2006 Toyota Highlander with MY 2006 Prius inverter/converter design, operating conditions, durability requirements and related test results.
17. Provide an overview of Toyota inverter/converter product development and launch process including procurement, validation points/gates and review, schedule and product launch.
18. Furnish Toyota'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;
 - 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

This letter is being sent to Toyota 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 and the production of things. It constitutes a new request for information. Toyota's failure to respond promptly and fully to this letter could subject Toyota 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.) Section 5(a) of the TREAD Act, codified at 49 U.S.C. § 30165(b), provides for civil penalties of up to \$6,000 per day, with a maximum of \$16,375,000 for a related series of violations, for failing or refusing to perform an act required under 49 U.S.C. § 30166. See 49 CFR 578.6 (as amended by 71 Fed. Reg. 28279 (May 16, 2006)). This includes failing to respond to ODI information requests.

If Toyota 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, Toyota does not submit one or more requested documents or items of information in response to this information request, Toyota 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.

Toyota's response to this letter, in duplicate, together with a copy of any confidentiality request, must be submitted to this office by April 29, 2011. **All business confidential information must be submitted directly to the Office of Chief Counsel as described in the following paragraph and should not be sent to this office.** In addition, do not submit any business confidential information in the body of the letter submitted to this office. Please refer to PE11-005 in Toyota's response to this letter and in any confidentiality request submitted to the Office of Chief Counsel. If Toyota finds that it is unable to provide all of the information requested within the time allotted, Toyota must request an extension from me at (202) 366-8703 no later than five business days before the response due date. If Toyota is unable to provide all of the information requested by the original deadline, it must submit a partial response by the original

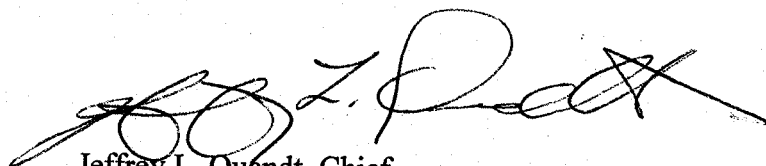
deadline with whatever information Toyota then has available, even if an extension has been granted.

If Toyota claims that any of the information or documents provided in response to this information request constitute confidential commercial material within the meaning of 5 U.S.C. § 552(b)(4), or are protected from disclosure pursuant to 18 U.S.C. § 1905, Toyota must submit supporting information together with the materials that are the subject of the confidentiality request, in accordance with 49 CFR Part 512, as amended, to the Office of Chief Counsel (NCC-111), National Highway Traffic Safety Administration, Room W41-227, 1200 New Jersey Avenue, S.E., Washington, D.C. 20590. Toyota is required to **submit two copies of the documents containing allegedly confidential information (except only one copy of blueprints) and one copy of the documents from which information claimed to be confidential has been deleted.** Please remember that the word "CONFIDENTIAL BUSINESS INFORMATION" must appear at the top of each page containing information claimed to be confidential, and the information must be clearly identified in accordance with 5 U.S.C. § 512.6. If you submit a request for confidentiality for all or part of your response to this IR, that is in an electronic format (e.g., CD-ROM), your request and associated submission must conform to the new requirements in NHTSA's Confidential Business Information Rule regarding submissions in electronic formats (49 CFR 512.6(c)). See Federal Register, volume 72, page 59434 (October 19, 2007).

Please send email notification to Kareem Habib (Kareem.Habib@DOT.gov) and to ODI_IRresponse@dot.gov when Toyota sends its response to this office and indicate whether there is confidential information as part of Toyota response. Also provide tracking numbers for the submissions.

If you have any technical questions concerning this matter, please call Kareem Habib of my staff at (202) 366-8703.

Sincerely,



Jeffrey L. Quandt, Chief
Vehicle Control Division
Office of Defects Investigation

Enclosure 1, one CD ROM titled Data Collection Disc containing five files