



NOV 28 2006

U.S. Department  
of Transportation

400 Seventh Street, S.W.  
Washington, D.C. 20590

**National Highway  
Traffic Safety  
Administration**

**CERTIFIED MAIL**  
**RETURN RECEIPT REQUESTED**

Mr. William Shapiro  
Regulatory and Environmental Affairs  
Volvo Cars of N.A. LLC  
1 Volvo Drive - Building B  
Rockleigh, NJ 07647

NVS-213dlr  
EA06-006

Dear Mr. Shapiro:

As you are aware the Office of Defects Investigation (ODI) of the National Highway Traffic Safety Administration (NHTSA) has opened an Engineering Analysis (EA06-006) to investigate allegations of thermal failures of battery cables in MY 2005 Volvo XC90 manufactured by Volvo Cars of North America, LLC, and to request certain information.

This office has received multiple field reports from Volvo in Early Warning Reporting submissions relating to loose positive battery cable connections and thermal failures of battery cables in MY 2005 Volvo XC90 vehicles. ODI became aware of two additional issues during the Preliminary Evaluation phase of the investigation. Volvo provided information to ODI concerning multiple fires in Volvo XC90 vehicles involving the jack crank handle and the positive battery cable. Additionally, ODI received field reports from Volvo in Early Warning Reporting submissions relating to a potential chafing condition of the positive battery cable to the main fuse box in the rear storage compartment. An electronic copy of the all the reports are enclosed in the CD-ROM for your review.

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

- **Subject vehicles:** all MY 2005 Volvo XC90 manufactured for sale or lease in the United States.
- **Subject component:** all positive battery cables and associated connecting hardware manufactured for use on the subject vehicles.
- **Volvo:** Volvo Cars of North America, LLC, 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



DOT AUTO SAFETY HOTLINE  
888-DASH-2-DOT  
888-327-4236

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 Volvo (including all business units and persons previously referred to), who are or, in or after January 1, 2001, 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:** Failure or malfunction of the positive battery cables and/or associated connectors resulting in any of the following: (1) fire; (2) thermal failure of positive battery cable; (3) engine stall; or (4) chafing of the positive battery cable.
  - **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 Volvo, 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 Volvo 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 Volvo has previously provided a document to ODI, Volvo 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 Volvo’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 Volvo has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Volvo, state the following:
  - a. Vehicle identification number (VIN);
  - b. Make;
  - c. Model;
  - d. Model Year;
  - e. Date of manufacture;
  - f. Date warranty coverage commenced; and
  - g. The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).
  - h. Whether the vehicle was subject to NHTSA recall number 05V-529.

Provide the table in Microsoft Access 2003, or a compatible format, entitled “PRODUCTION DATA.” See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

2. State the number of each of the following, received by Volvo, or of which Volvo is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles after December 1, 2005 through November 1, 2006:
  - 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; and
  - f. Third-party arbitration proceedings where Volvo is or was a party to the arbitration; and
  - g. Lawsuits, both pending and closed, in which Volvo is or was a defendant or codefendant.

For subparts "a" through "d, / 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 "d/e/f/g," provide a summary description of the alleged problem and causal and contributing factors and Volvo's assessment of the problem, with a summary of the significant underlying facts and evidence. For items "d/e/f" and "e/f/g," identify the parties to the action, as well as the caption, court, docket number, and date on which the complaint or other document initiating the action was filed.

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. Volvo's file number or other identifier used;
  - b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);
  - c. Vehicle owner or fleet name (and fleet contact person), address, and telephone number;
  - d. Vehicle's VIN;
  - e. Vehicle's make, model and model year;
  - f. Vehicle's mileage at time of incident;
  - g. 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.
  - n. Whether an engine stall occurred.

- o. Whether the complaint is related to the: (1) Undertorqued positive battery cable to starter motor fastener; (2) mis-positioned jack handle; or (3) the positive battery cable chafing concern.

Provide this information in Microsoft Access 2003, or a compatible format, entitled "REQUEST NUMBER TWO DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

- 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 Volvo used for organizing the documents.
- 5. State, by model and model year, since December 1, 2005 through November 1, 2006, a total count for all of the following categories of claims, collectively, that have been paid by Volvo 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. Volvo's claim number;
- b. Vehicle owner or fleet name (and fleet contact person) and telephone number;
- c. VIN;
- d. Repair date;
- e. Vehicle mileage at time of repair;
- f. Repairing dealer's or facility's name, telephone number, city and state or ZIP code;
- g. Labor operation number;
- h. Problem code;
- i. Replacement part number(s) and description(s);
- j. Concern stated by customer; and
- k. Comment, if any, by dealer/technician relating to claim and/or repair.
- l. Whether the claim is related to the: (1) Undertorqued positive battery cable to starter motor fastener; (2) mis-positioned jack handle; or (3) the positive battery cable chafing concern.

Provide this information in Microsoft Access 2003, or a compatible format, entitled "WARRANTY DATA." See Enclosure 1, Data Collection Disc, for a pre-formatted table that provides further details regarding this submission.

- 6. Describe in detail the search criteria used by Volvo to identify the claims identified in response to Request No. 5, including the labor operations, problem codes, part numbers and any other pertinent parameters used. Provide a list of all labor operations, labor operation descriptions, problem codes, and problem code descriptions applicable to the alleged defect in the subject vehicles. State, by make and model year, the terms of the new vehicle warranty coverage offered by Volvo 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 Volvo 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.

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 Volvo 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 Volvo is planning to issue within the next 120 days.
8. Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, sorted by each failure mechanism, that are being conducted, are planned, or are being planned by, or for, Volvo. 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.

9. Describe all modifications or changes made by, or on behalf of, Volvo in the design, material composition, manufacture, quality control, supply, or installation of the subject component, from December 1, 2005 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 numbers (service and engineering) of the original component;
  - e. The part number (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 Volvo is aware of which may be incorporated into vehicle production within the next 120 days.

10. Paragraph three of page thirteen of Volvo's response to ODI's PE05-057 Information Request Letter, references a technical service bulletin, TNN 89-07 that instructs Volvo technicians, service and parts managers of proper positioning of the jack crank handle. Please provide the following:
  - a. A copy of any owner notification or owner instruction issued by Volvo, similar to the instructions in TNN 89-07, instructing the owners of the proper position of the jack handle in relationship to the positive battery cable and/or warning owners of the risk of the improper placement of the jack handle.
  - b. If Volvo did not notify owners of the proper position of the jack handle, explain why not.
  - c. In the event that an owner replaces the battery, explain why an owner would position the jack handle on the top of the bracket (the proper position) rather than under the bracket.
  - d. A summary of any Human Factors study or studies that Volvo may have conducted concerning the subject vehicles that is representative of consumer usage of the jack crank handle; i.e. removal and proper replacement of the jack crank handle.
11. Provide the following in relation to the assembly plant installation process of the jack crank handle.
  - a. A copy of any Process Failure Mode Effects Analysis (PFMEA) that may relate to the installation process of the jack crank handle.
  - b. A copy of any assembly plant operation or process description sheet(s) applicable to the installation of the jack crank handle to the subject vehicles.
12. Provide the following information in reference to the undertorqued positive battery cable to starter motor fastener issue on subject vehicles equipped with V8 engines:
  - a. Volvo's assessment of the risk of a fire due to the undertorqued fastener condition and explain the basis for the assessment.
  - b. A description of what Volvo considers "worst case" for the condition with regard to the effect on engine performance and risk to engine stall and state the basis for that statement.
  - c. The typical circumstances under which a stalling event could occur (e.g. acceleration, deceleration, low speed, high speed, random, etc.)
  - d. Volvo's assessment of the percentage of warranty claims that involve an engine stall while driving due to the undertorqued fastener and explain the basis for the assessment.
  - e. Using warranty claim data, identify the engine stalling rate of the subject vehicles at the following service intervals: (1) 12 months, (2) 36 months, (3) 60 months and (4) 120 months. Explain in detail the statistical methods used to calculate these rates, whether they are based on actual failure data or statistical forecasting.
13. Provide the following information in reference to the chafing concern of the positive battery cable to the main fuse box in the rear storage compartment:
  - a. Chronologically list and describe in detail all engineering, supplier quality and assembly plant cable routing or process changes from MY 2003 through MY 2006 that may have affected the positive battery cable in the area of the sheet metal flange.

- b. Chronologically list and describe in detail any engineering and/or supplier related changes made to the main fuse box that may have influenced the spatial relationship of the main fuse box bracket and the positive battery cable.
  - c. Chronologically list and describe in detail any engineering and/or supplier related changes made to the main fuse box bracket that may have influenced the spatial relationship of the main fuse box bracket and the positive battery cable.
  - d. Provide a summary of any field visual inspection(s) conducted by Volvo of the positive battery cable chafing concern to include the VIN and mileage of each vehicle inspected. Provide copies of any pictures taken of the positive battery cable in relation to the inspection(s).
14. Describe in detail any fusible links or other built-in positive battery cable failure safety mechanisms.
15. For each failure mechanism or potential failure mechanism; (1) Undertorqued battery cable to starter motor attaching fastener; (2) jack handle mis-positioning; and (3) potential positive battery cable chafing condition on rear battery storage compartment flange, furnish Volvo's assessment of the alleged defect, including:
- a. The causal or contributory factor(s);
  - b. The failure mode(s);
  - c. The risk to motor vehicle safety that it poses;
  - d. 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;
  - e. A discussion of possible or potential countermeasures DCX has identified or considered which may reduce or eliminate the occurrence of the alleged defect;
  - f. The reports included with this inquiry.

This letter is being sent to Volvo 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. Volvo's failure to respond promptly and fully to this letter could subject Volvo 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.) Please note that maximum civil penalties under 49 U.S.C. § 30165 have increased as a result of the recent enactment of the Transportation Recall Enhancement, Accountability, and Documentation (TREAD) Act, Public Law No. 106-414 (signed November 1, 2000). Section 5(a) of the TREAD Act, codified at 49 U.S.C. § 30165(b), provides for civil penalties of up to \$5,000 per day, with a maximum of \$16,050,000 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 69 Fed. Reg. 57864 (Sept. 28, 2004)). This includes failing to respond to ODI information requests.

If Volvo 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, Volvo does not submit one or more requested documents or items of information in response to this information request, Volvo must provide a privilege log identifying each document or item



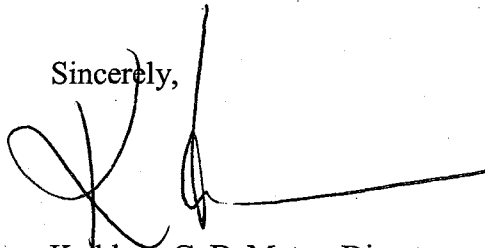
withheld, and stating the date, subject or title, the name and position of the person(s) from, and the person(s) to whom it was sent, and the name and position of any other recipient (to include all carbon copies or blind carbon copies), the nature of that information or material, and the basis for the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

Volvo's response to this letter, in duplicate, together with a copy of any confidentiality request, must be submitted to this office by February 5, 2007. Please refer to EA06-006 in Volvo's response to this letter. If Volvo finds that it is unable to provide all of the information requested within the time allotted, Volvo must request an extension from Mr. Jeffery Quandt at (202) 366-5207 no later than five business days before the response due date. If Volvo 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 Volvo then has available, even if an extension has been granted.

If Volvo 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, Volvo 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 (69 Fed. Reg. 21409 et seq; April 21, 2004), to the Office of Chief Counsel (NCC-113), National Highway Traffic Safety Administration, Room 5219, 400 Seventh Street, S.W., Washington, D.C. 20590. Volvo 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.

If you have any technical questions concerning this matter, please call Derek Rinehardt of my staff at (202) 366-3642.

Sincerely,

A handwritten signature in black ink, appearing to read 'Kathleen C. DeMeter', with a long horizontal line extending to the right.

Kathleen C. DeMeter, Director  
Office of Defects Investigation  
Enforcement

Enclosure: One CD ROM titled "EA06-006 Enclosures".