



August 11, 2020

Mr. Bruce York, Chief
Medium and Heavy Duty Vehicle Division
Office of Defects Investigation
U.S. Department of Transportation
National Highway Traffic Safety Administration
1200 New Jersey SE
Washington, D.C. 20590

Re: **PE20-005, Final Response**
NEF-106xt

Dear Mr. York:

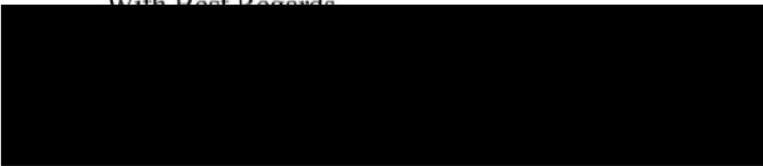
On behalf of the Volvo Group, I am providing this response to the questions in your letter dated May 5, 2020.

Important Note: Your letter was addressed to Volvo Trucks North America; however, the scope of the inquiry is MY 2013-2016 CHU & CXU Mack Trucks. Where appropriate, I have substituted Mack for Volvo, as the manufacturer is Mack Trucks.

This response contains Confidential Business Information (CBI). A signed declaration is provided on page 2. The files containing CBI are flagged in their title (e.g. Q3 **CBI** FIELD RPTS). Three files are provided; these include one complete copy (no redactions), a redacted copy (sections marked with brackets or complete page/ document labeled), and a copy with the redacted material removed.

Please feel free to give me a call if you have any questions

With Best Regards,



Tim L. LaFon
Vice President, Regulatory Affairs
Telephone: (336) 393-2233
Fax: (336) 393-2444
Email: timothy.lafon@volvo.com



I Timothy LaFon, pursuant to the provisions of 49 CFR part 512, state as follows:

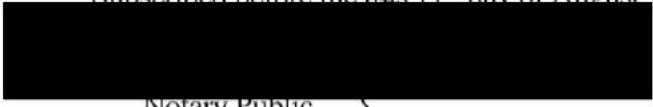
- (1) I am the Vice President Regulatory Affairs and I am authorized by Volvo Group North America to execute this certificate on its behalf;
- (2) I certify that the information contained in (pertinent document(s)) is confidential and proprietary data and is being submitted with the claim that it is entitled to confidential treatment under 5 U.S.C. 552(b)(4) (as incorporated by reference in and modified by the statute under which the information is being submitted);
- (3) I hereby request that the information contained in (pertinent document(s)) be protected;
- (4) This certification is based on the information provided by the responsible persons who have authority in the normal course of business to release the information for which a claim of confidentiality has been made to ascertain whether such information has ever been released outside the Volvo Group;
- (5) Based upon that information, to the best of my knowledge, information and belief, the information for which Volvo has claimed confidential treatment has never been released or become available outside Volvo;
- (6) I make no representations beyond those contained in this certificate and, in particular, I make no representations as to whether this information may become available outside the Volvo Group because of unauthorized or inadvertent disclosure (except as stated in paragraph 5); and
- (7) I certify under penalty of perjury that the foregoing is true and correct. Executed on this the 11th day of August, 2020. (If executed outside of the United States of America: I certify under penalty of perjury under the laws of the United States of America that the foregoing is true and correct).

Dated: August 11, 2020



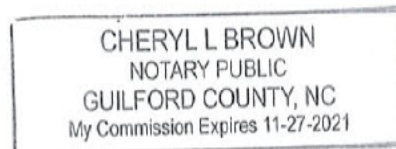
Timothy LaFon, VP Regulatory Affairs

Subscribed before me this 11th day of August, 2020, County of Guilford, North Carolina.



Notary Public

My Commission Expires November 27, 2021



1. *State, by model and model year, the number of subject vehicles Mack has manufactured for sale or lease in the United States. Separately, for each subject vehicle manufactured to date by Mack, state the following:*
 - a. *Vehicle identification number (VIN);*
 - b. *Make;*
 - c. *Model;*
 - d. *Model Year;*
 - e. *Transmission model number, design version, electronic control module part number (if so equipped), software version and optional features installed as original equipment;*
 - f. *Engine model number and power output;*
 - g. *Date of manufacture;*
 - h. *Date warranty coverage commenced; and*
 - i. *The State in the United States where the vehicle was originally sold or leased (or delivered for sale or lease).*

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

Response: The information requested is provided in the enclosed file folder labeled Q1 PRODUCTION DATA.

The source of this information is the Volvo Group North America's Aftermarket, Quality, and Operations department; the information was last collected on July 9, 2020.

2. *State the number of each of the following, received by Mack, or of which Mack is otherwise aware, which relate to, or may relate to, the alleged defect in the subject vehicles:*
 - a. *Consumer complaints, including those from fleet operators;*
 - b. *Field reports, including dealer field reports;*
 - c. *Reports involving a crash, injury or fatality;*
 - d. *Property damage claims;*
 - e. *Third-party arbitration proceedings where Mack is or was a party to the arbitration; and*
 - f. *Lawsuits, both pending and closed, in which Mack is or was a defendant or codefendant.*

For subparts "a" through "f," state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same vehicle are to be counted separately. Multiple reports of the same incident are also to be counted separately (i.e., a consumer complaint and a field report involving the same incident in which a crash occurred are to be counted as a crash report, a field report and a consumer complaint).

In addition, for items “c” through “f,” provide a summary description of the alleged problem and causal and contributing factors and Mack’s assessment of the problem, with a summary of the significant underlying facts and evidence. For items “e” and “f,” 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.

Response: The number of reports per category are as follows:

Category	Total number
<i>a. Consumer complaints, including those from fleet operators</i>	19
<i>b. Field reports, including dealer field reports</i>	37
<i>c. Reports involving a crash, injury or fatality</i>	0
<i>d. Property Damage Claims</i>	0
<i>e. Third-party arbitration proceedings where Mack is or was a party to the arbitration; and</i>	0
<i>f. Lawsuits, both pending and closed, in which Mack is or was a defendant or codefendant.</i>	0

The source of the information is the Volvo Group North America Aftermarket, Quality, and Operations department; the Legal department; and Regulatory Affairs department. The information was last collected on July 19, 2020.

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. Mack’s file number or other identifier used;*
 - b. The category of the item, as identified in Request No. 2 (i.e., consumer complaint, field report, etc.);*
 - c. Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;*
 - d. Vehicle’s VIN;*
 - e. Vehicle’s make, model and model year;*
 - f. Vehicle’s mileage at time of incident;*
 - g. Incident date;*
 - h. Incident location;*
 - i. Report or claim date;*
 - j. Whether a crash is alleged;*
 - k. Whether property damage is alleged;*
 - l. Number of alleged injuries, if any;*

- m. *Number of alleged fatalities, if any;*
- n. *The assessment of a Mack dealer of the actual or likely cause or factors contributing to the alleged incident(s) in the subject vehicle (if there was no examination of the vehicle by a dealer, so state; if a dealer examined the vehicle and did not identify the actual or likely cause or factors contributing to the alleged incident(s) in the subject vehicle(s) so state); and*
- o. *Mack's Assessment of the cause or factors contributing to the alleged incident(s) in the subject vehicle (if Mack has not and has never identified the actual or likely cause or factors contributing to the alleged incident(s) in the subject vehicle, so state).*

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

Response: Specific information is provided in two excel files (one for consumer complaints and one for field reports); these are provided in the file folder labeled "Q3 REQUEST NUNBER TWO DATA."

The source of the information is the Volvo Group North America Aftermarket, Quality, and Operations department; the Legal department; and Regulatory Affairs department. The information was last collected on August 2, 2020.

- 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 Mack used for organizing the documents.*

Response: Copies of the related documents are provided in the file folder labeled Q4 DOCUMENTS.

The source of the information is the Volvo Group North America Aftermarket, Quality, and Operations department. The information was last collected on August 3, 2020.

- 5. *State, by model and model year, a total count for all of the following categories of claims, collectively, that have been paid by Mack 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. *Mack's claim number*
- b. *Vehicle owner or fleet name (and fleet contact person), street address, email address and telephone number;*
- c. *VIN;*

- d. *Repair date;*
- e. *Vehicle mileage at time of repair;*
- f. *Repairing dealer's or facility's name, telephone number, city and state or ZIP code;*
- g. *Labor operation number(s);*
- h. *Problem code(s);*
- i. *Replacement part number(s) and description(s);*
- j. *Concern stated by customer;*
- k. *Comment, if any, by dealer/technician relating to claim and/or repair;*
- l. *The assessment of a Mack dealer of the actual or likely cause or factors contributing to the alleged incident(s) in the subject vehicle (if there was no examination of the vehicle by a dealer, so state; if a dealer examined the vehicle and did not identify the actual or likely cause or factors contributing to the alleged incident(s) in the subject vehicle(s) so state); and*
- m. *Mack's Assessment of the cause or factors contributing to the alleged incident(s) in the subject vehicle (if Mack has not and has never identified the actual or likely cause or factors contributing to the alleged incident(s) in the subject vehicle, so state).*

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

Response: The information requested is provided in the file folder labeled Q5 WARRANTY DATA.

The source of the information is Volvo Group North America's Aftermarket, Quality, and Operations Department. The information was last collected on July 7, 2020.

6. *Describe in detail the search methods and search criteria used by Mack to identify the claims 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 Mack 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 Mack 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.

Response: The information requested is provided in the file folder labeled Q6 RESPONSE.

The source of the information is Volvo Group North America's Aftermarket, Quality, and Operations Department. The information was last collected on July 21, 2020.

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 Mack 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 Mack is planning to issue within the next 120 days.*

Response: One CBR was identified as being related. The CBR is provide in the file folder labeled Q7_COPIES SERVICE_WARRANTY ETC.

Mack is not planning on issue any other documents within the next 120 days.

The source of the information is Volvo Group North America's Regulatory Affairs Department. The information was last collected on July 16, 2020.

8. *Describe all assessments, analyses, tests, test results, studies, surveys, simulations, investigations, inquiries and/or evaluations (collectively, "actions") that relate to, or may relate to, the alleged defect in the subject vehicles that have been conducted, are being conducted, are planned, or are being planned by, or for, Mack. 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.

Response: The information requested is provided in the file folder labeled Q8 ASSESSMENT.

The source of the information is Volvo Group North America's Regulatory Affairs department. The information was last collected on July 23, 2020.

9. Describe all modifications or changes made by, or on behalf of, Mack in the design, material composition, manufacture, quality control, supply, or installation of any mDRIVE transmission component(s) (including associated wiring, sensors, electronic control modules and software), installed on the subject vehicles, which relates 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) or software version number(s) of the original component or software, the part description (including acronyms), and supplier;
 - e. The part number(s) (service and engineering) or software version(s) of the modified component, and the supplier;
 - f. Whether the original unmodified component or software version was withdrawn from production and/or sale, and if so, when;
 - g. When the modified component or software version was made available as a service component or service software reflash/ reprogram; and
 - h. Whether the modified component or software version can be interchanged with earlier production components

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

Response: The information requested is provided in the enclosed file folder labeled Q9 MODIFICATIONS.

Mack is not planning any modifications within the next 120 days.

The source of the information is the Volvo Group Trucks Technology Division (Volvo Group's Product Development Group). This information was last collected on July 8, 2020.

10. State the number of each of the following that Mack has sold that may be used in the subject vehicles by component name, part number (both service and engineering/production), model and model year of the vehicle in which it is used and month/year of sale (including the cut-off date for sales, if applicable):
- a. Clutch Valve Unit: (CVU)
 - b. Concentric Clutch Actuator (CCA); and
 - c. Brake Pedal Position Signal Switch; and

- d. *Any kits that have been released, or developed, by Mack for use in service repairs to the subject component/assemblies described above in "a" through "c."*

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

Response: The information requested is provided in the enclosed file folder labeled Q10 PART SALES.

The source of the information is the Volvo Group Purchasing Department. The information was last collected on July 8, 2020.

11. *Provide ODI copies of any mDRIVE transmission diagnostic and service information including information found on the Trucks Dealer Portal (www.trucksdealerportal.com)*

Response: The information requested is provided in the enclosed file folder labeled Q11 DIAGNOSTIC.

The source of the information is the Volvo Group Trucks Technology Division. This information was last collected on July 31, 2020

12. *Describe the manner in which the wiring harness from the mDRIVE transmission gear lever selector to the mDRIVE transmission electronic control module is routed and secured using text and pictorial descriptions. In addition, describe all modifications or changes made by, or on the behalf of, Mack in the design, material composition, manufacture, quality control, supply, or installation of the subject wiring harness.*

Response: The information requested is provided in the enclosed folder labeled Q12 WIRING.

The source of the information is the Volvo Group Trucks Technology Division. This information was last collected on July 8, 2020.

13. Describe the potential and/or actual consequences of the wiring harness from the mDRIVE transmission gear lever selector to the mDRIVE transmission electronic control module chafing and/or short-circuiting. Provide Mack's assessment of the vehicle operator's ability to mitigate the alleged defect condition as it is occurring, in the event the subject wiring harness has been compromised.

Response: The information requested is provided in the enclosed folder labeled Q13 POTENTIAL CONSEQUENCE_WIRING.

The source of the information is the Volvo Group Trucks Technology Division. This information was last collected on July 8, 2020.

14. Furnish Mack's assessment of the alleged defect in the subject vehicles, including:

a. The causal or contributory factor(s);

Response: various service related items.

b. The failure mechanism(s);

Response: The information collected supports more than one failure mechanism. These include the brake pressure switch, a worn clutch, an air leak, software/programming, clutch valve unit, and concentric clutch actuator.

c. The failure mode(s);

Response: Clutch may feel like it is not disengaging, may not disengage, or may intermittently not disengage.

d. The risk to motor vehicle safety that it poses;

Response: The evaluation of potential safety-related defects involves evaluation of whether a defect exists and if so whether it poses a risk to motor vehicle safety.

A defect may involve a materials, manufacturing, design, performance related issue, or combination of these. Mack has not identified any non-conformances or defects that suggest that a systemic issue exists. Based on the data found in this response, there are different failure mechanisms that can create the condition that is the subject of this inquiry.

One additional factor is past recalls. NHTSA inquiry PE13-002 resulted in the agency and Volvo identifying a safety related defect involving a brake micro-switch. The micro-switch served as a redundancy (fallback) to disengage the clutch if the primary means (a pneumatic switch) were to fail. The Volvo Recall number is RVXX1303 (NHTSA Recall # 13V-268). As the Volvo Group's process for investigating potential safety related defects includes review of similar components and designs, the Mack mDrive was investigated and did not include the same design and therefore was not recalled.



A quick comparison of the numbers associated with the 2020 and 2013 inquiry is shown below:

	Defect Determined	Number of vehicles	Combined Field reports/ warranty claims/ consumer complaints	Accidents
PE20-005	No	41,774	48**	0
PE13-002	Yes, Micro-switch serving as redundancy removed	10,567	341	0

** A fraction of these indicates that the truck is pulling when coming to a stop.

Consider all the information (e.g. the warnings, the number of factors required to create the condition, the number of isolated reports). Mack is of the opinion that the risk to motor vehicle safety is low and that a safety-related defect does not exist.

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;*

Response: The driver would feel that the clutch is not disengaging. This is supported by the information contained in the response to this inquiry.

f. *What actions the vehicle operator might take to mitigate the alleged defect condition as it is occurring; and*

Response: The vehicle brake system is the primary means of stopping the vehicle. The vehicle brakes are sufficient to stop the vehicle even if the condition exists. .

g. *The report included with this inquiry.*

Response: The vehicle had a transmission issue that required a complete replacement. No indication of pushing through the brakes when coming to a stop. See information in file folder Q14g_INFORMATION.