

Daimler Trucks North America
Nasser Zamani
Senior Manager
Compliance and Regulatory Affairs

February 14, 2013

Via Email

Bruce York, Chief
Medium and Heavy Duty Vehicles Division
Office of Defects Investigation
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington, D.C. 20590

Re: NVS-214 RQ12-001, PDM

Dear Mr. York:

This letter is in response to the December 12, 2012 Information Request from NHTSA's Office of Defects Investigation regarding trailer Power Distribution Module (PDM) failures on certain Freightliner M2 trucks manufactured by Daimler Trucks North America (DTNA).

Background On 08V-154

M2 trucks are generally equipped with five different PDMs, a main PDM, powertrain PDM, chassis power PDM, body lighting PDM, and a trailer PDM. The PDM's that were the subject of safety recall 08V-154 which is the subject of this recall query, were body PDMs and trailer PDMs (hereinafter just "PDM"). The subject PDMs contain six fuses and six electrical relays that supply power for several electrical accessories found on trailers, including: the stop lamps, marker lamps, turn signals, and general power accessories found on trailers, like cargo lighting inside the trailer (and refrigeration units) for example. For M2 trucks that were mounted with fixed bodies by customers, the PDM is not necessary, and in fact, the recall remedy for such trucks in 08V-154 was to simply remove the PDM altogether. On trucks that do tow trailers, the PDM is connected to the trailer connector via a wiring harness. Because of the need to connect with the trailer, PDMs have traditionally (up through 2010 on the M2) been mounted outside of the cab and aft of the cab on the frame rails or a rear cross member at the end of the frame rail relatively close to the trailer to reduce the length of the connecting wiring harness. Because of the external mounting location and need to connect remotely to the trailer, these PDMs are inherently exposed to water and road salt to varying extents from rain, road splash and pressure washing. The extent of exposure to environmental conditions

depends on a number of factors such as the trailer PDM mounting location, the proximity of other frame-mounted components, the proximity of the cab, the trailer and other chassis components like the axles, tires, and mud-flaps, the mileage and type of operations as well as the maintenance practices used on a particular truck. For example, pressure washing, failure to properly close and secure the PDM cover after maintenance, and salt-belt operations can be factors impacting the durability of PDMs (as well as other frame mounted electrical components). Because of the severe operating environment, the subject PDMs have undergone several continuous improvement design changes over time to improve water resistance, and overall durability. These improvements are discussed below. Recall 08V-154 was implemented to remove M2 PDMs that were mounted in an especially vulnerable location. Specifically, the recall was implemented to remove all PDMs that were originally mounted near the bottom of the fuel tank, a location which is approximately 16 inches closer to the road than any other PDM mounting location. This location is approximately twice as close to the road as any other location. The installation of PDMs in this location was discontinued in January 2007. Removal of PDMs from the location near the bottom of the fuel tank reduced the exposure of the PDMs to road splash, and will increase the longevity of the PDM units on those trucks over what would be expected if the PDMs remained in that location.

The impact on motor vehicle safety of damage to the PDM will depend on which circuits within the PDM are affected, the extent to which they are impacted by moisture or corrosion, and when the issue is discovered by the operator. Because there are six different relay units, and six different fuse connections inside the trailer PDM, water intrusion and corrosion can impact some circuits, and not others with the PDM unit. For example, in some cases, corrosion in the PDM can cause flickering or disablement of the cargo area lighting, which would have little or no impact on motor vehicle safety. Similarly, in many cases, initial corrosion or moisture intrusion can cause intermittent flickering of affected lights without complete failure, and full circuit integrity can resume once the moisture in the PDM dries out. Finally, the turn signals, and tail lights are required to be operational and visually inspected daily on commercial motor vehicles prior to daily operations, and such daily pre- and post-trip inspections are likely to identify the need to inspect the PDM, wiring harness, or tail lights, perform maintenance or replace the PDM or other components prior to vehicle operations. See 49 C.F.R. §392.7 (FMCSA pre-trip inspection requirements); 396.11 (post-trip inspection report).

As discussed below, there have been no accidents, injuries or fatalities or customer complaints reported that relate to failure of the tail lights on subject or peer vehicles. DTNA has found no evidence indicating a safety defect exists in the subject component on vehicles other than the Peer Vehicles, which have already been the subject of a recall campaign. Recall 08V-154 was implemented to remove M2 PDMs from below the fuel tank mounting bracket location and eliminated the long term durability issues that were associated with such mounting location. The recall completion rate for this recall is approximately 50% and vehicles are continuing to be repaired. The most recent

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campaign repair was January 22, 2013 .¹ Information relating to the need for relocation or removal of the PDM is still available in the ServicePro electronic work instruction database available to all authorized Freightliner dealers and service centers. We believe that most of the peer vehicles that have not been campaigned do not tow trailers, and therefore do not use the PDM to operate the taillights or any other circuitry.

Responses to the Agency’s enumerated questions are provided below.

Question #1

1. *State how many units of the subject and peer vehicles DTNA has manufactured for sale or lease in the United States. For each vehicle provide the following:*
 - a. *VIN;*
 - b. *Date of manufacture;*
 - c. *Date warranty coverage commenced;*
 - d. *Model (M2 106 or M2 112);*
 - e. *Vehicle’s type (truck or tractor);*
 - f. *Vehicle’s vocation (construction, pickup & delivery, etc);*
 - g. *Location of PDM as originally installed; and*
 - h. *The part number(s) of the subject component installed on the vehicle as original equipment.*

DTNA’s Response

Group	Number Manufactured
Subject	[REDACTED]
Peer	[REDACTED]

See included Excel Workbook entitled “Confidential Business Information Response to question 1 PRODUCTION & PEER GRP DATA.xlsx” (confidential information redacted, non-redacted information is provided to chief counsel).

Question #2

2. *State the number and provide copies of each of the following, received by DTNA, which relate to, or may relate to, the alleged defect in the subject or peer vehicles:*
 - a. *Consumer / fleet complaints;*
 - b. *Field reports;*
 - c. *Reports involving a crash, injury, or fatality;*
 - d. *Reports involving a fire;*
 - e. *Property damage claims;*
 - f. *Third-party arbitration proceedings where DTNA is or was a party to the arbitration; and*
 - g. *Lawsuits, both pending and closed, in which DTNA is or was a defendant or codefendant.*

¹ Following the original owner notification, there were three re-notifications for recall FL529A (08V-154), which were sent to customers on 9/28/2009, 10/25/2010 and 9/21/2012). We do not believe that additional customer notification would be effective.

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For subparts “a” through “g,” state the total number of each item (e.g., consumer complaints, field reports, etc.) separately. Multiple incidents involving the same unit 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). For “f” and “g,” provide a summary of the event.

DTNA’s Response

	Subject Gp	Peer Gp
<i>a. Consumer / fleet complaints</i>		
<i>b. Field reports</i>		
<i>c. Reports involving a crash, injury, or fatality</i>		
<i>d. Reports involving a fire</i>		
<i>e. Property damage claims</i>		
<i>f. Third-party arbitration proceedings where DTNA is or was a party to the arbitration</i>		
<i>g. Lawsuits, both pending and closed, in which DTNA is or was a defendant or codefendant</i>		

Copies of the responsive field reports are attached [Confidential FSPR 19610, 11920, 14719 and 14996]. (confidential information redacted).

Question #3

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. VIN;*
 - b. Vehicle’s owner or fleet name (and fleet contact person), address, and telephone number;*
 - c. Model (M2 106 or M2 112);*
 - d. Vehicle’s type (truck or tractor);*
 - e. Vehicle’s vocation (construction, pickup & delivery, etc);*
 - f. Vehicle’s hours/mileage at time of incident, if known;*
 - g. Location of PDM as originally installed;*
 - h. PDM part number or revision;*
 - i. Incident date;*
 - j. Date of manufacture; and*
 - k. Date warranty coverage commenced.*

DTNA’s Response

See included Excel Workbook entitled “Confidential Business Information Response to question 3 REQUEST NUMBER TWO & PEER GRP DATA.xlsx”

Question #4

4. *State a total count for all of the following categories of claims, collectively, that have been paid by DTNA to date that relate to, or may relate to, the alleged defect in the subject or peer vehicles: warranty claims; extended warranty claims; claims for good will services that were provided; field,*

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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. DTNA's claim number;*
- b. VIN;*
- c. Vehicle's owner or fleet name (and fleet contact person) and telephone number;*
- d. Model (M2 106 or M2 112);*
- e. Vehicle's type (truck or tractor);*
- f. Vehicle's vocation (construction, pickup & delivery, etc);*
- g. Vehicle's build date;*
- h. Warranty start date;*
- i. Incident date;*
- j. PDM part number or revision;*
- k. Location of PDM as originally installed;*
- l. Vehicle's hours/mileage at time of repair;*
- m. Repairing facility's name, telephone number, and address;*
- n. Labor operation number;*
- o. Problem code;*
- p. Replacement part number(s) and description(s);*
- q. Concern stated by customer; and*
- r. Comment, if any, by dealer/technician relating to claim and/or repair.*

DTNA's Response

	Subject Gp	Peer Gp
<i>Warranty claims</i>	█	█
<i>Extended warranty claims</i>	█	█
<i>Claims for goodwill services</i>	██████████	██████████
<i>Field, zone, or similar adjustments and reimbursements</i>	█	█
<i>Warranty claims or repairs made in accordance with a procedure specified in a technical service bulletin or customer satisfaction campaign</i>	██████████	██████████

See included Excel Workbook entitled "Confidential Business Information Response to question 4 WARRANTY & PEER GRP DATA.xlsx." The claims reported above were identified by using the problem codes for PDM replacement and filtering the claims for any references to the subject tail light or brake light defect. (confidential information redacted, non-redacted information is provided to chief counsel).

Question #5

- 5. *Provide copies of any service or technical bulletins, product improvement campaigns, announcements, or advisories, and all other communications concerning the alleged defect that DTNA has issued or is considering issuing to fleets, dealers, zone offices, or field offices. If DTNA has drafted any such communications, furnish a copy of the draft. For any such communication that has been issued, identify, by name, address, telephone number, and contact person, each entity to which it*

was sent, the date on which the communication was sent, and the specific equipment to which the communication pertained. For each such communication:

- a. Provide a complete chronology, listing all activities or events, including, but not limited to, incidents, which led DTNA to issue the communication;
- b. Provide a listing (in chronological order) of all testing through which the need for the communication was identified and/or assessed, even if the testing was being conducted for another purpose. Please provide a copy of all relevant information from each test listed; and
- c. State the number of repairs and/or replacements paid for by DTNA that resulted from the communication identified. List your response by repairing dealer (and include the dealer's name, address, and telephone number).

DTNA's Response

The attached file "Response to Question 5" contains copies of service or campaign communications regarding the trailer PDM on Subject and Peer vehicles. DTNA has issued two service bulletins concerning the subject component. Service Bulletin 54-196 was issued in January 2006 to provide instructions on changing the mounting of the PDM from a vertical to a horizontal orientation using a new mounting bracket. Service Bulletin 54-224 was issued in April 2009 to introduce an improved design for replacement parts. The new PDM design features included a cover overlapping the base, a larger cover seal, a Goretex vent, elimination of rivet holes, a stainless power stud, and silicone-sealed terminals and seams. DTNA does not distribute service bulletins but rather uploads them to its online service database. DTNA also does not keep records of repairs made pursuant to particular service bulletins.

In addition to the service bulletins, Recall FL529A (NHTSA #08V-154) information was sent to 721 vehicle owners, with 359 vehicles evaluated for the alleged defect. 139 vehicles had the PDM location changed and 220 had the PDM removed completely because the truck was not used to tow trailers. See included recall bulletin "FL529ADLR" and recall recipient information "Confidential Business InformationFL529A Customer Notification.pdf" in file "Response to question 5" for information regarding the recall and recipients of the recall information and service. In addition, excel workbook "FL529A.xlsx" provides information for repairing dealers.

Question #6

6. Identify all locations which DTNA installed the PDM on the subject and peer vehicles. Include engineering drawings, build station instructions, and/or pictures as necessary.

DTNA's Response

	Subject Gp	Peer Gp	Diagram
Drop Center XMember	X		D06-46450-000
End Of Frame XMember	X		D06-43573-000
Forward Under Cab OutBoard	X		D06-58621-000
High Bracket Location Right Hand Fuel Tank	X		D06-58621-000

Rail Mounted Aft Of Cab InBoard	X		D06-42122-000
Rail Mounted Aft Of Cab OutBoard	X		D06-54953-000
Rail Mounted End Of Frame InBoard	X		D06-62231-000
Bottom of Fuel Tank Bracket Mounted		X	D06-58621-000
Bottom of Fuel Tank Bracket Mounted		X	D06-57835-000

The referenced drawings are included in the file folder entitled “Response to Question 6.”

Question #7

7. *Provide a detailed chronology of all events regarding the alleged defect which lead DTNA to issue the initial recall (08V-154) and continue to the present time. Describe how DTNA first became aware of the alleged defect and state the date on which DTNA first became aware of the possibility of the alleged defect. Include all information including dates of both internal and external meetings, meetings with fleets, manufacturers, or any others involved in this issue and discuss the resolution, planned action, and/or the manner in which DTNA plans to address this issue. Also separately, provide a copy of any/all document(s) and presentation materials that were used during the meeting(s) whether DTNA generated the document(s) or the document(s) were generated by others.*

DTNA’s Response

As discussed in more detail in response to questions five and eight, the trailer PDM has been the subject of continuous improvement design and installation improvements to reduce water intrusion since 2003, when a cover was first added to the PDM. Similarly, in 2010 trailer PDMs on new M2 vehicles were relocated to a position inside the cab. Regarding recall 08V-154, Freightliner received a field report in November 2006 regarding four vehicles with trailer PDM issues, where the PDM was mounted below the fuel tank. In June 2007, we received a question from NHTSA regarding eight field reports over the prior three quarters related to stop lamp failures on MY 2006 Business Class M2 vehicles. In December 2007, Field Service Campaign SF377A was drafted to implement relocation of the fuel tank bracket mounted trailer PDM on a fix-as-fail basis. This campaign either removes the PDM if not used for towing vehicles, or relocates inside cab if the vehicle tows other vehicles. Information on this field service measure was provided to NHTSA in January 2008. In February and March of 2008, Freightliner initiated a product defect investigation to fully examine the water intrusion issues associated with the Field Service Campaign. In March, the recall advisory committee recommended converting Field Service Campaign SF377A into a safety recall for all M2 vehicles that had trailer PDMs mounted in this location. The affected vehicles included all M2s manufactured with Option Code 294-1AE between June 15, 2005 and January 2, 2007.

Question #8

8. *Describe all modifications or changes made by, or on behalf of, DTNA 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 vehicle. For each such modification or change, provide the following information:*
 - a. *The date on which the change was incorporated into production;*

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- b. A detailed description of the change;
- c. The reason(s) for the 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, inventory(s) 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

DTNA's Response

Part modifications are described in the attached Excel Workbook entitled "Confidential Business Information RESPONSE TO QUESTION 8.xlsx"

Question #9

9. State the number of each of the following that DTNA has sold that may be used on the subject or peer vehicles by component name, part number (both service and engineering/production), make, model and model year of the subject vehicle in which it is used and month/year of sale (including the cut-off date for sales, if applicable):
- a. Subject component identified by manufacturer and part number; and
 - b. Any kits that have been released, or developed, by DTNA for use in service repairs to the subject component/assembly also by manufacturer and part number.

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

DTNA's Response

Peer Grp					
Component Name	Part Number	Make	Model	Model Year	Count
PDM Kit	25-FL529-000	Freightliner	M2 106 M2 112	2005-2007	█

It is not possible to identify the number of subject and peer components from the total aftermarket sales population. Aftermarket sales does not have a breakdown for domicile, make, model and model year for installation of components and rolls up components to highest level (ie, all discontinued parts will be rolled into the current design). Aftermarket sales information for PDM's is █ of A06-66807-000 and █ for A06-66808-000. This includes all sales of parts with these numbers and predecessor part numbers regardless of the country in which the part was sold and regardless of the model and model year vehicle on which the part may have been used. These additional models include: Sterling model year 2008, Argosy/Coronado/Columbia model year 2011 and Cascadia model year 2008 to the present. These part sales volumes also include sales by DTNA service centers that are made for the repair or

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modification of trucks manufactured by other OEMs. (confidential information redacted, non-redacted information is provided to chief counsel).

All PDMs were supplied by Cooper Bussman. The supplier information is as follows:

Supplier Name	Contact Person	Title	Contact Information
Cooper Bussman	Michelle Blake	Sales Support Coordinator	Phone: (888) 867-8194

Question #10

10. Provide a list including contact information for the ten (10) fleets that purchase the largest quantity of subject vehicles.

DTNA's Response

Fleet	Contact Info
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]

(confidential information redacted, non-redacted information is provided to chief counsel).

Question #11

11. Provide a full description and copies of the maintenance and inspection requirements furnished by DTNA or on DTNA's behalf to owners and leasers that relate or may relate to the alleged defect in the subject vehicle.

DTNA's Response

Maintenance instructions are provided in the file folder entitled "Response to Question 11."

Question #12

12. 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, DTNA. 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.*

DTNA's Response

DTNA has undertaken several evaluations that relate to, or may relate to, the alleged defect in the subject vehicles.

In April-June 2003, DTNA undertook an evaluation to determine whether or not the sealed/covered version of the PDM would be an effective solution for protecting the PDM components from splash and spray. The investigation and analysis, which included subjecting the sealed PDMs to pressure washing under the SAE J1455 method, salt spray exposure per ASTM B117 for 500 hours, as well as temperature, thermal shock, and humidity cycling was completed in June 2003. The evaluation concluded that the sealed unit successfully passed the liquid intrusion tests and would be suitable for external mounting applications subject to spray and splash.

In January and February of 2005, the trailer PDM was tested to determine whether the fuses could be replaced with mini circuit breakers to reduce customer inconvenience associated with fuse replacements caused by bad trailer wiring. The test concluded that the circuit breakers could not be used in these PDM. The close proximity of the breakers to the relays in the PDM caused self-heating and mechanical failure of the breakers at circuit loading well below the rated load. The use of circuit breakers to replace fuses was not recommended.

In November and December of 2005, Freightliner tested a version of the PDM where the internal power grid was fully encapsulated in a urethane compound to reduce the potential for corrosion. The components were tested for thermal shock, electrical loading, and durability. The testing caused some test parts to experience breakdown of the urethane encapsulation caused by the heating of the power grid under nominal voltage/maximum current loads when combined with high temperatures. The use of the urethane blocked air gaps that enabled cooling along the current paths and caused excessive heat build-up which degraded the urethane. Freightliner concluded that the encapsulation should not be used.

In December 2006 through January 2007, Freightliner evaluated a new PDM version with a different cover seal design. The testing included pressure washing based on SAE J1455 to compare the moisture proof performance of the existing and alternative part designs. The new part design did not outperform the then current design under the pressure washing and the new PDM cover design was not recommended for production.

From April 2007 to March 2008, Freightliner conducted validation testing on the new “Severe Service PDM” to evaluate the potential for water intrusion for severe duty applications. Electrical, mechanical and environmental exposure tests were conducted, including pressure washing and salt fog exposure. The testing was successful, and the seal integrity was validated. The testing did note that the footprint of the part was larger than the current PDM, and that the Severe Service PDM would require a redesigned mounting bracket before use on vehicles.

As discussed in response to question #7, Freightliner responded to questions from NHTSA on the alleged defect in January 2008. In February 2008, we commenced a product defect investigation internally and presented the issues to the recall advisory committee. In March, the recall advisory committee recommended converting Field Service Campaign SF377A into a safety recall for M2 vehicles that had trailer PDMs mounted in this location. We have continued to monitor the performance and durability of the PDM since that time, to evaluate whether any other mounting locations should be addressed through additional field service measures or safety recalls. No additional safety related defects, other than the one addressed by 08V-154 have been identified.

Test reports and excel workbook are provided in the file folder entitled “Response to Question 12”

Question #13

13. *Furnish DTNA’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; and*
- e. *What warnings, if any, the operator and other people both inside and outside the vehicle would have that the alleged defect had occurred?*

DTNA’s Response

Daimler Trucks North America has found no evidence indicating a safety defect exists in the subject component on the subject model year 2007 M2 vehicles other than the one addressed by recall 08V-154. Recall 08V-154 removed all M2 PDMs from below the fuel tank mounting bracket location close to the ground and exposed to significant levels of road spray. M2 PDMs are no longer installed at that mounting location. Incremental improvements have been made to the design, location and environmental protection of the PDM reducing the possibility of water intrusion and corrosion and the potential effect on the lighting systems. There are a number of warnings associated with impending light failures, including short circuits that result in the lights remaining on constantly, or flickering, or failing to illuminate during pre-trip inspections. Although most of the subject vehicles which actually tow trailers have already been campaigned, these warnings enable failures to be caught at an early stage through pre and post trip inspections. With proper maintenance procedures, careful pressure washing, and proper closure and

securement of the PDM cover, as well as pre and post trip inspections performed on vehicles, there is no unreasonable risk to motor vehicle safety at this time, and we believe that recall 08V-154 has fully addressed any issues that once existed.

Please contact me if you have any questions.

Sincerely yours,

A handwritten signature in black ink that reads "Nasser Zamani". The signature is written in a cursive, flowing style.

Nasser Zamani

Enclosures

Cd including requested information and redacted data.