DAIMLER

Daimler Trucks North America
Andy Jones
Manager
Compliance and Regulatory Affairs

PUBLIC VERSION

January 16, 2019

The Honorable James C. Owens
Acting Administrator
National Highway Traffic Safety Administration
1200 New Jersey Avenue, S.E.
Washington D.C. 20590

Re: Request for Inconsequential Noncompliance, Daimler Trucks North America

Dear Administrator Owens:

Pursuant to 49 U.S.C. § 30118(d) and 49 C.F.R. Part 556, Daimler Trucks North America ("DTNA") submits this petition for inconsequentiality. DTNA seeks an exemption from the notice and remedy requirements of the Vehicle Safety Act, pursuant to 49 U.S.C. §§ 30118(d) and 30120(h), and 49 C.F.R. Part 556, because the noncompliance described below is inconsequential to motor vehicle safety.

DTNA filed a noncompliance report for certain Thomas Built School Buses on December 17, 2019 (copy attached) identifying a total of 7,601 Saf-T-Liner HDX School Buses. (NHTSA Recall 19V-899). As required by 49 C.F.R. § 556.4(b)(3), the noncompliance report was filed by Daimler Trucks North America which is located at 4747 N. Channel Avenue, Portland, Oregon 97217. DTNA is a limited liability company organized under the laws of Delaware.

I. Background and Description of the Noncompliance

DTNA, the manufacturer of the subject vehicles, determined that certain Model Year 2011-2021 Thomas Built Saf-T-Liner HDX School Buses do not fully comply FMVSS 222, S5.2.3, Barrier performance forward. The subject buses were manufactured with a wall mounted restraining barrier at the first rafter on the passenger side. When tested according to the test procedure, the restraining barrier did not meet the force/deflection curve or deflection requirements because the upper loading bar made contact with the trim panel on the front entry door of the bus. This contact caused the upper loading bar force to exceed the allowable limit.

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NHTSA notified DTNA of an apparent test failure on October 30, 2019. In response, DTNA requested it be allowed to review and assess the manner in which the test was set up and conducted. Following that in-person review and after an indication from the agency that it should imminently submit its Noncompliance Information Report, on December 17, 2019, DTNA made a determination that a noncompliance existed. DTNA submitted its Noncompliance Information Report the same day.

After submitting the Noncompliance Information Report, DTNA continued its internal evaluation of the circumstances to better understand how and why the right side of the front barrier was not able to absorb the required energy before the upper loading bar exceeded the allowable force limit as it had in the past.

DTNA found that it had modified the restraining barrier design in October 2009 following an update to FMVSS 222 to increase the seat back height requirement to 24 inches. For aesthetic purposes and not for functional or compliance reasons, DTNA similarly adjusted the profiles (slope and angle) of the restraining barrier to match the new higher seatback height. To do so, DTNA added approximately 5/8 inch of foam padding to each side of the restraining barrier. (See Figure 1). Notably, the foam was added onto the outside of the frame of the barrier – doing so did not widen the frame structure itself. The additional padding is used for cosmetic purposes (to promote uniformity of design of the seat profiles at that time) and is not needed to provide protection beyond the construction of the restraining barrier itself.

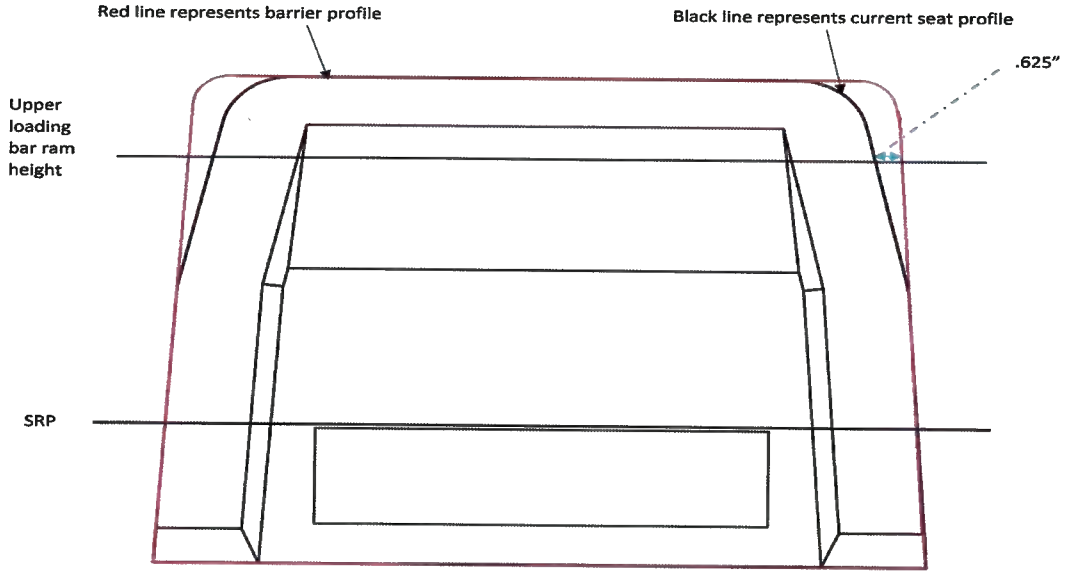

Figure 1: Overlay of barrier foam with current seat foam

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The effect of this adjustment was, due to the parameters of the test procedure, to cause the placement of the upper loading bar to move outwards, towards the wall of the bus during testing which in turn allowed it to make contact with the door frame trim. The addition of the foam, while it had no real world impact, created an unexpected consequence when tested in accordance with the test procedure.

Positioning of the upper loading bar is based on a calculation based on the relation to the SrGP. Per NHTSA's test procedure:

> Position the upper loading bar so that it is centered laterally along the barrier and the pivot attachment point and stroking device are in a horizontal plane 406 mm [± 6] above the SgRP. Adjust the length of the loading bar such that it is 102 mm [+13/ -6] less than the width of the barrier at the loading bar height.

The results indicated in the compliance test are attributable to the setup and operation of the upper loading arm in relation to the door frame. DTNA's analysis demonstrates that if the additional 5/8 inch of foam is removed from each side, the test device is slightly relocated and cannot come into contact with the door frame. The frontal barrier then absorbs 150% of the required energy, well beyond the minimum requirements. As described in detail below, as compared to where the arm would have been placed had the design remained the same, the operation of the frontal barrier itself remains uncompromised and there is an inconsequential effect, if any, on motor vehicle safety.

[ ]

[ ]

Further, the unreasonable risk to safety that FMVSS 222 attempts to address through the performance of the restraining barrier is to ensure that it can withstand the force of an occupant striking the barrier and preventing an occupant from being thrown over the barrier. Since the additional foam on the edges of the restraining barrier is for aesthetic purposes only, the more appropriate evaluation of the restraining barrier performance is the portion of the barrier from the frame inwards, not including the additional 5/8 inch of foam.

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II. Analysis

The purpose of the restraining barrier is to provide compartmentalization for occupants of the first row of school bus seats where there is not a seat back to offer protection. FMVSS 222 includes a series of performance requirements for school bus frontal barriers which include: distance between the barrier and the seat (S5.2.1), the barrier height and position (S5.2.2) and barrier forward performance (S5.2.3). The purpose of the barrier forward performance requirement at S5.2.3 is to ensure the front barrier can withstand the impact of certain set forces while at the same time maintaining component integrity.

A. The Force Exceedances are a Product of the Test Apparatus That Would Not Occur in the Real World

The effect of the additional foam outside the restraining barrier frame was to slightly widen the restraining barrier. Now, with a wider restraining barrier, the placement of the upper restraining barrier is moved outwards so that it now comes into contact with the door frame trim. With a wider restraining barrier, based on its calculated placement per the test procedure, the corresponding length of the upper loading bar becomes longer than that of the prior design. When the upper loading bar deployed, it made contact with the front entrance door trim and caused the upper loading bar to exceed the force limits.

The behavior of the upper loading bar is a product of the test procedure and does not represent the behavior of the barrier in actual use conditions. Prior to the 2009 design change, there was an approximately two inch gap at the height where the upper loading arm was placed. This design well exceeded the minimum requirements as indicated above. With the design change in 2009, that space was filled in with soft foam, but the effect of doing so did not have any impact on the performance or integrity of the barrier itself.

DTNA has since conducted its own analysis of the restraining barrier performance in the design tested by the agency as well as the prior design. The results of that testing demonstrates that the additional foam creates approximately 11 mm (.43 inches) of interference between the upper loading bar on the right side of the vehicle and the bus entrance door frame. The additional foam was not intended to and does not provide any safety or functional benefit. Even though the prior design of the restraining barrier left a small gap between the bus sidewall and the barrier itself, the barrier was more than sufficient to meet the performance forward requirements. The addition of foam for cosmetic purposes in 2009 does not deter from the safety of the barrier.

Removing the additional 5/8 inches of foam padding would eliminate the potential for any interference with the upper loading bar as it then cannot come into physical contact with the doorframe. The previous small gap in space did not expose occupants to an increased risk of

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harm (as demonstrated by the lack of any reports from the field potentially related to this issue) and the more recent addition of the foam also does not create any safety concerns beyond the operation of the test itself.

B. The Current Restraining Barrier Addresses the Unreasonable Risk to Safety Identified by FMVSS 222

The purpose of a restraining barrier is to compartmentalize and contain passengers located in the first row of seats in the event of a crash or sharp deceleration. The forward performance test evaluates the strength of the restraining barrier in a forward impact and to deflect in a controlled manner as it absorbs the energy of the occupant striking the barrier.

The restraining barrier is intended to provide an equivalent level of compartmentalization as does the seat back for the rearward seats. The safety benefit of compartmentalization is realized through the height of the restraining barrier (or seatback) as a restraining barrier that is too low could increase the likelihood that in a forward crash, an occupant could be thrown over the barrier. This view is consistent with the requirement that the height and position of the restraining barrier match or "coincide" with that of the seatback.[1] Because FMVSS 222 defines the unreasonable risk to safety as the potential for being thrown over the barrier, it is the height and position of the barrier that mitigate against this risk.

Additionally, while the surface area of the barrier must at least coincide with the surface area of the seat back, any additional width of the barrier that extends beyond the frame of the barrier and thus is surplus material that does not address the unreasonable risk to safety identified by the standard. The agency has previously recognized that a "restraining barrier must therefore only coincide with or lie outside of the seat back surface required by S5.1.2. If a seat back surface exceeds the size required in Standard 222, the size of the restraining barrier need not coincide." *Letter to Wort,* August 11, 1987. The reverse also holds true.[2] For the subject buses, the surface area of the barrier is larger than that of the seat back and exceeds the area required by S5.2.1. While the restraining barrier surface area can be larger than the seat back, the unreasonable risk to safety is addressed by maximizing the effects of compartmentalization by ensuring the perimeter of the restraining barrier coincides with the surface area of the seat back.

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[1] *See* FMVSS 222, S5.2.2 "Barrier height, position, and rear surface area. The position and rear surface area of the restraining barrier shall be such that, in a front projected view of the bus, each point of the barrier's perimeter coincides with or lies outside of the perimeter of the minimum seat back area required by S5.1.2 for the seat immediately rearward of the restraining barrier."

[2] Arguably the placement of the arm should be calculated based on the size of the barrier from the frame inwards and not include the surplus material that does not provide structure to the barrier.

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Finally, the test procedure takes into account the need to assess the portion of the barrier that is intended to bear the force of the loading. When creating the test procedure, the agency intentionally limited the length of the loading bar to be approximately 4 inches shorter than the width of the seat back or restraining barrier.[3] NHTSA declined to reduce the size of the range to two inches because it wanted "to ensure loads would be transferred to the seat structure without collapse of the seat back" and to discourage manufacturers from adding a narrow structural member in order to meet the requirements. *See* 39 Fed. Reg. 27585 (July 30, 1974). In other words, the objective of the forward performance test is to measure the operation and structural integrity of the restraining barrier by ensuring the loads are concentrated in the core of the structure itself and not the periphery of the structure which could cause it to unnecessarily collapse. Thus, the additional foam installed outwards of the retaining barrier frame has no bearing on the forward performance of the restraining barrier.

III. Conclusion

DTNA has corrected this issue in production by adjusting the location of the installation of the barrier by moving it away from the wall by ¾ inch. Doing so ensures that in any future testing, the loading bar will not come into contact with the door frame.

Finally, DTNA has used this seating design for over a decade. It is not aware of any consumer complaints or reports of accidents or injuries related to the forward displacement of the restraining barrier.

Based upon the foregoing data and information, DTNA requests that the agency determine that the noncompliance involving the restraining barrier is inconsequential to motor vehicle safety and that Daimler Trucks North America be relieved of its notice and remedy obligations.

Sincerely,

Andrew Jones

Andrew Jones
Manager
Compliance and Regulatory Affairs

Enclosure

[3] The same test procedure is used to measure the forward performance for both school bus seat backs and restraining barriers. FMVSS 222, S5.2.3 ("force is applied to the restraining barrier in the same manner as specified in S5.1.3.1 through S5.1.3.4 for seating performance tests.")

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Part 573 Safety Recall Report 19V-899

Manufacturer Name : Daimler Trucks North America LLC
Submission Date : JAN 16, 2020
NHTSA Recall No. : 19V-899
Manufacturer Recall No. : FL-843

Manufacturer Information :

Manufacturer Name : Daimler Trucks North America LLC
Address : 4747 N. Channel Avenue
Portland OR 97217-3849
Company phone : 800-745-8000

Population :

Number of potentially involved : 7,601
Estimated percentage with defect : 100 %

Vehicle Information :

Vehicle 1 : 2011-2021 Thomas Built Buses Saf-T-Liner HDX
Vehicle Type : BUSES, MEDIUM & HEAVY VEHICLES
Body Style :
Power Train : NR
Descriptive Information : Certain Saf-T-Liner HDX School Buses built with a wall mounted barrier at the 1st rafter on the passenger side manufactured within the above dates.
Production Dates : OCT 21, 2009 - DEC 16, 2019
VIN Range 1 : Begin : NR End : NR ☐ Not sequential

Description of Noncompliance :

Description of the Noncompliance : On the affected school buses, the forward barrier may not meet the requirements of Federal Motor Vehicle Safety Standard (FMVSS) 222, S5.2.3: Barrier performance forward
FMVSS 1 : 222 - School bus passenger seating and crash protection
FMVSS 2 : NR
Description of the Safety Risk : DTNA intends to petition the agency pursuant to 49 CFR 556 for exemption from the notice and remedy provisions of the Safety Act on the grounds this noncompliance is inconsequential as it relates to motor vehicle safety.
Description of the Cause : NR
Identification of Any Warning that can Occur : NR

Supplier Identification :

Component Manufacturer

Name :	NR
Address :	NR
	NR
Country :	NR

Chronology :

October 30, 2019 NHTSA notified DTNA of potential noncompliance with FMVSS 222, S5.2.3: Barrier performance forward relating to certain barriers equipped on the Saf-T-Liner HDX School Buses. Based on the information provided by NHTSA's testing, DTNA began to investigate the issue to evaluate the potential noncompliance and to determine the scope and establish the potentially affected population. November 2019 DTNA requested a visit to NHTSA's test facility to review findings. December 11, 2019, DTNA visited the NHTSA test facility to review test procedure and findings with NHTSA. December 17, 2019, DTNA determined that a non-compliance exists on certain vehicles built with the suspect barrier mounted at the 1st rafter on the passenger side. January 16, 2020, On review of test results, DTNA decided to file a petition for exemption from the notice and remedy provisions of the Safety Act for this issue on the basis that this noncompliance is inconsequential as it relates to motor vehicle safety.

Description of Remedy :

Description of Remedy Program :	Daimler Trucks North America intends to petition the agency pursuant to 49 CFR 556 for exemption from the notice and remedy provisions of the Safety Act on the grounds this noncompliance is inconsequential as it relates to motor safety.
How Remedy Component Differs from Recalled Component :	NR
Identify How/When Recall Condition was Corrected in Production :	NR

Recall Schedule :

Description of Recall Schedule :	Daimler Trucks North America intends to petition the agency pursuant to 49 CFR 556 for exemption from the notice and remedy provisions of the Safety Act on the grounds this noncompliance is inconsequential as it relates to motor safety.
Planned Dealer Notification Date :	NR - NR
Planned Owner Notification Date :	NR - NR

* NR - Not Reported