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DATE: 08/03/88

FROM: ERIKA Z. JONES -- CHIEF COUNSEL NHTSA

TO: BARRY NUDD -- ATWOOD MOBILE PRODUCTS

TITLE: NONE

ATTACHMT: LETTER DATED 08/28/87 TO ERIKA Z. JONES FROM BARRY NUDD; LETTER DATED 07/14?88 EST TO S. ROBSON FROM FRANK BERNDT, STANDARD 207

TEXT: Dear Mr. Nudd:

This responds to your letters concerning Federal Motor Vehicle Safety Standard No. 207, Seating Systems, as it applies to seat adjusters and an interpretation of that standard which this agency issued on July 14, 1983 to Mack Trucks, Inc. ("Mack"). The Mack letter discussed problems related to testing heavy-duty truck seat adjusters on pedestal seats (i.e., seats which include a suspension system which are mounted on a pedestal-like structure). I regret the delay in responding and hope the following discussion answers your questions.

Your letter asks five questions about a seating system consisting of a bucket seat mounted on top of a pair of seat adjusters which are, in turn, attached to the top of a pedestal. Seat belt anchorages are attached to the pedestal. You characterize the main issue posed by your inquiry as "whether the weight of the pedestal should be added to the weight of the seat when calculating the force to be applied to the seat back for testing the compliance of the seat adjusters when mounted between the seat and pedestal." You included with your letter two figures depicting a test procedure you use for Standard No. 207.

By way of background information, the National Highway Traffic Safety Administration (NHTSA) does not grant approval of motor vehicles or motor vehicle equipment. Under the National Traffic and Motor Vehicle Safety Act, it is the responsibility of the manufacturer to ensure that its vehicles or equipment comply with applicable requirements. The following represents our opinion based on the facts provided in your letter.

The seat adjustment requirements with which you are concerned are set forth in paragraph S4.2.1 of Standard No. 207. That paragraph requires seats subject to the standard to "remain in [their] adjusted position during the application of each force specified in S4.2." Paragraph S4.2 provides, in pertinent part:

S4.2 General performance requirements. When tested in accordance with S5., each occupant seat, other than a

side-facing seat or a passenger seat on a bus, shall withstand the following forces.

(a) In any position to which it can be adjusted--20 times the weight on [sic] the seat applied in a forward longitudinal direction; (b) In any position to which it can be adjusted--20 times the weight of the seat applied in a rearward longitudinal direction;

(c) For a seat belt assembly attached to the seat--the force specified in paragraph (a), if it is a forward facing seat, or paragraph (b), if it is a rearward facing seat, in each case applied simultaneously with the forces imposed on the seat by the seat belt assembly when it is loaded in accordance with S4.2 of @ 571.210; * * *

* * * * *

Before I address your specific questions, I would like to begin with a discussion of two related issues raised by your letter. The first concerns the "due care" responsibilities of a manufacturer to ensure that its vehicles or equipment comply with applicable Federal motor vehicle safety standards. This issue arises in each of your questions asking us whether the test procedures you use are permitted by Standard No. 207.

As you know, each safety standard specifies the test conditions and procedures that the agency will use to evaluate the performance of a test vehicle or item of equipment under the appropriate requirements. The agency precisely follows each of those specified test procedures in conducting its compliance testing. However, it is important to keep in mind that the Vehicle Safety Act does not require a manufacturer to test its products in only the manner specified in a particular motor vehicle safety standard or even to test the product at all. A manufacturer may choose any means of evaluating its products to determine whether the vehicle or item of equipment complies with the requirements of that standard, provided, however, that the manufacturer exercises due care in ensuring that the vehicle or equipment will comply with Federal requirements when tested by the agency according to the procedures specified in the standard. In other words, the manufacturer must show that his chosen means of evaluating compliance is a reasonable surrogate for the test procedure specified by the standard.

In the event that the agency determines an apparent noncompliance exists with a vehicle or item of equipment tested in the agency's compliance program, the manufacturer must show the basis for its certification that the vehicle or equipment complies. The manufacturer may be subject to civil penalties unless it can establish that it exercised due care in its designing and manufacturing of the product and in its checking (through actual testing, computer simulation or otherwise) to ensure compliance, but nevertheless did not have reason to know that the vehicle or item of equipment did not in fact comply. Of course, notwithstanding the exercise of due care, the manufacturer would still be subject to the

recall responsibilities of the Vehicle Safety Act for its noncomplying vehicles or equipment.

The second issue relates to your understanding of the agency's 1983 letter to Mack concerning the test of seat adjusters. In that letter, NHTSA addressed the issue of how a heavy-duty truck seat mounted on a pedestal-like structure can be loaded consistent with Standard No. 207. The agency said:

a manufacturer could establish due care through a combined test procedure which would load the seat adjusters and upper seat section to only 20 times the weight of those components to determine if the seat would remain in its adjusted position, and which would load the seat as anchored to the vehicle structure to 20 times the weight of the entire seat, including the pedestal.

You have concluded from the above-quoted language that:

the first portion of the procedure ... establishes that the seat adjusters meet the requirement of Standard No. 207, S4.2. The second portion of the test then establishes the compliance of the seat structure from the seat adjusters down to the pedestal mounting in the vehicle to the general requirements of S1 that seat attachment assemblies and their installation meet the standard as well as the seat itself.

I would like to clear up any misunderstanding on your part that the "combined" test procedure discussed in the Mack letter in effect revised Standard No. 207's requirements by establishing a sequential two-part test procedure which excludes the upper seat structure, as manufactured on the vehicle, from the general performance requirements of S4.2. I note that some of your questions relate to this apparent misunderstanding of the Mack letter. The primary issue addressed in the agency's letter to Mack was whether a manufacturer could meet the due care requirement when it tests its pedestal seats by using a procedure different from that specified in the standard. The interpretation did not exclude seat adjusters from the requirements of S4.2, as you appear to believe, or provide for a secondary test applying only to "the seat adjusters down to the pedestal mounting." Under Standard No. 207, the entire seat, including the upper seat structure and pedestal, is subject to the general performance requirements and force applications specified in S4.2. The seat adjusters must remain in their adjusted position during these force applications. (S4.2.1.)

In light of your letter, the agency has re-examined its statements in the Mack letter concerning whether a manufacturer could establish due care through the sequential two-part test procedure described therein. The procedure discussed in the letter to Mack for demonstrating compliance with Standard No. 207 subjects a seat specimen to a procedure different from that specified in the

standard, with somewhat different load applications. Upon reexamination, we have determined that the real issue presented to the agency was not a question of due care (since the agency could not have made such a finding due to the fact that not every seat

passing the test described by Mack can meet the standard's requirements when tested according to the procedures in the standard). Instead, the real issue concerned the appropriateness of Standard No. 207's current requirements as applied to pedestal seats. In its letter to the agency, Mack said that its seat adjuster should not be subject to forces generated by the pedestal structure since the adjuster would experience the force of only the upper seat section in a crash. (You raised a similar issue in your letter.) In responding to Mack, the agency agreed that with pedestal-type seats, "the adjusters and upper seat section would never experience a loading of 20 times the weight of the entire seat in an actual crash." (Emphasis in text.) Acknowledging an apparent discrepancy between the requirements of the standard for pedestal seat adjusters and real world crash conditions, the agency should have conducted rulemaking to determine whether Standard No. 207's requirements could be made more appropriate.

In light of the issues raised by your letter, we plan to initiate rulemaking on Standard No. 207's requirements for pedestal-type seats. Specifically, we will consider, among other issues, whether Standard No. 207 should be amended to adopt a modified test for pedestal seats similar but not necessarily identical to that described in the agency's letter to Mack. Until the issue is resolved by rulemaking, we will not take enforcement measures against a manufacturer who certifies that its seat adjusters conform to the requirements of S4.2.1 when that declaration is based on test results obtained from the test procedure described in the agency's letter to Mack.

Our statements in the preceding paragraph should not be misconstrued as implying, however, that your use of the two procedures you describe in your letter, which you said are modifications of the Mack procedure, establishes conformance to the standard. I will discuss this more fully below in answer to your five questions.

Your first question asks about the test method you use (depicted in your "figure 1") to evaluate the conformance of your seat adjusters with paragraphs S4.2(c) and S4.2.1. Your specific question is: "Does a load applied as in figure 1 satisfy the requirements of Standard No. 207 concerning the seat adjusters remaining in their adjusted position?"

With regard to the current requirements of Standard No. 207, the answer to your question is no. Standard No. 207 requires seats to (a) withstand the specified forces of S4.2, and (b) remain in their adjusted position during application of those forces, and currently has no separate test for seat adjusters. Instead, the seat must remain in its adjusted position during the one test specified by the standard. **A seat that fails to conform to Standard No. 207 when tested by the agency according to the standard's test procedures is considered an apparent noncompliance. A noncompliant seat is not converted into a compliant one "satisfy[ing] the requirements of Standard No. 207" simply because it has "passed" a test conducted by the manufacturer.**

However, in view of the agency's Mack letter and our plans to consider amending Standard No. 207's requirements for pedestal seat testing, we will interpret your question to ask further whether your figure 1

procedure is consistent with the test procedure described in the agency's Mack letter. With one change, the test procedure you use as shown in figure 1 is consistent with the procedure outlined in the agency's Mack letter for testing pedestal seats.

In order to be fully consistent with the Mack procedure, the lower seat structure (i.e., the pedestal) should be loaded to 20 times the weight of that component and the load should be applied at the pedestal's center of gravity simultaneously with "force D" in figure 1 (the force 20 times the weight of the seat belt anchorages, seat adjusters and upper seat frame) at the center of gravity of those components, and "force E" (the Standard No. 210 seat belt anchorage loads).

You should note also that while figure 1 appears to generally conform to the agency's statements in the Mack letter with regard to the proportionate load applied to the upper seat structure, Standard No. 207 requires the adjusters to sustain the specified forces in any position that is usable in actual operations. Therefore, the seat adjusters should be able to sustain the applied loads in not only the "full rearward" position depicted in figure 1, but also in all other usable positions.

Your next question referred to a test procedure depicted in your "figure 2" for testing seats to the performance requirements of S4.2. The test procedure depicted in figure 2 applies a force 20 times the weight of the upper seat structure and pedestal through the center of gravity of the entire seat structure, together with the seat belt anchorage load of 5,000 pounds specified by Standard No. 210. The seat adjusters are shown in figure 2 as welded or locked together. You ask whether "the seat adjuster, having passed figure 1 loads [can be welded or] locked for the second part of the test . . ." (The agency's letter to Mack made no reference to welding or locking the seat adjusters.)

The answer to your question is that when NHTSA tests a seat such as that described in your letter, the agency will not weld or lock the seat adjusters. As discussed above, NHTSA does not prohibit a manufacturer from using any test procedure in its determination of compliance. However, whether a manufacturer could establish due care through the figure 2 test procedure cannot be determined prior to and apart from an actual enforcement proceeding. Among other things, the manufacturer would have to show its reasons for concluding that the test was a reasonable surrogate for the agency's compliance test specified in Standard No. 207. Since welding or locking seat adjusters artificially creates a condition not representative of seat adjusters in the real world, we urge that this reasoning be carefully considered and developed.

Your third question asks whether the test procedures shown in figures 1 and 2 establish due care. We have answered this question in our responses to your first two questions and will not repeat our discussion here.

In your fourth question, you asked "can the 20 times seat weight load as required in Standard No. 207 S4.2 be applied at the center of gravity of

the seat as more [sic] accurate alternative to application from a point outside the seat frame in the horizontal plane of the seat's center of gravity?

We interpret your question to ask about either: (1) a manufacturer's obligation to test its seats as specified in Standard No. 207; or (2) the adequacy of the standard's present test procedure for pedestal seats. With regard to the first issue, as explained above, you are permitted to apply the S4.2

loads at the seat's center of gravity if, in the event that the agency tests according to the standard and finds a noncompliance, you can demonstrate that you did not have reason to know, in the exercise of due care, that the seat was not in compliance. In other words, the decision to rely upon your test instead of the test in the standard must be shown to be an exercise of due care.

As to the second issue, your letter did not demonstrate why the manner of applying the loads specified in Standard No. 207 should be changed. In your letter, you said the seat frame could significantly deflect as a result of forces acting on the frame that are higher than those required by the standard "[i]f the seat frame is excessively flexible and the braces [specified by the standard for testing seats to S4.2 were] not used." (Emphasis added.) It is unclear to us how your statement supports a change to the test procedures of S5 of the standard. Presumably, the cross-member placed on the seat in the horizontal plane of the seat's center of gravity ensures that the applied force remains in the horizontal plane and that the larger moment you observed on the seat attachment would not occur. In addition, your suggestion raises practicability issues since the center of gravity of a tested seat could vary over the duration of the test.

If you believe Standard No. 207's test procedures should be amended as described in your fourth question, you may submit a petition for rulemaking to NHTSA in accordance with the procedures set forth in Title 49 of the Code of Federal Regulations, Part 552. I have enclosed an information sheet explaining how you can obtain copies of this and any other NHTSA regulation.

Your fifth and final question relates again to your figures 1 and 2. You ask:

Can the seat belt load in figure 1 be eliminated based on the reasoning that an identical floor mounted seat and belt anchorage are not required to sustain the seat belt load and that the second part of the test, figure 2, subjects the seat assembly to the load to check the seat attachment assembly (pedestal) for compliance with Standard No. 207? . . . [A] pedestal mounted seat assembly should be permitted to have the tracks welded or locked together while the loads of 4.2(c) check the seat attachment assemblies to the general requirement of Standard No. 207.

As explained above, if you decide to eliminate the seat belt load from the forces applied to your seats, you must ensure that the seat will be able to meet the requirements of Standard No. 207 when tested in

accordance with the procedures specified in the standard. The agency is unable to make a determination outside the context of an enforcement proceeding whether your decision to eliminate the seat belt load or to weld certain components together conforms to the due care requirement. However, we recommend that you reconsider your reasons for eliminating the seat belt load--i.e., that the load is unnecessary because "an identical floor mounted seat and belt anchorage are not required to sustain the seat belt load."

Standard No. 207 is intended to ensure that seats and their attachments are strong enough not to fail as a result of "forces acting on them as a result of vehicle impact." (S1) A seat that has no seat belt anchorage attached to it will not see the load from the seat belt in a crash. Accordingly, since the

seat will not be loaded in a crash by the forces generated by the safety belt, it is not imperative that the seat be capable of withstanding the load from the belt. Thus, the seat need not be subjected to the seat belt anchorage loads of Standard No. 210.

On the other hand, a seat with seat belt anchorages attached thereto will be subject to forces generated by the belted occupant in a crash. It is necessary, therefore, that the seat be capable of providing occupant protection by remaining in place and withstanding the forces imposed on it in a crash, including that from the safety belt.

I hope this information answers your questions. Please contact my office if you have further questions.

Sincerely,

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