

the CRABI-12-month, and the Hybrid III 3- and 6-year-old dummies in rear- and forward-facing seat configurations, all with lap or lap and shoulder belt attachments (a top tether was not used). Charts providing plots of the normalized injury criteria measurements from these tests for HIC, chest acceleration and head and knee excursions are provided in the document titled, "Comparison of Flexible and Rigid Seat Backs—FMVSS No. 213 Test Assembly," which has been placed in the docket.

The CRABI 12-month-old dummy was tested in a rear-facing infant-only child restraint with both the rigid and the flexible seat backs. Charts A and B of the aforementioned document provide plots of the normalized injury criteria measurements from these tests for HIC and chest acceleration. There are no established head and knee excursion limits for rear-facing child restraints.

The Hybrid III 3-year-old dummy was tested in three forward-facing child restraints—a 5-point harness, an overhead shield, and a shield-type booster with the shield in place—using both the rigid and flexible seat backs as in the tests with the CRABI dummy. Charts C through K provide plots of the normalized injury criteria measurements from these tests for HIC, chest acceleration, head and knee excursion.

Similar tests were conducted using the Hybrid III 6-year-old dummy in both a backless belt-positioning booster and in a high-back belt-positioning booster seat. The plots of the normalized injury criteria measurements are provided in Charts L through Q of the document.

In each of the tested configurations (e.g., 3-year-old dummy in an overhead shield convertible restraint), only one set of rigid versus flexible comparison tests was run. As such, the data used to evaluate the effects of the seat back are limited at best. The data were inconclusive as to whether a rigid seat back represents a less vigorous test. Review of the data indicates that, in some cases, the move to a rigid seat back resulted in a reduction in measured dummy response (lower HIC and chest g's for the 3-year-old dummy in overhead shield convertible). However, other cases show increases in dummy response when the rigid seat back is used (higher HIC for 3-year-old dummy in 5-point harness convertible, shield booster; also for 6-year-old dummy in backless belt-positioning booster). Importantly, NHTSA notes that where differences in performance were noted for a particular injury criteria in a tested configuration, those differences were typically very small. Furthermore, in nearly each instance, results for both the

rigid and the flexible configurations were within a 20 percent compliance margin indicating a level of performance that is well within the established limits.

Based on the above data, NHTSA concludes that any differences seen between testing conducted with a rigid versus a flexible seat back would be minimal, and therefore, a move to a rigid seat back would not represent a less stringent test for child restraints. Further, the agency notes that there are more passenger cars (with rigid seat backs) than vans and multipurpose vehicles (with more flexible seat backs) in the existing vehicle fleet. As such, the move to a rigid seat back would more closely represent the existing vehicles on the road. The rigid seat back, on balance, will not be a less stringent requirement, and that it will allow child restraint performance optimization more representative of the vehicle fleet. In addition, a rigid seat back further harmonizes the standard's test seat assembly with ECE Regulation 44, which specifies a rigid seat back in testing child restraints to that standard. For the above reasons, NHTSA is adopting the rigid seat back as proposed in the NPRM.

Figure 1A of FMVSS No. 213 is revised to reflect the above changes, as is the drawing package of the seat assembly that is incorporated by reference into the standard. (This final rule makes a technical amendment to 49 CFR 571.5 to provide information on obtaining copies of the drawing package).

iv. Future Work. The agency tentatively decided in the NPRM that certain features of the bench seat need not be changed because they either reflected the design of production seats or are different but the difference was deemed not to have an effect on child restraint performance in dynamic testing.

Seat Cushion Length: NHTSA found that the current FMVSS No. 213 seat assembly has a seat pan length that is about 50 mm longer than the average seat pan length observed in today's vehicle fleet. The agency did not believe that the difference was significant. Commenters Consumers Union, Ms. Bidez, SafetyBeltSafe and ARCCA believed that the agency should consider shortening the length of the seat cushion to reflect a more demanding test condition. Ford commented that the current seat cushion is about the same length as a typical rear seat cushion, but suggested that the support for the seat cushion be extended to more realistically support the front edge of the cushion.

NHTSA continues to believe that the length of the seat cushion of the standard seat assembly need not be changed, as it closely reflects production seats and because there is no information indicating that the difference in seat cushion length may affect child restraint performance on the seat. In addition, in view of the time constraints of the TREAD Act, NHTSA did not assess seat cushion support. However, the agency does not believe that seat support is critical. While some existing passenger cars will likely have a seat cushion that is supported more fully toward the leading edge of the cushion, vans and SUVs with bench-type seats that are removable or foldable, or individual seats such as "Captains Chairs" typically found in the second row of seating positions, will likely have much less support toward the leading edge of the seat cushion than in passenger cars. The agency does not anticipate undertaking efforts to evaluate which of these conditions would provide a more stringent test.

Test Bench Floor: Graco and Ford indicated support for the addition of a floor onto the test bench for testing or rating⁷ child restraints. NHTSA does not believe that the standard seat assembly needs a floor because child restraints must meet the requirements of FMVSS No. 213 when attached to the seat assembly by use of the seat belts and LATCH system, without use of supplemental floor braces or other attachments. The commenters also suggest that an agency consumer information program rating the performance of child restraints should utilize all features with which the restraint is equipped, including those that are optional, *i.e.*, that are not necessary for the restraint to meet Standard No. 213. The agency will consider the suggestion when developing its upcoming consumer information pilot programs relating to child restraint performance.

Seat Cushion Stiffness: The question of the stiffness of the seat cushion attracted most of the comments relating to features of the seat assembly that the NPRM did not propose to change. The NPRM stated that the agency was interested in increasing the stiffness of the cushion, but was uncertain what differences, if any, could be seen in

⁷ Section 14(g) of the TREAD Act directed NHTSA to establish a child restraint safety ratings program. The agency has established an ease of use ratings program and will be conducting pilot programs on possible ratings programs geared toward rating child restraint performance in sled tests and vehicle performance in frontal vehicle crash tests. 67 FR 67491 (November 5, 2002)(Docket 02-10053).