DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Parts 571

Docket No. NHTSA-2005-21245

RIN 2127-AJ44

Federal Motor Vehicle Safety Standards;

Child Restraint Systems

AGENCY: National Highway Traffic Safety Administration (NHTSA), Department of Transportation (DOT).

ACTION: Notice of proposed rulemaking (NPRM).

SUMMARY: This document responds to Section 4(b) and Section 3(b)(2) of Anton's Law, which directed NHTSA to initiate rulemaking on child restraint system safety, with a specific focus on booster seats and restraints for children who weigh more than 50 pounds (lb). After the enactment of Anton's Law, this agency increased the applicability of Federal Motor Vehicle Safety Standard (FMVSS) No. 213, Child restraint systems, from restraints recommended for children up to 50 lb to restraints recommended for children up to 65 lb. Today's document proposes a further expansion, to restraints recommended for children up to 80 lb. It also proposes to require booster seats and other restraints to meet performance criteria when tested with a crash test dummy representative of a 10-year-old child. Section 4(a) and all other provisions of Section 3 were addressed in rulemaking documents issued previously by NHTSA.

DATES: You should submit comments early enough to ensure that Docket Management receives them not later than **[insert date 60 days after publication]**.

ADDRESSES: You may submit comments [identified by DOT DMS number in the heading of this document] by any of the following methods:

- Web Site: http://dms.dot.gov. Follow the instructions for submitting comments on the DOT electronic docket site.
- Fax: (202) 493-2251.
- Mail: Docket Management Facility; US Department of Transportation, 400 Seventh Street, SW, Nassif Building, Room PL-401, Washington, DC 20590-001.
- Hand Delivery: Room PL-401 on the plaza level of the Nassif Building, 400 Seventh Street, SW, Washington, DC, between 9 am and 5 pm, Monday through Friday, except Federal Holidays.
- Federal eRulemaking Portal: Go to http://www.regulations.gov. Follow the online instructions for submitting comments.

Instructions: All submissions must include the agency name and docket number or Regulatory Identification Number (RIN) for this rulemaking. For detailed instructions on submitting comments and additional information on the rulemaking process, see the Comments heading under the SUPPLEMENTARY INFORMATION section of this document. Note that all comments received will be posted without change to http://dms.dot.gov, including any personal information provided. Please see the information regarding the Privacy Act under the Submission Comments heading.

Docket: For access to the docket to read background documents or comments received, go to http://dms.dot.gov at any time or to Room PL-401 on the plaza level of the Nassif

Building, 400 Seventh Street, SW, Washington, DC, between 9 am and 5 pm, Monday through Friday, except Federal Holidays.

FOR FURTHER INFORMATION CONTACT: The following persons at the National Highway Traffic Safety Administration:

For non-legal issues: Mr. George Mouchahoir of the NHTSA Office of Rulemaking at (202) 366-4919.

For legal issues: Mr. Christopher Calamita of the NHTSA Office of Chief Counsel at (202) 366-2992 and at (202) 366-3820 by facsimile.

You may send mail to both of these officials at the National Highway Traffic and Safety Administration, 400 Seventh St., SW, Washington, DC 20590.

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I. Anton's Law

On December 4, 2002, President Bush signed Pub. L. 107-318, 116 Stat. 2772, ("Anton's Law[1]"), which provides for the improvement of the safety of child restraints in passenger motor vehicles. Section 3 of Anton's Law directed NHTSA to initiate a rulemaking for the purpose of improving the safety of child restraints, and to complete it by June 4, 2005. Section 4 directed NHTSA to develop and evaluate a test dummy that represents a 10-year-old child for use in testing child restraints, and to initiate a rulemaking proceeding for the adoption of the dummy within 1 year following that evaluation.

More specifically, Sections 3 and 4 of Anton's Law provide as follows:

> **Section 3. <u>Improvement of Safety of Child Restraints in Passenger Motor Vehicles.</u>**
> **(a) In General.** The Secretary of Transportation (hereafter referred to as the "Secretary") shall initiate a rulemaking proceeding to establish performance requirements for child restraints, including booster seats, for the restraint of children weighing more than 50 pounds.
> **(b) Elements for Consideration.** In the rulemaking proceeding required by subsection (a), the Secretary shall—
> (1) consider whether to include injury performance criteria for child restraints, including booster seats and other products for use in passenger motor vehicles for the restraint of children weighing more than 50 pounds, under the requirements established in the rulemaking proceeding;
> (2) consider whether to establish performance requirements for seat belt fit when used with booster seats and other belt guidance devices;
> (3) consider whether to address situations where children weighing more than 50 pounds only have access to seating positions with lap belts, such as allowing tethered child restraints for such children; and
> (4) review the definition of the term "booster seat" in Federal motor vehicle safety standard No. 213 under section 571.213 of title 49, Code of Federal Regulations, to determine if it is sufficiently comprehensive.

[1] Named in memory of Anton Skeen, a 4-year-old who was killed in a car crash in Washington State.

> **(c) Completion.** The Secretary shall complete the rulemaking proceeding required by subsection (a) not later than 30 months after the date of the enactment of this Act.
>
> **Section 4. Development of Anthropomorphic Test Device Simulating a 10-Year-Old Child.**
> **(a) Development and Evaluation.** Not later than 24 months after the date of the enactment of this Act, the Secretary shall develop and evaluate an anthropomorphic test device that simulates a 10-year-old child for use in testing child restraints used in passenger motor vehicles.
> **(b) Adoption by Rulemaking.** Within 1 year following the development and evaluation carried out under subsection (a), the Secretary shall initiate a rulemaking proceeding for the adoption of an anthropomorphic test device as developed under subsection (a).

II. Overview of NHTSA's Responses to Sections 3 and 4 of Anton's Law

Prior to the enactment of Anton's Law, the agency began several rulemaking proceedings on matters that were later included in Sections 3 and 4 of the Act. The agency continued work on those rulemakings following enactment of Anton's Law and later made final decisions in those rulemakings, taking into consideration the elements specified in the statute. As a result of those deliberations, NHTSA considered and addressed all but §3(b)(2) of the statute and has responded to one of the two elements of §4. The following discussion describes the elements of §3 and §4 of Anton's Law that have already been addressed by NHTSA, and the outstanding elements that are now addressed in this NPRM.

a. Sections Already Addressed

Sections 3(b)(1), 4(a) and 4(b)

Subsequent to the enactment of Anton's Law, the agency amended FMVSS No. 213 to expand the applicability of the standard from child restraints recommended for use by children weighing up to 50 lb to restraints recommended for children weighing up to 65 lb (30 kilograms) (June 2, 2003; 68 FR 37620; Docket No. NHTSA-03-15351). The

rulemaking was part of a planned agency upgrade to FMVSS No. 213, and also related to provisions in the Transportation Recall Enhancement, Accountability and Documentation Act (TREAD Act; Pub. L. 106-414, 114 Stat. 1800) addressing child passenger safety.[2] The agency expressly considered the directive of Anton's Law in that TREAD Act final rule, determining that extending the scope of the standard to 65 lb accorded with §3(b)(1). (68 FR at 37645.) The TREAD Act final rule adopted the weighted 6-year-old dummy for use in FMVSS No. 213 testing after the agency concluded that the dummy was suitable for testing the structural integrity of child restraints (68 FR at 37647) and that use of the dummy would ensure that booster seats certified up to 65 lb would not fail structurally in a crash. The agency codified the weighted 6-year-old dummy at 49 CFR Part 572, Subpart S (69 FR 42595; July 16, 2004).

In the TREAD Act final rule, the agency considered the merits of extending the standard to restraints recommended for use by children weighing up to 80 lb, but decided against that action because there was not then any test dummy that could adequately assess the dynamic performance of a child restraint in restraining an 80 lb child. Although work was underway on the Hybrid III 10-year-old child test dummy, the dummy was not ready in time for incorporation into that rulemaking. NHTSA believed that expanding the standard to restraints for children weighing up to 80 lb would not be meaningful in the absence of a dummy of suitable size and weight that could assess the conformance of the restraints with the performance requirements of the standard.

In September 2004, the agency completed its evaluation of the suitability of the Hybrid III 10-year-old dummy as a compliance test device, in accordance with §4(a) of

[2] The rule also updated procedures for testing child restraints, including incorporating other improved test dummies for performance testing and updating the bench seat used to test restraints to the requirements of FMVSS No. 213.

Anton's Law.[3] NHTSA determined the dummy was sufficiently sound to be proposed as an FMVSS No. 213 test dummy for testing child restraints recommended for children who weigh up to 80 lb. Accordingly, the agency is issuing today's NPRM to incorporate the dummy into FMVSS No. 213 as a test instrument. This proposal is part of a long-term agency plan on child passenger safety (Planning Document, 65 FR 70687; November 27, 2000; Docket NHTSA 7938), and also fulfills §4(b) of Anton's Law.

Section 3(b)(3)

NHTSA began a rulemaking in 1999 exploring whether to permit child restraints to be tethered in certain FMVSS No. 213 compliance tests in which they must now pass untethered. This rulemaking related to whether there are child restraints for children who only have access to lap belts. After considering all available data and information and §3(b)(3) of Anton's Law, the agency decided that an amendment was not appropriate and withdrew the rulemaking in 2004 (see 69 FR 16202; March 29, 2004, Docket No. 5891).

A number of restraints are available that can accommodate a child weighing 50 lb (22 kg) or more at a seating position equipped with a lap belt only. The Britax Wizard and the Britax Marathon are convertible child restraints with 5-point harnesses that are recommended for use in a forward-facing configuration by children weighing up to 65 lb (29.5 kg). The Britax Husky is a forward-facing only child restraint with a 5-point harness that is certified for children weighing up to 80 lb (36.3 kg). The Nania Airway LX Booster is a forward-facing child restraint that can be used with its 5-point harness by children weighing up to 50 lb (22 kg) with a lap belt. This availability illustrates that

[3] "Technical Evaluation of the Hybrid III Ten Year Old Dummy (HIII-10C)," Stammen; Vehicle Research and Test Center, National Highway Traffic Safety Administration (September 2004).

FMVSS No. 213 is not a deterrent in the production of child restraints for children who only have access to lap belts.

Section 3(b)(4)

When Anton's Law was enacted, FMVSS No. 213 applied to child restraints recommended for children who weigh up to 50 lb. As noted above, following enactment of Anton's Law, NHTSA expanded the applicability of the standard to child restraints recommended for children who weigh up to 65 lb. An effect of expanding the standard's application was to expand also the category of "booster seats" subject to FMVSS No. 213 to boosters recommended for children up to 65 lb (68 FR 37620, supra). That is, FMVSS No. 213 would apply not only to boosters recommended for children up to 50 lb, but to boosters recommended for use up to 65 lb as well.

The "booster seat" term was made more comprehensive in that rulemaking, and would be made even more so by today's NPRM. In proposing to expand the applicability of FMVSS No. 213 to restraints recommended for use by children weighing up to 80 lb, NHTSA believes that the term "booster seat" would be sufficiently comprehensive to encompass the overwhelming majority of booster seats manufactured for and used by children.

b. Sections Not Previously Addressed in Rulemaking

Section 3(b)(2)

Prior to the enactment of Anton's Law, NHTSA issued an NPRM exploring the issue of whether to require seat belt positioning devices to be labeled with a warning that the devices should not be used with children under the age of 6 (64 FR 44164; August 13, 1999; Docket No. 99-5100). The rulemaking was withdrawn in 2004 because there did

not appear to be sufficient safety need for the requirement and because the agency planned to conduct up-to-date research on current devices (69 FR 13503; March 23, 2004; Docket No. 5100). As discussed in today's NPRM, the agency has considered performance requirements for seat belt fit for booster seats or for belt guidance devices in accordance with §3(b)(2) of Anton's Law and has decided against such rulemaking at this time.

Section 4(b)

Section 4(b) of Anton's Law requires the initiation of a rulemaking proceeding for the adoption of an anthropomorphic test device that simulates a 10-year old child for use in testing child restraints used in passenger motor vehicles. Today's NPRM responds to §4(b) by proposing to adopt the Hybrid III 10-year-old dummy into FMVSS No. 213 as a test device used to test child restraints recommended for children weighing over 50 lb. NHTSA is also issuing an NPRM proposing to adopt specifications and performance requirements for the dummy into 49 CFR Part 572, Subpart T.

c. Summary of Responses to P. L. 107-318

In summary, NHTSA has considered and addressed all but one of the elements set forth in §3 of the statute and has responded to §4(a). Today's NPRM addresses the one outstanding element of §3 (whether there should be belt fit performance requirements), and responds to §4(b) by initiating rulemaking for the adoption of the Hybrid III 10-year-old dummy into FMVSS No. 213. It also would further expand the applicability of FMVSS No. 213 to restraints recommended for children up to 80 lb.

III. Expanded Coverage and Improved Evaluation of Booster Seats

a. Introduction

There has been considerable interest over the years in expanding the applicability of FMVSS No. 213 to increase the likelihood that child restraints (booster seats) that are recommended for older children will perform adequately in a crash. This interest goes hand-in-hand with efforts to increase booster seat use among children who have outgrown their child safety seat, but who cannot adequately fit a vehicle's lap and shoulder belt system. NHTSA recommends that children who have outgrown child safety seats should be properly restrained in booster seats until they are at least 8 years old, unless they are at least 4'9 inches tall. The goal of expanding the applicability of FMVSS No. 213 is to ensure booster seats that are recommended for children over the current weight limit meet the dynamic test requirements of the standard.

In the TREAD Act final rule, the applicability of FMVSS No. 213 was expanded to child restraint systems for children who weigh up to 65 lb. The agency also specified the use of the weighted 6-year-old (62-lb) test dummy to test restraints at the upper weight range. Use of the weighted dummy was viewed as an interim measure until the Hybrid III 10-year-old dummy was available.

The agency has completed its evaluation of the Hybrid III 10-year-old test dummy and is satisfied that the dummy's performance merits its proposal for use in FMVSS No. 213 compliance tests. (Hereinafter, the 10-year-old dummy is referred to as the "HIII-10C dummy.") In a separate NPRM published on July 13, 2005 (70 FR 40281; Docket No. NHTSA 2004-24217), the agency has proposed incorporation of the HIII-10C into 49 CFR Part 572, "Anthropomorphic test dummies."

Today's NPRM seeks to enhance child passenger safety by way of the proposals discussed below. It should be noted, however, that data indicate that booster seats are

generally very effective items of equipment. Based on its survey of vehicle crashes,[4] Children's Hospital of Philadelphia found that the odds of injury, adjusting for child, driver, crash, and vehicle characteristics, were 59 percent lower for children between the ages of 4 and 7 years in belt positioning booster seats than in seat belts alone. Children in belt positioning booster seats experienced no abdomen, neck/spine/back, or lower extremity injuries, while children in seat belts alone suffered injuries to all body regions.

Generally, current booster seat designs provide a high level of protection. Today's proposals are intended to ensure that all booster seats maintain this level of safety. If made final, the proposals would ensure that booster seats are robustly assessed to make sure that they would perform soundly in a 30 mile per hour (mph) crash when used by children at the upper limit of their recommended weight range, typically up to 80 lb. Booster seats recommended for children weighing up to 65 lb are now subject to FMVSS No. 213 testing, but they are now tested with a 50-lb instrumented dummy and with a 62-lb uninstrumented dummy. The standard does not now evaluate the boosters' performance with an instrumented test dummy weighing between 62 and 80 lb. Under today's NPRM, the ability of the boosters recommended for children weighing up to 80 lb to meet the performance requirements of FMVSS No. 213 would be assessed with the 77-lb Hybrid III 10-year-old dummy.

This notice addresses three issues. First, we propose to test restraints with the HIII-10C dummy, i.e., the dummy itself and how FMVSS No. 213 would be amended to reflect use of the dummy. Second, we explore whether the mass of belt-positioning boosters with seat backs should be limited, i.e., whether in a frontal crash, forces

[4] Children's Hospital of Philadelphia performed a cross sectional study of children ages 4 to 7 years in crashes of insured vehicles in 15 states. Data was collected via telephone and insurance claims records for 3616 crashes involving 4243 children.

generated by the mass of the seat back could overload the child occupant's chest. Third and last, in Appendix A to this NPRM, we discuss the agency's consideration of whether FMVSS No. 213 should be extended to belt-positioning devices.

b. Proposed Amendments to FMVSS No. 213

1. Hybrid III-10C Test Dummy

NHTSA has been interested in a test dummy between the sizes of a 6-year-old and a 5th percentile adult female for several years.[5] In early 2000, NHTSA asked the Society of Automotive Engineers (SAE) Dummy Family Task Group (DFTG) to develop a test dummy representative of a 10-year-old child. The agency wanted a dummy with a basic construction that would allow the dummy to be positioned in erect seated, slouched seated, standing, and kneeling postures. The ability of the test dummy to be positioned in a slouched posture was of particular importance because children whose legs are too short to allow them to bend their knees when sitting upright against a vehicle seat back will slouch down when seated directly on a vehicle seat in order to bend their knees over the edge of the seat for comfort.[6] It was thought that slouching could affect the placement of the lap belt portion of the seat belt on the abdomen[7] and thereby affect real-world performance of the seat belt in a vehicle.

The HIII-10C dummy was envisioned as having the same general construction as the adult dummies of the Hybrid III dummy family, but scaled to the average dimensions of a 10-year-old child. The most recent growth charts for children in the USA, developed by the National Center for Health Statistics (NCHS) for the Center for Disease Control

[5] A 5th percentile adult female is approximately the size of a 12-year-old.
[6] "Study of Older Child Restraint/Booster Seat Fit and NASS Injury Analysis," Klinich et al., DOT HS 808 248, November 1994.
[7] Discussion of the slouch factor's contribution to poor belt fit can also be found at 64 FR at 44164, 44169 (August 13, 1999; Docket No. NHTSA 99-5100).

(CDC 2000) indicate that the average 10-year-old child weighs 79.3 lb (36.05 kg), has a standing height of 56 in (1,422 mm) and a seated height of 28 in (711 mm). The Hybrid III-10C is close to its human counterpart with a weight of 77.6 lb, a standing height of 51 inches and a seated height of 28 inches. The dummy was developed with instrumentation measuring injury parameters for the head, neck, shoulder, thorax, pelvis, femur, and tibia.

The agency began evaluating the first production prototype of the HIII-10C test dummy in 2002. Extensive evaluation of the dummy continued through mid-2004. The evaluation has demonstrated good biofidelity, repeatability, reproducibility, and durability.[8] The agency has tentatively concluded that the Hybrid III-10C would provide an accurate representation of a 10-year-old child for the testing proposed in this NPRM. The agency is concurrently proposing incorporation of the Hybrid III-10C test dummy 49 CFR Part 572, Anthropomorphic test devices, by way of an NPRM published on July 13, 2005 (70 FR 40281; Docket No. NHTSA 2004-24217).

2. Extending the Applicability of the Standard

Based on the availability of the Hybrid III-10C test dummy, the agency is now proposing to extend the applicability of FMVSS No. 213 to include child restraint systems, including booster seats, recommended for use by children weighing up to 80 lb (36 kg).[9] Under the proposal, all child restraint systems, including booster seats, recommended for children weighing more than 50 lb, would be required to meet the specified injury criteria when tested with both the Hybrid III 6-year-old dummy (49 CFR Part 572, Subpart N) (HIII-6C) and the HIII-10C test dummies. All child restraint

[8] "Technical Evaluation of the Hybrid III Ten Year Old Dummy (HIII-10C)," supra.
[9] It is noted that the proposed extension would harmonize FMVSS No. 213 with ECE Regulation 44, in that both standards would regulate child restraint systems recommended for use by children weighing up to 36 kg.

systems, including booster seats, certified for use by children weighing between 40 and 50 lb would be required to meet the specified injury criteria when tested with the HIII-6C test dummy.

For convenience, Table 1 sets forth how test dummies are currently used in FMVSS No. 213, and the changes being proposed by this NPRM.

TABLE 1: Use of Dummies

Recommended Mass Range (Kilograms)	**Dummies Currently Used in Compliance Testing**	**Proposed Change**
Not greater than 5 kg (0 to 11 lb)	Newborn	Unchanged
Greater than 5 but not greater than 10 kg (11 to 22 lb)	Newborn, CRABI	Unchanged
Greater than 10 but not greater than 18 kg (22 to 40 lb)	CRABI, HIII 3-year-old	Unchanged
Greater than 18 kg but not greater than 22.7 kg (40 to 50 lb)	HIII 6-year-old	Unchanged
Greater than 22.7 kg (50 to 80 lb)	Weighted HIII 6-year-old	HIII 6-year-old, HIII-10C

The agency has tentatively decided that it would no longer use the weighted HIII 6-year-old dummy (which weighs 62 lb) to test child restraints because HIII 6-year-old and the HIII-10C dummies appear sufficient to evaluate the performance of a child restraint recommended for children weighing over 50 lb.[10] Comments are also requested on whether the HIII-10C dummy should be used to test any child restraint that is recommended for use by children weighing over 50 lb.

[10] While provisions providing for using the weighted Hybrid III-6C test dummy in testing would be eliminated from FMVSS No. 213 under the proposal, specification for the test dummy would be maintained in Part 572 because of the potential for future research and evaluation involving the dummy.

The agency proposes to provide manufacturers with two years of lead time from the date of a final rule. Optional early compliance with the requirements would be permitted.

3. Injury Criteria for the Hybrid III-10C Test Dummy

a. Proposed Criteria

The performance criteria that a child restraint must meet when restraining a test dummy would generally be unchanged, except for the buckle release requirements as described below. The requirements regarding dynamic performance, force distribution, installation, child restraint belts and buckles and flammability would thus be generally uniform for all restraints, including those tested with the HIII-10C dummy.

Consistent with current FMVSS No. 213 requirements, we are proposing to adopt the following maximums for the injury criteria measurements for the Hybrid III-10C: HIC_{36}=1000; chest acceleration=60 g's (3 millisecond clip); head excursion = 813 millimeters (mm) for untethered condition,[11] head excursion = 720 mm for tethered condition; and knee excursion = 915 mm. Given the effectiveness of booster seats currently in use, the agency tentatively concludes the proposed injury values would be appropriate to ensure the continued effectiveness of child restraints recommended for children weighing up to 80 lb. While injury data for older children in booster seats is very limited at this time, the agency is not aware of injuries unique to children in booster seats that would necessitate separate and differing injury criteria limits. The agency believes that the injury criteria proposed in this document would ensure that the

[11] In adopting more stringent head excursion regulations, boosters were excluded from the more stringent head excursion requirements because they are not tethered (see, 64 FR 10786; March 5, 1999; Docket No. 98-3390).

effectiveness seen across all types of child restraint systems would be maintained for restraints recommended for children weighing up to 80 lb.

In December 2003, the agency's Vehicle Research and Test Center (VRTC) tested eight booster seat models with the HIII-10C dummy in sled tests replicating the FMVSS No. 213 test configuration. Tests were also performed on two HIII-10C test dummies restrained by a lap/shoulder belt only, one was seated upright and one slouched. There was only one failure in the test series, a booster seat with a measured HIC (36) value of 1018, just marginally above the 1000 limit. Chest resultant accelerations and head and knee excursions were all well within the proposed limits in all tests with the FMVSS No. 213 pulse.[12] Test results are shown in Table 2.

Table 2. HIII-10C Injury Response

Test No.	Seat	HIC 36	Chest Acc (G)	Head (mm)	Knee (mm)
EFF1	Cosco Gnd Explorer	679	44.4	353	665
EFF1	Evenflo Right Fit	568	43.8	371	687
EFF2	Century Next Step	607	46.8	438	710
EFF2	Cosco Voyager	1018	50.3	434	750
EFF3	Graco Grand Cargo	993	54.6	444	745
EFF3	Century Breverra	659	45.7	422	714
EFF4	Britax Bodyguard	480	39.5	410	743
EFF4	Baby Trend Recaro	356	45.5	513	738
EFF5	No Booster	1105	45.7	445	801
EFF5	No Booster	855	42.2	385	768

[12] See "Hybrid III 10-Year-Old Dummy (HIII-10C) Injury Criteria," Stammen; Vehicle Research and Test Center, National Highway Traffic Safety Administration (September 2004).

The post-impact buckle force release requirement (S5.4.3.5(b)) currently differs according to the mass of the test dummy or dummies used in testing a child restraint, and would continue to do so under this proposal. Currently, S5.4.3.5(b) requires each child seat belt buckle to release when a force of not more than 71 N is applied, while tension (simulating a child restrained in the child seat) is applied to the buckle. Tension is applied because a child in the seat could impose a load on the belt buckle, which increases the difficulty of releasing it. (This requirement typically does not apply to a booster seat because boosters do not generally include a buckle as part of its structure.) If a child restraint were designed such that it would be tested with the HIII-10C dummy under this NPRM and had a buckle as part of the restraint's belt assembly, a tension of 437[13] Newtons would be applied when the buckle is tested according to the test procedures (S6.2).

b. Criteria Under Development

In developing injury criteria, VRTC also recognized a need to explore development of abdominal injury criteria for the HIII-10C. The kinematics that result in this type of injury are commonly referred to as "submarining." Submarining is when the pelvis becomes unrestrained by the lap belt portion of a safety belt assembly and then slides under the lap belt in a frontal impact. As a result, the belt is free to enter the abdominal cavity and cause injury to the unprotected internal organs and lumbar spine.

VRTC developed a ratio, the abdominal injury ratio (AIR), which uses impulse calculations from the iliac compressive and lumbar shear forces to identify dummy

[13] This value was calculated using the same ratio of dummy mass vs. applied tension used when the agency adopted the weighted 6-year-old dummy into FMVSS No. 213 for use in compliance testing.

kinematics associated with submarining. Preliminary testing indicated that the AIR might provide a basis for evaluating submarining potential.

At this time the agency is not proposing to establish injury criteria based on the AIR calculation. The agency has limited data with respect to the AIR parameter and additional testing is needed to evaluate its effectiveness in predicting abdominal loading in a consistent and accurate manner. However, the agency intends to continue efforts in developing an objective means to measure and evaluate abdominal loading, both through continued evaluation of the AIR parameter as well as alternative methods of measurement.

We note that when knee excursion was originally established in FMVSS No. 213, we stated that its purpose was to prevent manufacturers from controlling the amount of head excursion by designing restraints that permit an occupant to slide downward and forward, legs first (44 FR 72133). In the context of knee excursion, the agency referred to an occupant sliding legs first under a lap belt as "submarining." However, knee excursion is one of two potential major consequences of "submarining." Regarding AIR parameters, "submarining" can also result in movement of the belt from the pelvic area into the abdominal cavity. This does not necessarily result in excessive knee excursion. Discussions of "submarining" in the remainder of this document focus on the factors related to the AIR parameters.

c. Chest Deflection and Mass Limit for Boosters

We are requesting comment on eliminating the 4.4 kg mass limit for belt-positioning boosters. In place of the mass limit, we are considering the incorporation of the in-position chest deflection requirements from FMVSS No. 208 for the Hybrid III-3C,

-6C, and 10C test dummies. The agency believes that chest deflection requirements may provide an alternative to the use of a mass limit for preventing excessive belt forces from being loaded on a child occupant.

Background

Presently, S5.4.3.2, Direct restraint, of FMVSS No. 213 requires that:

> Except for a child restraint system whose mass is less than 4.4 kg, … each Type I and lap portion of a Type II vehicle belt that is used to attach the system to the vehicle shall, when tested in accordance with S6.1, impose no loads on the child that result from the mass of the system[.]

In a March 16, 1994 notice of proposed rulemaking, the agency proposed to prohibit child restraint designs that would result in a vehicle's lap belt, or lap portion of a lap/shoulder belt belts, imposing any load on a child resulting from the mass of the restraint system (59 FR 12225; Docket No. 74-09; Notice 35). In response, several commenters stated that the proposal would eliminate high-back belt positioning booster seats from the market because these restraint systems impose a load on a child through the lap belt portion of a vehicle's belt assembly. Commenters also stated that there was no apparent safety problem with belt-positioning boosters that would justify a prohibition. Additionally, they stated that there would be no practical way to measure the load imposed on a test dummy seated in a belt-positioning booster.

In response to these comments, the agency excluded child restraints with a mass less than 4 kg from the belt loading provisions in S5.4.3.2 (60 FR 35126; July 6, 1995; Docket No. 74-09, Notice 42). In that final rule, we explained that it was not our intention to prohibit belt-positioning boosters, nor did we believe that there was a sufficient safety problem to warrant such a prohibition. At the time of the March 1995 final rule, as currently, there was no test dummy available to measure abdominal loading

reliably. Additionally, there was no established method for measuring seatback load on a child dummy or an associated injury correlation. Nonetheless, the agency stated that seat back loads could, at some level, injure a child occupant in a crash.

As an alternative to developing a method to measure and identify excessive loads, the agency established the mass limit to prevent future injuries resulting from overloading a child occupant from a "massive seat back" on a child restraint. The 4 kg mass limit was based on the agency's understanding of the mass range of belt-positioning boosters then on the U.S. market and the absence of indication of a safety problem with such restraints, and was consistent with requirements in Europe. The limit was later increased to 4.4 kg after a child restraint manufacturer petitioned the agency, stating that it also marketed a seat with a mass of almost 4.4 kg and that the seat should have been a part of the assessment (61 FR 30824; June 18, 1996; Docket No. 74-09, Notice 46).

Since that time, the agency decided that it would not enforce the requirements of S5.4.3.2 against belt-positioning seats that have a mass greater than 4.4 kg until further notice (Letter to John Stipancich; April 11, 2003; Docket No. NHTSA 2003-15005-1).

Recent Developments

Recent agency research has tentatively led us to reconsider the current mass limit. In developing the injury criteria for the Hybrid III-10C[14], VRTC conducted a number of tests to examine the impact of belt-positioning booster seat mass on child occupants. VRTC conducted tests to explore the potential for more massive booster seats to cause excessive belt forces. The following Table 4 provides the data collected.

[14] "Hybrid III 10-Year-Old Dummy (HIII-10C) Injury Criteria Development," supra.

Table 4: Lap and Shoulder Belt Forces for Booster and Non-Booster Tests

Seat	Mass (kg)	Mass (lb)	Weight Rating	Lap Force (N)	Shoulder Force (N)
Cosco Grand Explorer	1.50	3.30	40 – 80 lb	4707	5833
Evenflo Right Fit	1.42	3.12	40 – 80 lb	4238	6446
Century Next Step	4.28	9.42	30 – 100 lb	2125	5525
Cosco Voyager	3.09	6.80	30 – 80 lb	2739	6494
Graco Grand Cargo	3.44	7.57	30 – 80 lb	1454	5987
Century Breverra	4.25	9.35	30 – 80 lb	1269	5665
Britax Bodyguard	5.98	13.16	40 – 100 lb	1690	6108
Baby Trend Recaro	8.87	19.51	30 – 80 lb	2283	6436
No Booster	---	---	---	2781	5684
No Booster	---	---	---	1965	5348

Note: The Cosco Grand Explorer and the Evenflo Right Fit have no back. All other booster seats in this evaluation are high-back belt-positioning booster seats.

While limited, the VRTC data did not demonstrate a correlation between seat mass and belt force. Because the VRTC tests provide a limited data set, we are requesting data on the relationship between the mass of belt-positioning boosters and belt loads on child occupants.

Although the VRTC data did not demonstrate a mass-belt force correlation, we are still concerned about the potential for excessively heavy high-back belt-positioning seats to cause loading on a child, crushing the chest between the booster seat back and the shoulder belt. To explore this concern, VRTC also examined the relationship between seat mass and the measured chest deflection of a child test dummy. VRTC ran tests with various booster seats installed according to the restraint manufacturers' instructions, except that if a booster seat was equipped with a tether the tether was not employed.

Table 5: Booster seat mass versus chest deflection

Seat	Mass (kg)	Chest deflection (mm)
Century Next Step	4.28	34.1
Cosco Voyager	3.09	33.7
Graco Grand Cargo	3.44	38.1
Century Breverra	4.25	33.4
Britax Bodyguard	5.98	28.7
Baby Trend Recaro	8.87	41

Initial data show that the heaviest booster tested in the agency's limited test series resulted in the highest measured chest deflection with the HIII-10C test dummy. However, the second heaviest booster resulted in the lowest measured chest deflection. Injury assessment reference values (IARVs) for the 10-year-old dummy have been developed for FMVSS Nos. 208 and 213 research testing.[15] The agency is considering proposing a chest deflection limit of 44 mm, which is a value that falls between the IARV for the 6-year-old out-of-position test requirement and the 5th percentile female in-position limits. All of the booster seats tested measured below the chest deflection limit of 44 mm.

In the TREAD Act final rule, the agency declined to adopt chest deflection as a measured injury parameter in FMVSS No. 213 because of the lack of evidence that chest injuries are occurring in the real world. Further, existing restraints were shown generally to have difficulty in meeting the FMVSS No. 208 chest deflection requirements. The agency stated in the TREAD Act final rule that we were concerned that restraint redesigns for the purposes of meeting chest injury criteria could compromise other aspects of injury protection.

[15] "Hybrid III 10 Year Old Dummy (HIII-10C) Injury Criteria," supra.

However, the recent data are causing the agency to reconsider chest deflection criteria for belt-positioning boosters, particularly if there is a possibility that these boosters may become more massive in the future to accommodate larger children. To address the potential of booster seat mass loading a child through the lap/shoulder belt, we are considering establishing chest deflection criteria. We request comment on the merits of this approach.

IV. Performance Criteria for Belt Fit

Section 3(b)(2) of Anton's Law directs the agency to consider establishing performance requirements for booster seats and other belt guidance devices regarding belt fit. Several studies, described below, have explored the extent to which booster seats differ in how they affect the fit of a vehicle's belts on a child. The agency has analyzed the belt fit studies and is unable to demonstrate that small differences in belt fit resulting from various booster seats translate into associated improvements in the dynamic performance of a belt system in a crash. Therefore, the agency is not proposing performance criteria for safety belt fit for booster seats or other belt guidance devices, but will continue development of tools necessary to identify improper belt loading; e.g. development of AIR injury criteria.

a. IIHS Study

In a small-scale study involving static testing, the Insurance Institute for Highway Safety[16] (IIHS) noted that belt fit varies depending upon a child's physique and belt-positioning booster design.[17] IIHS evaluated belt-fit with and without booster seats in the rear seats of three different vehicles (two sedans and a minivan) using a Hybrid III 6-

[16] IIHS is a non-profit group focused on motor vehicle safety and is funded by the insurance industry.
[17] See Docket No. NHTSA-2001-10359-10.

year-old child dummy (HIII-6C), along with three children of varying ages, heights and weights: a 4 year old child, 39 inches tall, 39 pounds; a 5 year 4 month old child, 45 inches tall, 42 pounds; and a 6 year 11 month old child, 45 inches tall, 62 pounds. Each child was positioned in each vehicle while seated in each of six booster seats selected by IIHS, and in one trial positioned directly on the vehicle seat cushion. The test dummy was positioned in each vehicle while seated in each of 25 booster seats selected by IIHS.

IIHS's data demonstrated that some booster seats improved the belt fit for all of the children in the study, some booster seats did not improve fit, and some worsened belt fit. In determining a "good fit," IIHS relied on NHTSA's guidelines regarding proper fit of a child restraint device, i.e., that the lap portion of a belt system should rest on the upper thighs to minimize instances of submarining and abdominal injury. In evaluation with the HIII-6C, IIHS determined that only a small number of the booster seats tested routed the lap belt properly. In some instances, the booster seat routed the lap portion of the belt directly over test dummy's abdomen.

The IIHS report expressed concern that poor belt fit may not be identified through dynamic testing of child restraint systems because dynamic testing may not replicate some critical occupant kinematics and injury patterns of real children. IIHS cited the inability of current test dummies to assess abdominal injury risk from improperly positioned lap belts. IIHS concluded that even if a new test dummy were to include instrumentation to measure abdominal loads, it is unlikely that a test dummy would submarine in a dynamic test because a dummy typically has a rigid spine and molded hips.

b. NHTSA Studies

In response to Anton's Law, the agency conducted two studies to examine the static belt fit of a vehicle's safety belt given various seating positions, dummies, and restraint types. The reports can be found in the docket for this rulemaking.

1. "Static Evaluation of Belt Fit for Hybrid III 6- and 10-year-old and 5th Female Dummies in Rear Outboard Seating Positions"[18]

i. **Survey Approach**. The first study examined belt fit in 20 passenger vehicles, ranging from model year (MY) 1999 to 2004, for lap and shoulder belts in the outboard rear position. To achieve a representative sample of the vehicle fleet, the survey fleet was comprised of three compact cars, three mid-size cars, five large size cars, five sport utility vehicles (SUVs), and four minivans. Some of these vehicles had adjustable shoulder belts.

The vehicle seats were evaluated with a combination of the Hybrid III 5th percentile adult female, the HIII-6C and the HIII-10C test dummies, with each dummy seated directly on the seat cushion and properly buckled. The female test dummy was tested in all of the vehicles, while the child test dummies were tested at an outboard seating position in 12 of the 20 test vehicles.

In addition to determining belt fit with the dummies seated directly on a vehicle seat, we also used a small number of belt positioning boosters with the HIII-6C and HIII-10C test dummies. The test employed three booster seats: a high back booster without a lap belt guide, a high back booster with a lap belt guide, and a backless booster seat.[19] The HIII-6C test dummy was tested in all of the booster seats, while the HIII-10C test dummy was tested only in the backless booster seat.

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[18] Louden, VRTC NHTSA, November 2003.

[19] A backless booster seat may list a maximum recommended height, but are only recommended for use in a seating position that has a head rest or where a child's ears are below the top of a vehicle's seat back.

The seating procedure used for each dummy was the same. The dummies were placed in the center of the seating position with their backs touching the seat back. The legs were bent over the front edge of the seat, if possible. Otherwise, the legs were positioned straight out in front of the dummy. The belt was then placed over the test dummy's torso and buckled. The shoulder belt was pulled out two to three times and allowed to fall naturally onto the torso. When a booster seat was used, it was positioned in the center of the seating position, the dummy was placed in the booster seat, and the vehicle belt was routed per the child restraint manufacturer's instructions.

Based on a 1992-1993 survey, VRTC determined proper belt fit on the dummy as the shoulder belt's fitting between the neck and shoulder at an angle of approximately 55 – 56 degrees from the centerline of the test dummy, and the lap belt's fitting over the pelvic area and upper thigh.[20] Each dummy was marked with tape showing where the belts should be properly positioned on each dummy. A good belt fit was determined by comparing the position of a vehicle's belt to the tape markings. Both seating position and belt fit were judged to be good when (1) a dummy's back was against the seatback, (2) its legs were bent at the knee joint over the front edge of the seat without slouching, (3) the shoulder belt remained across the torso without getting onto the neck or out onto the shoulder, and (4) the lap belt was on the pelvic bone or top of the thighs. The quality of belt fit was then quantitatively rated based on the difference between the location of the belt compared to the location of the tape markings on the test dummy at three critical points: the shoulder belt at the neckline, the shoulder belt at the torso, and the lap belt at the center of the pelvis. These three numbers were then averaged to produce a rating of poor, fair, or good.

[20] "Improved design for safety belts," Chambers, Sullivan and Duffy, June 1993. DOT HS 808-082.

ii. Results: The results of the survey demonstrated that generally, booster seats improved the rating for the child dummies. Adjustable upper anchorages in the rear seat also generally improved shoulder belt fit for all occupant sizes, particularly when used in conjunction with a booster seat. In virtually all of the vehicles surveyed, belt fit for the HIII-6C and HIII-10C test dummies in the outboard seating position improved when belt-positioning devices were used.

For the HIII-10C test dummy, use of a seat belt alone resulted in at least a fair rating 66 percent of the time. Use of the backless booster seat improved the seat belt fit from "fair" to "good" by 62 percent for the HIII-10C test dummy. For both child test dummies, the booster seats had the potential to reduce the incidence of slouching by permitting the dummy's legs to bend at the knees for comfort, which is not possible when seated directly on the vehicle seat in the belt only.

While use of booster seats generally improved the rating for the child test dummies, not all booster seats equally affected belt fit on the two child test dummies. Overall, the HIII-6C fit best in both a backless booster seat and a high back booster seat. However, in one vehicle, the use of the backless booster seat actually decreased the rating for the HIII-10C when compared to the belt only. In that test, the backless booster seat raised the test dummy up too high for a proper belt fit given the anchorage placement in that vehicle, resulting in a "poor" rating. This was because the placement of the shoulder belt was somewhat suspended in the rear window.

2. "**Static Evaluation of Belt Fit for Hybrid III 6- and 10-Year Olds**"[21]

[21] "Static Evaluation of Belt Fit for Hybrid III 6-Year-Old and 10-Year-Old," Louden, VRTC NHTSA, August 2003.

i. **Survey approach**. The second study evaluated belt fit with and without booster seats and with aftermarket belt positioning devices in the center rear seating position for two different sized child dummies.

The procedure for this study was similar to that in the first study. VRTC evaluated the belt fit with three booster seats: a high back booster without lap belt guide, a high back booster with lap guide, and a backless booster seat. Also evaluated were three aftermarket belt positioning devices. Each belt positioning device was recommended by its manufacturer for occupants weighing more than 50 lb. Each manufacturer recommended that children under 50 lb be restrained in a convertible or booster seat. To provide for a vehicle sample population representative of the vehicle fleet, the surveyed vehicles ranged from MY 1999 to 2004 and consisted of three compact cars, three mid-sized cars, three large size cars, five SUVs, and three minivans. Each vehicle was equipped with a lap and shoulder belt in the center rear position. The study used the Hybrid III-6C and -10C test dummies. Dummy seating procedures and determination of belt fit were the same as in the first VRTC study.

ii. Results: The second survey also demonstrated that booster seats generally improved the belt fit rating for both the Hybrid III 6-year-old and 10-year-old test dummies. As in the first survey, belt fit for the 6-year-old test dummy was generally poor when restrained only with a vehicle's belt assembly. In approximately 76 percent of the vehicles tested, when the Hybrid III-6C was restrained using only the vehicle belt system, the shoulder belt interacted with the neck and/or the lap belt was above the pelvic area. In all of the vehicles used in this study, the Hybrid III-6C test dummy's legs could not bend at the seat edge.

Belt fit for the HIII-10C was also generally poor when restrained with the vehicle's belts only. Approximately 53 percent of the positions evaluated resulted in a "poor" rating for the HIII-10C test dummy and the dummy's legs could only be bent over the vehicle's seat edge in 40 percent of the positions.

With the HIII-6C test dummy, use of a booster seat resulted in approximately 82 percent of the positions being evaluated as having a "fair" to "good" fit. However, as in the first survey, the improvement was not uniform among the three booster seat models. The high back booster with lap belt guide resulted in 76 percent of the positions evaluated with the HIII-6C dummy being rated "good," the high back booster without a lap belt guide resulted in approximately 71 percent of the positions tested with the HIII-6C being rated "fair" to "good," and the backless booster seat resulted in 76 percent of the positions evaluated being rated "fair" to "good."

In some vehicles, positioning the HII-6C dummy in a booster seat resulted in problems. In one instance, use of the backless booster seat caused the shoulder belt to come across the neck of the dummy, resulting in a "poor" fit. The high back booster seat without guides had a head restraint that, in some vehicles, interacted with the shoulder belt, resulting in a "poor" rating.

For the HIII-10C test dummy, the use of a booster seat improved the belt fit from "poor" to "good" by 90 percent.

Overall, the belt positioning devices improved belt fit. However, it is not known how these devices would affect belt performance when tested dynamically. Additionally, there were several issues of concern with the devices. Some of the devices wrap the vehicle's shoulder belt around them, which can add up to several inches of slack to the

belt if the device were to fail in a crash. Use of a device that was equipped with a hard metal clip with a plastic coating often resulted in the belt's becoming twisted near the retractor, the clip being positioned close to the center of the dummy (on an area of soft tissue), and the lap belt frequently being raised off of the pelvis.

c. Discussion of Static Belt Fit Studies

The static belt fit surveys generally demonstrated that booster seats improve belt fit, but they also demonstrated variation in fit that was attributable to the interaction between restraints and vehicle designs. Both studies demonstrated that some vehicle-booster seat combinations were not as good as others. Some boosters made the belts fit the child dummy better in some vehicles than in others.

While these surveys identified potential for variation, it is unknown whether the small variations in belt fit between the restraint configurations evaluated in the studies would translate into variations in safety benefits in an actual vehicle crash. The point at which belt fit degrades the performance of the belts from the point of "acceptable" to "unacceptable" has not been determined. Although NHTSA believes that belts are better positioned over bony structure of the body than over soft tissue, how much variation from the optimal placement of the belt should be permitted by a performance standard for the fit to be considered "passing" is unknown.

Nor does the agency believe there is a need to make that known. The agency believes that the dynamic performance requirements for child restraint systems, including booster seats, provide for a better evaluation of injury potential than a static belt fit test. The standardized test seat assembly specified in FMVSS No. 213 has been developed to be representative of existing vehicle seat geometries; e.g., seat back and cushion angles,

safety belt anchorage location, and spacing, and cushion force/deflection characteristics. All child restraint systems must meet the injury performance criteria in a 30 mph simulated frontal crash on the test seat assembly. The seat assembly was updated in the TREAD Act rulemaking, supra, and will be used to test child restraints manufactured on or after August 1, 2005. We believe that as child restraint manufacturers optimize their restraint designs to meet the performance requirements of FMVSS No. 213 using the updated configuration of the standard test seat assembly, the fit of child restraints in real-world vehicles may improve. While NHTSA believes that "proper" belt fit, especially shoulder belt fit, is largely dependent on vehicle design characteristics, the agency also believes that this optimization of child restraint design to current vehicle seat designs may translate into improved belt fit for children in booster seats. In any event, NHTSA believes that FMVSS No. 213's dynamic testing requirements provide a true and thorough evaluation of the performance of the restraints. Accordingly, a static belt fit performance requirement would not provide an additional safety benefit commensurate with the burdens of such a rulemaking.

It should be noted that, as part of the agency's work in response to the TREAD Act, we evaluated child restraint performance in vehicles tested to the frontal crash program of the New Car Assessment Program (NCAP). NCAP placed child restraint systems in the rear seat of vehicles that undergo frontal barrier crash tests at 35 mph. Data generated to date by testing with the HIII-3C dummy placed in a forward-facing child restraint indicate that the performance of a child restraint is largely dependent on the vehicle crash parameters, such as the vehicle crash pulse, and less dependent on

differences in design between various restraints.[22] Accordingly, for the reasons stated above, the agency has decided that establishing performance requirements for seat belt fit is not warranted.

V. Benefits and Costs

The agency cannot quantify the benefits of this rulemaking. However, the agency believes benefits will accrue by assuring child restraints can meet the FMVSS No. 213 requirements over the range of sizes of children for which they are recommended. Currently, booster seats are required to use only a dummy representative of a 3-year-old child at the lower end of the weight range and the weighted 6-year-old dummy at the upper weight limit per configuration. The weighted 6-year-old dummy is limited in representing heavier children that the booster seats are labeled to accommodate. Inclusion of a test dummy representative of a 10-year-old child would facilitate the testing of booster seats and other child restraints by causing each restraint to be tested with a test dummy better representative of children at the upper limit of a specified weight range.

If adopted, this proposed rule would generally not increase the testing that NHTSA conducts of child restraints.[23] Currently, restraints recommended for children weighing up to 65 lb are tested with a weighted 6-year-old test dummy. The NPRM proposes to replace the weighted 6-year-old dummy with the HIII-10C, rather than add a test with the HIII-10C. Thus, the certification responsibilities of manufacturers would not generally be affected. The 2004 price of an uninstrumented 10-year-old dummy is about $36,550. The specified instrumentation costs approximately $59,297.

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[22] Docket NHTSA-04-18682.

[23] There are no child restraints that are made only for children weighing between 65 and 80 lb that arguable would be newly subject to FMVSS No. 213.

Additionally, we do not believe that the proposed requirements would require extensive redesign of existing booster seat designs. We tentatively determined that any redesign required would be of minimal cost. For further discussion of the benefits and costs, please refer to the preliminary regulatory evaluation placed in the docket for this rulemaking.

VI. Submission Of Comments

How do I prepare and submit comments?

Your comments must be written and in English. To ensure that your comments are filed correctly in the Docket, please include the docket number of this document in your comments.

Your comments must not be more than 15 pages long. (49 CFR 553.21) NHTSA established this limit to encourage you to write your primary comments in a concise fashion. However, you may attach necessary additional documents to your comments. There is no limit on the length of the attachments.

Please submit two copies of your comments, including the attachments, to Docket Management at the address given above under ADDRESSES. You may also submit your comments to the docket electronically by logging onto the Docket Management System (DMS) website at http://dms.dot.gov. Click on "Help & Information" or "Help/Info" to obtain instructions for filing your comments electronically. Please note, if you are submitting comments electronically as a PDF (Adobe) file, we ask that the documents submitted be scanned using Optical Character Recognition (OCR) process, thus allowing the agency to search and copy certain portions of your submissions.[24]

[24] Optical character recognition (OCR) is the process of converting an image of text, such as a scanned paper document or electronic fax file, into computer-editable text.

How can I be sure that my comments were received?

If you wish Docket Management to notify you upon its receipt of your comments, enclose a self-addressed, stamped postcard in the envelope containing your comments. Upon receiving your comments, Docket Management will return the postcard by mail.

How do I submit confidential business information?

If you wish to submit any information under a claim of confidentiality, you should submit three copies of your complete submission, including the information you claim to be confidential business information, to the Chief Counsel, NHTSA, at the address given above under FOR FURTHER INFORMATION CONTACT. In addition, you should submit two copies, from which you have deleted the claimed confidential business information, to Docket Management at the address given above under ADDRESSES. When you send a comment containing information claimed to be confidential business information, you should include a cover letter setting forth the information specified in NHTSA's confidential business information regulation (49 CFR Part 512).

Will the agency consider late comments?

NHTSA will consider all comments that Docket Management receives before the close of business on the comment closing date indicated above under DATES. To the extent possible, the agency will also consider comments that Docket Management receives after that date. If Docket Management receives a comment too late for the agency to consider it in developing a final rule (assuming that one is issued), the agency will consider that comment as an informal suggestion for future rulemaking action.

How can I read the comments submitted by other people?

You may read the comments received by Docket Management at the address given above under ADDRESSES. The hours of the Docket are indicated above in the same location.

You may also see the comments on the Internet. To read the comments on the Internet, take the following steps:

1. Go to the Docket Management System (DMS) Web page of the Department of Transportation (http://dms.dot.gov).
2. On that page, click on "simple search."
3. On the next page (http://dms.dot.gov/search/searchFormSimple.cfm) type in the four-digit docket number shown at the beginning of this document. Example: If the docket number were "NHTSA-1998-1234," you would type "1234." After typing the docket number, click on "search."
4. On the next page, which contains docket summary information for the docket you selected, click on the desired comments. You may download the comments. Although the comments are imaged documents, instead of word processing documents, the "pdf" versions of the documents are word searchable.

Please note that even after the comment closing date, NHTSA will continue to file relevant information in the Docket as it becomes available. Further, some people may submit late comments. Accordingly, the agency recommends that you periodically check the Docket for new material.

Anyone is able to search the electronic form of all comments received into any of our dockets by the name of the individual submitting the comment (or signing the

comment, if submitted on behalf of an association, business, labor union, etc.). You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (Volume 65, Number 70; Pages 19477-78) or you may visit http://dms.dot.gov.

VII. Rulemaking Analyses and Notices

A. Vehicle Safety Act

Under 49 U.S.C. Chapter 301, Motor Vehicle Safety (49 U.S.C. 30101 *et seq.*), the Secretary of Transportation is responsible for prescribing motor vehicle safety standards that are practicable, meet the need for motor vehicle safety, and are stated in objective terms. 49 U.S.C. 30111(a). As defined by statute, motor vehicle safety standards are to provide minimum standards for motor vehicle or motor vehicle equipment performance. 49 U.S.C. 30102(a)(9). When prescribing such standards, the Secretary must consider all relevant, available motor vehicle safety information. 49 U.S.C. 30111(b). The Secretary must also consider whether a proposed standard is reasonable, practicable, and appropriate for the type of motor vehicle or motor vehicle equipment for which it is prescribed and the extent to which the standard will further the statutory purpose of reducing traffic accidents and associated deaths. Id. Responsibility for promulgation of Federal motor vehicle safety standards was subsequently delegated to NHTSA. 49 U.S.C. 105 and 322; delegation of authority at 49 CFR 1.50.

The agency carefully considered these statutory requirements in proposing these amendments to FMVSS No. 213.

We believe that the proposed amendments to FMVSS No. 213 would be practicable. The proposed performance requirements are based on existing requirements.

Additionally, agency testing has demonstrated that child restraint systems currently on the market would be able to comply with the proposed requirements.

We believe that this proposed rule is appropriate for child restraints recommended for use by children weighing up to 80 lb. The establishment of performance criteria for these restraint systems would help ensure that they provide optimized safety benefits for their intended occupants, children weighing up to 80 lb. Accordingly, the NPRM would meet the need for motor vehicle safety.

Further, the agency has tentatively determined that the HIII-10C test dummy provides an objective tool for determining compliance of a child restraint with the proposed requirements. Agency evaluation has demonstrated the HIII-10C test dummy provides results that are valid, repeatable and reliable.

Further, as stated above, we are proposing to establish performance criteria for child restraint systems intended for children weighing up to 80 lb. If made final, the proposed rulemaking would extend current performance requirements to these child restraint systems intended for heavier children.

With regard to Anton's Law, we have discussed those statutory requirements above. As directed by Anton's Law, the agency has initiated and completed rulemaking that (1) considered whether to include injury performance criteria for child restraints, including booster seats and other products for use in passenger motor vehicles for the restraint of children weighing more than 50 pounds (see 68 FR 37620, supra), (2) considered whether to address situations where children weighing more than 50 pounds only have access to seating positions with lap belts, such as allowing tethered child restraints for such

children (see 69 FR 16202, supra), and (3) reviewed the definition of the term "booster seat" in the Federal motor vehicle safety standards to determine if it is sufficiently comprehensive (see 68 FR 37620, supra).

The outstanding element in §3 of Anton's Law directing the agency to consider whether to establish performance requirements for seat belt fit when used with booster seats and other belt guidance devices is addressed in this notice. The agency has considered performance requirements for seat belt fit for booster seats or for belt guidance devices in accordance with §3(b)(2) of Anton's Law and has decided against such rulemaking at this time. Currently, field data does not indicate a need for performance requirements for seat belt fit for booster seats or for belt guidance devices.

B. Executive Order 12866 and DOT Regulatory Policies and Procedures

Executive Order 12866, "Regulatory Planning and Review" (58 FR 51735, October 4, 1993), provides for making determinations whether a regulatory action is "significant" and therefore subject to Office of Management and Budget (OMB) review and to the requirements of the Executive Order. The Order defines a "significant regulatory action" as one that is likely to result in a rule that may:

(1) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or Tribal governments or communities;

(2) Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(3) Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or

(4) Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

NHTSA has considered the impact of this rulemaking action under Executive Order 12866 and the Department of Transportation's (DOT) regulatory policies and procedures (44 FR 11034, February 26, 1979). The Office of Management and Budget did not review this rulemaking document under Executive Order 12866.

We cannot quantify the benefits of this rulemaking. However, the agency believes this rulemaking would improve the safety of child restraint systems by providing for their more thorough compliance testing. The result of this rule would be to provide better assurance that each child restraint safely restrains the children for whom the restraint is recommended.

The costs associated with the proposed rulemaking are largely attributable to the expense of an instrumented HIII-10YO. The 2004 price of an uninstrumented 10-year-old dummy is about $36,550. The specified instrumentation costs approximately $59,297. This NPRM does not require manufacturers to use the test dummy in certifying their child restraints. Rather, this NPRM proposes changes to how NHTSA would conduct compliance testing under FMVSS No. 213. A complete discussion of the costs is provided in the preliminary regulatory evaluation that has been included in the docket for this rulemaking.

C. Regulatory Flexibility Act

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 601 et seq., as amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA) of 1996) whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a regulatory flexibility analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). The Small Business Administration's regulations at 13 CFR Part 121 define a small business, in part, as a business entity "which operates primarily within the United States." (13 CFR 121.105(a)). No regulatory flexibility analysis is required if the head of an agency certifies the rule will not have a significant economic impact on a substantial number of small entities. SBREFA amended the Regulatory Flexibility Act to require Federal agencies to provide a statement of the factual basis for certifying that a rule will not have a significant economic impact on a substantial number of small entities. NHTSA estimates there to be 13 manufacturers of child restraints, four or five of which could be small businesses.

If adopted, this proposed rule would generally not increase the testing that NHTSA conducts of child restraints. The proposal would replace testing performed on restraints recommend for children weighing up to 65 lb with a weighted 6-year-old test dummy with testing using the HIII-10C. Thus, the certification responsibilities of manufacturers would not generally be affected. I certify that this NPRM would not impose a significant economic impact on a substantial number of small entities, because these businesses currently must certify their products to the dynamic test of Standard No.

213. They typically provide the basis for those certifications by dynamically testing their products using child test dummies. The effect of this NPRM on most child restraints would be to subject them to testing with a new dummy in place of an existing one. Testing child restraints on an updated seat assembly is not expected to affect the performance of the restraints significantly.

D. National Environmental Policy Act

NHTSA has analyzed this proposed rule for the purposes of the National Environmental Policy Act and determined that it would not have any significant impact on the quality of the human environment.

E. Executive Order 13132 (Federalism)

Executive Order 13132 requires NHTSA to develop an accountable process to ensure "meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications." "Policies that have federalism implications" is defined in the Executive Order to include regulations that have "substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government." Under Executive Order 13132, the agency may not issue a regulation with Federalism implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, the agency consults with State and local governments, or the agency consults with State and local officials early in the process of developing the proposed regulation. NHTSA also may not issue a regulation with Federalism implications and

that preempts State law unless the agency consults with State and local officials early in the process of developing the proposed regulation.

NHTSA has analyzed this NPRM in accordance with the principles and criteria set forth in Executive Order 13132. The agency has determined that this proposal would not have sufficient federalism implications to warrant consultation and the preparation of a Federalism Assessment.

F. Civil Justice Reform

This NPRM would not have any retroactive effect. Under 49 U.S.C. 30103, whenever a Federal motor vehicle safety standard is in effect, a State may not adopt or maintain a safety standard applicable to the same aspect of performance which is not identical to the Federal standard, except to the extent that the state requirement imposes a higher level of performance and applies only to vehicles procured for the State's use. 49 U.S.C. 30161 sets forth a procedure for judicial review of final rules establishing, amending, or revoking Federal motor vehicle safety standards. That section does not require submission of a petition for reconsideration or other administrative proceedings before parties may file suit in court.

G. Paperwork Reduction Act

Under the Paperwork Reduction Act of 1995, a person is not required to respond to a collection of information by a Federal agency unless the collection displays a valid control number from the Office of Management and Budget (OMB). This proposed rule would not establish any requirements that are considered to be information collection requirements as defined by the OMB in 5 CFR Part 1320.

H. National Technology Transfer and Advancement Act

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104-113, section 12(d) (15 U.S.C. 272) directs NHTSA to use voluntary consensus standards in its regulatory activities unless doing so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies, such as the Society of Automotive Engineers (SAE). The NTTAA directs NHTSA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards.

The agency searched for, but did not find, any voluntary consensus standards applicable to this proposed rulemaking.

I. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA), Pub. L. 104-4, Federal requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a Federal mandate likely to result in the expenditure by State, local, or tribal governments, in the aggregate, or by the private sector, of more than $100 million annually (adjusted for inflation with base year of 1995). (Adjusting this amount by the implicit gross domestic product price deflator for the year 2000 increases it to $109 million.) This NPRM would not result in a cost of $109 million or more to either State, local, or tribal governments, in the aggregate, or the private sector. Thus, this NPRM is not subject to the requirements of sections 202 of the UMRA.

J. Regulation Identifier Number

The Department of Transportation assigns a regulation identifier number (RIN) to each regulatory action listed in the Unified Agenda of Federal Regulations. The Regulatory Information Service Center publishes the Unified Agenda in April and October of each year. You may use the RIN contained in the heading at the beginning of this document to find this action in the Unified Agenda.

List of Subjects

49 CFR Parts 571

Imports, Motor vehicle safety, Reporting and recordkeeping requirements.

PART 571 - [Amended] FEDERAL MOTOR VEHICLE SAFTEY STANDARDS

In consideration of the foregoing, NHTSA proposes to amend 49 CFR Part 571 as follows:

1. The authority citation for Part 571 would continue to read as follows:

Authority: 49 U.S.C. 322, 30111, 30115, 30117 and 30166; delegation of authority at 49 CFR 1.50.

2. Section 571.213 would be amended by revising the definition of Child restraint system in S4, and revising S6.1.1(d), S6.2.3, S7.1.2(e), S7.1.2(f), S9.1(f), S9.3.2, and S10.2.2, to read as follows:

§571.213 Standard No. 213; Child restraint systems.

* * * * *

S4. Definitions.

* * * * *

Child restraint system means any device, except Type I or Type II seat belts, designed for use in a motor vehicle or aircraft to restrain, seat, or position children who weigh 36 kilograms (kg) or less.

* * * * *

S6.1.1 Test conditions.

* * * * *

(d)(1) * * *

(2) When using the test dummies specified in 49 CFR Part 572, subparts N, P, R, or T, performance tests under S6.1 are conducted at any ambient temperature from 20.6°C to 22.2°C and at any relative humidity from 10 percent to 70 percent.

* * * * *

S6.2.3 Pull the sling tied to the dummy restrained in the child restraint system and apply the following force: 50 N for a system tested with a newborn dummy; 90 N for a system tested with a 9-month-old dummy; 90 N for a system tested with a 12-month-old dummy; 200 N for a system tested with a 3-year-old dummy; 270 N for a system tested with a 6-year-old dummy; 350 N for a system tested with a weighted 6-year-old dummy; or 437 N for a system tested with a 10-year-old-dummy. The force is applied in the manner illustrated in Figure 4 and as follows:

(a) Add-on Child Restraints. For an add-on child restraint other than a car bed, apply the specified force by pulling the sling horizontally and parallel to the SORL of the standard seat assembly. For a car bed, apply the force by pulling the sling vertically.

(b) Built-in Child Restraints. For a built-in child restraint other than a car bed, apply the force by pulling the sling parallel to the longitudinal centerline of the specific

vehicle shell or the specific vehicle. In the case of a car bed, apply the force by pulling the sling vertically.

S7.1.2 * * *

(a) * * *

(b) * * *

(c) * * *

(d) * * *

(e) A child restraint that is manufactured on or after August 1, 2005 and before (two years after publication of a final rule; for illustration purposes, August 1, 2007), and that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 22.7 kg or by children in a specified height range that includes any children whose height is greater than 1100 mm is tested with a 49 CFR part 572, subpart S dummy.

(f) A child restraint that is manufactured after August 1, 2007, and that is recommended by its manufacturer in accordance with S5.5 for use either by children in a specified mass range that includes any children having a mass greater than 22.7 kg or by children in a specified height range that includes any children whose height is greater than 1100 mm is tested with a 10-year-old child dummy conforming to the applicable specifications in 49 CFR part 572, subpart T.

* * * * *

S9.1 Type of clothing.

(a) * * *

(b) * * *

(c) * * *

(d) * * *

(e) * * *

(f) Hybrid III 6-year-old dummy (49 CFR Part 572, Subpart N), Hybrid III 6-year-old weighted dummy (49 CFR Part 572, Subpart S), and Hybrid III 10-year-old dummy (49 CFR Part 572, Subpart T). When used in testing under this standard, the dummy specified in 49 CFR part 572, subpart N, weighted and unweighted, is clothed in a light-weight cotton stretch short-sleeve shirt and above-the-knee pants, and size 12 1/2 M sneakers with rubber toe caps, uppers of dacron and cotton or nylon and a total mass of 0.453 kg.

* * * *

S9.3.2 When using the test dummies conforming to Part 572 Subparts N, P, R, S, or T (10-year-old dummy), prepare the dummies as specified in this paragraph. Before being used in testing under this standard, dummies must be conditioned at any ambient temperature from 20.6 °C to 22.2 °C and at any relative humidity from 10 percent to 70 percent, for at least 4 hours.

* * * * *

S10.2.2 Three-year-old, six-year-old test and ten-year-old test dummy. Position the test dummy according to the instructions for child positioning that the restraint manufacturer provided with the system in accordance with S5.6.1 or S5.6.2, while conforming to the following:

(a) * * *

(b) * * *

(c) * * *

(d) * * *

* * * * *

APPENDIX A

Extending FMVSS No. 213 to Belt-Positioning Devices

Over the years, the agency has considered whether to extend FMVSS No. 213 to belt-positioning devices. Belt positioning devices alter the position of a vehicle lap and shoulder belt and in some cases are marketed for the purpose of improving belt fit on children seated directly on a vehicle seat without the use of a child restraint system.

The agency first addressed this issue in the context of responding to a petition for rulemaking from the American Academy of Pediatrics (AAP). In 1996, the AAP requested that the agency regulate aftermarket belt positioning devices under FMVSS No. 213. The AAP stated that because such devices are generally marketed as child occupant protection devices, the products should be subject to the same testing and certification to which child restraints are subject. The AAP was concerned that some belt positioning devices "appear to interfere with proper lap and shoulder harness fit by positioning the lap belt too high across the abdomen, the shoulder harness too low across the shoulder, and by allowing too much slack in the shoulder harness."

On August 13, 1999, the agency granted the petition and published an NPRM that proposed to regulate belt positioning devices by way of a consumer information regulation (64 FR 44164). The NPRM proposed to require labeling of belt positioning devices with a statement warning against use of the device by children under the age of 6 (alternative, or additionally, under the height of 47.5 inches (1206 mm)).

In 1994, the agency released a report regarding tests that the agency had conducted on three belt positioning devices that were then on the market.[25] The agency dynamically tested the belt positioning devices under the conditions then specified for testing child restraints under FMVSS No. 213. Hybrid II 3-year-old and 6-year-old dummies were used (which, in 1994, were the state-of-the-art dummies used to test child restraints), and a Hybrid III 5th percentile female adult dummy. Dummies were restrained in lap/shoulder belts with, and without the devices. A comparison of the test results revealed that in many of the tests with the 3-year-old dummy, the belt positioning devices reduced belt performance and contributed toward high HIC measurements (HIC values greater than 1000). In one case, the measured chest acceleration exceeded the FMVSS No. 213 limit of 60 g's. The devices generally performed adequately with the 6-year-old dummy with respect to HIC, i.e., the performance criteria of FMVSS No. 213 were not exceeded. However, one device resulted in chest g measurements that exceeded the FMVSS No. 213 limit in both frontal and offset sled tests.

Notwithstanding the results of the study, there was no evidence of a real-world problem. Only one case has been identified in which a child using a belt positioning device suffered injuries from the lap/shoulder belt.[26] Additionally, we were concerned that the proposed label might encourage parents to rely on a belt positioning device as opposed to a booster seat. Required labels could lead parents to believe that belt positioning devices are certified to the same performance criteria as child restraint systems.

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[25] "Evaluation of Devices to Improve Shoulder Belt Fit," DOT HS 808 383, Sullivan and Chambers, August 1994.

[26] See "Performance and Use of Child Restraint Systems, Seatbelts, and Air Bags for Children in Passenger Vehicles, Volume 1," National Transportation Safety Board (1996). (http://www.ntsb.gov/Publictn/1996/SS9601.pdf)

In the absence of real-world data and given the concerns of improper restraint choice, we terminated the rulemaking regarding belt positioning devices (69 FR 13503; March 23, 2004; Docket No. NHTSA-99-5100). However, while we are not pursuing rulemaking, we have initiated a testing program to allow us to use the most advanced test procedures and equipment to gain up-to-date research on current belt positioning devices. We are particularly interested in the potential use of the HIII-10C test dummy in evaluating forces that such devices could redirect to a child's abdominal and lumbar areas in a crash. The anterior superior iliac spine load cell attachment locations on the test dummy provide an opportunity to evaluate belt loading of the abdomen. Further, because the HIII-10C can be positioned in a slouched or upright posture, the dummy can be used to assess performance of the belts and belt positioning devices with slouching children. We believe that the research program will provide useful data that will enhance our ability to determine what regulatory approach, if any, would be most appropriate to address belt positioning devices.

For these reasons, the agency has decided not to regulate belt positioning devices under FMVSS No. 213 in this NPRM.

Issued:

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Stephen R. Kratzke
Associate Administrator
for Rulemaking

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[Signature page for RIN 2127-AJ44; NPRM]