

HONDA

American Honda Motor Co., Inc.
1919 Torrance Boulevard
Torrance, CA 90501-1146
Phone: (310) 283-0100

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Docket Management Facility, Room PL-401
National Highway Traffic Safety Administration
U.S. Department of Transportation
400 Seventh Street, SW, Nassif Building
Washington, DC 20590

Subject: Docket No. NHTSA-2004-17694
Notice of Proposed Rulemaking
49 CFR Part 571.214
Side Impact Protection

Dear Sir or Madam:

Enclosed are the comments of Honda Motor Co., Ltd. and American Honda Motor Co., Inc. regarding the above-referenced docket.

We thank you for this opportunity to provide our comments. If you have any questions, require additional data or further clarification, please contact us at your earliest convenience.

Sincerely,

AMERICAN HONDA MOTOR CO., INC.



William R. Willen
Managing Counsel
Product Regulatory Office

WRW:jwj

Enclosure

**Comments of Honda Motor Co., Ltd.
and American Honda Motor Co., Inc.**

FMVSS 214 Side Impact Protection NPRM

Docket NHTSA -2004-17694

October 14, 2004

Thank you for the opportunity to comment on this NPRM regarding FMVSS 214.

Summary Comment

Honda supports the direction of this NPRM, and encourages NHTSA to continue to advance side impact protection through use of the most advanced test dummies available and the increased data they can provide. Our comments address technical issues and clerical suggestions to this NPRM, including the following points:

- Honda suggests requiring two side impact compliance tests, using a combination of dummies and positions to provide comprehensive data that will be relevant to a wide selection of the public.
- Compliance with current FMVSS 214 requirements will be quite different from the proposed FMVSS 214, solely on the basis of dummy selection. A vehicle developed to meet today's FMVSS 214 requirements should logically be required to meet the proposed regulation when that vehicle undergoes a significant design change. The phase-in of this proposed FMVSS 214 should reflect those considerations.
- The future SINCAP procedures should use the same dummies that will be required or permitted for FMVSS 214.
- To make the most appropriate use of the test data, should NHTSA decide to use the ES-2re dummy, we believe NHTSA should use CFC 180 data filters for T12 acceleration – as opposed to the CFC 1000 filters used at this time.
- Allowing advanced or early compliance will be beneficial to motor vehicle safety.
- Other FMVSS' that refer to FMVSS 214 must be updated to align with the organizational changes to the proposed FMVSS 214.
- A vehicle capable of passing FMVSS 214 demonstrates a high level of safety, so the same vehicle should not be required to comply with the armrest requirement of FMVSS 201.
- The proposed FMVSS 214 includes contradictory references for setting the height of the head restraint, which must be clarified.

Selection of Test Dummies for FMVSS 214

Adapting to new test dummies does generate a considerable amount of work for automakers, but if the selected dummies are more biofidelic and appropriate to the data being gathered, this effort will result in improved occupant protection. While this additional workload should not be taken lightly, the benefit to passenger safety should justify the added expense and effort with respect to FMVSS 214. As a result, Honda believes the best way to improve occupant protection is to base the compliance tests on a combination of two tests for any given vehicle, utilizing both an Female 5th percentile and Male 50th percentile test dummy in each seating position (driver and rear seat passenger positions) in alternate tests. This combination of tests will represent a greater percentage of the public, and reduce the likelihood of fatalities and injuries from side impact collisions.

Further, the selection of dummies for FMVSS 214 should consider the most appropriate currently available dummies as well as improved dummies that are complete in their development. At this time, based on available data, Honda encourages NHTSA to specify the ES-2 dummy for the 50th percentile male dummy and SID-IIs for the 5th percentile female dummy until the WorldSID is ready for practical use. The superior biofidelity of ES-2 is well-documented¹ (Please see Attachment #1 for the current and NHTSA proposed phase-in schedule for global impact testing. Attachment #2 shows the chronology of dummy usage as it stands today and as NHTSA proposed. Attachment #3 shows Honda's recommendation to assure that the best available dummies are used when available.)

Honda believes the ES-2 offers the best biofidelity at this time. Although the ES-2 dummy is not commonly used by automakers or testing agencies today, Euro-NCAP issued an amendment on September 30, 2004 that mandates a change from the use of ES-1 to ES-2. Automakers will gain experience with ES-2 over time, and if NHTSA were to adopt the use of ES-2 for both FMVSS 214 compliance, and for SINCAP testing, these actions would promote global harmonization of safety standards.

ES-2 Dummy for 50th Percentile Male Dummy

There is test data to show that ES-2 offers better biofidelity than ES-2re on ISO/TS22/SC12/WG5. On May 11 of this year OSRP/USCAR released a study concluding that the biofidelity of the various dummies are 4.7 for ES-2; 4.2 for ES-2re; 4.4 for ES-1; 2.3 for SID; and 7.7 for WorldSID.

- NHTSA recognizes the biofidelity ratings of 4.6 for ES-2re, 2.3 for SID and 3.8 for SID-H3 in the preamble for this NPRM.
- Using the ES-2 type dummy proposed in FMVSS 214, offers better biofidelity than SID, also noted in the preamble of this NPRM.

SID-IIs for 5th Percentile Female Dummy

Similar to the current status of ES-2re, SID-IIs FRG is not commonly used by automakers today, although IIHS is using SID-IIs for SICE side impact testing. The use of SID-IIs will expand because it is specified in the compatibility commitment, which all major automakers in the United States have voluntarily agreed to comply with. SID-IIs has also been used in side airbag out of position testing, consistent with the SAB-OOP commitment by most major automakers in the United States and Canada.

¹ 69 FR 28000

“The problems with EuroSID-1 appear to have been eliminated with the evolution of the dummy into the ES-2 side impact dummy and the subsequent changes made with respect to the ES-2's rib design. The ES-2re dummy is more biofidelic than SID and offers more injury measurement capabilities than the present side impact dummy. Thus, using this improved dummy would enhance the protection afforded by vehicles to the affected population, especially those represented by a 50th percentile male dummy.”

WorldSID

The prospect that WorldSID will be a much-improved dummy compared to any of the side impact dummies currently available is great, based on its design, biofidelity ratings and state of development. Honda recommends that the manufacturers be permitted to use the WorldSID in vehicle development for FMVSS 214 as soon as possible, and that NHTSA accept optional FMVSS 214 certification data based on the WorldSID. Also, Honda requests that NHTSA use WorldSID for SINCAP evaluation of a vehicle if the manufacturer uses WorldSID for that vehicle's FMVSS 214 certification. This concept is similar to the optional phase-in that NHTSA permitted as the improved and more biofidelic Hybrid III dummy gradually replaced the Hybrid II dummy for frontal impacts over a period of years. It is expected that the WorldSID 50th percentile dummy will be available in the next several years, and a WorldSID 5th percentile dummy will follow shortly thereafter.

Regulation Phase-in and Phase-out Periods Based on Dummy Selection

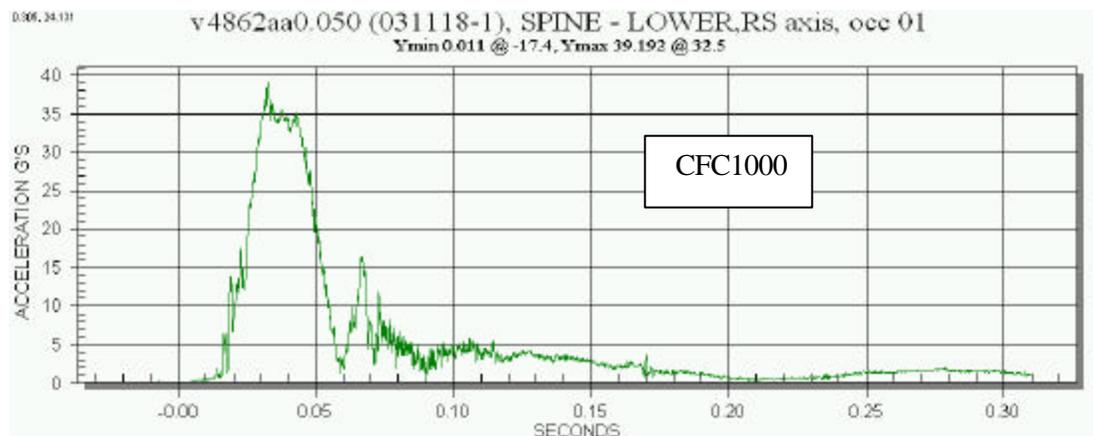
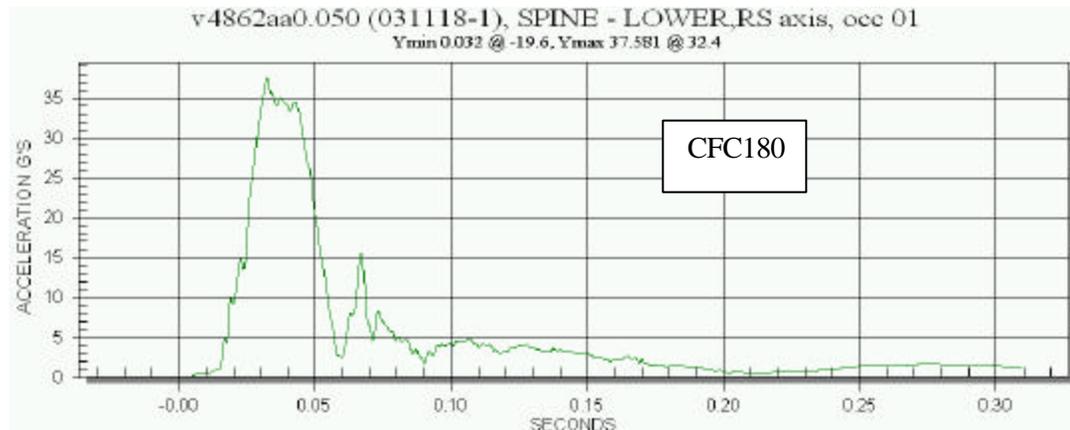
In consideration of both the capabilities and limitations of any test dummies, we believe vehicles developed to meet any test standard using a particular dummy should be tested using that dummy, and the phase-in periods should accommodate this. For example, a specific generation of vehicles developed to meet the proposed FMVSS 214 using the ES-2 50th percentile male dummy should not be expected to comply with FMVSS 214 using WorldSID later in its lifecycle. The phase-in of WorldSID should allow a reasonable phase-out of vehicles developed to meet the regulation using the ES-2 test dummy, allowing automakers to focus their efforts on advancing the safety of future vehicles instead of retrofitting older vehicles to meet requirements as they are phased in.

Forecasting SINCAP Results from FMVSS 214 Results

Recognizing that the criteria of the current SINCAP tests and the proposed FMVSS 214 are altogether different, the dummies used in these tests are, accordingly, different. Honda acknowledges that the resources allocated to developing vehicles to meet these different criteria are significant, both on the part of NHTSA and manufacturers. NHTSA should not use the current SINCAP protocol using SID if different dummies are used to meet the proposed FMVSS 214. NHTSA should use the same dummies for SINCAP that are used in FMVSS 214.

Change to the CFC180 on ES-2re of Lower Spine (T12)

NHTSA has been considering switching from CFC 1000 data for lower spine ratings to CFC 180. The data set of CFC 180 is quite different from CFC 1000, even if the source data to provide the ratings is the same. Please see the following charts that compare CFC 180 data to CFC 1000 data based on NHTSA research using a Honda Accord. Please note the peak value is different within the two CFC classifications.



As CFC 180 class is typically used for dummy rib acceleration data and due to these differences in the CFC class data, Honda believes NHTSA should use the CFC 180 data to measure lower spine injuries.²

² Reference: **INJURY CRITERIA FOR SIDE IMPACT DUMMIES REPORT May 2004, NHTSA -2004-17694-12**

Page 3: ... Maximum upper and lower spine accelerations are the maximum resultant upper and lower spine accelerations (SAE filter class 180) in gs.

Page 14: DATA ANALYSIS

Processing or transducer data and normalization of measurement for the cadavers were conducted in a similar manner as outlined by Kuppa, et al. (2003). Rib and spinal accelerations were filtered with SAE filter Channel Class 180. The thoracic, abdominal, and pelvic force signals were filtered with SAE filter Channel Class 600. Chest displacements were processed with SAE filter Channel Class 180. The acceleration and forces were normalized using the equal velocity-equal stress scaling procedure outlined by Eppinger, et al. (1984) to represent the responses for a 50th percentile male (Equations 3 and 4).

Advanced Acceptance of Application of Proposed Rule

Honda agrees that if NHTSA allows application of the proposed rule in advance of phase-in application, the public will benefit from the earlier availability of enhanced side impact performance.

Other FMVSS Items Referenced in FMVSS 214

Many other FMVSS' reference the current FMVSS 214, and will need to be changed to reflect the changes proposed to FMVSS 214. Please see the chart below for additional detail:

Regulation No.	Section	Reference Section on FMVSS 214
FMVSS 201	S8.18	S6.3
	S8.19	S6.4
	S8.28	S7
FMVSS 301	S6.3 (b)	S3 (b)
	S7.2 (b)	S6
		S7
FMVSS 305	S6.3	S7
	S7.5	S6.10
		S6.11
		S6.12

Exemption of Armrest Requirement of FMVSS 201 S5.5.1

Honda asks NHTSA to consider exempting vehicles from the armrest requirements of FMVSS 201 S5.5.1 if the vehicle complies with the proposed FMVSS 214. Many torso requirements on test dummies are proposed with respect to dynamic side impact crashes, using both MDB and pole side impact tests in the proposed FMVSS 214. If a vehicle meets the proposed requirements, that compliance should supercede the armrest requirements of FMVSS 201.

Position of Head Restraints at Each Seating Position

The NPRM contains conflicting information with respect to head restraint positioning:

Current FMVSS 214:

S6.4 Adjustable seat back placement.

Place adjustable seat backs in the manufacturer's nominal design riding position in the manner specified by the manufacturer. If the position is not specified, set the seat back at the first detent rearward of 25° from the vertical. Place each adjustable head restraint in its highest adjustment position. Position adjustable lumbar supports so that they are set in their released, i.e., full back position.

Proposed FMVSS 214:

S8.3.1.2 Other seat adjustments.

Position any adjustable parts of the seat that provide additional support so that they are in the lowest or non-deployed adjustment position. Position any adjustable head restraint in the lowest and most forward position.

S8.3.2.2 Other seat adjustments.

Position any adjustable parts of the seat that provide additional support so that they are in the lowest or non-deployed adjustment position. Position any adjustable head restraint in the lowest and most forward position.

S8.3.4 Adjustable seat back placement

When using the 50th percentile male dummy, adjustable seat backs are placed in the manufacturer's nominal design riding position in the manner specified by the manufacturer. If the position is not specified, set the seat back at the first detent rearward of 25 degrees from vertical. Each adjustable head restraint is placed in its highest adjustment position. Adjustable seat back placement for the 5th percentile female dummy is specified in S12.3.

To rectify this discrepancy, the proposed rule should be amended to require the head restraint to be positioned in its highest position, as is currently required by FMVSS 214.

Thank you for your consideration of these comments. Honda would be pleased to supply any additional explanations or data that NHTSA may consider necessary or desirable in responding to these Honda comments.

ATTACHMENT #1

GLOBAL CRASH TEST STANDARDS AND DUMMY REQUIREMENTS

	Country	Item	Application	Dummy	Application	Dummy	Remarks
Regulation	U.S.A	FMVSS201	9/1/1998	SID+HYIII		---	---
		FMVSS214	9/1/1993	SID	9/1/2009	ES-2re SID-IIsFRG	
	Europe	96/27/eec	9/1/1998	ES-1	---	---	---
	United	ECE 95	9/1/1998	ES-1	8/12/2007	ES-2	---
	Japan	=ECE95	9/1/1998	ES-1	---	---	Will be changed to ES-2
	Australia	ADR 72 (ECE95)	1/1/1999	ES-1	---	---	Alternative FMVSS214
	China	=ECE95	Proposed	ES-1 or ES-2	---	---	---
	Saudi Arabia	ECE95 or FMVSS214	Proposed	ES-1 or SID	---	---	---
NCAP	U.S.A	SINCAP	in 1997	SID	Nov-02	SID+HYIII	---
		IIHS	11/19/2002	SID-IIs	---	---	---
	Europe	Euro-NCAP	Feb-97	ES-1	Feb-03	ES-2	---
	Australia	AU-NCAP	Dec-99	ES-1	Feb-03	ES-2	---
	Japan	J-NCAP	in 1999	ES-1	---	---	---
Voluntary/ MOU	U.S.A	OOP for Side Airbag	6/22/2002	SID-IIs	---	---	---
		Compatibility Front to Side	8/31/2007	SID+HYIII or SID-IIs (50%)	8/31/2009	SID-IIs	---
	Canada	OOP for Side Airbag	6/22/2002	SID-IIs	---	---	---
		ECE95 or FMVSS214	6/22/2002	ES-1 or ES-2	---	---	---
		Compatibility Front to Side	8/31/2007	SID+HYIII or SID-IIs (50%)	8/31/2009	SID-IIs	---

ATTACHMENT #2

CHRONOLOGY OF GLOBAL CRASH TEST DUMMY REQUIREMENTS

	Country	Item	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Remarks		
Regulation	U.S.A	FMVSS201(Pole)	SID+HYIII															
		FMVSS214	SID from 1993													ES-2 re proposed SID-IIs FRG proposed		
	Europe	96/27/eec	ES-1													Forecast to harmonize ECE95		
	United Nation	ECE 95	ES-1										ES-2					
	Japan	=ECE95	ES-1													Forecast to harmonize ECE95		
	Australia	ADR 72 (ECE95)	ECE95 or Alternative FMVSS 214															
	China	=ECE95												Proposed ECE95 (ES-1 or ES-2)				
	Saudi Arabia	ECE95 or FMVSS214	Proposed ECE95 or Alternative FMVSS 214															
NCAP	U.S.A	SINCAP	SID from 1997					SID+HYIII					NCAP items are rough schedule					
		IIHS(SICE)	SID-IIs															
	Europe	Euro-NCAP	ES-1					ES-2										
	Australia	AU-NCAP	ES-1					ES-2										
	Japan	J-NCAP	ES-1															
Voluntary/ MOU	U.S.A	OOP for Side Airbag	SID-IIs															
		Compatibility Front to Side												SID+HYIII or SID-IIs (50%)		SID-IIs (100%)		
	Canada	OOP for Side Airbag	SID-IIs															
		ECE95 or FMVSS214	Proposed ECE95 or Alternative FMVSS 214															
		Compatibility Front to Side												SID+HYIII or SID-IIs (50%)		SID-IIs (100%)		

ATTACHMENT #3

HONDA RECOMMENDATION FOR LONG TERM CRASH TEST DUMMY HARMONIZATION

	Country	Item	2007	2008	2009	2010	2011	2012	2013	2014	2015	Remarks		
Regulation	U.S.A	FMVSS201(Pole)	SID+HYIII		Reduce by 20%	Reduce by 50%	Phase-out 100% as vehicles comply with FMVSS 214 pole test							
			Alternative (ES-2 or SID)		ES-2		----- or -----					WorldSID	Allow WorldSID as soon as possible from new vehicle	
		FMVSS214(MDB)	Alternative (SID-IIs or SID)		SID-IIs									
			Alternative (ES-2 or SID)		ES-2 (20%*)		ES-2 (50%*)		ES-2 (100)		----- or -----			World-SID
		FMVSS214(Pole)	Alternative (SID-IIs or SID)		SID-IIs (20%*)		SID-IIs (50%*)		SID-IIs (100)					*With Credit
			Alternative (ES-2 or SID+HYIII)		ES-2		----- or -----					WorldSID	Allow WorldSID as soon as possible from new vehicle	
NCAP	U.S.A	SINCAP	Alternative (ES-2 or SID+HYIII)		ES-2		----- or -----					WorldSID	Allow WorldSID as soon as possible from new vehicle	
		IIHS	SID-IIs											
Voluntary	U.S.A	OOP for Side Airbag	SID-IIs											
		Compatibility Front to Side	SID+HYIII or SID-IIs (50%)		SID-IIs (100%)									