

property or for Government property properly consumed in performing this contract.

*Alternate II (Date).* As prescribed in 45.107(a)(3), substitute the following for paragraph (e) of the basic clause:

(e) Title to property (and other tangible personal property) purchased with funds available for research and having an acquisition cost of less than \$5,000 shall vest in the Contractor upon acquisition or as soon thereafter as feasible; provided that the Contractor obtained the Contracting Officer's approval before each acquisition. Title to property purchased with funds available for research and having an acquisition cost of \$5,000 or more shall vest as set forth in this contract. If title to property vests in the Contractor under this paragraph, the Contractor agrees that no charge will be made to the Government for any depreciation, amortization, or use under any existing or future Government contract or subcontract thereunder. The Contractor shall furnish the Contracting Officer a list of all property to which title is vested in the Contractor under this paragraph within 10 days following the end of the calendar quarter during which it was received. Vesting title under this paragraph is subject to civil rights legislation, 42 U.S.C. 2000d. Before title is vested and by signing this contract, the Contractor accepts and agrees that—

“No person in the United States or its outlying areas shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under this contemplated financial assistance (title to property).”

#### **52.245-2 Government Property (Installation Operations for Services).**

As prescribed in 45.107(b), insert the following clause:

Government Property (Installation Operations for Services) (Date)

(a) This Government Property is furnished to the Contractor in an “as-is, where is” condition. The Government makes no warranty regarding the suitability for use of the Government property specified in this contract. The Contractor shall be afforded the opportunity to inspect the Government property as specified in the solicitation.

(b) The Government bears no responsibility for repair or replacement of any lost, damaged or destroyed Government property. If any or all of the Government property is lost, damaged or destroyed or becomes no longer usable, the Contractor shall be responsible for replacement of the property at Contractor expense. The Contractor shall have title to all replacement property and shall continue to be responsible for contract performance.

(c) Unless the Contracting Officer determines otherwise, the Government abandons all rights and title to unserviceable (i.e., scrap) property resulting from contract performance. Upon notification to the Contracting Officer, the Contractor shall remove such property from the Government premises and dispose of it at Contractor expense.

(d) Except as provided in this clause, Government property furnished under this contract shall be governed by the Government Property clause of this contract. (End of clause)

#### **52.245-3 through 52.245-8 [Removed and Reserved]**

19. Remove and reserve sections 52.245-3 through 52.245-8.

20. Amend section 52.245-9 by—

a. Removing from the introductory paragraph “45.106(h)” and adding “45.107(c)” in its place;

b. Revising the date of the clause; and

c. Revising in paragraph (a) the definitions “Acquisition cost”, “Government property”, and “Real property”.

The revised text reads as follows:

#### **52.245-9 Use and Charges.**

\* \* \* \* \*

#### **USE AND CHARGES (DATE)**

(a) \* \* \*

*Acquisition cost* means—

(1) For Contractor acquired property, the full cost determined in accordance with the system established by the Contractor in conformance with consistently applied sound accounting principles.

(2) For Government-furnished property, the amount identified in the contract, or in the absence of such identification, the fair market value attributed to the item by the Contractor.

*Government property* means all property owned or leased by the Government. Government property includes both Government-furnished and Contractor-acquired property.

*Real property* means land, land rights, buildings, structures, utility systems, steam-generation systems, and equipment attached to and made part of buildings and structures (such as heating systems). As such, land rights are considered real property. It does not include foundations and other work necessary for installing special tooling, special test equipment, or equipment.

\* \* \* \* \*

#### **52.245-10 through 52.245-19 [Removed and Reserved]**

21. Remove and reserve sections 52.245-10 through 52.245-19.

#### **PART 53—FORMS**

##### **53.245 [Amended]**

22. Amend section 52.245 in paragraph (e) by removing “52.245-2(i), 52.245-5(i)” and adding “52.245-1” in its place.

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#### **DEPARTMENT OF TRANSPORTATION**

#### **National Highway Traffic Safety Administration**

#### **49 CFR Part 572**

[Docket No. 2005-22068]

#### **Anthropomorphic Test Devices; Denial of Petition for Consideration Regarding Amending the Side Impact Dummy (SID); Specifications**

**AGENCY:** National Highway Traffic Safety Administration (NHTSA), DOT.

**ACTION:** Denial of petition for rulemaking.

**SUMMARY:** This notice denies a petition for rulemaking submitted by Ford Motor Company (Ford) on December 19, 2003, that asked the National Highway Traffic Safety Administration (NHTSA) to amend the Side Impact Dummy (SID) specifications in 49 CFR Part 572, Subpart F, for use in Federal Motor Vehicle Safety Standard (FMVSS) No. 214, “Side Impact Occupant Protection,” and the Side Impact New Car Assessment Program (Side NCAP).

**FOR FURTHER INFORMATION CONTACT:** For technical issues: Mr. Sean Doyle, NHTSA Office of Crashworthiness Standards. Telephone: (202) 366-1740. Facsimile: (202) 366-7002.

For legal issues: Ms. Dee Fujita, NHTSA Office of the Chief Counsel. Telephone: (202) 366-2992. Facsimile: (202) 366-3820.

Both officials can be reached by mail at the National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

#### **SUPPLEMENTARY INFORMATION:**

##### **Background**

On October 30, 1990, NHTSA published a final rule (**Federal Register** Vol. 55, No. 210, Docket Number 88-06; Notice 8) to amend FMVSS No. 214, at the time titled, “Side Door Strength.” Prior to this final rule, a vehicle's side impact performance was determined solely by a static assessment of the ability of a door to resist forces imparted by a piston pressing a rigid steel cylinder against the door's outer surface. However, with the implementation of this final rule, effective September 1, 1993, vehicles were additionally required to undergo full-scale dynamic crash tests to assess occupant protection. Because of its acceptable reliability and durability during research testing conducted in support of the final rule, the agency chose the SID to measure the potential for injuries to an occupant's thorax and pelvis in a side impact crash (**Federal Register** Vol.

55, No. 210, Docket Number 88-07; Notice 3). To provide an assessment of the dummy's measured readings, NHTSA developed an injury metric called the Thoracic Trauma Index (TTI).<sup>1</sup>

FMVSS No. 214, renamed, "Side Impact Protection," with the implementation of dynamic testing in 1990, was later amended on April 2, 1998 (**Federal Register** Vol. 63, No. 63, Docket Number NHTSA-98-3668). During sled tests conducted by the agency to evaluate the effect of adding spacer inserts to the SID lumbar spine, it was observed that, "the position of the damper piston in the SID ribcage prior to the [side impact] test had an appreciable effect on the thorax accelerations recorded by the SID." NHTSA further found that, "the return spring on the damper did not always return the damper to its fully extended position." Because, in such instances, the piston was not fully extended in the dummy's ribcage prior to impact, the agency observed internal collision of the damper piston at the onset of impact in some dummies. Subsequent testing showed that internal collision within the damper body would not occur if the damper piston were in the fully extended position prior to a side impact test. Therefore, FMVSS No. 214 was amended on April 2, 1998, to include specific dummy positioning procedures to solve this problem.

### Summary of the Petition

In a letter dated December 19, 2003, Ford petitioned NHTSA to amend specifications for the SID in 49 CFR Part 572, Subpart F. Ford alleged that the damper in the SID dummy's thorax could induce erroneous, mechanical noise or ringing in the recorded data traces during side impact crash tests such as those conducted pursuant to FMVSS No. 214, "Side Impact Protection," or Side NCAP. Consequently, Ford modified the SID's thorax to include a SID ribcage deflection potentiometer, which allowed the company to assess the displacement of the damper piston (compression/extension) in the SID's thorax during side impact tests. Ford claims "this mechanical "noise" or "ringing" is due to metal-to-metal contact between the SID ribcage damper piston and the damper body." The noise is present when the ribcage "fully

expand[s] allowing the damper piston to fully extend and bottom out on the damper body." In particular, Ford asserts this condition is present in certain vehicles tested both with and without side air bags.

Ford presented unfiltered data for three vehicles equipped with side air bags that the company asserted were affected by internal collision of the damper piston against the damper body. For two of these side airbag equipped vehicles, Ford indicated, "the SID thorax is initially loaded by the air bag positioning between the dummy and the vehicle door, then the thorax loading is relaxed due to the nature of the vehicle deformation and air bag kinematics, thereby allowing the damper piston to fully extend." As the crash event proceeds, Ford noted, "the loading is re-applied to the thorax." According to Ford, during this "loading/unloading/re-loading" progression, "the ribcage is initially compressed but then rapidly expands back to zero measured deflection indicating full extension of the damper piston." It is at this time, approximately 50-60 milliseconds (ms) from the initiation of the crash event, that Ford alleges erroneous spikes are present in the unfiltered thoracic data curves. In the third vehicle, Ford stated that the internal collision occurred "late in the crash event when the dummy is in rebound" and "therefore does not influence \* \* \* dummy performance." Contrary to that which occurred for the other two vehicles, in this vehicle, the dummy's ribcage was continuously compressed until the loading subsided at the end of the crash event.

Ford also presented unfiltered data from one vehicle that was tested without side air bags. In such a vehicle, the company contends, "the phenomenon can occur when the door structure of the vehicle initially loads the SID thorax as the FMVSS-214/ LINCAP [Side NCAP] barrier intrudes, then the loading is relaxed due to the kinematics of the vehicle's deformation thereby allowing the internal "collision" of the piston and damper body." This resulted in a sharp spike at 50 ms in the raw data traces. Ford further stated that the dummy's thorax is then reloaded "when the SID rotates outward and contacts the door structure a second time during the crash event."

Ford maintained that if "the ribcage damper piston can fully extend during the dummy loading event, \* \* \* the internal "collision" phenomenon can significantly affect the measured rib and spine accelerations by introducing data spikes " even with the FMVSS-214 specified FIR [Finite Impulse Response] -filtering process." Ford also stated, "the

resulting data spikes in the SID responses can register a magnitude and duration such that the resulting Thoracic Trauma Index calculation can be unrealistically high, with the potential to result in a value exceeding FMVSS No. 214 limits and/or to reduce a vehicle's LINCAP rating by one or more stars."

In an attempt to mitigate the spikes, Ford asked Denton ATD, Inc. to develop modifications for the SID ribcage damper, which included the addition of both an internal 1-2 mm thick nylon washer and a 7 mm external steel spacer to the piston shaft. Ford claimed that the internal nylon washer "creates a more 'compliant' bottoming out surface on the piston shaft, thereby reducing the likelihood of mechanical 'ringing' due to metal-to-metal contact between the shaft and damper body." Ford also stated that the external spacer would "provide more piston stroke length, thereby reducing the likelihood of bottoming out the piston against the damper body." Ford believes that the above modifications "do not alter the SID response characteristics associated with FMVSS-214 compliance or LINCAP performance (except for reducing or eliminating the ringing from metal-to-metal contact), and will comply with all regulatory SID dummy response calibration requirements." Therefore, Ford petitioned NHTSA to amend the SID specifications to incorporate the aforementioned modifications to the damper and accordingly, modify all SIDs used by contracting laboratories.

In addition to the modifications discussed previously, Ford also requested that NHTSA add a ribcage deflection potentiometer to the SID specifications and the corresponding mounting bracket design that they currently use. Ford claims that this assembly "aids in the diagnosis and verification of the metal-to-metal contact condition." Ford stated that the mounting bracket design presently used in their internal testing "was developed by NHTSA during the evolution of the bracket design associated with the [1986] NPRM" (**Federal Register** Vol. 53, No. 17, Docket Number 88-06; Notice 1). However, Ford stated that unlike the mounting bracket design that was proposed in 1986, this "modified design" precludes potential metal-to-metal contact.

### Analysis of Petition

NHTSA acknowledges that the unfiltered peak acceleration traces for the upper rib, lower rib, and lower spine presented by Ford in the petition appear to show evidence of "mechanical

<sup>1</sup> TTI is calculated by averaging the maximum filtered acceleration of the ribs (either the upper rib or the lower rib) and lower spine. The filter applied is a Finite Impulse Response (FIR) filter, which has a Passband frequency of 100 Hz, a Stopband frequency of 189 Hz, a Stopband gain of -50 db, and a Passband ripple of 0.0225 db.

noise," and the most prominent spikes in these curves tend to occur around 45–60 ms after the initiation of the crash event. However, as Ford noted in the petition, the agency recognizes that internal collision of the piston against the damper body is possible, and that such contact could produce a ringing signal in the resulting data traces (**Federal Register** Vol. 63, No. 63, Docket Number NHTSA–98–3668). For that reason, in 1998, the agency amended the SID positioning procedure to fully extend the piston within the damper body prior to the side impact test to preclude the piston from bottoming out against the damper body at the onset of impact. However, Ford did not provide evidence to indicate that the SID positioning procedures outlined in the 1998 final rule were in fact followed for the tests discussed in this petition. Therefore, the agency cannot be certain that the "mechanical noise" documented by Ford is not a result of improper pretest SID positioning. Similarly, Ford did not provide data showing the effects on TTI with application of the FIR filter. Nevertheless, to ensure that the performance of the SID had not changed since its incorporation as a regulatory tool, NHTSA reviewed its own side impact test data.

In analyzing Side NCAP test data spanning model years (MY) 1997–2004 and indicant<sup>2</sup> FMVSS No. 214 test data spanning MY 2000–2004, NHTSA found only a few instances in which the upper

<sup>2</sup> Indicant FMVSS No. 214 tests are conducted by the Office of Vehicle Safety Compliance, but are performed at the Side NCAP test speed of 38.5 mph instead of 33.5 mph, as specified in the FMVSS No. 214 standard.

rib, lower rib, or lower spine unfiltered data traces for the driver or rear passenger SID in vehicles tested show data spikes at approximately the same timeframe (~ 50 ms) indicated in the Ford petition.<sup>3</sup> However, NHTSA's analysis also showed that "noise" effects are considerably reduced, if not nullified, by application of the FIR filter. Therefore, the agency could not establish that the dummies' base acceleration response levels were elevated sufficiently to affect the TTI. Consequently, there is no evidence to suggest that the star ratings for Side NCAP vehicles were reduced because of mechanical noise. A similar review of thoracic data traces for the driver and rear passenger dummies in vehicles subjected to FMVSS No. 214 compliance tests from MY 1998–2003 uncovered a very limited number of vehicles in which a ringing signal was apparent between approximately 50–60 ms in the raw data traces. These spikes were significantly reduced once the FIR filter was applied. Hence, NHTSA has concluded that similar to the Side NCAP tests, the recorded TTIs for the dummies in the compliance tests were not affected to the extent that a vehicle would have exceeded the injury criteria imposed by FMVSS No. 214.

Ford additionally requested that the agency incorporate the ribcage

<sup>3</sup> Spikes occurring considerably later than typical peak acceleration magnitudes seen in side impacts (from approximately 150 milliseconds to approximately 200 milliseconds) were present in the agency's data as well. However, the agency has found that FIR filtering makes such spikes negligible compared to the peak acceleration at impact. Side NCAP vehicle test data is located in Docket No. 1998–3835.

deflection potentiometer and corresponding mounting bracket used in Ford's in-house tests to aid in the diagnosis and verification of metal-to-metal contact occurrence. Based on our analysis, NHTSA does not believe that these recommended changes are either needed or would serve the needs of safety. Therefore, the agency is choosing not to incorporate the ribcage deflection potentiometer and corresponding mounting bracket, or the internal washer and external spacer.

### Conclusion

NHTSA did not find compelling evidence in the limited unfiltered data provided by Ford to suggest that the claimed erroneous acceleration data spikes are a cause of compliance problems or result in reduced Side NCAP star ratings. Furthermore, a review of the agency's own side impact test data did not reveal any instances in which data spikes affected TTI to the extent that a vehicle did not meet the FMVSS No. 214 compliance limits or was unjustly given a lower star rating. Consequently, NHTSA feels that the currently specified SID is sufficiently suitable for FMVSS No. 214 and Side NCAP objective testing and deems that the requested modifications are not needed. NHTSA is therefore denying the Ford petition for rulemaking.

**Authority:** 49 U.S.C. 30162; delegations of authority at 49 CFR 1.50 and 49 CFR 501.8.

Issued on: September 13, 2005.

**Stephen R. Kratzke,**

*Associate Administrator for Rulemaking.*

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