State and county	Location	Dates and name of newspaper where notice was published	Chief executive officer of community	Effective date of modification	Community No.
Durham	Unincorporated Areas.	June 4, 2002, June 11, 2002, *The Herald-Sun*.	Mr. Michael M. Ruffin, Durham County Manager, 200 East Main Street, 2nd Floor, Durham, North Carolina 27701.	Sept. 10, 2002	370085 G
Lee	City of Sanford	Apr. 18, 2002, Apr. 25, 2002, *Sanford Herald*.	The Honorable Winston C. Hestor, Mayor of the City of Sanford, P.O. Box 3729, Sanford, North Carolina 27331–3729.	July 25, 2002	370143 B
Pennsylvania: Montgomery.	Borough of Emsworth.	May 29, 2002, June 5, 2002, *The Citizen*.	The Honorable Keith Johnston, Mayor of the Borough of Emsworth, 171 Center Avenue, Pittsburgh, Pennsylvania 15202.	Sept. 4, 2002	420034 D
Puerto Rico	Commonwealth	May 31, 2002, June 7, 2002, *The San Juan Star*.	The Honorable Sila Maria Calderon, Governor of the Commonwealth of Puerto Rico, Office of the Governor, P.O. Box 9020082, San Juan, Puerto Rico 00901.	Sept. 6, 2002	720000 E
South Carolina: Lexington.	Unincorporated Areas.	Apr. 19, 2002, Apr. 26, 2002, *The State*.	Mr. Bill Banning, Council Chairman, 212 South Lake Drive, Lexington, South Carolina 29072.	July 26, 2002	450129 G
Tennessee:					
Davidson	Metropolitan Government of Nashville.	Feb. 8, 2002, Feb. 15, 2002, *The Tennessean*.	The Honorable Bill Purcell, Mayor of the Metropolitan Government of Nashville and Davidson County, 107 Metropolitan Courthouse, Nashville, Tennessee 37201.	May 17, 2002	470040 F
Davidson	City of Oak Hill	Feb. 8, 2002, Feb. 15, 2002, *The Tennessean*.	The Honorable Warren Wilkerson, Mayor of the City of Oak Hill, 5548 Franklin Road, Suite 102, Nashville, Tennessee 37220.	May 17, 2002	470351 F
Virginia:					
Augusta	Unincorporated Areas.	May 28, 2002, June 4, 2002 *The Daily News Record*.	Mr. Patrick J. Coffield, Augusta County Administrator, P.O. Box 590, Verona, Virginia 24482–0590.	Sept. 3, 2002	510013 B
Loudoun	Town of Leesburg	May 15, 2002, May 22, 2002, *Loudoun Times Mirror*.	The Honorable B.J. Webb, Mayor of the Town of Leesburg, 25 West Market Street, P.O. Box 88, Leesburg, Virginia 20178.	Aug. 21, 2002	510091 D
Loudoun	Unincorporated Areas.	May 15, 2002, May 22, 2002, *Loudoun Times Mirror*.	Mr. Kirby Bowers, Loudoun County Administrator, 1 Harrison Street, SE., 5th Floor, P.O. Box 7000, Leesburg, Virginia 20177–7000.	Aug. 21, 2002	510090 D
Loudoun	Unincorporated Areas.	May 22, 2002, May 29, 2002, *Loudoun Times Mirror*.	Mr. Kirby Bowers, Loudoun County Administrator, 1 Harrison Street, SE., 5th Floor, P.O. Box 7000, Leesburg, Virginia 20177–7000.	May 6, 2002	510090 D

(Catalog of Federal Domestic Assistance No. 83.100, ''Flood Insurance'')

Dated: July 2, 2002.

Robert F. Shea,

Acting Administrator, Federal Insurance and Mitigation Administration.

[FR Doc. 02–17278 Filed 7–12–02; 8:45 am]

BILLING CODE 6718–04–M

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 572

[Docket No. NHTSA–2000–6940]

RIN 2127–AI01

Anthropomorphic Test Devices; Hybrid III 5th Percentile Female Test Dummy, Alpha Version; Final Rule; Response to Petitions for Reconsideration

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

ACTION: Final rule; response to petitions for reconsideration.

SUMMARY: This document responds to petitions for reconsideration of the final rule that adopted design and performance specifications for a new dummy whose height and weight are representative of a fifth percentile female adult. That final rule was published on March 1, 2000. Adopting the dummy was the first step toward using the dummy to evaluate the safety of air bags for small-statured adults and teenagers. The petitions are granted in part and denied in part. The agency also discovered several minor discrepancies in the drawings package and is correcting those errors in this document.

DATES: The amendments made in this final rule are effective September 13, 2002. If you wish to submit a petition for reconsideration for this rule, your petition must be received by August 29, 2002.

ADDRESSES: Petitions for reconsideration should refer to the docket number and be submitted to: Administrator, Room 5220, National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT: For technical and policy issues, Stan Backaitis, Office of Crashworthiness Standards at 202–366–4912. For legal issues, Dion Casey, Office of the Chief Counsel, at 202–366–2992. Both officials can be reached by mail at the National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC 20590.

SUPPLEMENTARY INFORMATION:

Availability of Drawings and PADI Document: The drawings and specifications package and the PADI (Procedures for Assembly, Disassembly, and Inspection) Document referred to in this final rule are available for viewing and copying at the DOT Docket's public area, located at Plaza 401, 400 Seventh Street, SW, Washington, D.C. 20590. Copies of these documents are also available from Reprographic Technologies, 9107 Gaither Road, Gaithersburg, MD 20877, (301) 419–5070. These documents may be downloaded from the DOT's document management system website at http://dms.dot.gov. Click on ''Search,'' then on ''Search Form.'' Under ''Agency,'' click on ''NHTSA.'' Under ''Category,'' click on ''Rulemaking.'' Under ''Subcategory,'' click on ''Crashworthiness Drawings and Test Equipment Specifications.'' Then click on ''Search'' and select the desired file.

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I. Summary of Decision

Most of the issues raised in the petitions were minor and involved technical changes to either the dummy specifications or to the drawing package. In response to the petitions, the agency is making the following minor changes to the dummy specifications: (1) Adding a channel frequency class specification if a rotary potentiometer is used for measuring head rotation; (2) specifying a maximum sternum displacement limit; (3) prohibiting contact between the dummy and any attachments to the test probe during a knee or thorax impact test; and (4) revising the thorax and knee test probe specifications to include provisions for mounting suspension hardware if a cable system is used for impacts, adopt a lower minimum mass moment of inertia, clarify the specification for free air resonant frequency, and add a minimum edge radius for the impact face.

NHTSA's review of the petitions and production dummies also uncovered several minor errors and discrepancies in the figures, tables, and drawings package, which are resolved in this document.

The petitioners also raised more significant issues. They requested that the agency specify a post-test calibration, narrow the temperature range for the torso flexion test, and discontinue using the Hybrid III neck for assessing neck injury criteria. The agency is denying those requests.

Further changes to the dummy will be designated as beta, gamma, etc., to assure that modifications can be easily tracked and identified. The new dummy is defined by a drawing and specification package, a new procedures document for disassembly, assembly and inspection, and performance parameters including associated calibration procedures.

II. Background

Air bag-related fatalities and injuries to small female drivers seated close to the deploying air bag in low speed crashes have raised serious concerns about the safety of certain air bag designs for this portion of the population.[1] One way to evaluate the protection provided by, and the risks associated with, air bag systems is through the use of human mechanical surrogates with a high degree of biofidelity, such as the family of Hybrid III-type crash test dummies.

On March 1, 2000, NHTSA published a final rule adopting design and performance specifications for a new dummy whose height and weight are representative of a fifth percentile female adult. (65 FR 10961). The specifications were added to 49 CFR Part 572 as Subpart O.

This new dummy (hereinafter referred to as the ''HIII–5F dummy'') is capable of accurately assessing the potential for injuries to small-statured adults and teenagers. It is especially needed to ensure that air bags protect small-statured adult females and teenage vehicle occupants in frontal crashes and to minimize the risk of injury during those crashes. The dummy will also provide a means of gathering useful information in a variety of crash environments to better evaluate vehicle safety.

The HIII–5F dummy's specifications adopted in the final rule consist of a drawing package that shows the component parts, the subassemblies, and the assembly of the complete dummy. They also specify materials and material treatment processes, where practical, for all the dummy's component parts, and specify the dummy's instrumentation and instrument installation methods. In addition, the specifications contain a manual specifying disassembly, inspection, and assembly procedures, and a parts list of dummy drawings. These drawings and specifications ensure that the dummies will vary little from each other in their construction and are capable of consistent and repeatable responses in the impact environment.

The final rule also established impact performance criteria for the HIII–5F dummy. These criteria address head, neck, and thorax impact responses. The criteria serve as calibration checks and further assure the kinematic uniformity of the dummy and the absence of

[1] Close proximity to the air bag is one of the primary factors leading to serious injury or fatality. Several factors can lead to an individual being too close to the air bag at the time of deployment, including failure to wear a safety belt. Nevertheless, very small-statured women appear to constitute the largest segment of the driver population that may not be able to sit a safe distance from the air bag, even when properly restrained. Additionally, differences in body size may lead to more severe injury for a small-statured woman than for an unrestrained, average-size male.

structural damage and functional deficiency from previous use.

Adopting the dummy is a step toward assuring the users that it is a stable and useful test device for the assessment of vehicle safety and its readiness to be used in the tests the agency conducts to determine compliance with Federal Motor Vehicle Safety Standards. The use of the HIII–5F dummy in NHTSA compliance tests is being addressed in separate rulemaking proceedings.

III. Petitions

NHTSA received petitions for reconsideration of the final rule from DaimlerChrysler; Toyota Motor Corporation; the Alliance of Automobile Manufacturers (whose members are BMW Group, DaimlerChrysler, Fiat, Ford Motor Company, General Motors, Isuzu, Mazda, Mitsubishi Motors, Nissan, Porsche, Toyota, Volkswagen, and Volvo); First Technology Safety Systems (FTSS—a manufacturer of crash test dummies); and Robert A. Denton, Inc. (a manufacturer of crash test dummies and the load cells used in crash test dummies).

Toyota and the Alliance requested that a post-test calibration of the dummy be included in the performance specifications. A post-test calibration is an assessment of whether the dummy conforms to NHTSA specifications after it has been used in a crash test. Toyota and DaimlerChrysler recommended that the agency discontinue using the Hybrid III neck to assess neck injury criteria.

The remainder of the issues raised in the petitions are relatively minor, technical issues. All of the issues are addressed in the Discussion and Analysis section below.

IV. Discussion and Analysis

A. Post-Test Calibration

Toyota and the Alliance requested that a post-test calibration of the dummy be included in the performance specifications. Toyota and the Alliance asserted that a post-test calibration is necessary to provide an objective check of the validity of the test dummy data acquired during the test, particularly if the crash test results in an apparent non-compliance. The Alliance stated that, without a post-test calibration, ''neither a vehicle manufacturer nor a NHTSA test contractor can determine whether an apparent vehicle non-compliance is due to a test dummy anomaly during a test.''

Toyota and the Alliance previously raised the issue of post-test calibration of dummies in their comments on NHTSA's proposals to establish Hybrid III dummies for 12-month-old children, six-year-old children (HIII–6C), and three-year-old children (HIII–3C), in addition to the Notice of Proposed Rulemaking (NPRM) proposing the HIII–5F dummy. Historically, NHTSA has required that the structural properties of a dummy satisfy the specifications set out in the applicable regulation in every respect both before and after its use in any test in a Federal motor vehicle safety standard. However, in the NPRM proposing the HIII–5F dummy, the agency rejected a post-test dummy calibration provision for the following reasons:

> NHTSA is concerned that the post-test calibration requirement could handicap and delay its ability to resolve a potential vehicle or motor vehicle equipment test failure solely because the post-test dummy might have experienced a component failure and might no longer conform to all of the specifications. On several occasions during the past few years, a dummy has been damaged during a compliance test such that it could not satisfy all of the post-test calibration requirements. Yet the damage to the dummy did not affect its ability to accurately measure the performance requirements of the standard. The agency is also concerned that the interaction between the vehicle or equipment and the dummy could be directly responsible for the dummy's inability to meet calibration requirements. In such an instance, the failure of the test dummy should not preclude the agency from seeking compliance action. Thus, NHTSA has tentatively concluded that removal of the post-calibration requirement would be in the public interest, since it would permit the agency to proceed with a compliance investigation in those cases where the test data indicate that the dummy measurements were not markedly affected by the dummy damage or that some aspect of vehicle or equipment design was responsible for the dummy failure.

(63 FR 46981, 46983, September 3, 1998).

The agency believes this reasoning remains valid. Further, in their petitions for reconsideration, neither Toyota nor the Alliance provided any new information that would support the reversal of the decision not to include a post-test calibration provision. Thus, the agency is denying this part of the Alliance and Toyota petitions.

B. Neck Characteristics

1. Neck Response

Toyota expressed concern with the response of the HIII–5F dummy's neck. Toyota first expressed these concerns in its comments to the Supplemental Notice of Proposed Rulemaking updating Standard No. 208, Occupant Crash Protection, published in the **Federal Register** on November 5, 1999 (64 FR 60556).

In those comments, Toyota stated that in barrier crash testing at about 23 kph without an air bag, the HIII–5F dummy's neck extension exceeded the IARV value. However, the 50th percentile male dummy in the same test at the same speed met the injury criteria. Toyota noted that the incidence rates of cervical spine injury in the real world for a 5th percentile female-statured occupant is not significantly different from those for a 50th percentile male-statured occupant. Therefore, Toyota believed that the HIII–5F dummy's neck response was inappropriately measuring an artifact of the dummy, not the actual response that is related to the injuries that may be seen by a small statured female.

In addition, Toyota claimed to experience non-biofidelic responses of the HIII–5F dummy's neck. Toyota observed a large flexion moment when the dummy's head was slightly extended rearward, and a large extension moment when the dummy's head was slightly flexed forward and the rotational angle of the head was very small. Toyota stated that this indicated the existence of a neck artifact in the HIII–5F dummy.

Due to these concerns, Toyota recommended that the dummy not be used to measure any neck injury criteria associated with the neck extension bending moment until these issues are resolved.

DaimlerChrysler argued that the current biomechanical flexion and extension response corridors of the Hybrid III dummy neck are not applicable to air bag loading. DaimlerChrysler stated that the biomechanical response corridors for the Hybrid III neck were developed based on inertial loading (whiplash loading of seat belt-restrained occupants) of the head-neck rather than direct impact loading by the deploying air bag. DaimlerChrysler claims that impact loading of the head-neck is significantly different because the Hybrid III neck bends in a second-mode, in contrast to the first-mode of bending associated with inertial loading. In this second-mode of bending, the dummy's neck produces substantial moments with very little observed rotation between the head and chest, which places the neck response outside the established biomechanical design corridors. DaimlerChrysler stated that a relaxed human neck cannot produce a resistance moment without significant rotation of the head. Thus, DaimlerChrysler claimed, the dummy's neck is not biofidelic for air bag loading, and the responses can be considered an artifact of current Hybrid III dummy neck design not relevant for assessing human injury. DaimlerChrysler recommended that the agency cease using the HIII–5F dummy to assess neck injuries.

NHTSA agrees that the biomechanical corridors for the Hybrid III neck were based on the inertial loading response of human heads with respect to their torso. However, this does not invalidate the design and use of the neck in other impact applications. Paragraph 4.5.3 of SAE document J885, July 1986, titled ''Human Tolerance to Impact Conditions as Related to Motor Vehicle Design'' reads:

> * * * the neck can be injured without exceeding its static angular range of motion. * * * Measures of the neck loads may be a better indicator of injury potential [than angular rotation].

The agency disagrees with DaimlerChrysler's claim that a relaxed human neck cannot produce a resistance moment without significant rotation of the head. The agency believes that this statement is incorrect for several reasons.

First, to hold the head upright, activation of the cervical musculature is required. Dynamic loading of this activated musculature would produce high visco-elastic reaction forces. In real-world crashes, it is also reasonable to expect that most occupants who see an impending collision may activate additional neck muscles to brace themselves. The Hybrid III dummy neck reflects these reactions by incorporating a stiffness equivalent to 80% muscle tone in its design.

Second, NHTSA's Vehicle Research and Test Center (VRTC) conducted informal tests with several human volunteers and special tests with HIII–5F dummies [2] to determine the average resistance that the neck can generate before noticeable head rotation is observed. Male and female volunteers were loaded at the chin in the inferior-superior direction. Moments were calculated at the level of the occipital condyle before noticeable head rotation was observed. The average female volunteer produced a neck moment of 6.4 to 7.7 Nm at the level of the occipital condyle. The average male volunteer produced a neck moment of 12.2 to 15 Nm. Test results suggested that, before noticeable head rotation has occurred, the moments generated by the female volunteers at the occipital condyle level and those measured by the HIII–5F dummy neck were approximately the same. The measured human moment resistance values are probably at the lower end of the resistance spectra since the volunteers were tested for normal resistance to head motion rather than at a pain-producing level. In addition, the tests were conducted under nearly static loading conditions. Dynamically, visco-elastic properties of the neck structure would be expected to generate a higher resistance to impact-induced motion, and thus a larger moment, with little observable head rotation. These informal tests revealed that the human neck can provide resistance to bending moments at the level of the occipital condyle. Similarly, the moments that the Hybrid III dummy neck produces with little head-to-torso rotation are a reasonably accurate representation of what the total human neck experience would be.

Third, at high loading rates (as generated by air bags), the rotational inertial resistance of the head may be large. In a series of tests using small female cadavers in the driver ISO 2 position, angular accelerations of the head reached a peak of 8000 rad/sec ^{2} at 10 ms with little rotation of the head. If the moment of inertia of the head were approximately 0.0155 kg-m/sec ^{2}, the equivalent resistive moment due to inertia at that point in time would be about 125 Nm.

Thus, the facts do not support the DaimlerChrysler argument that the head of the human is free to rotate about the occipital condyle without any resistance under high speed impact conditions. Under a high loading rate and in the presence of partially activated cervical musculature, the human neck can experience large, short duration extension moments in the presence of small angular rotations of the head. Thus, the agency does not believe that the measured forces and moments are an artifact of the dummy.

Fourth, preliminary analysis using modeling techniques has shown that, for an air bag loading to the head and neck, the initial rotation of the head with respect to the chest does not change significantly as the stiffness of the occipital condyle and neck elements are changed. That is to say, in a global sense, the dummy and human necks interact with the deploying air bag in approximately the same way and produce similar kinematics and total loads in the neck. However, at the local level, particularly at the occipital condyle joint, the forces and moments may be somewhat different for the dummy and human neck due to stiffness differences. These forces and moments may be lower than those measured by the dummy due to the lower stiffness of the human spine. However, the critical values for Nij (neck injury criteria formula, found in Standard No. 208, to evaluate neck injury) have already been adjusted to account for this.

Finally, in pendulum impacts to the underside of the chin, the neck is forced into tension-type stretching and extension bending. Within a few milliseconds, the load cells in the upper neck register a large moment. Similarly, a human, under similar impact loading conditions, would have a high probability of fatal injuries, primarily at the upper portion of the neck. The NHTSA Special Crash Investigations (SCI) files, as of January 2002, show a total of twenty-six females with serious or fatal neck injuries due to deploying air bag exposures. Nineteen of these were caused by injuries to the upper neck segments. Only one of the twenty-six clearly showed a failure at the bottom of the cervical spine, while the remaining six showed massive blunt injuries, fractures of cervicals, transactions, etc., that were difficult to assign to any specific section of the neck. SCI describes a typical unrestrained occupant injury when the occupant gets too close to the air bag [3] as follows:

> Upon impact, the air bag deploys into the out-of-position adult passenger's neck and head. As the air bag expands, it results in the rapid translation and extension of the air bag underneath the chin against the neck and then wrapping upward from ear to ear. The occupant's head is effectively lifted upward off the neck resulting in an atlanto-occipital joint fracture (C1–C2) and transection of the spinal cord, and probable brain stem injuries.

The agency notes that only two additional small female (adult occupant category up to a height of 5 feet 4 inches) neck injuries were added to the SCI data files between March 2000 and January 2002. One injury was sustained in a 1990 model year vehicle, and the other in a 1994 model year vehicle. To the present time, the SCI data contain no neck injuries of small females in vehicles of post-1997 model years.

In summary, the agency believes that the current Hybrid III neck is appropriate for use in both inertial and impact loading scenarios to assess the risk of injury. Further, the compensation

[2] See report titled ''Impact Loading to the Chin of the Hybrid III Small Female Dummy Head and Neck System,'' September 27, 2000, submitted to Docket No. NHTSA–2000–6940.

[3] August ''Chip'' B. Chidester & Thomas A. Roston, ''Air Bag Crash Investigations,'' NHTSA, Paper No. 246, ESV Conference Proceedings, Amsterdam, Netherlands (June 2001).

[4] See report titled ''Evaluation of Neck Wrap and Skin Modifications for the Hybrid III Small Female Dummy,'' August 1998, submitted to Docket No. NHTSA–98–4283.

[3] August ''Chip'' B. Chidester & Thomas A. Roston, ''Air Bag Crash Investigations,'' NHTSA, Paper No. 246, ESV Conference Proceedings, Amsterdam, Netherlands (June 2001).

factors associated with the current Nij critical values account for the higher forces and moments measured in the dummy due to stiffness differences between the dummy and human necks. Accordingly, the agency is denying this part of the Toyota and DaimlerChrysler petitions.

2. Neck Injury Criteria

DaimlerChrysler argued that neck tension alone is the most accurate predictor of injury assessment. DaimlerChrysler stated that the absence of moment as an effective injury predictor may be due to the inability of the Hybrid III dummy family to accurately simulate human neck moment response to the type of loading seen in air bag deployment tests. Thus, DaimlerChrysler recommended that the agency cease using the HIII–5F to assess neck injuries.

DaimlerChrysler submitted similar comments on the advanced air bag (Standard No. 208) Supplemental Notice of Proposed Rulemaking (SNPRM) and NPRM. NHTSA responded to these comments in the final rule on advanced air bags. The agency stated that the biomechanical tests used to reach the conclusion that tension alone is the most accurate predictor of injury were limited to one loading mode of out-of-position testing. In a vehicle environment, the neck is subject to many loading modes, including compression, flexion, extension, lateral bending, and torsion. Biomechanical data have shown that these other loading modes are in fact injurious to the neck. Thus, the agency has chosen to adopt more comprehensive neck injury criteria in the standard.

Further, the biomechanical community addressed the load and moment relationship to injury and came to the consensus judgment that both moments and forces (shear, tension, and compression) are needed for injury assessment purposes. Members of the Alliance and the international automobile importers appear to agree with that conclusion. Also, analysis by NHTSA SCI of occupant injuries in air bag deployment crashes clearly indicates that more than one injury mechanism is involved in neck trauma. Thus, all of the forces and moments must be considered to assure the occupant's safety.

Finally, the agency reviewed the data provided by DaimlerChrysler from a series of out-of-position tests with the HIII–5F dummy. DaimlerChrysler provided data on three types of air bag-to-head interactions with the HIII–5F dummy positioned close to the passenger air bag. DaimlerChrysler characterized the three different interaction patterns in the following manner: (1) The air bag directly loading the head in the fore-and-aft direction pushes the chin of the dummy downward (flexion) and backwards; (2) the air bag ''trapped under the chin'' pushes the chin upward (extension) and backwards; and (3) the air bag fabric, entrapped in the hollow area between the neck and the jaw, pushes the head upward (extension) and forward.

The agency's review of the data from these tests indicates that dummy and the Nij criteria appear to accurately distinguish injurious from non-injurious loading patterns. For case one, the agency agrees with DaimlerChrysler's description of contact with the air bag on the front of the face at the chin. The applied force of the deploying air bag causes flexion of the head/neck and backwards loading of the head relative to the neck. This loading pattern of low to moderate flexion at the upper cervical spine does not appear to be associated with the type of air bag related neck injuries reported by SCI. The Nij for DaimlerChrysler's case one was 0.7 tension-flexion. The agency believes that the Hybrid III dummy and the Nij injury criteria correctly identify this as a non-injurious mode of interaction.

For case two, DaimlerChrysler characterized the interaction as ''air bag trapped under the chin'' of the dummy. The agency believes that interaction of the expanding air bag with the under surface of the chin is very similar to the injury patterns seen in SCI cases with upper cervical tension-extension type injuries. The Nij for this case was 2.9 tension-extension. The agency believes that the Hybrid III dummy and the Nij injury criteria correctly identify this as a potentially harmful mode of interaction.

For case three, DaimlerChrysler claimed that air bag fabric was entrapped in the hollow area between the neck and jaw. In this third loading mode, the air bag expands in a wedge-like manner, pushing the neck backwards and at the same time pushing the head upward and dragging it forward along the undersurface of the chin. As with case two, the agency believes that interaction of the expanding air bag with the under surface of the chin is very similar to the injury patterns seen in SCI cases with upper cervical tension-extension type injuries. Further, the addition of a significant direct shear loading to the anterior surface of the neck in case three creates an even greater probability of this loading mode being harmful to humans. The shear loads measured in this third loading mode are more than 5000 N, which are much higher than the injury assessment reference value (IARV) of 3100 N used in the Standard No. 208 sled test and by industry as an IARV for shear load. Although the shear load is not directly included in the Nij formulation, the high shear load along with the tension loads causes the large extension moments which result in an Nij failure with a value of 4.5 in tension-extension. The agency believes that the current Hybrid III dummy neck and the Nij injury criteria correctly identify this as a potentially harmful human mode of interaction.

Examination of vehicle crash data with the HIII–5F dummy seated in the full forward position (at 30 mph into a flat, rigid barrier) suggested that the first two modes of interaction described by DaimlerChrysler are common. Loading mode one results in lower values of Nij, while loading mode two results in higher values of Nij. However, case three, where the load applied by the air bag pulls the head forward, was not observed in vehicle crash tests. Based on the calculated external shear and axial forces applied by the air bag, there were no cases of high shear forces pulling the head forward. Review of the films from these tests indicated that for the low driver Nij cases, the air bag appeared fully or nearly fully deployed upon contact with the occupant's head. There was no contact or only glancing contact with the anterior surface of the dummy neck. In contrast, review of the films for cases with high driver Nij values showed clear interaction of an inflating air bag with the underside of the dummy's chin and neck, as evidenced by chalk transfers onto the air bag fabric, visible folds of the air bag located under the chin, and inflation around the dummy's chin resulting in a dumbbell-type appearance of the air bag. These vehicle crash test data support the appropriateness of the Hybrid III neck and the Nij criteria for identifying injurious air bag loading patterns.

In summary, the agency believes the current neck and Nij are appropriate, sufficient, and needed for the intended purpose. The neck has sufficient sensitivity to objectively differentiate between deploying air bag systems that are inherently safe and those that are unsafe for the small occupant.

Accordingly, NHTSA is denying this part of the DaimlerChrysler petition. The agency will continue to use the current Hybrid III neck and Nij criteria as published in the HIII–5F final rule. However, the agency will conduct further review of out-of-position test data and compare them with SCI cases to determine if there are any loading scenarios that could cause high occipital condyle moments and high Nij's without producing harmful neck injuries.

3. Neck Shield

The Alliance noted that the HIII–5F dummy final rule does not contain a neck skin or neck shield for the dummy. The Alliance stated that without a neck skin or shield, a deploying air bag may get caught on the head-neck structure of the dummy, raising concerns about the validity of the forces and moments being recorded.

The Alliance also noted that the SAE Hybrid III Dummy Family Task Group has evaluated a variety of neck skin concepts. The Task Group has agreed that a neck skin is preferable to no neck skin. Currently, the Task Group is evaluating the effects of various neck skin designs.

Accordingly, the Alliance recommended that the agency add a neck skin to the HIII–5F dummy. The Alliance recommended that the agency choose a neck skin type to avoid compliance issues over neck force-moment measurements because several of its member companies are currently developing their advanced restraint systems using the HIII–5F dummy fitted with different types of neck skin.

DaimlerChrysler conducted a series of static air bag deployment tests to investigate the loading of the head and neck of the HIII–5F dummy during air bag deployment. DaimlerChrysler observed that the SAE recommended head skin and neck shield did not prevent the air bag from being trapped under the chin or behind the jaw of the dummy.

To eliminate this artifact, DaimlerChrysler modified the dummy using two approaches. In its first approach, DaimlerChrysler used a modified head/neck skin. Using neck parts from the Hybrid II 50th percentile male dummy, additional skin and rubber, and a head skin from the HIII–5F dummy, DaimlerChrysler formed a neck surface that extended from the jaw to the upper torso. This modification prevented the air bag from snagging under the chin or behind the jaw and produced an insignificant change in the pendulum extension test. In addition, the moment and rotation responses were within the specified biomechanical extension corridor. However, DaimlerChrysler believed that the flexion response would be compromised due to the bridge effect between the neck skin and the upper torso jacket.

In its second approach, DaimlerChrysler added a pair of aluminum patches to the notch area of the head. This modification prevented the air bag from snagging behind the jaw, but not from under the chin. It did not affect the flexion and extension responses in the standard pendulum calibration tests.

Before issuing the NPRM and final rule for the HIII–5F dummy, NHTSA made an exhaustive effort to evaluate a variety of neck shields.[4] The agency was unable to produce any evidence that neck shields could effectively and consistently reduce some of the high moments associated with aggressive air bags. Thus, the agency did not specify a neck shield for the HIII–5F dummy. The agency remains unconvinced that neck shields will be able to have such effects.

In its petition, DaimlerChrysler noted that it has produced two head-neck shield modifications which prevented the air bag from getting caught under the dummy's chin or behind its jaw. DaimlerChrysler provided a picture of a modified Hybrid II head and an accompanying neck cover without indicating what neck was used for that installation. Inasmuch as the head is not of a Hybrid III dummy, the shield modification for that head may not provide any insight as to the effectiveness of such a modification for the Hybrid III dummy. The agency notes that DaimlerChrysler admitted that one of its neck shield designs might compromise the neck flexion response due to bridge effects between the neck skin and the upper torso jacket, and that the other design did not prevent the air bag from getting caught under the chin.

Based on observations of dummy interactions with deploying air bags and real-world neck injury patterns to small females from Special Crash Investigations photos, the agency believes that the Hybrid III head/neck without the neck skin produces sufficiently realistic interactions with the deploying air bag to indicate either beneficial or overly aggressive effects of the air bag on the human occupants it is designed to protect. Moreover, the agency notes that the petitioners have not provided any feasible suggestions on what type of neck shield they would support to improve its alleged shortcomings. Accordingly, the agency is denying this part of the Alliance and DaimlerChrysler petitions.

4. Pendulum Pulse for Neck Flexion/ Extension

Table B of § 572.133 specifies the pendulum pulse for neck flexion and extension. The Alliance and FTSS noted that the table contains a typographical error: the column headings ''Extension'' and ''Flexion'' are reversed. The Alliance and FTSS recommended that the agency correct this error.

NHTSA agrees with this recommendation. Accordingly, the agency is switching the order of the ''Extension'' and ''Flexion'' column headings.

C. Torso Flexion Test

Section 572.135 specifies procedures for the torso flexion test. The temperature range for the test is specified at 66 to 78 degrees F. The Alliance and FTSS stated that this range is too wide and could result in test variability because of the sensitivity of the dummy materials to temperature. The Alliance noted, for example, that the dummy's lumbar spine should be maintained at 69 to 72 degrees F for proper behavior. The Alliance and FTSS recommended that the agency change the temperature range specification to 69 to 72 degrees F to be consistent with other dummy component tests.

To determine whether there is a need for a narrower temperature range in torso flexion tests, NHTSA's Vehicle Research and Test Center (VRTC) performed two series of temperature sensitivity tests on the HIII–3C dummy: one at a temperature range between 66 and 78 degrees F, and the other between 69 and 72 degrees F. In both series of tests, the average resistance force to flexion was slightly higher at the lower temperature.[5] However, the test results also indicated a resistance force difference of less than 2 pounds over the full temperature range for both series. In addition, plots of force vs. angle showed a very consistent and uniform slope with considerable overlap of measurements over the entire range of temperatures tested, indicating that temperature is not a significant factor. Based on these test data, VRTC concluded that variations in temperature have virtually no influence on the test results due to torso flexion in a crash test.

Although these tests were performed with the HIII–3C dummy and not the HIII–5F dummy, the agency believes that the similarities of design and test methods between the HIII–3C and HIII–5F dummies would lead to the same temperature sensitivity conclusions for the HIII–5F dummy.

To address the petitioners' concern with the ''consistency'' of temperature specifications, the agency has reviewed

[4] See report titled ''Evaluation of Neck Wrap and Skin Modifications for the Hybrid III Small Female Dummy,'' August 1998, submitted to Docket No. NHTSA–98–4283.

[5] The test results can be found in Docket No. NHTSA–2000–7051.

all temperature ranges for crash test dummies currently specified in 49 CFR Part 572. Except for the Hybrid III neck and thorax, all specifications for Hybrid II, Hybrid III, and side impact (SID) dummies call for a test temperature range of 66 to 78 degrees F. The narrower temperature specification (69 to 72 degrees F) for the Hybrid III neck and thorax is due to a greater temperature sensitivity of these components, which highly influences the head kinematics and chest compression in crash tests. However, impact responses of the head, torso flexion, and femurs are not sensitive to temperature variations in the 66 to 78 degrees F range, and therefore allow a wider temperature spread. Thus, specifying a narrower temperature range exclusively for the torso flexion test for the HIII–5F dummy would create an inconsistency with respect to all other dummy torso flexion tests in Part 572.

Moreover, to change the temperature specifications to a narrower range for dummies that already have a temperature specification of 66 to 78 degrees F, the agency would have to initiate rulemaking to determine the desirability of such a change. The agency notes that there are a number of dummy users, other than the petitioners, who may neither see a need for nor want to have a narrower temperature range specification. Some test facilities do not have the torso flexion test fixtures set up in a tight temperature control environment. These facilities would have to make capital expenditures to accommodate a narrower range specification.

In addition, the agency would have to provide a rationale for narrowing the temperature specification. Inasmuch as VRTC could not show a need for a narrower temperature range, and the petitioners have not provided data that would support the need for such a change, the agency would not be able to justify the requested revision.

In view of these considerations, the agency is denying this part of the Alliance and FTSS petitions.

D. Thoracic Peak Force Criterion

Section 572.134 specifies the thorax assembly and test procedure. Paragraph (b)(1) specifies the maximum sternum displacement relative to the spine (compression) and the peak force within this specified compression corridor. The last sentence of that paragraph specifies:

> The peak force after 18.0 mm (0.71 in) of sternum displacement but before reaching the minimum required 50.0 mm (1.97 in) sternum displacement limit shall not exceed by more than five percent the value of the peak force measured within the required displacement limit.

FTSS stated:

> We have studied fourteen thorax calibration tests of seven FTSS 5th female dummies manufactured to date, and while the majority of the dummies pass the 5% requirement, we are unable to see a relationship between the 18 mm to 50 mm peak force and the maximum deflection force that would justify a fractional limit. For this reason, we suggest that an absolute peak force limit between 18 mm and 50 mm would be more appropriate and this force limit should be 5% higher than the maximum peak force limit, rounded to the nearest 100 N.

FTSS requested that the peak force be specified as an absolute value rather than a percentage. FTSS recommended that the last sentence of paragraph (b)(1) be revised to read:

> The peak force after 18.0 mm (0.71 in) of sternum displacement but before reaching the minimum required 50.0 mm (1.97 in) sternum displacement limit shall not exceed 4600 N.

The HIII–5F final rule states that peak force during the displacement interval of 50–58 mm must be within 3900–4400 N. Applying the five percent criteria specified in paragraph (b)(1) to this results in a force range of 4095–4620 N. FTSS's recommended limit of 4600 N is basically the same as the limit that results from applying the five percent criteria currently specified in paragraph (b)(1). Thus, the agency agrees with FTSS's recommended change.

Accordingly, the agency is revising the last sentence of paragraph (b)(1) to read:

> The peak force after 18.0 mm (0.71 in) of sternum displacement but before reaching the minimum required 50.0 mm (1.97 in) sternum displacement limit shall not exceed 4600 N.

E. Impact Pendulum Characteristics

1. Probe Definition

Section 571.137 specifies test conditions and instrumentation. Paragraphs (a) and (b) specify the geometrical and inertial properties for the thorax and knee probes, respectively. Paragraph (a) reads:

> The test probe for thoracic impacts shall be of rigid metallic construction, concentric in shape, and symmetric about its longitudinal axis. It shall have a mass of 13.97 ± 0.023 kg (30.8 ± 0.05 lbs) and a minimum mass moment of inertia of 5492 kg–cm² (4.86 lbs-in-sec²) in yaw and pitch about the CG [center of gravity]. ⅓ of the weight of the suspension cables and their attachments to the impact probe must be included in the calculation of mass, and such components may not exceed three percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis, must be at least 25 mm (1.0 in) long, and have a flat, continuous, and non-deformable 152.4 ± 0.25 mm (6.00 ± 0.01 in) diameter face with a maximum edge radius of 12.7 mm (0.5 in). The probe's end opposite to the impact face must have provisions for mounting of an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. No concentric portions of the impact probe may exceed the diameter of the impact face. The impact probe shall have a free air resonant frequency of not less than 1000 Hz.

Paragraph (b) reads:

> The test probe for knee impacts shall be of rigid metallic construction, concentric in shape, and symmetric about its longitudinal axis. It shall have a mass of 2.99 ± 0.01 kg (6.6 ± 0.022 lbs) and a minimum mass moment of inertia of 622 kg-cm² (0.55 lbs-in-sec²) in yaw and pitch about the CG. ⅓ of the weight of the suspension cables and their attachments to the impact probe may be included in the calculation of mass, and such components may not exceed five percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis, must be at least 12.5 mm (0.5 in) long, and have a flat, continuous, and non-deformable 76.2 ± 0.2 mm (3.00 ± 0.01 in) diameter face with a maximum edge radius of 12.7 mm (0.5 in). The probe s end opposite to the impact face must have provisions for mounting an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. No concentric portions of the impact probe may exceed the diameter of the impact face. The impact probe must have a free air resonant frequency of not less than 1000 Hz.

The Alliance argued that the requirement in both paragraphs that the probe be symmetric about its longitudinal axis is unrealistic because the pendulum is often fitted with velocity vanes, causing asymmetry. The Alliance recommended that the agency revise the first sentence of both paragraphs to read as follows:

> The primary test probe, less any additional hardware, for [thoracic or knee] impacts shall be of rigid metallic construction, concentric in shape, and symmetric about its longitudinal axis.

FTSS argued that the test probe definitions are vague and overly restrictive. FTSS claimed that the test probes can be adequately defined by the geometry of the contact area with the dummy together with the mass, center of gravity (CG) location, and moments of inertia of the entire probe.

FTSS expressed concerns about the descriptions of the geometrical and inertial properties for the thorax and knee probes. FTSS stated that it is not clear what "concentric in shape" means because "concentric" means "having the same center" but does not define the shape of an object. FTSS echoed the Alliance's concerns about the requirement that the probe be symmetric about its longitudinal axis. FTSS stated that the necessary addition of cable attachments and velocity vanes means this requirement cannot be met. FTSS noted that these attachments will cause the center of gravity (CG) to be slightly offset from the geometrical center of the probe. Thus, FTSS recommended that the agency specify a dimensional tolerance for the CG offset of 3.5 mm.[6]

Finally, FTSS argued that the requirement that no concentric portions of the probe exceed the diameter of the impact face is redundant because mass distribution is controlled by the mass moments of inertia (MMI) specification. Accordingly, FTSS recommended that the agency delete the sentence ''No concentric portions of the impact probe may exceed the diameter of the impact face'' from both paragraphs and replace the first sentence of both paragraphs with the following sentences:

> The test probe should be of rigid metallic construction with the geometrical and inertial properties specified below. The probe center of gravity shall lie within 3.5 mm of the longitudinal axis passing through the center of the impacting face.

NHTSA agrees with the Alliance that the test probe definition should include provisions for mounting suspension hardware if a cable system is used for guiding the impactor's trajectory. However, the agency does not agree with FTSS that the possible CG offset from the longitudinal axis is either needed or should be specified. NHTSA believes the specifications in the final rule for MMI in pitch and yaw provide sufficient controls to assure stable kinematics during the probe's free flight and impact with the dummy. Inasmuch as hardware attachments do not meet the definition of concentricity, the agency is excluding them from the concentricity requirement.

Accordingly, NHTSA is revising § 572.137(a) and (b) as specified in section E.7 below. The agency is also adding a paragraph (7) to § 572.134(c) and a paragraph (6) to § 572.136(c) disallowing any contact between hardware attached to the probe and the dummy. The agency believes this is necessary to assure that hardware attached to the probe does not interfere with the dummy. Each paragraph will read as follows:

> No suspension hardware, suspension cables, or any other attachments to the probe, including the velocity vane, shall make contact with the dummy during the test.

[6] FTSS stated that they have calculated that the maximum offset will not exceed 3.5 mm.

2. Mass Moment of Inertia

Paragraph (a) of § 572.137 specifies that the test probe for thoracic impacts have a MMI of 5492 kg–cm² (4.86 lbs-in-sec²) in yaw and pitch about the CG. Paragraph (b) specifies that the test probe for knee impacts have a MMI of 622 kg–cm² (0.55 lbs-in-sec²) in yaw and pitch about the CG.

The Alliance stated that, for thorax impact probes used at a number of test labs, the MMI values fall below 5492 kg–cm². The Alliance argued that these probes were used to develop the data that formed the basis for the thorax calibration performance corridors adopted by the agency in the final rule.

The Alliance observed that a similar problem exists with the MMI specification for the test probe for knee impacts in paragraph (b). The Alliance claimed that the MMI values of knee impact probes used at a number of test labs fall below 622 kg-cm².

The Alliance recommended that the agency delete the MMI criteria until substantial data are available justifying its need. In the alternative, the Alliance requested that if the cylindrical pendulum described in paragraphs (a) and (b) represents the ideal test probe, and if NHTSA insists on retaining the MMI requirement, the agency change the MMI requirement to 1132.5 kg-cm² for the thorax test probe and 156.8 kg-cm² for the knee test probe.

FTSS stated that in setting the minimum MMI, ''it appears that NHTSA has used the measured values of the physical probes at it's [sic] own test laboratories without a tolerance and without an analysis of a minimum MMI that will ensure satisfactory performance.'' FTSS stated that ''these numbers are arbitrary and have not been justified.''

FTSS noted that its thorax test probe has a yaw MMI of 5320 kg-cm² and a pitch MMI of 5303 kg-cm², both of which fall below the minimum specified in § 572.137(a). FTSS stated that NHTSA has no evidence to suggest that these probes do not provide satisfactory performance. FTSS claimed that the minimum MMI specification, as currently written, will force a re-design of the probe and obsolescence of existing probes without evidence that the design is inadequate. FTSS recommended that the MMI specification be held in abeyance for six months to allow time to develop criteria for the probes and to develop and manufacture re-designed probes as necessary.

NHTSA specified the test probes in generic terms in response to industry comments on the NPRM for the HIII–5F dummy stating that the probe needs to be generic in specification and that the users desire to make them from building blocks, essentially, an assembly of multiple pieces. The commenters also requested that NHTSA not specify the probe by design. NHTSA agreed with this objective but noted that any probe that cannot be specified by design must be specified by engineering parameters, which are mass, stiffness, MMI, CG location, and resonance of the probe's structure. As a result, the agency accepted the commenters' desire for a generic probe and specified the probe in engineering terms.

However, assembling probes from multiple pieces may result in compositions taking many configurations and wide variations of the MMI in yaw and pitch. These wide variations are evident in the Alliance's petition, in which it noted that its member companies have used different probes with MMIs ranging from 4114 to 5320 kg-cm² (calculated) for thorax test probes and from 209 to 331 kg-cm² (measured) for knee test probes.

To determine the effects on kinematics of low and high inertia test probes, the agency studied the kinematics of a probe with a considerably lower MMI than specified in § 572.137 and compared that with the kinematics of the NHTSA probe having a much higher MMI. The evaluation revealed that the low inertia probe experienced considerable motion instability. In contrast, the agency probe with the MMI specified in the final rule exhibited very stable free flight kinematics. This experiment shows that the use of probes with low MMIs could lead to unstable kinematics. Inasmuch as the response of the dummy in calibration tests is used as a measure of the dummy's repeatability and objectivity, it is important that the test probe kinematics at and during the impact with the dummy not be a source of variability.

In its petition, the Alliance included a table with actual inertia values of test probes used by the industry for both thorax and knee calibrations. The agency believes that these values reflect current industry practice, and, therefore, these are reasonably good grounds for their acceptance. In contrast, the calculated probe values, which are considerably below the inertia values currently used by the industry, have never been evaluated for kinematic stability as used in the specified tests.

As a result, the agency is accepting as the minimum MMI for thorax test probes the lower MMI value of 3646 kg-cm², and for knee test probes the lower MMI value of 209 kg-cm², cited by the

Alliance. Accordingly, the agency is changing the MMI specification for thorax test probes in § 572.137(a) to 3646 kg-cm² (3.22 lb-in-sec²), and the MMI specification for knee test probes in § 572.137(b) to 209 kg-cm² (.177 lb-in-sec²), in yaw and pitch about the CG of the probe.

Since the FTSS thorax probe, with a yaw MMI value of 5320 kg-cm² and a pitch MMI value of 5303 kg-cm², meets this specification, the agency is denying the FTSS request to hold the minimum MMI specification in abeyance for six months.

3. Free Air Resonance Frequency

Paragraphs (a) and (b) of § 572.137 both specify that the probe have a free air resonant frequency of not less than 1000 Hz.

The Alliance said that there are insufficient data to support the need for such a specification. The Alliance stated that preliminary analysis of the knee test probe conducted by FTSS demonstrates that the measured free air resonance frequency of a probe currently in use is only 662 Hz. Additional analysis conducted by DaimlerChrysler indicates that there is not frequency content sufficient to excite a resonance, thereby failing to meet the 1000 Hz requirement. Thus, the Alliance recommended that this specification be deleted until substantial data are available to justify it.

FTSS disagreed with the free air resonant frequency specification. FTSS claimed that NHTSA established it without specifying the methods to measure the frequency or providing a rationale for the need of it. FTSS stated that it has analyzed the frequency content of the probe structure used in its calibration laboratories. It said that the results showed that the probe has two primary resonant modes. The first resonant mode is bending of the probe about its CG, causing each end of the probe to translate laterally. FTSS noted that a typical accelerometer, which is mounted at the non-impacted end of the probe, has less than three percent cross-axis sensitivity. Accordingly, if the probe's first mode natural resonance were excited during a dummy test, the effect on the signal of a longitudinally oriented accelerometer would be minimal. FTSS asserted that it may be more appropriate to specify a 1000 Hz resonant frequency limit in the sensitive axis of the accelerometer. However, FTSS recommended that the free air resonant frequency specification be held in abeyance for six months to allow time to develop criteria for the probes and to develop and manufacture re-designed probes as necessary.

The agency notes that commenters on the HIII–6C and HIII–5F dummy NPRMs expressed a desire for generic probe specifications to allow users the freedom to design and build probes in a variety of ways, including constructing them from building blocks. As a result, the agency developed a generic engineering specification and inserted it in the final rules for the HIII–6C, HIII–5F, and HIII–3C dummies.

The agency believes that the resonant frequency specification is necessary for three reasons: (1) Because the intent of users is to build the probe from multiple pieces and of unspecified material, the natural resonance of the probe is the only reliable indicator to assure that the probe will be of sufficient structural rigidity and capable of repeatable response; (2) the specification will assure that a multiple piece probe will not produce separate interactions between its constituent parts; and (3) the specification will assure that the mounting structure for the accelerometer is sufficiently rigid and will not affect the accelerometer readings.

NHTSA does not agree with the Alliance comment that the resonance specification is unnecessary. A multiple piece impact probe, if improperly constructed, may contain a series of resonances along its longitudinal axis. The 1000 Hz minimum specification would preclude use of such a probe.

Moreover, in its petition, the Alliance indicated that the probe's free air resonance frequency is 662 Hz, which falls below the minimum specification of 1000 Hz. However, the agency's review of the Alliance data indicated the existence of at least two resonances: one around 800 Hz and the other around 7.5 kHz. The 800 Hz resonance is due to the first mode of beam bending around the CG of the probe. The 7.5 kHz is the second mode natural resonance of the probe along its longitudinal axis.

The agency agrees with the FTSS observation that beam bending is perpendicular to the longitudinal axis of the probe and should have little, if any, effect on the output of the longitudinally-oriented accelerometer (unless the accelerometer has a large cross axis sensitivity). In contrast, resonance along the axis of the probe is of primary interest in thorax and knee tests. NHTSA would not be concerned if the probe's resonance in the longitudinal axis of the impactor were at 7.5 kHz. This exceeds the agency's specification of 1 kHz. However, if the probe's resonance were lower than 1 kHz, it could affect the measured impact response.

NHTSA concludes that the Alliance's argument does not demonstrate the irrelevance of the minimum natural free air resonance frequency for undefined probes. Instead, the Alliance argument demonstrates that the agency should specify which resonance mode it is defining. Thus, the agency is revising the last sentence in ''572.137(a) and (b) to read:

> The impact probe has a free air resonant frequency of not less than 1000 Hz, which may be determined using the procedure listed in Docket No. NHTSA–6714–14.

4. Weight of Attachments to the Thorax and Knee Probes

Paragraphs (a) and (b) of § 572.137 both specify that one-third of the weight of suspension cables and any attachments to the impact probe must be included in the calculation of mass, and that such components may not exceed three percent of the total weight of the test probe. There were no comments regarding this specification. However, the specifications for the HIII–3C and CRABI dummies specify that one-third of the weight of suspension cables and any attachments to the impact probe may not exceed five percent of the total weight of the test probe. To maintain consistency in specifications for the entire H–III dummy family, the agency is revising the specification in paragraphs (a) and (b) of § 572.137 to five percent of the total weight of the test probe. This change has been made as specified in section E.7 below.

5. Knee Impactor Mass Tolerance

Section 572.137(b) specifies that the test probe for knee impacts have a mass of 2.99 ± 0.01 kg (6.6 ± 0.022 lbs).

The Alliance and FTSS argued that the probe mass tolerance of ± 0.01 kg (± 0.022 lb) is not practical. The Alliance stated that some accelerometers weigh approximately 0.02 lb. FTSS stated that a mass tolerance of 0.01 kg is too small to be practically measured. Thus, the Alliance and FTSS recommended that the agency increase the tolerance to ± 0.023 kg (± 0.05 lb) to account for both slight mass deviations and additional instrumentation, such as accelerometers.

NHTSA agrees that the mass tolerance is too tight. Accelerometers used on the probe do not have to be the same as the very low mass accelerometers used on the dummy. Since the weight of some accelerometers can be as high as 0.02 lb, the agency must account for this additional variation. Accordingly, the agency is changing the mass tolerance in ±572.137(b) to ± 0.023 kg (± 0.05 lb).

6. Impact Face Edge Radius

Section 572.137(a) specifies that the edge radius of the thorax probe impact face is a maximum of 12.7 mm. Both the Alliance and FTSS stated that specifying a maximum edge radius allows for smaller radii, which could affect the probe's interaction with the dummy due to differences in initial contact area. The Alliance and FTSS recommended that the agency delete the word ''maximum''.

NHTSA agrees with these concerns. At its extreme, a maximum radius specification allows the edge of the probe face to have no radius and produce a sharp corner. Such a probe face may affect the probe's interaction with the dummy if the alignment at impact was not perfect. However, the agency does not agree with the Alliance and FTSS recommendation of specifying an exact radius. This could cause substantial tolerancing problems over even small variations of the edge radius. To overcome these concerns, the agency is adding a minimum edge radius of 7.6 mm (0.3 in) to both the thorax and knee impact probe specifications to assure that the probes will always have an edge radius that is practical to hold and will not affect the probes' interaction with the dummy.

7. Conclusion

In view of the discussion above, the agency is revising paragraphs (a) and (b) of § 572.137 to read as follows:

(a) The test probe for thoracic impacts, except for attachments, shall be of rigid metallic construction and concentric about its longitudinal axis. Any attachments to the impactor, such as suspension hardware, impact vanes, etc., must meet the requirements of § 572.134(c)(7). The impactor shall have a mass of 13.97 ± 0.23 kg (30.8 ± 0.05 lbs) and a minimum mass moment of inertia of 3646 kg-cm^2 (3.22 lbs-in-sec^2) in yaw and pitch about the CG of the probe. One-third (1⁄3) of the weight of suspension cables and any attachments to the impact probe must be included in the calculation of mass, and such components may not exceed five percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis of the probe, has a flat, continuous, and non-deformable 152.4 ± 0.25 mm (6.00 ± 0.01 in) diameter face with a minimum/maximum edge radius of 7.6/12.7 mm (0.3/0.5 in). The impactor shall have a 152.4–152.6 mm (6.0–6.1 in) diameter cylindrical surface extending for a minimum of 25 mm (1.0 in) to the rear from the impact face. The probe's end opposite to the impact face has provisions for mounting of an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. The impact probe has a free air resonant frequency of not less than 1000 Hz, which may be determined using the procedure listed in Docket No. NHTSA–6714–14.

(b) The test probe for knee impacts, except for attachments, shall be of rigid metallic construction and concentric about its longitudinal axis. Any attachments to the impactor, such as suspension hardware, impact vanes, etc., must meet the requirements of § 572.136(c)(6). The impactor shall have a mass of 2.99 ± 0.23 kg (6.6 ± 0.05 lbs) and a minimum mass moment of inertia of 209 kg-cm^2 (0.177 lb-in-sec^2) in yaw and pitch about the CG of the probe. One-third (1⁄3) of the weight of suspension cables and any attachments to the impact probe may be included in the calculation of mass, and such components may not exceed five percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis of the probe, has a flat, continuous, and non-deformable 76.2 ± 0.2 mm (3.00 ± 0.01 in) diameter face with a minimum/maximum edge radius of 7.6/12.7 mm (0.3/0.5 in). The impactor shall have a 76.2–76.4 mm (3.0–3.1 in) diameter cylindrical surface extending for a minimum of 12.5 mm (0.5 in) to the rear from the impact face. The probe's end opposite to the impact face has provisions for mounting an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. The impact probe has a free air resonant frequency of not less than 1000 Hz, which may be determined using the procedure listed in Docket No. NHTSA–6714–14.

F. Instrumentation Filter Classes

1. Thorax Spine and Pendulum Accelerations

Section 572.137(m)(3)(ii) specifies CFC Class 1000 filters for conditioning the spine and pendulum acceleration signals. The Alliance and FTSS recommended that the agency change this specification to Class 180 because Class 1000 is too high for the pendulum acceleration measurement during impact with the dummy, and to remain consistent with SAE–J211.

NHTSA agrees with the Alliance and FTSS comments regarding § 572.137(m)(3)(ii). The current specification of Class 1000 is too high for the intended application and is not consistent with SAE–J211 Recommended Practice and similar specifications in the final rules for other dummies. The agency notes that it is a typographical error. Accordingly, the agency is correcting this error by revising ''572.137(m)(3)(ii) to read as follows:

(ii) Spine and pendulum accelerations—Class 180

2. Sternum Deflection

Section 572.137(m)(3)(iii) specifies the sternum deflection signal filters at Class 180. The Alliance recommended that the agency change this specification to Class 600 to remain consistent with SAE–J211.

NHTSA notes that the Class 180 specification in ''572.137(m)(3)(iii) is in line with the specification for the Hybrid III 50th percentile male dummy. The agency believes this specification is sufficient for direct chest deflection measurement. However, Class 600 data are needed if a V*C measurement is to be made. NHTSA does not require the measurement of V*C, but the agency has no objection to filtering the data to a higher CFC class since that level data is suitable for both the deflection and V*C measurements. Accordingly, the agency is revising § 572.137(m)(3)(iii) to read as follows:

(iii) Sternum deflection—Class 600

3. Lower Leg

Section 572.137(m)(6) specifies the femur forces filters at Class 600. The Alliance and FTSS recommended that the agency revise this paragraph to include a knee pendulum filter, also of Class 600, to remain consistent with SAE–J211.

NHTSA notes that currently § 572.137(m)(6) reads: ''Femur forces—Class 600.'' Since the femur force is calculated during calibration from the pendulum based accelerometer, the agency assumed it was clear that the Class 600 also applied to the impactor mounted accelerometer data. Apparently, it was not. Accordingly, the agency is revising § 572.137(m)(6) to read as follows:

(6) Femur forces and knee pendulum—Class 600

4. Neck

Section 572.137(m)(2) specifies the neck signal filters. The Alliance and FTSS noted that it does not specify a filter class for the neck test rotation potentiometers. The Alliance and FTSS recommended that the agency add a paragraph (iv) to that section to read as follows:

(iv) Rotation potentiometer—Class 60.

In § 572.137(m)(2), NHTSA did not specify use of mechanical test fixtures, including potentiometers, to measure head rotation in the specified head-neck tests. The agency believes that there are several methods of measuring this, and there is no reason why a specific method should limit the user's choice. The Alliance and FTSS recommended that the agency revise § 572.137(m)(2) to specify a channel class to provide guidance for those instances in which a rotary potentiometer is used to measure the amount of head rotation by adding:

(iv) Rotation potentiometer—Class 60.

In its petitions concerning the HIII–6C final rule, the Alliance noted that industry users appear to have reached a consensus that the Society of

Automotive Engineers (SAE) recommended practice J211 Channel Frequency Class (CFC) 60 specification is appropriate if a potentiometer is used to measure head rotation. In addition, the VRTC used the CFC 60 to filter head rotation data measured by rotary potentiometers to establish the certification requirements for the dummies. VRTC review of raw data showed absence of high frequency signals that would obviate the need for a specification greater than CFC 60.

Consequently, the agency has no objections to specifying Channel Frequency Class 60 for this application if a rotary potentiometer is used for measuring head rotation. The agency is revising ''572.137(m)(2) to add the following paragraph:

(iv) Rotation potentiometer—Class 60 (optional).

G. Sensor Specifications

The drawing package contains seven drawings that provide generic specifications for load cells used within the HIII–5F dummy. Each of these drawings specifies that the load cell electrical output/input sensitivity at capacity be 1.0 mV/V MIN.

Denton stated that many of the existing load cells that it has built for these applications have a nominal sensitivity specification of 1.0 mV/V channels. Due to manufacturing variations, load cells may have a sensitivity above or below the 1.0 mV/V level. Denton stated that many existing load cells would be rendered obsolete by this requirement. Denton argued that load cells with outputs slightly below 1.0 mV/V have functioned satisfactorily in these applications for many years. Denton also stated that NHTSA did not provide any data to justify this requirement. Thus, Denton requested that this specification be changed to 0.75 mV/V MIN.

NHTSA is granting Denton's request. The agency notes that this change is nominal and will have no detrimental effects on the quality of the resulting data channel. Accordingly, the agency is changing this specification in Drawings SA572–S11, SA572–S14, SA572–S15, SA572–S29, SA572–S16–L&R, SA572–S27, and SA572–S28 from 1.0 mV/V MIN to 0.75 mV/V MIN.

Drawing SA572–S15 for the Small Female Lumbar Spine Load Cell specifies 5000 Hz as the minimum free air resonance specification. It also specifies that the lumbar load cell force measurement use a Channel Frequency Class (CFC) of 1000.

Denton requested that the agency change the free air resonance specification to 3000 Hz. Denton stated that the measured free air resonance of its load cell is below 5000 Hz and that it has functioned well for years. Denton argued that if the agency did not change this specification, many, if not all, existing lumbar spine load cells currently in use would be rendered obsolete.

Denton also requested that the agency change the CFC specification to Class 600 for data signals generated by the lumbar load cell. Denton noted that there is no rationale for the Class 1000 specification for the force measurement and that it was chosen by default. Denton stated that it is extremely unlikely that any forces or moments will come even close to exceeding Class 600 because the top of the load cell is attached to a rubber lumbar spine, and the lumbar spine will be unable to transmit high frequencies.

NHTSA is granting both of Denton's requests. As Denton noted, the agency chose the minimum free air resonance specification and CFC by default. Accordingly, the agency is revising Drawing SA572–S15 by changing the minimum free air resonance specification from 5000 Hz to 3000 Hz and changing the lumbar force CFC classification from Class 1000 to Class 600.

H. Drawings, Figures, and PADI Document

The Alliance and FTSS found several errors in Figures O1, O2, and O3. Denton noted several specification errors in Drawing SA572–S14. In the process of inspecting production dummies, the VRTC noted additional dimensional discrepancies in three of the dummy drawings. The agency believes that these discrepancies are of little consequence to the dummy functioning but must be adjusted to reflect the dummies being built with production equipment. In this document, the agency is correcting the errors in these drawings.

1. Figures O1, O2, O3, O4, and O5

The Alliance noted that Figure O1 (*Neck Flexion Test Setup Specifications*) is missing the label for the lower neck-adjusting bracket. The Alliance also noted that the second label for the neck-adjusting bracket in Figure O2 (*Neck Extension Test Setup Specifications*) is incorrect. It should read: ''BRACKET—NECK ADJUSTING—UPPER (P/N 880105–207).''

The Alliance and FTSS noted that some of the language in Figure O3 (*Thorax Impact Test Setup Specifications*) does not conform to the language in the final rule text. Specifically, the Alliance and FTSS recommended that the agency change the tolerance for the test probe alignment from ± 0.05 degrees to ± 0.5 degrees, and the tolerance for the impact probe weight from ± 0.01 kg (0.02 lb) to ± 0.023 kg (0.05 lb) to conform to the text of the final rule. Finally, the Alliance and FTSS stated that Figure O3 does not contain a pelvic angle measurement. They noted that the Society for Automotive Engineers (SAE) Engineering Aid 25 specifies that the pelvis should be inclined rearward 7 ± 2 degrees with respect to the horizontal. They recommended that this angle be added to the note Pelvic Angle Reference Surface'' in Figure O3 so that testers will not be required to force the dummy's pelvis into an unnatural orientation.

NHTSA agrees with all of these recommendations. The suggested changes reflect errors in the figures. Accordingly, the agency is revising Figure O1 by adding the missing label for the lower neck-adjusting bracket. That label will read ''BRACKET—NECK ADJUSTING—LOWER (P/N 880105–208).'' The agency is also revising the second label for the neck-adjusting bracket in Figure O2 to read: BRACKET—NECK ADJUSTING—UPPER (P/N 880105–207). The agency is changing the tolerance for the test probe alignment in Figure O3 from ± 0.05 degrees to ± 0.5 degrees, and the tolerance for the impact probe weight in Figures O3 and O5 from ± 0.01 kg (0.02 lb) to ± 0.023 kg (0.05 lb). Finally, the agency is adding the angle 7 ± 2 degrees from the horizontal to the note Pelvic Angle Reference Surface in Figure O3.

In reviewing Figure O4, NHTSA discovered that it had failed to specify the weight of the pull mechanism [7] used in the torso flexion test. The Hybrid III Six- and Three-Year-Old dummy requirements each specify the weight of the pull mechanism for the torso flexion test. To be consistent with those dummy requirements and assure test repeatability, the agency is specifying that the weight of the pull mechanism must be less than or equal to 1.07 kg (2.35 lb).

Accordingly, the agency is adding the following note to Figure O4: ''Combined weight of load cell, loading adaptor bracket, pull cable, and attachment hardware 1.07 kg (2.35 lb).

2. Drawing SA572–S14

This drawing provides generic specifications for the uniaxial femur

[7] The pull mechanism consists of the load cell, loading adapter bracket, pull cable, and attachment hardware needed for the torso flexion test.

load cells for use within the HIII–5F dummy. The drawing specifies a diameter dimension of 1.722 inches/ 4.375 millimeters, with a tolerance of ±0.005 inch, for the load cell.

Denton said that there are three errors in this specification. First, the 1.722 inches should be 1.75 inches. Denton said that its Model 2121 femur, which has been used for this application worldwide (including by NHTSA) for many years, has a diameter of 1.75 inches. Denton argued that if NHTSA required a diameter of 1.722 inches, all existing femur force transducers would be rendered obsolete. As a result, the agency and its contractors, and other test facilities worldwide, would have to purchase all new femur force transducers. Denton also argued that this dimension is irrelevant to the performance of the load cell. Thus, Denton requested that the diameter dimension be changed to 1.75 inches.

Second, Denton argued that the ±0.005 inch tolerance is unnecessarily tight for the diameter dimension. Denton requested that the tolerance be changed to two decimal places, or ±0.01 inch.

Third, Denton noted that the metric conversion for 1.722 inches is stated incorrectly in the drawing. It should be 44.45, rather than 4.375, millimeters.

NHTSA agrees with all three of Denton's recommendations. The agency notes that the 1.722 inch specification and metric conversion for 1.722 inches were errors, and the agency is correcting them in this document. The agency also agrees that the tolerance specification is unnecessarily tight. For the load cells used in the Child Restraint Air Bag Interaction (CRABI) dummy, NHTSA has already changed the tolerance specification for diameter dimensions to two decimal places. For the sake of consistency, the agency is changing the tolerance specification of the HIII–5F load cell diameter dimension to two decimal places as well. Accordingly, the agency is revising Drawing SA572–S14 by changing: (1) The load cell diameter dimension to 1.75 inches; (2) the tolerance to ±0.01 inch; and (3) the metric conversion for 1.75 inches to 44.45 millimeters.

3. Drawing 880105–000

In inspecting production dummies, the VRTC noted a discrepancy in the height reference dimension ''AA'' of sheet 5 of 6 of drawing 880105. This dimension locates the measurement of the maximum chest circumference ''Y'' of the dummy with respect to the seating surface. Currently, the dimension is 12.0 ±0.20 inches.

The agency is increasing that dimension to 13.6 ±0.50 inches. This increase is needed to allow for stack up of dimensional tolerances of dummy components from the bottom of the buttocks to the shoulder structure and for variations in the dummy's torso posture. The changes will appear in the modified drawing as revision ''J''.

The agency's review of drawing 880105–000 (sheet 3 of 6) also revealed an erroneous callout for Item #4 of the parts list. Item #4 specifies part #9000224, Screw, 10–24 x ⅝, SHCS. However, the agency has determined that a ⅝ inch length screw is too long and will bottom-out before securely fastening the head accelerometer mount to the skull casting. The correct length of screw is ⅜ inch. Accordingly, the correct callout for Item #4 is part #9000487, 10–24 x ⅜, SHCS. The agency is revising Print 880105–000 sheet 3 of 6 to reflect this correction under revision ''I''.

4. Drawing 880105–434

The VRTC also noted a discrepancy in the abdominal insert drawing in drawing 880105–434. Currently, the abdominal drawing specifies, on the posterior side of the abdomen, a semicircular relief denoted by the R 3.62 and R 1.90 dimensions and shape.

Instead, the abdominal drawing should specify a rectangular shaped cutout on the posterior side of the abdomen to fit around the chest deflection transducers mounted bi-laterally next to the lumbar spine. All of NHTSA's evaluation, calibration, repeatability, and reproducibility work, including vehicle tests, have been performed with the HIII–5F dummy containing an abdomen with the rectangular cutout. If the abdominal insert were fabricated according to the dimensions and shape in the current drawing, the agency could not be assured that the dummy response would be consistent with these underlying tests.

Accordingly, the agency has revised the abdominal insert drawing in drawing 880105–434 by replacing the semicircular cutout shape with a rectangular cutout shape 4.45 inches wide and 2.00 inches long in the fore and aft direction from the posterior side, and 1.87 inches deep from the top surface of the abdomen. The change will appear in the modified drawing as revision ''C''.

5. Drawing 880105–440

Finally, the VRTC noted a discrepancy in the datum line in Drawing 880105–440, Molded Pelvic Assembly. The drawing dimension with respect to the datum line adds up to an overall depth of 10 inches in the fore-aft direction. As measured, however, the actual parts on several FTSS and Denton dummies have an overall depth of 9.25 inches. These dummies provide a good fit between the pelvis and thigh flesh.

The VRTC has inspected several pelvis assemblies and determined that the 1.00 inch dimension to the end of the pelvis flesh at the interface with the thigh flesh is incorrectly specified in the drawing. It is not needed, if the overall fore and aft depth of 9.25 inches of the pelvis is specified. Thus, control of the pelvis to a depth of 9.25 inches eliminates a potential assembly interference problem and provides a good fit between the pelvis and thigh flesh during the attachment of the femur to the pelvis. Accordingly, the agency is removing the 1.00 inch dimension from the end of the pelvis flesh and adding an overall depth dimension of 9.25 inches. The changes will appear in the modified drawing as revision ''B''.

6. Minor Drawing Revisions

In reviewing the drawings package, VRTC discovered several missing or misplaced notes and call out errors. To correct these errors, the agency is revising the drawings as shown in the following table. The revised drawings package contains a drawing revision list (Drawing Number SA572–880105DRL–1) describing all these changes.

Drawing #	Drawing title	Revision	Reason
880105–109	SKIN, HEAD—HIII 5th FEMALE	Added hole note ''½ in. Dia.''	The hole in the skin for the condile pin had no dimension.
880105–728–1	ARM COMPLETE ASSEMBLY, RIGHT.	Corrected location of balloon ''11'' arrowhead.	The arrow for item #11 was not pointing to the clamping screw.
880105–728–2	ARM COMPLETE ASSEMBLY, LEFT	Corrected location of balloon ''11'' arrowhead.	The arrow for item #11 was not pointing to the clamping screw.

Drawing #	Drawing title	Revision	Reason
880105–650/651	HYBRID III 5th FEMALE—FOOT ASSEMBLY.	(1) Changed weight to 1.75 +/- 0.10 lbs. from 1.60 +/- 0.10 lbs. (2) Removed ''left'' from the title block.	(1) The weight was changed to 1.75 lbs to reflect the actual weight of the foot assembly. (2) The word ''LEFT'' was removed from the title block because the drawing is for the Left and Right Assembly.
880105–621	KNEE CLEVIS—ADAPTOR WELDMENT.	Changed hole dia. to .266 from .2656	The hole drilled in part is actually .266.
880105–516	LINEAR POT—SHAFT MODIFICATIONS.	Changed call-out in ''Next Assembly'' to 880105–528L/R from 880105–229L/R.	Drawing 880150–229L/R specified in the ''Next Assembly'' was incorrect.
880105–250	NECK ASSEMBLY	Changed note 2 from 2.0 +/- 0.2 lbs/in to 12.0 +/- 2.0 in-lbs.	Incorrect torque designation. The PADI document (page 11) requires the neck to be torqued to 10–14 in-lbs.
880105–1092	LUMBAR LOAD CELL SIMULATOR	Hole depth dia .75 x .30 DP. changed to dia. .75 x .350 DP. Removed .350 dimension from crossectional view.	Corrected depth of .75 dia. hole note, and removed duplicate call-out of same in crossectional view.
H350–1006	MOUNT, CHEST ACCELEROMETER FOR ENDEVCO 7264–2000 ACCELS ON TRIAX MOUNT.	Added to title block ''SA572–S4'' and removed ''Endevco 7264–2000''.	Title block was revised by removing vendor designated accelerometer call-out.

7. PADI Document

Currently, the PADI (Procedures for Assembly, Disassembly, and Inspection) Document specifies that the dummy shoes shall be ''low dress black oxfords, size 8E that met MIL–S–13192P.'' These specifications must be updated to be consistent with the specifications in the Standard No. 208 Advanced Air Bag NPRM. Accordingly, the agency is revising the fifth sentence on page four of the PADI Document (under the Clothing section) to read as follows:

The shoes are women's low dress black oxfords, size 7½

W that meet MIL–S21711E.

V. Rulemaking Analyses and Notices

A. 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.

This rulemaking document was not reviewed by the Office of Management and Budget under E.O. 12866. This rule also is not considered to be significant under the Department of Transportation's Regulatory Policies and Procedures (44 FR 11034, February 26, 1979).

This document amends 49 CFR Part 572 by making minor amendments to the design and performance specifications for a new 5th percentile female dummy that the agency may later incorporate into Federal motor vehicle safety standards. This document does not impose requirements on anyone.

The cost of an uninstrumented 5th percentile female dummy is approximately $33,400. Instrumentation would add from $29,000 to $99,100 to the cost, depending on the amount of instrumentation the user chooses to employ. This document does not add any costs to the cost of the dummy or any instrumentation. Thus, the economic impacts of this document are minimal, and no further regulatory evaluation is necessary.

B. 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.

I have considered the effects of this rule under the Regulatory Flexibility Act and certify that this rule will not have a significant economic impact on a substantial number of small entities. The rule does not impose or rescind any requirements. This rule makes relatively minor amendments to the design and performance specifications for a new 5th percentile female dummy that the agency may later incorporate into Federal motor vehicle safety standards. It does not impose requirements on anyone. The Regulatory Flexibility Act does not, therefore, require a regulatory flexibility analysis.

C. National Environmental Policy Act

NHTSA has analyzed this rule for the purposes of the National Environmental

Policy Act and determined that it will not have any significant impact on the quality of the human environment.

D. 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 rule in accordance with the principles and criteria set forth in Executive Order 13132. This rule will not 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. This rule makes relatively minor amendments to the design and performance specifications for a new 5th percentile female dummy that the agency may later incorporate into Federal motor vehicle safety standards. The agency has determined that this rule does not have sufficient federalism implications to warrant consultation and the preparation of a Federalism Assessment.

E. Civil Justice Reform

This rule will 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.

F. 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 rule does not have any requirements that are considered to be information collection requirements as defined by the OMB in 5 CFR Part 1320.

G. 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 our 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 us to provide Congress, through OMB, explanations when we decide not to use available and applicable voluntary consensus standards.

The 5th percentile female test dummy that is the subject of this document was developed under the auspices of the SAE. All relevant SAE standards were reviewed as part of the development process. The following voluntary consensus standards have been used in developing the dummy: SAE Recommended Practice J211, Rev. Mar 95 ''Instrumentation for Impact Tests;'' and SAE J1733 of 1994–12 ''Sign Convention for Vehicle Crash Testing, Surface Vehicle Information Report.''

H. Unfunded Mandates Reform Act

Section 202 of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 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). Before promulgating a NHTSA rule for which a written statement is needed, section 205 of the UMRA generally requires the agency to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective, or least burdensome alternative that achieves the objectives of the rule.

This rule does not impose any unfunded mandates under the UMRA. This rule does not meet the definition of a Federal mandate because it does not impose requirements on anyone. This rule makes relatively minor amendments to the design and performance specifications for a new 5th percentile female dummy that the agency may later incorporate into Federal motor vehicle safety standards. It will not result in costs of $100 million or more to either State, local, or tribal governments, in the aggregate, or to the private sector. Thus, this rule is not subject to the requirements of sections 202 and 205 of the UMRA.

K. Regulation Identifier Number (RIN)

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 in 49 CFR Part 572

Incorporation by reference, Motor vehicle safety.

In consideration of the foregoing, 49 CFR Part 572 is amended as follows:

PART 572—ANTHROPOMORPHIC TEST DUMMIES

1. The authority citation for Part 572 continues to read as follows:

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

2. In ''572.130, paragraphs (a)(1) introductory text, (a)(2), and (c)(1) are revised to read as follows:

§572.130 Incorporation by reference.

(a) * * *

(1) A drawings and specification package entitled ''Parts List and

Drawings, Part 572 Subpart O Hybrid III Fifth Percentile Small Adult Female Crash Test Dummy (HIII–5F, Alpha Version)'' (June 2002), incorporated by reference in ''572.131, and consisting of:

* * * * *

(2) A procedures manual entitled ''Procedures for Assembly, Disassembly, and Inspection (PADI) Subpart O Hybrid III Fifth Percentile Adult Female Crash Test Dummy (HIII–5F), Alpha Version'' (February 2002), incorporated by reference in § 572.132.

* * * * *

(c) * * *

(1) The Parts List and Drawings, Part 572 Subpart O Hybrid III Fifth Percentile Small Adult Female Crash Test Dummy, (HIII–5F, Alpha Version) (June 2002), referred to in paragraph (a)(1) of this section and the Procedures for Assembly, Disassembly, and Inspection (PADI) of the Hybrid III 5th Percentile Small Adult Female Crash Test Dummy, Alpha Version, referred to in paragraph (a)(2) of this section are available from Reprographic Technologies, 9107 Gaither Road, Gaithersburg, MD 20877, (301) 419–5070. These documents are also accessible for reading and copying through the DOT Docket Management System.

* * * * *

3. In ''572.131, paragraph (a)(2) is revised to read as follows:

§ 572.131 General description.

(a) * * *

(2) Parts List and Drawings, Part 572 Subpart O Hybrid III Fifth Percentile Small Adult Female Crash Test Dummy (HIII–5F, Alpha Version) (June 2002) (refer to § 572.130(a)(1)(ix)).

* * * * *

4. In ''572.133, Table B is revised to read as follows:

§ 572.133 Neck assembly and test procedure.

* * * * *

TABLE B.—PENDULUM PULSE

Time ms	Flexion		Extension	
	m/s	ft/s	m/s	ft/s
10	2.1–2.5	6.9–8.2	1.5–1.9	4.9–6.2
20	4.0–5.0	13.1–16.4	3.1–3.9	10.2–12.8
30	5.8–7.0	19.5–23.0	4.6–5.6	15.1–18.4

5. In ''572.134, the last sentence of (b)(1) is revised and paragraph (c)(7) is added to read as follows:

§ 572.134 Thorax assembly and test procedure.

* * * * *

(b) * * *

(1) * * * The peak force after 18.0 mm (0.71 in) of sternum displacement but before reaching the minimum required 50.0 mm (1.97 in) sternum displacement limit shall not exceed 4600 N.

* * * * *

(c) * * *

(7) No suspension hardware, suspension cables, or any other attachments to the probe, including the velocity vane, shall make contact with the dummy during the test.

6. In § 572.136, paragraph (c)(6) is added to read as follows:

§ 572.136 Knees and knee impact test procedure.

* * * * *

(c) * * *

(6) No suspension hardware, suspension cables, or any other attachments to the probe, including the velocity vane, shall make contact with the dummy during the test.

7. In § 572.137, paragraphs (a), (b), (m)(3)(ii) and (iii), and (m)(6), are revised and paragraph (m)(2)(iv) is added to read as follows:

§ 572.137 Test conditions and instrumentation.

(a) The test probe for thoracic impacts, except for attachments, shall be of rigid metallic construction and concentric about its longitudinal axis. Any attachments to the impactor, such as suspension hardware, impact vanes, etc., must meet the requirements of § 572.134(c)(7). The impactor shall have a mass of 13.97 ± 0.23 kg (30.8 ± 0.05 lbs) and a minimum mass moment of inertia of 3646 kg-cm ^{2} (3.22 lbs-in-sec ^{2}) in yaw and pitch about the CG of the probe. One-third (1/3) of the weight of suspension cables and any attachments to the impact probe must be included in the calculation of mass, and such components may not exceed five percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis of the probe, has a flat, continuous, and non-deformable 152.4 ± 0.25 mm (6.00 ± 0.01 in) diameter face with a minimum/maximum edge radius of 7.6/12.7 mm (0.3/0.5 in). The impactor shall have a 152.4–152.6 mm (6.0–6.1 in) diameter cylindrical surface extending for a minimum of 25 mm (1.0 in) to the rear from the impact face. The probe's end opposite to the impact face has provisions for mounting of an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. The impact probe has a free air resonant frequency of not less than 1000 Hz, which may be determined using the procedure listed in Docket No. NHTSA–6714–14.

(b) The test probe for knee impacts, except for attachments, shall be of rigid metallic construction and concentric about its longitudinal axis. Any attachments to the impactor, such as suspension hardware, impact vanes, etc., must meet the requirements of § 572.136(c)(6). The impactor shall have a mass of 2.99 0.23 kg (6.6 ±0.05 lbs) and a minimum mass moment of inertia of 209 kg-cm ^{2} (0.177 lb-in-sec ^{2}) in yaw and pitch about the CG of the probe. One-third (1/3) of the weight of suspension cables and any attachments to the impact probe may be included in the calculation of mass, and such components may not exceed five percent of the total weight of the test probe. The impacting end of the probe, perpendicular to and concentric with the longitudinal axis of the probe, has a flat, continuous, and non-deformable 76.2 ± 0.2 mm (3.00 ± 0.01 in) diameter face with a minimum/maximum edge radius of 7.6/12.7 mm (0.3/0.5 in). The impactor shall have a 76.2–76.4 mm (3.0–3.1 in) diameter cylindrical surface extending for a minimum of 12.5 mm (0.5 in) to the rear from the impact face. The probe's end opposite to the impact face has provisions for mounting an accelerometer with its sensitive axis collinear with the longitudinal axis of the probe. The impact probe has a free air resonant frequency of not less than 1000 Hz, which may be determined using the procedure listed in Docket No. NHTSA–6714–14.

* * * * *

(m) * * *

(2) * * *

(iv) Rotation potentiometer—Class 60 (optional)

(3) * * *

(ii) Spine and pendulum accelerations—Class 180

(iii) Sternum deflection—Class 600

* * * * *

(6) Femur forces and knee pendulum—Class 600

* * * * *

8. At the end of subpart O, Figures O1, O2, O3, O4, and O5 are revised as follows:

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Figures to Subpart O

FIGURE O1
NECK FLEXION TEST SETUP SPECIFICATIONS

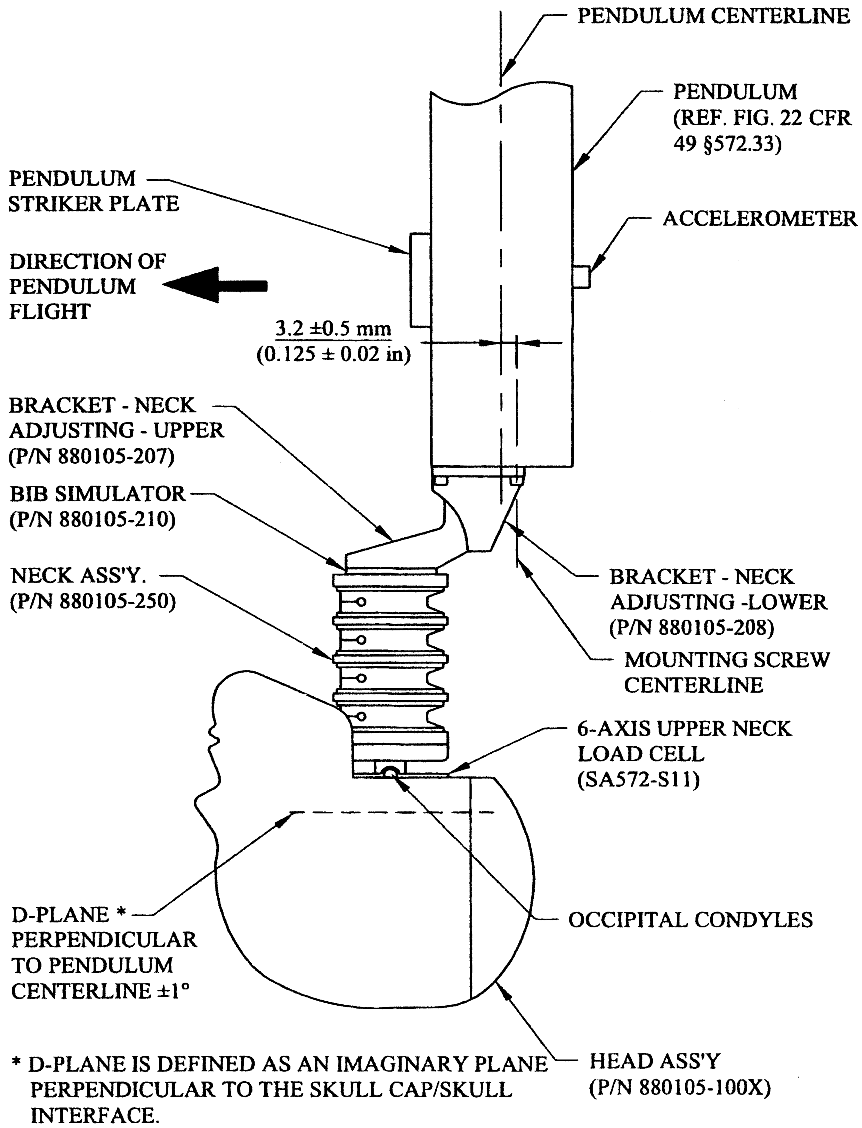
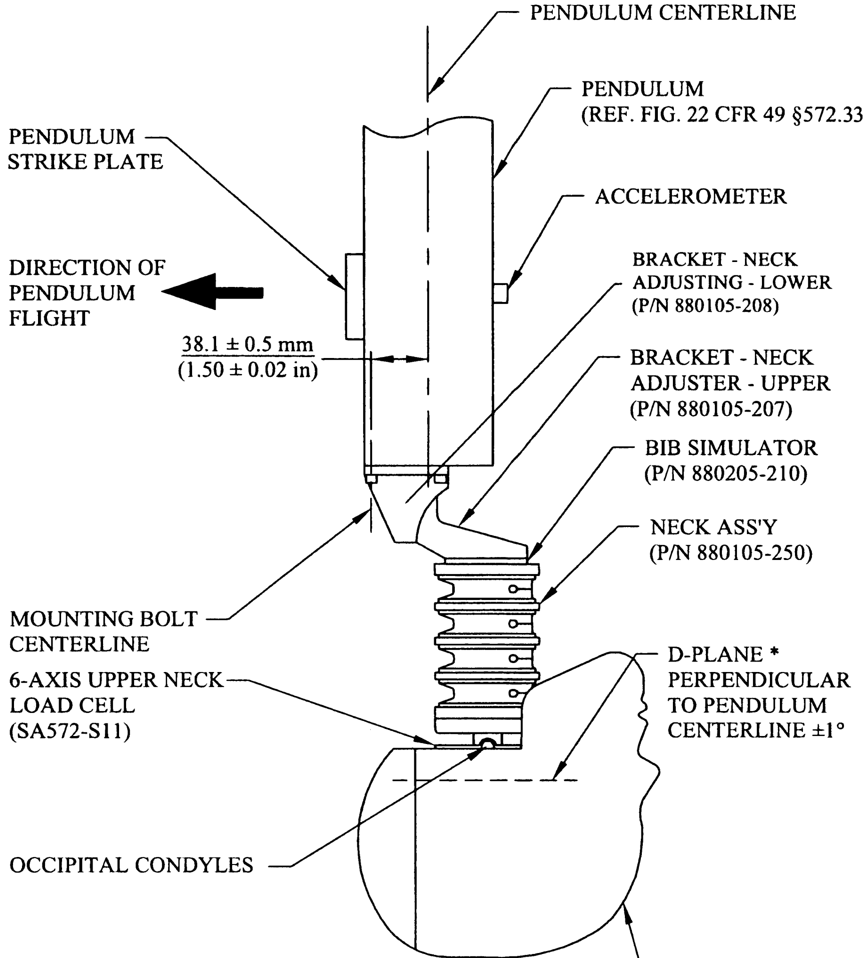


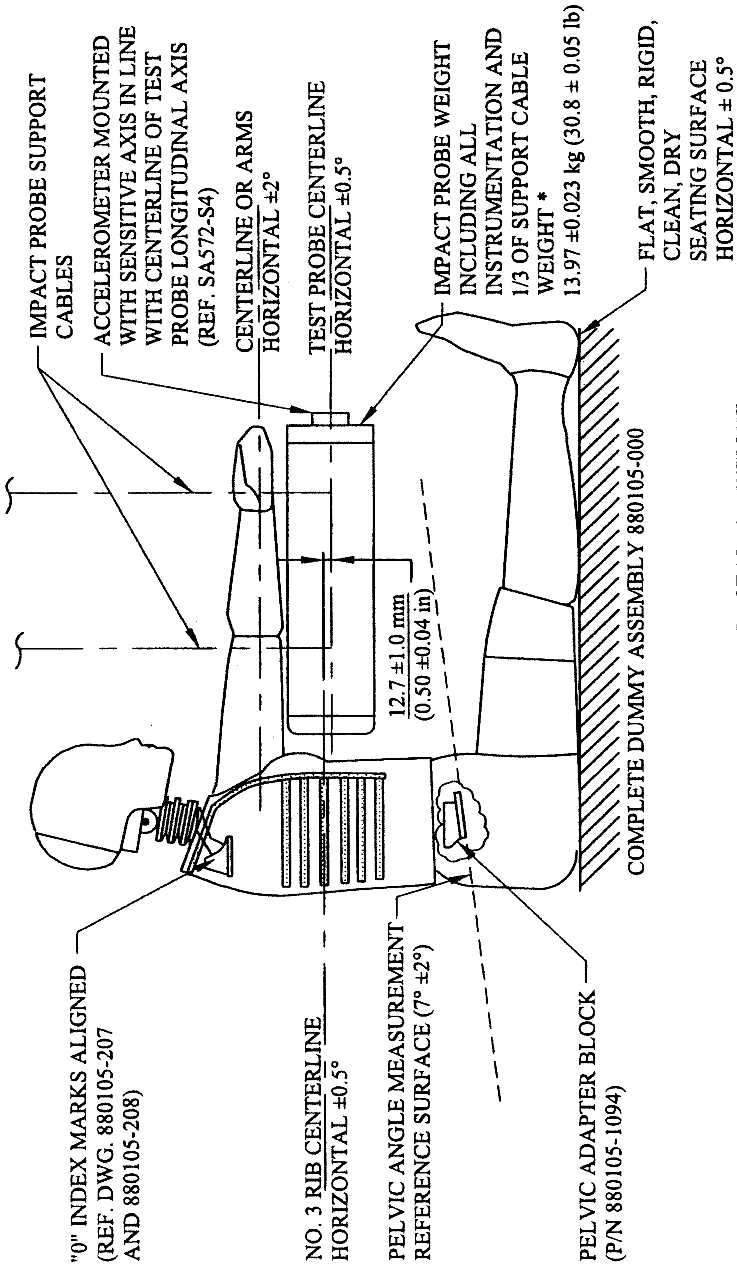
FIGURE O2
NECK EXTENSION TEST SETUP SPECIFICATIONS



* D-PLANE IS DEFINED AS AN IMAGINARY PLANE PERPENDICULAR TO THE SKULL CAP/SKULL INTERFACE.

FIGURE 03

THORAX IMPACT TEST SETUP SPECIFICATIONS



* 1/3 CABLE WEIGHT NOT TO EXCEED 5% OF THE TOTAL IMPACT PROBE WEIGHT

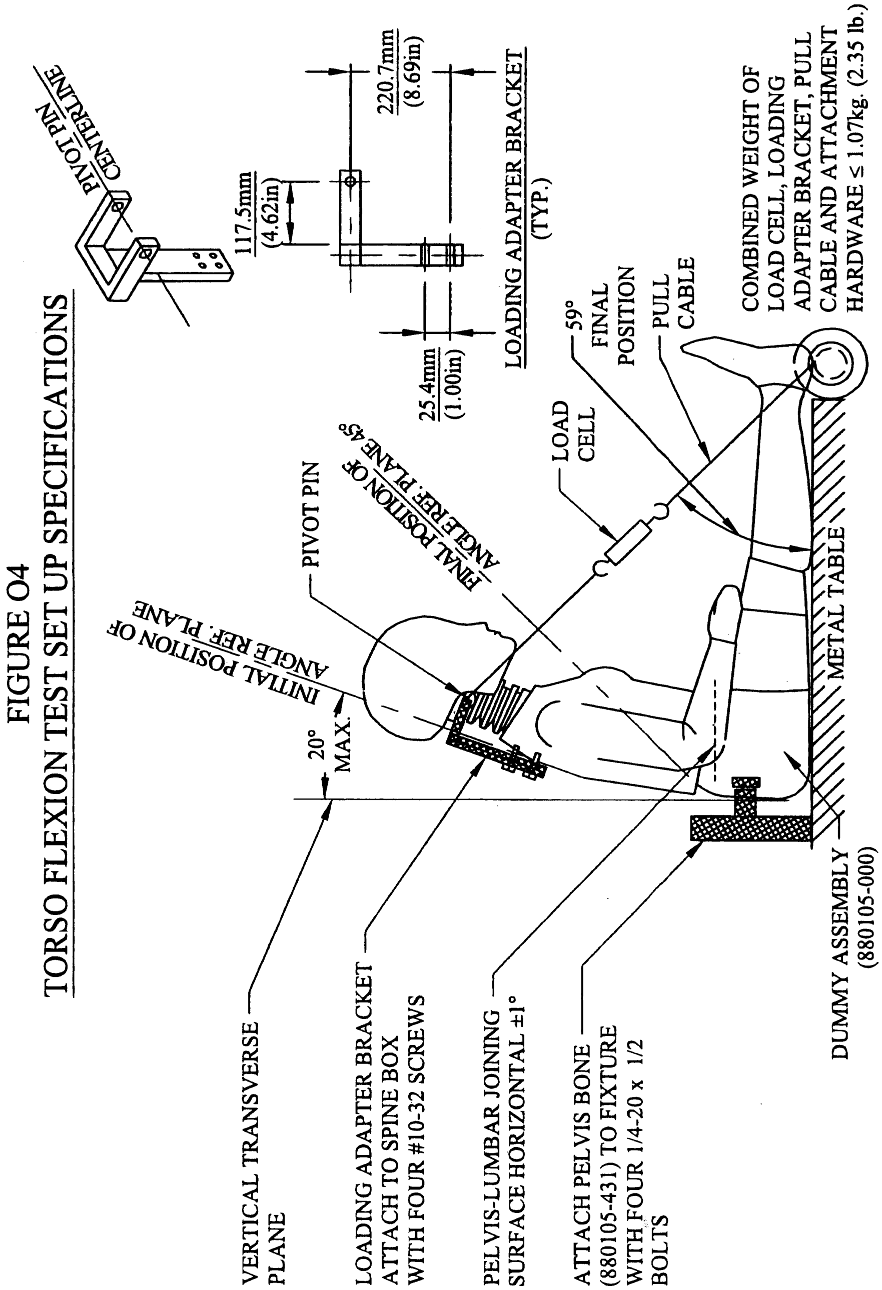
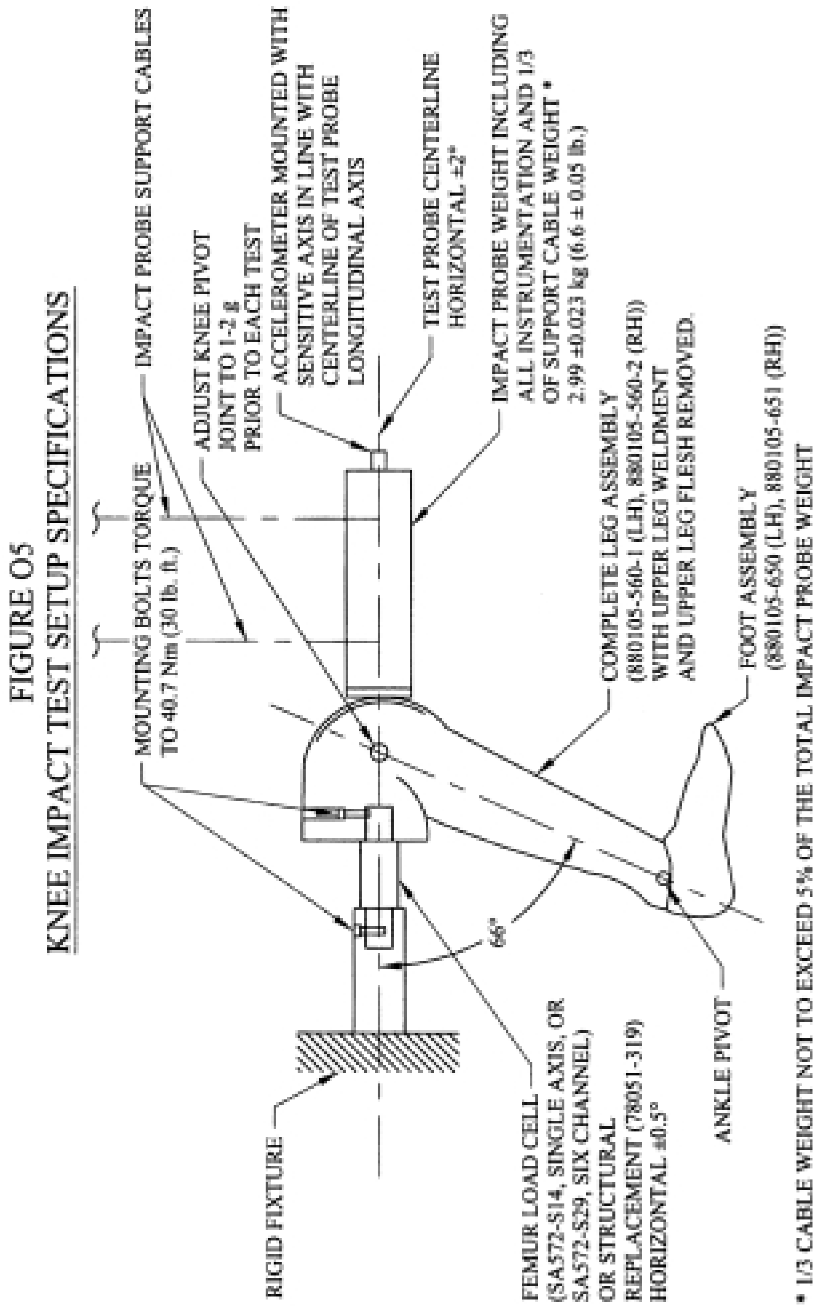


FIGURE O4
TORSO FLEXION TEST SET UP SPECIFICATIONS
PIVOT PIN CENTERLINE
117.5mm (4.62in)
220.7mm (8.69in)
25.4mm (1.00in)
LOADING ADAPTER BRACKET (TYP.)
INITIAL POSITION OF ANGLE REF. PLANE
PIVOT PIN
FINAL POSITION OF ANGLE REF. PLANE 45°
LOAD CELL
59° FINAL POSITION
PULL CABLE
COMBINED WEIGHT OF LOAD CELL, LOADING ADAPTER BRACKET, PULL CABLE AND ATTACHMENT HARDWARE ≤ 1.07kg. (2.35 lb.)
20° MAX.
METAL TABLE
VERTICAL TRANSVERSE PLANE
LOADING ADAPTER BRACKET ATTACH TO SPINE BOX WITH FOUR #10-32 SCREWS
PELVIS-LUMBAR JOINING SURFACE HORIZONTAL ±1°
ATTACH PELVIS BONE (880105-431) TO FIXTURE WITH FOUR 1/4-20 x 1/2 BOLTS
DUMMY ASSEMBLY (880105-000)



Issued: June 13, 2002.

Jeffrey W. Runge,

Administrator.

[FR Doc. 02–15285 Filed 7–12–02; 8:45 am]

BILLING CODE 4910–59–C

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 300

[Docket No. 020131023–2056–02; I.D. 070302B]

Pacific Halibut Fisheries; Washington Sport Fisheries

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

ACTION: Inseason action and partial closure; request for comments.

SUMMARY: NMFS announces changes to the regulations for the Area 2A sport halibut fisheries off the south coast of Washington. This action would change the days and the area open to halibut fishing along the south coast. The purpose of this action is to allow continued access to Washington's south coast halibut quota while reducing the likelihood of yelloweye rockfish interception.

DATES: Effective 0001 local time, July 12, 2002, through the **Federal Register**