State, local, and tribal governments, in the aggregate, or by the private sector, of $100 million or more in any one year (2 U.S.C. 1531 *et seq.*).

Executive Order 13045 (Protection of Children)

This publication is not a covered regulatory action under Executive Order 13045 because it would not affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety of State, local, or tribal governments or communities.

Executive Order 12630 (Taking of Private Property)

This publication will not affect the taking of private property or otherwise have taking implications under Executive Order 12630, Governmental Actions and Interference with Constitutionally Protected Property Rights.

Executive Order 13132 (Federalism)

This action will be analyzed in accordance with the principles and criteria contained in Executive Order 13132 dated August 4, 1999, to determine if this action has federalism implications. Nothing in this document directly preempts any State law or regulation.

Executive Order 12372 (Intergovernmental Review)

The regulations implementing Executive Order 12372 regarding intergovernmental consultation on Federal programs and activities do not apply to this program. Catalog of Federal Domestic Assistance Program Number 20.217, Motor Carrier Safety.

Paperwork Reduction Act

This action, if taken beyond the ANPRM stage, could have an impact on existing collection of information requirements for the purposes of the Paperwork Reduction Act of 1995 (49 U.S.C. 3501–3520). Office of Management and Budget (OMB) reviews and approvals would be required if regulatory changes were proposed and promulgated.

National Environmental Policy Act

The FMCSA is a new administration within the Department of Transportation (DOT). We are striving to meet all of the statutory and executive branch requirements on rulemaking. The FMCSA is currently developing an agency order that will comply with all statutory and regulatory policies under the National Environmental Policy Act of 1969 (42 U.S.C. 4321 *et seq.*). We expect the draft FMCSA Order to appear in the **Federal Register** for public comment in the near future. The framework of the FMCSA Order will be consistent with and reflect the procedures for considering environmental impacts under DOT Order 5610.1C. Due to the preliminary nature of this document and the lack of necessary information, the FMCSA is unable to evaluate the effects of the potential regulatory changes on the environment at this time.

Executive Order 13175: Consultation and Coordination With Indian Tribal Governments

On November 6, 2000, the President issued Executive Order 13175 (65 FR 67249) entitled, ''Consultation and Coordination with Indian Tribal Governments.'' Executive Order 13175 took effect on January 6, 2001, and revoked Executive Order 13084 (Tribal Consultation) as of that date. E.O. 13175 requires the DOT to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' At this time, we are only soliciting data to develop a rulemaking. Due to the preliminary nature of this document and the lack of necessary information, the FMCSA is unable to evaluate the effects of the potential regulatory changes on Indian Tribal Governments.

Issued on: October 16, 2001.

Brian M. McLaughlin,

Associate Administrator, Policy and Program Development.

[FR Doc. 01–26562 Filed 10–19–01; 8:45 am]

BILLING CODE 4910–22–P

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Part 571

[Docket No. NHTSA–1999–5572; Notice 2]

RIN 2127–AG51

Federal Motor Vehicle Safety Standards; Roof Crush Resistance

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

ACTION: Request for comments.

SUMMARY: This notice is a request for comments to assist NHTSA in upgrading the requirements of Federal Motor Vehicle Safety Standard No. 216, ''*Roof Crush Resistance,*'' to reduce injuries and fatalities in passenger cars, pickup trucks, vans and multipurpose passenger vehicles resulting from roof intrusion during rollover crashes. It asks the public for its views and comments on what changes, if any, are needed to the roof crush resistance standard. NHTSA will consider all such comments in deciding what regulatory changes, if any, may be appropriate for upgrading the standard. Concerns presented in a petition for rulemaking from the law firm R. Ben Hogan, Smith and Alspaugh requesting that dynamic testing be used to validate the strength of vehicle roof structures, instead of the current quasi-static procedure, are also addressed in this notice.

DATES: Comments on this notice must be received no later than December 6, 2001.

ADDRESSES: You may submit your comments in writing to: Docket Management, Room PL–401, 400 Seventh Street, SW., Washington, DC 20590. Alternatively, you may submit your comments electronically by logging onto the Docket Management System (DMS) website at http://dms.dot.gov. Click on ''Help & Information'' or ''Help/Info'' to view instructions for filing your comments electronically. Regardless of how you submit your comments, you should mention the docket number of this document.

FOR FURTHER INFORMATION CONTACT: The following persons at the National Highway Traffic Safety Administration, 400 Seventh Street, SW., Washington, DC, 20590: *For technical and policy issues:* Mr. Maurice Hicks, Office of Crashworthiness Standards, NPS–11, telephone (202) 366–6345, facsimile (202) 366–4329, electronic mail: maurice.hicks@nhtsa.dot.gov *For legal issues:* Ms. Nancy Bell, Office of the Chief Counsel (202–366–2992), facsimile (202) 366–3820, electronic mail: nancy.bell@nhtsa.dot.gov

SUPPLEMENTARY INFORMATION: You may read the materials placed in the docket for this notice (e.g., the comments submitted in response to this notice by other interested persons) by going to the DMS at the street address given above under **ADDRESSES.** The hours of the DMS are indicated above in the same location.

You may also read the materials on the Internet. To do so, take the following steps:

(1) Go to the Web page of the Department of Transportation DMS (http://dms.dot.gov/).

(2) On that page, click on ''search'' near the top of the page or scroll down to the words ''Search the DMS Web'' and click on them.

(3) On the next page (http://dms.dot.gov/search/), scroll down to ''Docket Number'' and type in the four-digit docket number shown in the title at the beginning of this notice. After typing the docket number, click on ''search.''

(4) On the next page (''Docket Summary Information''), which contains docket summary information for the materials in the docket you selected, scroll down to ''search results'' and click on the desired materials. You may download the materials.

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I. Background

A. Current Requirements

In the early 1970's, the National Highway Traffic Safety Administration (NHTSA) was responsible for the United States becoming the first country in the world to address deaths and serious injures associated with vehicle roof crush. Federal Motor Vehicle Safety Standard (FMVSS) No. 216, ''Roof Crush Resistance,'' became effective on September 1, 1973. This standard established strength requirements for the roof structure over the front occupants of passenger cars with a gross vehicle weight rating (GVWR) of 6,000 pounds or less. The purpose of the standard is to reduce deaths and injuries due to crushing of the roof into the passenger compartment area in rollover crashes. Since 1973, Canada and Saudi Arabia have adopted roof crush standards that have the same requirements as Standard No. 216. We are not aware that any other country has adopted a roof crush standard, and know that both Europe and Japan do not have any such requirements.

Since inception, the roof crush standard has been amended, extending its requirements to passenger cars, trucks, buses, and multipurpose passenger vehicles with a GVWR of 2722 kilograms (6,000 pounds) or less (55 FR 15510, April 17, 1991). The standard was also amended to modify the test device placement procedure to accommodate vehicles with raised and highly sloped (aerodynamic) roof structures (64 FR 22567, April 27, 1999).

The test procedure currently used to evaluate compliance with the standard involves securing a vehicle on a rigid horizontal surface, placing a flat steel rectangular plate on the vehicle's roof, and using the plate to apply 1.5 times the unloaded weight of the vehicle (up to a maximum of 22,240 N, or 5,000 pounds, for passenger cars) onto the roof structure. During the test, the plate is angled and positioned to simulate vehicle-to-ground contact on the roof over the front seat area.[1] To achieve this contact, the plate is tilted forward at a 5-degree angle, along its longitudinal axis, and tilted outward at a 25-degree angle, along its lateral axis, so that the plate's outboard side is lower than its inboard side. The test plate's edges are also positioned with respect to fixed locations on the vehicle's roof, depending upon the roof slope, to ensure that the plate stresses the roof over the front seat area. Compliance with the standard is achieved if the vehicle's roof prevents the test plate from moving downward more than 127 mm (5 inches).

B. Safety Problem

Roof intrusion and roof contact injury are common factors in rollovers. Based upon crash data in NHTSA's National Automotive Sampling System (NASS) for 1995–1999, rollover crashes are the most dangerous collision type for light duty vehicles, measured by the ratios of fatal and serious injuries to the number of occupants involved in towaway crashes. Table 1 shows the ratios and the number of fatalities and serious injuries in light duty vehicle towaway crashes by crash type.

TABLE 1.—ANNUAL AVERAGE NUMBER OF FATAL AND SERIOUS OCCUPANT INJURIES IN TOWAWAY CRASHES BY CRASH TYPE IN THE 1995–1999 NASS AND FARS CRASH DATABASES*

Crash type	Total occupants	Fatalities	Fatalities per total occupants	Fatal and serious injuries	Injuries per total occupants
Rollover	418,371	10,149	0.0243	27,057	0.0647
Frontal	2,921,864	12,384	0.0042	62,536	0.0214
Side	1,359,538	8,169	0.0060	33,610	0.0247
Rear	467,559	1,023	0.0022	2,701	0.0058
Other	36,978	432	0.0117	580	0.0157
Totals	5,204,309	32,157	0.0062	126,484	0.0243

* Adjusted for unknowns

From NASS, it is estimated that an annual average of 253,000 light vehicle rollovers resulted in towaway crashes. Eighty-one percent (205,000) of these rollovers are in single-vehicle crashes, and 87 percent (178,000) occurred after the vehicle left the roadway. According to the 1999 Fatality Analysis Reporting System (FARS), 10,149 people were killed in light vehicle rollovers. This includes 8,345 occupants who were killed in single-vehicle rollovers. Eighty percent of these people were unrestrained and 64 percent were ejected (including 53 percent who were completely ejected). FARS shows that 55 percent of light vehicle occupant fatalities in single-vehicle crashes involved rollover. The proportion differs greatly by vehicle type: 46 percent of passenger car occupant fatalities in single-vehicle crashes involved rollover, compared to 63 percent for pickup trucks, 60 percent for vans, and 78 percent for multipurpose passenger vehicles. The higher proportion for pickup, vans, and sports utility vehicles may be attributed to their higher center of gravity compared to passenger cars.

The FARS and NASS data were further analyzed to determine the various causes and distribution of rollover injury. NASS data from 1988–1999 were used in the analysis, and thus provide slightly different estimates of

[1] The roof over the front seat area means the portion of the roof, including windshield trim, forward of a transverse plane passing through a point 162 mm rearward of the seating reference point of the rearmost front outboard seating position.

rollover serious injury from those presented in Table 1. The NASS data were adjusted and prorated to account for unknown data relating to ejection, roof intrusion, roof contact injury, and belt use. Fatality estimates from the NASS sample were adjusted to agree with the 10,149 rollover fatalities in the 1999 FARS. As shown in Figure 1, this analysis resulted in an estimate of 16,227 seriously injured occupants in light vehicle rollover, where serious injury was defined as an Abbreviated Injury Scale (AIS) [2] rating of at least 3. An estimated 26,376 vehicle occupants sustain serious or fatal injury due to rollover annually. Over half of these are ejected, and about 13,000 are occupants who remain in the vehicle. In 7,460 cases, at least one injury was due to roof contact, and roof intrusion was present for 6,934 (93%) of those. Over half (3,734) of those sustaining injury with the occurrence of roof intrusion were belted. Thus, roof crush intrusion is estimated to occur, and potentially contribute to serious or fatal occupant injury, in about 26% (6,934/26,376) of the rollover crashes.

[2] The Abbreviated Injury Scale is a method of classifying injuries. It is a six level scale, with higher levels associated with more serious injury. AIS 1 is assigned to minor injuries; AIS 3 injuries include serious lacerations, breaks, and concussions; AIS 6 represents currently untreatable, fatal injuries.

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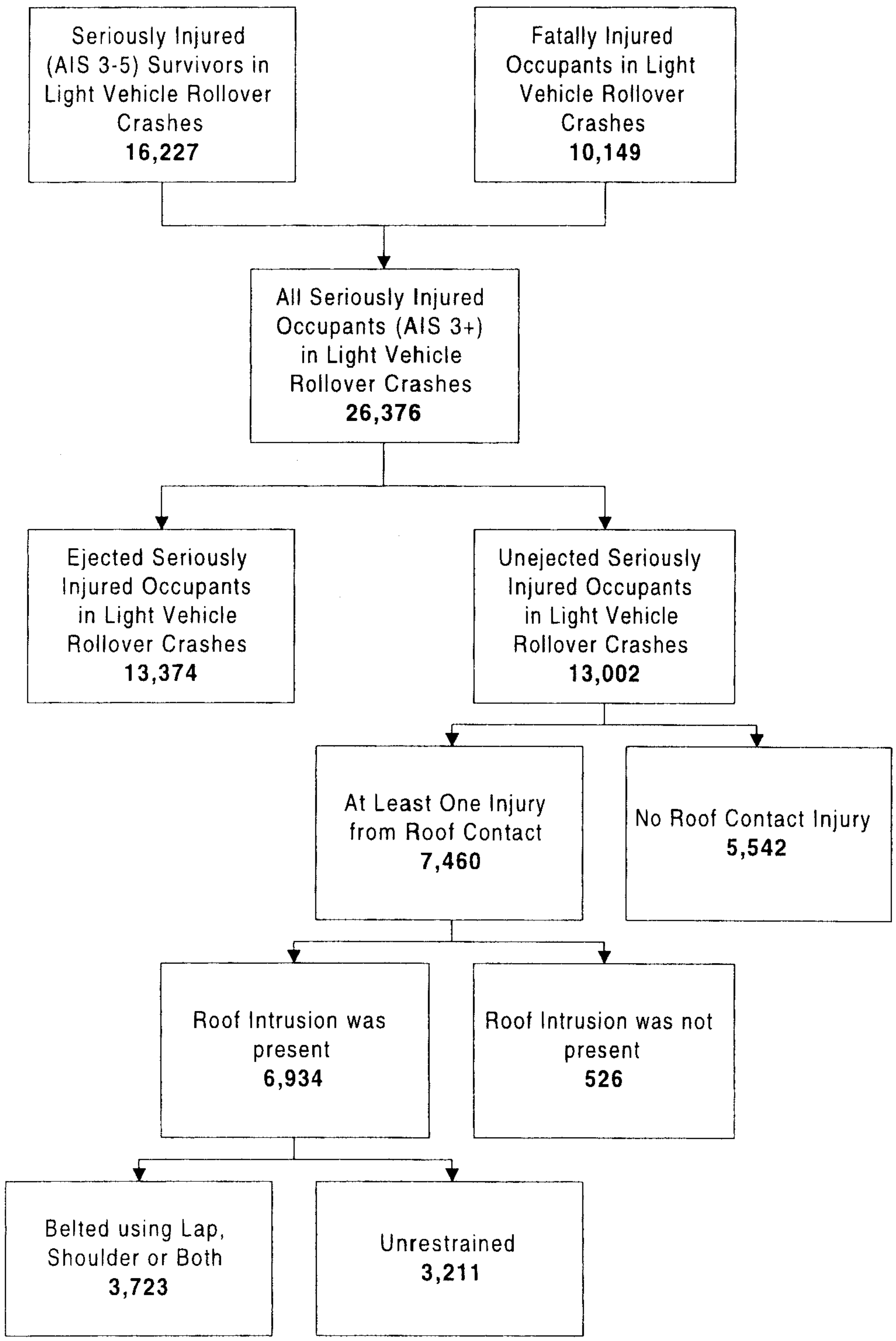
Figure 1 – 1988 through 1999 Rollover Injury Causation Distribution: Annual Estimates



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A study by Partyka [3] examining light duty vehicle crashes that required towing found that roof intrusion occurs in approximately 10 percent of all crashes. The study showed that eighty percent of rollover crashes, with two or more vehicle quarter turn rolls, involved vertical roof intrusion (which included the roof top, roof side rails and front/rear headers). It is noted that the first quarter turn occurs when the vehicle flips from the upright position (wheels on the roadway) to either side of the vehicle, and the second quarter turn occurs when the vehicle flips from its side to the roof that is in contact with the roadway/ground. Other meaningful findings from the study showed that vertical roof intrusion was present in a larger percentage of pickups (12.9%) and sport utility vehicles (13.7%) than in passenger cars (6.3%) in towaway crashes.

Observing only drivers in rollover crashes with vertical roof intrusion, the study concluded that 15 percent of drivers are injured by roof intrusion. It was also found that the roof itself was the most frequently reported source of roof injury and the head was the body part most frequently injured by these contacts. Further, 89 percent of roof-injured drivers received their most serious injuries from the roof.

According to NASS, roof contact and the severity of rollover injury is greatly influenced by belt usage. Eighty-nine percent of unbelted ejected occupants receive their most severe injury from ejection (based on NASS annual averages from 1988–1997). Consequently, preventing ejection is the most important means for reducing injury to unbelted occupants. Roof crush intrusion is an additional injury source for unbelted occupants, although generally only a minor contributor. Roof intrusion is present in the majority of cases, but is only the leading cause of injury in less than 10 percent of unbelted rollover cases.

Partyka's study found that eliminating injuries caused by roof intrusion might not reduce overall injury severity of non-ejected unbelted occupants. It showed that severe injuries received by unbelted rollover occupants are more frequently caused by ejection or vehicle interior components rather than from the roof structure. Thus, unbelted occupants will gain little, if any, safety benefit from changes to the roof crush standard. By contrast, belted rollover occupants usually receive their most severe injury by contacting the roof structure.

The methods for preventing roof contact, by limiting the occupant's movement or by limiting roof intrusion (through improved roof strength or roof reinforcements), and the predicted benefits (lives saved and injuries prevented), have been debated for many years. There are a number of possible factors that influence the type of outcomes and the severity of injury for belted occupants in rollover crashes. These factors include the occupant's initial position and motion while in the rollover event, seatbelt tension or/slack, the deformation and velocity of intruding vehicle components (i.e., the roof, side rails and A/B-pillars), and severity of the crash. Additionally, most crash databases, including the NASS Crashworthiness Database System (CDS), do not provide sufficient information to separate and identify the contribution of each of these and other factors. For example, most crash databases only record whether seat belts are worn, not whether they were worn properly. In addition, belt slack and any subsequent vertical excursion of the occupant cannot be determined. Of particular interest is the timing of occupant to roof contact and any roof intrusion that may occur. Crash investigations cannot distinguish between occupant travel off the seat towards the roof, and head to roof contact from roof intrusion.

In summary, unbelted occupants in rollover crashes are primarily injured by ejection from the vehicle, which is fatal in about half the cases. Belted occupants in rollover crashes are primarily injured by roof contact and by contacts with other components within the vehicle's interior. Roof contact for belted occupants in rollover crashes is usually non-fatal, but the severity of the injury is only directly related to the level of roof intrusion in severe cases of intrusion. In less severe cases, the severity of injury is related to other vehicle and occupant factors. A discussion of the relationship between these factors and injury severity is presented in the following section.

C. Evaluation of Roof Crush Testing

In November 1989, NHSTA published an Evaluation Report concerning FMVSS No. 206, Door Locks and Door Retention Components (49 CFR 571.206) and FMVSS No. 216.[4] This report specifically evaluated the safety effectiveness and benefits of improvements to door locks and roof structures in passenger cars.[5]

The objectives of the evaluation were to determine if there were actual benefits (lives saved, injuries prevented, damage avoided and costs of safety equipment installed in production vehicles) in connection with FMVSS Nos. 206 and 216 for passenger car occupants. More specifically, the evaluation examined these standards in the context of the overall trend in fatality risk of unbelted occupants of passenger cars of model years 1963–82 in rollover crashes. However, because FMVSS Nos. 206 and 216 were not the only vehicle factors which affected fatality risk in rollover crashes during the 1963–82 periods, a major task of the evaluation was to study the overall fatality trend and identify what changes were due to improved door locks and roof crush strength, as opposed to other vehicle factors.

Based on examinations of rollover trends as well as more detailed analyses of vehicle changes in the fleet, the principal rollover findings and conclusions of the analysis were as follows:

(1) By influencing changes during the 1970's in vehicle design (true hardtops were restyled as pillared hardtops or sedans), the implementation of the standard saved an estimated 110 lives per year for vehicles manufactured from 1963–1982.

(2) True hardtops have approximately 15 percent higher risk of a non-ejection fatality in a rollover crash than pillared cars of the same size and exposure pattern.

(3) Narrower, lighter, shorter cars have higher rollover rates than wide, heavy, long ones under the same crash conditions. During 1970–82, as the market shifted from large domestic cars to downsized, subcompact or imported cars, the fleet became more rollover prone. That may have been partly offset by increases in the track width of some imported cars after 1977. The net effect of all car changes since 1970 is an increase of approximately 1340 rollover fatalities per year.

(4) The fatality or injury rate per 100 rollover crashes is not a valid measure of crashworthiness in comparisons of cars of different sizes. Cars that tend to roll over easily (small, narrow cars) do so in crashes of intrinsically low severity. These rollovers have low injury rates. Larger cars would not roll over at all in those circumstances. When

[3] Partyka, Susan C., "Roof Intrusion and Occupant Injury in Light Passenger Vehicle Towaway Crashes," NHTSA Docket No. 88–06–GR, 1992.

[4] Charles J. Kahane, PhD, January 1989, DOT HS 807 489.

[5] The report was developed in response to Executive Order 12291, which provided for Government-wide review of existing major Federal regulations.

larger cars do roll over, it is typically in more severe crashes, which are more likely to result in injuries. Hence, the fatality rate per 100 rollover crashes may well be lower for small cars, even if they are less crashworthy, simply because they are more likely to experience a rollover crash.

The Kahane study has not been updated to examine the post-1982 fleet, particularly as it has shifted to a greater percentage of light trucks, vans, and sport utility vehicles. Consequently, the effectiveness of the changes made to FMVSS No. 216 in 1991, extending the requirements to pickup trucks and multipurpose passenger vehicles with a GVWR of 6,000 pounds or less, has not been assessed.

Various researchers [6] have found that comparing the results from FMVSS No. 216's compliance testing directly to the severity of injury in rollover crashes involving occupants with roof contact injuries only had meaningful relationships after intrusion reached extensive levels. Other researchers support this conclusion. An analysis by Friedman [7] on rollover crash data from the 1982–1983 NASS data files showed that the injury risk in rollover accidents increased dramatically only when intrusion in the proximity of the occupant exceeds a Collision Deformation Classification (CDC) [8] extent of 3. A CDC value of 3 usually denotes vertical deformation about half the distance from the roof to the bottom of the side door window. Digges and Klisch [9] found similar findings when examining 161 rollover cases from the 1988–1989 NASS data. It was noted that when CDC extent values approached 4 or 5 (5 denotes the location of the bottom of the side door window), 5 percent of non-ejected occupants were fatalities and intrusion was approximately 12 to 15 inches (for the studied vehicles); however, when the CDC extent values were below the top of the side door window, at CDC 6 or 7, 20 percent of the occupants received fatal injuries.

However, these findings became confounded by other limitations existing within the data investigations. In particular, researchers acknowledged that both the severity of the roof crush and the severity of injury were possibly related to the severity of the crash. Partyka [3] concluded that there are two important limitations with the results of most data analysis. First, most investigators did not attempt to determine whether intrusion increased the frequency or the severity of injury, that is, whether the roof intrusion is something more than merely a reflection of crash severity. If it is merely a reflection of crash severity, one generally expects higher severity injuries in higher severity crashes. It should be noted that there is no widely accepted measure of crash severity in rollover crashes. A measure of crash severity would allow fair comparison of injury rates in similar crash exposures of occupants with and without roof intrusion.

Second, occupant contacts with vehicle interior components are reported only if they cause injury. Therefore, it is not possible to estimate how often occupants contact intruding surfaces without injury when estimating injury rates for these contacts or comparing them to rates for non-intruding surfaces. On the other hand, occupant contact with interior vehicle components can produce injury even when there is no intrusion, and preventing roof intrusion may not always prevent injury from contact. Thus, it is important to determine if roof crush and injury are both associated with impact severity.

In an attempt to determine the relationship between limiting roof intrusion, by rollcaged/reinforced roofs, and injury severity measured using unbelted Hybrid III anthropomorphic test dummies, Orlowski, et al.,[10] conducted full vehicle dolly rollover tests (as defined in FMVSS No. 208, "Frontal Occupant Protection") measuring dummy movement and head and neck loads with intrusion. They concluded that roof strength was not an important factor in the mechanics of head/neck injuries in rollover collisions for unbelted occupants. There were no significant differences in dummy kinematics or any reduction in head injury severity resulting for roof reinforcements.

In 1990, Orlowski, et al.,[11] conducted similar research using lap/shoulder belted Hybrid III dummies in dynamic dolly rollover tests and inverted vehicle drop tests. This research was conducted to evaluate the relationship between roof strength and injury severity when restraints are used. Comparisons were made on the basis of the dummy axial neck loads resulting from rollover tests in production and reinforced roof vehicles. The analysis also attempted to understand the factors that influence neck loads under these conditions. For these analyses, Orlowski found similarities between the results of dynamic drop and rollover tests. Particularly, in both tests, the dummies in the reinforced roof vehicles indicated a lower number of potentially injurious impacts and a lower average neck load than the dummies in the production vehicles. However, for tests that could be compared on the basis of similar roof-to-ground impact conditions (i.e., drop and rollover conditions), Orlowski found that there was no increase in the level of protection in the reinforced roof vehicles over the production roof vehicles. He concluded that roof strength might not be a factor influencing injury. Orlowski also found that roof deformation never caused the dummy to be compressed between the roof and the seat. He observed that all of the dummy neck loads resulted from "diving" type impacts where the head stops the torso momentum and compresses the neck, with a magnitude proportional to the impact velocity. Orlowski stated that, at best, the absence of deformation may only benefit belted occupants if it results in the belted occupant not contacting the roof.

D. Previous Agency Roof Crush Rulemaking

On April 17, 1991, NHTSA published a final rule amending FMVSS No. 216 to extend its requirements to multipurpose passenger vehicles, trucks, and buses with a gross vehicle weight rating (GVWR) of 6,000 pounds or less (56 FR 15510). NHTSA explained that we were extending FMVSS No. 216 to light trucks because of the increased use of light trucks as passenger vehicles and the need to ensure that those vehicles offer safety protection comparable to that offered passenger car occupants. This final rule adopted the same test requirement and procedure as those for passenger cars, except there is

[6] Moffatt Edward A. and Padmanaban, Jeya, "The Relationship Between Vehicle Roof Strength and Occupant Injury in Rollover Crash data," 39th Annual Proceedings: AAAM, Oct 1995.

[7] Friedman, Donald and Keith D. Friedman, "Roof Collapse and the Risk of Severe Head and Neck Injury," Paper No. 91–S6–0–11, 13th Experimental Safety Vehicle Conference, Paris, France, 1991.

[8] The Collision Deformation Classification (CDC), defined in SAE J224, is a means of classifying the extent of vehicle deformation caused by vehicle accidents on the highway by direction, size of the area and extent of the damage.

[9] Digges, Kennerly and Steven Klisch, "Crashworthiness Effectiveness in Rollover Crashes," Final Report, Task II (DTRS–57–90–c–00092), Washington, DC, 1992.

[10] Orlowski, KF, RT Bundorf, and EA Moffat, "Rollover Crash Test—The influence of Roof Strength on Injury Mechanics," SAE Paper No. 851734, Society of Automotive Engineers, Warrendale, PA, 1985.

[11] Bahling GS, RT Bunforf, GS Kaspzyk, EA Moffat, KF Orlowski, and JE Stocke, "Rollover and Drop Tests: The Influence of Roof Strength on Injury Mechanics Using Belted Dummies," SAE Paper No. 902314, Society of Automotive Engineers, Warrendale, PA, 1990.

no 5,000 pound maximum limit on the test force. This test force is applied to either side of the forward edge of the vehicle. This amendment became effective on September 1, 1994.

In 1991, Congress mandated NHTSA to assess rulemaking on rollover occupant protection as a part of the Intermodal Surface Transportation Efficiency Act (ISTEA). ISTEA required NHTSA to initiate rulemaking to address the problems of rollover crashes. In response to that mandate, NHTSA published an advance notice of proposed rulemaking (ANPRM) (57 FR 242, January 3, 1991) that summarized the statistics and research in rollover crashes, sought answers to several questions about vehicle stability and rollover crashes, and outlined possible regulatory and other approaches to reduce rollover casualties. NHTSA also published a report to Congress [12] that detailed agency efforts in these areas.

During the development of the ANPRM and after receiving and analyzing comments to the ANPRM, it became apparent that no single type of rulemaking could solve all, or even a majority of, the problems associated with rollover. This view was strengthened by the agency's review and analysis of comments on the ANPRM. To emphasize this conclusion and inform the public further about the complicated nature of the light duty vehicle rollover problem, the agency released a document titled, ''Planning Document for Rollover Prevention and Injury Mitigation,'' at a Society of Automotive Engineers (SAE) meeting on rollover on September 23, 1992. The Planning Document gave an overview of the rollover problem and a list of alternative actions that NHTSA was examining to address the problem. Activities described in the document were: crash avoidance research on vehicle measures for rollover resistance, research on antilock brake effectiveness, rulemaking on upper interior padding to prevent head injury, research into improved roof crush resistance to prevent head and spinal injury, research on improved side window glazing and door latches to prevent occupant ejection, and consumer information to alert people to the severity of rollover crashes and the benefits of safety seat belt use in this type of crash. NHTSA published a notice announcing the availability of the Planning Document and requesting comments (57 FR 44721, September 29, 1992).

In May 1996, NHTSA issued the ''Status Report for Rollover Prevention and Injury Mitigation'' (NHTSA 1996–1811–2). This document updated the progress of the programs discussed in the Planning Document.

On May 6, 1996, the agency received a petition for rulemaking from R. Ben Hogan, Smith and Alspaugh, PC, a law firm. Hogan commented that the current static requirements in FMVSS No. 216 bear no relationship to real world rollover crash conditions and therefore should be replaced with a more realistic test such as the inverted vehicle drop test defined in the Society of Automotive Engineers (SAE) Standard J996. This request coincided with agency research testing that was being conducted using the inverted drop test procedure. The petitioner also requested that NHTSA require ''roll cages'' to be standard in all cars as requested by some commenters responding to the January 3, 1992, ANPRM on rollover occupant protection. NHTSA granted this petition on January 8, 1997, because we believed that the inverted drop testing had merit for further agency consideration.

On April 27, 1999, NHTSA published a final rule relating to the test procedure in FMVSS No. 216 (64 FR 22567). Prior to the amendments made by the final rule, the existing procedure resulted in certain vehicles with rounded roofs (e.g., the Ford Taurus) being tested with the test plate positioned too far rearward on the vehicle roof. In this position, the plate did not test the roof over the front occupants. In addition, this position created the potential for contact between the front edge of the test plate and the roof, allowing the plate to penetrate the roof along the leading edge of the plate. Similarly, in following this procedure for vehicles with raised, irregularly-shaped roofs (such as some vans with roof conversions), the initial contact point on the roof may not be above the front occupants, but on the raised rear portion of the roof, behind those occupants. In both of these cases, the positioning of the plate relative to the initial contact point on the roof, instead of relative to a fixed location on the roof, resulted in too much variability in the plate positioning and reduced test repeatability.

This final rule addressed the problem of rounded roofs by specifying a new primary test procedure for all vehicles except those with certain modified roof configurations. Under the new procedure, the test plate is to be positioned so that the front edge of the plate is 254 mm (10 inches) in front of the forwardmost point of the roof. Positioned in this way, the front edge of the plate will always project slightly forward of the roof instead of contacting it. The rule addressed the problem for vehicles with raised or modified roofs by specifying that if following the primary test procedure results in an initial point of contact that is rearward of the front seats, a second procedure would be used to position and orient the plate as specified for the primary procedure, except that the plate is moved forward such that its rearward edge is positioned at the rear of the roof over the front seat area.

Until October 25, 2000, vehicle manufacturers also had the option of using the standard's original test plate placement procedure (as established in 1973) for multipurpose vehicles, trucks and buses that have a raised or altered roof, instead of the primary or secondary procedures defined above (65 FR 4579, January 31, 2000). The original procedure positioned the plate with respect to its initial point of contact with the roof. The initial point of contact was established by angling the plate as required for the first procedure and then lowering it horizontally until it contacted the roof. After establishing the initial contact point on the vehicle, the test plate was moved upwards, and positioned as specified in the first procedure, except the plate's forward edge was positioned 254 mm forward of the initial point of contact with the vehicle. This position was allowed to make testing possible for raised roof vehicles that experience contact with the plate's rearward edge when testing to the second procedure.[13]

II. Agency Roof Crush Research

NHTSA has undertaken a comprehensive research program to find ways to protect occupants better in rollover crashes. The roof crush research has taken the form of both vehicle testing and analytical research.

A. Vehicle Testing

NHTSA has conducted an extensive vehicle-testing program to evaluate rollover crashes. The research has consisted of: (1) full vehicle dynamic rollover testing (as defined in FMVSS No. 208, ''Frontal Occupant Protection''); (2) computer modeling; (3) inverted vehicle drop test (as defined in the SAE Recommended Practice J996); and (4) modified FMVSS No. 216 testing with comparisons to inverted drop testing. The following paragraphs summarize the findings of these activities.

[12] ''Rollover Prevention and Roof Crush'', April 1992, DOT Docket No. NHTSA–1999–5572.

[13] Currently, the agency is assessing whether to re-allow this option or to add/modify the placement procedure to address the petitions for reconsideration dated June 11, 1999, from Ford and the Recreational Vehicle Industry Association (see DOT Docket 99–5572).

A series of full-scale dynamic rollover tests has been conducted by NHTSA to evaluate a range of crash situations, injury mechanisms, and safety countermeasures. NHTSA designed a rollover test cart that was similar to the FMVSS 208 dolly rollover cart, but was elevated four feet vertically and the vehicle's angular momentum could be initiated using pneumatic cylinders. These tests were designed to produce severe roof intrusion, and to study occupant kinematics and injury mechanisms. The severity of this test condition, however, made it difficult to discriminate between good and bad performing roof structures. While the test program provided valuable insight into occupant kinematics and injury mechanisms, the occupant kinematics were inherently unrepeatable. As a result, it was determined that the development of an improved roof crush standard based on dynamic rollover testing was not feasible.[14] [15]

The agency also contracted with Pioneer Engineering and later EASi Engineering to design and test a reinforced roof structure for a Nissan pickup.[16] The Nissan pickup was chosen since several rollover tests had previously been conducted with this vehicle. Modification involved the use of high strength steel reinforcements and foam filler material in the roof header, side rails and A and B-pillars. It was found that substantial reduction in roof intrusion could be achieved by reinforcing the roof. However, the severity of the full-scale dynamic rollover test made it difficult to prevent all intrusion.

NHTSA also began investigating other possible test procedures for upgrading FMVSS No. 216. One such procedure was the inverted vehicle drop test, defined in SAE J996[17], which has been noted to produce deformation patterns similar to what is observed in rollover tests and real-world collisions.[18] After evaluating a series of dynamic drop tests, NHTSA concluded that this procedure had merit in its usage, realism and repeatability in evaluating roof crush. However, the disadvantage to this approach is that it does not introduce the complex rolls and ground/vehicle interaction of a full-scale rollover test. The dynamic drop test also involves a difficult procedure for suspending the vehicle and turning it over. While the dynamic drop test would be more repeatable than a full-scale rollover test, it would not be as repeatable as the existing FMVSS No. 216 static test.

Additional testing was then conducted using a modified FMVSS No. 216 test with increased loads to produce more extensive roof crush (254 mm (10 inches) and 381 mm (15 inches), instead of the 127 mm (5 inches) requirement in the standard).[19] In order to achieve the more extensive roof crush levels, forces ranging up to twice that required by Standard No. 216 were necessary. The objective of the study was to determine the correlation between roof crush performance measured by the modified 216 test and the dynamic inverted drop test. A series of tests comparing quasi-static roof loading versus dynamic roof loading was conducted to determine how static and dynamic tests can be correlated, and if static test results can be used to predict the dynamic behavior of the roof structure.

It is noted that a statistical analysis of the findings showed the modified FMVSS No. 216 procedure results strongly correlated with the dynamic results of inverted drop tests (correlation coefficient of 0.94). This correlation was based on energy equivalence between the results of the two sets of tests. To further validate the relationship (energy equation), additional vehicle testing was performed using the modified 216 test. The energy equation was then used to predict the dynamic performance of the same vehicle types drop tested at two different heights. The energy equation from the modified 216 deviated from the two dynamic drop heights by no more than about 15 percent.

B. Analytical Research

NHTSA conducted an analytical study to explore the relationship between roof intrusion and the severity of injury. To evaluate the relationship between injury, occupant parameters and belt slack, the agency conducted a comparative study[20] using the NASS CDS. This study evaluated belted rollover occupants who did and did not receive head injuries from roof contact to determine if headroom reduction[21] was related to the risk of head injury in rollovers. For the analysis, pre-crash and post-crash headroom for 155 rollover involved belted occupants in the 1988–1992 NASS data was determined using information in the American Automobile Manufacturers Association manuals, and NASS reported occupant height and vehicle roof intrusion measurements. Examining the severity of head injuries with the pre-crash and post-crash headroom led to the following conclusions:

(1) Headroom reduction (pre- versus post-crash) by more than 70% substantially increased the risk of head injury from roof contact.

(2) Head injury increased when the post crash headroom was less than the original headroom. Also, as the severity of the injury increased, the percentage of cases with no remaining headroom increased.

(3) When the intrusion exceeded the original headroom, the percentage of injured occupants was 1.8 times the percentage of uninjured occupants.

(4) The average percent of headroom reduction for injured occupants was more than twice that of uninjured occupants.

III. Discussion of Issues

This section discusses a range of issues and presents a series of questions for public comment to aid the agency in evaluating the current roof crush standard and whether further action by the agency is warranted. These issues and questions are grouped according to the following areas: (1) Current test procedure; (2) alternative dynamic tests; and (3) limiting headroom reduction.

A. Current Test Procedure

1. Agency analysis of crash data indicates that injury levels did not progressively increase with roof intrusion until severe amounts of intrusion were established. In addition, vehicles that perform well in roof crush tests do not appear to better protect occupants from more severe roof intrusion in real world crashes. Are there more appropriate ways than the current FMVSS No. 216 test procedure to measure roof intrusion that would

[14] Segal, D. and Kamholz, L., ''Development of a General Rollover Test Device'', DOT Report HS–807–587 September 1983.

[15] Stultz, John C., ''Modifications to the NHTSA General Purpose Rollover Test Device'', Transportation Research Center of Ohio, January 1989.

[16] Design Modification for a 1989 Nissan Pick-up—Final Report. 1991. NHTSA/USDOT. DOT HS 807 925, NTIS, Springfield, Virginia, 22161.

[17] The Inverted Drop Test in SAE J996 involves suspending the vehicle upside down at specified roll and pitch angles, and at a specified height above the ground. The vehicle is then allowed to free-fall and provide roof crush upon contact with the ground.

[18] Michael J. Leigh and Donald T. Willke, ''Upgraded Rollover Roof Crush Protection: Rollover Test and NASS Case Analysis,'' Docket NHTSA–1996–1742–18, June 1992.

[19] Glen C. Rains and Mike Van Voorhis, ''Quasi Static and Dynamic Roof Crush Testing'', DOT HS 808–873, 1999.

[20] Kanianthra, Joseph and Rains, Glen, ''Determination of the Significance of Roof Crush on Head and Neck Injury to Passenger Vehicle Occupants in Rollover Crashes,'' SAE Paper 950655, Society of Automotive Engineers, Warrendale, PA, 1994.

[21] Headroom reduction was defined as the decrease in the vertical space between the interior of the roof and the top of the occupant's head.

better relate to injury severity in rollover crashes? If so, please identify the appropriate metric. Is it possible to evaluate the more appropriate metric with the current test procedure? If so, please explain how. If not, please describe the test procedure that should be used to evaluate the appropriate performance and provide any data that show the repeatability, practicability, and objectivity of the alternative test procedure.

2. Are FMVSS No. 216's testing procedures, particularly the test plate load requirement and plate angles, adequate for simulating real world rollover conditions? If not, please identify more appropriate testing parameters and explain the basis for the belief that this parameter is more appropriate.

3. Beginning in the mid-1990's, the composition of the light duty vehicle fleet has been drastically changing with an increasing proportion of this fleet consisting of light trucks. This has been accompanied by increases in GVWR for some of these vehicles. In the past, vehicles with a GVWR of more than 6,000 pounds were typically used for commercial applications as work vehicles. However, today's larger light trucks, particularly sport utility vehicles, are now typically used as an everyday means for personal transportation. Currently, the requirements of FMVSS No. 216 are not applicable to many of these vehicles because they exceed 6,000 pounds GVWR. Is it appropriate for NHTSA to propose extending the applicability of FMVSS No. 216 to vehicles with a 10,000 pounds GVWR?

4. FMVSS No. 216's test load application is not representative of dynamic roof crush rates in real-world rollovers. Our standard currently applies the load at a rate of 13 mm per second, which is far less than the loading rate in a real-world rollover. However, agency research demonstrates that static loading in the current standard and dynamic loading in inverted drop tests can be correlated by use of a dynamic equivalency factor/equation. Is such a factor appropriate for equating static and dynamic roof intrusion? If so, is it appropriate or necessary for the agency to conduct further research into finding appropriate dynamic conditions through inverted vehicle drop testing before proceeding with a proposal? Or, is it more appropriate for the agency to accept the current static loading as ''good enough,'' based on the correlation already found, and proceed with a proposal based on what we now know?

B. Alternative Dynamic Tests

5. As mentioned above, the current standard uses a quasi-static rate of load application that is not representative of real-world dynamic roof intrusion. Full vehicle dynamic testing is most representative of real-world rollover conditions. However, it has been difficult to attain repeatable results when testing vehicles. Factors such as the orientation/altitude of the vehicle at the initiation of the rollover, the tolerance of the speed of the vehicle and test cart before roll initiation and the method of initiating the roll cause variability in testing. To date, the agency has evaluated two dynamic tests to better simulate real-world rollovers. This includes: (1) the full vehicle rollover test (as defined in FMVSS No. 208, ''Frontal Occupant Protection''); and (2) an inverted vehicle drop test (as defined in the Society of Automotive Engineers Recommended Practice J996).[22]

a. Is it appropriate to consider using the FMVSS No. 208 dynamic rollover procedure for testing vehicles and, if so, are there any means of reducing/eliminating the test variability resulting from dynamic conditions?

b. With regard to SAE J996, should the agency require inverted drop testing as requested by R. Ben Hogan and Associates? Have manufacturers or others evaluated the drop angle conditions for inverted drop tests? What complications with the test have manufacturers experienced? (In agency testing, certain vehicles experienced complications in testing at the angles prescribed within J996, whereas ground contact with the hood or top of the front quarter panel occurred prior to, or just after, contact with the roof structure, resulting in less energy being imparted to the roof structure.) Also, have manufacturers or others evaluated the effects of different drop heights? If so, what attempts have been made to equate drop height to real-world deformation or injury severity?

6. Have any other dynamic rollover test procedures been evaluated by manufacturers or other interested parties? Have manufacturers or other parties assessed any new criteria for experimental dynamic rollover tests? Have manufacturers or other parties performed dynamic rollover testing using dummies? If so, what injury criteria do manufacturers or other parties use to assess performance in that dynamic test?

C. Limiting Headroom Reduction

7. Agency research analysis demonstrates that limiting the reduction of headroom between the occupant's head and the roof reduces injuries in rollovers. More specifically, this research shows a moderate correlation between post crash headroom elimination and the severity of injury to the head, neck or face resulting from roof contact. However, this benefit only exists for belted occupants.

Can limiting headroom reduction offer quantifiable benefits for unbelted occupants in rollover crashes? Are there quantifiable benefits for belted occupants in rollover crashes where roof intrusion does not exceed the top of the occupant's head?

8. If NHTSA were to incorporate a headroom limitation in a compliance procedure, either as percentage of the original cabin environment or an absolute crush requirement based upon maintaining room over the head of an anthropomorphic dummy, what would be an appropriate limitation and would there be any problems associated with such a requirement? Should different limitations be made to accommodate different size occupants?

IV. Submission of Comments

Interested persons are invited to submit comments in response to this request for comments. For easy reference, the agency has consecutively numbered its questions. NHTSA requests that commenters respond to each question by these numbers and provide all relevant factual information of which they are aware to support their conclusion or opinions, including but not limited to statistical data and estimated cost and benefits, and the source of such information. It is also requested, but not required, that 10 copies be submitted.

All comments must not exceed 15 pages in length (49 CFR 553.21). Necessary attachments may be appended to these submissions without regard to the length limitation. This limitation is intended to encourage commenters to state their positions and arguments as concisely as possible.

If a commenter wishes to submit certain information under a claim of confidentiality, three copies of the complete submission, including purportedly confidential business information, should be submitted to the

[22] The inverted vehicle drop test, defined in the Society of Automotive Engineers Recommended Practice J996, provides a repeatable means of dynamically testing roof crush. The agency has conducted numerous tests to evaluate its performance. However, very little research has been done by NHTSA, and we are not aware of research by others, to relate the results in SAE J996 to real-world rollover condition and performance. Also, there is no certainty that the test parameters (defined in J996) relate to real-world conditions.

NHTSA Chief Counsel, Room 5219, 400 Seventh Street, SW., Washington DC 20590, and seven copies from which the purportedly confidential information has been deleted should be submitted to the Docket Section at the street address given above. A request for confidentiality should be accompanied by a cover letter setting forth the information specified in the agency's confidential business information regulation (49 CFR Part 512).

Comments on this notice will be available for inspection in the docket. NHTSA will continue to file relevant information as it becomes available in the docket after the closing date. Those persons desiring to be notified upon receipt of their written comments in the Docket Section should enclose, in the envelope with their comments, a self addressed stamped postcard. Upon receipt, the docket supervisor will return the postcard by mail.

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

Issued on: October 16, 2001.

Stephen R. Kratzke,

Associate Administrator for Safety Performance Standards.

[FR Doc. 01–26560 Filed 10–19–01; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Parts 222 and 223

[I.D. 101701B]

RIN 0648–AN62

Endangered and Threatened Wildlife; Sea Turtle Conservation Requirements

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

ACTION: Public hearing notice.

SUMMARY: Notice is hereby given that the National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Department of Commerce, will hold public hearings for the purpose of receiving comments on the proposed rule to amend the regulations protecting sea turtles to enhance their effectiveness in reducing sea turtle mortality resulting from shrimp trawling in the Atlantic and Gulf Areas of the southeastern United States, published in the **Federal Register** on October 2, 2001. Turtle excluder devices (TEDs) have proven to be effective at excluding sea turtles from shrimp trawls; however, NMFS has determined that modifications to the design of TEDs need to be made to exclude leatherbacks and large, sexually mature loggerhead and green turtles; several approved TED designs are structurally weak and do not function properly under normal fishing conditions; and modifications to the trynet and bait shrimp exemptions to the TED requirements are necessary to decrease lethal take of sea turtles. These proposed amendments are necessary to protect endangered and threatened sea turtles in the Atlantic and Gulf Areas.

DATES: See **SUPPLEMENTARY INFORMATION** for specific dates, times and addresses of the hearings.

FOR FURTHER INFORMATION CONTACT: Robert Hoffman (ph. 727–570–5312, fax 727–570–5517, e-mail Robert.Hoffman@noaa.gov), or Therese A. Conant (ph. 301–713–1401, fax 301–713–0376, e-mail Therese.Conant@noaa.gov).

SUPPLEMENTARY INFORMATION: The hearings are scheduled as follows:

1. October 24, 2001 at 7 p.m. to 9 p.m., Madeira Beach, FL
2. November 1, 2001, at 7 p.m. to 9 p.m., Charleston, SC
3. November 5, 2001, at 7 p.m. to 9 p.m., Beaufort, NC
4. November 5, 2001, at 7 p.m. to 9 p.m., Kenner, LA
5. November 6, 2001, at 7 p.m. to 9 p.m., Brunswick, GA
6. November 7, 2001, at 7 p.m. to 9 p.m., Galveston, TX
7. November 8, 2001, at 7 p.m. to 9 p.m., Port Isabel, TX
8. November 9, 2001, at 7 p.m. to 9 p.m., Cocoa, FL

The hearings will be held in the following locations:

1. Madeira Beach City Hall, 300 Municipal Dr., Madeira Beach, FL 33708
2. South Carolina Department of Natural Resources, Marine Resources Research Institute Main Auditorium, 217 Fort Johnson Rd., Charleston, SC 29412
3. Duke Marine Laboratory, I.E. Grey Library Auditorium Building, 135 Duke Marine Lab Rd., Beaufort, NC 28516
4. Airport Hilton, Main Ballroom, 901 Airline Dr., Kenner, LA 70062
5. University of Georgia, Marine Extension Service Office, 715 Bay St., Brunswick, GA 31520
6. Texas A&M University, Classroom Laboratory Building, Room 100, 200 Seawolf Parkway, Galveston, TX 77553
7. Laguna Madre Learning Center at the Port Isabel High School Lecture Hall, Highway 100, Port Isabel, TX 78578
8. Brevard Agricultural Center Auditorium, 3695 Lake Dr., Cocoa, FL 32926

Dated: October 16, 2001.

Wanda L. Cain,

Acting Director, Office of Protected Resources, National Marine Fisheries Service.

[FR Doc. 01–26552 Filed 10–19–01; 8:45 am]

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