

DEPARTMENT OF TRANSPORTATION

National Highway Traffic Safety Administration

49 CFR Parts 571 and 589

[Docket No. 92-28; Notice 7]

RIN No. 2127-AB85

Federal Motor Vehicle Safety Standards; Head Impact Protection

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

ACTION: Final rule; Response to petitions for reconsideration.

SUMMARY: On August 18, 1995, NHTSA published a final rule amending Standard No. 201, "Occupant Protection in Interior Impact," to require passenger cars and trucks, buses, and multipurpose passenger vehicles with a gross vehicle weight rating (GVWR) of 10,000 pounds or less, to provide protection when an occupant's head strikes upper interior components, including pillars, side rails, headers, and the roof, during a crash. In response to petitions for reconsideration, NHTSA is amending that final rule to include another phase-in option, allow manufacturers to carry forward credits for vehicles certified to the new requirements prior to the beginning of the phase-in period, exclude buses with a GVWR of more than 8,500 pounds, specify that all attachments to the upper interior components are to remain in place during compliance testing, and make other changes to the test procedure to clarify some areas of confusion.

DATES: *Effective Date:* The amendments made in this rule are effective May 8, 1997.

Petition Date: Any petitions for reconsideration must be received by NHTSA no later than May 23, 1997.

ADDRESSES: Any petitions for reconsideration should refer to the docket and notice number of this notice and be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590.

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SUPPLEMENTARY INFORMATION:

Table of Contents

- I. Background
- II. FMH Drop Test Calibration Corridor
- III. Lead time/Credits
 - A. Lead time
 - B. Credits
- IV. Exclusion of Certain Vehicles
 - A. School Buses
 - B. Police Vehicles
- V. Test Procedure
 - A. Definitions
 - 1. Convertibles
 - 2. Pillars
 - 3. Windshield Trim/Surface of the Vehicle Ceiling
 - B. Test Conditions
 - 1. Targeting Conditions
 - 2. Removal of Attachments on Vehicle Interior Surface
 - 3. Securing Vehicle That is Not Resting on Its Suspension
 - 4. Removal of Windows
 - 5. Rear Doors
 - 6. Sun Visors
 - 7. Location of Head Center of Gravity
 - 8. Initial Contact
 - 9. Approach Angles
 - 10. Minimum Impact Distance
 - C. Targets
 - 1. Issues Related to Multiple Targets
 - 2. A-pillar Targets
 - 3. B-Pillar Targets
 - 4. Other Pillar Targets
 - 5. Front Header Targets
 - 6. Side Rail Targets
 - 7. Upper Roof Targets
 - 8. Sliding Door Track Targets
 - 9. Roll-bar Targets
- VI. Rulemaking Analysis and Notices.
 - A. Executive Order 12866 and DOT Regulatory Policies and Procedures.
 - B. Regulatory Flexibility Act.
 - C. Paperwork Reduction Act.
 - D. National Environmental Policy Act.
 - E. Executive Order 12612 (Federalism).
 - F. Civil Justice Reform.

I. Background

On August 18, 1995, the National Highway Traffic Safety Administration (NHTSA) published a final rule amending Standard No. 201, "Occupant Protection in Interior Impact," to require passenger cars and trucks, buses, and multipurpose passenger vehicles (these vehicles are collectively referred to as LTVs) with a gross vehicle weight rating (GVWR) of 10,000 pounds or less, to provide protection when an occupant's head strikes upper interior components, including pillars, side rails, headers, and the roof, during a crash (60 FR 43031). The amendments added performance requirements and test procedures for a new in-vehicle component test. The new requirements

will be phased-in over a four-year period beginning September 1, 1998.

The agency received nine timely petitions for reconsideration of the final rule. The issues raised by the petitions can be divided into five categories—(1) Application of the new requirements to dynamic (i.e., crash-deployed) head protection systems, (2) variability of test results attributed to width of the free motion headform (FMH) drop test calibration corridor, (3) lead time and phase-in, (4) exclusion of certain vehicles, and (5) test procedures.

The first category of issues is outside the scope of the rulemaking that led to the August 1995 final rule and thus is not a proper subject for a petition for reconsideration. Therefore, the agency announced that it was treating the requests concerning these issues as petitions for rulemaking, and granted those petitions. On March 7, 1996, the agency published an advance notice of proposed rulemaking to assist the agency in assessing those issues (61 FR 9136). Further agency action on those issues will be taken in the context of that separate rulemaking proceeding. Therefore, those issues will not be addressed in this notice.

II. FMH Drop Test Calibration Corridor

The American Automobile Manufacturers Association (AAMA) attached a copy of SAE Paper #950882, "Influence of System Variables in Interior Head Impact Testing," to its original petition for reconsideration. The paper discusses the percentage of test variability attributable to various factors in the agency's new test procedure. Citing this paper, AAMA requested that the drop test calibration corridor for the free motion headform (FMH) be reduced since it was said to account for 26 percent of the variability. The current corridor is 225 to 275 g's. AAMA suggested that the width of the corridor be reduced from 50 g's to no more than 25 g's (250 to 275 g's). This issue was also raised by Honda in one of its comments.

NHTSA assumes that the analysis of the SAE paper #950882 is appropriate and the conclusions are accurate. The SAE paper shows a Head Injury Criterion (HIC) range from 2,095 to 1,611 for the 27 FMH tests discussed. This HIC range indicates a potential variability of 30 percent. Of this, eight percent, \pm four percent, is attributed to variability in FMH calibration. The agency disagrees with AAMA that this is excessive, as dummy response variability of \pm five percent is generally considered "excellent."

There are additional reasons for not adopting the requested change to the

corridor. Neither AAMA nor Honda submitted any data to substantiate their comments that a 25 g calibration corridor width would be practicable. Further, the agency notes that manufacturers can choose to use a FMH at the upper end of the calibration corridor when testing their own vehicles. By choosing this worst-case scenario, manufacturers could be assured their vehicles would comply when tested by the agency, regardless of the location of the agency's FMH within the calibration corridor. Therefore, the agency is not amending the calibration corridor for the FMH.

III. Lead Time/Credits

A. Lead Time

The final rule specifies three phase-in schedules, the earliest of which begins with vehicles manufactured on or after September 1, 1998. The Center for Auto Safety (CAS) submitted a petition asking that the phase-in schedules begin on September 1, 1997. AAMA and Volkswagen submitted petitions asking that the beginning of the phase-in schedules be delayed until September 1, 1999. Toyota asked the agency to delay the beginning of the phase-in schedules to compensate for the time needed to clarify the test procedure in the final rule.

With regard to the CAS petition, the agency is not reducing the lead time prior to the beginning of the phase-in schedules. In the final rule, the agency noted that manufacturers had uniformly commented that a lead time period longer than that proposed (approximately 2 years) and a phase-in schedule were necessary. Manufacturer estimates of the time needed prior to the beginning of a phase-in schedule ranged from three to five years. After reviewing these comments, NHTSA decided to begin the phase-in schedules slightly more than three years after the publication of the final rule. This period of lead time was at the lower end of the range of manufacturer lead time requests. NHTSA noted that its analysis showed that all but one existing vehicle model would need some degree of redesign to comply with the new requirements. CAS disagreed with this assessment. However, even after a post-petition request by the agency, CAS did not provide any information identifying additional vehicle models that do not need to be redesigned. In addition, the NHTSA decision on lead time was based on its conclusion that padding alone might not be sufficient for some components, that other countermeasures might be preferable (i.e., to prevent reduction in visibility), and that

additional lead time was necessary to implement these other countermeasures. CAS did not dispute these conclusions.

NHTSA is also not increasing the lead time prior to the beginning of the phase-in schedules. NHTSA regulations clearly state that the filing of a petition for reconsideration does not delay the effective date of the rule (49 CFR 553.35(d)). Therefore, manufacturers should have been preparing for the beginning of the phase-in since August of 1995. While NHTSA has made some changes to the final rule, they are not so extensive that manufacturers should have to redesign vehicles again. Further, if the manufacturers' contemplated method of compliance is, as it should be, the uniform application of energy absorbing materials over the entire upper interior of their vehicles, the decisions by the agency in this notice regarding the specific location of particular target points should have relatively limited implications for the manufacturers' compliance efforts. Finally, the agency's adoption of another alternative phase-in option will provide some flexibility (see the next section).

B. Credits

In the final rule, NHTSA allowed manufacturers to earn carry-forward credit during the phase-in for producing complying vehicles in excess of the percentage of production required in the earlier years of the phase-in. In its petition, Ford stated that it would have trouble meeting the 10 percent requirement during the first year of the phase-in, and asked that a carry-back allowance of up to three percent be allowed for that year. In its petition, Honda asked that manufacturers be allowed to earn carry-forward credits for vehicles which are produced prior to the beginning of the phase-in period and which comply with the new requirements.

In allowing the earning and carrying-forward of credits during the phase-in, NHTSA stated:

this will encourage manufacturers to exceed the requirements in early years, by concentrating initial efforts on either vehicles which present fewer redesign problems or high volume vehicles. This will benefit consumers by accelerating the availability of vehicles which comply with the new requirements and will benefit manufacturers by providing them with flexibility for the later years of the phase-in.

NHTSA believes this rationale is equally applicable to vehicles manufactured prior to the phase-in. Standard No. 208, "Occupant Crash Protection," encouraged early installation of automatic protection

systems by allowing the earning of carry-forward credits for passenger cars that complied with the automatic protection requirement and were produced in the year prior to the beginning of the phase-in. Such credits were not allowed for the phase-in of the dynamic testing requirement in Standard No. 214, "Side Impact Protection," because of the high percentage of vehicles that did not need to be redesigned in order to comply. As stated previously, NHTSA was aware of only one production vehicle at the time of the final rule which would not require some redesign to comply with the new upper interior head protection requirements, and no additional information has been received to indicate that this assessment was incorrect. Therefore, NHTSA has decided to allow carry-forward credits for vehicles certified to the new requirement prior to the beginning of the phase-in. To accomplish this, NHTSA has amended the regulatory language to allow manufacturers the option of certifying to the new requirements prior to September 1, 1998.¹

NHTSA did not specifically address carry-back credits in the preamble to the final rule. While Ford did submit confidential information to support its assertion that it could not achieve 10 percent compliance in the first year of the phase-in, the agency does not believe that carry-back credits would be appropriate as such credits would delay the introduction of complying vehicles. Instead, the agency has decided to add another phase-in option for all manufacturers. Under this option, manufacturers could certify compliance with seven percent of their vehicle fleet in the first year, 31 percent the second year, 40 percent the third year, 70 percent the fourth year, and 100 percent the final year. The figure for the first year is based on Ford's indication that its shortfall would be up to three percent in that year. While this schedule will result in fewer vehicles in the first year, it will require a greater number of vehicles to comply in the second year. The cumulative number of vehicles produced in compliance with the new requirements in the first two years of this phase-in will be greater than under the original 10/25/40/70/100 phase-in.

¹ This change in the regulatory language required a change in the numbering of all subsequent sections. To aid the reader, the preamble refers to the previous section number, and includes the new section number, where appropriate in parentheses.

IV. Exclusion of Certain Vehicles

A. School Buses

Three school bus manufacturers petitioned NHTSA to exclude school buses from the final rule. The manufacturers indicated that the final rule did not address a number of issues associated with school buses, including:

(1) Differences in implementation cost for small school buses,

(2) Inappropriateness of many target location procedures for small school buses,

(3) Negative economic impact on school bus manufacturers, many of which are small businesses, and,

(4) Lack of technical expertise and engineering support.

In reviewing these petitions, NHTSA contacted the petitioning manufacturers and the National Truck Equipment Association (NTEA) to obtain additional information on buses, including school buses, with a GVWR of 10,000 pounds or less.

All small school buses currently in production have a GVWR of more than 8,500 pounds. There were approximately 6,566 small school buses manufactured annually in 1993 and 1995. Of these, approximately 5,000 were Type-A buses (a school bus body on a van chassis), the remaining were van conversions. In the same years, 1,800 to 2,000 small (non-school) buses with a GVWR of more than 8,500 pounds and less than or equal to 10,000 pounds were produced, respectively. Finally, approximately 40,000 to 60,000 vans with a GVWR of more than 8,500 pounds and less than or equal to 10,000 pounds (these vehicles are classified as buses by NHTSA because of their passenger carrying capacity) are produced annually. Thus, the total number of small buses (buses with a GVWR of less than or equal to 10,000 pounds) produced annually is approximately 48,000 to 69,000.

Examination of fatality statistics shows that approximately 28 fatalities occur annually in buses with a GVWR of more than 8,500 pounds and less than or equal to 10,000 pounds. This figure represents occupant fatalities from all causes, not just those associated with impacts with upper interior components. In the Final Economic Assessment (FEA) for the final rule, NHTSA estimated that improvements to LTVs of all types and sizes would produce a fatality reduction of 289 to 334. Based on the assumption that the fatality reduction would be evenly distributed among the various types and sizes of LTVs, the reduction for buses with a GVWR of more than 8,500 pounds and less than 10,000 pounds

would be very small. Given the ratio of the total annual production of LTVs (5,600,000 units in 1995) to the total annual production of small buses (48,000 to 69,000 units), the estimated fatality reduction for those buses would be one.

The FEA also indicates that the cost of compliance for vans is \$72.29. The National Association of State Directors of Pupil Transportation Services indicated in a submission to Docket 95-98, Notice 1, that the cost of compliance for all small school buses would be \$1,000 to \$2,000. However, NHTSA developed a cost estimate of \$507 to \$926 per small school bus. NHTSA assumes the same cost for all small buses. Using these estimates for the appropriate numbers of small buses with a GVWR of more than 8,500 pounds results in an estimated cost of approximately \$7 million.

Many vans which are classified as "buses" and vans which are classified as "mpvs" are manufactured using the same chassis and vehicle body construction. Since all vans below 8,500 pounds GVWR must comply with these requirements, it is expected that the manufacturers will provide complying interiors for all their vans. Thus, it is likely that some of the "buses" in the 8,500 to 10,000 pound GVWR range will have padded interiors despite an exclusion. Therefore, the actual benefit for buses in this weight range is much smaller than one life saved per year.

The school buses in this weight range already have to comply with a number of regulations in addition to the regulations for buses. Because school buses are more costly than regular buses, some schools use vehicles which are not "school buses" to transport children, or would not replace their old buses. These vehicles would not have the additional safety features of a "school bus." NHTSA is increasingly concerned that requiring these vehicles to absorb a large additional cost with little benefits would cause more schools to delay purchase of new vehicles or to use non-school buses. This would result in a loss of benefits in other areas that would offset the extremely small benefits of this rule.

Finally, all of the multistage buses in this class are produced by small businesses. This increases NHTSA's concerns about the large costs of this rule for this class of vehicles.

Therefore, NHTSA has decided to exclude buses with a GVWR of more than 8,500 pounds from the new requirements. This will have minimal impact on the benefits estimate in the final rule. However, requiring these vehicles to comply would have a

significant impact on this portion of the industry.

Police Vehicles

In a supplement to its petition for reconsideration, AAMA asked the agency to exclude police vehicles from the final rule. AAMA stated that police vehicles require special modifications for the installation of interior lighting, A-pillar-mounted spotlights, and roof-mounted beacons and sirens, and that such equipment would be difficult to redesign for compliance.

NHTSA is not excluding police vehicles in the final rule. NHTSA believes that many of the concerns underlying AAMA's request for exclusion are similar to concerns regarding attachments generally. Because of this, these concerns should be addressed by NHTSA's treatment of all attachments (see below). AAMA did not present evidence to indicate that police equipment required different treatment from other attachments.

V. Test Procedure

The fifth category of issues (test procedure) generated a large number of questions. In the final rule, the agency responded to comments objecting to the proposed broad requirements for universal compliance of the upper interior vehicle surface by narrowing the amendments to require compliance at specific targets only. To accommodate that change, however, the agency had to adopt a complex new test procedure to define and locate the targets on the vehicle interior. Because manufacturers had not seen the test procedure prior to the final rule, there were a large number of questions and concerns regarding the test procedure. To enable interested parties and NHTSA personnel to discuss the questions concerning the test procedure, and to aid petitioning parties in narrowing and refining those questions, NHTSA decided to hold a technical workshop on the test procedure.

The focus was on the location of target points. Interested parties were invited to submit questions in writing prior to the workshop (60 FR 53280; October, 13, 1995). The workshop was held on December 13-14, 1995 at the Vehicle Research and Test Center (VRTC) in East Liberty, Ohio. The workshop was attended by about 55 individuals representing the automobile and school bus manufacturers as well as automotive compliance test facilities. The procedures used to locate 12-15 headform impact target points were discussed relative to each of three demonstration vehicles: (1) A 1996 Ford Mustang GT (convertible), (2) a 1996

Saab 900 (4 door sedan with sun roof), and (3) a 1987 Nissan Van. Participants at the meeting were invited to supplement their petitions for reconsideration with discussions of any remaining target location issues. Both the submissions regarding workshop content and post-workshop supplements to the petitions are available in the docket. The specific questions and concerns raised in the petitions and at the workshop are addressed in this section. The section is arranged to parallel the regulatory text of the final rule. Because the same concerns and/or questions were raised by numerous parties, they are not attributed to any specific party.

A. Definitions

1. Convertibles

Manufacturers asked for changes to the definitions of "convertible roof frame" and "convertible roof linkage mechanism." Manufacturers stated that the first definition presumes a metal frame for convertible roofs and that manufacturers are beginning to use other materials. Some manufacturers also asked the agency to exclude the entire convertible roof, while one manufacturer stated that hard top convertible roofs should be included. Finally, manufacturers asked for clarification of the particular components of a convertible that were excluded from the final rule, in particular, whether only components on the roof itself were excluded.

NHTSA agrees that the inclusion of the word "metal" in the definition of "convertible roof frame" is design restrictive and is removing that word from the definition.

NHTSA is not excluding the entire convertible roof. This issue was addressed in the final rule. In the final rule, NHTSA agreed to exclude "convertible roof frames and linkage mechanisms because the presence of a countermeasure such as padding would interfere with their movement" (60 FR 43031, at 43047). NHTSA did not exclude all targets on convertible roofs because commenters did not provide any justification suggesting that countermeasures could not be installed on other parts of the convertible roof. NHTSA notes that, while some convertible roofs are made of cloth or other soft material, many are not. While the former are unlikely to produce head injuries, the latter could. NHTSA believes that protection should be provided for all the hard areas in the upper interior of vehicles, unless it is not practicable to do so.

With regard to which components in convertibles are excluded, "convertible roof linkage mechanism" is defined as "any anchorage, fastener, or device necessary to deploy a convertible roof frame." This definition is not limited to components on the roof itself. Some convertibles include anchor points on the front header and/or A-pillar for the convertible roof. These components are included in the definition of "convertible roof linkage mechanism" and thus were excluded from the final rule.

2. Pillars

Some manufacturers asked for changes to the definitions for various pillars because they have difficulty applying the definitions to the unusual designs of their vehicles. For example, Toyota stated that one of its vehicles has an unusual side window design which is cut-out lower at the front edge of the window. Toyota believes that, for this design, the definition of Plane 9 (a horizontal plane passing through the lowest point of the daylight opening forward of the B-pillar) results in a target BP3 which is lower on the B-pillar than NHTSA intended, or even below the B-pillar.

NHTSA has decided not to make any changes to these definitions based on these designs. Unless NHTSA were to write a unique set of target location provisions for each vehicle model in production, it is inevitable that use of a test procedure based on specific targets will not succeed in locating all target points on some vehicles. Even if NHTSA were to write unique provisions for each vehicle model currently in production, the procedures might no longer ensure that all targets could be located once a vehicle model was redesigned or a new vehicle model introduced. For this reason, NHTSA examined a wide number of vehicles when selecting targets and attempted to write the target location procedures in a way that would make it possible to locate all points on a majority of vehicles and a sufficient number of points on all vehicles. Section S4 (S6.1 and S6.2) states that "(t)he requirements do not apply to any target that cannot be located using the procedures of S8 (S10)." This provision adequately addresses the problem of unusual vehicle designs. NHTSA will not amend the definitions or change the target provisions absent information indicating that they are not workable for a significant number of target points on a wide variety of vehicle models.

3. Windshield Trim/Surface of the Vehicle Ceiling

Manufacturers also asked for definitions for the phrases "windshield trim" and "surface of the vehicle ceiling." These phrases are used in the procedures to locate some targets. NHTSA agrees that these phrases are susceptible to more than one interpretation. Accordingly, the agency has added a definition of "windshield trim." It has also replaced the phrase "surface of the vehicle ceiling" with the phrase "interior roof surface" to clarify that it is a reference to the interior surface only.

B. Test Conditions

1. Targeting Conditions

Section S4 (S6) requires vehicles to comply when tested under the conditions specified in S6 (S8). Section S8 (S10) does not indicate whether or not targets are located under the same conditions. Manufacturers asked whether the test conditions applied only during testing or also during the locating of the targets.

In the final rule, NHTSA did not specify whether or not the test conditions applied during target location as well as during testing. Most of the test conditions replicate conditions that would exist during vehicle use. However, some test conditions are intended to facilitate testing, and do not represent conditions that would arise during vehicle use. For example, seats and steering wheels may be removed to facilitate placing test equipment used to provide air pressure for and launch the FMH in the vehicle. NHTSA believes that these parts should be present when the targets are located. If, during target location, the seat or steering wheel prevents the FMH from contacting the target, it is also likely that an occupant could not impact that area. NHTSA has amended the regulatory language to specify which test conditions apply during the locating of the targets.

2. Removal of Attachments on Vehicle Interior Surface

Manufacturers asked NHTSA to prohibit the removal of any items that are attached to the upper interior of the vehicle. Currently, removal of some such attachments is explicitly permitted, allowing NHTSA to test a target on or near such attachments with or without the attachment in place. Some attachments may be in a variety of positions, and therefore may or may not be in the target location when the vehicle is in use. Thus, for example, S6.5 specifies that sun visors may be

removed. Other attachments are a target, and removal makes it easier to contact other targets. Thus, for example, S6.7 allows a seat belt anchorage to be removed to test the component on which it is mounted if the target is not on the anchorage. Other attachments are not explicitly addressed.

Manufacturers argued that companies may wish to use attachments as some of the countermeasures to meet the rule. Removal of the attachments would remove those countermeasures.

Manufacturers also argued that removal of attachments could adversely affect the material on the component on which the attachment is mounted, and cause the vehicle to no longer comply with the requirements of the rule.

It is possible that manufacturers could use attachments as part of the countermeasures to meet the new requirements. In addition, the means by which some attachments are anchored to the upper interior components could make it difficult or impossible to remove the attachment without adversely affecting the surrounding material. Finally, the agency notes that the attachments would be present in the vehicle during a crash, even if not in the specific target location NHTSA is testing. Therefore, the agency is specifying that no attachments, including sun visors and seat belt anchorages, are removed for testing.

3. Securing Vehicle That is Not Resting on its Suspension

Section S6.1 (S8.1) specified that a vehicle being tested is supported so that it is not resting on its suspension. Manufacturers asked whether the vehicle was clamped down when not resting on its suspension.

The regulatory text does not specify whether or not the vehicle is clamped down when not resting on its suspension. Therefore, NHTSA could test the vehicle either clamped or not. NHTSA notes that clamping would make the vehicle body stiffer, and thus is likely to be a worst case condition for manufacturers when they are doing certification testing. NHTSA does not believe it is necessary to specify one of these conditions in the final rule.

4. Removal of Windows

Section S6.2 (S8.2) requires windows to be open. Section 6.4 (S8.4) allows side doors on the opposite side of the vehicle from the target to be impacted to be open. Manufacturers asked whether windows could be removed for testing.

In some vehicles (e.g., vans), it may be necessary to remove windows to allow placement of the test equipment inside

the vehicle to aim the FMH at some targets. These vehicles may not have doors in the rear portion of the vehicle and may have windows in this area which do not open, or which do not open sufficiently to allow placing test equipment in the vehicle. The regulatory text has been amended to allow removal of windows on the opposite side from a target during testing of that target.

5. Rear Doors

Section S6.4 (S8.4) allows side doors on the side of the vehicle not be impacted during a particular test to be open. Manufacturers asked whether a rear hatch or rear door could be opened for testing.

The regulatory language only allows side doors to be open. NHTSA decided to allow doors to be open to allow test equipment to access the targets. Because an open door could change the stiffness of adjacent vehicle components, NHTSA only allowed side doors on the opposite side of the longitudinal centerline of the vehicle from the target to be open. For some targets, it may be difficult or impossible to reach the target with test equipment from a side door. Therefore, NHTSA has decided to allow rear windows or doors to be open for testing of any target except those on the rear header, the rearmost pillars, and the rearmost side rail target SR3 on each side of the vehicle. The agency believes that the performance of these targets could be affected by an open rear door or window.

6. Sun Visors

Section S6.5 (S8.5) allows sun visors to be placed in any adjustment position as long as one side is in contact with the vehicle interior surface. Manufacturers asked NHTSA to specify a single position for testing. NHTSA is not changing this test condition because the sun visor could be in any position when in use.

7. Location of Head Center of Gravity

Section S6.12 (S8.12) specifies the location of the head center of gravity in reference to the seating reference point (SgRP). The agency was asked to change the reference to the H-point. The SgRP is defined at 49 CFR 571.3 in reference to the design H-point with the seat in its rearmost normal design driving or riding position. Therefore, the agency does not believe a change is necessary.

Manufacturers noted that target RP2 is located on the rearmost pillar with reference to the center of gravity of the head for the rearmost designated seating position. Manufacturers asked how this is determined for vehicles in which the

rearmost seat is rearward facing. NHTSA is amending the procedures to specify that the rearward measurement used to locate the head center of gravity is made relative to the seat orientation and not the vehicle orientation.

8. Initial Contact

Section S6.13.3 (S8.13.3) specifies that some portion of the forehead impact zone is to contact some point of the target circle defined in S6.11 at the time of initial contact. If this does not occur, manufacturers asked if the FMH were to be moved, or the target circle, or both. Manufacturers also asked NHTSA to include the prohibition proposed in the NPRM that "no portion of the headform contacts any part of the vehicle outside the impact zone."

Section S8(b) (S10(b)) provides for the relocation of any target point which cannot be contacted by some portion of the forehead impact zone at some combination of impact angles. The relocated point is the point used for testing. If, for some reason, a portion of the forehead impact zone is not the point of initial contact when the testing is repeated at the relocated point, the test is considered an incomplete test. The target is not relocated again.

With regard to the second request, the final rule eliminated the impact zone concept and substituted targets. The procedures ensure that the initial contact is between the target and the forehead impact zone. Because there no longer are impact zones, the NPRM prohibition on impacts outside the zone is not appropriate or necessary.

9. Approach Angles

Section S6.13.4.1 (S8.13.4.1) describes a procedure to determine maximum and minimum horizontal approach angles. Manufacturers asked whether the component surface or the attachment is used in determining the shortest horizontal line when an attachment is in the same horizontal plane as the head center of gravity.

NHTSA does not believe that the selection of either distance would result in a significantly different approach angle. However, since the agency is specifying that the attachments are to remain in place, the measurements will be made to the attachment if that is the shortest distance.

Pursuant to S6.13.4.2(a) (S8.13.4.2(a)), the maximum vertical approach angle for each target is determined by rotating the FMH upward until a portion of the FMH outside the forehead impact zone contacts the vehicle and then rotating the FMH downward five degrees. Some manufacturers petitioned for the amount of downward rotation to be increased

because chin contact could still occur during testing.

In the final rule, the agency added the five degree offset in response to manufacturer concerns about chin contact. NHTSA never stated that this amount was sufficient to prevent chin contacts, only that it would delay chin contact. Because NHTSA continues to believe this amount is sufficient for this purpose, it is not making any further changes.

10. Minimum Impact Distance

Section S6.14 (S8.14) prohibits multiple impacts when the distance between the targets is less than 150 mm. This distance was determined during NHTSA testing of various types of padding as an expected countermeasure. Manufacturers expressed concern that for other types of countermeasures, performance will be degraded for multiple impacts on the same component, regardless of the distance between the targets.

While NHTSA appreciates that its testing was done only using padding, manufacturers did not submit any data indicating that the 150 mm distance was not adequate for any other countermeasure. Absent such information, NHTSA is not changing this test condition.

C. Target Locations

1. Issues Related to Multiple Targets

Section S8(b) (S10(b)) describes a procedure for relocating targets when no portion of the forehead impact zone can contact the target. Manufacturers asked NHTSA to delete this, arguing that it allowed for infinite test possibilities. Manufacturers also asked what is done when contact is prevented by interference from attachments.

NHTSA is not deleting the relocation procedures. The forehead impact zone is approximately fifteen inches square. It is likely that the forehead impact zone will contact the entire area within the 1.5 inch target circle specified in S8(b) (S10(b)). Even if multiple impacts are possible, it is not different than other targets which allow options. In addition, it is unlikely that the injury measurements would differ significantly between the possible targets in such a small area.

With regard to the interference of attachments, NHTSA is making one change. Section S8(b) (S10(b)) is amended to allow relocation within a sphere rather than a circle. As noted above, NHTSA has decided that attachments should not be moved. Allowing relocation within a sphere when there is interference by an

attachment will allow the target to be relocated onto the attachment. This will limit the need for increasing the relocation area due to interference. The agency also notes that, unless otherwise specified, movable attachments may be moved to any position for the purpose of testing. This will also reduce the incidence of interference.

2. A-Pillar Targets

Manufacturers indicated concerns that the A-pillar reference point (APR) and target AP1 could not be located in some vehicles, particularly convertibles, and the points would be located in space. NHTSA does not agree that this is the case. NHTSA is not aware of any vehicles that do not have some type of roof to protect occupants from rain and snow. Section S6.3 (S8.3) states that convertible vehicles are tested with their tops closed. Therefore, even in these vehicles there would be an exterior roof surface to use in locating APR. If APR is on the soft cloth of a roof, it is unlikely that NHTSA would actually conduct a test (since such a surface would not produce a high injury measurement), but there would also be a target AP1.

Manufacturers also asked whether measurements were made along each convolution of the outside weather stripping or rain gutter. NHTSA would not take measurements in such a manner, but would instead follow the nominal vehicle surface. By following the nominal surface, NHTSA means that the measurement is made as though the weather stripping or rain gutters were not present.

Manufacturers also asked whether weather stripping was included in the determination of the "outboardmost point * * *" with the vehicle side door open." The answer is yes. Viewed perpendicular to the top of the test vehicle (or the plan view) with the side door open, the "outboardmost point" is the outermost edge of the door opening (including uncompressed weather stripping, trim, or rain gutter).

Manufacturers also noted that some vehicles have split or dual A-pillars and asked whether such vehicles would have multiple AP2 and AP3 target points. If the pillars are not part of the door structure, they are treated as separate pillars. Thus, it is possible to have multiple AP2 and AP3 target points. To clarify this, the definition of A-pillar is amended to specify " * * * any pillar that is entirely forward of a transverse vertical plane passing through the seating reference point of the driver's seat." In addition, the definition of B-pillar is amended to specify " * * * the forwardmost pillar

on each side of the vehicle that is, in whole or part, rearward of a transverse vertical plane passing through the seating reference point of the driver's seat."

Finally, manufacturers noted that the highest point at the intersection of the dashboard and the A-pillar is not always apparent, because in some vehicles there is a small gap between the two components. Manufacturers also stated that this point could be one height on one side of the vehicle and another height on the other side. NHTSA has re-examined current production vehicles and agrees that there is often a small gap or depression between the dashboard and the A-pillar. However, this is equivalent to the convolutions at edges of trim discussed above. Again, NHTSA would measure along the nominal surface, as if the small gap did not exist. Section S8(a) (S10(a)) provides that targets are located on each side of the vehicle using the specified procedures. Therefore, if the point of intersection is at different heights on each side of the vehicle, there is a different plane 5 defined on each side of the vehicle. Manufacturers should not simply transfer points from one side of the vehicle to the other.

3. B-pillar Targets

Manufacturers asked a number of questions concerning belt anchorages on the B-pillar. Manufacturers asked the location of target BP2 for an anchorage which is covered by trim such that only the webbing is visible through a slot in the trim. Manufacturers also asked whether a stalk would be considered part of the anchorage and thus a possible target.

The seat belt anchorage is defined in S2.1 (S3). The regulation states that the target is any point on the anchorage. Thus, manufacturers must certify that all portions of the anchorage comply with the requirements. Targets can be located on decorative trim covering the anchorage or a portion of the anchorage.

Manufacturers also asked whether the centerline of the width of the B-pillar is determined by viewing the pillar laterally. The answer is yes.

Finally, one manufacturer noted that, for location of target BP3, Plane 9 passes "through the lowest point of the daylight opening forward of the pillar. The manufacturer stated that one of its vehicle designs has an unusual window design. The manufacturer believed that Plane 9 would not be located in that vehicle as intended by NHTSA. As stated previously, NHTSA acknowledges that not all points can be located in every vehicle, and that not all points will be located on the hardest

points of every vehicle. This result is inherent in using a test procedure applicable to all vehicles, rather than a procedure individually tailored for each vehicle model. However, NHTSA will not change the specification for a target unless it is not appropriate for a large number of vehicles.

4. Other Pillar Targets

Manufacturers asked whether vehicles with multiple "other pillars" have multiple other pillar targets. The answer is yes. The procedures do not specify a single "other pillar." In addition, there would be multiple SR3 targets since they are located relative to the other pillar reference point (OPR).

5. Front Header Targets

Manufacturers noted that the term "sunroof frame" was not defined. NHTSA agrees that this term could be confusing and is changing it to "interior sunroof opening." Manufacturers also asked whether the sunroof is open or closed during testing. NHTSA believes that sunroofs are similar to windows and has, therefore, added language to indicate that they are treated in the same manner.

Manufacturers also asked whether a "Targa" roof, which contains a considerable amount of glass and is larger than most sun roofs, is considered a sunroof. Other standards (e.g., Standard No. 216, "Roof Crush Resistance") use the term "convertible." In previous interpretations of that term, NHTSA stated that a Targa roof is a convertible. In these interpretation letters, NHTSA has consistently stated that a convertible is "a vehicle whose A-pillars or windshield peripheral support is not joined with the B-pillars (or rear roof support rearward of the B-pillar position) by a fixed, rigid structural member." A comparable definition has been included in the amended final rule.

6. Side Rail Targets

Manufacturers noted that some side rail targets (SR1 and SR2) are less than six inches apart. Since S6.14 (S8.14) specifies that impacts are not to occur less than six inches apart, they stated that they might have to use more than one vehicle to complete the tests for all possible combinations of targets on left and right sides. NHTSA is changing the procedure to locate target SR2 so that it is either 12 inches rearward of APR or 12 inches forward of the B-pillar reference point (BPR). This will provide at least six inches between targets SR1 and SR2 as measured from the APR reference.

Manufacturers also noted that some vehicles (such as pickup trucks) have only two pillars on either side of the vehicle and asked whether the rear pillar is treated as a B-pillar, a rearmost-pillar, or both, for the purpose of locating side rail targets. In the 1995 final rule, the rearmost pillar in a vehicle with two pillars on each side is defined as a "rearmost pillar" and not as a "B-pillar." Therefore, there is no "side rail between the A-pillar and the B-pillar" (S8.6 (S10.6)). For "other side rails" (S8.7 (S10.7)), targets are located in reference to BPR or OPR, neither of which exists in the vehicles. NHTSA did not intend that there would be no side rail targets in these vehicles, and is amending the procedures for locating target SR2 for these vehicles.

One manufacturer asked whether grab handles located on the upper interior in locations other than the side rail are targets. Section S8.7 (S10.7) states that if there is no seat belt anchorage on the side rail, but there is a grab handle, target SR3 is located on the grab handle. Since there are not similar specifications for other interior components, grab handles in other locations are not targets unless the procedures locate them there.

7. Upper Roof Targets

The procedures for defining planes C and D for the upper roof specify that the planes are tangent to outermost points on the "interior roof (including trim)" at a distance of 12 inches rearward of the APR. Manufacturers asked for clarification of how those points on the interior roof are to be determined. Those points are determined by closing the doors and marking where the door parts (with or without weather stripping) intersect the roof parts (with or without weather stripping), at a horizontal distance of 12 inches behind the APR.

Manufacturers also asked whether, in establishing transverse vertical planes A and plane B, the rear view mirror and the center high mounted stop light (CHMSL), respectively, are considered part of the trim. The rearview mirror and the center high mounted stop light (CHMSL) are not considered trim. An example of trim would be weather stripping. The rearview mirror and CHMSL are considered "attachments."

8. Sliding Door Track Targets

Manufacturers noted that target SD is not necessarily located on the sliding door track at the door opening edge, and asked whether this is the intent of the test procedure. The answer is yes.

Manufacturers also noted that horizontal and vertical approach angles were not specified for target SD in the

final rule, and asked whether the side rail angles apply. This was the intent of the final rule. Horizontal and vertical approach angles for the sliding door track will be added to Table 1.

9. Roll-Bar Targets

Manufacturers asked whether there is a target on a deployable roll-bar. Since the definition of "roll-bar" does not include deployable roll-bars, there are no targets on a deployable roll bar.

VI. Rulemaking Analyses and Notices

A. Executive Order 12866 and DOT Regulatory Policies and Procedures

NHTSA has considered the impact of this rulemaking action under E.O. 12866 and the Department of Transportation's regulatory policies and procedures. This rulemaking document was reviewed under E.O. 12866, "Regulatory Planning and Review." This action has been determined to be "significant" under the Department of Transportation's regulatory policies and procedures. The changes implemented in this final rule do not appear to add further significant economic impact over the existing requirements. The only apparent economic impact appears to be relief of \$7 million dollars for small school bus manufacturers, as discussed earlier in this notice.

B. Regulatory Flexibility Act

NHTSA has also considered the impacts of this final rule under the Regulatory Flexibility Act. I hereby certify that this rule will not have a significant economic impact on a substantial number of small entities and for those small entities likely to be affected, specific relief has been accorded in the notice. The changes made in this final rule do not substantially alter the final rule published on August 18, 1995.

C. Paperwork Reduction Act

In accordance with the Paperwork Reduction Act of 1980 (Pub. L. 96-511), the agency notes that there are no requirements for information collection associated with this final rule.

D. National Environmental Policy Act

NHTSA has also analyzed this final rule under the National Environmental Policy Act and determined that it will not have a significant impact on the human environment.

E. Executive Order 12612 (Federalism)

NHTSA has analyzed this rule in accordance with the principles and criteria contained in E.O. 12612, and has determined that this rule will not have sufficient federalism implications

to warrant the preparation of a Federalism Assessment.

F. Civil Justice Reform

This final rule does 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.

In consideration of the foregoing, 49 CFR Ch. V is amended as follows:

List of Subjects in 49 CFR Parts 571 and 589

Imports, Motor vehicle safety, Motor vehicles.

PART 571—FEDERAL MOTOR VEHICLE SAFETY STANDARDS

1. The authority citation for part 571 of title 49 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. Section 571.201 is revised to read as follows:

§ 571.201 Standard No. 201; Occupant protection in interior impact.

S1. *Purpose and scope.* This standard specifies requirements to afford impact protection for occupants.

S2. *Application.* This standard applies to passenger cars and to multipurpose passenger vehicles, trucks, and buses with a GVWR of 4,536 kilograms or less, except that the requirements of S6 do not apply to buses with a GVWR of 3,860 kilograms or less.

S3. Definitions.

A-pillar means any pillar that is entirely forward of a transverse vertical plane passing through the seating reference point of the driver's seat.

Ambulance means a motor vehicle designed exclusively for the purpose of emergency medical care, as evidenced by the presence of a passenger compartment to accommodate emergency medical personnel, one or more patients on litters or cots, and equipment and supplies for emergency care at a location or during transport.

B-pillar means the forwardmost pillar on each side of the vehicle that is, in whole or part, rearward of a transverse vertical plane passing through the seating reference point of the driver's seat, unless there is only one pillar rearward of that plane and it is also a rearmost pillar.

Brace means a fixed diagonal structural member in an open body vehicle that is used to brace the roll-bar and that connects the roll-bar to the main body of the vehicle structure.

Convertible means a vehicle whose A-pillars are not joined with the B-pillars (or rearmost pillars) by a fixed, rigid structural member.

Convertible roof frame means the frame of a convertible roof.

Convertible roof linkage mechanism means any anchorage, fastener, or device necessary to deploy a convertible roof frame.

Daylight opening means, for openings on the side of the vehicle, other than a door opening, the locus of all points where a horizontal line, perpendicular to the vehicle longitudinal centerline, is tangent to the periphery of the opening. For openings on the front and rear of the vehicle, other than a door opening, *daylight opening* means the locus of all points where a horizontal line, parallel to the vehicle longitudinal centerline, is tangent to the periphery of the opening. If the horizontal line is tangent to the periphery at more than one point at any location, the most inboard point is used to determine the daylight opening.

Door opening means, for door openings on the side of the vehicle, the locus of all points where a horizontal line, perpendicular to the vehicle longitudinal centerline, is tangent to the periphery of the side door opening. For door openings on the back end of the vehicle, *door opening* means the locus of all points where a horizontal line, parallel to the vehicle longitudinal centerline, is tangent to the periphery of the back door opening. If the horizontal line is tangent to the periphery at more than one point at any location, the most inboard point is the door opening.

Forehead impact zone means the part of the free motion headform surface area that is determined in accordance with the procedure set forth in S8.10.

Free motion headform means a test device which conforms to the specifications of part 572, subpart L of this chapter.

Mid-sagittal plane of a dummy means a longitudinal vertical plane passing through the seating reference point of a designated seating position.

Motor Home means a motor vehicle with motive power that is designed to provide temporary residential

accommodations, as evidenced by the presence of at least four of the following facilities: Cooking; refrigeration or ice box; self-contained toilet; heating and/or air conditioning; a potable water supply system including a faucet and a sink; and a separate 110–125 volt electrical power supply and/or an LP gas supply.

Other pillar means any pillar which is not an A-pillar, a B-pillar, or a rearmost pillar.

Pillar means any structure, excluding glazing and the vertical portion of door window frames, but including accompanying moldings, attached components such as safety belt anchorages and coat hooks, which:

- (1) Supports either a roof or any other structure (such as a roll-bar) that is above the driver's head, or
- (2) Is located along the side edge of a window.

Roll-bar means a fixed overhead structural member, including its vertical support structure, that extends from the left to the right side of the passenger compartment of any open body vehicles and convertibles. It does not include a header.

Seat belt anchorage means any component involved in transferring seat belt loads to the vehicle structure, including, but not limited to, the attachment hardware, but excluding webbing or straps, seat frames, seat pedestals, and the vehicle structure itself, whose failure causes separation of the belt from the vehicle structure.

Sliding door track means a track structure along the upper edge of a side door opening that secures the door in the closed position and guides the door when moving to and from the open position.

Stiffener means a fixed overhead structural member that connects one roll-bar to another roll-bar or to a header of any open body vehicle or convertible.

Upper roof means the area of the vehicle interior that is determined in accordance with the procedure set forth in S8.15.

Windshield trim means molding of any material between the windshield glazing and the exterior roof surface, including material that covers a part of either the windshield glazing or exterior roof surface.

S4 Requirements

S4.1 Except as provided in S4.2, each vehicle shall comply with either:

- (a) The requirements specified in S5, or,

- (b) The requirements specified in S5 and S6.

S4.2 Vehicles manufactured on or after September 1, 1998 shall comply with the requirements of S5 and S6.

S5 *Requirements for instrument panels, seat backs, interior*

compartment doors, sun visors, and armrests. Each vehicle shall comply with the requirements specified in S5.1 through S5.5.2.

S5.1 *Instrument panels.* Except as provided in S5.1.1, when that area of the instrument panel that is within the head impact area is impacted in accordance with S5.1.2 by a 6.8 kilogram, 165 mm diameter head form at—

(a) A relative velocity of 24 kilometers per hour for all vehicles except those specified in paragraph (b) of this section,

(b) A relative velocity of 19 kilometers per hour for vehicles that meet the occupant crash protection requirements of S5.1 of 49 CFR 571.208 by means of inflatable restraint systems and meet the requirements of S4.1.2.1(c)(2) of 49 CFR 571.208 by means of a Type 2 seat belt assembly at the right front designated seating position, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S5.1.1 The requirements of S5.1 do not apply to:

(a) Console assemblies;

(b) Areas less than 125 mm inboard from the juncture of the instrument panel attachment to the body side inner structure;

(c) Areas closer to the windshield juncture than those statically contactable by the head form with the windshield in place;

(d) Areas outboard of any point of tangency on the instrument panel of a 165 mm diameter head form tangent to and inboard of a vertical longitudinal plane tangent to the inboard edge of the steering wheel; or

(e) Areas below any point at which a vertical line is tangent to the rearmost surface of the panel.

S5.1.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that:

(a) The origin of the line tangent to the instrument panel surface shall be a point on a transverse horizontal line through a point 125 mm horizontally forward of the seating reference point of the front outboard passenger designated seating position, displaced vertically an amount equal to the rise which results

from a 125 mm forward adjustment of the seat or 19 mm; and

(b) Direction of impact shall be either:

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact.

S5.2 *Seat Backs.* Except as provided in S5.2.1, when that area of the seat back that is within the head impact area is impacted in accordance with S5.2.2 by a 6.8 kilogram, 165 mm diameter head form at a relative velocity of 24 kilometers per hour, the deceleration of the head form shall not exceed 80g continuously for more than 3 milliseconds.

S5.2.1 The requirements of S5.2 do not apply to seats installed in school buses which comply with the requirements of Standard No. 222, *School Bus Passenger Seating and Occupant Protection* (49 CFR 571.222) or to rearmost side-facing, back-to-back, folding auxiliary jump, and temporary seats.

S5.2.2 *Demonstration procedures.* Tests shall be performed as described in Society of Automotive Engineers Recommended Practice J921, "Instrument Panel Laboratory Impact Test Procedure," June 1965, using the specified instrumentation or instrumentation that meets the performance requirements specified in Society of Automotive Engineers Recommended Practice J977, "Instrumentation for Laboratory Impact Tests," November 1966, except that:

(a) The origin of the line tangent to the uppermost seat back frame component shall be a point on a transverse horizontal line through the seating reference point of the right rear designated seating position, with adjustable forward seats in their rearmost design driving position and reclinable forward seat backs in their nominal design driving position;

(b) Direction of impact shall be either:

(1) In a vertical plane parallel to the vehicle longitudinal axis; or

(2) In a plane normal to the surface at the point of contact.

(c) For seats without head restraints installed, tests shall be performed for each individual split or bucket seat back at points within 100 mm left and right of its centerline, and for each bench seat back between points 100 mm outboard of the centerline of each outboard designated seating position;

(d) For seats having head restraints installed, each test shall be conducted with the head restraints in place at its lowest adjusted position, at a point on the head restraint centerline; and

(e) For a seat that is installed in more than one body style, tests conducted at

the fore and aft extremes identified by application of subparagraph (a) shall be deemed to have demonstrated all intermediate conditions.

S5.3 *Interior compartment doors.* Each interior compartment door assembly located in an instrument panel, console assembly, seat back, or side panel adjacent to a designated seating position shall remain closed when tested in accordance with either S5.3.1(a) and S5.3.1(b) or S5.3.1(a) and S5.3.1(c). Additionally, any interior compartment door located in an instrument panel or seat back shall remain closed when the instrument panel or seat back is tested in accordance with S5.1 and S5.2. All interior compartment door assemblies with a locking device must be tested with the locking device in an unlocked position.

S5.3.1 *Demonstration procedures.*

(a) Subject the interior compartment door latch system to an inertia load of 10g in a horizontal transverse direction and an inertia load of 10g in a vertical direction in accordance with the procedure described in section 5 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965, or an approved equivalent.

(b) Impact the vehicle perpendicularly into a fixed collision barrier at a forward longitudinal velocity of 48 kilometers per hour.

(c) Subject the interior compartment door latch system to a horizontal inertia load of 30g in a longitudinal direction in accordance with the procedure described in section 5 of SAE Recommended Practice J839b, "Passenger Car Side Door Latch Systems," May 1965, or an approved equivalent.

S5.4 *Sun visors.*

S5.4.1 A sun visor that is constructed of or covered with energy-absorbing material shall be provided for each front outboard designated seating position.

S5.4.2 Each sun visor mounting shall present no rigid material edge radius of less than 3.2 mm that is statically contactable by a spherical 165 mm diameter head form.

S5.5 *Armrests.*

S5.5.1 *General.* Each installed armrest shall conform to at least one of the following:

(a) It shall be constructed with energy-absorbing material and shall deflect or collapse laterally at least 50 mm without permitting contact with any underlying rigid material.

(b) It shall be constructed with energy-absorbing material that deflects or collapses to within 32 mm of a rigid

test panel surface without permitting contact with any rigid material. Any rigid material between 13 and 32 mm from the panel surface shall have a minimum vertical height of not less than 25 mm.

(c) Along not less than 50 continuous mm of its length, the armrest shall, when measured vertically in side elevation, provide at least 50 mm of coverage within the pelvic impact area.

S5.5.2 Folding armrests. Each armrest that folds into the seat back or between two seat backs shall either:

(a) Meet the requirements of S5.5.1; or
(b) Be constructed of or covered with energy-absorbing material.

S6 Requirements for upper interior components.

S6.1 Vehicles manufactured on or after September 1, 1998 and before September 1, 2002. Except as provided in S6.3, for vehicles manufactured on or after September 1, 1998 and before September 1, 2002, a percentage of the manufacturer's production, as specified in S6.1.1, S6.1.2, S6.1.3, or S6.1.4, shall, when tested under the conditions of S8, comply with the requirements specified in S7 at the target locations specified in S10 when impacted by the free motion headform specified in S8.9 at any speed up to and including 24 kilometers per hour. The requirements do not apply to any target that cannot be located using the procedures of S10. The phase-in schedule the manufacturer chooses to use during this period shall be reported to the National Highway Traffic Safety Administration pursuant to 49 CFR 589.6.

S6.1.1 Phase-in Schedule #1

S6.1.1.1 Vehicles manufactured on or after September 1, 1998 and before September 1, 1999. Subject to S6.1.5(a), for vehicles manufactured by a manufacturer on or after September 1, 1998 and before September 1, 1999, the amount of vehicles complying with S7 shall be not less than 10 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1996 and before September 1, 1999, or

(b) The manufacturer's production on or after September 1, 1998 and before September 1, 1999.

S6.1.1.2 Vehicles manufactured on or after September 1, 1999 and before September 1, 2000. Subject to S6.1.5(b), for vehicles manufactured by a manufacturer on or after September 1, 1999 and before September 1, 2000, the amount of vehicles complying with S7 shall be not less than 25 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1997 and before September 1, 2000, or

(b) The manufacturer's production on or after September 1, 1999 and before September 1, 2000.

S6.1.1.3 Vehicles manufactured on or after September 1, 2000 and before September 1, 2001. Subject to S6.1.5(c), for vehicles manufactured by a manufacturer on or after September 1, 2000 and before September 1, 2001, the amount of vehicles complying with S7 shall be not less than 40 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1998 and before September 1, 2001, or

(b) The manufacturer's production on or after September 1, 2000 and before September 1, 2001.

S6.1.1.4 Vehicles manufactured on or after September 1, 2001 and before September 1, 2002. Subject to S6.1.5(d), for vehicles manufactured by a manufacturer on or after September 1, 2001 and before September 1, 2002, the amount of vehicles complying with S7 shall be not less than 70 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1999 and before September 1, 2002, or

(b) The manufacturer's production on or after September 1, 2001 and before September 1, 2002.

S6.1.2 Phase-in Schedule #2

S6.1.2.1 Vehicles manufactured on or after September 1, 1998 and before September 1, 1999. Subject to S6.1.5(a), for vehicles manufactured by a manufacturer on or after September 1, 1998 and before September 1, 1999, the amount of vehicles complying with S7 shall be not less than seven percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1996 and before September 1, 1999, or

(b) The manufacturer's production on or after September 1, 1998 and before September 1, 1999.

S6.1.2.2 Vehicles manufactured on or after September 1, 1999 and before September 1, 2000. Subject to S6.1.5(b), for vehicles manufactured by a manufacturer on or after September 1, 1999 and before September 1, 2000, the amount of vehicles complying with S7 shall be not less than 31 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1997 and before September 1, 2000, or

(b) The manufacturer's production on or after September 1, 1999 and before September 1, 2000.

S6.1.2.3 Vehicles manufactured on or after September 1, 2000 and before September 1, 2001. Subject to S6.1.5(c), for vehicles manufactured by a manufacturer on or after September 1,

2000 and before September 1, 2001, the amount of vehicles complying with S7 shall be not less than 40 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1998 and before September 1, 2001, or

(b) The manufacturer's production on or after September 1, 2000 and before September 1, 2001.

S6.1.2.4 Vehicles manufactured on or after September 1, 2001 and before September 1, 2002. Subject to S6.1.5(d), for vehicles manufactured by a manufacturer on or after September 1, 2001 and before September 1, 2002, the amount of vehicles complying with S7 shall be not less than 70 percent of:

(a) The manufacturer's average annual production of vehicles manufactured on or after September 1, 1999 and before September 1, 2002, or

(b) The manufacturer's production on or after September 1, 2001 and before September 1, 2002.

S6.1.3 Phase-in Schedule #3

S6.1.3.1 Vehicles manufactured on or after September 1, 1998 and before September 1, 1999 are not required to comply with the requirements specified in S7.

S6.1.3.2 Vehicles manufactured on or after September 1, 1999 shall comply with the requirements specified in S7.

S6.1.4 Phase-in Schedule #4 A final stage manufacturer or alterer may, at its option, comply with the requirements set forth in S6.1.4.1 and S6.1.4.2.

S6.1.4.1 Vehicles manufactured on or after September 1, 1998 and before September 1, 2002 are not required to comply with the requirements specified in S7.

S6.1.4.2 Vehicles manufactured on or after September 1, 2002 shall comply with the requirements specified in S7.

S6.1.5 Calculation of complying vehicles.

(a) For the purposes of complying with S6.1.1.1 or S6.1.2.1, a manufacturer may count a vehicle if it is manufactured on or after May 8, 1997, but before September 1, 1999.

(b) For the purposes of complying with S6.1.1.2 or S6.1.2.2, a manufacturer may count a vehicle if it:

(1) Is manufactured on or after May 8, 1997, but before September 1, 2000, and
(2) Is not counted toward compliance with S6.1.1.1 or S6.1.2.1, as appropriate.

(c) For the purposes of complying with S6.1.1.3 or S6.1.2.3, a manufacturer may count a vehicle if it:

(1) Is manufactured on or after May 8, 1997, but before September 1, 2001, and
(2) Is not counted toward compliance with S6.1.1.1, S6.1.1.2, S6.1.2.1, or S6.1.2.2, as appropriate.

(d) For the purposes of complying with S6.1.1.4 or S6.1.2.4, a manufacturer may count a vehicle if it:

- (1) Is manufactured on or after May 8, 1997, but before September 1, 2002, and
- (2) Is not counted toward compliance with S6.1.1.1, S6.1.1.2, S6.1.1.3, S6.1.2.1, S6.1.2.2, or S6.1.2.3, as appropriate.

S6.1.6 Vehicles produced by more than one manufacturer.

S6.1.6.1 For the purpose of calculating average annual production of vehicles for each manufacturer and the number of vehicles manufactured by each manufacturer under S6.1.1 through S6.1.4, a vehicle produced by more than one manufacturer shall be attributed to a single manufacturer as follows, subject to S6.1.6.2.

(a) A vehicle which is imported shall be attributed to the importer.

(b) A vehicle manufactured in the United States by more than one manufacturer, one of which also markets the vehicle, shall be attributed to the manufacturer which markets the vehicle.

S6.1.6.2 A vehicle produced by more than one manufacturer shall be attributed to any one of the vehicle's manufacturers specified by an express written contract, reported to the National Highway Traffic Safety Administration under 49 CFR part 589, between the manufacturer so specified and the manufacturer to which the vehicle would otherwise be attributed under S6.1.6.1.

S6.2 Vehicles manufactured on or after September 1, 2002. Except as provided in S6.3, vehicles manufactured on or after September 1, 2002 shall, when tested under the conditions of S8, comply with the requirements specified in S7 at the target locations specified in S10 when impacted by the free motion headform specified in S8.9 at any speed up to and including 24 kilometers per hour. The requirements do not apply to any target that cannot be located using the procedures of S10.

S6.3 A vehicle need not meet the requirements of S6.1 through S6.2 for:

- (a) Any target located on a convertible roof frame or a convertible roof linkage mechanism.
- (b) Any target located rearward of a vertical plane 600 mm behind the seating reference point of the rearmost designated seating position.
- (c) Any target located rearward of a vertical plane 600 mm behind the seating reference point of the driver's seating position in an ambulance or a motor home.
- (d) Any target in a walk-in van-type vehicles.

S7 Performance Criterion. The HIC(d) shall not exceed 1000 when calculated in accordance with the following formula:

(a) $HIC(d) = 0.75446$ (free motion headform HIC) + 166.4.

(b) The free motion headform HIC is calculated in accordance with the following formula:

$$\left[\frac{1}{(t_2 - t_1)} \int_{t_1}^{t_2} a dt \right]^{2.5} (t_2 - t_1)$$

Where the term a is the resultant acceleration expressed as a multiple of g (the acceleration of gravity), and t_1 and t_2 are any two points in time during the impact which are separated by not more than a 36 millisecond time interval.

S8 Target location and test conditions. The vehicle shall be tested and the targets specified in S10 located under the following conditions.

S8.1 Vehicle test attitude.

(a) The vehicle is supported off its suspension at an attitude determined in accordance with S8.1(b).

(b) Directly above each wheel opening, determine the vertical distance between a level surface and a standard reference point on the test vehicle's body under the conditions of S8.1(b)(1) through S8.1(b)(3).

(1) The vehicle is loaded to its unloaded vehicle weight, plus its rated cargo and luggage capacity or 136 kg, whichever is less, secured in the luggage area. The load placed in the cargo area is centered over the longitudinal centerline of the vehicle.

(2) The vehicle is filled to 100 percent of all fluid capacities.

(3) All tires are inflated to the manufacturer's specifications listed on the vehicle's tire placard.

S8.2 Windows and Sunroofs.

(a) Movable vehicle windows are placed in the fully open position.

(b) For testing, any window on the opposite side of the longitudinal centerline of the vehicle from the target to be impacted may be removed.

(c) For testing, movable sunroofs are placed in the fully open position.

S8.3 Convertible tops. The top, if any, of convertibles and open-body type vehicles is in the closed passenger compartment configuration.

S8.4 Doors.

(a) Except as provided in S8.4(b) or S8.4(c), doors, including any rear hatchback or tailgate, are fully closed and latched but not locked.

(b) During testing, any side door on the opposite side of the longitudinal centerline of the vehicle from the target to be impacted may be open or removed.

(c) During testing, any rear hatchback or tailgate may be open or removed for testing any target except targets on the rear header, rearmost pillars, or the rearmost other side rail on either side of the vehicle.

S8.5 Sun visors. Each sun visor shall be placed in any position where one side of the visor is in contact with the vehicle interior surface (windshield, side rail, front header, roof, etc.).

S8.6 Steering wheel and seats.

(a) During targeting, the steering wheel and seats may be placed in any position intended for use while the vehicle is in motion.

(b) During testing, the steering wheel and seats may be removed from the vehicle.

S8.7 Seat belt anchorages. If a target is on a seat belt anchorage, and if the seat belt anchorage is adjustable, tests are conducted with the anchorage adjusted to a point midway between the two extreme adjustment positions. If the anchorage has distinct adjustment positions, none of which is midway between the two extreme positions, tests are conducted with the anchorage adjusted to the nearest position above the midpoint of the two extreme positions.

S8.8 Temperature and humidity.

(a) The ambient temperature is between 19 degrees C. and 26 degrees C., at any relative humidity between 10 percent and 70 percent.

(b) Tests are not conducted unless the headform specified in S8.9 is exposed to the conditions specified in S8.8(a) for a period not less than four hours.

S8.9 Headform. The headform used for testing conforms to the specifications of part 572, subpart L of this chapter.

S8.10 Forehead impact zone. The forehead impact zone of the headform is determined according to the procedure specified in (a) through (f).

(a) Position the headform so that the baseplate of the skull is horizontal. The midsagittal plane of the headform is designated as Plane S.

(b) From the center of the threaded hole on top of the headform, draw a 69 mm line forward toward the forehead, coincident with Plane S, along the contour of the outer skin of the headform. The front end of the line is designated as Point P. From Point P, draw a 100 mm line forward toward the forehead, coincident with Plane S, along the contour of the outer skin of the headform. The front end of the line is designated as Point O.

(c) Draw a 125 mm line which is coincident with a horizontal plane along the contour of the outer skin of the forehead from left to right through Point O so that the line is bisected at Point O.

The end of the line on the left side of the headform is designated as Point a and the end on the right as Point b.

(d) Draw another 125 mm line which is coincident with a vertical plane along the contour of the outer skin of the forehead through Point P so that the line is bisected at Point P. The end of the line on the left side of the headform is designated as Point c and the end on the right as Point d.

(e) Draw a line from Point a to Point c along the contour of the outer skin of the headform using a flexible steel tape. Using the same method, draw a line from Point b to Point d.

(f) The forehead impact zone is the surface area on the FMH forehead bounded by lines a-O-b and c-P-d, and a-c and b-d.

S8.11 Target circle. The area of the vehicle to be impacted by the headform is marked with a solid circle 12.7 mm in diameter, centered on the targets specified in S10, using any transferable opaque coloring medium.

S8.12 Location of head center of gravity.

(a) *Location of head center of gravity for front outboard designated seating positions (CG-F).* For determination of head center of gravity, all directions are in reference to the seat orientation.

(1) *Location of rearmost CG-F (CG-F2).* For front outboard designated seating positions, the head center of gravity with the seat in its rearmost adjustment position (CG-F2) is located 160 mm rearward and 660 mm upward from the seating reference point.

(2) *Location of forwardmost CG-F (CG-F1).* For front outboard designated seating positions, the head center of gravity with the seat in its forwardmost adjustment position (CG-F1) is located horizontally forward of CG-F2 by the distance equal to the fore-aft distance of the seat track.

(b) *Location of head center of gravity for rear outboard designated seating positions (CG-R).* For rear outboard designated seating positions, the head center of gravity (CG-R) is located 160 mm rearward, relative to the seat orientation, and 660 mm upward from the seating reference point.

S8.13 Impact configuration.

S8.13.1 The headform is launched from any location inside the vehicle which meets the conditions of S8.13.4. At the time of launch, the midsagittal plane of the headform is vertical and the headform is upright.

S8.13.2 The headform travels freely through the air, along a velocity vector that is perpendicular to the headform's skull cap plate, not less than 25 mm before making any contact with the vehicle.

S8.13.3 At the time of initial contact between the headform and the vehicle interior surface, some portion of the forehead impact zone of the headform contacts some portion of the target circle.

S8.13.4 Approach Angles. The headform launching angle is as specified in Table 1. For components for which Table 1 specifies a range of angles, the headform launching angle is within the limits determined using the procedures specified in S8.13.4.1 and S8.13.4.2, and within the range specified in Table I, using the orthogonal reference system specified in S9.

TABLE 1.—APPROACH ANGLE LIMITS
[In degrees]

Target component	Horizontal angle	Vertical angle
Front Header	180	0–50
Rear Header	0 or 360	0–50
Left Side Rail	270	0–50
Right Side Rail	90	0–50
Left Sliding Door Track	270	0–50
Right Sliding Door Track	90	0–50
Left A-Pillar	195–255	–5–50
Right A-Pillar	105–165	–5–50
Left B-Pillar	195–345	–10–50
Right B-Pillar	15–165	–10–50
Other Left Pillars	270	–10–50
Other Right Pillars	90	–10–50
Left Rearmost Pillar ..	270–345	–10–50
Right Rearmost Pillar ..	15–90	–10–50
Upper Roof	Any	0–50
Overhead Rollbar	0 or 180	0–50
Brace or Stiffener	90 or 270	0–50
Seat Belt Anchorages ..	Any	0–50

S8.13.4.1 Horizontal Approach Angles for Headform Impacts.

(a) *Left A-Pillar Horizontal Approach Angles.*

(1) Locate a line formed by the shortest horizontal distance between CG-F1 for the left seat and the right A-pillar. The maximum horizontal approach angle for the left A-pillar equals 360 degrees minus the angle formed by that line and the X-axis of the vehicle, measured counterclockwise.

(2) Locate a line formed by the shortest horizontal distance between CG-F2 for the left seat and the left A-pillar. The minimum horizontal approach angle for the left A-pillar impact equals the angle formed by that line and the X-axis of the vehicle, measured counterclockwise.

(b) *Right A-Pillar Horizontal Approach Angles.*

(1) Locate a line formed by the shortest horizontal distance between CG-F1 for the right seat and the left A-pillar. The minimum horizontal

approach angle for the right A-pillar equals 360 degrees minus the angle formed by that line and the X-axis of the vehicle, measured counterclockwise.

(2) Locate a line formed by the shortest horizontal distance between CG-F2 for the right seat and the right A-pillar. The maximum horizontal approach angle for the right A-pillar impact equals the angle formed by that line and the X-axis of the vehicle measured counterclockwise.

(c) *Left B-Pillar Horizontal Approach Angles.*

(1) Locate a line formed by the shortest horizontal distance between CG-F2 for the left seat and the left B-pillar. The maximum horizontal approach angle for the left B-pillar equals the angle formed by that line and the X-axis of the vehicle measured counterclockwise, or 270 degrees, whichever is greater.

(2) Locate a line formed by the shortest horizontal distance between CG-R for the left seat and the left B-pillar. The minimum horizontal approach angle for the left B-pillar equals the angle formed by that line and the X-axis of the vehicle measured counterclockwise.

(d) *Right B-Pillar Horizontal Approach Angles.*

(1) Locate a line formed by the shortest horizontal distance between CG-F2 for the right seat and the right B-pillar. The minimum horizontal approach angle for the right B-pillar equals the angle formed by that line and the X-axis of the vehicle measured counterclockwise, or 90 degrees, whichever is less.

(2) Locate a line formed by the shortest horizontal distance between CG-R for the right seat and the right B-pillar. The maximum horizontal approach angle for the right B-pillar equals the angle between that line and the X-axis of the vehicle measured counterclockwise.

S8.13.4.2 Vertical Approach Angles

(a) Position the forehead impact zone in contact with the selected target at the prescribed horizontal approach angle. If a range of horizontal approach angles is prescribed, position the forehead impact zone in contact with the selected target at any horizontal approach angle within the range which may be used for testing.

(b) Keeping the forehead impact zone in contact with the target, rotate the FMH upward until the lip, chin or other part of the FMH contacts the component or other portion of the vehicle interior.

(1) Except as provided in S8.13.4.2(b)(2), keeping the forehead impact zone in contact with the target, rotate the FMH downward by 5 degrees

for each target to determine the maximum vertical angle.

(2) For all pillars except A-Pillars, keeping the forehead impact zone in contact with the target, rotate the FMH downward by 10 degrees for each target to determine the maximum vertical angle.

S8.14 Multiple impacts.

(a) A vehicle being tested may be impacted multiple times, subject to the limitations in S8.14 (b) and (c).

(b) As measured as provided in S8.14(d), impacts within 300 mm of each other may not occur less than 30 minutes apart.

(c) As measured as provided in S8.14(d), no impact may occur within 150 mm of any other impact.

(d) For S8.14(b) and S8.14(c), the distance between impacts is the distance between the centers of the target circle specified in S8.11 for each impact, measured along the vehicle interior.

S8.15 Upper Roof. The upper roof of a vehicle is determined according to the procedure specified in S8.15 (a) through (h).

(a) Locate the transverse vertical plane A at the forwardmost point where it contacts the interior roof (including trim) at the vehicle centerline.

(b) Locate the transverse vertical plane B at the rearmost point where it contacts the interior roof (including trim) at the vehicle centerline.

(c) Measure the horizontal distance (D1) between Plane A and Plane B.

(d) Locate the vertical longitudinal plane C at the leftmost point at which a vertical transverse plane, located 300 mm rearward of the A-pillar reference point described in S10.1(a), contacts the interior roof (including trim).

(e) Locate the vertical longitudinal plane D at the rightmost point at which a vertical transverse plane, located 300 mm rearward of the A-pillar reference point described in S10.1(a), contacts the interior roof (including trim).

(f) Measure the horizontal distance (D2) between Plane C and Plane D.

(g) Locate a point (Point M) on the interior roof surface, midway between Plane A and Plane B along the vehicle longitudinal centerline.

(h) The upper roof zone is the area of the vehicle upper interior surface bounded by the four planes described in S8.15(h)(1) and S8.15(h)(2):

(1) A transverse vertical plane E located at a distance of (.35 D1) forward of Point M and a transverse vertical plane F located at a distance of (.35 D1) rearward of Point M, measured horizontally.

(2) A longitudinal vertical plane G located at a distance of (.35 D2) to the

left of Point M and a longitudinal vertical plane H located at a distance of (.35 D2) to the right of Point M, measured horizontally.

S9. Orthogonal Reference System. The approach angles specified in S8.13.4 are determined using the reference system specified in S9.1 through S9.4.

S9.1 An orthogonal reference system consisting of a longitudinal X axis and a transverse Y axis in the same horizontal plane and a vertical Z axis through the intersection of X and Y is used to define the horizontal direction of approach of the headform. The X-Z plane is the vertical longitudinal zero plane and is parallel to the longitudinal centerline of the vehicle. The X-Y plane is the horizontal zero plane parallel to the ground. The Y-Z plane is the vertical transverse zero plane that is perpendicular to the X-Y and X-Z planes. The X coordinate is negative forward of the Y-Z plane and positive to the rear. The Y coordinate is negative to the left of the X-Z plane and positive to the right. The Z coordinate is negative below the X-Y plane and positive above it. (See Figure 1.)

S9.2 The origin of the reference system is the center of gravity of the headform at the time immediately prior to launch for each test.

S9.3 The horizontal approach angle is the angle between the X axis and the headform impact velocity vector projected onto the horizontal zero plane, measured in the horizontal zero plane in the counter-clockwise direction. A 0 degree horizontal vector and a 360 degree horizontal vector point in the positive X direction; a 90 degree horizontal vector points in the positive Y direction; a 180 degree horizontal vector points in the negative X direction; and a 270 horizontal degree vector points in the negative Y direction. (See Figure 2.)

S9.4 The vertical approach angle is the angle between the horizontal plane and the velocity vector, measured in the midsagittal plane of the headform. A 0 degree vertical vector in Table I coincides with the horizontal plane and a vertical vector of greater than 0 degrees in Table I makes an upward angle of the same number of degrees with that plane.

S10 Target Locations.

(a) The target locations specified in S10.1 through S10.13 are located on both sides of the vehicle and, except as specified in S10(b), are determined using the procedures specified in those paragraphs.

(b) Except as specified in S10(c), if there is no combination of horizontal and vertical angles specified in S8.13.4 at which the forehead impact zone of

free motion headform can contact one of the targets located using the procedures in S10.1 through S10.13, the center of that target is moved to any location within a sphere with a radius of 25 mm, centered on the center of the original target and measured along the vehicle interior, which the forehead impact zone can contact at one or more combination of angles.

(c) If there is no point within the sphere specified in S10(b) which the forehead impact zone of the free motion headform can contact at one or more combination of horizontal and vertical angles specified in S8.13.4, the radius of the sphere is increased by 25 mm increments until the sphere contains at least one point that can be contacted at one or more combination of angles.

S10.1 A-pillar targets

(a) A-pillar reference point and target AP1. On the vehicle exterior, locate a transverse vertical plane (Plane 1) which contacts the rearmost point of the windshield trim. The intersection of Plane 1 and the vehicle exterior surface is Line 1. Measuring along the vehicle exterior surface, locate a point (Point 1) on Line 1 that is 125 mm inboard of the intersection of Line 1 and a vertical plane tangent to the vehicle at the outboardmost point on Line 1 with the vehicle side door open. Measuring along the vehicle exterior surface in a longitudinal vertical plane (Plane 2) passing through Point 1, locate a point (Point 2) 50 mm rearward of Point 1. Locate the A-pillar reference point (Point APR) at the intersection of the interior roof surface and a line that is perpendicular to the vehicle exterior surface at Point 2. Target AP1 is located at point APR.

(b) Target AP2. Locate the horizontal plane (Plane 3) which intersects point APR. Locate the horizontal plane (Plane 4) which is 88 mm below Plane 3. Target AP2 is the point in Plane 4 and on the A-pillar which is closest to CG-F2 for the nearest seating position.

(c) Target AP3. Locate the horizontal plane (Plane 5) containing the highest point at the intersection of the dashboard and the A-pillar. Locate a horizontal plane (Plane 6) half-way between Plane 3 and Plane 5. Target AP3 is the point on Plane 6 and the A-pillar which is closest to CG-F1 for the nearest seating position.

S10.2 B-pillar targets.

(a) B-pillar reference point and target BP1. Locate the point (Point 3) on the vehicle interior at the intersection of the horizontal plane passing through the highest point of the forwardmost door opening and the centerline of the width of the B-pillar, as viewed laterally. Locate a transverse vertical plane (Plane

7) which passes through Point 3. Locate the point (Point 4) at the intersection of the interior roof surface, Plane 7, and the plane, described in S8.15(h), defining the nearest edge of the upper roof. The B-pillar reference point (Point BPR) is the point located at the middle of the line from Point 3 to Point 4 in Plane 7, measured along the vehicle interior surface. Target BP1 is located at Point BPR.

(b) *Target BP2.* If a seat belt anchorage is located on the B-pillar, Target BP2 is located at any point on the anchorage.

(c) *Target BP3.* Target BP3 is located in accordance with this paragraph. Locate a horizontal plane (Plane 8) which intersects Point BPR. Locate a horizontal plane (Plane 9) which passes through the lowest point of the daylight opening forward of the pillar. Locate a horizontal plane (Plane 10) half-way between Plane 8 and Plane 9. Target BP3 is the point located in Plane 10 and on the interior surface of the B-pillar, which is closest to CG-F(2) for the nearest seating position.

(d) *Target BP4.* Locate a horizontal plane (Plane 11) half-way between Plane 9 and Plane 10. Target BP4 is the point located in Plane 11 and on the interior surface of the B-pillar which is closest to CG-R for the nearest seating position.

S10.3 Other pillar targets.

(a) *Target OP1.*

(1) Except as provided in S10.3(a)(2), target OP1 is located in accordance with this paragraph. Locate the point (Point 5), on the vehicle interior, at the intersection of the horizontal plane through the highest point of the highest adjacent door opening or daylight opening (if no adjacent door opening) and the centerline of the width of the other pillar, as viewed laterally. Locate a transverse vertical plane (Plane 12) passing through Point 5. Locate the point (Point 6) at the intersection of the interior roof surface, Plane 12 and the plane, described in S8.15(h), defining the nearest edge of the upper roof. The other pillar reference point (Point OPR) is the point located at the middle of the line between Point 5 and Point 6 in Plane 12, measured along the vehicle interior surface. Target OP1 is located at Point OPR.

(2) If a seat belt anchorage is located on the pillar, Target OP1 is any point on the anchorage.

(b) *Target OP2.* Locate the horizontal plane (Plane 13) intersecting Point OPR. Locate a horizontal plane (Plane 14) passing through the lowest point of the daylight opening forward of the pillar. Locate a horizontal plane (Plane 15) half-way between Plane 13 and Plane 14. Target OP2 is the point located on the interior surface of the pillar at the

intersection of Plane 15 and the centerline of the width of the pillar, as viewed laterally.

S10.4 Rearmost pillar targets

(a) *Rearmost pillar reference point and target RP1.* Locate the point (Point 7) at the corner of the upper roof nearest to the pillar. The distance between Point M, as described in S8.15(g), and Point 7, as measured along the vehicle interior surface, is D. Extend the line from Point M to Point 7 along the vehicle interior surface in the same vertical plane by $(3 \cdot D/7)$ beyond Point 7 or until the edge of a daylight opening, whichever comes first, to locate Point 8. The rearmost pillar reference point (Point RPR) is at the midpoint of the line between Point 7 and Point 8, measured along the vehicle interior. Target RP1 is located at Point RPR.

(b) *Target RP2.*

(1) Except as provided in S10.4(b)(2), target RP2 is located in accordance with this paragraph. Locate the horizontal plane (Plane 16) through Point RPR. Locate the horizontal plane (Plane 17) 150 mm below Plane 16. Target RP2 is located in Plane 17 and on the pillar at the location closest to CG-R for the nearest designated seating position.

(2) If a seat belt anchorage is located on the pillar, Target RP2 is any point on the anchorage.

S10.5 Front header targets.

(a) *Target FH1.* Locate the contour line (Line 2) on the vehicle interior trim which passes through the APR and is parallel to the contour line (Line 3) at the upper edge of the windshield on the vehicle interior. Locate the point (Point 9) on Line 2 that is 125 mm inboard of the APR, measured along that line. Locate a longitudinal vertical plane (Plane 18) that passes through Point 9. Target FH1 is located at the intersection of Plane 18 and the upper vehicle interior, halfway between a transverse vertical plane (Plane 19) through Point 9 and a transverse vertical plane (Plane 20) through the intersection of Plane 18 and Line 3.

(b) *Target FH2.*

(1) Except as provided in S10.5(b)(2), target FH2 is located in accordance with this paragraph. Locate a point (Point 10) 275 mm inboard of Point APR, along Line 2. Locate a longitudinal vertical plane (Plane 21) that passes through Point 10. Target FH2 is located at the intersection of Plane 21 and the upper vehicle interior, halfway between a transverse vertical plane (Plane 22) through Point 10 and a transverse vertical plane (Plane 23) through the intersection of Plane 21 and Line 3.

(2) If a sun roof opening is located forward of the front edge of the upper roof and intersects the mid-sagittal

plane of a dummy seated in either front outboard seating position, target FH2 is the nearest point that is forward of a transverse vertical plane (Plane 24) through CG-F(2) and on the intersection of the mid-sagittal plane and the interior sunroof opening.

S10.6 Targets on the side rail between the A-pillar and the B-pillar or rearmost pillar in vehicles with only two pillars on each side of the vehicle.

(a) *Target SR1.* Locate a transverse vertical plane (Plane 25) 150 mm rearward of Point APR. Locate the point (Point 11) at the intersection of Plane 25 and the upper edge of the forwardmost door opening. Locate the point (Point 12) at the intersection of the interior roof surface, Plane 25 and the plane, described in S8.15(h), defining the nearest edge of the upper roof. Target SR1 is located at the middle of the line between Point 11 and Point 12 in Plane 25, measured along the vehicle interior.

(b) *Target SR2.* Locate a transverse vertical plane (Plane 26) 300 mm rearward of the APR or 300 mm forward of the BPR (or the RPR in vehicles with no B-pillar). Locate the point (Point 13) at the intersection of Plane 26 and the upper edge of the forwardmost door opening. Locate the point (Point 14) at the intersection of the interior roof surface, Plane 26 and the plane, described in S8.15(h), defining the nearest edge of the upper roof. Target SR2 is located at the middle of the line between Point 13 and Point 14 in Plane 26, measured along the vehicle interior.

S10.7 Other side rail target (target SR3).

(a) Except as provided in S10.7(b), target SR3 is located in accordance with this paragraph. Locate a transverse vertical plane (Plane 27) 150 mm rearward of either Point BPR or Point OPR. Locate the point (Point 15) as provided in either S10.7(a)(1) or S10.7(a)(2), as appropriate. Locate the point (Point 16) at the intersection of the interior roof surface, Plane 27 and the plane, described in S8.15(h), defining the nearest edge of the upper roof. Target SR3 is located at the middle of the line between Point 15 and Point 16 in Plane 27, measured along the vehicle interior surface.

(1) If Plane 27 intersects a door or daylight opening, the Point 15 is located at the intersection of Plane 27 and the upper edge of the door opening or daylight opening.

(2) If Plane 27 does not intersect a door or daylight opening, the Point 15 is located on the vehicle interior at the intersection of Plane 27 and the horizontal plane through the highest point of the door or daylight opening nearest Plane 27. If the adjacent door(s)

or daylight opening(s) are equidistant to Plane 27, Point 15 is located on the vehicle interior at the intersection of Plane 27 and either horizontal plane through the highest point of each door or daylight opening.

(b) Except as provided in S10.7(c), if a grab handle is located on the side rail, target SR3 is located at any point on the anchorage of the grab-handle. Folding grab-handles are in their stowed position for testing.

(c) If a seat belt anchorage is located on the side rail, target SR3 is located at any point on the anchorage.

S10.8 Rear header target (target RH). Locate the point (Point 17) at the intersection of the surface of the upper vehicle interior, the mid-sagittal plane (Plane 28) of the outboard rearmost dummy and the plane, described in S8.15(h), defining the rear edge of the upper roof. Locate the point (Point 18) as provided in S10.8(a) or S10.8(b), as appropriate. Except as provided in S10.8(c), Target RH is located at the mid-point of the line that is between Point 17 and Point 18 and is in Plane 28, as measured along the surface of the vehicle interior.

(a) If Plane 28 intersects a rear door opening or daylight opening, then Point 18 is located at the intersection of Plane 28 and the upper edge of the door opening or the daylight opening (if no door opening).

(b) If Plane 28 does not intersect a rear door opening or daylight opening, then Point 18 is located on the vehicle interior at the intersection of Plane 28 and a horizontal plane through the highest point of the door or daylight opening nearest to Plane 28. If the adjacent door(s) or daylight opening(s) are equidistant to Plane 28, Point 18 is located on the vehicle interior at the intersection of Plane 28 and either horizontal plane through the highest point of each door or daylight opening.

(c) If Target RH is more than 112 mm from Point 18 on the line that is between Point 17 and Point 18 and is in Plane 28, as measured along the surface of the vehicle interior, then Target RH is the point on that line which is 112 mm from Point 18.

S10.9 Upper roof target (target UR). Target UR is any point on the upper roof.

S10.10 Sliding door track target (target SD). Locate the transverse vertical plane (Plane 29) passing through the middle of the widest opening of the sliding door, measured horizontally and parallel to the vehicle longitudinal centerline. Locate the point (Point 19) at the intersection of the surface of the upper vehicle interior, Plane 29 and the plane, described in S8.15(h), defining the nearest edge of the upper roof. Locate the point (Point 20) at the intersection of Plane 29 and

the upper edge of the sliding door opening. Target SD is located at the middle of the line between Point 19 and Point 20 in Plane 29, measured along the vehicle interior.

S10.11 Roll-bar targets.

(a) **Target RB1.** Locate a longitudinal vertical plane (Plane 30) at the mid-sagittal plane of a dummy seated in any outboard designated seating position. Target RB1 is located on the roll-bar and in Plane 30 at the location closest to either CG-F2 or CG-R, as appropriate, for the same dummy.

(b) **Target RB2.** If a seat belt anchorage is located on the roll-bar, Target RB2 is any point on the anchorage.

S10.12 Stiffener targets.

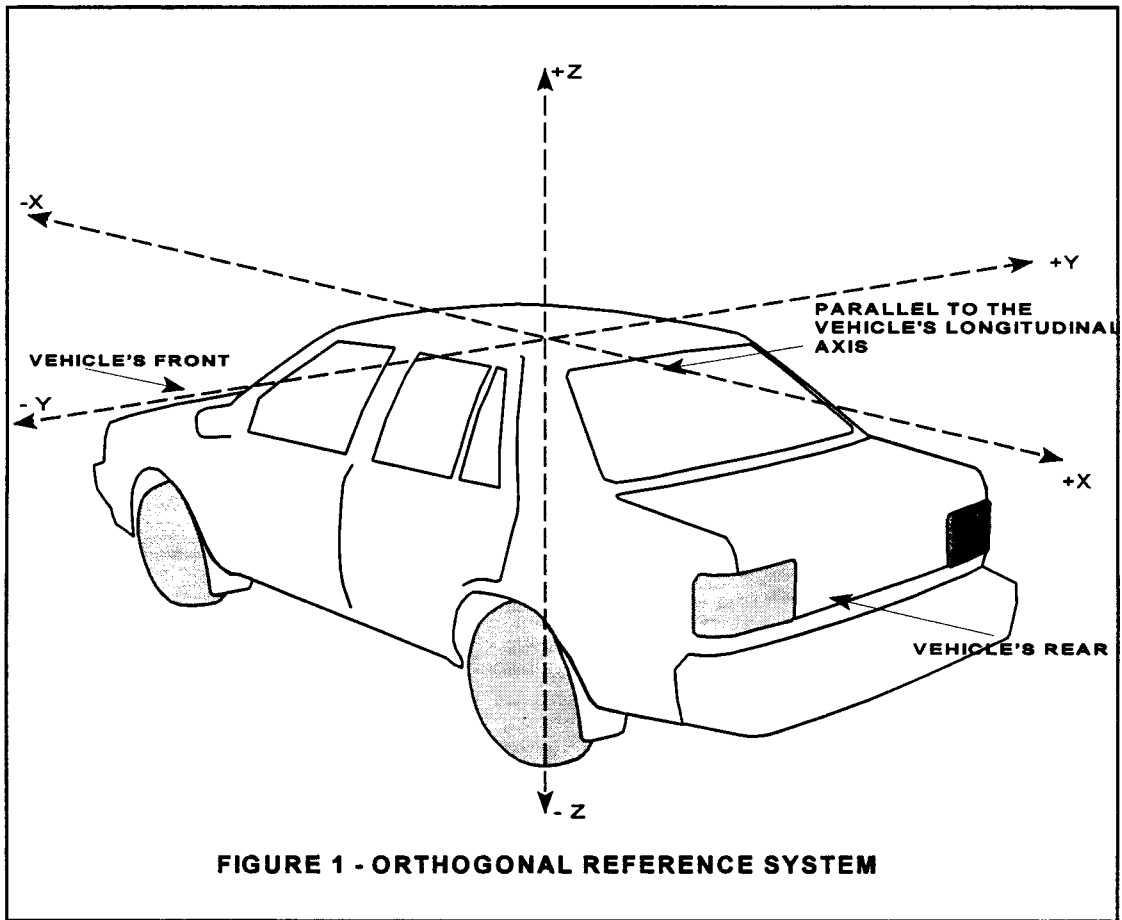
(a) **Target ST1.** Locate a transverse vertical plane (Plane 31) containing either CG-F2 or CG-R, as appropriate, for any outboard designated seating position. Target ST1 is located on the stiffener and in Plane 31 at the location closest to either CG-F2 or CG-R, as appropriate.

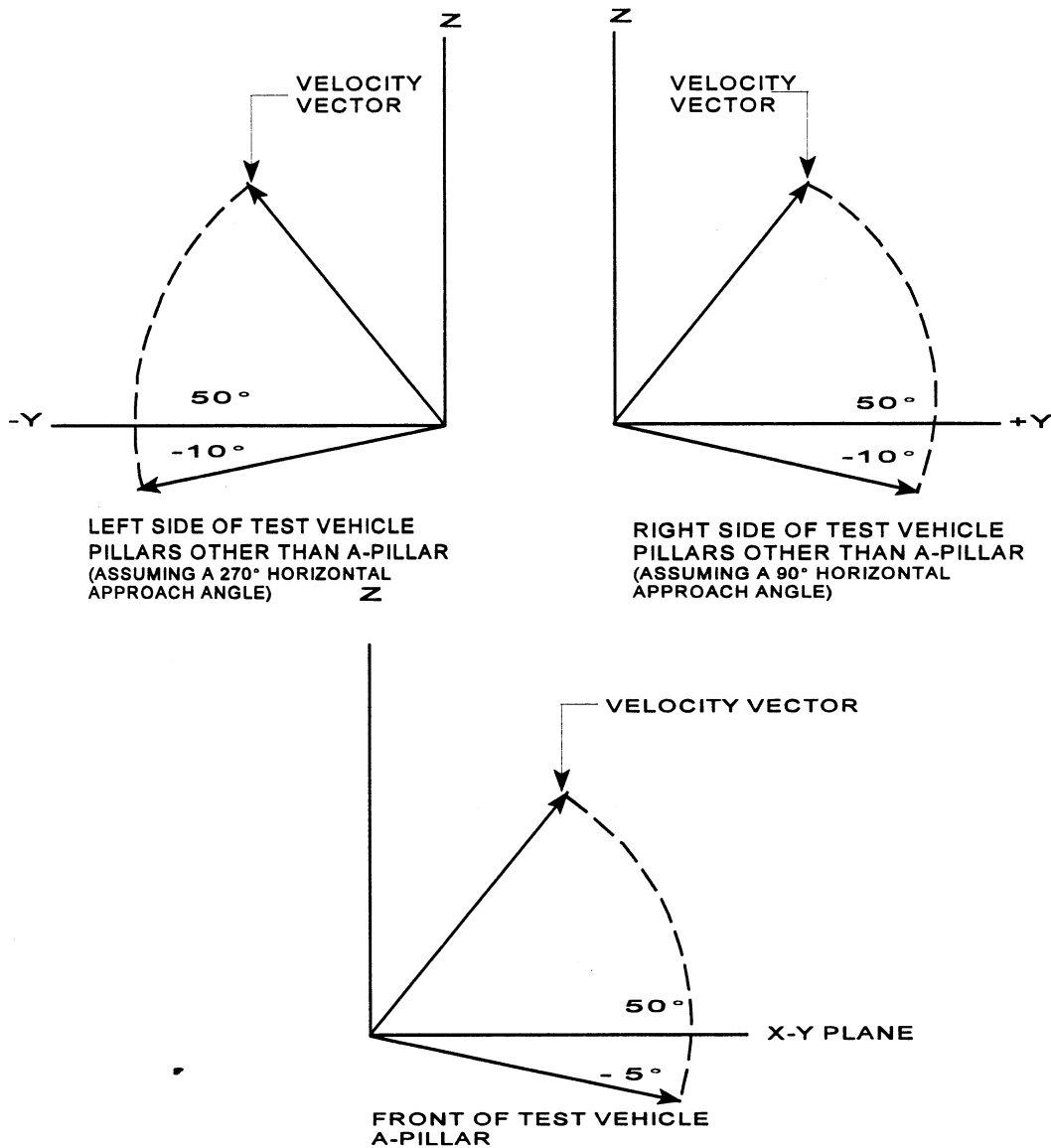
(b) **Target ST2.** If a seat belt anchorage is located on the stiffener, Target ST2 is any point on the anchorage.

S10.13 Brace target (target BT)

Target BT is any point on the width of the brace as viewed laterally from inside the passenger compartment.

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VERTICAL AND HORIZONTAL APPROACH ANGLE PLANE
FIGURE 2

PART 589—[AMENDED]

3. The authority citation for Part 589 continues to read as follows:

Authority: 15 U.S.C. 1392, 1401, 1407; delegation of authority at 49 CFR 1.50.

4. Section 589.1 is revised to read as follows:

§ 589.1 Scope.

This part establishes requirements for manufacturers of passenger cars and trucks and multipurpose passenger vehicles with a gross vehicle weight rating of 4,536 kilograms or less and buses with a gross vehicle weight rating of 3,860 kilograms or less to respond to NHTSA inquiries, to submit a report, and maintain records related to the report, concerning the number of such vehicles that meet the upper interior component head impact protection requirements of Standard No. 201, *Occupant protection in interior impact* (49 CFR 571.201).

5. Section 589.2 is revised to read as follows:

§ 589.2 Purpose.

This purpose of these reporting requirements is to aid the National Highway Traffic Safety Administration in determining whether a manufacturer of passenger cars and trucks and multipurpose passenger vehicles with a gross vehicle weight rating of 4,536 kilograms or less and buses with a gross vehicle weight rating of 3,860 kilograms or less has complied with the upper interior component head impact protection requirements of Standard No. 201.

6. Section 589.3 is revised to read as follows:

§ 589.3 Applicability.

This part applies to manufacturers of passenger cars and trucks and multipurpose passenger vehicles with a gross vehicle weight rating of 4,536 kilograms or less and buses with a gross vehicle weight rating of 3,860 kilograms or less. However, this part does not apply to any manufacturers whose production consists exclusively of walk-in vans, vehicles manufactured in two or more stages, and vehicles that are altered after previously having been certified in accordance with part 567 of this chapter.

7. Section 589.5 is revised to read as follows:

§ 589.5 Response to inquiries.

During the production years ending August 31, 1999, August 31, 2000, August 31, 2001, and August 31, 2002, each manufacturer shall, upon request from the Office of Vehicle Safety

Compliance, provide information regarding which vehicle make/models are certified as complying with the requirements of S6 of Standard No. 201.

8. Part 589.6 is revised to read as follows:

§ 589.6 Reporting requirements.

(a) *Phase-in selection reporting requirement.* Within 60 days after the end of the production year ending August 31, 1999, each manufacturer choosing to comply with one of the phase-in schedules permitted by S6.1 of 49 CFR 571.201 shall submit a report to the National Highway Traffic Safety Administration stating which phase-in schedule it will comply with until September 1, 2002. Each report shall—

- (1) Identify the manufacturer;
- (2) State the full name, title, and address of the official responsible for preparing the report;
- (3) Identify the section number for the phase-in schedule selected;
- (4) Be written in the English language; and

(5) Be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590.

(b) *General reporting requirements.* Within 60 days after the end of the production years ending August 31, 1999, August 31, 2000, August 31, 2001, and August 31, 2002, each manufacturer shall submit a report to the National Highway Traffic Safety Administration concerning its compliance with the upper interior component head impact protection requirements of Standard No. 201 for its passenger cars, trucks, buses and multipurpose passenger vehicles produced in that year. Each report shall—

- (1) Identify the manufacturer;
- (2) State the full name, title, and address of the official responsible for preparing the report;
- (3) Identify the production year being reported on;
- (4) Contain a statement regarding whether or not the manufacturer complied with the upper interior component head impact protection requirements of the amended Standard No. 201 for the period covered by the report and the basis for that statement;
- (5) Provide the information specified in § 589.6(c);

(6) Be written in the English language; and

(7) Be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590.

(c) *Report content—(1) Basis for phase-in production goals.* Each manufacturer shall provide the number

of passenger cars and trucks and multipurpose passenger vehicles with a GVWR of 4,536 kilograms or less and buses with a GVWR of 3,860 kilograms or less manufactured for sale in the United States for each of the three previous production years, or, at the manufacturer's option, for the current production year. A new manufacturer that has not previously manufactured passenger cars and trucks and multipurpose passenger vehicles with a GVWR of 4,536 kilograms or less and buses with a GVWR of 3,860 kilograms or less for sale in the United States must report the number of such vehicles manufactured during the current production year. However, manufacturers are not required to report any information with respect to those vehicles that are walk-in van type vehicles, vehicles manufactured in two or more stages, and/or vehicles that are altered after previously having been certified in accordance with part 567 of this chapter.

(2) *Production.* Each manufacturer shall report for the production year for which the report is filed the number of passenger cars and multipurpose passenger vehicles and trucks with a GVWR of 4,536 kilograms or less and buses with a GVWR of 3,860 kilograms or less that meet the upper interior component head impact protection requirements (S6) of Standard No. 201.

(3) *Vehicles produced by more than one manufacturer.* Each manufacturer whose reporting of information is affected by one or more of the express written contracts permitted by S6.1.6.2 of Standard No. 201 shall:

(i) Report the existence of each contract, including the names of all parties to the contract, and explain how the contract affects the report being submitted.

(ii) Report the actual number of vehicles covered by each contract.

9. Section 589.7 is revised to read as follows:

§ 589.7 Records.

Each manufacturer shall maintain records of the Vehicle Identification Number for each passenger car, multipurpose passenger vehicle, truck and bus for which information is reported under § 589.6(c)(2) until December 31, 2003.

10. Section 589.8 is revised to read as follows:

§ 589.8 Petition to extend period to file report.

A petition for extension of the time to submit a report must be received not later than 15 days before expiration of the time stated in § 589.6(b). The

petition must be submitted to: Administrator, National Highway Traffic Safety Administration, 400 Seventh Street, SW, Washington, DC 20590. The filing of a petition does not automatically extend the time for filing a report. A petition will be granted only if the petitioner shows good cause for the extension, and if the extension is consistent with the public interest.

Issued on April 1, 1997.

Ricardo Martinez,
Administrator.

[FR Doc. 97-8826 Filed 4-7-97; 8:45 am]

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DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

50 CFR Part 679

[Docket No. 961107312-7021-02; I.D. 040197D]

Fisheries of the Exclusive Economic Zone Off Alaska; Shortraker/Rougheye Rockfish in the Aleutian Islands Subarea

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

ACTION: Prohibition of Retention.

SUMMARY: NMFS is prohibiting retention of shortraker/rougheye rockfish in the Aleutian Islands subarea of the Bering Sea and Aleutian Islands management area (BSAI). NMFS is requiring that catches of species in the shortraker/rougheye rockfish group in this area be treated in the same manner as prohibited species and discarded at sea with a minimum of injury. This action is necessary because the shortraker/rougheye 1997 initial total allowable catch (ITAC) in this area has been reached.

EFFECTIVE DATE: 1200 hrs, Alaska local time (A.l.t.), April 2, 1997, through 2400 hrs, A.l.t., December 31, 1997.

FOR FURTHER INFORMATION CONTACT: Andrew N. Smoker, 907-586-7228.

SUPPLEMENTARY INFORMATION: The groundfish fishery in the BSAI exclusive economic zone is managed by NMFS according to the Fishery Management Plan for the Groundfish Fishery of the Bering Sea and Aleutian Islands Area (FMP) prepared by the North Pacific Fishery Management Council under authority of the Magnuson-Stevens Fishery Conservation and Management Act. Fishing by U.S. vessels is governed by regulations implementing the FMP at subpart H of 50 CFR part 600 and 50 CFR part 679.

In accordance with § 679.20(c)(3)(iii), the 1997 ITAC of shortraker/rougheye rockfish in the Aleutian Islands subarea was established by the Final 1997

Harvest Specifications of Groundfish for the BSAI (62 FR 7168, February 18, 1997) as 797 metric tons. The Administrator, Alaska Region, NMFS (Regional Administrator), determined that the ITAC amount specified for shortraker/rougheye rockfish in the Aleutian Islands subarea was necessary as incidental catch to support other anticipated groundfish fisheries and, therefore, NMFS prohibited directed fishing effective February 12, 1997. The closure action was published in the Final 1997 Harvest Specifications document.

In accordance with § 679.20(d)(2), the Regional Administrator has determined that the 1997 ITAC for shortraker/rougheye rockfish in the Aleutian Islands subarea has been reached. Therefore, NMFS is requiring that further catches of shortraker/rougheye rockfish in the Aleutian Islands subarea be treated as prohibited species in accordance with § 679.21(b).

Classification

This action is required by § 679.20 and is exempt from review under E.O. 12866.

Authority: 16 U.S.C. 1801 *et seq.*

Dated: April 2, 1997.

Bruce Morehead,

Acting Director, Office of Sustainable Fisheries, National Marine Fisheries Service.
[FR Doc. 97-8858 Filed 4-12-97; 2:58 am]

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