DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

49 CFR Parts 216 and 238

[FRA Docket No. PCSS–1, Notice No. 7]

RIN 2130–AB48

Passenger Equipment Safety Standards

AGENCY: Federal Railroad Administration (FRA), Department of Transportation (DOT).

ACTION: Final rule; response to petitions for reconsideration.

SUMMARY: This document responds to certain of the petitions for reconsideration of FRA's May 12, 1999 final rule establishing comprehensive Federal safety standards for railroad passenger equipment. This document clarifies and amends the final rule.

EFFECTIVE DATE: The amendments to the final rule are effective June 24, 2002.

FOR FURTHER INFORMATION, CONTACT: Ronald Newman, Staff Director, Motive Power and Equipment Division, Office of Safety Assurance and Compliance, FRA, 1120 Vermont Avenue, Mail Stop 25, Washington, DC 20590 (telephone: 202–493–6300); Daniel Alpert, Trial Attorney, Office of Chief Counsel, FRA, 1120 Vermont Avenue, Mail Stop 10, Washington, DC 20590 (telephone: 202–493–6026); or Thomas Herrmann, Trial Attorney, Office of Chief Counsel, FRA, 1120 Vermont Avenue, Mail Stop 10, Washington, DC 20590 (telephone: 202–493–6036).

SUPPLEMENTARY INFORMATION:

Background

On June 17, 1996, FRA published an Advance Notice of Proposed Rulemaking (ANPRM) concerning the establishment of comprehensive safety standards for railroad passenger equipment. *See* 61 FR 30672. The ANPRM provided background information on the need for such standards, offered preliminary ideas on approaching passenger safety issues, and presented questions on various passenger safety topics. Following consideration of comments received on the ANPRM and advice from FRA's Passenger Equipment Safety Standards Working Group (Working Group), FRA published a Notice of Proposed Rulemaking (NPRM) on September 23, 1997, to establish comprehensive safety standards for railroad passenger equipment. *See* 62 FR 49728. In addition to written comment on the NPRM, FRA also solicited oral comment at a public hearing held on November 21, 1997. FRA considered the comments received on the NPRM and advice from its Working Group in preparing a final rule establishing comprehensive safety standards for railroad passenger equipment, which was published on May 12, 1999. *See* 64 FR 25540.

Following publication of the final rule, parties filed petitions seeking FRA's reconsideration of requirements in the rule. These petitions principally related to the following subject areas: structural design; fire safety; training; inspection, testing, and maintenance; and movement of defective equipment. On July 3, 2000, FRA issued a response to the petitions for reconsideration concerning the final rule's requirements for the inspection, testing, and maintenance of passenger equipment, the movement of defective passenger equipment, and other related, miscellaneous provisions. *See* 65 FR 41284. FRA is hereby responding to all remaining issues raised in the petitions for reconsideration other than those issues concerning the fire safety portion of the final rule. This notice also clarifies the final rule in response to other issues and requests for interpretation that have arisen since publication of the rule. The amendments contained in this notice generally clarify requirements currently contained in the final rule or allow for greater flexibility in complying with the rule, and are within the scope of the issues and options discussed, considered, or raised in the NPRM. FRA will address the issues raised in the petitions for reconsideration concerning fire safety by separate notice in the **Federal Register**.

The specific issues and recommendations raised by the petitioners and FRA's response to those petitions are discussed in detail in the ''Section-by-Section Analysis'' portion of the preamble, below. The section-by-section analysis also contains a detailed discussion of each provision of the final rule which FRA has clarified or amended. This will enable the regulated community to more readily compare this document with the preamble discussions contained in both the final rule and the July 3, 2000 response document, and will thereby aid in understanding the requirements of the rule.

Section-by-Section Analysis

Amendments to 49 CFR Part 216

FRA is revising §§ 216.17 and 216.23 to correct typographical errors resulting from the final rule's amendments to part 216. These occurred when the phrase ''the FRA Regional Administrator'' was substituted throughout this part for the phrases ''the FRA Regional Director for Railroad Safety,'' ''the FRA Regional Director of Railroad Safety,'' ''a Regional Director,'' and ''the Regional Director.'' For a discussion of FRA's amendments to this section, *see* 64 FR 25575.

Amendments to 49 CFR Part 238

Subpart A—General

Section 238.1 Purpose and Scope

FRA has amended this section by restoring paragraphs (c)(1)–(3) of the May 12, 1999 final rule. *See* 64 FR 25661. These paragraphs were unintentionally omitted from the rule when FRA amended paragraph (c) in the July 3, 2000 petition for reconsideration response document. *See* 65 FR 41305.

Section 238.3 Applicability

Following publication of the final rule, an issue arose involving the circumstances in which a railroad may use the exclusion from the requirements of the rule applicable to ''tourist, scenic, historic, or excursion operations,'' as specified in paragraph (c)(3). The issue concerned whether a train consisting of new passenger equipment could be operated with passengers (principally business and government officials) for demonstration purposes without complying with the requirements of the rule. As FRA explained, such a train operation is subject to the requirements of the rule and does not fall under the exclusion in paragraph (c)(3). FRA is amending the definition of ''tourist, scenic, historic, or excursion operations'' in § 238.5 to clarify this point, as discussed below.

Section 238.5 Definitions

FRA is amending the definition of ''in service'' to make clear that passenger equipment is ''in service'' when it is in passenger or revenue service in the United States. See the discussion of § 238.201, below, for an explanation of this clarification. FRA has also made a conforming change to this definition by substituting section ''238.305(d)'' for section ''238.305(c)(5).'' Section 238.305(c)(5) was amended by the July 3, 2000 response to petitions for reconsideration. *See* 65 FR 41308.

FRA is amending the definition of ''MIL–STD–882C'' to remove the ''C'' designation. The final rule cited MIL–STD–882C as a formal safety methodology to guide railroads in identifying and then eliminating or reducing the risk posed by a hazard to an acceptable level. MIL–STD–882 was updated on February 10, 2000, and designated as MIL–STD–882D, superceding MIL–STD–882C. (FRA has

placed a copy of MIL–STD–882D in the public docket for this rulemaking.) This amendment makes clear that a railroad may use MIL–STD–882D.

FRA is removing the definition of ''monocoque'' and adding the new definition ''semi-monoque'' in its place. The term ''semi-monocoque''—not ''monocoque''—was expressly used in the final rule text. Further, the definition of ''monocoque'' in the final rule actually described a ''semi-monocoque'' structure by stating that the shell or skin acts as a single unit ''with the supporting frame'' to resist and transmit the loads acting on the structure. Reliance on the supporting frame to help resist and transmit loads–as opposed to resisting and transmitting loads on the shell or skin alone—makes a structure ''semi-monocoque,'' and FRA has clarified the rule accordingly.

FRA is amending the definition of ''tourist, scenic, historic, or excursion operations,'' as noted above. As defined in § 238.5 of the final rule, ''tourist, scenic, historic, or excursion operations'' means railroad operations that carry passengers, often using antiquated equipment, with the conveyance of the passengers to a particular destination not being the principal purpose.'' FRA recognizes that a train consisting of new passenger equipment that is operated for demonstration purposes is seemingly not conveying passengers to a particular destination as its principal purpose. However, the very usage of new passenger equipment, as opposed to antiquated equipment, and the clear business purposes of the train, distinguish such demonstration train operations from the class of train operations FRA intended to exclude from the requirements of the rule under § 238.3(c)(3). Any person wishing to operate such a demonstration train that does not comply with a requirement of the rule must file a request for a waiver and obtain FRA's approval on the waiver request prior to commencing the demonstration train's operation.

Section 238.15 Movement of Passenger Equipment With Power Brake Defects

FRA is modifying the requirements in paragraph (e)(2) that concern the movement of a passenger train with inoperative power brakes on the front or rear vehicle in instances where a handbrake on such a vehicle may not be accessible to a member of the train crew or may be located outside the interior of the vehicle. In the final rule, paragraph (e)(2)(ii) required that the train be operated at ''restricted speed not to exceed 20 mph,'' as one of the restrictions imposed on such movements. *See* 64 FR 25667. Following publication of the final rule, the National Railroad Passenger Corporation (Amtrak) raised the concern that the phrase ''restricted speed not to exceed 20 mph'' has a specific meaning which is different from simply stating that the ''speed . . . shall be restricted to 20 mph or less,'' as used in paragraph (d)(2)(ii). FRA did not intend that the speed restriction in paragraph (e)(2)(ii) be different than the one specified in paragraph (d)(2)(ii), and FRA believes that the way in which the speed restriction is stated in paragraph (d)(2)(ii) more accurately reflects FRA's intent. Consequently, for consistency and to avoid confusion, FRA has amended paragraph (e)(2)(ii) to state that the speed of the train shall be restricted to 20 mph or less.

Subpart B—Safety Planning and General Requirements

Section 238.105 Train Electronic Hardware and Software Safety

This section applies to electronic systems, subsystems and components used to control or monitor safety functions in passenger equipment ordered on or after September 8, 2000, and to such systems, subsystems and components implemented or materially modified in new or existing passenger equipment on or after September 9, 2002. Inclusion of these requirements in passenger equipment reflects the growing role of automated systems to control or monitor passenger train safety functions. For example, most new locomotives are controlled by microprocessors that respond to operator commands while making numerous automatic adjustments to locomotive systems to ensure efficient operation. FRA has renamed this section ''Train electronic hardware and software safety'' since the focus of this section is on electronic hardware and software—not on all hardware components as the term is generically used.

In its petition for reconsideration, the American Public Transportation Association (APTA) requested that the term ''materially modified'' be specifically defined for purposes of the application of this section. APTA suggested that hardware or software used to control or monitor safety functions in passenger equipment is ''materially modified'' in at least the following circumstances: when microprocessor-based hardware components are added; and when changes are made to existing microprocessor-based hardware components that provide the vehicle with a new safety-related capability, or safety-related functionality, or both. APTA cautioned that the definition should distinguish between software changes of a minor nature that have no safety impact and significant software changes, modifications, or upgrades that could have a safety impact. APTA believed that, through its requested clarifications to this section, railroads could implement minor software upgrades without triggering the full requirements of this section.

FRA agrees that hardware or software used to control or monitor safety functions in passenger equipment is ''materially modified'' when microprocessor-based hardware components are added to the passenger equipment, and when changes are made to existing microprocessor-based hardware components that provide the vehicle with a new safety-related capability, or safety-related functionality, or both. FRA also believes that the term encompasses significant software changes, modifications, or upgrades that could have a safety impact. For instance, revision of executive software has the potential to fundamentally affect the safety-relevant characteristics of a system. Although FRA does not suggest that every ''patch'' designed to address an error or vulnerability would subject a system to this section's requirements, significant revision of code that alters the basic logic or protocols of the system should prompt a safety review. When a review is required, a railroad must examine the safety risks resulting from a change to the hardware and software components used in monitoring or controlling safety functions, including new risks not previously present and existing risks whose nature is affected by the change.

FRA recognizes that the requirements of § 238.105 lend themselves best to the design, analysis, and testing of hardware and software components used to control or monitor safety functions in new passenger equipment. A formal safety program is necessary to ensure the compatibility and safety of all the various hardware and software components used to control or monitor safety functions in newly constructed equipment. FRA does not intend that the material modification of an existing hardware or software component used to control or monitor safety functions in passenger equipment result in the analysis and testing of all such components in the equipment to the same extent as if the equipment were newly constructed. To the extent risk can be partitioned through preliminary analysis, the focus of the analysis and testing required by a ''material modification'' is placed on the

materially modified component, the safe operation of the component in controlling or monitoring a safety function, and the compatibility of that component with the existing infrastructure, including whether the modification affects the safe operation of other components that control or monitor safety functions.

FRA notes that the issue APTA has raised is similar to one facing FRA in a rulemaking on Standards for Development and Use of Processor-Based Signal and Train Control Systems, published as an NPRM on August 10, 2001. *See* 66 FR 42352; Docket No. FRA–2001–10160. Through the rulemaking, FRA seeks to ensure the safety of processor-based signal and train control systems in light of rapid and significant changes in locomotive design. FRA is also examining the appropriate relationship between train control systems and locomotive control systems, such as those subject to the requirements of this section. Because the rulemaking is focused on the safety of electronic control systems, it may ultimately lead FRA to amend or clarify the requirements of this section of the Passenger Equipment Safety Standards for purposes of consistency. As a result, FRA expects to consider further the requirements of this section as a whole with the Working Group as part of the second phase of the Passenger Equipment Safety Standards rulemaking.

Following publication of the final rule, an issue was raised as to the application of § 238.105 to cab signal systems. Cab signal systems are governed by 49 CFR part 236 and are affected by the requirements of § 238.105 only to the extent they are commingled with other cab electronic systems (which currently should not be the case). The rulemaking on Standards for Development and Use of Processor-Based Signal and Train Control Systems is specifically devoted to the safety of processor-based signal and train control systems.

FRA also notes that General Electric Transportation Systems (GETS) has raised concern that strict compliance to the requirements of § 238.105 would result in a significant incremental change to the complexity, sophistication, and integrity required for all locomotive safety-related systems which interface with or include a microprocessor. GETS stated that § 238.105(d) of the final rule could be interpreted to mean that any computer involved in safety-related functions must be designed to be ''fail-safe'' or ''vital'' similar to the requirements applied to signal and train control systems in 49 CFR part 236. Further, GETS contended that because the definition of a ''safety-critical'' function includes a function that ''increases the risk of damage to passenger equipment,'' the requirements could be interpreted to mean that any microprocessor that may be utilized for reliability purposes alone must also be designed and implemented in a fail-safe manner. GETS stated that it has conducted a preliminary hazard analysis and functional fault tree on its Genesis locomotive microprocessor-based systems in accordance with the practices and criteria specified in Institute of Electrical and Electronics Engineers, Inc., (IEEE) Standard 1483, ''Standard for the Verification of Vital Functions in Processor-Based Systems Used in Rail Transit Control.'' GETS cited these as standard tools employed throughout the rail and transit industries for many years, and believed that they constitute an equivalent, alternate approach for applying a ''formal safety methodology'' to the hardware and software safety program specified in paragraph (b). GETS also noted that it has completed Failure Modes and Effects Analyses (FMEA's). GETS further stated that it has a comprehensive and robust process for designing, developing, and testing software used in safety-related applications. It explained that this process includes well-defined software design requirements, quality assurance practices, and exhaustive pre-revenue verification and validation testing. In addition, GETS stated that formal technical reviews are conducted as necessary at various phases in the software development program including during development of the software specifications, the software design document, the software test plan, and as part of the line-by-line code review. According to GETS, these software design, development, and verification and validation practices have produced highly reliable microprocessor-based systems that have proven to be safe and effective with hundreds of P42 locomotive-years and over 100 million miles in revenue service. GETS suggested that consideration be given to accepting the current, proven microprocessor-based systems as implemented, and limiting the new requirements for software vitality to the next generation or the introduction of new technology train control systems, consistent with the rulemaking on Standards for Development and Use of Processor-Based Signal and Train Control Systems.

As stated in the final rule, paragraph (c) provided in part that software that controls or monitors safety functions be considered safety-critical unless a completely redundant, failsafe, non-software means ensuring the same function is provided. Paragraph (d) required that hardware and software that controls or monitors passenger equipment safety functions include design feature(s) that result in a safe condition in the event of a hardware or software failure. *See* 64 FR 25671. FRA is aware of specific electronic system failures that have occurred on passenger and freight locomotives that have presented safety concerns. As manufacturers intensify use of commercial off-the-shelf operating systems and attempt greater integration of on-board functions (including eventually train control), the potential for uncovered hazards will increase unless action is taken to ensure greater rigor in safety analysis and testing before products are brought to market.

However, on reconsideration, FRA agrees that this language is unnecessarily broad in requiring that all hardware and software that controls or monitors passenger equipment safety functions in effect be designed to fail safely in the event of a hardware or software failure. Consequently, FRA has amended this section by deleting the first sentence in paragraph (c) and by amending paragraph (d) to focus the requirement for vitality or functional redundancy on two key systems. First, hardware and software that controls or monitors a train's primary braking system shall fail safely by initiating a full service brake application in the event of a hardware or software failure; or access to direct manual control of the primary braking system (both service and emergency braking) shall be provided to the engineer. In the preamble to the final rule, FRA explicitly stated that in the case of primary braking systems, electronic controls must either fail safely (resulting in a full service brake application) or access to full pneumatic control must be provided. *See* 64 FR 25591. Second, hardware and software that controls or monitors the electronic ability to shut down the main power and fuel intake system shall either fail safely by shutting down the main power and intake of fuel in the event of an uncovered system failure; or the ability to shut down the main power and fuel intake system by non-electronic means shall be provided to the train crew. FRA desires that the train crew have the ability to shut down the main power and fuel intake system in the event of

a collision, derailment, or fire, in particular, to mitigate the consequences of such occurrences. This has long been identified as a safety requirement for fossil-fuel locomotives. *See* 49 CFR § 229.93. Obviously, it may also be critical to be able to reduce power to avoid or mitigate the seriousness of an accident to begin with, regardless of the type of motive power.

FRA notes for clarity that the reference to reliability in paragraph (c), which is retained from the final rule, arises only within the context of systems that control or monitor safety functions, as stated in the initial text of the section. It is important that such systems be available and function as intended, since otherwise they may be circumvented out of expediency. FRA does not intend to address reliability of electronic systems except in this context.

As a separate matter, FRA notes that it has amended paragraph (c) to add the phrase ''hardware and software'' where the word ''software'' previously was written. As paragraph (c) concerns the requirements of a hardware and software safety program, and the software and hardware work as a system, both components of the system should logically be identified together. This arises out of the nature of the systems and merely clarifies the intent of the final rule. FRA has made a similar change to paragraph (b).

Finally, with respect to GETS's suggestion to use IEEE 1483 as a formal safety methodology for purposes of complying with the hardware and software safety program requirements, FRA notes that this IEEE consensus standard developed by the rail transit industry focuses principally on the verification process, which is only an element of the entire hardware and software safety program described in paragraph (b) and required by paragraph (a). As a general matter, IEEE 1483 does not address safety validation; the definition of requirements for safe operation; hazard severity and frequency assessment; hazard causes, effects and resolutions; or system and development design. While use of IEEE 1483 is appropriate for purposes of hardware and software safety verification, its use alone is not sufficient for purposes of complying with the hardware and software safety program requirements in this section. Nonetheless, the steps GETS has described to provide for hardware and software safety in its P42 locomotives indicate that GETS is in at least substantial compliance with the requirements of this section. GETS specifically cited performing failure modes and effects criticality analyses, as well as validation and verification testing—all elements of the hardware and software safety program.

Section 238.109 Training, Qualification, and Designation Program

FRA is amending paragraph (b)(6) to make clear that a railroad may offer to its employees and contractors the option of taking an oral examination—instead of a written examination—covering the equipment and tasks for which they are responsible. As originally promulgated, paragraph (b)(6) stated that such contractors and employees were required to pass a written examination. However, in the preamble to the final rule, FRA explained that paragraph (b) ''requires that employees pass either a written or oral examination.'' *See* 64 FR 25593. Consistent with the preamble discussion, FRA did not intend to restrict a railroad from offering oral examinations to its employees and contractors. Consequently, FRA has amended paragraph (b)(6) of this section to effectuate this intent.

Section 238.111 Pre-Revenue Service Acceptance Testing Plan

This section provides requirements for pre-revenue service testing of passenger equipment and relates to subpart G, which describes requirements for the procurement of Tier II passenger equipment and for a major upgrade or introduction of new technology that could affect a Tier II passenger equipment safety system.

In its petition for reconsideration, Amtrak noted that § 213.345 of the Track Safety Standards already contains an approval process for equipment qualification testing, and that §§ 238.21 and 238.111 require the submission of test plans for FRA approval in the case of Tier II passenger equipment. Amtrak believed that the requirement to submit and obtain approval of pre-revenue service acceptance testing plans could substantially delay equipment testing.

FRA has explained that it desires closer monitoring of Tier II passenger equipment because of safety concerns associated with the higher speeds at which this equipment will travel. Although closer monitoring may lengthen the testing process for this equipment, FRA believes that safety is better and more efficiently promoted by identifying safety concerns prior to placing the equipment in passenger service. While the Track Safety Standards focus on track/vehicle interaction, the plan required by this section permits a broader examination of the equipment's safety. Accordingly, FRA does not believe that a modification of the final rule is warranted. Of course, FRA will reasonably enforce the requirements for submission and approval of test plans. For instance, FRA notes that § 238.111(b)(2) requires that a copy of a test plan be submitted to FRA at least 30 days prior to conducting the testing. This 30-day period is for the benefit of FRA to allow sufficient time to review the test plan and arrange for FRA to witness the testing, as necessary. In some cases the approval, coordination, and testing may be able to be accomplished in less than 30 days.

Section 238.113 Emergency Window Exits

In its petition for reconsideration, APTA requested clarification of four issues concerning this section. First, APTA requested that FRA clarify the meaning of ''main level'' as applied to gallery-type cars such as those operated by the Northeast Illinois Regional Commuter Railroad Corporation (Metra). APTA stated that approximately 30% of the seating capacity of these gallery cars is located in four separate gallery areas. APTA asked whether each of these galleries is a main level, or whether only the lower level of the car—containing 70% of the seating—is a main level. APTA stated that Metra would equip gallery areas with emergency window exits as they buy new cars and as they overhaul existing cars but could not add emergency windows to gallery areas by November 8, 1999.

FRA recognizes that the term ''main level'' was not defined in the final rule. Nor did FRA intend to define ''main level'' strictly based on a percentage of passenger car seating capacity. FRA's use of the term ''main level'' was intended to exclude from the requirements of this section a level of a car that is principally used for passage between the door exits and passenger seating areas, or between passenger seating areas. Such an area is not principally used for seating and includes a stairwell landing between the two main levels of a conventional ''bi-level'' car. A conventional bi-level car has two main levels—an upper and a lower level—that are principally used for passenger seating.

As FRA understands, the Metra cars referenced by APTA are equipped with eight emergency window exits. Four emergency window exits are located on each main level. The four separate gallery areas are located on the upper level of the cars; one gallery area is located on each side of each end of the cars; and each gallery area has one emergency window exit. On this basis, FRA makes clear that the Metra cars are

in compliance with paragraph (a) of this section.

Second, APTA requested that the rule not require emergency window exits to be placed at the ends of a passenger car if staggering the window exits is not practical. APTA believed that, since windows at car ends are more likely to be damaged and rendered unusable in a collision, the rule should provide railroads the flexibility to place window exits at the locations that will most effectively allow for passengers to exit a car in an emergency.

FRA agrees that emergency window exits need to be distributed throughout a passenger car so as to maximize passenger egress in a life-threatening situation. As the discussion in the final rule explains, safety is advanced by staggering the configuration of emergency window exits—instead of placing the exits directly across from each other on opposite sides of the car—and distributing the window exits as uniformly as practical throughout the car. *See* 64 FR 25596. For a main level of a typical passenger car, this can be conceptualized as follows: Divide the car longitudinally into four equal quadrants from the forward (A) end to the rear (B) end; number the quadrants one through four, running from the A end to the B end; place one window in each quadrant; and locate the windows in the first and third quadrants on the opposite side of the car from the windows in the second and fourth quadrants. This represents the optimal placement of emergency window exits on a main level of a typical passenger car, and is required by paragraph (a)(1) where practical. Yet, as FRA noted in the final rule, other considerations may be taken into account, including the need to provide an unobstructed exit without diminishing normal seating capacity. As a result, where staggering is not practical, paragraph (a)(1) would allow the emergency window exits to be placed on opposite sides of the car, directly across from one another, provided at least two emergency window exits are located in each end of the car.

FRA reiterates that use of the term ''in each end'' in paragraph (a)(1) refers to the forward and rear ends of a car as divided longitudinally by its center. This term does not literally refer to the extreme forward and rear ends of a passenger car, nor does it require that emergency window exits be placed at the extreme ends of a car. FRA also reiterates that railroads should be mindful that if the ends of a car crush in a collision, the window exits located at the car's ends may be rendered inoperable. FRA makes clear that paragraph (a)(1) does not require emergency window exits to be placed at the extreme ends of a passenger car.

Third, APTA requested that FRA clarify the meaning of ''unobstructed opening'' in paragraph (b). APTA suggested that an opening is obstructed only if an obstacle prevents or significantly delays the removal of a window, noting that seats and seat backs can help in an evacuation by providing passengers a surface to stand on and hold as they pass through the window. APTA also mentioned that some of the larger emergency window exits weigh more than fifty pounds, and that seat backs provide a surface on which to place these windows safely. Amtrak, in its petition for reconsideration, similarly requested that the term ''unobstructed opening'' be defined to make clear that items such as seat backs that project in front of the window but do not prevent removal of the emergency window do not violate the requirements of this section. Amtrak stated that, since the purpose of this section is to ensure ready access to and easy removal of the windows, objects such as seat backs should be allowed in front of the window opening so long as they do not impair access to and rapid and easy removal of the window in an emergency.

FRA notes that the NTSB, in commenting on the NPRM, stated that emergency window exit dimensions should be based on the dimensions needed: (1) To extricate an injured person from the passenger car; and (2) to allow an emergency responder fitted with a self-contained breathing apparatus to enter the passenger car. *See* 64 FR 25595. FRA agreed with the NTSB and paragraph (b) of the final rule reflects these considerations. The size of the emergency window exit opening cannot be determined solely on the dimensions needed for an able-bodied passenger to exit through a window. Although FRA recognizes that use of a seat back may facilitate the escape of able-bodied passengers through a window, the same seat back may impair the removal of an injured person from the car or block an emergency responder fitted with a self-contained breathing apparatus from entering through the window. Further, the requirements of paragraph (b) only apply to new passenger cars and only require that four windows on each main level be emergency window exits subject to this section's requirements. In consideration of APTA's and Amtrak's concerns, however, FRA is amending the paragraph to make clear that a seat back does not obstruct an emergency window exit opening if the seat back can be moved away from the opening's clearance without requiring the use of a tool or other implement. As a result, a seat back that can be manually reclined away from the minimum required 26-inch by 24-inch emergency window exit opening would not obstruct the opening for purposes of this paragraph.

Finally, APTA requested that FRA clarify the meaning of ''rapid and easy removal'' in paragraph (a)(3). APTA asked if this paragraph requires that the window be designed to permit rapid and easy removal from not only the inside of a passenger car but also from the outside of the car as well. FRA is amending the paragraph to make clear that the emergency window exits required by this section need only be designed to permit rapid and easy removal from the inside of the car without requiring the use of a tool or other implement. As paragraph (a) applies to both new and existing passenger cars, FRA did not intend to require a retrofit of existing passenger cars so that the windows could also be accessed by emergency responders from the outside without requiring the use of a tool or other implement. Nevertheless, pursuant to 49 CFR 223.9(d), each window intended for emergency access by emergency responders for extricating passengers from both new and existing passenger cars must be clearly marked and have clear and understandable instructions posted for its use. In Phase II of this rulemaking FRA will examine with the Working Group the need for requirements concerning the ease of removing passenger car windows from the outside of the car, taking into consideration potential issues and concerns such as the unintentional dislodgement of the windows. FRA does note that, pursuant to § 238.235(b), each powered, exterior side door on a new passenger car must be equipped with a manual override that is designed and maintained so that a person may access the override device from both inside and outside the car without requiring the use of a tool or other implement.

In the final rule, FRA reserved paragraph (c) for emergency window exit marking and operating instruction requirements, which were specified in the Passenger Train Emergency Preparedness final rule, *see* 63 FR 24630. FRA noted that in Phase II of the rulemaking FRA will consider integrating into part 238 the emergency window exit marking and operating instruction requirements specified in the Passenger Train Emergency Preparedness final rule, as well as consider revising the requirements as necessary. While FRA still intends to examine these requirements in Phase II,

FRA has in the interim inserted a reference to the marking and instruction requirements specified in the Passenger Train Emergency Preparedness final rule to make clear that there are marking and instruction requirements and identify where to locate these requirements.

Subpart C–Specific Requirements for Tier I Passenger Equipment

Section 238.201 Scope/Alternative Compliance

Subpart C contains specific requirements for railroad passenger equipment operating at speeds not exceeding 125 mph. In general, except for the static end strength requirements (§ 238.203) and as otherwise provided in this subpart, the requirements of subpart C apply only to passenger equipment ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002.

Following publication of the final rule, a passenger car builder asked FRA at what point would a railcar, having undergone extensive rebuilding, be considered new and therefore subject to the requirements for new passenger equipment in subpart C. The builder explained that it has torn down and rebuilt passenger cars using all new materials except for their underframes and trucks. FRA makes clear that when a passenger car is torn down to its underframe and rebuilt, the requirements of subpart C do not apply unless otherwise specified (such as in § 238.203). FRA considered the extent to which subpart C should apply to rebuilt passenger cars and generally decided against applying the requirements of the subpart to such rebuilt equipment. *See* 64 FR 25601–2; see also the discussion of the definition ''ordered'' in § 238.5 (64 FR 25577). Nonetheless, FRA has applied specific requirements of the rule to rebuilt equipment, such as the fire safety requirements in subpart B for materials placed in a passenger car during a rebuild (see § 238.103(a)(2)). FRA notes that the builder's question does highlight the concern that even when a car is torn down to its underframe and could be fitted with new or improved structural features, the rule generally does not require that it be done. FRA will examine this concern further in Phase II of the rulemaking.

The builder also asked FRA about the meaning of the term ''placed in service for the first time,'' which is used throughout rule—not only in subpart C—and its effect for purposes of equipment that has previously been placed in service in Canada or another country. FRA makes clear that the necessary implication of the term ''placed in service for the first time'' is that the equipment is placed in service for the first time in the United States. For example, where a requirement applies to passenger equipment placed in service for the first time on or after September 9, 2002, and the railroad desires to purchase passenger equipment operating in a foreign country, that equipment will be considered placed in service for the first time on or after September 9, 2002, if it is placed in service in the United States for the first time on or after this date. Consequently, the equipment will be subject to the requirements of the rule applicable to passenger equipment placed in service for the first time on or after September 9, 2002. As noted above, FRA has amended the definition of ''In service'' in § 238.5 to make this clear. Overall, this clarification is consistent with the pre-revenue service acceptance testing plan requirements in § 238.111, which distinguish between passenger equipment that has previously been used in revenue service in the United States, and that equipment which has not.

Similarly, for purposes of the presumption in § 238.203(b) that passenger equipment placed in service before November 8, 1999, is presumed to comply with the 800,000-pound static end strength requirement in § 238.203(a), the presumption only applies to passenger equipment placed in service in the United States prior to November 8, 1999. The builder had asked whether this presumption applied to passenger equipment operating in Canada prior to this date, and FRA makes clear that it does not. However, FRA believes that typical Canadian passenger equipment would meet the requirements of § 238.203(a).

FRA is only amending § 238.201 to correct a typographical error in paragraph (a)(2). The reference to § 238.203 in paragraph (a)(2) of the final rule was incorrectly stated as ''§ 238.203B.''

Section 238.203 Static End Strength

This section contains the requirements for the overall compressive strength of all Tier I rail passenger equipment, except for equipment meeting the requirements of § 238.201.

In the final rule, FRA included paragraphs (d) through (f) to provide a formalized process for seeking grandfathering approval of passenger equipment in use on a rail line or lines on November 8, 1999, not meeting the minimum static end strength requirements. These paragraphs set forth the content requirements for a petition, service of a petition, and commenting on a petition, as well as the process FRA follows in acting on a petition. FRA notes that, subsequent to the final rule, § 238.203(g) was amended by a December 16, 1999 final rule that revised docket filing procedures for FRA rulemaking and adjudicatory dockets. *See* 64 FR 70193. Yet, the amendments to § 238.203(g) only concerned the procedures for filing comments by interested parties.

In its petition for reconsideration, Amtrak believed that paragraph (h)(1) provided that a hearing must be conducted in connection with all petitions; that this would deviate from the standard specified in FRA's rules of practice at 49 CFR 211.25(a) for convening a hearing; and that no need exists to deviate from this practice. Paragraph (h)(1) provided that FRA will conduct a hearing on a grandfathering petition in accordance with 49 CFR 211.25, which, among other things, states that a hearing will be held if required by statute or the Administrator finds it necessary or desirable. In the case of a petition for grandfathering, a hearing is not required by statute. Consequently, in reading these two sections together, paragraph (h)(1) would not require that a hearing be held on every petition for grandfathering. Nonetheless, FRA has amended the rule to make clear that a hearing will be held on a petition for grandfathering only if the FRA Administrator finds it necessary or desirable.

Further, Amtrak stated that it may be appropriate for the scope of the potential grandfathering of passenger equipment to be modified to permit use of the grandfathered equipment for detour or other emergency operations on a rail line or lines other than the one or ones specifically approved for use without the necessity of a formal waiver being obtained in such an instance. FRA does not agree that the rule should provide such general flexibility to a railroad, as the rule is structured to address the safety of the equipment on a specific rail line or lines. The grandfathering petition may of course address this situation by specifying potential rail lines the equipment may need to use in detour or emergency situations and by seeking approval for use of these rail lines in accordance with the requirements of paragraph (d). Otherwise, FRA will address such a situation on a case-by-case basis.

Finally, Amtrak stated that there is no apparent reason to specify that approved grandfathering petitions are subject to reopening per paragraph (h)(2). The rule provides for the

reopening of approved grandfathering petitions for cause stated so that FRA may retain oversight of grandfathered equipment. For instance, the facts or circumstances underlying the approval of a grandfathering petition may change over time and bring into question whether usage of the equipment continues to be in the public interest and consistent with railroad safety. Paragraph (h)(2) remains unchanged.

As a final matter, for a discussion of the application of the presumption in paragraph (b) to passenger equipment in service in a foreign country before November 8, 1999, see the discussion of § 238.201, above.

Section 238.205 Anti-Climbing Mechanism

This section contains the vertical strength requirements for anti-climbing mechanisms on rail passenger equipment. As stated in the final rule text, paragraph (a) applies to all passenger equipment placed in service for the first time on or after September 8, 2000. 64 FR 25675. However, the section-by-section analysis to the final rule incorrectly stated that paragraph (a) applied to all passenger equipment placed in service for the first time on or after November 8, 1999. 64 FR 25604. FRA makes clear that the September 8, 2000 applicability date as stated in the final rule text is correct.

In its petition for reconsideration of the final rule, APTA asked FRA to reconsider the requirement in paragraph (b) that the forward end of a locomotive ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, be equipped with an anti-climbing mechanism capable of resisting an upward or downward vertical force of 200,000 pounds without failure. FRA had explained in the preamble to the final rule that specifying a vertical load resistance requirement for lead vehicles (locomotives) that is greater than that for coupled vehicles is needed to address the greater tendency for override in a collision between uncoupled vehicles. *See* 64 FR 25604. However, FRA recognized that implementing this anti-climbing requirement in the leading structure of cab cars and MU locomotives presented a significant challenge.

In its petition, APTA stated that no car builder had been able to find a means of constructing a cab car or an MU locomotive meeting the anti-climbing requirement in paragraph (b). APTA explained that, due to dissimilar structures on the leading ends of a cab car and an MU locomotive on the one hand, and a conventional locomotive on the other, it is not possible to apply the load in the same manner on these structures. APTA contended that the final rule should not define requirements beyond what has proven to be achievable, and recommended that the current industry practice for anti-climbing mechanisms at the leading ends of cab cars and MU locomotives be retained, *i.e,* the strength requirements provided in paragraph (a).

In a letter to APTA dated September 24, 1999, FRA announced that it would amend the rule to extend paragraph (b)'s compliance dates forward by one year and encouraged APTA to work with equipment builders to identify appropriate design criteria for cab car and MU locomotive anti-climbers within this additional one-year period. (A copy of this letter has been placed in the public docket for this rulemaking.) FRA agreed that the industry needed additional time to perfect practicable designs to meet the requirements of paragraph (b), but was concerned with excluding cab cars and MU locomotives from the requirement. If anything, the need for the requirement is greater in preventing injury in the context of passenger-occupied locomotives (cab cars and MU locomotives), where the engineer is located far forward in the vehicle.

By letter dated November 21, 2000, APTA informed FRA of its progress in achieving a practical design standard. (A copy of this letter has been placed in the public docket for this rulemaking.) APTA explained that at least three car builders proposed strengthening the forward car body structure that supports the coupler, in order to withstand the required vertical loads. APTA stated that Bombardier had proposed meeting this requirement in building MU locomotives for the Long Island Railroad by designing the car body structure to resist an ultimate load of 200,000 pounds applied upward on the buffer beam and downward on the coupler carrier. APTA sought FRA's concurrence on this design approach, maintaining that the approach is consistent with the loading requirements that have traditionally been used to meet a 100,000-pound (to yield) anti-climbing requirement. APTA stated that the industry currently has no other viable options for anti-climbing mechanism designs for cab cars and MU locomotives that would meet the requirements of paragraph (b), and that these vehicles do not lend themselves to the shelf-type anti-climbing mechanisms used on conventional locomotives.

In a letter to APTA dated February 2, 2001, FRA explained that the intent of paragraph (b) was not to focus on strengthening a locomotive's draft arrangement, and therefore FRA could not agree that APTA's approach complied with paragraph (b). (A copy of this letter has been placed in the public docket for this rulemaking.) FRA's intent has been to encourage the use of anti-climbing mechanisms that help to prevent (1) debris from rising toward the cab and passenger compartments in the case of a highway-rail collision and (2) insofar as reasonably possible, any vertical disengagement that could reduce the effectiveness of collision and corner post arrangements (and consequent telescoping) in the case of collisions with other rail equipment. FRA intended to incorporate a feature of Association of American Railroads (AAR) Standard (S) 580 that appeared to be helpful in this regard (along with the requirements for improved collision posts and ½-inch or equivalent steel skin protecting the forward end structure). Conventional freight and passenger locomotives have generally implemented this requirement through use of a horizontal shelf arrangement that protrudes forward of the locomotive. In order to be effective, such an anti-climbing mechanism must be situated on the front of the vehicle in such a way as to encourage capture of the object in danger of rising and be strong enough to contain its rise. Ideally, such an arrangement would tend to interlock with the arrangement on the front of other rail vehicles. Certainly a coupler and drawbar can be helpful, but the capture surface of a coupler is narrow, and the chance of achieving coupling with another vehicle in higher force impacts is not high.

FRA continues to have confidence that incorporation of a separate anti-climbing mechanism on the front of cab cars and MU locomotives is both feasible and warranted. This conclusion is supported in part by successful efforts in rail equipment design internationally. Nonetheless, FRA has accepted the fact that for cab cars and MU locomotives implementation of effective anti-climbing arrangements that comply with paragraph (b) will, in at least some cases, require more elaborate redesign than initially contemplated by FRA. Considering the further work that will be required to develop compliant designs and evaluate their compatibility and effectiveness, FRA has modified the rule to exclude cab car and MU locomotives from the additional forward-end anti-climbing requirements in paragraph (b). Of course, cab car and MU locomotives will continue to be subject to the requirements of paragraph

(a). In Phase II of the rulemaking, FRA looks forward to restoring an appropriate requirement for cab car and MU locomotives, based on research results, continued input from APTA, and consultations with the Passenger Equipment Safety Standards Working Group as a whole.

As a final point, FRA has no objection if a railroad wishes to exceed the traditional minimum standard of 100,000 pounds for the anti-climbing capacity of the coupler carrier and buffer beam. However, FRA has amended paragraph (b) to remove the text stating that its requirements are ''in lieu of the forward end anti-climbing mechanism requirements described in paragraph (a) of this section.'' Because paragraph (a) states that certain tight-lock couplers satisfy the anti-climbing mechanism requirements, the reference to paragraph (a) in paragraph (b) could have led to the misunderstanding that increasing the strength of the coupler would satisfy the requirements of paragraph (b) without the need for a separate anti-climbing mechanism. FRA did not intend such a result. Nevertheless, FRA is not aware of any serious deficiency in the 100,000-pound draft securement requirement, given the function it has typically played in crossing and train-to-train collisions. Existing draft arrangements should be sufficient to prevent override in those cases where coupler engagement is sufficient to arrest vertical movement (up to the strength of the coupler components and the drawbar itself).

Section 238.207 Link Between Coupling Mechanism and Car Body

This section contains the vertical strength requirements for the structure that links the coupling mechanism to the car body for passenger equipment. The purpose of these requirements is generally to avoid a premature failure of the draft system so that the anti-climbing mechanism will have an opportunity to engage. As stated in the final rule text, this section applies to all passenger equipment placed in service for the first time on or after September 8, 2000. 64 FR 25675. However, the section-by-section analysis to the final rule incorrectly stated that this section applied to all passenger equipment placed in service for the first time on or after November 8, 1999. 64 FR 25605. FRA makes clear that the September 8, 2000 applicability date as stated in the final rule text is correct.

Section 238.211 Collision Posts

This section contains the structural strength requirements for collision posts. As stated in the final rule text, paragraph (a) applies to all passenger equipment placed in service for the first time on or after September 8, 2000. 64 FR 25675. However, the section-by-section analysis to the final rule incorrectly stated that paragraph (a) applied to all passenger equipment placed in service for the first time on or after November 8, 1999. 64 FR 25605. FRA makes clear that the September 8, 2000 applicability date as stated in the final rule text is correct.

In its petition for reconsideration, APTA stated that FRA inadvertently changed the requirements of this section in the final rule contrary to FRA's intent and the Working Group's consensus. APTA maintained that consensus was reached for all passenger cars to have two full-height collision posts at each end, as well as not to require collision posts at the rear end of non-passenger carrying locomotives. APTA believed that paragraph (a)(1)(i), as stated in the final rule, would not require collision posts at both ends of any passenger equipment.

FRA has revised paragraph (a)(1) to make clear that collision posts are required at each end of passenger equipment, unless otherwise expressly excepted. In the NPRM, FRA had generally proposed that all passenger equipment have collision posts at each end, *see* 62 FR 49804, and the preamble to the final rule does not at all indicate that FRA had so radically departed from the NPRM as to limit the requirements for collision posts to only one end of passenger equipment. FRA believes that the final rule did require collision posts at each end. Nevertheless, FRA is clarifying the requirements of this section by adding the words ''at each end'' to paragraph (a)(1)(i) to remove any ambiguity.

Further, FRA has generally adopted APTA's request to amend this section to exempt the rear end of non-passenger occupied locomotives from the collision post requirements. FRA acknowledges that in preparing the final rule it seemingly overlooked APTA's comment on the NPRM questioning the need for collision posts at the rear end of non-passenger occupied locomotives. In its comments on the NPRM, APTA stated that such collision posts could simply have the effect of adding weight to locomotives without providing any additional protection to the crew, and that no evidence had been presented that crewmembers of non-passenger carrying locomotives have been harmed by trailing passenger coaches overriding such locomotives from the rear. In addition, APTA had commented that passengers in a coach overriding the rear of a locomotive may be provided more protection by allowing the coach's collision posts to deform the rear of the locomotive, thereby absorbing and dissipating collision energy.

FRA has amended this section to provide that collision posts are not required at the rear end of a locomotive that is designed to be occupied only at its forward end. As a result, rear collision posts will continue to be required on an MU locomotive and a cab car, as well as on any locomotive designed to be occupied at the rear. In the case of a conventional passenger locomotive designed only to be occupied at its forward end, rear collision posts will not be required for Tier I operations at this time. Nevertheless, FRA notes that, in considering occupant protection strategies for such locomotives, the focus of any collision post requirement should be on the rear end of the locomotive cab-not the rear of the locomotive in its entirety-as provided for Tier II passenger equipment in § 238.411(b). (The locomotive cab is the volume normally occupied by the train crew in a locomotive.) As noted in the final rule, structural requirements for locomotives are also being considered in the Locomotive Crashworthiness Working Group of FRA's RSAC, and FRA expects further advances in locomotive crashworthiness safety to result from this separate proceeding.

Section 238.219 Truck-to-Car-Body Attachment

This section contains the truck-to-car-body attachment strength requirements for Tier I passenger equipment. The final rule required the attachment to resist without failure a 2g vertical force on the mass of the truck and a force of 250,000 pounds acting in any horizontal direction on the truck.

APTA, in its petition for reconsideration, stated that the requirement for the vertical and horizontal forces to be applied simultaneously on the truck (as explained in the preamble to the final rule) is not the industry practice and was never discussed at Working Group meetings. Accordingly, APTA believed that this requirement should not be included in the final rule without having input from the industry regarding its feasibility and impact. APTA stated that no truck-to-car-body attachments are designed to meet this requirement and cited potential operational and economic impacts that may result if any new equipment ordered would be incompatible with existing equipment as a result of this requirement. APTA disagreed with FRA's reasoning for this requirement, as

stated in the preamble to the final rule, that ''[r]equiring the truck-to-car-body attachment to resist the vertical and horizontal forces applied at the same time reflects actual conditions experienced during a collision or derailment.'' (See discussion of § 238.419, the Tier II counterpart to § 238.219, at 64 FR 25634.) APTA maintained that the industry has always applied these loads separately because each load case addresses a different scenario. According to APTA, the 2g load criterion is typically used to ensure that the truck remains with the car body when it is lifted and is not intended for a collision scenario; whereas, the 250,000-pound horizontal load requirement is the principal strength criterion that has historically been applied to passenger equipment to keep the truck with the car body in a collision scenario. To meet the latter criterion, APTA explained that the vertical reaction to the load must also be considered in the analysis to ensure that the truck does not separate vertically. APTA therefore recommended that FRA address this reaction instead of addressing the 2g vertical and 250,000-pound horizontal loads together.

Similarly, in discussing § 238.419 in its petition for reconsideration, Amtrak believed the final rule to be inconsistent with long-standing industry practice by requiring that the 2g vertical and 250,000-pound horizontal loads be applied simultaneously. Further, Bombardier raised concerns similar to APTA's and Amtrak's in discussing § 238.419 in its petition for reconsideration. Bombardier noted in particular that since the 2g vertical load criterion is intended to keep the truck safely attached to the car body when lifted, the criterion is typically based on yield strength rather than on ultimate strength.

FRA agrees with the petitioners that the 2g vertical load and the 250,000-pound horizontal load on the truck do not need to be resisted simultaneously, and FRA has amended the rule to make this clear. (FRA announced this decision in a letter to APTA dated February 2, 2001, noted above.) At the same time, FRA has amended the rule to state that the truck-to-car-body attachment must withstand the resulting vertical reaction to the applied 250,000-pound horizontal load. Consequently, FRA has adopted the petitioners' recommendations on reconsideration, except for Bombardier's point that the 2g vertical load resistance requirement be based on yield strength rather than on ultimate strength. Use of a yield strength criterion may result in a more stringent requirement than one based on ultimate strength.

Section 238.223 Locomotive Fuel Tanks

This section contains the structural requirements for external and internal fuel tanks on passenger locomotives ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002. The final rule required that external fuel tanks comply with the performance requirements contained in Appendix D to this part, or an industry standard providing at least an equivalent level of safety if approved by FRA's Associate Administrator for Safety under § 238.21. The requirements in Appendix D are based on AAR Recommended Practice-506 (RP–506), Performance Requirements for Diesel Electric Locomotive Fuel tanks, as adopted on July 1, 1995.

In its petition for reconsideration, APTA noted that RP–506 represents the first contemporary attempt to standardize fuel tank design for crash performance and that it was developed within the framework of conventional locomotive designs–*i.e.*, locomotives with a separate fuel tank suspended beneath the underframe and located relatively close to the rails between the trucks. According to APTA, the passenger rail community has since utilized RP–506 as the starting point for further development of a standard for passenger locomotive fuel tanks that: (1) Specifically addresses the needs of the various passenger-type locomotives and their operation, and (2) builds upon and complements RP–506 by encouraging the incorporation of additional safety-related enhancements such as increased height above the rail and compartmentalization. APTA stated that one of its own standards meets these goals: APTA SS–C&S–007–98, ''Standard for Fuel Tank Integrity for Non-Passenger Carrying Passenger Locomotives,'' and requested that FRA expressly allow the use of this standard as an alternative to RP–506.

Since the filing of its petition for reconsideration, APTA has petitioned FRA pursuant to § 238.21 for a finding that its fuel tank safety standard, designated as APTA S–007–98REV10, provides at least an equivalent level of safety to the requirements contained in this section. APTA's petition is identified as DOT docket number FRA–2001–8698; the petition and all documents in the docket are available for examination on the Internet at the DOT's Docket Management System Web site: http://dms.dot.gov. The proceedings on this petition will enable FRA to focus more closely on APTA's standard than in this response to petitions for reconsideration. For example, in examining how the APTA standard provides for safety and compares to the fuel tank requirements specified in this section, FRA is focusing on how the hazard of a jacknifed locomotive is addressed by the higher fuel tank ground clearance and other provisions of the APTA standard. Consequently, FRA has decided to deny APTA's petition for reconsideration request to modify the final rule to permit use of its fuel tank safety standard as an alternative to the requirements contained in this section. However, FRA makes clear that this denial in no way prejudices APTA's petition in docket number FRA–2001–8698. In fact, FRA is amending § 238.223 to better address petitions for special approval such as APTA's because the petition appears to encompass not only the external fuel tank safety standards specified in paragraph (a) but also the internal fuel tank safety standards specified in paragraph (b). As originally stated in the final rule, § 238.223 did not expressly provide the opportunity to seek special approval of an alternative, internal fuel tank safety standard. FRA is actively investigating the suitability of APTA's fuel tank safety standard and expects to render a decision soon on its petition.

Nonetheless, FRA notes that GETS has raised the concern that its Genesis P42 series locomotive fuel tank may not technically comply with § 238.223. GETS states that the fuel tank is an integral part of the car body structure; elevated a minimum of 29 inches above the rail even with fully worn wheels; divided into four separate compartments, each with a maximum capacity of approximately 550 gallons; equipped with a fuel fill and vent system that minimizes the potential for fuel spillage in any locomotive orientation; designed with sloping end plates to deflect debris down and away from the fuel tank, and a wall thickness providing puncture resistance in excess of the FRA standard. However, GETS believes that significant structural modification to the Genesis car body and fuel tank design will be required if FRA mandates strict compliance to all the requirements in Appendix D for external fuel tanks. According to GETS, these modifications would likely include eliminating the sloping end plate design of the fuel tank (a change which GETS believes would degrade overall fuel tank safety) and also require extensive internal structural modification to meet the loading

conditions originally intended for conventional, frame-suspended fuel tanks that have lower clearances above the rail. GETS believes that FRA approval of APTA's fuel tank safety standard would eliminate any compliance concerns, stating that the Genesis fuel tank meets or exceeds all provisions of APTA's fuel tank standard.

FRA recognizes that the Genesis locomotive fuel tank, as a fuel containment volume that is integral with a structural element of the locomotive not designed solely as a fuel container, would have met the definition of an ''integral'' fuel tank as proposed in the NPRM and seemingly complied with the requirements proposed for ''integral'' fuel tanks. *See* 62 FR 49793, 49805. However, as explained in the final rule, FRA removed the definition of ''integral fuel tank'' and instead specified requirements for ''internal'' and ''external'' fuel tanks to more clearly address FRA's safety concerns. See 64 FR 25611. Because the Genesis locomotive fuel tank extends outside the body structure of the locomotive, albeit to a significantly lesser degree than a conventional, frame-suspended fuel tank, the fuel tank is not ''internal'' and therefore subject to the requirements for ''external'' fuel tanks in the final rule. Although GE's concerns were not raised in a petition for reconsideration of the final rule, FRA will address them concurrently with FRA's response to APTA's petition for fuel tank safety equivalency.

FRA is amending the final rule to reconcile a discrepancy between the external and internal fuel tank safety standards. As stated in the final rule, paragraph (b)(3) provides in part that internal fuel tank bulkheads and skin shall at a minimum be equivalent to a 3/8-inch (6/16-inch) thick steel plate with a yield strength of 25,000 pounds per square inch. Following publication of the final rule, FRA compared this requirement with those for external fuel tanks in Appendix D, which states in part: ''(4) Load case 4-penetration resistance. The minimum thickness of the sides, bottom sheet and end plates of the fuel tank shall be equivalent to a 5/16-inch steel plate with a 25,000 pounds-per-square-inch yield strength . . . . The lower one third of the end plates shall have the equivalent penetration resistance . . . of a 3/4-inch steel plate with a 25,000 pounds-per-square-inch yield strength . . . .'' As a result, the final rule would have required that certain portions of an internal fuel tank be stronger (equivalent to a 6/16-inch steel plate) than similar portions of an external fuel tank (equivalent to a 5/16-inch steel plate). FRA did not intend that the internal fuel tank requirements be stricter in this regard. Consequently, FRA has amended § 238.223(b) to replace the 3/8-inch thickness requirement with a 5/16-inch thickness requirement to be consistent with Appendix D.

Finally, FRA notes that for purposes of advancing discussion in Phase II of the rulemaking FRA is concerned with fuel tanks on passenger equipment other than locomotives. Such fuel tanks may be found on head-end power generator cars, private cars, and express cars with engine-generator sets. Railroads should be mindful of the potential hazard posed by the presence of these fuel tanks in the event of a collision and derailment, and their contribution to fire. FRA will consider with the Working Group in Phase II whether to impose requirements on such fuel tanks.

Section 238.227 Suspension System

This section contains requirements for the suspension system performance of Tier I passenger equipment. FRA is explaining but not amending the requirements of the final rule.

In its petition for reconsideration, APTA requested that FRA recognize that most railroad passenger equipment experiences laterally oscillating trucks under some operating conditions and that most lateral oscillations are not hunting oscillations because they do not lead to a dangerous instability. APTA therefore asked FRA to clarify under what circumstances a lateral oscillation becomes a hunting oscillation for purposes of the rule.

In paragraph (a), the final rule defines hunting oscillations as lateral oscillations of trucks that could lead to a dangerous instability. FRA recognizes that this definition of hunting oscillations is less definitive than the one provided for Tier II passenger equipment in § 238.427(c), and in §§ 213.333 and 213.345 of the Track Safety Standards (49 CFR 213)-which is, ''a sustained cyclic oscillation of the truck which is evidenced by lateral accelerations in excess of 0.4g root mean square (mean-removed) for 2 seconds.'' Further, FRA recognizes that any instability could be dangerous under the right circumstances.

As noted in the preamble to the final rule, § 213.345 of the Track Safety Standards requires that train equipment operating at Class 6 track speeds and above (above 90 mph for passenger equipment and above 80 mph for freight equipment) be qualified for operation by meeting, among other things, the 0.4g root mean square requirement. *See* 64 FR 25612. In addition, § 213.333 of the Track Safety Standards requires that an instrumented car which is representative of the other equipment assigned to service on the railroad track be operated over the track at the revenue speed profile at least twice within every 60 days at Class 7 track speeds and above (above 110 mph), and that the lateral truck accelerations in the representative car must also not exceed the 0.4g root mean square requirement. *See* § 213.333(k).

In effect, the more specific hunting oscillation requirements of the Track Safety Standards apply to all Tier I passenger equipment operating at speeds greater than 90 mph, at least at the vehicle qualification stage. For Tier I passenger equipment operating at speeds not exceeding 90 mph, railroads are encouraged to follow as appropriate §§ 213.333 and 213.345 of the Track Safety Standards, as well as § 238.427(c) of the Passenger Equipment Safety Standards, for purposes of assuring compliance with § 238.227(a). Although railroad passenger equipment operating at speeds not exceeding 90 mph is not subject to any of these more specific provisions, demonstrating compliance with the 0.4g root mean square requirement will nonetheless demonstrate compliance with § 238.227(a). In general, FRA will evaluate whether hunting oscillations present a ''dangerous instability'' in light of these vehicle/track interaction criteria and general engineering knowledge and experience (*e.g.,* possibility of wheel climb). In Phase II of the rulemaking, FRA will investigate more fully the safety implications of various types of lateral oscillations. As a result, more detailed requirements may be specified concerning hunting oscillations for all Tier I passenger equipment, and revisions to the more specific requirements for Tier II passenger equipment may be possible as well.

Section 238.235 Doors

This section contains the requirements for exterior side doors on passenger cars. These doors are the primary means of egress from a passenger train.

Paragraph (a) requires that by December 31, 1999, each powered, exterior side door in a vestibule that is partitioned from the passenger compartment of a passenger car shall have a manual override device that is: capable of releasing the door to permit it to be opened without power from inside the car; located adjacent to the door which it controls; and designed and maintained so that a person may

readily access and operate the override device from inside the car without requiring the use of a tool or other implement. Passenger cars subject to this requirement that were not already equipped with such manual override devices were required to be retrofitted accordingly.

In its petition for reconsideration, APTA explained that during Working Group meetings it had pointed out that certain passenger cars have quarter-point, dual-leafed door arrangements. According to APTA, each of these side door locations is equipped with a manual override device for one of the two door leafs, and each door leaf exceeds the dimensional requirements for an emergency door. APTA therefore requested that FRA clarify the rule to avoid requiring that each door leaf be equipped with a manual override device.

FRA has decided that, in the case of dual-leafed doors and solely for purposes of the retrofit requirement in paragraph (a), only one door leaf of a dual-leafed door arrangement be required to respond to a manual override device by December 31, 1999. FRA previously informed APTA of this decision and is now amending paragraph (a) accordingly. Yet, FRA recognizes the limitation on emergency egress capacity through the route of the single panel that is responsive to the manual release when the other door leaf is not open. As a result, for purposes of the permanent requirement applicable to new passenger cars in paragraph (b), each door leaf in such a dual-leafed arrangement must be capable of responding to a manual override device located adjacent to the door.

APTA's petition for reconsideration also raised concern with FRA's statement in the preamble to the May 12, 1999 final rule that a vestibule is not partitioned from the passenger compartment of a passenger car solely by the presence of a windscreen which extends no more than one-quarter of the width across the car from the wall to which it is attached. *See* 64 FR 25616. APTA stated that windscreens on some types of passenger cars extend one-third of the width across the car from the wall to which they are attached, and requested that FRA clarify the rule to acknowledge that these windscreens do not by themselves partition a passenger compartment from a vestibule.

FRA notes that the preamble language referenced by APTA was intended to address the concerns of railroads that windscreens not be considered partitions. FRA did not intend that windscreens constitute partitions where there is an open passageway that allows employees and passengers to move freely between the vestibule and passenger compartments. Consequently, FRA's statement in the preamble concerning windscreens was unnecessarily restrictive. FRA makes clear that the presence of windscreens or other structures that extend across a portion of the width of a passenger car do not ''partition'' the vestibule from the passenger compartment provided there is an open passageway allowing unobstructed movement between the vestibule and passenger compartments. There would not be a door between the vestibule and passenger compartments in such circumstances. Of course for purposes of the permanent requirement applicable to new passenger cars in paragraph (b) each powered, exterior side door must have a manual override device, even if the door is located in a vestibule that is not partitioned from the passenger compartment.

In the final rule, FRA reserved paragraph (d) for door exit marking and operating instruction requirements, which were specified in the Passenger Train Emergency Preparedness final rule, *see* 63 FR 24630. FRA intended in Phase II of the rulemaking to consider integrating into part 238 the door exit marking and operating instruction requirements specified in the Passenger Train Emergency Preparedness final rule, as well as consider revising the requirements as necessary. While FRA still intends to examine these requirements in Phase II, FRA has in the interim inserted a reference to the marking and instruction requirements specified in 49 CFR 239.107(a) to make clear that there are marking and instruction requirements and identify where to locate these requirements.

Section 238.237 Automated Monitoring

This section requires an operational alerter or a deadman control device in the controlling locomotive of each passenger train operating in other than cab signal, automatic train control, or automatic train stop territory on or after November 8, 1999. This section further requires that such locomotives ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, be equipped with a working alerter. As a result, it is prohibited to use a deadman control device alone on these new locomotives operating in other than cab signal, automatic train control, or automatic train stop territory.

In its petition for reconsideration, APTA requested that FRA narrow the application of the restrictions in paragraph (d) which applied, as written, if the alerter or deadman control fails en route.'' *See* 64 FR 25678. APTA explained that some controlling locomotives are equipped with both a deadman and an alerter, and stated that only if both features fail should the restrictions in paragraph (d) apply.

FRA believes that the application of the restrictions in paragraph (d) should be consistent with the requirements in paragraph (a) for having an alerter or deadman feature. As a result, if a locomotive is required to be equipped with either a working alerter or a deadman feature pursuant to paragraph (a), and the locomotive is in fact equipped with both devices, then the restrictions in paragraph (d) would not apply if only one of the devices fails en route. Of course, alerter and deadman control features are safety appurtenances which are required to be in proper condition and safe to operate under FRA's Railroad Locomotive Safety Standards. See 49 CFR 229.7. Further, these appurtenances are also subject to the requirements of the Locomotive Safety Standards in 49 CFR 229.9 that govern the movement for repair of a defective safety appurtenance. FRA recognizes that an alerter is preferable to a deadman feature as a safety device and will reexamine in Phase II of the rulemaking the continued allowance of deadman features in lieu of alerters under part 238.

In response to questions that have arisen since publication of the final rule, FRA is also amending this paragraph to clarify one of the remedial measure provisions. FRA makes clear that paragraph (d)(1)(i) requires a second person stationed in the locomotive cab as a remedial measure to be qualified on the signal system and trained to apply the emergency brake-not qualified on normal brake application procedures. FRA did not intend that this second person be required to be qualified on the brake application procedures in the way a locomotive engineer is qualified and certified under 49 CFR 240. This clarification will help avoid any further confusion and more appropriately express FRA's intent that the second person be required to know how to apply the emergency brake.

Subpart D—Inspection, Testing, and Maintenance Requirements for Tier I Passenger Equipment

Section 238.315 Class IA Brake Test

This section contains the requirements for performing Class IA brake tests. As stated in the final rule, paragraph (c) allows a Class I or Class IA brake test to be performed at a shop

or yard site without requiring that the test be repeated at the first passenger terminal if the train remains on air and in the custody of the crew. 64 FR 25683. Paragraph (c) is intended to be an incentive for railroads to conduct Class IA brake tests at shop or yard locations where they can be performed more safely and easily than at a passenger terminal. FRA is therefore amending paragraph (c) to allow a train crew to receive notice that a Class IA brake test has been performed, rather than require that the train crew actually have custody of the train during and after the performance of the test. To the extent FRA encourages Class IA brake tests to be performed at shop or yard locations (likely in advance of the time train crews normally report for duty) FRA recognizes that requiring train crews to have custody of the trains in these circumstances is seemingly a disincentive to performing the tests at shop or yard locations. Allowing the train crew to receive notice that a Class IA brake test has been performed, together with the requirement that the train remain on a source of compressed air, continues to ensure safety and is consistent with FRA's intent.

Additionally, following publication of the final rule FRA determined that the reference to a Class I brake test in paragraph (c) may cause confusion since subpart D contains specific requirements governing the performance of Class I brake tests and Class I brake tests must be performed by qualified maintenance persons presumably at shop or yard locations. As a result, FRA is amending paragraph (c) to remove the reference to a Class I brake test, consistent with the preamble discussion of this paragraph in the final rule which omits such reference as well. *See* 64 FR 25628.

FRA has also revised this section by clarifying the inspection requirement contained in paragraph (f)(3), which is particular to MU locomotives. FRA makes clear that for MU locomotives that utilize an electric signal to communicate a service brake application and only a pneumatic signal to propagate an emergency brake application, the emergency brake application shall be tested to determine that it functions as intended. As stated in the final rule, paragraph (f)(3) required that for all MU equipment the emergency brake application and the deadman pedal or other emergency control device be tested and be determined to function as intended. *Id.* However, on reconsideration FRA recognizes that imposing such a requirement on all MU locomotives during a Class IA brake test is unnecessary.

The intent of this provision is to ensure that an emergency brake application occurs in a train compromised of MU locomotives if an angle cock in the train is inadvertently closed. For certain MU locomotives an electric control wire or ''P'' wire is used to make service brake applications but the pneumatic train line is used for making emergency brake applications. If an angle cock is closed in a train made up of such MU locomotives, the engineer would be able to make regular service brake applications to slow or stop the train because the brake application signal is transmitted over the ''P'' wire. However, if the engineer attempts to apply the emergency brakes either through the engineer's control stand or the emergency dump valve, the signal to apply the emergency brakes would not travel beyond the closed angle cock. As a result, the engineer would not have full emergency braking ability.

For the majority of MU locomotives, paragraph (f)(3) is unnecessary because a ''P'' wire circuit is used to apply both the service and emergency brakes throughout the train. For such locomotives, the inspection requirement in paragraph (f)(2) to determine that each brake sets and releases during a service brake application effectively tests to ensure that the emergency brakes also apply as intended. Even if an angle cock is closed on a train comprised of such MU locomotives, the signal communicating the emergency brake application will bypass the closed angle cock since it travels on the ''P'' wire and not on the pneumatic brake line.

FRA has also removed the reference to the ''deadman pedal or other emergency control devices'' from paragraph (f)(3). This reference is not necessary since such devices typically initiate service brake applications—not emergency brake applications. Further, to the extent any such device would initiate an emergency brake application, testing of the emergency brake application is specially addressed in paragraph (f)(3) in those instances where it is necessary. For similar reasons, FRA is modifying § 238.317(d)(2), below, which is the Class II brake test counterpart to this paragraph.

Section 238.317 Class II brake test

FRA has revised this section by clarifying the inspection requirement contained in paragraph (d)(2), which is particular to MU locomotives. FRA makes clear that for MU locomotives that utilize an electric signal to communicate a service brake application and only a pneumatic signal to propagate an emergency brake application, the emergency brake application shall be tested to determine that it functions as intended. As stated in the final rule, paragraph (d)(2) required that for all MU equipment the emergency brake application and the deadman pedal or other emergency control device be tested and be determined to function as intended. *Id.* However, for effectively the same reasons discussed above for the Class IA brake test counterpart to this requirement in § 238.315(f)(3), FRA recognizes that imposing such a requirement on all MU equipment during a Class II brake test is unnecessary.

In performing a Class II brake test, paragraph (d)(1) requires that the railroad determine that the brakes on the rear unit of a train apply and release in response to a signal from the engineer's brake valve or controller of the leading or controlling unit, or a gauge at the rear of the train or in the cab of the rear unit indicates that brake pipe pressure changes are properly communicated at the rear of the train. For the majority of MU locomotives where a ''P'' wire circuit is used to apply both the service and emergency brakes throughout the train, paragraph (d)(2) is unnecessary because the inspection requirement in paragraph (d)(1) effectively tests the integrity of both the service and emergency brake application signals throughout the train. However, for those MU locomotives that use an electric control wire or ''P'' wire to make service brake applications but use the pneumatic train line for making emergency brake applications, the inspection requirement in paragraph (d)(1) is, by itself, insufficient to determine whether the emergency brakes will apply as intended. Hence, the need for this requirement.

Subpart E—Specific Requirements for Tier II Passenger Equipment

Section 238.411 Rear end structures of power car cabs

As stated in the final rule, the rear end structure of a power car cab provides protection to crewmembers from intrusion of locomotive machinery or trailing cars into the cab as a result of a collision or derailment. The requirements in this section are based on a specific end structure design that consists of two full-height corner posts (paragraph (a)) and two full-height collision posts (paragraph (b)). In addition, this section specifies loading requirements that each of these

structural members must withstand and permits flexibility for using other equipment designs that provide equivalent structural protection. The required rear end structural protection results in considerably greater protection to the train operator than that provided by previous passenger equipment designs. Together, the front and rear end structural protection required by this rule for a power car cab make the cab a highly survivable crash refuge.

In its petition for reconsideration, Bombardier raised concern that the 750,000-pound shear strength requirement for collision posts in paragraph (b)(1) of the final rule arose due to confusion between the loading requirements in the following sections: § 238.405(a) (longitudinal static compressive strength); § 238.409 (forward end structures of power car cabs); and § 238.411. Bombardier explained that, for Amtrak's high-speed trainsets, compliance with the 2,100,000-pound longitudinal static compressive strength requirement was met by applying the load at the vertical centerline of the underframe as follows: 300,000 pounds at each of the two front corner post locations, and 500,000 pounds at each of the three front collision post locations; 300,000 pounds at each of the two rear corner post locations, and 750,000 pounds at each of the two rear collision post locations. As such, the 750,000-pound force applied to the rear collision post locations was applied at the vertical centerline of the underframe-not at the shear connection at the top of the underframe-to demonstrate compliance with the longitudinal static compressive strength requirement in § 238.405(a).

Bombardier stated that the purpose of the rear collision and corner posts is to prevent intrusion into the cab from the rear. Bombardier noted that the total weight of all the components in the machinery compartment behind the power car cab is approximately 31,000 pounds and that these components are designed with an attachment strength to resist an 8g longitudinal load. According to Bombardier, to address the risk of incursion into the rear of the power car cab, the cab's rear collision posts were each designed to resist a shear load of 500,000 pounds at the joint with the underframe. Bombardier recommended that § 238.411(b)(1) be modified by substituting this 500,000-pound loading requirement for the 750,000-pound loading requirement for rear collision posts in the final rule.

FRA has adopted Bombardier's request and modified paragraph (b)(1) accordingly. (FRA has also made a corresponding change to figure 2 to subpart E.) FRA recognizes that the strength of the power car cab's rear collision posts should not necessarily be dependent on the strength of the cab's front end structure, as the front and rear end structures are intended to protect against somewhat different hazards. The front end structure must protect against the greater hazard of a head-on collision with another train or object.

Section 238.419 Truck-to-Car-Body and Truck Component Attachment

FRA has modified this section in response to petitions for reconsideration. See the discussion of the Tier I counterpart to this section at § 238.219, above.

Section 238.421 Glazing

This section contains the safety glazing requirements for Tier II passenger equipment exterior windows. FRA believes that the higher speed of Tier II passenger equipment necessitates more stringent glazing standards than those currently required by 49 CFR 223. Nonetheless, in response to comments on the NPRM, FRA decided to focus the final rule principally on more stringent safety glazing requirements for end-facing exterior windows as specified in paragraph (b), instead of all exterior windows. *See* 64 FR 25634. FRA did note, however, that well in advance of the final rule it had helped to develop the specifications for exterior window safety glazing of Amtrak's high-speed trainsets. FRA believes that these specifications provide excellent protection to the trainsets' occupants. As a result, FRA included the specifications as alternative standards in paragraph (c) for use by Amtrak in equipment ordered prior to May 12, 1999, with limitations on the replacement of windows.

Following publication of the final rule, Amtrak petitioned FRA for reconsideration of the safety glazing requirements. In particular, Amtrak noted that the provision for end-facing exterior glazing in paragraph (b)(1) required testing at an impact angle of 90 degrees to the window's surface; whereas, paragraph (c) required that each end-facing exterior window be tested at an impact angle equal to the angle between the window's surface as installed and the direction of travel. Amtrak stated that the requirement in paragraph (c) was consistent with the high-speed trainset specification and believed that complying with the requirement in paragraph (b) would likely require a thickening of the glazing which would protrude up to an inch outward from the otherwise streamlined surface of the power car. According to Amtrak, limiting the use of replacement windows conforming to paragraph (c) and ultimately compelling the use of windows conforming to paragraph (b) would thereby affect both the thermal and acoustic performance of its high-speed trainsets ordered prior to May 12, 1999.

FRA is amending paragraph (c) to make clear that use of the alternative safety glazing standards specified in that paragraph is available to passenger equipment ordered prior to May 12, 1999, for the life of the equipment. The only Tier II passenger equipment subject to the provisions of paragraph (c) are Amtrak's high-speed trainsets ordered prior to May 12, 1999. FRA recognizes that well in advance of the final rule the exterior windows in these trainsets were specially designed for the particular shape of the trainsets and that replacement windows should be of the same design. As amended, there is now no limitation on using replacement windows conforming to paragraph (c) in these trainsets.

Further, for passenger equipment not subject to the alternative standards specified in paragraph (c), FRA is also amending paragraph (b). As stated in the final rule, FRA had originally proposed that an end-facing exterior window resist an impact with a 12-pound steel sphere at an angle equal to the angle between the window's surface as installed and the direction of travel of the train. *See* 62 FR 49817. In response to comments on the proposal, FRA revised the rule text to require that the window glazing resist the impact with the 12-pound steel sphere at an impact angle of 90 degrees to the window's surface. *See* 64 FR 25634. However, upon reconsideration, FRA believes that this requirement was too strict. Although FRA agrees that specifying an impact angle of 90 degrees to the window's surface provides a uniform standard for production purposes, a point raised in comments on the NPRM, FRA recognizes that end-facing exterior windows on Tier II passenger equipment will likely be specially fitted for the design of this advanced equipment. Additionally, end-facing windows on power cars will be sloped away from the vertical plane to take advantage of aerodynamic designs and, therefore, any impact with the windows will likely occur at an angle less severe than 90 degrees to the surface of the windows.

Consequently, FRA has amended paragraph (b)(1) to provide that each end-facing exterior window in a passenger car and a power car cab, in the orientation in which the window is

installed in the car or cab, shall resist the impact of a 12-pound solid steel sphere traveling (i) at the maximum speed at which the car will operate (ii) at an angle no less severe than horizontal to the car, with no penetration or spall. In all cases, an impact angle that is perpendicular (90 degrees) to the window's surface shall be considered the most severe impact angle for purposes of this requirement. Performance testing may be conducted using an impact angle that is perpendicular to the window's surface, but is not required. FRA has also amended paragraph (c)(1) for clarity and consistency but does not intend the amended paragraph to be more stringent than paragraph (c)(1) in the May 12, 1999 final rule. Describing the impact angle as the ''angle between the window's surface as installed and the direction of travel,'' as stated in paragraph (c)(1) in the May 12, 1999 final rule, may be less clear than describing the impact angle in terms of an object traveling horizontal to the vehicle and striking the window in the orientation in which the window is installed in the vehicle.

In its petition for reconsideration, Amtrak also stated that the 0.001-inch witness plate requirement for demonstration of anti-spalling performance is inconsistent with the high-speed trainset specification. Amtrak stated that the high-speed trainset specification provided for the use of a 0.002-inch witness plate, and that the testing of the high-speed trainsets' windows is complete and would have to be repeated using a thinner witness plate. FRA had understood that the anti-spalling performance of the exterior window glazing on Amtrak's high-speed trainsets would be measured using a 0.001-inch witness plate, in accordance with a May 8, 1994 specification for the trainsets. A witness plate having a thickness of 0.002 inches was apparently used instead. FRA notes that the difference between the two witness plates is not as significant when compared to the 0.006-inch thick witness plate allowed by 49 CFR 223. Further, assuming that the window glazing on Amtrak's high-speed trainsets would not pass the performance testing requirements if a 0.001-inch witness plate were used, this too may require a thickening of the glazing that would affect the thermal and acoustic performance of the trainsets. As a result, for purposes of the standards in paragraph (c) for equipment ordered prior to May 12, 1999, FRA is amending paragraph (c)(3)(ii) to permit anti-spalling performance to be demonstrated by use of a 0.002-inch thick witness plate. FRA continues to believe that use of a 0.001-inch thick witness plate in paragraph (b)(2) is appropriate for equipment ordered on or after May 12, 1999. FRA is correcting paragraph (b)(2) principally because the word ''inch'' was inadvertently omitted from the paragraph.

As touched on above, in the final rule FRA decided not to impose on all Tier II passenger equipment the particular requirements for side-facing exterior window glazing which FRA had proposed in the NPRM. *See* 64 FR 25634–6. Instead, FRA required that Tier II power car cabs and passenger cars comply with either the existing side-facing exterior window glazing requirements specified in 49 CFR 223, or the alternative standards specified in paragraph (c), as appropriate. FRA included in the final rule's preamble the comments received on the proposed side-facing exterior window glazing standards for purposes of advancing the discussion of these standards in Phase II of the rulemaking. FRA also noted that certain of the comments FRA had received on the proposed standards addressed the sufficiency of the existing safety glazing standards for all passenger equipment-both Tier I and Tier II- and for freight equipment as well. In fact, in the ANPRM FRA had sought comment concerning the sufficiency of the existing safety glazing standards in part 223 for all equipment-both freight and passenger. *See* 61 FR 30696. Nonetheless, the Passenger Equipment Safety Standards Working Group was generally reluctant to address changes to part 223 in this proceeding because of the complexity of the issues in the rulemaking, the satisfaction with existing standards, and the need for coordination with freight interests not represented on the Working Group. *Id.*

FRA makes clear that it is concerned with the adequacy of the requirements of part 223 as they apply to both freight and passenger equipment, and these concerns need a fuller examination than has been done to date. FRA is therefore reiterating the principal concerns stated in the ANPRM-namely, that the witness plate used for testing under part 223 may be too thick, allowing spalling of pieces of glass large enough to cause injury; the impact test using a 24-pound cinder block is not repeatable; manufacturers of the window glazing or their products, or both, need to be certified (and, thereafter, periodically re-certified) by an independent testing laboratory; and the strength of the framing arrangement securing the glazing is not specified.

In particular, the cinder block test specified in part 223 has proven impractical and, now, unrepeatable because the block is no longer manufactured. To accomplish the test, a current block must be cut down in size and have material ground from its inner core to reduce the gross weight to meet the cinder block specifications. Moreover, no frangibility requirement is specified for the block or the strength of the material. In addition, each manufacturer that provides glazing materials for use in achieving compliance with part 223 must certify that each type of glazing material being supplied for this purpose has been successfully tested in accordance with the requirements of part 223 and that test verification data is available to the railroad or FRA on request. *See* 49 CFR 223, Appendix A, a(1). There is no requirement that the glazing products supplied to railroads be tested by an independent testing laboratory, and a glazing manufacturer's process of producing the glazing may have changed over time. FRA is also concerned that the glazing frame and gasket have sufficient strength to retain vehicle occupants in the event of a derailment or rollover. While the Passenger Equipment Safety Standards final rule does require securement of windows to resist both air pressure difference generated by passing trains and the impact forces the windows are required to withstand, *see* §§ 238.221(b) and 238.421(d), part 223 contains no such express requirements. FRA will reexamine the requirements of part 223 in Phase II of the rulemaking or through another appropriate forum.

As a separate matter, FRA also notes the concern for an appropriate ballistic impact test, as discussed in the preamble to the final rule. *See* 64 FR 25636. In the final rule, FRA deferred imposing new requirements for ballistic testing of exterior window glazing, except for purposes of the alternative glazing standards specified in paragraph (c). FRA will reexamine this issue in Phase II of the rulemaking or through another appropriate forum.

Section 238.423 Fuel tanks.

This section contains the requirements for Tier II passenger equipment fuel tanks. Since the requirements for internal fuel tanks on Tier II passenger equipment are the same as those for Tier I passenger equipment in § 238.223(b), FRA notes that it has modified the requirements of § 238.223(b). Please see the discussion of § 238.223(b), above.

Section 238.427 Suspension system.

Paragraph (b) *Car body accelerations.* As stated in the final rule, paragraph (b) required that the steady-state lateral acceleration of passenger cars be less than 0.1g, as measured parallel to the car floor inside the passenger compartment, under all operating conditions. In its petition for reconsideration, Bombardier stated that Amtrak's high-speed trainsets are designed to have a nominal steady-state lateral acceleration equal to 0.1g at nine inches of cant deficiency. Bombardier added that the actual operational cant deficiency will often be slightly higher than the nominal cant deficiency upon which the schedule is predicated due to allowable variations in operating speed, as well as in track cross level and curvature consistent with 49 CFR 213, and believed that under normal operating conditions it may be common for the 0.1g acceleration level to be exceeded on some curves. Bombardier maintained that the 0.1g limit was established by the passenger rail industry to describe ride quality and not set a safety threshold, stating that the 0.1g criterion is based on a historically developed, long-standing AAR comfort limit and that the AAR Ride Index Table classifies a steady-state lateral acceleration of up to 0.11g as merely ''perceptible.'' Bombardier acknowledged that at some magnitude lateral acceleration creates the potential for injuries to passengers, and noted that operations are conducted in Europe with a steady-state lateral acceleration of up to 0.15g. Bombardier stated that the lean test requirement for vehicles intended for high cant deficiency operation under FRA's Track Safety Standards defines the maximum car body floor angle with respect to the horizontal when the vehicle is standing on track with a uniform superelevation equal to the intended target cant deficiency; that this requirement is intended to ensure that the nominal steady-state acceleration does not exceed 0.1g at the intended target cant deficiency; and that compliance with the static lean test requirement in the Track Safety Standards better defines and fulfills the intent of the steady-state lateral acceleration requirement. Bombardier added that if FRA is to define a maximum allowable steady-state lateral acceleration criterion, the maximum limit should be applicable to all high cant deficiency operations for both Tier I and Tier II passenger equipment since the potential for passenger injury resulting from such accelerations would be the same regardless of the type of equipment.

Similarly Amtrak, in its petition for reconsideration, believed that a steady-state lateral acceleration limit of 0.1g for passenger cars is too strict as a Federal standard. Amtrak mentioned that it was providing passenger service in equipment with a steady-state lateral acceleration of 0.09g between New Haven and Boston without incident. Amtrak maintained, as Bombardier did, that FRA-sponsored research showed the discomfort level for ten percent of passenger car occupants to be at a steady-state lateral acceleration of 0.15g, with no impact to passengers at an acceleration of 0.1g. Amtrak added that the TGV operates in Europe within an acceleration limit of 0.12g, and that the ICE train operates within a 0.15g limit. Amtrak contended that a 0.12g limit would be more appropriate.

In evaluating these petitions, FRA examined its experience with waivers of FRA's Track Safety Standards where FRA has permitted five or more inches of cant deficiency for passenger equipment operation. In addition, FRA reviewed the results of qualification testing of several high-speed vehicles that have been conducted in the past few years in accordance with subpart G of the Track Safety Standards. Tests involving both tilting and non-tilting equipment have shown that steady-state lateral acceleration levels below 0.1g are achievable in both types of equipment. Further, FRA notes that although there is no specific 0.1g limit in the Track Safety Standards, the roll angle requirement in § 213.329 effectively restricts non-tilting passenger equipment to no more than six inches of cant deficiency and requires that tilting equipment be capable of limiting steady-state lateral accelerations to no more than 0.1g. This static lean test evaluates a vehicle's suspension system and tilt control system, if so equipped, in a static condition; whereas, paragraph (b) describes a limit on the steady-state lateral accelerations that are experienced by passengers under operating conditions. Paragraph (b) is a performance requirement concerning the actual dynamic operation of the suspension and tilt control systems. Amtrak's high-speed trainsets are designed with tilt control systems that compensate for part of the lateral accelerations that result from operating at speeds above the balance speed. If there were no car body tilt, a nine inch cant deficiency (nine inches of unbalance) would correspond to an equivalent lateral acceleration of 0.15g. The tilt control systems would be expected to compensate for 70% of this acceleration, however, leaving a net acceleration of 0.05g to be experienced by a passenger.

FRA believes that a limit of 0.1g for steady-state, car body lateral acceleration is consistent with U.S. rail industry practice. However, FRA recognizes that as stated in the final rule, compliance with the requirements of paragraph (b) must not only be demonstrated during the qualification testing of the equipment, but also continually for the operational life of the equipment. As a result, FRA has amended the final rule to distinguish between the steady-state lateral acceleration limit for qualification testing of the equipment and the limit for service operation of the equipment, in order to provide an operational tolerance level. As amended, paragraph (b) requires that steady-state, car body lateral acceleration be demonstrated not to exceed 0.1g at the maximum intended cant deficiency only during pre-revenue service acceptance testing under § 238.111 and § 213.345 of this chapter. FRA has introduced the phrase ''at the maximum intended cant deficiency'' to address the concern that, during pre-revenue service acceptance testing, a slight increase in train speed or change in track geometry may result in an actual cant deficiency at a few locations above that which was intended. Such an increase in actual cant deficiency at these locations would result in a corresponding increase in steady-state lateral acceleration which may exceed 0.1g. In monitoring high-speed equipment, FRA's experience is that such isolated fluctuations in steady-state lateral acceleration caused by variances between the actual and intended cant deficiencies do not pose a larger safety concern. As amended, paragraph (b) also requires that steady-state, car body lateral acceleration not exceed 0.12g when the equipment is in service. Because the higher 0.12g limit takes into account operational concerns such as unintended changes in cant deficiency, FRA has not added the phrase ''at the maximum intended cant deficiency.'' Overall, FRA believes that these amendments to paragraph (b) appropriately address the concern that the original requirements were too strict, while helping to ensure that passengers not experience undue steady-state lateral accelerations which could cause them to lose their balance and fall.

FRA has also amended paragraph (b) to make clear that acceleration measurements shall be processed through a low-pass filter having a cut-off frequency of 10 Hz. Processing car body acceleration data through a low-pass filter having a cut-off frequency of

10 Hz is consistent with the Track Safety Standards, and a low pass filter retains important information about track curvature. FRA has also amended the rule to define the term ''steady-state.'' Steady-state lateral acceleration shall be computed as the mathematical average of the accelerations in the body of a curve, between the spiral/curve points. In a compound curve, the average lateral acceleration shall be calculated over each curve segment.

FRA has merged paragraph (d) of the final rule into paragraph (b) and changed the title of paragraph (b) to read, ''Car body accelerations.'' As paragraphs (b) and (d) of the final rule both established requirements for car body accelerations, FRA believes that having the requirements in separate paragraphs with separate titles was unnecessary and potentially confusing. Paragraph (d) of the final rule established limits for vertical acceleration, lateral acceleration, and the combination of lateral and vertical accelerations experienced by Tier II passenger equipment. As provided in the final rule, Tier II passenger equipment must be designed to meet these limits while traveling at the maximum operating speed over the intended route of the equipment.

In its petition for reconsideration, Bombardier noted that the basis for the limits in paragraph (d) of the final rule appeared to have been FRA's experience with the ICE and X–2000 trainsets on Amtrak's Northeast Corridor (NEC) and that neither the ICE nor X–2000 trainset could consistently meet the criteria as defined in the final rule because they exceeded the 0.3g peak-to-peak limit at revenue speeds at least 2–4 times per week. Bombardier further maintained that vehicle qualification tests conducted by FRA and Amtrak have demonstrated the impracticality of the 0.3g single event, peak-to-peak requirement. As an alternative to the requirements of the final rule, Bombardier recommended that car body accelerations be limited to the vehicle/track interaction safety limits defined in § 213.333 at a speed up to 10 mph above the maximum operating speed. This approach, according to Bombardier, was proposed in the NPRM for the high-speed track safety standards and provides a margin of safety by requiring that the limits be met at a speed up to 10 mph above the maximum operating speed. Bombardier also recommended that car body acceleration limits be defined in terms of sustained oscillations rather than as single events, to ensure that operations not be unduly restricted for perturbations caused by track switches, etc.

FRA makes clear that Tier II passenger equipment must demonstrate compliance with the requirements of former paragraph (d), now contained in paragraphs (b)(2) and (3), only during the pre-revenue service qualification testing of the equipment. These vertical and lateral car body acceleration limits are consistent with the limits contained in § 213.345(b) of the Track Safety Standards for vehicle qualification testing. Under the Track Safety Standards, the vertical and lateral car body acceleration limits contained in § 213.345(b) are more stringent than those specified in § 213.333. However, like former § 238.427(d), now §§ 238.427(b)(2) and (3), compliance testing under § 213.345 of the Track Safety Standards is required only at the vehicle qualification stage; whereas, under § 213.333 of the Track Safety Standards, compliance testing is required monthly or yearly, as appropriate. FRA believes that the more stringent acceleration limits specified in § 213.345(b) and § 238.427(b)(2) are appropriate for system qualification testing and, as the equipment and track wear, those more restrictive limits should give way to the less restrictive limits specified in § 213.333 for monitoring the safety of the system over its life.

FRA notes that since paragraph (b)(2) considers a single event, car body acceleration to be a peak-to-peak value over a one second period, it should not matter whether the acceleration data is processed through a filter having a low-pass, cut-off frequency of 10 Hz or a band pass of 0.5 to 10 Hz. Further, the Track Safety Standards provide for the use of a low-pass filter having a cut-off frequency of 10 Hz to measure car body accelerations. As a result, FRA is amending the rule so that the acceleration limits be processed through a filter having a cut-off frequency of 10 Hz, consistent with the Track Safety Standards.

Paragraph (c) *Truck (hunting) acceleration.* FRA is revising the title of this paragraph to more appropriately identify its requirements. The paragraph otherwise is unchanged.

Paragraph (d) *Overheat sensors.* FRA is removing paragraph (e) of the final rule and redesignating it as paragraph (d). Original paragraph (d) of the final rule has been merged into (b), as noted above.

Section 238.429 Safety appliances

This section contains the Tier II passenger equipment safety appliance requirements. In the final rule, FRA simplified and clarified how the Safety Appliance Standards contained in 49 CFR 231 and 49 U.S.C. 20302(a) apply to Tier II passenger equipment, tailoring them specifically to this new and somewhat unconventional equipment. The final rule retained all of the requirements proposed in the NPRM, with one modification concerning sill steps.

In its petition for reconsideration, Amtrak noted a concern with paragraph (f)(3) of this section, which addresses safety appliance requirements in the case where two high-speed trainsets are coupled together. Amtrak stated that the requirements of this paragraph will prevent its high-speed trainset fleet from developing its full design potential to use signal paths and station platform time. Paragraph (f)(3) of the final rule stated that if two trainsets are coupled to form a single train that is not semi-permanently coupled (*i.e.*, that is coupled by an automatic coupler), the automatically coupled ends shall be equipped with hand brakes, sill steps, end handholds, and side handholds that meet the requirements contained in 49 CFR 231.14. However, if the trainsets are semi-permanently coupled, these safety appliances are not required. *See* 64 FR 25688.

FRA understands and agrees with Amtrak's concern that the final rule would essentially negate the railroad's ability to connect two currently designed high-speed trainsets together to provide the passenger-carrying capacity of two high-speed trains running on one schedule. After reviewing the design of the currently operating high-speed trainsets, FRA has determined that the requirements contained in paragraph (f)(3) regarding handbrakes, sill steps, and side handholds are either not appropriate or are unnecessary based on the design of the high-speed trainsets operated by Amtrak. The design of the power cars utilized in the high-speed trainsets does not require an individual to mount a sill step in order to couple and uncouple the trainsets. The coupling or uncoupling of the trainsets can be accomplished from ground level without the necessity of an individual going between the equipment. Thus, because the sill step is unnecessary there is no reason to equip the cars with side handholds as the purpose of these handholds would be to provide an individual standing on the sill step a secure place to hold on to the equipment. In addition, the requirement to have the ends of the trainsets equipped with a hand brake is misplaced. Paragraph (b) of this section already requires a semi-permanently coupled trainset to be equipped with a parking or hand brake capable of

holding the train on a three percent grade.

Although FRA agrees that it is unnecessary for paragraph (f)(3) to require that the ends of the trainsets be equipped with hand brakes, sill steps, and side handholds for the reasons noted above, FRA does believe that an end handhold is necessary to ensure the safety of an individual while uncoupling the trainsets. An end handhold provides a secure fixture for individuals who are required to bend over the nose of the equipment to accomplish the coupling or uncoupling of the equipment. Consequently, FRA is amending paragraph (f)(3) of the final rule to require that when two trainsets are coupled together to form a single train that is not semi-permanently coupled, the automatically coupled ends must be equipped with at least an end handhold that meets the basic design and structural standards contained in this section.

Amtrak's petition for reconsideration also noted its belief that safety appliances for its high-speed trainsets would be addressed by an FRA approval letter following a sample car inspection. A sample car inspection is an inspection FRA performs prior to the placement of a car in service to determine whether FRA would take exception to the safety appliance arrangement if the car were in service. FRA does not issue an ''approval'' letter as such but would inform the car builder or railroad as appropriate whether FRA would take exception to the safety appliance arrangement. FRA has performed a safety appliance inspection of Amtrak's high-speed trainsets and has been in discussions with Amtrak and the equipment manufacturer to address issues concerning the safety appliance arrangement.

Section 238.435 Interior Fittings and Surfaces

This section contains requirements for Tier II passenger equipment interior fittings and surfaces. Once survivable space is ensured by vehicle structural strength and crash energy management features, the design of interior features and surfaces becomes an important factor in preventing or mitigating occupant injuries resulting from collisions or derailments.

In its petition for reconsideration, Amtrak believed that paragraph (c) does not include a requirement for the seat attachment to resist a longitudinal force of 8g and requested that such a requirement be added. FRA notes that paragraphs (a) through (c) contain requirements for the design of passenger car seats and the strength of their attachments to the car body. Specifically, paragraph (c) contains lateral and vertical acceleration loading requirements for purposes of ensuring sufficient seat attachment strength. The longitudinal loading requirement is specified in paragraph (a), which states: ''Each seat back and seat attachment in a passenger car shall be designed to withstand, with deflection but without total failure, the load associated with the impact into the seat back of an unrestrained 95th-percentile adult male initially seated behind the seat back, when the floor to which the seat is attached decelerates with a triangular crash pulse having a peak of 8g and a duration of 250 milliseconds.'' *See* 64 FR 25688. As a result, no modification of the final rule is necessary to address Amtrak's concern; the requirement is already contained in the rule.

FRA is amending paragraph (i) to correct a grammatical error by substituting the word ''are'' for the word ''is'' in a phrase in the first sentence.

Section 238.437 Emergency Communication

This section requires an emergency communication system with back-up power within a Tier II train. Following publication of the May 12, 1999 final rule, an issue arose concerning the accessibility of emergency communication transmission units. As stated in the final rule, emergency communication transmission units are required to be accessible to both passengers and crewmembers. 64 FR 25689. However, following publication of the final rule, FRA learned from Amtrak that the emergency communication system in its high-speed trainsets was not accessible to passengers, but rather was designed to allow the train crew to provide evacuation and other instructions to passengers in an emergency situation consistent with the NPRM's discussion of the emergency communication proposed requirement. *See* 62 FR 49783.

FRA acknowledges that in the NPRM the proposed rule text concerning emergency communication requirements was silent as to the accessibility of the communication system to passengers. However, FRA had believed the requirement for passenger accessibility to be implicit from the proposal that clear and understandable operating instructions be posted at or near each transmission location. *See* 62 FR 49820. The final rule made clear FRA's intent that the emergency communication system be accessible to passengers and be more than a one-way public address system from the crew to the passengers. FRA intended that such a system allow passengers to communicate with the train crew so as to bring to the crew's attention an emergency situation and otherwise allow passengers to communicate directly with the crew in an emergency. Amtrak has subsequently made accessible to passengers the emergency communication system transmission locations on its high-speed trainsets, and the system is now in compliance in this regard.

Following publication of the final rule, FRA also learned from Amtrak that not all passenger cars in its high-speed trainsets have emergency communication system transmission locations at each end of the cars. The café car in each trainset actually has three transmission locations but only one at an end of the car, in the only vestibule in the car. The other two locations in the car are in the galley and the crew office. Further, both the first class and end coach cars have only one transmission location—that at a single end of each car in the only vestibule in the cars. Amtrak has stated that it would be difficult to install transmission locations at the non-vestibule ends of these cars so that both ends of the cars are equipped with an emergency communication system transmission station. These cars exceed 45 feet in length and would be required by the May 12, 1999 final rule to have two emergency communication transmission locations, one at each end of each car, adjacent to the car's end doors.

In recognition that Amtrak's high-speed trainsets were in development in advance of both the proposed and final rules, FRA is amending paragraph (a) so that only one emergency communication transmission location is required in a passenger car ordered prior to May 12, 1999. For all other passenger cars exceeding 45 feet in length ordered on or after May 12, 1999, the rule will continue to require emergency communication transmission locations at each end of the cars.

Section 238.439 Doors

This section contains the requirements for doors on Tier II passenger cars. In the final rule, FRA reserved paragraph (g) for door exit marking and operating instruction requirements, which were specified in the Passenger Train Emergency Preparedness final rule, *see* 63 FR 24630. FRA intended in Phase II of the rulemaking to consider integrating into part 238 the door exit marking and operating instruction requirements specified in the Passenger Train Emergency Preparedness final rule, as well as consider revising the

requirements as necessary. While FRA still intends to examine these requirements in Phase II, FRA has in the interim inserted a reference to the marking and instruction requirements specified in 49 CFR 239.107(a) to make clear that there are marking and instruction requirements and identify where to locate these requirements.

Section 238.443 Headlights

This section contains requirements for headlights on Tier II power cars. In its petition for reconsideration, Amtrak noted that the power cars of its high-speed trainsets have two headlights, each headlight focused 1,000 feet ahead of the power cars. Amtrak was concerned whether its headlights complied with the requirements of this section. The final rule, as adopted without comment from the NPRM, required that a power car have at least two headlights producing no less than 200,000 candela-one headlight focused to illuminate a person standing between the rails 1,500 feet ahead of the power car under clear weather conditions, and the other 800 feet ahead under the same circumstances. 64 FR 25689. (For comparison, under § 229.125(a), a Tier I locomotive used in road service would be required to have one headlight producing no less than 200,000 candela arranged to illuminate a person at least 800 feet ahead and in front of the headlight.)

FRA explained in the preamble to the final rule that a headlight must be directed farther in front of a Tier II passenger train to illuminate a person than is currently required for existing equipment under 49 CFR 229.125(a). *See* 64 FR 25642. Because a Tier II passenger train will travel distances more quickly than a Tier I passenger train, the train operator will have less time to react to obstacles ahead of the train and will thereby require earlier awareness of these obstacles through a headlight directed farther in front of the train. In addition, a headlight focused farther in front of the train will provide earlier awareness to persons who may be in the path of the train.

Addressing Amtrak's concern, FRA understands that the light emitted from the headlights on Amtrak's high-speed trainsets is directed at such an angle that each headlight can simultaneously illuminate a person 800 and 1,500 feet ahead of the trainsets. FRA believes that these headlights are consistent with the final rule and satisfy FRA's safety concerns. For clarity, however, FRA is amending this section to replace the phrase ''focused to illuminate'' with ''arranged to illuminate,'' as used in 49 CFR 229.125(a) and (b). This amendment makes clear that even if the headlight is not specifically focused at a person 800 feet or 1,500 feet ahead of the trainset as the case may be, the headlight is in compliance if it is arranged to illuminate a person 800 feet or 1,500 feet ahead of the trainset, or both. Due to concerns regarding the handling of a power car with a defective headlight, discussed below, FRA has divided this section into two paragraphs with the clarifications discussed above contained in paragraph (a) of the section.

Amtrak also raised concern in its petition for reconsideration that the failure of a single bulb in one of the two headlights on its power cars would seemingly result in the trainset being in violation. Amtrak noted that service delays could result if the headlights on Tier II power cars were required to be repaired immediately upon being found defective.

FRA did not intend that a failure of a headlight on a Tier II power car be handled any more restrictively than the failure of a headlight on a Tier I locomotive. Under 49 CFR 229, a Tier I locomotive is permitted to continue in service with a defective headlight to the earlier of either the next calendar day inspection or the nearest forward point where the repairs necessary to bring it into compliance can be made. *See* 49 CFR 229.9(b). However, since headlights on Tier I locomotives are governed by part 229, which requires only one front headlight on such vehicles, FRA was in fact inclined to allow additional flexibility in using Tier II power cars with a defective headlight since Tier II power cars are required to have two headlights.

As the requirements for headlights on Tier II power cars are contained in 49 CFR 238, the provisions regarding the movement of non-running gear defects would apply to such headlights when they become defective. Thus, despite the concern raised by Amtrak in its petition, a power car with a defective headlight may continue to be used in passenger service until the power car's next calendar day mechanical inspection. FRA's intent when drafting the final rule was to permit a Tier II power car with one of its required headlights defective to continue to be used until its next calendar day mechanical inspection if: the car is tagged; the operation is deemed safe by a qualified individual; and operating restrictions are imposed, as appropriate. However, FRA did not intend to afford this broad latitude in using Tier II power cars when both of the required headlights become defective. In such instances, FRA intended that the power car's continued use be governed by restrictions similar to those imposed on a Tier I locomotive when its only required headlight becomes defective.

Therefore, FRA has added paragraph (b) to this section to make clear that a Tier II power car with one defective headlight is to be handled as a non-running gear defect in accordance with the movement for repair provisions contained in § 238.17. Thus, if one of the headlights on a Tier II power car becomes defective en route, the power car may continue in passenger service until the power car's next calendar day mechanical inspection, provided it has been properly inspected and tagged under § 238.17(c). Paragraph (b) makes clear that when both headlights on a Tier II power car become defective, the power car may continue in passenger service only to the nearest forward location where the repairs necessary to bring the power car into compliance can be made or to the power car's next calendar day mechanical inspection, whichever occurs first. These are general requirements that govern the movement for repair of a Tier I locomotive with a defective headlight and are equally applicable to a Tier II power car with a similar non-complying condition. FRA has also amended § 238.503(f) of this part for consistency. Section 238.503(f) provides that the movement of defective Tier II passenger equipment other than with power brake defects is governed by the requirements contained in § 238.17 of this part.

Subpart F—Inspection, Testing, and Maintenance Requirements for Tier II Passenger Equipment.

Section 238.503 Inspection, Testing, and Maintenance Requirements

Paragraph (f) of this section contains a reference to the requirements contained in § 238.17 to indicate that those provisions also apply to the movement of Tier II passenger equipment with a condition not in compliance with part 238, excluding power brake defects. As explained in the preceding discussion of headlight requirements for Tier II power cars, FRA has amended this section to make clear that the provisions contained in § 238.443(b) govern the movement of a power car with a headlight not in compliance with that section. This amendment is necessary because FRA had previously excluded Tier II power cars from the requirements for headlights contained in 49 CFR 229.125(a) and (b) that are otherwise applicable to other locomotives. *See* 49 CFR 229.3(c); 64 FR 25659.

Subpart G—Specific Safety Planning Requirements for Tier II Passenger Equipment

Section 238.603 Safety Planning Requirements

FRA has amended paragraphs (a)(3) and (b)(4) principally by substituting the term ''MIL–STD–882'' for ''MIL–STD–882C.'' As explained in the discussion of § 238.5 above, the final rule cited MIL–STD–882C as a formal safety methodology to guide railroads in eliminating or reducing the risk posed by each hazard identified to an acceptable level. MIL–STD–882 was updated on February 10, 2000, and designated as MIL–STD–882D, superceding MIL–STD–882C. These amendments make clear that a railroad may use MIL–STD–882D. The amendments also make clear that railroads may continue to use other formal safety methodologies to guide them in eliminating or reducing safety hazards.

Appendix A to Part 238—Schedule of Civil Penalties

Appendix A to this part contains the schedule of civil penalties to be used in connection with this part. Conforming changes are being made to the entries for § 238.105, ''Train electronic hardware and software safety,'' and § 238.427, ''Suspension system,'' based on changes to the final rule as discussed above.

Regulatory Impact

Executive Order 12866 and DOT Regulatory Policies and Procedures

This response to petitions for reconsideration of the final rule has been evaluated in accordance with Executive Order 12866 and DOT policies and procedures. Although the final rule met the criteria for being considered a significant rule under these policies and procedures, the amendments contained in this response to petitions for reconsideration of the final rule are not considered significant in the same way because they generally clarify requirements currently contained in the final rule or allow for greater flexibility in complying with the rule. These amendments and clarifications will, overall, reduce the cost of complying with the rule. However, this cost reduction has not specifically been calculated. FRA believes that these amendments and clarifications will have a minimal net effect on FRA's original analysis of the costs and benefits associated with the final rule.

Regulatory Flexibility Act

The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 *et seq.*) requires a review of rules to assess their impact on small entities. FRA certifies that this response to petitions for reconsideration does not have a significant impact on a substantial number of small entities. Because the amendments contained in this document generally clarify requirements currently contained in the final rule or allow for greater flexibility in complying with the rule, FRA has concluded that there are no substantial economic impacts on small units of government, businesses, or other organizations.

Paperwork Reduction Act

This response to petitions for reconsideration of the final rule does not change the information collection requirements contained in the original final rule.

Environmental Impact

FRA has evaluated this response to petitions for reconsideration of the final rule in accordance with its ''Procedures for Considering Environmental Impacts'' (64 FR 28545; May 26, 1999) as required by the National Environmental Policy Act (42 U.S.C. 4321 *et seq.*), other environmental statutes, Executive Orders, and related regulatory requirements. FRA has determined that this document is not a major FRA action requiring the preparation of an environmental impact statement or environmental assessment because it is categorically excluded from detailed environmental review pursuant to section 4(c) of FRA's Procedures.

Federalism Implications

Executive Order 13132 provides in part that, to the extent practicable, no agency shall promulgate any regulation that has federalism implications, that imposes substantial direct compliance costs on State and local governments, and that is not required by statute, unless the Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, or the agency consults with State and local officials early in the process of developing the proposed regulation. *See* 64 FR 43255; Aug. 10, 1999. FRA believes that this regulatory action will not have federalism implications that impose substantial direct compliance costs on State and local governments, and that this action is in compliance with Executive Order 13132. The amendments contained in this response to petitions for reconsideration of the final rule generally clarify requirements currently contained in the final rule or allow for greater flexibility in complying with the rule.

FRA does note that States involved in the State Participation Program, pursuant to 49 CFR 212, may incur minimal costs associated with the training of their inspectors involved in the enforcement of the rule. Nonetheless, representatives of States were consulted in the development of the rule, in particular through the participation of the American Association of State Highway and Transportation Officials in the Passenger Equipment Safety Standards Working Group. *See* 64 FR 25541. FRA also considered and addressed comments on the rulemaking from the New York Department of Transportation, North Carolina Department of Transportation, Washington State Department of Transportation, and the State of Vermont Agency of Transportation.

In any event, Federal preemption of a State or local law occurs automatically as a result of the statutory provision contained at 49 U.S.C. 20106 when FRA issues a regulation covering the same subject matter as a State or local law unless the State or local law is designed to reduce an essentially local safety hazard, is not incompatible with Federal law, and does not place an unreasonable burden on interstate commerce. *See* 49 CFR 238.13. It should be noted that the potential for preemption also exists under various other statutory and constitutional provisions, including the Locomotive Inspection Act (now codified at 49 U.S.C. 20701–20703) and the Commerce Clause of the United States Constitution.

Energy Impact

Executive Order 13211 requires Federal agencies to prepare a Statement of Energy Effects for any ''significant energy action.'' 66 FR 28355; May 22, 2001. Under the Executive Order, a ''significant energy action'' is defined as any action by an agency that promulgates or is expected to lead to the promulgation of a final rule or regulation, including notices of inquiry, advance notices of proposed rulemaking, and notices of proposed rulemaking: (1)(i) that is a significant regulatory action under Executive Order 12866 or any successor order, and (ii) is likely to have a significant adverse effect on the supply, distribution, or use of energy; or (2) that is designated by the Administrator of the Office of Information and Regulatory Affairs as a significant energy action. FRA has evaluated this response to petitions for reconsideration of the final rule in

accordance with Executive Order 13211, and has determined that this regulatory action is not a ''significant energy action'' within the meaning of the Executive Order.

Compliance With the Unfunded Mandates Reform Act of 1995

Pursuant to the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4) each Federal agency ''shall, unless otherwise prohibited by law, assess the effects of Federal Regulatory actions on State, local, and tribal governments, and the private sector (other than to the extent that such regulations incorporate requirements specifically set forth in law).'' Sec. 201. Section 202 of the Act further requires that ''before promulgating any general notice of proposed rulemaking that is likely to result in promulgation of any rule that includes any Federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of $100,000,000 or more (adjusted annually for inflation) in any 1 year, and before promulgating any final rule for which a general notice of proposed rulemaking was published, the agency shall prepare a written statement * * *'' detailing the effect on State, local and tribal governments and the private sector. This response to petitions for reconsideration of the final rule will not result in the expenditure, in the aggregate, of $100,000,000 or more in any one year, and thus preparation of a statement was not required.

List of Subjects

49 CFR Part 216

Penalties, Railroad Safety, Reporting and recordkeeping requirements, Special notice for repairs.

49 CFR Part 238

Passenger equipment, Penalties, Railroad Safety, Reporting and recordkeeping requirements.

The Rule

In consideration of the foregoing, chapter II, subtitle B of title 49, Code of Federal Regulations is amended as follows:

PART 216—[AMENDED]

1. The authority citation for part 216 is revised to read as follows:

Authority: 49 U.S.C. 20102–20104, 20107, 20111, 20133, 20701–20702, 21301–21302, 21304; 28 U.S.C. 2461, note; and 49 CFR 1.49.

2. Section 216.17 is amended by revising it to read as follows:

§ 216.17 Appeals.

(a) Upon receipt of a Special Notice prescribed in §§ 216.11, 216.13, 216.14, or 216.15, a railroad may appeal the decision of the Inspector to the FRA Regional Administrator for the region in which the notice was given. The appeal shall be made by letter or telegram. The FRA Regional Administrator assigns an inspector, other than the inspector from whose decision the appeal is being taken, to reinspect the railroad freight car, locomotive, railroad passenger equipment, or track. The reinspection will be made immediately. If upon reinspection, the railroad freight car, locomotive, or passenger equipment is found to be in serviceable condition, or the track is found to comply with the requirements for the class at which it was previously operated by the railroad, the FRA Regional Administrator or his or her agent will immediately notify the railroad, whereupon the restrictions of the Special Notice cease to be effective. If on reinspection the decision of the original inspector is sustained, the FRA Regional Administrator notifies the railroad that the appeal has been denied.

(b) A railroad whose appeal to the FRA Regional Administrator has been denied may, within thirty (30) days from the denial, appeal to the Administrator. After affording an opportunity for informal oral hearing, the Administrator may affirm, set aside, or modify, in whole or in part, the action of the FRA Regional Administrator.

(c) The requirements of a Special Notice issued under this subpart shall remain in effect and be observed by a railroad pending appeal to the FRA Regional Administrator or to the Administrator.

3. Section 216.23 is amended by revising it to read as follows:

§ 216.23 Consideration of recommendation.

Upon receipt of a Notice of Track Conditions issued under § 216.21, the FRA Regional Administrator prepares a recommendation to the Administrator concerning the issuance of an Emergency order removing the affected track from service. In preparing this recommendation, the FRA Regional Administrator considers all written or other material bearing on the condition of the track received from the railroad within three (3) calendar days of the issuance of the Notice of Track Conditions and also considers the report of the FRA Regional Track Engineer.

PART 238—[AMENDED]

4. The authority citation for part 238 is revised to read as follows:

Authority: 49 U.S.C. 20103, 20107, 20133, 20141, 20302–20303, 20306, 20701–20702, 21301–21302, 21304; 28 U.S.C. 2461, note; and 49 CFR 1.49.

Subpart A—General

5. Section 238.1 is amended by revising paragraph (c) to read as follows:

§238.1 Purpose and scope.

* * * * *

(c) Railroads to which this part applies shall be responsible for compliance with all of the requirements contained in §§ 238.15, 238.17, 238.19, 238.107, 238.109, and subpart D of this part effective January 1, 2002.

(1) A railroad may request earlier application of the requirements contained in §§ 238.15, 238.17, 238.19, 238.107, 238.109, and subpart D upon written notification to FRA's Associate Administrator for Safety. Such a request shall indicate the railroad's readiness and ability to comply with all of the provisions referenced in paragraph (c) introductory text of this section.

(2) Except for paragraphs (b) and (c) of § 238.309, a railroad may specifically request earlier application of the maintenance and testing provisions contained in §§ 238.309 and 238.311 simultaneously. In order to request earlier application of these two sections, the railroad shall indicate its readiness and ability to comply with all of the provisions contained in both of those sections.

(3) Paragraphs (b) and (c) of § 238.309 apply beginning September 9, 1999.

6. Section 238.5 is amended by revising the definitions of *In service* and *Tourist, scenic, historic, or excursion operations;* removing the definitions *MIL–STD–882C* and *Monocoque;* and adding the definitions *MIL–STD–882* and *Semi-monocoque* to read as follows:

§ 238.5 Definitions.

* * * * *

In service, when used in connection with passenger equipment, means:

(1) Passenger equipment subject to this part that is in passenger or revenue service in the United States; and

(2) All other passenger equipment subject to this part in the United States, unless the passenger equipment:

(i) Is being handled in accordance with §§ 238.15, 238.17, 238.305(d), or 238.503(f), as applicable;

(ii) Is in a repair shop or on a repair track;

(iii) Is on a storage track and is not carrying passengers; or

(iv) Has been delivered in interchange but has not been accepted by the receiving railroad.

* * * * *

MIL-STD–882 means a military standard issued by the United States Department of Defense to provide uniform requirements for developing and implementing a system safety plan and program to identify and then eliminate the hazards of a system or reduce the associated risk to an acceptable level.

* * * * *

Semi-monocoque means a type of rail vehicle construction where the shell or skin acts as a single unit with the supporting frame to resist and transmit the loads acting on the rail vehicle.

* * * * *

Tourist, scenic, historic, or excursion operations means railroad operations that carry passengers, often using antiquated equipment, with the conveyance of the passengers to a particular destination not being the principal purpose. Train movements of new passenger equipment for demonstration purposes are not tourist, scenic, historic, or excursion operations.

* * * * *

7. Section 238.15 is amended by revising paragraph (e)(2) to read as follows:

§ 238.15 Movement of passenger equipment with power brake defects.

* * * * *

(e) * * *

(2) If the handbrake is located outside the interior of the car or is inaccessible to a qualified person:

(i) The car shall be locked-out and empty;

(ii) The speed of the train shall be restricted to 20 mph or less; and

(iii) The car shall be removed from the train or repositioned in the train at the first location where it is possible to do so.

* * * * *

Subpart B—Safety Planning and General Requirements

8. Section 238.105 is amended by revising it to read as follows:

§ 238.105 Train electronic hardware and software safety.

The requirements of this section apply to electronic hardware and software used to control or monitor safety functions in passenger equipment ordered on or after September 8, 2000, and such components implemented or materially modified in new or existing passenger equipment on or after September 9, 2002.

(a) The railroad shall develop and maintain a written hardware and software safety program to guide the design, development, testing, integration, and verification of software and hardware that controls or monitors equipment safety functions.

(b) The hardware and software safety program shall be based on a formal safety methodology that includes a Failure Modes, Effects, Criticality Analysis (FMECA); verification and validation testing for all hardware and software components and their interfaces; and comprehensive hardware and software integration testing to ensure that the hardware and software system functions as intended.

(c) The hardware and software safety program shall include a description of how the following will be accomplished, achieved, carried out, or implemented to ensure safety and reliability:

(1) The hardware and software design process;

(2) The hardware and software design documentation;

(3) The hardware and software hazard analysis;

(4) Hardware and software safety reviews;

(5) Hardware and software hazard monitoring and tracking;

(6) Hardware and software integration safety testing; and

(7) Demonstration of overall hardware and software system safety as part of the pre-revenue service testing of the equipment.

(d) (1) Hardware and software that controls or monitors a train's primary braking system shall either:

(i) Fail safely by initiating a full service brake application in the event of a hardware or software failure that could impair the ability of the engineer to apply or release the brakes; or

(ii) Access to direct manual control of the primary braking system (both service and emergency braking) shall be provided to the engineer.

(2) Hardware and software that controls or monitors the ability to shut down a train's main power and fuel intake system shall either:

(i) Fail safely by shutting down the main power and cutting off the intake of fuel in the event of a hardware or software failure that could impair the ability of the train crew to command that electronic function; or

(ii) The ability to shut down the main power and fuel intake by non-electronic means shall be provided to the train crew.

(e) The railroad shall comply with the elements of its hardware and software safety program that affect the safety of the passenger equipment.

9. Section 238.109 is amended by revising paragraph (b)(6) to read as follows:

§ 238.109 Training, qualification, and designation program.

* * * * *

(b) * * *

(6) Require all employees and contractors to pass either a written or an oral examination covering the equipment and tasks for which they are responsible that are required by this part as well as the specific Federal regulatory requirements contained in this part related to equipment and tasks for which they are responsible;

* * * * *

10. Section 238.113 is amended by revising paragraphs (a)(3), (b) and (c) to read as follows:

§ 238.113 Emergency window exits.

(a) * * *

(3) Each emergency window exit shall be designed to permit rapid and easy removal from the inside of the car during an emergency situation without requiring the use of a tool or other implement.

(b) Each emergency window exit in a passenger car, including a sleeper car, ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, shall have an unobstructed opening with minimum dimensions of 26 inches horizontally by 24 inches vertically. A seat back is not an obstruction if it can be moved away from the window opening without requiring the use of a tool or other implement.

(c) Emergency window exits shall be marked, and instructions provided for their use, as required by § 223.9(d) of this chapter.

Subpart C—Specific Requirements for Tier I Passenger Equipment

11. Section 238.201 is amended by revising paragraph (a)(2) to read as follows:

§ 238.201 Scope/alternative compliance.

(a) * * *

(2) The structural standards of this subpart (§ 238.203-static end strength; § 238.205-anti-climbing mechanism; § 238.207-link between coupling mechanism and car body; § 238.209-forward-facing end structure of locomotives; § 238.211-collision posts; § 238.213-corner posts; § 238.215-rollover strength; § 238.217-side structure; § 238.219 -truck-to-car-body attachment; and § 238.223-locomotive fuel tanks) do not apply to passenger equipment if used exclusively on a rail line:

(i) With no public highway-rail grade crossings;

(ii) On which no freight operations occur at any time;

(iii) On which only passenger equipment of compatible design is utilized; and

(iv) On which trains operate at speeds not exceeding 79 mph.

* * * * *

12. Section 238.203 is amended by revising paragraph (h)(1) to read as follows:

§ 238.203 Static end strength.

* * * * *

(h) *Disposition of petitions.*

(1) If the Administrator finds it necessary or desirable, FRA will conduct a hearing on a petition in accordance with the procedures provided in § 211.25 of this chapter.

* * * * *

13. Section 238.205 is amended by revising paragraph (b) to read as follows:

§ 238.205 Anti-climbing mechanism.

* * * * *

(b) Except for a cab car or an MU locomotive, each locomotive ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, shall have an anti-climbing mechanism at its forward end capable of resisting both an upward and downward vertical force of 200,000 pounds without failure.

14. Section 238.211 is amended by revising paragraphs (a)(1)(i) and (a)(2) to read as follows:

§ 238.211 Collision posts.

(a) * * *

(1) * * *

(i) Two full-height collision posts, located at approximately the one-third points laterally, at each end. Each collision post shall have an ultimate longitudinal shear strength of not less than 300,000 pounds at a point even with the top of the underframe member to which it is attached. If reinforcement is used to provide the shear value, the reinforcement shall have full value for a distance of 18 inches up from the underframe connection and then taper to a point approximately 30 inches above the underframe connection; or

* * * * *

(2) The requirements of this paragraph do not apply to unoccupied passenger equipment operating in a passenger train, or to the rear end of a locomotive if the end is unoccupied by design.

* * * * *

15. Section 238.219 is amended by revising it to read as follows:

§ 238.219 Truck-to-car-body attachment.

Passenger equipment shall have a truck-to-car-body attachment with an ultimate strength sufficient to resist without failure the following individually applied loads: 2g vertically on the mass of the truck; and 250,000 pounds in any horizontal direction on the truck, along with the resulting vertical reaction to this load. For purposes of this section, the mass of the truck includes axles, wheels, bearings, the truck-mounted brake system, suspension system components, and any other component attached to the truck by design.

16. Section 238.223 is amended by revising it to read as follows:

§ 238.223 Locomotive fuel tanks.

Locomotive fuel tanks shall comply with either the following or an industry standard providing at least an equivalent level of safety if approved by FRA under § 238.21:

(a) *External fuel tanks.* External locomotive fuel tanks shall comply with the requirements contained in Appendix D to this part.

(b) *Internal fuel tanks.*

(1) Internal locomotive fuel tanks shall be positioned in a manner to reduce the likelihood of accidental penetration from roadway debris or collision.

(2) Internal fuel tank vent systems shall be designed so they do not become a path of fuel loss in any tank orientation due to a locomotive overturning.

(3) Internal fuel tank bulkheads and skin shall, at a minimum, be equivalent to a 5/16-inch thick steel plate with a yield strength of 25,000 pounds per square inch. Material of a higher yield strength may be used to decrease the required thickness of the material provided at least an equivalent level of strength is maintained. Skid plates are not required.

17. Section 238.235 is amended by revising paragraph (a)(3) and (d) to read as follows:

§ 238.235 Doors.

(a) * * *

(3) Designed and maintained so that a person may readily access and operate the override device from inside the car without requiring the use of a tool or other implement. If the door is dual-leafed, only one of the door leafs is required to respond to the manual override device.

* * * * *

(d) Door exits shall be marked, and instructions provided for their use, as required by § 239.107(a) of this chapter.

18. Section 238.237 is amended by revising the introductory text of paragraph (d) and revising paragraph (d)(1)(i) as follows:

§ 238.237 Automated monitoring.

* * * * *

(d) The following procedures apply if the alerter or deadman control fails en route and causes the locomotive to be in non-compliance with paragraph (a):

(1)(i) A second person qualified on the signal system and trained to apply the emergency brake shall be stationed in the locomotive cab; or

* * * * *

Subpart D—Inspection, Testing, and Maintenance Requirements for Tier I Passenger Equipment

19. Section 238.315 is amended by revising paragraphs (c) and (f)(3) to read as follows:

§ 238.315 Class IA brake test.

* * * * *

(c) A Class IA brake test may be performed at a shop or yard site and is not required to be repeated at the first passenger terminal if the train remains on a source of compressed air and:

(1) The train remains in the custody of the train crew; or

(2) The train crew receives notice that the Class IA brake test has been performed.

* * * * *

(f) * * *

(3) For MU locomotives that utilize an electric signal to communicate a service brake application and only a pneumatic signal to propagate an emergency brake application, the emergency brake application functions as intended.

* * * * *

20. Section 238.317 is amended by revising paragraph (d)(2) to read as follows:

§ 238.317 Class II brake test.

* * * * *

(d) * * *

(2) For MU locomotives that utilize an electric signal to communicate a service brake application and only a pneumatic signal to propagate an emergency brake application, the emergency brake application functions as intended.

* * * * *

Subpart E-Specific Requirements for Tier II Passenger Equipment

21. Section 238.411 is amended by revising paragraph (b)(1) to read as follows:

§ 238.411 Rear end structures of power car cabs.

* * * * *

(b) * * *

(1) A horizontal, longitudinal shear load of 500,000 pounds at its joint with the underframe without exceeding the ultimate strength of the joint; and

* * * * *

22. Section 238.419 is amended by revising paragraph (a) to read as follows:

§ 238.419 Truck-to-car-body and truck component attachment.

(a) The ultimate strength of the truck-to-car-body attachment for each unit in a train shall be sufficient to resist without failure the following individually applied loads: a vertical force equivalent to 2g acting on the mass of the truck; and a force of 250,000 pounds acting in any horizontal direction on the truck, along with the resulting vertical reaction to this load.

* * * * *

23. Section 238.421 is amended by revising the introductory text of paragraph (b), revising paragraphs (b)(1) and (2), revising the introductory text of paragraph (c), and revising paragraphs (c)(1) and (3)(ii) to read as follows:

§ 238.421 Glazing.

* * * * *

(b) *Particular end-facing exterior glazing requirements.* Each end-facing exterior window in a passenger car and a power car cab shall also, in the orientation in which it is installed in the car:

(1) Resist the impact of a 12-pound solid steel sphere traveling (i) at the maximum speed at which the car will operate (ii) at an impact angle no less severe than horizontal to the car, with no penetration or spall. An impact angle that is perpendicular (90 degrees) to the window's surface shall be considered the most severe impact angle for purposes of this requirement; and

(2) Demonstrate anti-spalling performance by the use of a 0.001-inch thick aluminum witness plate, placed 12 inches from the window's surface during all impact tests. The witness plate shall contain no marks from spalled glazing particles after any impact test; and

* * * * *

(c) *Passenger equipment ordered prior to May 12, 1999.* Each exterior window in passenger equipment ordered prior to May 12, 1999, may comply with the following glazing requirements in lieu of the requirements specified in paragraphs (a) and (b) of this section:

(1) Each end-facing exterior window shall, in the orientation in which it is installed in the vehicle, resist the impact of a 12-pound solid steel sphere traveling (i) at the maximum speed at which the vehicle will operate (ii) at an impact angle no less severe than horizontal to the vehicle, with no penetration or spall. An impact angle that is perpendicular to the window's surface shall be considered the most severe impact angle for purposes of this requirement.

* * * * *

(3) * * *

(i) * * *

(ii) Demonstrate anti-spalling performance by the use of a 0.002-inch thick aluminum witness plate, placed 12 inches from the window's surface during all impact tests. The witness plate shall contain no marks from spalled glazing particles after any impact test; and

* * * * *

24. Section 238.427 is amended by removing paragraph (e), and by revising paragraph (b), revising the heading of paragraph (c), and revising paragraph (d) to read as follows:

§ 238.427 Suspension system.

* * * * *

(b) *Car body accelerations.* (1) A passenger car shall not operate under conditions that result in a steady-state lateral acceleration greater than 0.12g as measured parallel to the car floor inside the passenger compartment. During pre-revenue service acceptance testing of the equipment under § 238.111 and § 213.345 of this chapter, a passenger car shall demonstrate that steady-state lateral acceleration does not exceed 0.1g at the maximum intended cant deficiency.

(2) While traveling at the maximum operating speed over the intended route, the train suspension system shall be designed to:

(i) Limit the vertical acceleration, as measured by a vertical accelerometer mounted on the car floor, to no greater than 0.55g single event, peak-to-peak over a one second period;

(ii) Limit lateral acceleration, as measured by a lateral accelerometer mounted on the car floor, to no greater than 0.3g single event, peak-to-peak over a one second period; and

(iii) Limit the combination of lateral acceleration (a_L) and vertical acceleration (a_V) occurring over a one second period as expressed by the square root of ($a_L^2 + a_V^2$) to no greater than 0.6g, where a_L may not exceed 0.3g and a_V may not exceed 0.55g. Compliance with the requirements of paragraph (b)(2) shall be demonstrated during the pre-revenue service acceptance testing of the equipment required under § 238.111 and § 213.345 of this chapter.

(3) For purposes of this paragraph:

(i) Car body acceleration measurements shall be processed through a filter having a cut-off frequency of 10 Hz; and

(ii) Steady-state lateral acceleration shall be computed as the mathematical average of the accelerations in the body of a curve, between the spiral/curve points. In a compound curve, steady-state lateral acceleration shall be measured separately for each curve segment.

(c) *Truck (hunting) acceleration.*

* * *

(d) *Overheat sensors.* Overheat sensors for each wheelset journal bearing shall be provided. The sensors may be placed either onboard the equipment or at reasonable intervals along the railroad's right-of-way.

25. Section 238.429 is amended by revising paragraph (f)(3) to read as follows:

§ 238.429 Safety appliances.

* * * * *

(f) * * *

(3) If two trainsets are coupled to form a single train that is not semi-permanently coupled (i.e., that is coupled by an automatic coupler), the automatically coupled ends shall be equipped with an end handhold that is located and installed so that an individual can safely couple and uncouple the trainsets. The end handhold shall be not more than 16 inches from each side of the car and shall extend the remaining length of the end of the car. (If the equipment is designed with a tapered nose, the side of the car shall be determined based on the outer dimension of the tapered nose where the end handhold is attached.) The end handhold shall also meet the mechanical strength and design requirements contained in paragraphs (c), (d)(3), and (d)(6) of this section. If the trainsets are semi-permanently coupled, this safety appliance is not required.

* * * * *

26. Section 238.435 is amended by revising paragraph (i) to read:

§ 238.435 Interior fittings and surfaces.

* * * * *

(i) If, for purposes of showing compliance with the requirements of this section, the strength of a seat attachment is to be demonstrated through sled testing, the seat structure and seat attachment to the sled that are used in such testing must be representative of the actual seat structure in, and seat attachment to, the rail vehicle subject to the requirements of this section. If the attachment strength of any other interior fitting is to be demonstrated through sled testing, for purposes of showing compliance

with the requirements of this section, such testing shall be conducted in a similar manner.

27. Section 238.437 is amended by revising paragraph (a) to read as follows:

§ 238.437 Emergency communication.

* * * * *

(a) Except as further specified, transmission locations at each end of each passenger car, adjacent to the car's end doors, and accessible to both passengers and crewmembers without requiring the use of a tool or other implement. If the passenger car does not exceed 45 feet in length, or if the passenger car was ordered prior to May 12, 1999, only one transmission location is required;

* * * * *

28. Section 238.439 is amended by revising paragraph (g) to read as follows:

§ 238.439 Doors.

* * * * *

(g) Door exits shall be marked, and instructions provided for their use, as required by § 239.107(a) of this chapter.

29. Section 238.433 is amended by revising it to read as follows:

§ 238.443 Headlights.

(a) Each power car shall be equipped with at least two headlights. Each headlight shall produce no less than 200,000 candela. One headlight shall be arranged to illuminate a person standing between the rails 800 feet ahead of the power car under clear weather conditions. The other headlight shall be arranged to illuminate a person standing between the rails 1,500 feet ahead of the power car under clear weather conditions.

(b) A power car with a headlight not in compliance with the requirements of paragraph (a) of this section shall be moved in accordance with the following:

(1) If one of the headlights is defective, the defect shall be considered a non-running gear defect subject to the provisions contained in § 238.17 of this part.

(2) If both headlights are defective, the power car shall be inspected and tagged in accordance with the requirements contained in § 238.17(c) relating to non-running gear defects. The power car may continue to be used in passenger service only to the nearest forward location where the repairs necessary to bring the power car into compliance can be made or to the power car's next calendar day mechanical inspection, whichever occurs first.

30. Figure 2 to subpart E is revised to read as follows:

BILLING CODE 4910–06–P

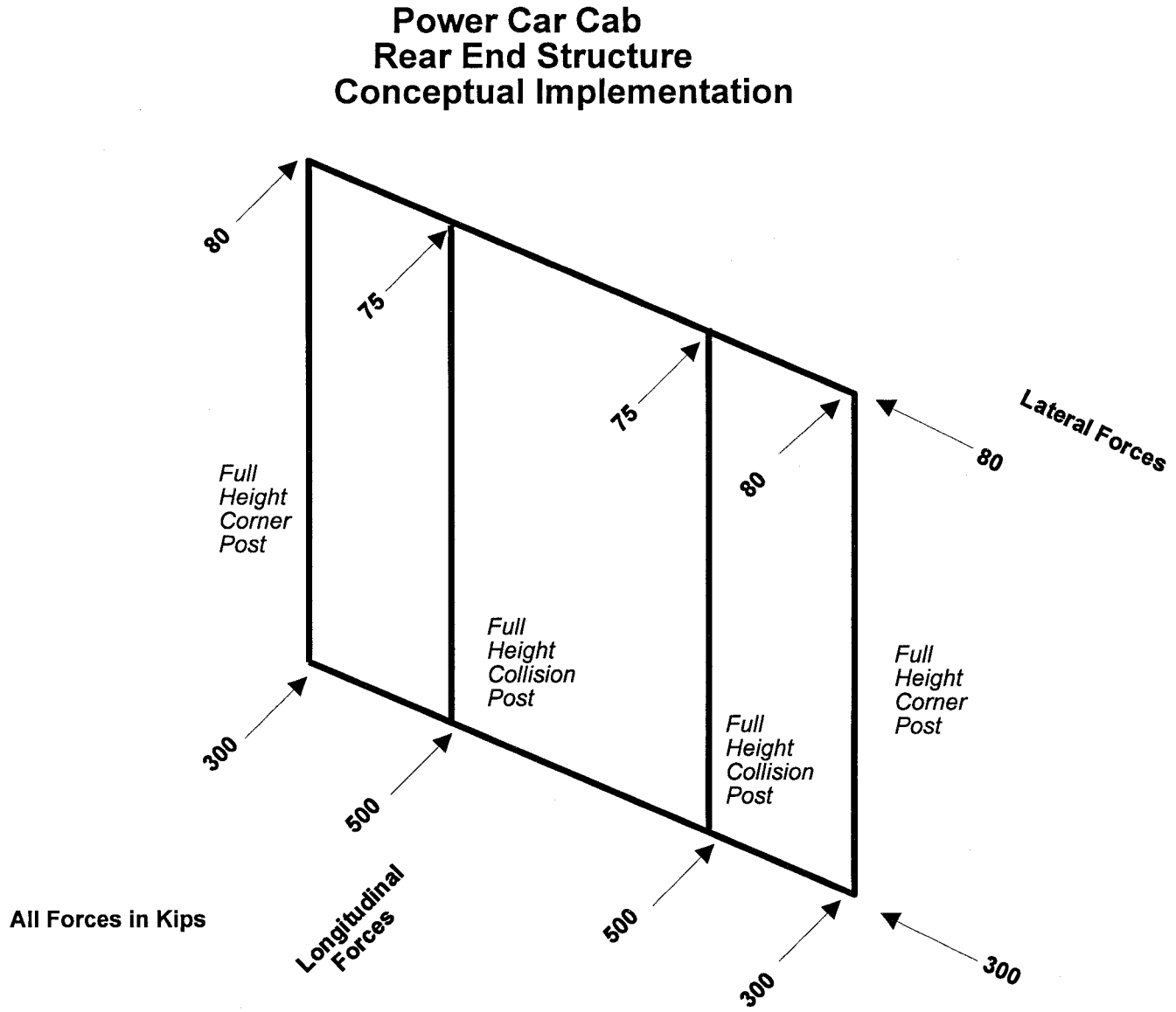

Figure 2

BILLING CODE 4910–06–C

Subpart F—Specific Requirements for Tier II Passenger Equipment

31. Section 238.503 is amended by revising paragraph (f) to read as follows:

§ 238.503 Inspection, testing, and maintenance requirements.

* * * * *

(f) *Movement of trains with other defects.* The movement of a train with a defect other than a power brake defect shall be conducted in accordance with § 238.17, with the following exceptions:

(1) The movement of a Tier II power car with a non-complying headlight shall be conducted in accordance with § 238.443(b) of this part; and

(2) When a failure of a secondary brake on a Tier II passenger train occurs en route, that train may remain in service until its next scheduled calendar day Class I brake test equivalent at a speed no greater than the maximum safe operating speed demonstrated through analysis and testing for braking with the friction brake alone. The brake system shall be restored to 100 percent operation before the train departs that inspection location.

* * * * *

Subpart G—Specific Safety Planning Requirements for Tier II Passenger Equipment—[AMENDED]

32. Section 238.603 is amended by revising paragraphs (a)(3) and (b)(4) to read as follows:

§ 238.603 Safety planning requirements.

(a) * * *

(3) Eliminate or reduce the risk posed by each hazard identified to an acceptable level using a formal safety methodology such as MIL-STD–882; and

* * * * *

(b) * * *

(4) Eliminate or reduce the risk posed by each hazard identified to an acceptable level using a formal safety methodology such as MIL–STD–882;

* * * * *

33. Appendix A to part 238 is amended by revising the entries for sections 238.105 and 238.427 to read as follows:

Appendix A to Part 238—Schedule of Civil Penalties [1]

* * * * *

Section	Violation	Willfull violation
* * * * * *		*
238.105 Train electronic hardware and software safety:		
(a), (b), (c) Failure to develop and maintain hardware and software safety	7,500	11,000
(d) Failure to include required design features	5,000	7,500
(e) Failure to comply with hardware and software safety program	5,000	7,500
* * * * * *		*
238.427 Suspension system	2,500	5,000
* * * * * *		*

Issued in Washington, DC, on April 10, 2002.

Allan Rutter,

Federal Railroad Administrator.

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[1] A penalty may be assessed against an individual only for a willful violation. Generally when two or more violations of these regulations are discovered with respect to a single unit of passenger equipment that is placed or continued in service by a railroad, the appropriate penalties set forth above are aggregated up to a maximum of $10,000 per day. However, failure to perform, with respect to a particular unit of passenger equipment, any of the inspections and tests required under subparts D and F of this part will be treated as a violation separate and distinct from, and in addition to, any substantive violative conditions found on that unit of passenger equipment. Moreover, the Administrator reserves the right to assess a penalty of up to $22,000 for any violation where circumstances warrant. *See* 49 CFR par 209, appendix A. Failure to observe any condition for movement of defective equipment set forth in § 238.17 will deprive the railroad of the benefit of the movement-for-repair provision and make the railroad and any responsible individuals liable for penalty under the particular regulatory section(s) concerning the substantive defect(s) present on the unit of passenger equipment at the time of movement. Failure to observe any condition for the movement of passenger equipment containing defective safety appliances, other than power brakes, set forth in § 238.17(e) will deprive the railroad of the movement-for-repair provision and make the railroad and any responsible individuals liable for penalty under the particular regulatory section(s) contained in part 231 of this chapter or § 238.429 concerning the substantive defective condition. The penalties listed for failure to perform the exterior and interior mechanical inspections and tests required under § 238.303 and § 238.305 may be assessed for each unit of passenger equipment contained in a train that is not properly inspected. Whereas, the penalties listed for failure to perform the brake inspections and tests under § 238.313 through § 238.319 may be assessed for each train that is not properly inspected.