AMERICAN PUBLIC TRANSPORTATION ASSOCIATION

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Subject:

Federal Railroad Administration
49 CFR Parts 236 and 238
Docket No. FRA-2013-0060, Notice 1
RIN 2130-AC 46
Passenger Equipment Safety Standards;
Standards for Alternative Compliance and High-Speed Trainsets
Notice of Proposed Rule Making

Dear Docket Clerk:

The American Public Transportation Association (APTA), on behalf of its members, offers the accompanying comments and response to the subject Notice of Proposed Rule Making (NPRM). Working in conjunction with the Engineering Task Force as part of the Railroad Safety Advisory Committee, APTA has compiled and consolidated comments representing the industry consensus response to the proposed rule. APTA appreciates the open dialog and responsiveness of the highly professional staff of the Federal Railroad Administration (FRA) throughout this lengthy and complex process.

The industry response is contained in two forms, a section by section narrative analysis and in the form of a response matrix. In the Section-by-Section Analysis APTA responds to FRA proposed new definitions and revisions to certain existing definitions intended to clarify the meaning of important terms and to minimize potential for misinterpretation of the rule.

The response matrix identifies the original/current CFR language, the proposed NPRM rule text for Tier III equipment, as well as the industry-proposed revision to the NPRM language. Comments and justifications as to why the industry is requesting the amendments are also included. Further discussion of many of the items in this table are also addressed in the companion document entitled.

APTA and its members look forward to a continuing productive working relationship with the FRA in pursuit of enhanced rail safety for the riding public and railroad employees. For additional information, please contact Linda Ford, APTA's chief counsel, at (202) 496-4808 or lford@apta.com.

Sincerely yours,

Richard A. White
Acting President & CEO

RAW/ lf:ls:jr

Attachments Follow

Attachments:

Attachment A:

APTA Comments on Notice of Proposed Rulemaking: Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets

Attachment B:

Section Analysis for Subpart J – Safe Operating Plan for Tier III Passenger Equipment

ATTACHMENT A

APTA Comments on Notice of Proposed Rulemaking

Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets

§ 238.5 – Definitions

In the Section-by-Section Analysis FRA proposes to add new definitions and revise certain existing definitions to clarify the meaning of important terms and to minimize potential for misinterpretation of the rule. FRA requested public comment regarding the terms defined in this section and whether we should also define other terms.

APTA agrees with the definitions proposed in the NPRM for:

- Tier II
- Tier II passenger train
- Tier III
- Tier III trainset
- Tier I alternative passenger trainset
- Glazing, end-facing
- Glazing, side-facing

APTA finds the proposed definition of a "trainset unit", however, to be unclear.

Additionally, APTA recommends that a definition be included for *"trainset"* as used in reference to *"Tier I alternative passenger trainset"*, *"Tier III trainset"* and *"trainset unit"*. Such a definition would provide significant clarity on how the rule was developed and how it is to be applied.

The specific requirements proposed by the ETF for a Tier III trainset are based on the assumption that all units within the trainset are semi-permanently coupled together, such that units of the trainset can only be coupled or uncoupled at a maintenance facility or other location where personnel can safely get under or between units. Additionally revenue operations can only be conducted using a complete trainset. As such, the collision scenario defined in § 238.705 is based on the operation of a complete trainset. Additionally, the specific requirements pertaining to safety appliances for Tier III trainsets are also based on the assumption that all units within a trainset are semi-permanently coupled.

APTA therefore recommends a definition for trainset be as follows:

> ***Trainset*** means a passenger train where all units within the trainset are semi-permanently coupled to operate as a single consist. A Tier I alternative trainset may be equipped with a conventional locomotive at either end that may not be semi-permanently coupled to the adjacent unit of the trainset.
>
> Note: This definition would replace the current definition of "*trainset*" contained in § 238.5

To provide flexibility and facilitate maintenance, a trainset may be equipped with an automatic coupler in the middle of the configuration such that it could be more easily disconnected in a maintenance facility. For such configurations the requirements of §238.705 (a) would apply to the complete trainset as operated in revenue service.

APTA also recommends the following definition for "trainset unit"

> ***Trainset unit*** means any car within a trainset that is semi-permanently coupled to an adjacent car within the trainset.

To provide clarity, and in order for the rule to be applied in a manner consistent with the basis upon which consensus was reached within the ETF, APTA recommends that a definition be included for "Conventional Locomotive" as used in § 238.705(a)(6). When the ETF discussed and agreed on a collision scenario for a Tier I alternative compliant trainset that had a conventional locomotive at one end, it was assumed that that conventional locomotive was a typical North American locomotive that was designed in accordance with § 229.205, which includes minimum crashworthiness performance requirements defined in Appendix E (to part 229) for the front end structure (for wide-nose locomotives), along with compliance with other requirements such as AAR S-580. The conventional locomotive considered as Part of the ETF consensus did not incorporate a CEM system and was considered to have crush characteristics and geometric design similar to those defined in the new Appendix H in NPRM.

APTA therefore, recommends the addition of a definition for "conventional locomotive" as follows:

> ***Locomotive, conventional*** means a piece of on-track rail equipment with one or more control stands designed to transport a Tier I alternative compliant passenger trainset and which meets the crashworthiness requirements defined in § 229.205 and the design requirements contained in § 229.206.

APTA recommends deleting the requirement that the term "cab" includes a locomotive cab for the purpose of subpart H. Subpart H addresses Tier III trainsets which do not have a locomotive cab. Additionally, any analysis for a Tier I alternative compliant trainset as governed by Appendix G cannot include an analysis of the cab of a conventional locomotive as the collision model used for that analysis is insufficient. APTA, therefore, suggests that the definition for cab for the purpose of subpart H be:

> ***Cab*** means, for the purposes of subpart H of this part, a compartment or space in a trainset designed to be occupied by the engineer and contain an operating console from which the engineer exercises control over the trainset.

Tier IV System Designation

The NPRM proposes amendments to part 238 to incorporate standards for Tier I Alternative Compliance equipment and also High-Speed Rail Trainsets. Through this rulemaking FRA is proposing to designate a new tier of safety standards (Tier III) for passenger equipment that is capable of operation over a dedicated and grade separated right-of-way at speeds above 125 mph and up to a maximum speed of 220 mph. The proposed equipment standards include crashworthiness and occupant protection requirements that permit Tier III trainsets to operate in a shared right of way with conventional passenger and freight at speeds below 125 mph (Tier I environment). This type of interoperability has

the potential to have a safe and cost effective approach to implementing high-speed rail as it permits the use of internationally service-proven high-speed rail equipment and also the use of existing infrastructure for lower speed operation. As such, APTA is very supportive of the Tier III approach.

APTA also notes that in the **Executive Summary** under **Alternatives Considered** FRA describes very well the advantages for some applications of a standalone system that has the potential to *"optimize its operations to high levels of performance without necessarily having to adhere to requirements generally applicable to railroad systems in the U.S"*. FRA further pointed out that to do so would require the entire system to be optimized, not only the passenger equipment. FRA also stated that it will continue to address these systems on a case-by-case basis through a rule of particular applicability (RPA), or other regulatory means, due to the potential for significant differences in their design. FRA also pointed out that the regulatory approval for a system would be "*comprehensive, covering more than equipment safety concerns, to ensure proposed standalone systems properly address all rail safety concerns*". A Tier IV system requires a holistic approach incorporating accident avoidance principles.

APTA fully supports FRA's views on this issue and recommends that the final rule also include a definition for this category of system. APTA notes that incorporating a new designation (such as **Tier IV System**) would address all fully dedicated and grade separated systems that are not interoperable with the national network, but rather have the ability to provide connectivity to various other transportation modes, including conventional rail. A Tier IV system has the potential to provide added safety, transplant a service proven system and also permit the introduction of very new or innovative technologies, including maglev, very high speed steel-wheel-on-rail and other emerging technologies that are not compatible with the national network.

Due to the significant differences in technologies that could be covered by this category, it would not be feasible to develop specific technical regulatory requirements for a Tier IV system through RSAC; however, any RPA developed for such system would need to cover all aspects of the system and be based on the specific technology and system proposed.

APTA recommends the final rule therefore include a definition of a Tier IV system such as:

> ***Tier IV system*** is any passenger rail or ground transportation system that operates on an exclusive right-of-way without grade crossings and is governed by a technology-specific rule of particular applicability, or other regulatory means.

§ 238.111 – Pre-revenue service acceptance testing plan.

There are various places in NPRM that refer to design review issues that would be subject to review and approval in accordance with § 238.111. However, the title of § 238.111 refers to a "testing plan" rather than design reviews. Therefore, APTA recommends the inclusion of a new section 238.110 called "**pre-revenue qualification plan**." That section would require a plan addressing all documents required by the rule to be submitted for review and approval for Tier III equipment. Section 238.111 would therefore continue to address the over-the-road running tests. As such, it would be necessary to develop specific requirements in § 238.110 in the ongoing ETF meetings along with the required edits to the proposed language in § 238.111.

§ 238.201 – Scope/Alternative Compliance

The proposed edits contained in § 238.201 (b)(2)(i) actually permit Tier I passenger trainsets to comply with the alternative crashworthiness and occupant protection requirements in Appendix G rather than complying with specific Tier I structural requirements. APTA agrees with this approach, and notes that it is of the utmost importance that efforts be undertaken to complete and reach consensus on the content of the document "Suggested Practices for Demonstrating Crashworthiness of Passenger Rail Equipment."

§ 238.401 – Scope

APTA agrees with this proposal to revise the maximum speed for Tier II equipment from 150 mph to 160 mph, which also results in harmonization of the cut-off speed in part 238 and 213 for track Class 8.

The discussion in the executive summary states "*FRA makes clear that its approach to this NPRM does not mean FRA may not re-examine its Tier II requirements in future.*" APTA agrees that it might be appropriate to re-examine Tier II requirements in the future as those requirements were developed prior to the congressional mandate to implement PTC. Such review of Tier II requirements should take into consideration the incident and accident data since the introduction of the Acela trainsets, along with the corresponding risks associated with future operations and an anticipated NEC upgrades.

§ 238.701 – Scope

If the trainset meets the crashworthiness requirements for a Tier III trainset, passengers should be allowed in a lead vehicle without further analysis. Trainset crashworthiness defined in NPRM for Tier III trainsets is equivalent to that provided by Tier I equipment operating in Tier I environment. ROW protection on a dedicated section for operations at speeds above 125 mph will be addressed by the railroad's HSR-125 and ROW barrier plan.

§ 238.705 – Dynamic collision scenario

The dynamic collision scenario defined in § 238.705(a) is based on the consensus reached during the initial Engineering Task Force (ETF I) meetings that addressed Alternative Compliant Tier I trainsets. The scenario requires the Alternative Compliant trainset to collide with a standing train that is led by a conventional locomotive. The conventional locomotive considered by the task force was a typical North American locomotive that weighs 260,000 lbs. It is considered a "rigid" locomotive with crush characteristics as defined in Table 1 in this section (§ 238.705(a)(4)(ii)) and geometric design as depicted in Figure 1 to appendix H of the NPRM (§ 238.705(a)(4)(iii)).

§ 238.705(a)(6) defines collision scenarios where the trainset is either led by a cab car or MU locomotive, or by a conventional locomotive. While the scenario for having a conventional locomotive on the lead end of a Tier I Alternative Compliant trainset is probable, it is not possible with a Tier III trainset. As noted in the Section-by-Section Analysis under Subpart H, Tier III equipment will be *"an integrated trainset, particularly for purposes of crashworthiness and occupant protection requirements.*

This rule presumes that Tier III trainsets will consist of semi-permanently coupled, articulated, or otherwise "fixed" configurations, that are not intended to operate normally as individual vehicles or in mixed consists (with equipment of another design or operational tier)". Practically speaking, a high speed Tier III trainset could never meet its performance requirements with a conventional locomotive at either end. The end units of a Tier III trainset must be low profile, aerodynamic designs that are an integral part of the trainset.

APTA therefore recommends that the collision scenario having a conventional locomotive at the lead end of a Tier III trainset be deleted from § 238.705(a)(6) and be moved to Appendix G, which addresses Alternative Requirements for Tier I trainsets. As such the proposed language in § 238.705(a)(6) for Tier III trainsets would read:

> *"(6) The initially-moving trainset shall have an initial velocity of 20 mph."*

Additionally, APTA also recommends that paragraph § 238.705(a)(3) be moved to Appendix G as it is only applicable to alternative compliant Tier I trainsets.

The definitions proposed by APTA for *"trainset"* and *"conventional locomotive"* are consistent with, and provide clarity to this approach.

To provide clarity of the collision scenario, APTA recommends that the proposed rule use the term "trainset" rather than train when referring to the initially moving trainset in paragraphs (§ 238.705(a)(1), (2), (3), (6), and (8). These sections will therefore read:

> *"(1) The initially-moving trainset is made up of the equipment undergoing evaluation at its AW0 ready-to-run weight;*
>
> *"(2) If trainsets of various lengths are intended for use in service, then the shortest and longest trainsets shall be evaluated;*
>
> *"(6) The initially-moving trainset shall have an initial velocity of 20 mph."*
>
> *"(8) The initially-moving trainset and initially-standing train consists are not braked;*

For consistency, when the original § 238.705(a)(3) language is moved to Appendix G, it should read:

> *"If the initially-moving trainset is intended for use in push-pull service, then, as applicable, both the configurations as led by a locomotive and as led by a cab car shall be evaluated separately;"*

The approach to analyze the shortest and longest trainset is consistent with European practice in EN 15227[1] Section 5.2.1 Complete trainset method, which states:

> *"When assessing a trainset which can be assembled and operated in different configurations of a same architecture, the shortest and longest trainset shall be considered.*
>
> *Note: If a trainset can be configured to a fixed formation of 4 to 8 vehicles, the formation with 4 vehicles and the formation with 8 vehicles are assessed.*

[1] prEN 15227, European Standard "Railway applications – Crashworthiness requirements for railway vehicle bodies" November 2016

When assessing a trainset which can also be operated in a train of two or more trainsets, the assessment of only one single trainset is sufficient."

This is also the basis on which the carbuilders conducted their simulations and upon which consensus was reached.

APTA notes that the wording in § 238.705 (b)(2) addresses the maximum average longitudinal acceleration is slightly different than the consensus agreement in ETF; however APTA is fine with the proposed wording if the intent is to allow the use of a moving window of a 5g average deceleration within 100 milliseconds. APTA, therefore, suggests that this issue is clarified in the section-by-section analysis in the final rule and the document "Suggested Practices for Demonstrating Crashworthiness of Passenger Rail Equipment."

§ 238.709 – Fluid Entry Inhibition

APTA agrees with the proposed language addressing fluid entry inhibition. APTA notes that this set of requirements will be satisfied by a design / drawing review of the vehicle. It does not imply the need to evaluate fluid tightness in the state after an explicit collision scenario. APTA will update APTA C&S-SS-034-Rev2 to provide clarity on how it is applied in accordance with the basis of consensus within RSAC.

§ 238.721 – Glazing

APTA recommends that the language contained in paragraph § 238.721(a) be deleted as the specific requirements for Tier III glazing are adequately defined in § 238.721(b) through (e). Those requirements contained in the NPRM were based upon the operating environment for Tier I passenger equipment and the protected ROW required by FRA (under parts 213 and 236) on the dedicated high speed portions. Compliance with the requirements defined by §238.721 (b) through (e) will permit Tier III trainsets to be interoperable on the national rail network.

APTA does not agree with the proposed paragraph § 238.721 (b)(5) regarding ballistic protection for Tier III equipment. APTA proposes that rather than a railroad identifying ballistic-related risks and hazards, the regulation should require compliance with the current ballistic requirement defined in the paragraph (b)(10)(i) of Appendix A to Part 223, "*Ballistic Impact in which a standard 22 caliber long rifle lead bullet of 40 grains in weight impacts at a minimum of 960 feet per second velocity.*" Due to the interoperability requirements for Tier III equipment, the ballistic impact requirement must be standardized rather than varying for each railroad. As FRA has pointed out in the previous RSAC crashworthiness/glazing task group the current 22 caliber requirement has proven effective and therefore APTA recommends retaining the current requirement for Tier III equipment. APTA concurs with discussions in the previous RSAC crashworthiness/glazing task group that any changes to the ballistic impact requirements for interoperable equipment would require input from the broader industry stakeholders that would be affected.

Additionally, APTA proposes that rather than referencing the ballistic impact requirements for cab forward-facing glazing in § 238.721 (c)(2) for cab side-facing glazing, the regulation should require compliance with the current ballistic requirement defined in the paragraph (b)(11)(i) of Appendix A to

Part 223, "*Ballistic Impact in which a standard 22 caliber long rifle lead bullet of 40 grains in weight impacts at a minimum of 960 feet per second velocity*."

The proposed language in § 238.721 (b)(6) addresses who and by what means the testing of the glazing material can be certified. APTA does not support this approach, but rather recommends that the provision in the proposed rule text in § 238.721 (b)(6) should make the glazing manufacturer responsible for certification of each type of glazing material supplied and allow testing to either be done by an independent laboratory, or the manufacturer with a provision for FRA to witness the test. Appendix A to Part 223 currently requires "*Each manufacturer that provides glazing materials, intended by the manufacturer for use in achieving compliance with the requirements of this part, shall certify that each type of glazing material being supplied for this purpose has been successfully tested in accordance with this appendix* ..." APTA feels it is very important for a manufacturer to be responsible to certify glazing materials it provides to meet the requirements.

§ 238.731 – Brake system.

The proposed language in § 238.731 identifies various requirements to be determined by the Safe Operation Plan for Tier III equipment. APTA has proposed alternative language for each of those provisions in comments to Subpart J – Specific Requirements for the Safe Operation Plan for Tier III Passenger Equipment and in the attached matrix entitled "Section Analysis for Subpart J – Safe Operation Plan for Tier III Passenger Equipment".

Section § 238.731 (e) addresses degraded performance of the braking system. In order to adequately quantify the braking performance for the movement of defective equipment APTA recommends the additional language underlined below. This requirement would need to be identified as a requirement under § 238.110.

> *"(4) The railroad shall demonstrate through analysis and testing the maximum speed for safely operating its Tier III trainsets using only the friction brake portion of the blended brake with no thermal damage to equipment or infrastructure. The analysis and testing shall also determine the maximum safe operating speed for various percentages of operative friction brakes."*

APTA notes that it will be necessary to harmonize the language being developed for movement of defective equipment in the ongoing RSAC process with this revision.

INTERIOR FITTINGS AND SURFACES

The ETF consensus for interior attachment strength was to require compliance with § 238.233 and APTA PR-CS-S-006-98, Rev. 1, "*Standard for Attachment Strength of Interior Fittings for Passenger Railroad Equipment*," authorized September 2005, for Tier I alternative trainsets. This is adequately reflected in paragraphs (i) through (k) of Appendix G. Based upon the justification provided, there was also agreement that the interior fixture attachment strength for Tier III trainsets should comply with Section 6.1.4, "Security of furniture, equipment and features," of Railway Group Standard GM/RT2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010 with the enhancement of 3g vertical in lieu of the 1g vertical. APTA therefore recommends that since

the interior fixture attachment strength for Tier I alternative trainsets is already contained in Appendix G, the specific language for §§ 238.733, .735 and .737 is as follows:

§ 238.733 Interior fixture attachment

Tier III trainsets shall comply with the interior fixture attachment requirements referenced in Section 6.1.4, "Security of furniture, equipment and features," of Railway Group Standard GM/RT2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that—

(a) The conditions of § 238.705(b)(2) are met; and

(b) Interior fixture attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance.

§ 238.735 Seat crashworthiness (passenger and cab crew).

Passenger seating in Tier III trainsets shall comply with the requirements referenced in Section 6.2, "Seats for passengers, personnel, or train crew," of Railway Group Standard GM/RT2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that—

(a) The conditions of 238.705(b)(2) are met; and

(b) Seat attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance.

§ 238.737 Luggage racks.

(a) Overhead storage racks shall provide longitudinal and lateral restraint for stowed articles. These racks shall incorporate transverse dividers at a maximum spacing of 10 ft. (3 m) to restrain the longitudinal movement of luggage. To restrain the lateral movement of luggage, these racks shall also slope downward in the outboard direction at a minimum ratio of 1:8 with respect to a horizontal plane.
(b) Luggage racks shall comply with the requirements in Section 6.8, "Luggage stowage," of Railway Group Standard GM/RT2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that—

(i) The conditions of 238.705(b)(2) are met;

(ii) Attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance.

(iii) The railroad shall determine the maximum allowable weight of the luggage stowed for purposes of evaluating luggage rack attachment strength.

§238.743 Emergency lighting.

APTA recommends deleting § 238.743 (b)(1) as Tier III equipment will be designed in accordance with Section 6.1.4 of GM/RT2100 Issue 4. This is consistent with the approach proposed by APTA for Interior Fittings and Surfaces in §§ 238.733, .735 and .737. As Appendix G is silent on the requirements for emergency lighting, § 238.115 would be applicable to Tier I alternative trainsets.

§ 238.753 – Sanders

The international operators and carbuilders indicate that sanders on high speed trainsets are typically used to improve acceleration and/or braking performance and are not deemed safety-critical. The safe braking distance is determined without the use of sanders. However, if the sanders on a specific trainset are safety-critical that will be defined in the Inspection, Testing, and Maintenance program, in which case, operating restrictions will be addressed under movement of defective equipment. APTA, therefore, recommends that the language associated with sanders in § 238.753 be removed.

Subpart I – Inspection, Testing, and Maintenance Requirements for Tier III Passenger Equipment

Due to the ongoing discussion in the ETF, the requirements contained in Subpart I in NPRM will be subject to change and therefore the specific language contained in Subpart I for NPRM should not be included in the final rule until it is properly vetted and consensus reached in the ongoing ETF meetings. APTA also notes that the approach taken by the ETF in Subpart I in the ongoing efforts will also affect the requirements for movement of defective equipment.

Subpart J – Specific Requirements for the Safe Operation Plan for Tier III Passenger Equipment

As previously discussed in the ongoing RSAC ETF, APTA recommends that the reference to the "Safe Operation Plan (SOP)" in the NPRM be eliminated. APTA notes that the information identified in the NPRM for inclusion in the SOP is already required to be provided to FRA in other existing regulations or new provisions under development by the ETF. APTA has therefore proposed amendments to the NPRM to identify where the specific information desired needs to be provided, including specific design review elements that require submittal under the newly proposed § 238.110.

APTA has attached a matrix entitled "Section Analysis for Subpart J – Safe Operation Plan for Tier III Passenger Equipment" that identifies the original/current CFR language, the proposed NPRM rule text for Tier III equipment, as well as the industry-proposed revision to the NPRM language. Comments and justifications as to why the industry is requesting the amendments are also included. APTA looks forward to working with the ETF stakeholders to finalize these requirements for inclusion in the following NPRM.

Reference to APTA Standards:

The NPRM references several APTA Standards by “date certain” for incorporation by reference. Many of those standards will be updated in the near future. APTA recommends, based upon the timing of the promulgation of the final rule that the latest versions of the standards be referenced. APTA also recommends that existing references to APTA standards within part 238 also be updated in the final rule.

Section Analysis for Subpart J - Safe Operation Plan for Tier III Passenger Equipment

Original CFR Language	NPRM Proposed Text	Proposed Revision	Comment/Justification
Summary of Changes As discussed in the ongoing RSAC ETF, APTA recommends that the reference to the "Safe Operation Plan (SOP)" in the NPRM be eliminated. APTA notes that the information identified in the NPRM for inclusion in the SOP is already required to be provided to FRA in other existing regulations or new provisions under development by the ETF. APTA has therefore proposed amendments to the NPRM to identify where the specific information desired needs to be provided, including specific design review elements that require submittal under the newly proposed § 238.110 "pre-revenue qualification plan." That section would require a plan addressing all documents required by the rule to be submitted for review and approval for Tier III equipment. The matrix below identifies the original/current CFR language, the proposed NPRM rule text for Tier III equipment, as well as the industry-proposed revision to the NPRM language. Comments and justifications as to why the industry is requesting the amendments are also included. Further discussion of many of the items in this table are also addressed in the companion document entitled "*APTA Comments on Notice of Proposed Rulemaking Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets*". Note: The language in red font identifies wording that industry recommends be deleted; the language in blue font identifies new wording proposed by industry.			
§238.201 Scope/alternative compliance. a) Scope. (1) This subpart contains requirements for railroad passenger equipment operating at speeds not exceeding 125 miles per hour. As stated in §238.229, all such passenger equipment remains subject to the safety appliance requirements contained in Federal statute at 49 U.S.C. chapter 203 and in FRA regulations at part 231 and §232.2 of this chapter. Unless otherwise specified, these requirements only apply to passenger equipment ordered on or after September 8, 2000 or placed in service for the first time on or after September 9, 2002.	**§238.701 Scope.** This subpart contains specific requirements for railroad passenger equipment operating in a shared right-of-way at speeds not exceeding 125 mph and in an exclusive right-of-way without grade crossings at speeds exceeding 125 mph but not exceeding 220 mph. Passenger seating is permitted in the leading unit of a Tier III trainset, provided that safety issues associated with passengers occupying the leading unit are addressed and mitigated through a comprehensive Safe Operation Plan for Tier III Passenger Equipment. Demonstration of compliance with the requirements of this subpart is subject to FRA review and approval in accordance with §238.111.	**§238.701 Scope.** This subpart contains specific requirements for railroad passenger equipment operating in a shared right-of-way at speeds not exceeding 125 mph and in an exclusive right-of-way without grade crossings at speeds exceeding 125 mph but not exceeding 220 mph. Demonstration of compliance with the requirements of this subpart is subject to FRA review and approval in accordance with §238.110 and §238.111.	Passengers should always be permitted in the leading vehicle of Tier III equipment if: - The equipment meets the trainset structural requirements defined in Subpart H, - The dedicated sections of the ROW are protected from intrusions as required by Part 213 Right-of-Way Barrier plan and Part 236 HSR-125 plan.

Original CFR Language	NPRM Proposed Text	Proposed Revision	Comment/Justification
§238.221 Glazing. a) Passenger equipment shall comply with the applicable Safety Glazing Standards contained in part 223 of this chapter, if required by that part. ********** **§238.421 Glazing.** a) General. Except as provided in paragraphs (b) and (c) of this section, each exterior window on a passenger car and a power car cab shall comply with the requirements contained in part 223 of this chapter.	**§238.721 Glazing.** a) General. Glazing safety issues associated with operating in a Tier III environment shall be identified and addressed through a comprehensive analysis in the railroad's Safe Operation Plan for Tier III Passenger Equipment that considers right-of-way access control, intrusion detection, and safety devices to provide containment of thrown or dropped objects.	**§238.721 Glazing.**	APTA recommends that the language contained in paragraph § 238.721(a) be deleted as the specific requirements for Tier III glazing are adequately defined in § 238.721(b) through (e). Those requirements contained in the NPRM were based upon the operating environment for Tier I passenger equipment and the protected ROW required by FRA (under parts 213 and 236) on the dedicated high speed portions. Compliance with the requirements defined by §238.721 (b) through (e) will permit Tier III trainsets to be interoperable on the national rail network.
§238.221 Glazing. a) Passenger equipment shall comply with the applicable Safety Glazing Standards contained in part 223 of this chapter, if required by that part. ********** **§238.421 Glazing.** a) General. Except as provided in paragraphs (b) and (c) of this section, each exterior window on a passenger car and a power car cab shall comply with the requirements contained in part 223 of this chapter.	**§238.721 Glazing.** b)… 5) Each end-facing exterior window in a cab shall provide ballistic penetration resistance sufficient to protect cab occupants from risks and hazards identified by the railroad as part of its Safe Operation Plan for Tier III Equipment. This protection shall, at a minimum, meet the requirements of part 223, appendix A.	**§238.721 Glazing.** b)… 5) Each end-facing exterior window in a cab shall provide the ballistic penetration resistance in accordance with the requirements of part 223, appendix A.	Reference to the SOP is not needed. Industry proposes that the ballistic requirement should be maintained to the existing requirements for Type 1 glazing, as stated in the NPRM. There is no need for a hazard or risk analysis - the existing requirement has shown through long history to be adequate for conventional equipment. Industry is also concerned that the ballistic requirement is a concern not just for this class of equipment but for everything that is currently operating in North America and hence if FRA wishes to raise the bar on the ballistic requirement, then it needs to be done in another forum that involves all affected stakeholders. Further discussion of this is contained in the document entitled "APTA Comments on Notice of Proposed Rulemaking Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets".
§	**238.721 Glazing.** d)… 2) Instead of the requirements specified in paragraph (d)(1) of this section, a side-facing exterior window intended to be breakable and	**§238.721 Glazing.** d)… 2) Instead of the requirements specified in paragraph (d)(1) of this section, a side-facing exterior window intended to be breakable and	The information required to demonstrate the equivalent level of safety will be available during design reviews and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will

Original CFR Language	NPRM Proposed Text	Proposed Revision	Comment/Justification
	serve as an emergency window exit may comply with an alternative standard in accordance with the railroad's Tier III Safe Operation Plan that provides an equivalent level of safety and is approved for use by FRA.	serve as an emergency window exit may comply with an alternative standard that provides an equivalent level of safety and is approved for use by FRA.	specifically reference this requirement to be included in the pre-revenue qualification plan.
§238.231 Brake system. Except as otherwise provided in this section, on or after September 9, 1999 the following requirements apply to all passenger equipment and passenger trains. a) A passenger train's primary brake system shall be capable of stopping the train with a service application from its maximum authorized operating speed within the signal spacing existing on the track over which the train is operating. ********** **§238.431 Brake system.** a) A passenger train's brake system shall be capable of stopping the train from its maximum operating speed within the signal spacing existing on the track over which the train is operating under worst-case adhesion conditions.	**§238.731 Brake system.** b) Minimum performance requirement for brake system. Each Tier III trainset's brake system shall be capable of stopping the trainset from its maximum operating speed within the signal spacing existing on the track over which the trainset is operating under the worst-case adhesion conditions as defined in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.731 Brake system.** b) Minimum performance requirement for brake system. Each Tier III trainset's brake system shall be capable of stopping the trainset from its maximum operating speed within the signal spacing existing on the track over which the trainset is operating under the worst-case adhesion conditions as defined by the railroad.	The information required to demonstrate the minimum performance requirements for the brake system will be available during design reviews and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement to be included in the pre-revenue qualification plan. Worst case adhesion is normally described based on the capability of the WSP system to make corrections. This information is captured during design reviews and testing. The proposed approach for Tier III equipment is consistent with the requirement defined in § 238.431 for Tier II equipment.
§238.231 Brake system. c) Passenger equipment shall be provided with an emergency brake application feature that produces an irretrievable stop, using a brake rate consistent with prevailing adhesion, passenger safety, and brake system thermal capacity. An emergency brake application shall be available at any time, and shall be initiated by an unintentional parting of the train.	**§238.731 Brake system.** c) Emergency brake system. A Tier III trainset shall be provided with an emergency brake application feature that produces an irretrievable stop. An emergency brake application shall be available at any time, and shall be initiated by either of the following: (1) An unintentional parting of the trainset; or (2) The train crew at locations specified in the railroad's Safe Operation Plan for Tier III	**§238.731 Brake system.** c) Emergency brake system. A Tier III trainset shall be provided with an emergency brake application feature that produces an irretrievable stop. An emergency brake application shall be available at any time, and shall be initiated by either of the following: (1) An unintentional parting of the trainset; or (2) The train crew at designated onboard locations specified by the railroad.	Locations for the crew accessible emergency brake device will be addressed during design reviews and therefore does not require inclusion in a Safe Operation Plan. These locations can be easily determined by observing the equipment. The proposed language for § 238.110 will specifically reference this requirement.

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	Passenger Equipment.		
§238.231 Brake system. i) Passenger cars shall be equipped with a means to apply the emergency brake that is accessible to passengers and located in the vestibule or passenger compartment. The emergency brake shall be clearly identified and marked. ********** **§238.431 Brake system.** c) Passenger equipment shall be provided with an emergency brake application feature that produces an irretrievable stop, using a brake rate consistent with prevailing adhesion, passenger safety, and brake system thermal capacity. An emergency brake application shall be available at any time, and shall be initiated by an unintentional parting of the train. A means to initiate an emergency brake application shall be provided at two locations in each unit of the train; however, where a unit of the train is 45 feet or less in length a means to initiate an emergency brake application need only be provided at one location in the unit.	**§238.731 Brake system.** d) Passenger brake alarm. 1) A means to initiate a passenger brake alarm shall be provided at two locations in each unit of a Tier III trainset; except where a unit of the trainset is 45 feet or less in length, a means to initiate a passenger brake alarm need only be provided at one location in the unit. These locations shall be identified in the railroad's Safe Operation Plan for Tier III Passenger Equipment. The words "Passenger Brake Alarm" shall be legibly stenciled or marked on each device or on an adjacent badge plate.	**§238.731 Brake system.** d) Passenger brake alarm. 1) A means to initiate a passenger brake alarm shall be provided at two locations in each unit of a Tier III trainset; except where a unit of the trainset is 45 feet or less in length, a means to initiate a passenger brake alarm need only be provided at one location in the unit. The words "Passenger Brake Alarm" shall be legibly stenciled or marked on each device or on an adjacent badge plate.	In paragraph (d)(1) Passenger alarm locations will be identified during the design review and can easily be determined by viewing the equipment and therefore does not require inclusion in a Safe Operation Plan.
	§238.731 Brake system. d)… 4) A passenger brake alarm activation that occurs after the trainset has safely cleared the boarding platform shall be acknowledged by the engineer within the time period specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, in order for train operation to remain	**§238.731 Brake system.** d)… 4) A passenger brake alarm activation that occurs after the trainset has safely cleared the boarding platform shall be acknowledged by the engineer within the time period identified by the railroad, in order for train operation to remain under the full control of the engineer. The method used to	The time required for the engineer to acknowledge a passenger brake alarm is determined in design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement. Each railroad will establish a route and equipment specific means of

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	under the full control of the engineer. The method used to confirm that the trainset has safely cleared the boarding platform shall be defined in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	confirm that the trainset has safely cleared the boarding platform shall be defined.	determining that the trainset has cleared a platform. Such information must be included in the railroad's operating rules and engineers training program.
	§238.731 Brake system. d)… 6) To retrieve the full service brake application described in paragraph (d)(5) of this section, the engineer must acknowledge the passenger brake alarm and activate appropriate controls to issue a command for brake application as specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.731 Brake system.** d)… 6) To retrieve the full service brake application described in paragraph (d)(5) of this section, the engineer must acknowledge the passenger brake alarm and activate appropriate controls to issue a command for brake application as defined by the railroad.	The actions required of the engineer will be identified in the railroad's operating rules. The procedure to recover would be addressed in the operating manual and training program. Recovery of a passenger brake alarm will be established during design review. The proposed language for § 238.110 will specifically reference this requirement.
§238.231 Brake system. Locomotives ordered after September 8, 2000, or placed in service for the first time after September 9, 2002, that are equipped with blended brakes shall be designed so that: (2) Loss of power or failure of the dynamic brake does not result in exceeding the allowable stopping distance. ********** **§238.431 Brake system.** e) The following requirements apply to blended braking systems: (1) Loss of power or failure of the dynamic brake does not result in exceeding the allowable stopping distance.	**§238.731 Brake system.** (e) Degraded performance of blended brake system. The following requirements of this paragraph (e) apply to operation of Tier III trainsets with blended braking systems to address degraded brake system performance: (1) Loss of power or failure of the dynamic or regenerative brake shall not result in exceeding the allowable stopping distance as defined in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.731 Brake system.** (e) Degraded performance of blended brake system. The following requirements of this paragraph (e) apply to operation of Tier III trainsets with blended braking systems to address degraded brake system performance: (1) Loss of power or failure of the dynamic or regenerative brake shall not result in exceeding the allowable stopping distance as defined by the railroad.	The allowable stopping distance will be determined during design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement.

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§238.231 Brake system. Locomotives ordered after September 8, 2000, or placed in service for the first time after September 9, 2002, that are equipped with blended brakes shall be designed so that: (3) The friction brake alone is adequate to safely stop the train under all operating conditions. ********** **§238.431 Brake system.** e) The following requirements apply to blended braking systems: (2) The friction brake alone is adequate to safely stop the train under all operating conditions;	**§238.731 Brake system.** (e)… (2) The available friction braking shall be adequate to stop the trainset safely under the operating conditions defined in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.731 Brake system.** (e)… (2) The available friction braking shall be adequate to stop the trainset safely under the operating conditions as defined by the railroad.	The performance of the braking system will be determined during design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement.
§238.431 Brake system. (4) The operating railroad shall demonstrate through analysis and testing the maximum operating speed for safe operation of the train using only the friction brake portion of the blended brake with no thermal damage to wheels or discs.	**§238.731 Brake system.** (e)… **(**4) The railroad shall demonstrate through analysis and testing the maximum speed for safely operating its Tier III trainsets using only the friction brake portion of the blended brake with no thermal damage to equipment or infrastructure.	**§238.731 Brake system.** (e)… **(**4) The railroad shall demonstrate through analysis and testing the maximum speed for safely operating its Tier III trainsets using only the friction brake portion of the blended brake with no thermal damage to equipment or infrastructure. The analysis and testing shall also determine the maximum safe operating speed for various percentages of operative friction brakes.	While the NPRM does not reference the Safe Operation Plan, the proposed changes to § 238.731(e)(4) are shown here for completeness. Justification for the proposed changes are contained in the document entitled "APTA Comments on Notice of Proposed Rulemaking Passenger Equipment Safety Standards; Standards for Alternative Compliance and High-Speed Trainsets".
§229.49 Main reservoir system. (a) (1) The main reservoir system of each locomotive shall be equipped with at least one safety valve that shall prevent an accumulation of pressure of more than 15 pounds per square inch above the maximum working air pressure fixed by the chief mechanical officer of the carrier operating the	**§238.731 Brake system.** (f) Main reservoir system. (1) The main reservoirs in a Tier III trainset shall be designed and tested to meet the requirements of a recognized standard specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, such as the American Society of Mechanical Engineers (ASME) Boiler and	**§238.731 Brake system.** (f) Main reservoir system. (1) The main reservoirs in a Tier III trainset shall be designed and tested to meet the requirements of a recognized standard, such as the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code for Unfired Pressure Vessel Section VIII, Division I (ASME Code) or	The design and tests required for main reservoirs will be determined during design review and therefore does not require inclusion in a Safe Operation Plan. Recognized standard, working pressure, and rated temperature will be addressed during design review. Alternate pressure could be captured on the reservoir data plate. The proposed language for § 238.110 will specifically reference this requirement.

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locomotive. (2) Except for non-equipped MU locomotives built prior to January 1, 1981, each locomotive that has a pneumatically actuated system of power controls shall be equipped with a separate reservoir of air under pressure to be used for operating those power controls. The reservoir shall be provided with means to automatically prevent the loss of pressure in the event of a failure of main air pressure, have storage capacity for not less than three complete operating cycles of control equipment and be located where it is not exposed to damage. b) A governor shall be provided that stops and starts or unloads and loads the air compressor within 5 pounds per square inch above or below the maximum working air pressure fixed by the carrier. c) Each compressor governor used in connection with the automatic air brake system shall be adjusted so that the compressor will start when the main reservoir pressure is not less than 15 pounds per square inch above the maximum brake pipe pressure fixed by the carrier and will not stop the compressor until the reservoir pressure has increased at least 10 pounds.	Pressure Vessel Code for Unfired Pressure Vessel Section VIII, Division I (ASME Code). The working pressure shall be 150 psig (10.3 bar) and the corresponding rated temperature shall be 150F (65C) unless otherwise defined in the railroad's Safe Operation Plan for Tier III Passenger Equipment. Reservoirs shall be certified based on their size and volume requirements.	other standard approved by FRA. The working pressure shall be 150 psig (10.3 bar) and the corresponding rated temperature shall be 150F (65C) unless otherwise defined by the railroad. Reservoirs shall be certified based on their size and volume requirements.	
§229.49 Main reservoir system. a) (1) The main reservoir system of each locomotive shall be equipped with at least one safety valve that shall prevent an accumulation of pressure of more than 15 pounds per square inch above the maximum working air pressure fixed by the chief mechanical officer of the carrier operating the locomotive. (2) Except for non-equipped MU locomotives	**§238.731 Brake system.** f)… 2) Each welded steel main reservoir shall be drilled in accordance with the requirements of a recognized standard specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, such as the ASME Code, UG-25(e). With the drain opening located at the low point of the reservoir, one row of holes shall be drilled lengthwise on the reservoir on a line intersecting	**§238.731 Brake system.** f)… 2) Each welded steel main reservoir shall be drilled in accordance with the requirements of a recognized standard as specified by the railroad, such as the ASME Code, UG-25(e). With the drain opening located at the low point of the reservoir, one row of holes shall be drilled lengthwise on the reservoir on a line intersecting the drain opening and sloped to the drain opening.	Drilling would be addressed during the design review and captured on the reservoir drawings and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement.

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built prior to January 1, 1981, each locomotive …	the drain opening and sloped to the drain opening.		
	§238.731 Brake system. j)… 2) The minimum brake cylinder pressure shall be established to provide adequate adjustment from minimum service to full service for proper train operation. The brake cylinder pressure shall be approved as part of the design review process described in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.731 Brake system.** j)… 2) The minimum brake cylinder pressure shall be established to provide adequate adjustment from minimum service to full service for proper train operation. The brake cylinder pressure shall be approved as part of the design review process.	The minimum brake cylinder pressure would be addressed during the design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement.
§229.59 Leakage. a) Leakage from the main air reservoir and related piping may not exceed an average of 3 pounds per square inch per minute for 3 minutes after the pressure has been reduced to 60 percent of the maximum pressure. b) Brake pipe leakage may not exceed 5 pounds per square inch per minute. c) With a full service application at maximum brake pipe pressure and with communication to the brake cylinders closed, the brakes shall remain applied at least 5 minutes. d) Leakage from control air reservoir, related piping, and pneumatically operated controls may not exceed an average of 3 pounds per square inch per minute for 3 minutes.	**§238.731 Brake system.** l) Leakage. 1) If a Tier III trainset is equipped with a brake pipe, the leakage rates shall not exceed the limits defined in either paragraph (l)(2) of this section, or those defined in the Air Consumption Analysis included in the railroad's Safe Operation Plan for Tier III Passenger Equipment, whichever is more restrictive. The method of inspection for main reservoir pipe leakage shall be prescribed in the railroad's ITM plan.	**§238.731 Brake system.** l) Leakage. 1) If a Tier III trainset is equipped with a brake pipe, the leakage rates shall not exceed the limits defined in either paragraph (l)(2) of this section, or those defined in the Air Consumption Analysis conducted by the railroad, whichever is more restrictive. The method of inspection for main reservoir pipe leakage shall be prescribed in the railroad's ITM program.	Brake pipe leakage will be addressed via an air consumption analysis during design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement. The maximum leakage rate will also be contained in the Inspection, Testing, and Maintenance program. APTA notes that such detail would be in the ITM “program” rather than the ITM “plan”.
§238.431 Brake system. h) Passenger equipment shall be equipped with an adhesion control system designed to automatically adjust the braking force on each	**§238.731 Brake system.** (m)… (3) If this system fails to prevent wheel slide within preset parameters specified in the	**§238.731 Brake system.** (m)… (3) If this system fails to prevent wheel slide within preset parameters as defined in the	Wheel slide parameters will be during design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for §

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wheel to prevent sliding during braking. In the event of a failure of this system to prevent wheel slide within preset parameters, a wheel slide alarm that is visual or audible, or both, shall alert the train operator in the cab of the controlling power car to wheel-slide conditions on any axle of the train.	railroad's Safe Operation Plan for Tier III Passenger Equipment, then operating restrictions for a trainset with slide protection devices that are not functioning as intended shall be specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	railroad's ITM program, then operating restrictions for a trainset with slide protection devices that are not functioning as intended shall be defined in the railroad's operating rules.	238.110 will specifically reference this requirement. The specific wheel slide parameters must be defined in the railroad's ITM program. Similarly, in the event of a failure of the wheel slide system, the trainset shall be operated in accordance with the railroad's operating rules.
	§238.731 Brake system. (n) Monitoring and diagnostics. Each Tier III trainset shall be equipped with a monitoring and diagnostic system that is designed to automatically assess the functionality of the brake system for the entire trainset. Details of the system operation and method of communication of brake system functionality prior to the departure of the trainset and while en route shall be described in detail in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.731 Brake system.** (n) Monitoring and diagnostics. Each Tier III trainset shall be equipped with a monitoring and diagnostic system that is designed to automatically assess the functionality of the brake system for the entire trainset. Details of the system operation and method of communication of brake system functionality prior to the departure of the trainset and while en route shall be defined in the railroad's operating rules and ITM program.	APTA notes that FRA added the requirement that the monitoring and diagnostic system shall determine the brake system status prior to departure and while en route. Existing equipment would monitor and report en route conditions. Therefore, APTA concurs with the addition as reasonable. Brake system monitoring is established during the design review and documented in the functional description. The proposed language for § 238.110 will specifically reference this requirement. In addition, faults are contained in the operating manuals. Therefore this requirement does not require inclusion in a Safe Operation Plan.
	§238.731 Brake system. (o) Train securement. Independent of the pneumatic brakes, Tier III equipment shall be equipped with a means of securing the equipment when unattended, as defined in 238.231(h)(4), against unintentional movement. The railroad shall specify in its Safe Operation Plan for Tier III Passenger Equipment the procedures used to secure the equipment and shall also demonstrate that those procedures effectively secure the equipment on all grade conditions identified by the railroad.	**§238.731 Brake system.** (o) Train securement. Independent of the pneumatic brakes, Tier III equipment shall be equipped with a means of securing unattended equipment against unintentional movement. For the purposes of this section, "unattended equipment" means equipment left standing and unmanned in such a manner that the brake system of the equipment cannot be readily controlled by a qualified person. The railroad shall specify the procedures used to secure the equipment and shall also demonstrate that those procedures effectively secure the equipment on all grade conditions identified by the railroad.	The physical means for securing the trainset will be addressed during the design review and therefore does not require inclusion in a Safe Operation Plan. The proposed language for § 238.110 will specifically reference this requirement. The procedural requirements for securing the trainset will be defined in the railroad's operating rules. This provision requires the use of a parking or handbrake by referencing § 238.231(h)(4) which is not consistent with the RSAC ETF agreement where wheel chocks could be used under certain circumstances. APTA notes that FRA added the term 'unattended". Technical specifications normally state that the equipment can be left for an indefinite time period, which corresponds to unattended. Therefore, the addition appears to be reasonable.

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§238.233 Interior fittings and surfaces. (c) Other interior fittings within a passenger car shall be attached to the car body with sufficient strength to withstand the following individually applied accelerations acting on the mass of the fitting: (1) Longitudinal: 8g; (2) Vertical: 4g; and (3) Lateral: 4g.	**§238.733 Interior fixture attachment.** (a) Tier III trainsets shall comply with the interior fixture attachment requirements referenced in either of the following paragraphs: (1) Section §238.233 and APTA PR-CS-S-006-98, Rev. 1, "Standard for Attachment Strength of Interior Fittings for Passenger Railroad Equipment," Authorized September 2005. (2) Section 6.1.4, "Security of furniture, equipment and features," of Railway Group Standard GM/RT2100, Issue Four, "Requirements of Rail Vehicle Structures," Rail Safety and Standards Board, Ltd., December 2010, provided that – (i) The conditions of §238.705 (b)(2) are met; (ii) Interior fixture attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance; and (iii) Use of the standard is carried out in accordance with any conditions identified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, as approved by FRA.	**§238.733 Interior fixture attachment.** Tier III trainsets shall comply with the interior fixture attachment requirements referenced in Section 6.1.4, "Security of furniture, equipment and features," of Railway Group Standard GM/RT2100, Issue Four, "Requirements of Rail Vehicle Structures," Rail Safety and Standards Board, Ltd., December 2010, provided that – (a) The conditions of §238.705 (b)(2) are met; (b) Interior fixture attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance.	APTA proposes to delete the reference to the Safe Operation Plan in § 238.733 (a)(2)(iii) as the criteria for the acceleration pulse in the collision scenario for Tier III equipment must be met as set out in paragraph § 238.705(b)(2). As this is a design review issue, the proposed language for § 238.110 will specifically reference this requirement. APTA notes that the interior fixture attachment strength for Tier I alternative trainsets is contained in Appendix G.
§238.233 Interior fittings and surfaces. a) Each seat in a passenger car shall— (1) Be securely fastened to the car body so as to withstand an individually applied acceleration of 4g acting in the lateral direction and 4g acting in the upward vertical direction on the deadweight of the seat or seats, if held in tandem; and (2) Have an attachment to the car body of an ultimate strength capable of resisting	**§238.735 Seat crashworthiness (passenger and cab crew).** (a) Passenger seating in Tier III trainsets shall comply with the requirements referenced in either of the following paragraphs: (1) Section §238.233 and APTA PR-CS-S-016-99, Rev. 2, "Standard for Passenger Seats in Passenger Rail Cars," Authorized October 2010, excluding Section 6.0, "Seat durability testing."	**§238.735 Seat crashworthiness (passenger and cab crew).** Passenger seating in Tier III trainsets shall comply with Section 6.2, "Seats for passengers, personnel, or train crew," of Railway Group Standard GM/RT 2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that –	APTA proposes to delete the reference to the Safe Operation Plan in § 238.735 (a)(2)(iii) as the criteria for the acceleration pulse in the collision scenario for Tier III equipment must be met as set out in paragraph § 238.705(b)(2). As this is a design review issue, the proposed language for § 238.110 will specifically reference this requirement. APTA notes that the seat crashworthiness requirements for Tier I alternative trainsets is contained in Appendix G.

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simultaneously: (i) The longitudinal inertial force of 8g acting on the mass of the seat; and (ii) The load associated with the impact into the seatback of an unrestrained 95th-percentile adult male initially seated behind the seat, 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. f) Locomotives required to be constructed in accordance with subpart D of part 229 of this chapter shall have cab seat attachment in compliance with §229.206 of this chapter, in lieu of the following requirements of this paragraph. Each seat provided for a crewmember regularly assigned to occupy the cab of a locomotive and each floor-mounted seat in the cab shall be secured to the car body with an attachment having an ultimate strength capable of withstanding the loads due to the following individually applied accelerations acting on the combined mass of the seat and a 95th-percentile adult male occupying it: (1) Longitudinal: 8g; (2) Lateral: 4g; and (3) Vertical: 4g.	(2) Section 6.2, "Seats for passengers, personnel, or train crew," of Railway Group Standard GM/RT 2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that – (i) The conditions of §238.705 (b)(2) are met; (ii) Seat attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance; and (iii) Use of the standard is carried out in accordance with any conditions identified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, as approved by FRA.	(a) The conditions of §238.705 (b)(2) are met; (b) Seat attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance.	
§238.233 Interior fittings and surfaces. b) Overhead storage racks in a passenger car shall provide longitudinal and lateral restraint for stowed articles. Overhead storage racks shall be attached to the car body with sufficient strength to resist loads due to the following individually applied accelerations acting on the mass of the luggage stowed as determined by the railroad: (1) Longitudinal: 8g; (2) Vertical: 4g; and	**§238.737 Luggage (passenger and cab crew).** (b) Luggage racks shall comply with the requirements referenced in either of the following paragraphs: 1) Section §238.233; or (2) Section 6.8, "Luggage stowage," of Railway Group Standard GM/RT 2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that – (i) The conditions of §238.705 (b)(2) are met;	**§238.737 Luggage (passenger and cab crew).** (b) Luggage racks shall comply with Section 6.8, "Luggage stowage," of Railway Group Standard GM/RT 2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that – (i) The conditions of §238.705 (b)(2) are met;	APTA proposes to delete the reference to the Safe Operation Plan in § 238.737 (b)(1)(iii) as the criteria for the acceleration pulse in the collision scenario for Tier III equipment must be met as set out in paragraph § 238.705(b)(2). As this is a design review issue, the proposed language for § 238.110 will specifically reference this requirement. APTA notes that the luggage rack requirements for Tier I alternative trainsets is contained in Appendix G.

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(3) Lateral: 4g. ********** **§238.435 Interior fittings and surfaces.** h) Luggage stowage compartments shall be enclosed, and have an ultimate strength sufficient to resist loads due to the following individually applied accelerations acting on the mass of the luggage that the compartments are designed to accommodate: (1) Longitudinal: 8g; (2) Lateral: 4g; and (3) Vertical: 4g.	(ii) Attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance; and (iii) Use of the standard is carried out in accordance with any conditions identified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, as approved by FRA. In particular, the railroad shall determine the maximum allowable weight of the luggage stowed for purposes of evaluating luggage rack attachment strength.	(ii) Attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance; and (iii) The railroad shall determine the maximum allowable weight of the luggage stowed for purposes of evaluating luggage rack attachment strength.	
§238.115 Emergency lighting. a) Prior to January 1, 2017, the requirements specified in paragraphs (a)(1) through (4) of this section apply to each passenger car ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002. Emergency lighting shall be provided in each passenger car and shall include the following: (1) A minimum, average illumination level of 1 foot-candle measured at floor level adjacent to each exterior door and each interior door providing access to an exterior door (such as a door opening into a vestibule); (2) A minimum, average illumination level of 1 foot-candle measured 25 inches above floor level along the center of each aisle and passageway; (3) A minimum illumination level of 0.1 foot-candle measured 25 inches above floor level at any point along the center of each aisle and passageway; and (4) A back-up power system capable of:	**§238.743 Emergency lighting.** (b) Emergency lighting back-up power systems shall, at a minimum, be capable of operating after experiencing the individually applied accelerations defined in either of the following paragraphs: (1) §238.115 (b)(4)(ii); or (2) Section 6.1.4, "Security of furniture, equipment and features," of Railway Group Standard GM/RT 2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that – (i) The conditions of §238.705 (b)(2) are met; (ii) Attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance; and	**§238.743 Emergency lighting.** (b) Emergency lighting back-up power systems shall, at a minimum, be capable of operating after experiencing the individually applied accelerations defined in Section 6.1.4, "Security of furniture, equipment and features," of Railway Group Standard GM/RT 2100, Issue Four, "Requirements for Rail Vehicle Structures," Rail Safety and Standards Board Ltd., December 2010, provided that – (i) The conditions of §238.705 (b)(2) are met; (ii) Attachment strength is based on a minimum of 5g longitudinal, 3g lateral, and 3g vertical acceleration resistance.	APTA recommends deleting § 238.743 (b)(1) as Tier III equipment will be designed in accordance with Section 6.1.4 of GM/RT2100 Issue 4. This is consistent with the approach proposed by APTA for Interior Fittings and Surfaces. The Tier I alternative requirements for emergency lighting are contained in § 238.115. APTA also recommends deleting the reference to the Safe Operation Plan in § 238.743 (b)(2)(iii) as the criteria for the acceleration pulse in the collision scenario for Tier III equipment must be met as set out in paragraph § 238.705(b)(2). As this is a design review issue, the proposed language for § 238.110 will specifically reference this requirement.

Original CFR Language	NPRM Proposed Text	Proposed Revision	Comment/Justification
(i) Operating in all equipment orientations within 45 degrees of vertical; (ii) Operating after the initial shock of a collision or derailment resulting in the following individually applied accelerations: (A) Longitudinal: 8g; (B) Lateral: 4g; and (C) Vertical: 4g; and …	(iii) Use of the standard is carried out in accordance with any conditions identified in the railroad's Safe Operation Plan for Tier III Passenger Equipment, as approved by FRA.		
§238.237 Automated monitoring. b) Alerter or deadman control timing shall be set by the operating railroad taking into consideration maximum train speed and capabilities of the signal system. The railroad shall document the basis for setting alerter or deadman control timing and make this documentation available c) If the train operator does not respond to the alerter or maintain proper contact with the deadman control, it shall initiate a penalty brake application. ********** **§238.447 Train operator's controls and power car cab layout.** c) An alerter shall be provided in the power car cab. If not acknowledged, the alerter shall cause a brake application to stop the train.	**§238.751 Alerters.** b) Upon initiation of the alerter, the engineer must acknowledge the alerter within the time period and according to the parameters specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment in order for train operation to remain under the full control of the engineer.	**§238.751 Alerters.** b) Upon initiation of the alerter, the engineer must acknowledge the alerter within the time period and according to the parameters specified by the railroad in order for train operation to remain under the full control of the engineer. The railroad shall document the basis for setting alerter control timing and make this documentation available.	APTA proposes to delete the reference to the Safe Operation Plan in § 238.751 (b) as the basis for setting the alerter control timing will be addressed during design review, the proposed language for § 238.110 will specifically reference this requirement.
§	**238.751 Alerters.** d) To retrieve the full service brake application described in paragraph (c) of this section, the engineer must acknowledge the alerter and	**§238.751 Alerters.** d) To retrieve the full service brake application described in paragraph (c) of this section, the engineer must acknowledge the alerter and	APTA proposes to delete the reference to the Safe Operation Plan in § 238.751 (d) as the required action of the engineer would be contained in the railroad's operating rules and engineer's training program.

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	activate appropriate controls to issue a command for brake application as specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	activate appropriate controls to issue a command for brake application as specified by the railroad.	
§	**238.751 Alerters.** e) If an alternate technology to the alerter is used, the railroad shall conduct a hazard analysis that confirms the ability of the technology to provide an equivalent level of safety. This analysis shall be included in the railroad's Safe Operation Plan for Tier III Passenger Equipment.	**§238.751 Alerters.** e) If an alternate technology to the alerter is used, the railroad shall conduct a safety analysis that confirms the ability of the technology to provide an equivalent level of safety. This analysis shall be approved during the design review process.	APTA proposes to delete the reference to the Safe Operation Plan in § 238.751 (e) as safety analysis required to demonstrate equivalent safety will be addressed during design review, the proposed language for § 238.110 will specifically reference this requirement.
§229.131 Sanders. a) Prior to departure from an initial terminal, each locomotive, except for MU locomotives, shall be equipped with operative sanders that deposit sand on each rail in front of the first power operated wheel set in the direction of movement or shall be handled in accordance with the requirements contained in §229.9	**§238.753 Sanders.** a) A Tier III trainset shall be equipped with operative sanders, if required by the railroad's Safe Operation Plan for Tier III Passenger Equipment.		The international operators and carbuilders indicate that sanders on high speed trainsets are typically used to improve acceleration and/or braking performance and are not deemed safety-critical. The safe braking distance is determined without the use of sanders. However, if the sanders on a specific trainset are safety-critical that will be defined in the Inspection, Testing, and Maintenance program, in which case, operating restrictions will be addressed under movement of defective equipment. APTA, therefore, recommends that the language associated with sanders in § 238.753 be removed.
	§238.803 Inspection, testing, and maintenance requirements; brake system. (b)… (2) Movement of a trainset with a power brake defect as defined in §238.15 shall be conducted in accordance with §238.15, with the following exceptions: (i) The confirmation of the percentage of operative power brakes required by §238.15(c)(4)(iv) may be by a technological		Due to the ongoing discussion in the ETF, the requirements contained in Subpart I in NPRM will be subject to change and therefore the specific language contained in Subpart I of the NPRM should not be included in the final rule until it is properly vetted and consensus reached in the ongoing ETF meetings. APTA also notes that the approach taken by the ETF in Subpart I in the ongoing efforts will also affect the requirements for movement of defective equipment.

Original CFR Language	NPRM Proposed Text	Proposed Revision	Comment/Justification
	method specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment. (ii) The computation of the percentage of operative power brakes required by §238.15(c)(1) shall be determined by a formula specified in the railroad's Safe Operation Plan for Tier III Passenger Equipment; and (iii) Operating restrictions determined by the percentage of operative power brakes in a trainset shall be based upon the requirements of §238.15 when the trainset operates in a shared right-of-way; operating restrictions shall be based upon a percentage of operative brakes as defined in the railroad's Safe Operation Plan for Tier III Passenger Equipment when the trainset operates in a right-of-way exclusively for Tier III passenger equipment.		