



DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

49 CFR Parts 238 and 239

[Docket No. FRA-2009-0119, Notice No. 2]

RIN 2130-AC22

Passenger Train Emergency Systems II

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

ACTION: Final rule.

SUMMARY: This final rule is intended to further the safety of passenger train occupants through both enhancements and additions to FRA's existing requirements for emergency systems on passenger trains. In this final rule, FRA is adding requirements for emergency passage through vestibule and other interior passageway doors and enhancing emergency egress and rescue access signage requirements. FRA is also establishing requirements for low-location emergency exit path markings to assist occupants in reaching and operating emergency exits, particularly under conditions of limited visibility. Further, FRA is adding standards to ensure that emergency lighting systems are provided in all passenger cars, and FRA is enhancing requirements for the survivability of emergency lighting systems in new passenger cars. Finally, FRA is clarifying requirements for participation in debriefing and critique sessions following emergency situations and full-scale simulations.

DATES: This final rule is effective January 28, 2014. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of January 28, 2014. Petitions for reconsideration must be received on or before January 28, 2014. Comments in response to petitions for reconsideration must be received on or before March 14, 2014.

ADDRESSES: Petitions for reconsideration: Petitions for reconsideration related to Docket No. FRA-2009-0119, Notice No. 2, may be submitted by any of the following methods:

- Web site: The Federal eRulemaking Portal, <http://www.regulations.gov>. Follow the Web site's online instructions for submitting comments, to include petitions for reconsideration.
- Fax: 202-493-2251.
- Mail: Docket Management Facility, U.S. Department of Transportation, 1200 New Jersey Avenue, SE., W12-140, Washington, DC 20590.
- Hand Delivery: Room W12-140 on the ground level of the West Building, 1200 New Jersey Avenue, SE., Washington, DC between 9 a.m. and 5 p.m. Monday through Friday, except Federal holidays.

Instructions: All submissions must include the agency name and docket number or Regulatory Identification Number (RIN) for this rulemaking. Note that all petitions and comments received will be posted without change to <http://www.regulations.gov>, including any personal information. Please see the Privacy Act heading in the **SUPPLEMENTARY INFORMATION** section of this document for Privacy Act information related to any submitted comments or materials.

Docket: For access to the docket to read background documents, any petition for reconsideration submitted, or comments received, go to <http://www.regulations.gov> at any time or visit the Docket Management Facility, U.S. Department of Transportation, Room W12-140 on the ground level of the West Building, 1200 New Jersey Avenue, SE., Washington, DC between 9 a.m. and 5 p.m. Monday through Friday, except Federal holidays.

FOR FURTHER INFORMATION CONTACT: Michael Masci, Trial Attorney, Office of Chief Counsel, FRA, 1200 New Jersey Avenue, SE., RCC-12, Mail Stop 10, Washington, DC 20590 (telephone 202-493-6037); Michael Hunter, Trial Attorney, Office of Chief Counsel, FRA, 1200 New Jersey Avenue, SE., RCC-12, Mail Stop 10, Washington, DC 20590 (telephone 202-493-0368); or Brenda Moscoso, Director, Office of Safety Analysis, Office of Railroad Safety, FRA, 1200 New Jersey Avenue, SE., RRS-20, Mail Stop 25, Washington, DC 20590 (telephone 202-493-6282).

SUPPLEMENTARY INFORMATION:

Abbreviations Frequently Used in this Document

| | |
|--------|---------------------------------|
| CFR | Code of Federal Regulations |
| FRA | Federal Railroad Administration |
| U.S.C. | United States Code |

Table of Contents for Supplementary Information

- I. Executive Summary
- II. History
 - A. Statutory Background
 - B. Implementation of the 1994 Passenger Equipment Safety Rulemaking Mandate
 - C. Tasking of Passenger Safety Issues to the Railroad Safety Advisory Committee

- D. 2008 Passenger Train Emergency Systems Final Rule
- E. Passenger Train Emergency Systems II Rulemaking
- III. Discussion of Specific Comments and Conclusions
- IV. Technical Background and General Overview of Final Rule Requirements
 - A. Doors
 - B. Identification of Emergency Systems
 - C. Emergency Lighting
 - D. Marking and Instructions for Emergency Egress and Rescue Access
 - E. Low-Location Emergency Exit Path Marking
 - F. Photoluminescent Marking Materials
 - G. Emergency Communications
 - H. Debriefing and Critique Session Following Emergency Situations and Full-Scale Simulations
- V. Section-by-Section Analysis
 - A. Amendments to Part 238, Subparts B, C, and E
 - B. Amendments to Part 239, Subpart B
- VI. Regulatory Impact and Notices
 - A. Executive Orders 12866 and 13563, and DOT Regulatory Policies and Procedures
 - B. Regulatory Flexibility Act and Executive Order 13272
 - C. Paperwork Reduction Act
 - D. Federalism Implications
 - E. Environmental Impact
 - F. Unfunded Mandates Reform Act of 1995
 - G. Trade Impact

H. Privacy Act

I. Executive Summary

Having considered the public comments in response to FRA's January 3, 2012, proposed rule on passenger train emergency systems, see 77 FR 153, FRA issues this final rule amending the Passenger Equipment Safety Standards, 49 CFR part 238, and the Passenger Train Emergency Preparedness regulations, 49 CFR part 239. This rule establishes enhanced or new requirements related to the following subject areas: doors, emergency lighting, markings and instruction for emergency egress and rescue access, emergency communication, low-location emergency exit path markings, and debriefing and critique of emergency situations and simulations. As part of these amendments, FRA is incorporating by reference three American Public Transportation Association (APTA) standards for passenger train emergency systems. A brief overview of the final rule is provided below, organized by subject area:

Door emergency egress and rescue access systems

This rule as it relates to vestibule doors (and other interior passageway doors) requires such doors in new passenger cars to be fitted with a removable panel or removable window for use in accessing and exiting the passenger compartment through the vestibule in the event that the vestibule door is inoperable. Additionally, FRA is establishing distinct requirements for bi-parting vestibule doors (and other bi-parting, interior passageway doors), including provisions for a manual override and retention mechanisms. For security reasons, an exception is included to allow railroads discretion when deciding whether to include a removable panel or removable window in a door

leading to a cab compartment. This rule also sets forth requirements for the inspection, testing, reporting, and repairing of the door safety mechanisms.

Emergency lighting

This rule establishes requirements for minimum emergency light illumination levels within all passenger cars, supplementing requirements that have applied generally to new passenger cars. The rule also provides standards for the number and placement of power sources for the emergency lighting system in newer cars and specifies requirements for testing lighting fixtures and power sources that are part of the emergency lighting system for all cars.

Emergency lighting power sources that include batteries located under passenger cars may not be reliable following a collision or derailment due to their location. This rule helps to ensure that in both new and certain existing passenger cars these essential back-up power sources are able to function as intended by requiring that the batteries are located in the passenger compartment, where they are better protected.

Emergency communications

This rule makes clear that public address (PA) and intercom systems on newer passenger cars are required to have back-up power to remain operational for at least 90 minutes when the primary power source fails. This rule also establishes more specific requirements for the luminescent material used to mark intercoms, enhancing regulations that have required the location of each intercom to be clearly marked with luminescent material.

Emergency egress and rescue access markings and instructions

This rule enhances current signage requirements by specifying requirements for signage recognition, design, location, size, color and contrast, and materials used for emergency exits and rescue access locations. This additional detail helps to ensure that emergency egress points and systems can be easily identified and operated by passengers and train crewmembers needing to evacuate a passenger car during an emergency. The enhancements also help to ensure that emergency response personnel can easily identify rescue access points and then facilitate their access to the passenger car. This rule establishes more comprehensive requirements for marking emergency roof access locations and providing instructions for their use to facilitate emergency responder access to passenger cars.

Photoluminescent materials

Specifically, the rule enhances requirements related to the use of high-performance photoluminescent (HPPL) material, i.e., a photoluminescent material that is capable of emitting light at a very high rate and for an extended period of time, as well as policies and procedures for ensuring proper placement and testing of photoluminescent materials. These revisions are intended to help ensure greater visibility of signage and markings in an emergency situation so that train occupants can identify emergency exits and the path to the nearest exit in conditions of limited visibility, which include, but are not limited to conditions when all lighting fails, or when smoke is present in the passenger car. Existing emergency egress signage inside some passenger compartment areas within passenger cars has been ineffective due to its inability to absorb sufficient levels of ambient or electrical light. The requirements in this rule improve the

conspicuity of signage and markings in the passenger compartment, and thus increase the discernability of the exit signs and markings.

Low-location emergency exit path marking (LLEPM)

This rule establishes minimum requirements for photoluminescent and electrically-powered LLEPM systems to provide visual guidance for passengers and train crewmembers when the emergency lighting system has failed or when smoke conditions obscure overhead emergency lighting. The rule also requires railroads to conduct periodic inspections and tests to verify that all LLEPM system components, including power sources, function as intended.

Debriefing and critique

FRA is modifying the existing debriefing and critique requirements to clarify that passenger train personnel who have first-hand knowledge of an emergency involving a passenger train are intended to participate in a debriefing and critique session after the emergency, or an emergency simulation, occurs.

Economic impact

FRA has assessed the cost to railroads that is expected to result from the implementation of this rule. For the 20-year period analyzed, the estimated quantified cost that will be imposed on industry totals \$21.8 million, with a present value (PV, 7 percent) of \$13.4 million.

| 20-Year Cost for Final Rule | |
|--|-------------|
| Door Removable Panels or Windows, and Bi-Parting Doors | \$4,399,223 |
| Emergency Lighting | \$2,450,213 |

| | |
|---|---------------------|
| Emergency Egress and Rescue Access Marking and Instructions | \$4,730,631 |
| Low-Location Emergency Exit Path Markings | \$1,377,615 |
| Debriefing and Critique | N/A |
| Inspection, Testing, and Recordkeeping | \$405,296 |
| | |
| Total | \$13,362,979 |

Dollars are discounted at a present value rate of 7 percent.

This rule is expected to improve railroad safety by promoting the safe resolution of emergency situations involving passenger trains, including the evacuation of passengers and crewmembers in the event of an emergency. The primary benefits include a heightened safety environment for egress from a passenger train and rescue access by emergency response personnel after an accident or other emergency. This corresponds to a reduction of casualties and fatalities in the aftermath of collisions, derailments, and other emergency situations. FRA believes the value of the anticipated safety benefits will justify the cost of implementing this rule.

II. History

A. Statutory Background

In September 1994, the Secretary of Transportation (Secretary) convened a meeting of representatives from all sectors of the rail industry with the goal of enhancing rail safety. As one of the initiatives arising from this Rail Safety Summit, the Secretary announced that DOT would begin developing safety standards for rail passenger equipment over a five-year period. In November 1994, Congress adopted the Secretary's schedule for implementing rail passenger equipment safety regulations and included it in the Federal Railroad Safety Authorization Act of 1994 (the Act), Pub. L. No. 103-440,

108 Stat. 4619, 4623-4624 (November 2, 1994). Congress also authorized the Secretary to consult with various organizations involved in passenger train operations for purposes of prescribing and amending these regulations, as well as issuing orders pursuant to them. Section 215 of the Act (codified at 49 U.S.C. 20133).

B. Implementation of the 1994 Passenger Equipment Safety Rulemaking Mandate

On May 4, 1998, pursuant to Section 215 of the Act, FRA published the Passenger Train Emergency Preparedness (PTEP) final rule. See 63 FR 24629. This rule contains minimum Federal safety standards for the preparation, adoption, and implementation of emergency preparedness plans by railroads connected with the operation of passenger trains, including freight railroads hosting the operations of passenger rail service. Elements of the required emergency preparedness plan include: communication; employee training and qualification; joint operations; tunnel safety; liaison with emergency responders; on-board emergency equipment; and passenger safety information. The rule also established specific requirements for passenger train emergency systems. The requirements include: conspicuous marking of all emergency window exits with luminescent material on the interior, along with instructions provided for their use, and marking on the exterior of all windows intended for rescue access by emergency responders with retroreflective material, along with instructions provided for their use; lighting or marking of all door exits intended for egress on the interior along with instructions for their use; and marking of all door exits intended for rescue access by emergency responders, on the exterior along with providing instructions for their use. In

addition, the rule contains specific requirements for participation in debrief and critique sessions following emergency situations and full-scale simulations.

On May 12, 1999, FRA published the Passenger Equipment Safety Standards (PESS) final rule. See 64 FR 25540. The rule established comprehensive safety standards for railroad passenger equipment. The standards established various requirements for emergency systems, including requirements for the size, location, and operation of exterior side doors used for emergency egress or access for all passenger cars and for emergency lighting for new passenger cars. After publication of the PESS final rule, interested parties filed petitions seeking FRA's reconsideration of certain requirements contained in the rule. These petitions generally related to the following subject areas: structural design; location of emergency exit windows; fire safety; training; inspection, testing, and maintenance; and movement of defective equipment. To address the petitions, FRA grouped issues together and published three sets of amendments to the final rule in 2000 and 2002. See 65 FR 41284; 67 FR 19970; and 67 FR 42892.

C. Tasking of Passenger Safety Issues to the Railroad Safety Advisory Committee

While FRA had completed these rulemakings, FRA had identified various issues for possible future rulemaking, including those to be addressed following the completion of additional research, the gathering of additional operating experience, or the development of industry standards, or all three. FRA decided to address these issues with the assistance of the Railroad Safety Advisory Committee (RSAC). FRA established the RSAC in March 1996, and it serves as a forum for developing consensus recommendations on rulemakings and other safety program issues. The RSAC includes

representation from all of the agency's major stakeholders, including railroads, labor organizations, suppliers and manufacturers, and other interested parties. A list of member groups follows:

American Association of Private Railroad Car Owners (AARPCO);
American Association of State Highway and Transportation Officials (AASHTO);
American Chemistry Council;
American Petroleum Institute;
APTA;
American Short Line and Regional Railroad Association (ASLRRA);
American Train Dispatchers Association (ATDA);
Association of American Railroads (AAR);
Association of Railway Museums (ARM);
Association of State Rail Safety Managers (ASRSM);
Brotherhood of Locomotive Engineers and Trainmen (BLET);
Brotherhood of Maintenance of Way Employees Division (BMWED);
Brotherhood of Railroad Signalmen (BRS);
Chlorine Institute;
Federal Transit Administration (FTA);*
Fertilizer Institute;
High Speed Ground Transportation Association (HSGTA);
Institute of Makers of Explosives;
International Association of Machinists and Aerospace Workers;
International Brotherhood of Electrical Workers (IBEW);

Labor Council for Latin American Advancement (LCLAA);*

League of Railway Industry Women;*

National Association of Railroad Passengers (NARP);

National Association of Railway Business Women;*

National Conference of Firemen & Oilers;

National Railroad Construction and Maintenance Association;

National Railroad Passenger Corporation (Amtrak);

National Transportation Safety Board (NTSB);*

Railway Supply Institute (RSI);

Safe Travel America (STA);

Secretaria de Comunicaciones y Transporte (Mexico);*

Sheet Metal Workers International Association (SMWIA);

Tourist Railway Association Inc.;

Transport Canada;*

Transport Workers Union of America (TWU);

Transportation Communications International Union/BRC (TCIU/BRC);

Transportation Security Administration;* and

United Transportation Union (UTU).

*Indicates associate membership. (Please see 77 FR 156 for additional discussion of the RSAC process.)

On May 20, 2003, FRA presented the RSAC with the task of reviewing existing passenger equipment safety needs and programs and recommending consideration of specific actions that could be useful in advancing the safety of rail passenger service. In

turn, the RSAC accepted the task and established the Passenger Safety Working Group (Working Group) to handle the task and develop recommendations for the full RSAC to consider. Members of the Working Group, in addition to FRA, include the following:

AAR, including members from BNSF Railway Company, CSX Transportation, Inc., and Union Pacific Railroad Company;

APRCO;

AASHTO;

Amtrak;

APTA, including members from: Bombardier, Inc., Herzog Transit Services, Inc.,

Interfleet Technology Inc., Long Island Rail Road (LIRR), Metro-North

Commuter Railroad Company (Metro-North), Northeast Illinois Regional

Commuter Railroad Corporation (Metra), Southern California Regional Rail

Authority (Metrolink), and Southeastern Pennsylvania Transportation Authority (SEPTA);

BLET;

BRS;

FTA;

HSGTA;

IBEW;

NARP;

NTSB;

RSI;

SMWIA;

STA;

TCIU/BRC;

TWU; and

UTU.

The Working Group met 14 times between September 9, 2003, and September 16, 2010. Staff from DOT's John A. Volpe National Transportation Systems Center (Volpe Center) attended all of the Working Group meetings and contributed to the technical discussions. See 77 FR 157. Due to the variety of issues involved, at its November 2003 meeting, the Working Group established four task forces: Emergency Systems, Vehicle/Track Interaction, Crashworthiness/Glazing, and Mechanical. Each task force was formed as a smaller group to develop recommendations on specific issues within each group's particular area of expertise. Members of the Emergency Systems Task Force (Task Force), in addition to FRA, include (or have included) the following:

Amtrak;

APTA, including members from Bombardier, Elcon National, Go Transit, Interfleet Technology, Inc, Jacobs Civil Engineering, Jessup Manufacturing Company, Kawasaki Rail Car, Inc., LIRR, LTK, Luminator, Maryland Transit Administration, Massachusetts Bay Transportation Authority (MBTA), Metrolink, Metro-North, Northern Indiana Commuter Transit District (NICTD), SEPTA, San Diego Northern Commuter Railroad (Coaster), Permalight, Po's Ability USA, Inc., Prolink, Transit Design Group (TDG), Transit Safety Management (TSM), Translite, STV Inc., and Visual Marking Systems, Inc.;

BLET;

California Department of Transportation (Caltrans);

FTA;

NARP;

RSI, including Globe Transportation Graphics;

TWU; and

UTU.

Representatives from TSA, of the U.S. Department of Homeland Security (DHS), while an advisory member and not a voting member of the Task Force, attended certain meetings and contributed to the discussions of the Task Force. In addition, staff from the Volpe Center attended all of the meetings and contributed to the technical discussions through their comments and presentations and by setting up various lighting, marking, and signage demonstrations.

The Task Force held 17 meetings between February 25, 2004, and March 31, 2009. Associated with these meetings were site visits where FRA met with representatives of Metrolink, MBTA, Amtrak, LIRR, Coaster, SEPTA, and Caltrans, respectively, and toured their passenger equipment. See 77 FR 157-158. The visits were open to all members of the Task Force (and Working Group) and included a demonstration of emergency system features. As in the case of Working Group visits to Metra and the South Florida Regional Transportation Authority, FRA believes they have added to the collective understanding of RSAC members in identifying and addressing passenger train safety issues for not only this rulemaking, but for other RSAC initiatives as well.

D. 2008 Passenger Train Emergency Systems Final Rule

With the RSAC's assistance, FRA published a final rule on Passenger Train Emergency Systems (PTES) on February 1, 2008. See 73 FR 6370. The rule addressed a number of concerns raised and issues discussed during the various Task Force and Working Group meetings, and was a product of the RSAC's consensus recommendations. The rule expanded the applicability of requirements for PA systems to all passenger cars, and also expanded the applicability of requirements for intercom systems and emergency responder roof access to all new passenger cars. Further, the rule enhanced requirements for emergency window exits and established requirements for rescue access windows used by emergency responders. See 73 FR 6370.

E. Passenger Train Emergency Systems II Rulemaking

To address additional concerns raised, and issues discussed, during the various Task Force and Working Group meetings, FRA initiated the Passenger Train Emergency Systems II (PTES II) rulemaking. In addition to clarifying the nature of participation in debriefing and critique of emergency situations and full-scale simulations, the purpose of the rulemaking was to address the following emergency systems: door emergency egress and rescue access, emergency lighting, marking and instruction for emergency egress and access, emergency communication, and low-location emergency exit path markings. The Working Group reached full consensus on recommendations related to these emergency systems and issues at its December 11, 2007 meeting. The Working Group presented its consensus recommendations to the full RSAC body for concurrence at its meeting on February 20, 2008. All of the members of the full RSAC body in attendance at that February 2008 meeting accepted the regulatory recommendations submitted by the Working Group. Thus, the Working Group's recommendations became the full RSAC

body's recommendations to FRA. FRA subsequently met with the Task Force twice after that to make some non-substantive technical clarifications and review technical research findings related to potential enhancements of emergency systems. A Tier II sub-task force also met to discuss the requirements affecting Tier II equipment, i.e., passenger equipment operating at speeds in excess of 125 mph but not exceeding 150 mph. This sub-task force did not recommend any changes to the recommendation. After reviewing the full RSAC body's recommendations, FRA agreed that the recommendations provided a sound basis for a rule and adopted the recommendations with generally minor changes for purposes of clarity and Federal Register formatting. On January 3, 2012, FRA published a notice of proposed rulemaking (NPRM), and opened the comment period. 77 FR 154.

III. Discussion of Specific Comments and Conclusions

FRA received nine comments in response to the NPRM during the comment period from the following parties: Metra, Caltrans, NTSB, City of Seattle, students from the Quinnipiac University School of Law (the Students), and four individual commenters. FRA appreciated and carefully considered all comments. The comments generally raised issues related to doors, emergency lighting, emergency markings, and instructions for emergency egress and rescue access. FRA also received comments that were outside the scope of this rule. The final rule text differs from the proposed rule in part because of the concerns raised by Metra in relation to the emergency lighting requirement. Please note that the order in which the comments are discussed in this document is not intended to reflect the significance of the comment raised or the standing of the commenter.

Please also note that following the issuance of the NPRM and the close of the comment period, as part of improvements to the APTA Standards Program, APTA comprehensively changed the numbering nomenclature for its standards, including the standards FRA proposed to incorporate by reference in this rule. However, these nomenclature changes do not affect the substantive content or the revision histories of the standards FRA proposed to incorporate in this rule. Accordingly, in this final rule FRA has updated the numbering nomenclature of these APTA standards as follows:

| Standard Title | Previous Standard Number | New Standard Number |
|--|--------------------------|---------------------|
| Standard for Emergency Lighting System Design for Passenger Cars, Rev. 1, October 2007 | SS-E-013-99 | PR-E-S-013-99 |
| Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment, Rev. 3, October 2007 | SS-PS-002-98 | PR-PS-S-002-98 |
| Standard for Low-Location Exit Path Marking, Rev. 2, October 2007 | SS-PS-004-99 | PR-PS-S-004-99 |

Metra submitted comments stating that the proposed emergency lighting requirement, which would incorporate by reference APTA Standard PR-E-S-013-99 (previously SS-E-013-99), Rev. 1, “Standard for Emergency Lighting Design for Passenger Cars,” October 2007, would require Metra to expend \$4,700,000.00 to bring its equipment into compliance with the rule as proposed. When the NPRM was published, Metra had 386 cars that would have been considered non-compliant under the rule as proposed. Metra provided FRA with a schedule for bringing the cars into compliance. While Metra supports the emergency lighting requirement, it suggests that the

applicability date be extended two years until January 1, 2017, to allow Metra to bring its 386 cars into compliance. Metra also believes that extending the applicability date would allow additional research and development that may yield an industry-wide standard with added benefits of energy and maintenance savings. To mitigate the expense of compliance and permit time for additional research and development, FRA is modifying the proposal related to the emergency lighting requirement to phase-in compliance. The phased-in compliance schedule requires that by December 31, 2015, railroads retrofit 70% of their passenger cars that are not in compliance with the emergency lighting requirements as of the date of publication of the final rule, and that by January 1, 2017, all cars comply with the emergency lighting requirements.

Caltrans submitted comments stating that the proposed requirement that vestibule doors and certain other interior doors be equipped with removable panels is confusing based on the examples that are provided in the NPRM and Caltrans's understanding of the Working Group's discussions and agreements related to this issue. Caltrans points out that based on the examples, it appears that end-frame doors would be required to be equipped with a removable panel, while noting that the definition of vestibule door that is contained in § 238.5 excludes an end-frame door. Caltrans suggests that this is confusing, because there was no agreement within the Working Group to require end-frame doors to be equipped with a removable panel.

FRA agrees that, at this time, removable panels or windows should not be required in end-frame doors because, ultimately, no design was identified that would address three overriding concerns related to end-frame doors. Those concerns are: (1) unintentional removal of the panel or window, which would result in a safety hazard for

occupants while the train is in operation; (2) crashworthiness of the door containing the panel or window; and (3) prevention of fluids, such as fuel, from entering the car during an accident. Therefore, the Task Force developed a recommendation that was limited to vestibule doors, and certain other interior passageway doors. An interior passageway door is a door used to pass through a passenger car to the vestibule to exit the car from a side door exit or to pass through the car to exit the car into an adjoining car, or both. In addition to end-frame doors, doors separating sleeping compartments or similar private compartments from a passageway are neither vestibule doors nor other interior passageway doors. FRA believes that the examples that are provided in the NPRM have caused inadvertent confusion about this issue. FRA did not intend to propose a requirement to equip end-frame doors with a removable panel or window, and FRA does not intend to establish such a requirement in this final rule.

To clarify the removable panel or window requirement related to vestibule doors and certain other interior passageway doors, the following example supersedes and replaces the examples that were provided in the NPRM. Amtrak Acela Express (Acela) passenger cars that are not at the end of the train consist have no end-frame doors, as the cars are semi-permanently coupled to other Acela passenger cars (not the power cars). In the case of two business class cars that are coupled together in the interior of the consist, moving from one of these passenger cars to the next, an occupant would pass the end-frame (collision posts/corner posts), then pass through the vestibule where there are exterior side door exits, and, depending on the end of the car, move through a passageway adjacent to a restroom accessible under the Americans with Disabilities Act (ADA) before arriving at an interior bi-parting door that leads to the seating area.

Because that interior door does not directly lead to the vestibule when moving from the seating area, but to the passageway where the ADA-accessible restroom is located and then to the vestibule, the door is an interior passageway door but not a vestibule door. Certain foreign trainsets have a similar layout that includes interior passageway doors that are not vestibule doors.

The NTSB submitted a comment that recounts the various safety recommendations issued by the NTSB following the February 16, 1996, collision of two passenger trains near Silver Spring, MD, and the status of many of those recommendations. The comment states that FRA has addressed many of the recommendations through its various rulemakings, but highlights that two of the recommendations—Safety Recommendation R-97-15, regarding removable windows, kick panels, or other suitable means for emergency exiting through interior and exterior passageway doors where the door could impede passengers exiting in an emergency; and R-97-17, regarding fitting each emergency lighting fixture with a self-contained independent power source—are currently classified as “Open–Unacceptable Response.” The comment notes that proposed § 238.112, “Door emergency egress and rescue access systems,” and the proposed revisions to § 238.115, “Emergency lighting,” are considered consistent with the intent of Safety Recommendations R-97-15, and R-97-17, respectively. While the NTSB stated that it is “encouraged that the various actions indicated in the NPRM are under consideration” and expresses support for the intent of the NPRM, the comment noted that it is unfortunate that no design changes have yet been required for passenger car doors or emergency lighting more than 17 years after the Silver Spring accident. The NTSB also commented that it “remains concerned about the

significant length of time it is taking to make a modification available to [railroad] operators.”

In response to the Silver Spring accident, FRA has focused on some of the broader issues of passenger train safety, emergency egress and rescue access, to ensure that there is a means of egress and rescue access in every passenger compartment of a passenger rail car. With respect to NTSB’s specific concerns related to passenger car doors, FRA points out that it has required design changes in Tier II passenger trains. In the 1997 PESS NPRM, FRA stated that for Tier II passenger equipment that is operated as a fixed unit, having kick-panels to allow emergency egress through the length of the train has merit, so long as the panels do not interfere with the normal operation of the doors in which they are installed. 62 FR 49735. As such, in the 1999 PESS final rule, FRA required that Tier II passenger railroads must equip passenger compartment end doors (other than those leading to the exterior of the train) with removable windows or kick-panels, unless the doors have a negligible probability of becoming inoperable. 64 FR 25642, 25689. For Tier I passenger rail cars, FRA stated in the 1997 PESS NPRM that “the interchangeable use of some cab cars and MU locomotives as leading and trailing units on a Tier I passenger train will complicate analyzing the efficacy of installing such panels on Tier I equipment,” and reserved the issue for future consideration. 62 FR 49735. FRA is not aware of any design changes that would safely mitigate the additional safety concerns raised by requiring kick-panels or other removable panels or windows in doors leading to the exterior of a passenger car, such as end-frame doors, as discussed above.

With respect to emergency lighting, FRA required in the 1999 PESS final rule that new passenger cars have a “back-up power feature capable of operating the lighting for a minimum of 90 minutes after loss of normal power.” See 64 FR 25598. This back-up feature assists occupants of the rail cars to discern their immediate surroundings and thereby minimize or avoid panic in an emergency, if normal lighting is lost, because fully-equipped emergency response forces can take an hour or more to arrive at a remote accident site, with additional time required to deploy and reach people trapped or injured in a train. Even passenger train emergencies in urban areas can pose significant rescue problems, especially in the case of tunnels, and operations during hours of limited visibility or inclement weather. In either situation, emergency lighting should help emergency responders extricate occupants that may be injured and assist with an orderly evacuation. FRA also addressed design concerns in the 1999 PESS final rule and stated that its “findings in recent accidents support NTSB’s implied concern that placement of electrical conduits and battery packs below the floor of passenger coaches can result in damage that leads to the unavailability of emergency lights precisely at the time they are most needed,” but that “the concept of a power source at each fixture, as a regulatory requirement, is novel.” 64 FR 25598. Moreover, FRA questioned “whether current ‘ballast’ technology provides illumination of sufficient light level quality with reliable maintainability.” 64 FR 25598. FRA therefore reserved the issue of independent power sources for future consideration.

While this final rule is being issued many years after the Silver Spring accident, the underlying concerns expressed by NTSB in issuing recommendations R-97-15 and R-97-17 have not gone unaddressed; rather, they have been reflected in FRA final rules

issued following this accident, as codified in FRA regulations. For example, the 2008 PTES final rule established requirements that improve passenger emergency egress and rescue access that are consistent with the intent of NTSB's recommendations. Specifically, the rulemaking enhanced the emergency window exits requirements, established roof access requirements, and added rescue access window requirements to improve the means by which occupants can quickly and safely egress when exit doors are inoperable or inaccessible. See 73 FR 6376-78. During the development of the 2008 PTES final rule, FRA realized that there was a potential safety gap in the then-existing regulatory requirements that could result in passenger trains not being equipped with rescue access windows. The requirements established by the 2008 PTES rulemaking, which considered NTSB's recommendations, remedy this potential safety gap. In this regard, FRA has been actively addressing the underlying concerns expressed by NTSB recommendations R-97-15 and R-97-17 since they were issued.

The City of Seattle submitted comments suggesting that FRA consider adding roof access requirements for passenger cars. The NPRM did not raise the issue of roof access for passenger cars, other than for their marking and instructions for their use. Accordingly, FRA believes that the City of Seattle's comment is outside of the scope of this rulemaking proceeding to the extent it concerns the development of more substantive requirements for roof access systems. However, FRA believes that roof access is an important safety feature for passenger cars, and it is addressed by FRA regulation at §§ 238.123 and 238.441.

The 2008 PTES final rule established a roof access requirement for all new passenger cars by adding § 238.123, "Emergency roof access," requiring that all new

passenger cars be equipped with two roof access locations (roof hatches or structural weak points). Section 238.441 continues to contain specific requirements for Tier II passenger equipment. See 73 FR 6403. FRA recognizes that roof access locations can be especially useful in emergency situations where passenger cars have rolled onto their sides following certain collision and derailment scenarios. All else being equal, car rollover or tilt should result in more severe injuries than when a car remains upright, as occupants may be thrown greater distances inside the car. In turn, this risk increases the potential need for access to rescue the car's occupants because of the reduced likelihood that the occupants can evacuate the car on their own. In addition, when there is a rollover, doors, which are the preferred means of access under normal circumstances, may be blocked or otherwise rendered inoperable due to structural damage to the door or the door pocket. In particular, end doors, which due to the direction they face, would normally be better suited for use than side doors when a car has tilted or rolled onto its side, may also be blocked, jammed, or otherwise unavailable for use. Moreover, although emergency responders may be able to enter a car that is on its side via a rescue access window, the removal of an injured occupant through a side window in such circumstances can be difficult or complicated, especially depending upon the condition of the occupant. Nonetheless, the Task Force that helped to develop the existing requirements determined that having more than two roof access locations could jeopardize the structural integrity of passenger cars.

At this time, FRA believes that the requirements contained in §§ 238.123 and 238.441 adequately address the important need for roof access for passenger cars. FRA is therefore not modifying or expanding the existing regulations based on this comment,

other than for enhancing requirements for the marking of roof access locations and provision of instructions for their use.

The Students submitted comments stating that they agree with many aspects of the NPRM, but they also have general concerns related to: the door panel requirement; the emergency lighting requirement; the emergency communications requirement; and the cost of the rulemaking. The Students recommend requiring removable panels or removable windows in vestibule doors and other interior passageway doors to be shatter-proof. While FRA believes that such a regulatory requirement would be too prescriptive at this time, the potential maintenance and replacement costs associated with removable panels or windows that shatter during normal operations will drive the industry to use sufficiently shatter-resistant materials. In fuller context, of course, these removable panels or removable windows are to be used as one of a number of possible means of egress.

The Students also ask whether a floor hatch may be an effective alternative method for emergency egress. FRA believes that a floor hatch would likely cause a tripping hazard when not in use, and further believes that it may present significant challenges to maintaining the integrity of the carbody structure, and its design. Openings large enough for egress through the carbody underframe would have a greater impact on the structural integrity of the car than the soft spots on the roof and windows/doors on the sides of the car that are currently required. In addition, a floor hatch may reduce the ability of the car to protect passengers from an under-car fire and, as such, would be inconsistent with FRA's fire safety regulations. See, e.g., appendix B to part 238, note

16, concerning fire resistance requirements for the structural flooring assembly separating the interior of a vehicle from its undercarriage.

The Students further suggest supplementing the required emergency lighting with a hearing sensory device that will guide passengers and train crews to emergency exits when the emergency lighting is obscured by smoke. FRA believes that the addition of a hearing sensory device for safety purposes may be reasonable, but it was not part of FRA's proposal in the NPRM. FRA would need to pursue this suggestion in a future rulemaking with full notice and comment, including the gathering of information related to the capabilities and cost of such devices, as well as power supply needs.

In addition, the Students commented in favor of requiring an automated safety announcement played by the on-board train crew each time new passengers board the train. Such announcements may be worthwhile for some operations. However, FRA has addressed this type of passenger safety awareness requirement in the Passenger Train Emergency Preparedness rule, codified at § 239.101(a)(7), and believes that each railroad is in the best position to decide which additional required safety awareness medium to use—one of which is on-board announcements—in conjunction with the conspicuous positing of emergency procedures.

The last comment from the Students raises concerns about the costs of implementing the rule. FRA believes that the costs of investing in the safety systems required by this rule should have a nominal impact on ticket fares. According to the APTA Fact Book for 2012, all capital investment is funded only by government funds, and capital investment is defined as expenses related to the purchase of equipment. Passenger railroads have a dedicated funding source for capital investment that can be

used to implement certain requirements of this rule. FRA recognizes that there may be an indirect impact on passenger fares due to potential increases in maintenance costs for the upkeep of the new safety systems. However, users of passenger rail take into account many things when determining their mode of transportation, in addition to fare price. Many value avoidance of traffic congestion associated with driving, or the convenience of being able to read or work. For peak-hour commuters who are less responsive to fare changes, it would take a significant increase in fares for such riders to switch modes of travel.

As part of their comment, the Students also sought clarification as to the costs associated with enforcing the rule as proposed. By law, FRA is responsible for promoting the safety of railroads throughout the Nation, and FRA's enforcement policy is carried out through the support of its approximately 470 Federal inspectors and technical specialists who also coordinate their efforts with approximately 172 State inspectors. These inspectors work with railroads, shippers of hazardous materials, and other regulated entities to help ensure a safe railroad environment. The Students recommended random inspections to verify proper installation and use of the new systems that would be required by the proposed rule. FRA and State inspectors routinely conduct inspections of railroad operations, property, and records to determine that safety is being properly maintained. Unannounced inspections are an important part of their work. Consequently, any costs associated with the enforcement of this and other regulations have been accounted for in FRA's budgeting process, and will not be impacted due to the issuance of this regulation.

One individual submitted a comment suggesting that FRA require an independent power source for illuminated exit signs in the event that an accident disrupts the normal power supply to a car. In the NPRM, FRA proposed to incorporate by reference APTA Standard PR-PS-S-002-98 (previously SS-PS-002-98), “Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment,” October 2007. The APTA standard specifically requires that emergency exit signs and markings located on vestibule, end-frame, and side-door exits leading to the outside of the passenger car for emergency egress have electrically powered fixtures that have an independent power source to power either the internally illuminated sign, or the light fixture that is externally illuminating the non-HPPL sign when there is disruption to the normal power supply to the car. FRA notes that alternatively under this standard, railroads are able to employ HPPL material that provides an adequate level of conspicuity, when there is disruption to the normal power supply to a car, and this specifically includes dual-mode HPPL signs.

Wherever illumination from the normal lighting system is less than required for charging, dual-mode sign systems can be used to achieve greater conspicuity. Dual-mode signs have an active component (an active light source to properly charge the HPPL) and a passive component (the HPPL material itself). FRA notes that the use of HPPL material would obviate the need for an independent power source, as the properly charged HPPL material will luminesce, and in-turn, provide the desired conspicuity under conditions of limited visibility or darkness, when there is a disruption to the normal power supply to a car. Moreover, the emergency lighting requirement that was also proposed in the NPRM, incorporating APTA Standard PR-E-S-013-99 (previously SS-E-013-99), “Standard for Emergency Lighting Design for Passenger Cars,” October 2007, is

being retained in the final rule, which helps to ensure that the independent power source is effective when the normal power supply to a car is disrupted.

Another individual submitted comments stating that the proposed rule is extremely warranted, highlighting the general need for emergency exit lighting. In addition, this commenter disagrees with providing passengers the ability to apply the emergency brake whenever they deem it necessary, although the NPRM did not raise this issue. As such, FRA believes that this comment is outside of the scope of this rulemaking proceeding. Making the emergency brake accessible to passengers is a longstanding industry practice and an important safety feature that was codified as a Federal regulatory requirement for all passenger cars in 1999. See 64 FR 25540. FRA is not modifying the existing regulation based on this comment.

Two comments in favor of the proposed changes that are contained in the NPRM were received from two other individual commenters. Both stated that the proposed rule is a good idea because it will enhance passenger rail safety and it should be adopted as a final rule. FRA appreciates the positive feedback and has considered it in the formulation of this final rule.

IV. Technical Background and General Overview of Final Rule Requirements

Experience with passenger train accidents and simulations of emergency situations, and technological advances in emergency systems are the main impetus for the enhancements and additions in this final rule to FRA's existing requirements related to passenger train emergency systems, as highlighted below.

A. Doors

In February 1996, as a result of a near head-on collision between a Maryland Mass Transit Administration MARC (MARC) train and an Amtrak train in Silver Spring, MD, and subsequent fire, eight passengers and three crewmembers died in one car. This incident raised concerns that at least some of the passengers in the MARC train tried unsuccessfully to exit via the exterior side doors in the rear vestibule of the lead, passenger-occupied cab car. Following its post-collision investigation, the NTSB expressed concern regarding passengers' ability to exit through interior and exterior passageway doors. During the accident, the front end of the cab car that led the MARC train suffered extensive structural damage, and fire destroyed the controls for the left- and right-side rear exterior doors. The left-side exterior door's interior emergency release handle was also damaged by the fire and could not be pulled down to operate the door. The right-side door's interior emergency release handle was in a secured cabinet in the lavatory and it failed to open the door when later tested by the NTSB. The NTSB did note in its investigation report of the Silver Spring train collision that "[e]xcept for those passengers who died of blunt trauma injuries, others may have survived the accident, albeit with thermal injuries, had proper and immediate egress from the car been available." NTSB/RAR-97/02 at page 63. NTSB explained in its explicit findings on the collision that "the emergency egress of passengers was impeded because the passenger cars lacked readily accessible and identifiable quick-release mechanisms for the exterior doors, removable windows or kick panels in the side doors, and adequate emergency instruction signage." *Id.* at 73.

Specifically, NTSB recommended that FRA "[r]equire all passenger cars to have either removable windows, kick panels, or other suitable means for emergency exiting

through the interior and exterior passageway doors where the door could impede passengers exiting in an emergency and take appropriate emergency measures to ensure corrective action until these measures are incorporated into minimum passenger car safety standards.” R-97-15. In addition, in the development of this rulemaking, the Task Force identified concerns related to door egress from a car that is not upright. Emergency egress simulations organized by the Volpe Center confirmed this. Such simulations at the FRA-funded “roll-over rig,” an emergency evacuation simulator located at the Washington Metropolitan Area Transit Authority’s (WMATA) training facility, demonstrated that egress from a passenger rail car that is not upright can be very challenging. The simulations have demonstrated that emergency egress from a car that is on its side could present a significant challenge related to the operation of the pocket doors. If the pocket for a door is situated on the side of the car that is above the door when the car comes to rest on its side, gravity would work against opening the door and maintaining it in place for occupants to egress. Although passenger rail cars with single-panel vestibule doors are usually designed such that on the two ends of a car the pockets are on opposite sides of the panel, emergency situations may affect either end of the car rendering one or more of the vestibule and end-frame doors unavailable for emergency egress. In addition, doors could be rendered inoperable due to structural deformation of the doors or their frames and surrounding structures following a collision or derailment, blocking the egress pathways.

The Task Force gave thoughtful consideration to the issue of vestibule and end-frame door egress. With assistance from the Task Force, FRA explored the feasibility of designing removable panels or windows in passenger car interior passageway doors and

exterior end-frame doors that could be used for emergency egress, and funded research to develop and evaluate various designs. Interior door egress was examined first. In some passenger cars, exterior side or end-frame doors, or both, are located in vestibule areas that are separated from the seating area(s) by a vestibule door. Structural deformation or malfunctioning of vestibule doors could inhibit or unduly delay egress to the vestibules from the passenger compartments. End-frame door egress was examined next.

Ultimately, no design was identified that would address three overriding concerns related to end-frame doors: (1) unintentional removal of the panel or window, which present a clear safety hazard for occupants while the train is in operation; (2) crashworthiness of the door containing the panel or window; and (3) prevention of fluids, such as fuel, from entering the car during an accident. Therefore, the Task Force developed a recommendation that was limited to vestibule doors and other interior passageway doors. For new passenger cars, the Task Force generally recommended requiring a removable panel or removable window in each vestibule door and other interior passageway doors. In the case of a vestibule, for example, occupants could use a removable panel or removable window in the vestibule door to gain access from the seating area to the exterior doors in the vestibule. Alternatively, this panel or window could also facilitate passage in the opposite direction from the vestibule area to the seating area. Given the unique circumstances surrounding passenger train accidents, the Task Force considered it prudent to recommend that access be available from both areas.

The Task Force specifically evaluated kick-panels and ultimately decided that such panels could be partially or fully removed unintentionally, creating a safety hazard, particularly for small children who could get caught in the opening and become injured

by the door sliding into its pocket. For security reasons, the Task Force also recommended an exception to the removable panel or removable window requirement for a vestibule door that leads directly into a cab compartment. The Task Force believed that each railroad is best situated to determine whether equipping such a vestibule door with a removable panel or removable window would be appropriate for its specific equipment and operation.

In particular, FRA believes that to require vestibule doors to be equipped with a removable panel or removable window will, in the event that vestibule doors are not operable, provide a means for occupants in the passenger seating area to reach the vestibule area where exterior doors are located, facilitating their egress. Additionally, the removable panel or removable window will provide an additional means for emergency responders to access the passenger seating area to aid and assist occupants. FRA further believes that the rule satisfies the safety concerns expressed in the NTSB's recommendation without raising other safety concerns both during normal operations and in emergency situations.

The Task Force considered requiring that existing passenger cars be retrofitted to comply with the removable panel/window requirement for vestibule and other interior passageway doors. Because of limitations posed by the design of existing doors, the Task Force decided not to recommend that the equipment be retrofitted. For example, vestibule doors are designed with a horizontal structural member, located approximately at the vertical center of the door, which provides rigidity. The design would significantly limit both the size and location of a properly functioning removable panel or removable window. Although there are existing windows in the upper half of certain vestibule

doors, the windows are not sufficiently large for adults to pass through and would be difficult to access in many situations. In addition, the existing door pockets would require modification. Removable windows would likely be designed similarly to emergency windows that are equipped with a handle to facilitate the removal of the gasket that holds the emergency window in place. The doors would need to be modified to accommodate the protrusions in the door that would be created by adding the handle. The Task Force also reviewed additional issues related to the emergency operation of these doors and developed recommendations applicable to manual override devices and bi-parting doors, including door retention systems, which are addressed in this final rule.

As noted above, the Task Force also examined the emergency egress issue as it relates to exterior end-frame doors. After much deliberation, the Task Force recommended not to proceed with a removable window or panel requirement for end-frame doors, due to remaining concerns related to the crashworthiness of the exterior end-frame doors, the prevention of fluids entering the passenger car in an accident, and unintentional removal of the panel or window while the train is in operation. These concerns remain. The Task Force did, however, extend the removable window or panel requirement to “any other interior door used for passage through a passenger car” to further expand options for emergency egress, as well as rescue access.

The Task Force also reviewed the APTA emergency signage standard, as discussed below, to develop recommendations for sign and instruction marking to assist passengers and crewmembers in locating and operating removable panels and windows in vestibule and other interior passageway doors, as well as operating bi-parting vestibule and other interior passageway doors in an emergency situation.

B. Identification of Emergency Systems

An overturned rail car, or a rail car located on a narrow bridge or in a tunnel can greatly complicate passenger train evacuation in an emergency situation. Evacuation can be further complicated when multiple rail cars are affected, or when conditions of limited visibility or adverse weather are present. Such circumstances necessitate enhanced systems for use in emergency evacuations. The 1999 PESS rule highlighted a systems approach to effective passenger train evacuation that takes into consideration the interrelationship between features such as the number of door and window exits in a passenger car, lighted signs that indicate and facilitate the use of the door and window exits, and floor exit path marking, in addition to the general emergency lighting level in a car. 64 FR 25598. In particular, in the PESS final rule FRA stated that it was investigating emergency lighting requirements, as part of a systems approach to effective passenger train evacuation.

As FRA was issuing comprehensive Federal requirements for passenger train safety in the late 1990s, APTA was also developing and authorizing complementary passenger rail equipment safety standards applicable to equipment operated by its commuter and intercity passenger railroad members. In this regard, FRA stated in the 1999 PESS final rule that it would examine the APTA emergency lighting standard to determine whether the standard satisfactorily addresses matters related to emergency signage, exit path marking, and egress capacity. See 64 FR 25598. Through the development and issuances of multiple standards, APTA developed a systems-based approach to facilitate the safe evacuation of a passenger car in an emergency under various circumstances. These APTA standards, which address emergency lighting,

signage, and low-location exit path markings, were designed to work together to provide a means for passengers and crewmembers to identify, reach, and operate passenger car emergency exits.

The most recent, revised versions of the APTA standards, all authorized on October 7, 2007, are listed below; copies are included in the docket.

- PR-E-S-013-99 (previously SS-E-013-99), Rev. 1, Standard for Emergency Lighting System Design for Passenger Cars.
- PR-PS-S-002-98 (previously SS-PS-002-98), Rev. 3, Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment.
- PR-PS-S-004-99 (previously SS-PS-004-99), Rev. 2, Standard for Low-Location Exit Path Marking.¹

The APTA approach recognizes that, in the majority of emergencies, the safest place for passengers and crewmembers is to remain on the train. Should evacuation from a particular rail car be required, the safest course of action for passengers and crewmembers is normally to move into an adjacent car. This evacuation strategy avoids or minimizes the hazards inherent with evacuating passengers onto the railroad right-of-way. It is only in unavoidable or life-threatening situations that it would be necessary for passengers and crewmembers to leave the train to reach a place of safety.

The Task Force was charged with reviewing the three APTA standards and recommending revisions that would enhance the existing emergency lighting requirements contained in § 238.115 and the window egress and rescue access marking

¹ Please note that although the title of the APTA standard does not contain the word “emergency,” FRA considers low-location exit path markings and low-location emergency exit path markings to be one in the same for purposes of this final rule and can be used interchangeably. For ease of reference, both terms are referred to with the acronym “LLEPM.”

requirements contained in §§ 238.113 and 238.114, respectively. In addition, the Task Force was charged with adding a new requirement for LLEEPM systems. After careful review, the Task Force recommended that the three APTA standards be revised to address relevant advances in technology, and that these standards be incorporated by reference in their entirety in Federal regulations. With assistance from the Task Force, and an investment of considerable time and effort, APTA revised the three standards to enable FRA to incorporate them by reference and take advantage of certain technological advances that allow for certain other desired enhancements. In addition, the Task Force recommended applying the requirements of APTA's emergency lighting, emergency signage, and LLEEPM standards (as revised in 2007), to both new and existing equipment. Incorporation by reference of these APTA standards into part 238 extends their applicability to all commuter and intercity passenger railroads and makes them enforceable by FRA. FRA has reviewed these industry standards and has determined that they contain appropriate specifications for passenger train emergency systems to be incorporated into this final rule.

C. Emergency Lighting

Section 238.115 has contained emergency lighting requirements applicable for new passenger cars since the 1999 PESS final rule. As noted in that final rule, experience gained from emergency response to several passenger train accidents indicated that emergency lighting systems either did not work or failed after a short time, greatly hindering rescue operations. See 64 FR 25596. Emergency lighting system failures, or low levels of illumination during these accidents, or both, have been cited as a cause for confusion and contributing to injuries and casualties in emergency situations. For

example, according to the NTSB report, two passengers in a coach car of the MARC train involved in the 1996 Silver Spring, MD, accident stated that emergency lighting was not available following the accident and that, along with one passenger's injuries and another's loss of eyeglasses, made it more difficult to move in the darkness. See NTSB/RAR-97/02 at 61-62. The coach car's tilted position also contributed to their disorientation and hindered mobility. Id. at 62. Post-accident investigation by the NTSB also revealed that the main car battery powering the emergency lighting had been damaged as a result of the derailment. Id.

The NTSB expressed concern regarding emergency lighting survivability because the location of the battery supplying power to the emergency lighting system below the car made it susceptible to damage from the rail, the car's trucks, and the ground surface in the event of a derailment. The NTSB concluded that "a need exists for Federal standards requiring passenger cars be equipped with reliable emergency lighting fixtures with a self-contained independent power source when the main power supply has been disrupted to ensure passengers can safely egress." Id. The NTSB issued recommendation R-97-17 to FRA, as follows:

Require all passenger cars to contain reliable emergency lighting fixtures that are each fitted with a self-contained independent power source and incorporate the requirements into minimum passenger car safety standards.

In addition, on May 16, 1994, in Selma, NC, an Amtrak train derailed after colliding with an intermodal trailer from a freight train on an adjacent track. This accident resulted in 1 fatality and 121 injuries. According to the NTSB accident report, three of the injured passengers reported difficulty exiting the passenger cars because they could not identify the emergency exit windows in the darkness. NTSB/RAR-95/02.

When they were finally able to escape through the doors leading outside, they said that they were not sure how far they were above a surface, which may not have been solid ground, because they could not see below the steps of the car. The NTSB found that fixed emergency lighting systems were not operating inside several passenger cars because the batteries and the wiring connecting the batteries to the lights were damaged as a result of the derailment.

In the 1999 PESS final rule, FRA established performance criteria for emergency lighting, including minimum illumination levels in new passenger car door locations, aisles, and passageways, to help enable the occupants of the passenger cars to discern their immediate surroundings (be situationally aware) and thereby minimize or avoid panic in an emergency. Establishing an illumination requirement at floor level adjacent to doors was intended to permit passenger car occupants to see and negotiate thresholds and steps that are typically located near doors. The illumination requirement 25 inches above the floor for aisles and passageways was intended to permit passenger car occupants to see and make their way past obstacles as they exit a train in an emergency. FRA also required that the emergency lighting system remain operational on each car for 90 minutes.

With respect to existing equipment, FRA noted in the 1999 PESS final rule that it desired achievable emergency lighting enhancements and that it would evaluate an APTA emergency lighting standard when completed. Subsequently, the Task Force helped develop a revised APTA emergency lighting standard that would enhance the FRA emergency lighting requirements in § 238.115 by: (1) applying the requirements to existing equipment; and (2) improving the back-up power supply survivability

requirement (with application to both new and certain existing cars). The Task Force recommended revisions to the APTA emergency lighting standard to address older equipment not covered by the emergency lighting requirements contained in original § 238.115. The revised APTA standard specifies minimum emergency lighting performance criteria for all passenger cars (new and existing). The levels of illumination and duration required for equipment ordered before September 8, 2000, and placed in service before September 9, 2002, are half the levels that are required for newer equipment by the APTA standard. This takes into consideration the more limited capabilities of older electrical lighting systems. The APTA emergency lighting standard provides that these illumination and duration requirements be implemented by January 1, 2015, or when the equipment is transferred, leased, or conveyed to another railroad for more than 6 months of operation, whichever occurs first. Some railroads indicated their intention to retire certain equipment by 2015. The Task Force agreed it would not be cost-justified to retrofit such equipment. It should be noted that, although the APTA standard provides for compliance by January 1, 2015, FRA requires compliance by January 1, 2017, to allow those railroads not already in compliance sufficient time to comply with the requirements.

In addition, the APTA emergency lighting standard provides that emergency lighting systems installed on each passenger car ordered on or after April 7, 2008, or placed in service for the first time on or after January 1, 2012, meet minimum illumination levels by means of an independent power source that is located in or within one-half of a car length of each light fixture it powers, and that operates when normal power is unavailable. As previously noted, these illumination levels are the same as the

ones originally specified in § 238.115 for doors, aisles, and passageways. The independent power source requirement was not originally contained in § 238.115, and is being incorporated into this final rule. The Task Force evaluated the feasibility of equipping emergency lighting fixtures with self-contained power sources, as a back-up power source, independent of the main car battery. After deliberation, the Task Force concluded that maintenance would be very costly due to the high number of power sources. The Task Force examined other methods for addressing the issue of emergency lighting system reliability and assisted APTA in revising the APTA emergency lighting standard to better address those situations in which an emergency lighting system may be most beneficial. For example, in the event of a derailment resulting in a car rollover, the importance of situational awareness is heightened. Occupants are likely not in the same location as they were before the incident and, in conditions of darkness, are likely unaware as to where in the passenger car they are located in relation to the nearest exit. APTA added four requirements that address the NTSB's recommendation to FRA regarding emergency lighting survivability for new passenger cars, as described below.

First, the APTA emergency lighting standard was revised to require an independent power source within the car body located no more than one-half of a car length away from the fixture it powers. For most passenger car designs, this translates into a minimum of two batteries, one in each end of the car. In the Silver Spring accident, passenger cars incurred collision and derailment damage to under-floor battery boxes, causing the wet-cell batteries contained in those boxes to leak electrolyte. Because of the damage and leakage, the batteries failed to provide power to the emergency lighting on board the passenger cars. Placing the batteries within the car body

will reduce the risk of damage to the batteries during a collision, and increase the likelihood that the batteries will be capable of providing power to the emergency lighting.

Second, each of these independent power sources is required to have an automatic, self-diagnostic module to perform a discharge test to ensure timely detection and notification of a malfunction.

Third, emergency lighting systems in new cars are required by the APTA standard to be capable of operating in all equipment orientations to address accident situations resulting in the rollover of a car. During an accident, passenger cars may tilt, causing wet-cell batteries contained in those cars to leak electrolyte and, as a consequence, fail to provide power to the emergency lighting on board the passenger cars. Wet-cell batteries will likely leak when tilted in a rollover, because wet-cell batteries have a gas vent on top, which allows liquid to escape when tipped over. Alternatively, a sealed battery is capable of functioning as intended, regardless of the battery's orientation. When a sealed battery is tilted during an accident, it will not fail to provide power to emergency lighting merely as a result of being tilted.

Finally, the APTA standard provides that emergency lighting systems must be designed so that at least 50 percent of the light fixtures operate, notwithstanding the failure of any single fixture or power source. Additionally, augmenting this requirement, FRA notes that the APTA emergency signage standard that FRA is incorporating by reference into this rule requires a minimum of 144 square-inches of HPPL material placed either on, or in the immediate vicinity of, side door exits that are intended to be used as emergency exits, to provide some illumination at the floor for passengers and crewmembers as they exit.

In support of revising the APTA emergency lighting standard, the Volpe Center researched various alternative, cost-effective technologies for addressing the reliability of emergency lighting systems. The Volpe Center found that the development of emergency lighting systems that can function reliably for a decade or more with minimal maintenance and that can withstand passenger train collision/derailment forces has been greatly facilitated by two technologies:

- Solid-state lighting (SSL) – most commonly known as light emitting diodes (LEDs); and
- Super capacitors – devices that store about 100 times as much electrical charge per unit volume as previous types of capacitors.

Solid-state lighting includes conventional LEDs and other light technologies to produce illumination without the use of legacy methods such as incandescent filaments or excited gases in glass containers. Compared with other lighting technologies, the SSL devices are much smaller, are able to withstand hundreds or thousands of times as much shock forces, and have much longer service lives. LED and other SSL devices use approximately only half as much energy to produce a given amount of light as the best fluorescent lamps. The light output of current white LEDs ranges from 25 to 90 lumens per watt, which means that a large area can be illuminated to a required minimum value (one lumen per square foot) with only one watt of power. Use of LEDs also makes it easier to shape the light output to concentrate it in areas such as an aisle or at door locations and permits meeting the illumination requirements with less power than would be needed if LEDs were omnidirectional (like incandescent or fluorescent lamps).

Capacitors are devices that store energy in an electrical field (as opposed to a battery, in which the energy is stored chemically). Chemicals that store and release energy in amounts that are useful in batteries are inherently corrosive, which limits battery life to about a thousand charge-discharge cycles, or about seven years in applications where the battery is rarely discharged. By avoiding use of corrosive chemicals, capacitors are far more durable. Super capacitors are rated for 500,000 charge-discharge cycles, and their service lives are expected to extend to at least ten years. Currently, commercial super capacitors are available that store as much as 5 watt-hours of energy. Combined with very efficient LEDs or other SSL devices, they allow the manufacture of emergency lighting systems using self-contained power with the ability to withstand collision forces of much greater magnitude than traditional emergency lighting systems currently in use. As discussed in sections VII.D through F, below, the brightness of newer photoluminescent materials that can be used for emergency egress signs and exit path marking can be a cost-effective means of addressing concerns regarding the survivability of emergency lighting systems, particularly for older equipment in operation, until retired from service.

D. Marking and Instructions for Emergency Egress and Rescue Access

To initially address emergency egress and rescue access, as well as other issues related to the 1996 Silver Spring, MD, accident cited earlier, FRA issued Emergency Order No. 20 (EO 20). 61 FR 6876. In addition to other requirements, EO 20 required commuter and intercity passenger railroads to mark the location, and provide instructions for the use, of emergency window exits by no later than April 20, 1996. In an effort to respond to this requirement as effectively as possible in the timeframe provided, affected

railroads that had not done so began to install photoluminescent emergency exit markings to mark emergency window exits, as well as doors intended for emergency egress, using photoluminescent materials that were available at the time for this purpose.

On May 4, 1998, FRA issued the PTEP final rule that required door exits that are intended for emergency egress to be lighted or conspicuously marked with luminescent material, and that instructions for their use be provided. The rule also required that emergency window exits be conspicuously marked with luminescent material, and that instructions for their use be provided as well. See 63 FR 24630. Similarly, the rule required that doors and windows intended for emergency access by emergency responders for extrication of passengers also be marked with retroreflective material and instructions for their use posted.

Notably, the 1998 PTEP rule did not specify criteria for minimum luminance levels, letter size, or sign color. Yet, FRA stated that the marking of the door and window exits must be conspicuous enough so that a reasonable person, even while enduring the stress and panic of an emergency evacuation, could determine where the closest and most accessible route out of the car is located. See 63 FR 24669. Many railroads installed signs made of zinc-sulfide, which were capable of providing luminance for only a period of less than 10 minutes in many cases. Subsequently, photoluminescent sign technology evolved, and other materials began to be used, such as strontium-aluminate, which is capable of providing high levels of luminance for much longer periods.

The original APTA emergency signage standard was revised in 1999 to require the installation of emergency exit signs with specific minimum “higher performance”

photoluminescent material, in terms of brightness and duration, as well larger minimum letter sizes, color contrast, etc., for emergency exit signs. The second revision, authorized in 2002, included a reorganization of certain sections, citation of the American Society for Testing and Materials International (ASTM) retroreflectivity standards, as well as the revision of annex guidance to evaluate the performance characteristics of the emergency exit signs. FRA considered incorporating elements of the APTA standard into the PTES final rule in 2008 so that emergency exit signs and intercom markings in passenger cars would be required to be made of photoluminescent material with higher levels of brightness for longer duration. However, the Task Force recommended that certain requirements in the APTA emergency signage standard be revised to address technical issues with the performance characteristics of certain types of photoluminescent materials already installed in existing passenger rail cars, as well as other necessary clarifications concerning sign size, color, and contrast, etc., before the standard would be incorporated by reference by FRA. See 63 FR 6886.

Accordingly, APTA further revised its emergency signage standard to incorporate the Task Force recommendations. The recommendations were based on Volpe Center research findings and technological advances in photoluminescence (as discussed in Section VII.F, below). Substantively, the revised APTA emergency signage standard required that each passenger rail car have interior emergency signage to assist passengers and train crewmembers in more readily locating, reaching, and operating emergency exits in order to safely evacuate from the passenger rail car or train. The standard also required that each car have exterior signage to assist emergency responders in more readily locating and utilizing emergency access points during an emergency situation

warranting immediate passenger rail car or train evacuation. To ensure visibility to passengers, signs used to mark the location of vestibule doors were required to meet the brightness and duration performance requirements for photoluminescent material, as specified in the APTA standard.

Although the APTA emergency signage standard does not address emergency communications system signage, the Task Force recommended applying certain criteria for photoluminescent marking specified in that standard to intercom systems, as further described in Section VII.G, below. The APTA standard also includes specifications for retroreflective marking and material, which are consistent with FRA requirements for rescue access point marking for doors, windows, and roof access location. In addition, the APTA standard is more detailed than the relevant FRA requirements that have previously been specified in this part, for example addressing minimum letter sizes for doors and emergency window exits and including specific criteria for color, color contrast, etc.

The revised APTA emergency signage standard requires periodic testing of certain system components and contains procedures to ensure compliance. APTA designed its emergency signage standard to offer flexibility in application, as well as to achieve the desired goal of facilitating passenger and crew egress from potentially life-threatening situations in passenger rail cars. Accordingly, an individual railroad would have the responsibility to design, install, and maintain an emergency signage system that is compatible with its internal safety policies for emergency evacuation, while complying with the performance criteria specified in this APTA standard.

The Task Force previously recommended that FRA adopt the specific retroreflective material criteria contained in the APTA emergency signage standard related to rescue access windows and doors intended for access by emergency responders. See § 238.114 of the 2008 PTES rule, which added requirements for the installation of a minimum number of rescue access windows in specified locations on all passenger cars. Thus, in that rule, FRA added a definition of “retroreflective material” that incorporates by reference criteria from ASTM’s Standard D 4956-07 for Type 1 Sheeting, which is consistent with the APTA emergency signage standard. FRA also made other revisions related to rescue access marking, consistent with the other rescue access marking requirements specified in the APTA standard. See 73 FR 6389.

E. Low-Location Emergency Exit Path Marking

A review of past passenger rail accidents involving passenger and train crew emergency evacuation has indicated that, in certain cases, both passengers and emergency responders lacked sufficient information necessary for expedient emergency egress and responder access due to the absence of identifiable markings. A lack of adequate markings indicating the location of emergency exits, in conjunction with lighting system failures, or low levels of illumination, or both, during conditions of limited visibility when these accidents occurred caused confusion and contributed to casualties. In addition, the presence of fire or smoke may substantially increase the difficulty of evacuating passenger train occupants.

To avoid the many hazards associated with evacuation onto the right-of-way, the preferred means of egress from a passenger car that is not located at a station is via the end door(s) to the next car. Under conditions of limited visibility, or when illumination

from emergency lighting fixtures located at or near the ceiling are obscured by smoke, such LLEPM (including exit signs) must remain discernible. Particularly when smoke is present, the most viable escape path is the more visible escape path, which is likely to be at or near the floor, towards where occupants are forced to lower themselves (where the pathway markings are located) to avoid inhaling the smoke.

The 1999 APTA LLEPM standard required HPPL material to be installed on all new passenger rail cars. Such markings are intended to provide a visible pathway for passenger rail car occupants to locate and reach emergency exits under conditions of limited visibility, even if the emergency lighting system fails. The standard includes requirements for marking aisles, stairways, and passageways to indicate the path to the primary exit for both existing and new cars, using either HPPL material for marking, or lighting having an independent power source with a duration of at least 90 minutes. Certain revisions were made to the original LLEPM standard, which consisted primarily of additional definitions, reorganization and revision of certain sections, and the addition of annexes used to evaluate the performance of HPPL material used for LLEPM.

In December 2006, with the participation of the Task Force, the Volpe Center conducted a series of emergency egress simulations at the WMATA training facility, which demonstrated that egress from a passenger rail car can be very challenging. Initially, some photoluminescent emergency exit sign materials commonly found in passenger rail cars and some HPPL sign and LLEPM materials were placed in a single-level passenger rail car that was darkened to demonstrate the difference in performance between the two types of materials. Next, the car was filled with theatrical smoke, which quickly rose and filled most of the car, obscuring photoluminescent signs, including

HPPL markings, except for door exit location markings located near the floor and LLEPM. Members of the Task Force participating in the simulation attempted to exit the car via an end door by moving along the aisle in a crouching position and using an HPPL LLEPM system as guidance. The LLEPM system was covered in one end (half) of the car to demonstrate the noticeable effectiveness of the LLEPM system that remained visible in the other end (half) of the car, in terms of brightness and duration. Then, the darkened car was tilted to a 15-degree angle. This car orientation was used to demonstrate firsthand the potential difficulties associated with trying to maintain one's balance and walk through the car to a door exit.

The LLEPM system complements the emergency signage system by identifying all primary door exits with HPPL and complements the emergency lighting system by providing a visible path to emergency exits that is not dependent on a power source outside of the passenger compartment, so that all primary emergency exits in a passenger car can be identified from every seat in the car. The Task Force initially reviewed the 2002 version of the APTA LLEPM standard and recommended that certain revisions be made to address the same type of issues related to photoluminescent material as in the emergency signage standard, as well as recommended other technical revisions for consistency with the emergency signage standard, to enable FRA to incorporate the standard by reference.

F. Photoluminescent Marking Materials

As mentioned above, as a result of the NTSB's investigation of the February 1996 Silver Spring, MD, accident, the NTSB expressed concern that at least some of the passengers in the MARC train involved in the collision were unable to locate, reach, or

operate doors and emergency window exits due to the failure of emergency lighting. Shortly after, FRA issued EO 20 requiring commuter and intercity passenger railroads to mark emergency window exits with luminescent material. See 61 FR 6876. The most conspicuous and visible markings related to emergency egress are either internally illuminated (illuminated by a self-contained source), or made of HPPL materials.

Since the issuance of EO 20, Volpe Center research has provided extensive information to FRA and the Task Force for different types of photoluminescent materials and their performance characteristics when installed in passenger rail cars. The brightness levels for many of the emergency exit signs and LLEPM using zinc sulfide material, originally installed in response to EO 20, are low and the duration is short, and thus do not perform as well as newer HPPL materials using strontium aluminate, which are capable of a much higher initial brightness and longer duration time. In addition, Volpe Center research shows that placement of the photoluminescent sign and marking materials relative to sources of light is key to proper performance in terms of brightness and duration. Other factors that affect the ability of occupants to see and read signs and markings include the size of the letters and their distance from the sign or marking.

Separately, and in conjunction with industry representatives, the Volpe Center conducted tests in various in-service passenger cars of different design and age by measuring illumination and luminance levels, and demonstrated that some of the photoluminescent markings were not as bright as they were intended to be. Photoluminescent signs and LLEPM materials certified to be capable of achieving certain brightness levels were found not to meet those criteria due to inadequate charging light levels. The presence of shadows cast by nearby structures and fixtures, the location

of light fixtures relative to emergency exit signs and photoluminescent LLEPM materials, the condition of light diffusers, and the type of lamps used to provide the charging light were all causes for why either the zinc sulfide or the HPPL products were unable to charge sufficiently and thus achieve expected brightness levels.

The Task Force considered the use of HPPL material to be an important improvement over the previous photoluminescent materials that were designed to less stringent criteria for duration and brightness, and also a cost-effective means of addressing concerns regarding the survivability of emergency lighting systems, particularly for older equipment in service. To develop a more effective photoluminescent standard that would address the Volpe Center findings, the Task Force developed HPPL material specifications with technical assistance from the Volpe Center, which APTA included in its 2007 revision of both the emergency signage standard and the LLEPM standard. FRA notes that the Task Force revisions to the emergency signage and LLEPM standards: (1) allow flexibility for use of different types of charging light sources; (2) require that new HPPL signs meet the same luminance requirements with lower charging light levels; (3) allow alternative testing criteria using meters that do not measure off-axis illuminance accurately; (4) grandfather signs that are likely to perform as intended for 60 minutes; and (5) in small areas, allow for lower luminance levels and in some cases the use of larger signs to compensate for even lower light levels. APTA revised the two APTA standards which now establish more stringent minimum requirements for the HPPL material performance criteria to provide visual guidance for passengers and train crewmembers to locate, reach, and operate door exits and emergency window exits, especially during conditions of limited visibility when the

emergency lighting system has failed (or when smoke conditions obscure overhead emergency lighting).

G. Emergency Communications

The NTSB accident investigation report for the February 9, 1996 collision near Secaucus, New Jersey, that involved two New Jersey Transit Rail Operations (NJTR) trains and resulted in three fatalities and numerous injuries, illustrates the importance of emergency communication systems to prevent panic and further injuries. According to the NTSB report (NTSB/RAR-97/01, at p. 27):

Although the train crews said that they went from car to car instructing passengers to remain seated, passengers said that they were not told about the severity of the situation and were concerned about a possible fire or being struck by an oncoming train. They therefore left the train and wandered around the tracks waiting for guidance, potentially posing a greater hazard because of the leaking fuel from train 1107.

No crewmember used the public address system to communicate with passengers. By using the public address system, all passengers would have received the same message in less time than it would have taken the NJT employees to walk from car to car.

The NTSB report also stated:

Information about the possibility of a fire or a collision with an oncoming train could have been provided to passengers over the public address system to address their concerns and prevent them from leaving the train. The Safety Board concludes that the lack of public announcements addressing the passengers' concerns caused them to act independently, evacuate the train, and wander along the tracks, thus potentially contributing to the dangerous conditions at the collision site.

To help address such concerns, FRA issued the PESS final rule in 1999, which established requirements for two-way emergency communication systems and markings for Tier II passenger equipment. See 64 FR 25641. PA systems allow the train crew to keep passengers informed in an emergency situation and provide instructions to them in a

timely manner. The train crew can provide instructions to passengers to not take an action that could place them or other passengers in any greater danger, such as instructing the passengers, as appropriate, to remain on the train and not endanger themselves by unnecessarily evacuating the train on their own. Conversely, passengers could use the intercom feature of a two-way communication system to report security issues as well as other pertinent information to the train crew, such as injuries resulting from an accident, other forms of medical emergencies, or serious mechanical problems with the passenger rail car. The 2008 PTES final rule established emergency communication (PA and intercom) system requirements for Tier I passenger equipment and replaced the previous emergency communication system requirements in § 238.437 for Tier II passenger equipment. See 73 FR 6370, 6389.

When there is a disruption to the normal power supply to a car, having markings that remain conspicuous allow passengers to locate and use the intercom to communicate with the train crew. During the development of the PTES final rule, some railroad representatives on the Task Force noted that although instructions were posted at the intercom locations on their passenger cars, luminescent markings indicating the intercom location were not used. The Task Force therefore recommended that luminescent markings be required for that purpose.

It should be noted that FRA proposed to adopt a requirement for luminescent markings of intercom locations in the 2008 PTES final rule, and invited comment on whether the luminescent material should be HPPL material. See 71 FR 50293. As noted above, in the discussion concerning emergency window exit signage, the APTA emergency signage standard contains specific criteria for luminescent markings. The

Task Force focused on revisions to this APTA standard in order to recommend whether to incorporate some or all of its contents into part 238 by reference and thereby require that luminescent markings for intercoms comply with the standard as it relates to luminescent markings. The APTA Passenger Rail Equipment Safety Standards (PRESS) Task Force had also indicated that they intended to revise then-APTA Standard SS-PS-001-98 (re-designated as PR-PS-S-001-98), “Standard for Passenger Railroad Emergency Communications,” to include more specific requirements for marking emergency communication systems.

The 2008 PTES final rule required luminescent marking of each intercom location to ensure that the intercom can be easily identified for use in the event that both normal and emergency lighting are not functioning. The posted operating instructions, however, are not required to be luminescent as some Task Force members indicated that the instructions may be easier to read when not luminescent.

As noted previously, the Task Force discussed at length issues associated with the development of HPPL material component requirements. Due to the APTA revision of the performance criteria for HPPL material, the Task Force recommended that emergency communication system markings comply with the performance criteria for brightness and duration of HPPL material in the emergency signage standard. Accordingly, FRA believes that applying the luminescent marking requirements in the revised APTA emergency signage standard to intercom systems will further address the emergency communication concerns raised in the NTSB report.

H. Debriefing and Critique Session Following Emergency Situations and Full-Scale Simulations

As an illustration of the importance of train crew participation in a debrief and critique session, FRA notes that on May 25, 2006, a power outage disrupted all rail traffic on Amtrak's Northeast Corridor between Washington and New York during the morning rush hour, stranding approximately 112 trains with tens of thousands of passengers on board. Part 239 has required that train crewmembers participate in a debriefing and critique session of such incidents. However, the managers of the train crew of at least one train participated in the debriefing and critique session for that train, rather than the train crew.

The Task Force recognized the importance of the participation in the debriefing and critique session of train crewmembers and other employees who actually have first-hand knowledge of the emergency that occurred. Accordingly, the Task Force reviewed the debriefing and critique requirements in § 239.105 and recommended that clarifications be made to ensure that, to the extent practicable, all onboard crewmembers, control center personnel, and any other employees actually involved in emergency situations and full-scale simulations, be included in the debriefing and critique sessions. In addition, flexibility was recommended to be provided to railroads by permitting participation in the required debriefing and critique sessions of the employees either by appearing in person or by the use of alternative methods. As such, FRA clarifies § 239.105 to reflect this necessary participation.

V. Section-by-Section Analysis

This section-by-section analysis explains the provisions included in the rule. A number of the issues and provisions involving this rule have been discussed and addressed in detail in the preamble, above. Accordingly, these preamble discussions

should be considered in conjunction with those below and will be referenced as appropriate. Notably, as indicated above, there has been a change in the final rule text from the NPRM in relation to emergency lighting based on comments received from Metra.

A. Amendments to Part 238, Subparts B, C, and E

Section 238.5 Definitions

In this section, FRA is introducing a set of new definitions into the regulation, as well as revising certain existing definitions. FRA intends these definitions to clarify the meaning of important terms as they are used in the text of the rule, in an attempt to minimize the potential for misinterpretation of the rule.

“APTA” means the American Public Transportation Association, the present name of APTA.

“End-frame door” means an end-facing door normally located between or adjacent to the collision posts or similar end-frame structural elements. This term refers to exterior doors only. This term is added for use in the definition of a vestibule door to make clear that an end-frame door is not a vestibule door.

“Vestibule” means an area of a passenger car that normally does not contain seating, is adjacent to a side door, and is used for passing from a seating area to a side exit door. Passageways located away from side door exits are not considered vestibules.

“Vestibule door” means a door separating a seating area from a vestibule. End-frame doors and doors separating sleeping compartments or similar private compartments from a passageway are not vestibule doors. This term is referenced in § 238.112(f) as one type of door that is required to have removable panels or windows for emergency

egress use in new passenger cars. Please note that § 238.112 also applies to other interior doors intended for passage through a passenger car, and not only vestibule doors.

Section 238.112 Door Emergency Egress and Rescue Access Systems

FRA revised this new section heading from the NPRM to make clear that the requirements of this section concern systems for door use during an emergency. FRA notes that this clarification will be particularly helpful in light of FRA's intent to propose enhancements to the requirements for passenger train exterior side door safety systems in the near future.

This section consolidates certain existing door requirements that apply to both Tier I and Tier II passenger cars, adds new requirements related to removable panels or windows in vestibule and other interior doors, and clarifies that an exterior side door is required "in each side" of a passenger car ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002. These door requirements were formerly located in §§ 238.235 for Tier I equipment and 238.439 for Tier II equipment. Section 239.107 also contained interior and exterior marking and instruction requirements, respectively, for all doors intended for emergency egress and all doors intended for emergency access by emergency responders. All door emergency egress and rescue access system requirements that apply both to Tier I and Tier II passenger cars have been moved to this new § 238.112. Notably, the new vestibule door requirements enhance passenger safety by requiring an additional means of access to the vestibule area from the passenger seating area, and vice versa.

Paragraphs (a) through (c) contain the requirements formerly located in paragraphs § 238.235(a) through (c), respectively. Paragraph (a), moved from former

238.235(a) and concerning manual override devices, is being modified slightly to remove the December 31, 1999 compliance date. Having this date written in the rule is no longer necessary, as the scope of subpart B in which this section is located does not limit application of its requirements to equipment ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, unless otherwise specified, as subpart C does. See § 238.201(a). A manual override device allows a passenger during an emergency to open or unlock a passenger car door that has been closed or locked by the railroad for operational purposes. Without the manual override device, a key or other tool or implement is typically needed to open or unlock the door. By making the door easier to unlock, the manual override device expedites passenger egress during an emergency.

A minor modification to paragraph (b) makes clear that of the minimum two exterior side doors required in each passenger car ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, one must be located in each side of the car. Moreover, paragraph (b) makes clear that a set of dual-leafed (or bi-parting) exterior doors is considered a single door for purposes of this paragraph.

Paragraphs (d) and (e) contain requirements for interior and exterior door exit markings and instructions, respectively, which were formerly contained in §§ 238.235(d) and 239.107(a). Both paragraphs reference the requirements for marking and instructions for emergency egress and rescue access in new § 238.125.

Paragraph (f) requires a removable panel or removable window in each vestibule door, as well as in any other interior door intended for passage through a passenger car. A vestibule door, or other interior passageway door or the door pocket, may become

deformed or otherwise inoperable during an emergency. The additional means of egress would be used in the event that the door cannot be opened, or it becomes difficult to retain the door in an open position, as in the case of a vestibule door to allow for passage from the seating area to the exterior doors in the vestibule. The latter circumstance is of particular concern when a passenger car is on its side where the pocket for the door would now be located above the door, making it difficult to keep the door in the open position. In the case of other interior doors intended for passage through a passenger car (see discussion above related to the definition of vestibule door in the section-by-section analysis of § 238.5), the removable panel or removable window facilitates passage through the car to the vestibule to exit the car from a side door exit or through the car to exit the car into an adjoining car, or both.

Specifically, in addition to the requirements for removable panels or removable windows, paragraph (f)(1) requires a manual override device for a vestibule door or other interior passageway door if it is powered, so that occupants can open the door in the event power is lost and the door or its pocket is not deformed. Moving through the open door is, of course, the preferred means of passage; a removable panel or window is provided in the door as an alternative means of passage, should the manual override device not be able to open the door. As further described, below, paragraph (f)(2) contains requirements for the ease of operability, dimensions, and location of the removable panels or windows in doors. In addition, distinct requirements in paragraph (f)(3) apply to bi-parting doors; because such individual door panels or leaves are very narrow, they cannot reasonably contain removable panels or windows that would allow occupants to pass through.

To allow sufficient time for railroads and manufacturers of passenger cars to implement these requirements without costly modifications to existing car orders, the requirements in this paragraph apply to equipment ordered on or after January 28, 2014, or placed in service for the first time on or after January 29, 2018. Railroad representatives on the Task Force indicated that such a 4-year time period is consistent with the time between the placement of an order and delivery of the ordered equipment.

This section makes clear that doors providing access to a control compartment are exempt from the requirement for removable panels or windows. The doors to such compartments are usually locked, particularly in newer cars that have door lock override mechanisms, to prevent unauthorized access to the control compartment. Railroads may, at their discretion, include removable panels or other additional means of egress in these doors, but they are not required to do so.

Paragraph (f)(2)(i) requires that each removable panel or removable window be designed to permit rapid and easy removal from both sides of the door without the use of a tool or other implement. For example, in the case of a vestibule door, rapid and easy removal is required from the vestibule side and the seating area side of the door. Access from both sides of the door is consistent with the preferred means of car evacuation, which is to the next car and not onto the right-of-way. The designs for removable windows or panels in the doors would likely be very similar to the removable gasket design and other designs generally used for dual-function windows, which serve both as emergency window exits and rescue access windows and therefore can be opened and removed from inside or outside of the car. This requirement in paragraph (f)(2)(i) is intended to be consistent with the ease of operability requirement currently applicable to

emergency window exits in § 238.113, which dual-function windows must meet. For example, the design presented by Kawasaki for a removable panel in a vestibule door, described in the 2008 PTES final rule, would satisfy the requirements for ease of operability. See 73 FR 6370.

Paragraph (f)(2)(ii) requires that removal of the panel or window in the door create an unobstructed opening with minimum dimensions of 21 inches horizontally by 28 inches vertically. The Task Force consulted with passenger car and door manufacturers to ensure that the dimensions could be met without sacrificing the basic structural design and integrity properties of vestibule doors, including firmness, balance, and stability. Manufacturers agreed that the maximum width that could be reasonably achieved is 21 inches. The 28-inch vertical dimension allows for the door to have a vertically-centered horizontal structural member, as well as retain a window in the upper half, which is common to many existing door designs and a feature that railroads are interested in retaining.

Paragraph (f)(2)(iii) requires that the removable panel or removable window in the door be located so that the lowest point of the opening is no higher than 18 inches from the floor. This requirement provides ease of use for passing through after removal of the panel or window. The opening should be located close to the floor so that car occupants can crawl through without undue difficulty or undue delay.

Paragraph (f)(3) contains distinct requirements for bi-parting doors. Each powered, bi-parting vestibule door and any other interior, powered bi-parting door intended for passage through a passenger car must be equipped with a manual override device and a mechanism to retain each door leaf in the open position. Examples of a

retention mechanism include a ratchet and pawl system, which allows movement in one direction but locks it in the other, and a sprag. The retention mechanism is intended to expedite egress by holding the door panels in place once they are opened. The override mechanism provides a means to operate the doors in the event that power is lost. It must be located adjacent to the door leaf it controls and be designed and maintained so that a person can readily access and operate it from each side of the door without the use of any tool or other implement. Access from both sides of the door is consistent with the preferred means of car evacuation, which is to the next car, and not onto the right-of-way.

Paragraph (f)(4) specifically contains requirements relating to the capabilities of manual override devices for vestibule doors and other interior doors intended for passage through a passenger car, including such doors that are bi-parting. See the discussion relating to manual override devices in paragraph (a).

Paragraph (f)(5)(i) contains requirements for marking and operating instructions for removable panels and windows in vestibule and other interior passageway doors. Paragraph (f)(5)(ii) contains particular requirements for marking and providing operating instructions for door override devices and retention mechanisms in vestibule and other interior passageway doors that are bi-parting.

To ensure that each removable panel or removable window in a door can be identified in conditions of limited visibility, the panel or window must be conspicuously and legibly marked with HPPL material on both sides of the vestibule or other interior passageway door in which it is installed, in accordance with section 5.4.2 of the APTA emergency signage standard that FRA is incorporating by reference in § 238.125. Use of such material is consistent with requirements for emergency window exit and door exit

signage. Legible and understandable operating instructions for each removable panel or removable window must also be provided on each side of the door. For example, in the case of a vestibule door, these instructions need to be provided on both the vestibule side and the seating area side of the door. Marking and instruction requirements also apply to bi-parting door manual override devices and retention mechanisms.

Paragraph (f)(6) contains requirements for testing a representative sample of door removable panels and windows, manual override devices, and door retention mechanisms to determine that they operate as intended. In particular, FRA believes that it is important to inspect, maintain, and repair manual vestibule and other interior passageway door override devices and door retention mechanisms to ensure that they function properly in the event of an emergency. FRA believes that testing of a representative sample of manual override devices and door retention mechanisms no less frequently than once every 184 days to verify that they are operating properly is reasonable and appropriate for safety. This frequency is consistent with existing requirements contained in § 238.113 for the testing of emergency window exits. However, because emergency window exits are subject to different service conditions than removable panels and removable windows located in vestibule doors and other interior passageway doors, including bi-parting doors, separate tests are needed. Following each test, defective systems must be repaired as appropriate in accordance with the requirements of this part.

Section 238.113 Emergency Window Exits

Requirements in parts 223 and 239 for the marking of emergency exits, as well as in part 238 for the marking of emergency communications transmission points, have specified the use of luminescent materials. (Door exits intended for emergency egress

may also be lighted, in accordance with § 239.107(a)(1).) Part 238 defines “luminescent material” as material that absorbs light energy when ambient levels of light are high and emits this stored energy when ambient levels of light are low, making the material appear to glow in the dark. See § 238.5. However, § 238.113 has not specified minimum requirements for the initial levels of brightness of the markings (i.e., luminance levels) or how long the markings must maintain the same or reduced levels of brightness.

Accordingly, paragraph (d) of this section is amended to require markings, as well as instructions, for emergency window exits to comply with the APTA emergency signage standard that FRA is incorporating by reference in § 238.125. The inspection requirement related to marking of emergency window exits formerly contained in § 239.107(b) is also added as paragraph (e) of this section. By helping to ensure that the markings appear conspicuous and legible, FRA believes that these changes enhance the capability and benefit of the markings in guiding passenger train occupants to locate and operate emergency window exits.

Specifically, as further discussed below, in § 238.125 FRA is incorporating by reference APTA Standard PR-PS-S-002-98 (previously SS-PS-002-98), Rev. 3, “Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment.” The APTA standard establishes specific criteria for luminescent material, including how bright the material must be and for how long. The APTA standard also contains specific design requirements to facilitate recognition and reliability, including letter size and color contrast requirements as well as requirements for door locator signs to facilitate identification of door locations that may not be easily seen by seated passengers.

As noted above, FRA is moving the emergency window exit testing requirements formerly contained in § 239.107(b) to a new paragraph (e) in this section. Generally, emergency window exits are intended to supplement door exits, which are normally the preferred means of egress in an emergency situation. Emergency windows provide an alternative means of emergency egress should doors intended for egress be rendered inoperable or inaccessible. Emergency windows also provide an additional means of egress in life-threatening situations requiring very rapid exit, such as an on-board fire or submergence of the car in a body of water. The requirement to periodically test a representative sample of emergency window exits arose from EO 20 and is being carried forward from § 239.107 into this new paragraph.

Section 238.114 Rescue Access Windows

This section includes requirements for the location and retroreflective marking of rescue access windows. Paragraph (d) of this section continues to require that retroreflective material be used to mark rescue access windows. However, as further discussed below, in § 238.125 FRA is incorporating by reference APTA Standard PR-PS-S-002-98 (previously SS-PS-002-98), Rev. 3, “Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment.” FRA believes that adopting the APTA standard enhances the effectiveness of the retroreflectivity requirements in identifying rescue access locations for emergency responders, taking into consideration the environment in which passenger trains operate. This section was originally prompted in part by the April 23, 2002 collision involving a Metrolink passenger train near Placentia, CA, and the ensuing NTSB Safety Recommendation (R-03-21) to FRA, which illustrated the potential importance of having rescue access windows on each level of a passenger

car. The general intent of the provision is to provide a means for emergency responders to quickly identify and effectively operate rescue access windows in order to gain access directly into every passenger compartment on every level of a passenger car, in the event that a stairway or interior door is compromised and any exterior doors are blocked.

The same APTA emergency signage standard discussed previously related to emergency window exit marking contains detailed criteria for marking rescue access windows, including the use of certain retroreflective material. FRA notes that, consistent with this standard, in the 2008 PTES final rule it added the definition of “retroreflective material” for marking doors, windows, and roof locations intended for rescue access. See § 238.5; 73 FR 6370, 6380. As used in this rule, “retroreflective material” means a material that is capable of reflecting light rays back to the light source and that conforms to the specifications for Type I Sheeting, as specified in ASTM International’s (ASTM) Standard D 4956-07, “Standard Specification for Retroreflective Sheeting for Traffic Control.” ASTM International defines Type I Sheeting as “medium-intensity retroreflective sheeting referred to as ‘engineering grade’ and typically enclosed lens glass-bead sheeting,” and FRA has previously incorporated the ASTM definition by reference. FRA is now incorporating by reference the APTA emergency signage standard, and notes that the standard also requires that the retroreflective material be tested according to ASTM’s Standard E 810-03, “Standard Test Method for Coefficient of Retroreflective Sheeting Utilizing the Coplanar Geometry.” Further, the APTA standard provides that, in order to maintain the optimum retroreflective properties of the base material, any retroreflective markings that have ink or pigment applied shall utilize a translucent or semi-translucent ink, as per the manufacturer’s instructions. In addition, a

clear coat that protects against ultra-violet light may be added to prevent fading. Finally, retroreflectivity requirements shall be met if protective coatings or other materials for the enhancement of sign durability are used. Please see section 6 of the APTA emergency signage standard for design requirements addressing rescue access information for emergency responders.

Section 238.115 Emergency Lighting

This section formerly contained requirements for emergency lighting in passenger cars only ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002. These requirements continue to apply to this equipment. Yet, to enhance the performance of emergency lighting in passenger cars, FRA is amending this section to expand its application to all passenger cars, both new and existing, and is also modifying the emergency lighting requirements. Specifically, this section now incorporates by reference APTA Standard PR-E-S-013-99 (previously SS-E-013-99), Rev. 1, “Standard for Emergency Lighting Design for Passenger Cars.” All passenger cars must comply with this standard by January 1, 2017, or an alternative standard providing at least an equivalent level of safety if approved by FRA pursuant to § 238.21. Moreover, in advance of the January 1, 2017 compliance deadline, this section requires that by December 31, 2015, each railroad must ensure that 70% of its passenger cars comply. Incorporating and phasing-in this APTA emergency lighting standard for all passenger cars not only enhances the standards for new passenger cars but also establishes standards for passenger cars both ordered before September 8, 2000, and placed in service before September 9, 2002, i.e., passenger cars not previously subject to this section.

This section continues to require minimum emergency illumination levels at doors, aisles, and passageways. In addition to these locations, the APTA emergency lighting standard requires minimum levels of emergency illumination for stairways, crew areas of multiple-unit (MU) locomotives and cab cars, toilets, and other areas.

This section has required a “back-up power system” capable of operating in all equipment orientations within 45 degrees of vertical, as well as after the initial shock of certain collision or derailment scenarios. The car’s main battery has also been considered an acceptable “back-up power system.” However, a traditional main battery is limited in its ability to provide power in equipment orientations greater than 45 degrees of vertical. Additionally, because it is common for such batteries to be at least partially located below the car body, it would not be unusual for the main car battery to be damaged in the event of a derailment, which would render the emergency lighting system inoperable, as occurred in the MARC train cab car that was involved in the 1996 accident in Silver Spring, MD. Accordingly, for equipment ordered on or after April 7, 2008, or first placed in service on or after January 1, 2012, the APTA emergency lighting standard requires an independent power source to be located within the car body and placed no more than a half-car length away from the fixture it powers in the event the main car battery is not able to power the system. This system must also be capable of operating in all equipment orientations. The APTA emergency lighting standard contains additional design and performance criteria for batteries that are used as independent power sources. It also contains rigorous requirements for periodic testing of batteries used as independent power sources.

FRA notes that § 238.307 requires railroads to perform periodic mechanical inspections of passenger equipment, including passenger cars. Specifically, that section requires the inspection of interior and exterior mechanical components not less frequently than every 184 days. As part of this inspection, railroads have been required to verify that all emergency lighting systems are in place and operational as specified in this § 238.115. The APTA emergency lighting standard contains more detailed periodic inspection and maintenance requirements, including the conduct of periodic tests to confirm the minimum illumination levels and duration no less frequently than every eight years on a representative sample of cars or areas. However, if the first two cars or areas tested exceed the minimum illumination levels by a factor of 4 or greater, no further testing is required of that particular representative sample until the next required periodic test eight years later, according to the APTA emergency lighting standard. Importantly, the APTA standard also requires railroads to replace each sealed battery that is used as an independent power source for an emergency light circuit at two-year intervals, unless the lighting circuit can be manually turned off or is equipped with controllers that automatically prevent unnecessary battery discharge, or other measures are taken to prevent routine discharge (e.g., maintaining equipment on wayside power or head-end power). If so equipped, the APTA standard requires that the battery-replacement interval be according to the manufacturer's specifications, or if not specified, at least every five years. For emergency lighting systems that use capacitors as independent power sources, a functional test of the devices shall be conducted as part of the periodic inspection. Due to their long life, the two-year replacement requirement does not apply to capacitor-based energy storage devices. However, a functional test of the devices shall be conducted as

part of the periodic inspection. The APTA standard also requires initial verification tests on at least one representative car or area of a car for each emergency lighting system layout to ensure compliance with the minimum duration and illumination levels.

FRA has reviewed the APTA emergency lighting standard it is incorporating by reference and has determined that the standard contains the proper specifications for emergency lighting in passenger cars. FRA believes that compliance with the APTA standard requirements identified in this section will help ensure effective operation of emergency lighting in new passenger cars. Establishment of requirements for older, existing equipment will help ensure emergency lighting systems are capable of providing sufficient illumination for occupants to retain situational awareness in the event normal lighting is not available, particularly in the event of an emergency situation. FRA expects that almost all affected railroads are already in compliance with the APTA standard requirements. Some railroads, including railroads that are not members of APTA, are not currently in compliance with the APTA standard requirements. To allow railroads that are not currently in compliance with the APTA standard requirements enough time to comply with the requirements, FRA is phasing in the requirements of this section, as discussed above.

Section 238.121 Emergency Communications

This section contains requirements for PA and intercom systems so that passengers and train crewmembers may communicate with each other in an emergency.

FRA is clarifying the requirements in paragraph (a)(2) of this section, which applies to new Tier I and all Tier II passenger cars. FRA is inserting the word “after” directly before the date “April 1, 2010.” The previous omission of the word “after” in

this paragraph was a typographical error, which was evident from the discussion of this provision in the 2008 PTES final rule. See 73 FR 6389. Insertion of “after” in the rule text makes clear that the requirements of this paragraph (a)(2) apply to each Tier I passenger car ordered on or after April 1, 2008, or placed in service for the first time on or after April 1, 2010—not only on April 1, 2010, as well as to all Tier II passenger cars. This clarification does not result in substantive change to the requirements contained in this section.

In addition, FRA is amending paragraph (b)(2) of this section, which contains requirements for marking the location of each intercom intended for passenger use and providing operating instructions. Specifically, prior to January 28, 2016, this paragraph continues to require that the location of each intercom intended for passenger use be clearly marked with luminescent material and that legible and understandable operating instructions be posted at or near each such intercom to facilitate passenger use.

Paragraph (b)(2)(i). A new provision, paragraph (b)(2)(ii), now provides that on or after January 28, 2016, each intercom intended for passenger use shall be marked in accordance with section 5.4.2 of the APTA emergency signage standard. Notably, the APTA standard for emergency signage incorporated into this rule includes specific requirements for the use of luminescent marking materials, thereby enhancing the former requirements in this paragraph for luminescent material at intercom locations. Legible and understandable operating instructions shall also continue to be posted at or near each such intercom to facilitate passenger use.

FRA believes that the compliance dates in paragraph (b)(2) are consistent with the Task Force’s intent to allow for sufficient implementation time to transition to the newer

requirements. Accordingly, photoluminescent markings that were installed in accordance with the 2008 PTES final rule continue to remain in compliance for the first two years following the effective date of this rule, as provided in paragraph (b)(2)(i). The requirements in paragraph (b)(2)(ii) then become applicable to both Tier I and Tier II passenger equipment two years from the effective date of this final rule.

Paragraph (c) of this section continues to require that PA and intercom systems on all new Tier I passenger rail cars, as explained below, and all Tier II passenger cars have back-up power for a minimum period of 90 minutes. An example of a back-up power source is the main battery in a passenger car. The only change FRA is making clarifies the applicability of this paragraph, which was originally added by the 2008 PTES final rule without any express applicability dates. The back-up power requirements have the same applicability dates as those for intercom systems in the PTES final rule. That is, paragraph (c) applies to each Tier I passenger rail car ordered on or after April 1, 2008, or placed in service for the first time on or after April 1, 2010, and to all Tier II passenger cars. While FRA believes that the application of paragraph (c) is understood from a reading of this section as a whole, adding these dates removes any confusion that may arise.

Section 238.123 Emergency Roof Access

This section contains emergency roof access requirements for Tier I and Tier II passenger cars ordered on or after April 1, 2009, or placed in service for the first time on or after April 1, 2011. Requirements for Tier II power cars and existing Tier II passenger cars are found in § 238.441.

Paragraph (e) of this section contains specific requirements for marking, and providing instructions for, emergency roof access locations. This rule amends paragraph (e) to reference the APTA emergency signage standard in new § 238.125 for marking emergency roof access locations and providing instructions for their use. Paragraph (e) of this section formerly required that each emergency roof access location be conspicuously marked with retroreflective material as defined in § 238.5 and be of contrasting color, and that legible and understandable instructions be provided near each emergency roof access location. Section 6 of the APTA emergency signage standard contains design requirements for rescue access information for emergency responders, and section 6.1.3 of the standard specifically addresses emergency roof access locations. The APTA standard is more comprehensive than the former requirements in paragraph (e) of this section.

The use of retroreflective material is intended to enable emergency responders to quickly identify emergency roof access locations by shining a light directly onto the car roof, and the instructions are intended to promote the proper use of the emergency roof access feature by emergency responders. To maximize the potential use of the required retroreflective material, this paragraph (e) now references the requirements of § 238.125, which incorporates by reference APTA's emergency signage standard for retroreflective material. Please see the discussion in § 238.114 of retroreflective material requirements in the APTA emergency signage standard. Overall, FRA believes that compliance with the APTA emergency signage standard will help ensure that the retroreflective material markings for emergency roof access are conspicuous and that the instructions are legible, thereby facilitating emergency responder access to passenger cars.

Section 238.125 Markings and Instructions for Emergency Egress and Rescue
Access

To enhance the requirements for markings and instructions for passenger car emergency egress and rescue access, FRA is adding a new section that incorporates by reference APTA Standard PR-PS-S-002-98 (previously SS-PS-002-98), Rev. 3, “Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment,” October 2007. This new section also permits use of an alternative standard providing at least an equivalent level of safety if approved by FRA pursuant to § 238.21. FRA notes that it intends the term “markings” to encompass the term “emergency signage,” as an emergency sign is a type of marking.

Generally, the APTA emergency signage standard provides that each passenger rail car have interior emergency signage to assist passengers and train crewmembers in locating and operating emergency exits in order to safely evacuate as necessary from the rail car or train during an emergency situation. The APTA standard also addresses exterior emergency signage to assist emergency responders in locating and operating features and systems to access the rail equipment.

FRA and passenger railroads recognize that, in the majority of emergency situations, the safest place for passengers and crewmembers is typically on the train. Should evacuation from a particular car be required, the safest course of action for passengers and crew is normally to move into an adjacent car. Staying on the train avoids or minimizes the hazards inherent in evacuating passengers onto the railroad right-of-way. The APTA emergency signage standard was designed to achieve the desired

goal of facilitating passenger and crew egress from potentially life-threatening situations in passenger rail cars, as well as offer flexibility in application.

Individual railroads have the responsibility to design, install, and maintain an emergency signage system that is compatible with their internal safety policies for emergency evacuation and rescue access, while complying with the performance criteria specified in the APTA emergency signage standard. The APTA standard is intended to increase the overall effectiveness of the emergency signage by specifying requirements related to signage that include: recognition, design, location, size, color and contrast, and materials. Incorporation of the more detailed APTA standard's requirements helps ensure that emergency exits are more easily identified and operated by passengers and train crewmembers to evacuate a passenger car during an emergency and also that rescue access systems are more easily identified and used by emergency responders.

As noted above, § 238.307 requires railroads to perform periodic mechanical inspections of passenger equipment, including passenger cars. The periodic mechanical inspection requires the inspection of interior and exterior mechanical components not less frequently than every 184 days. As part of this inspection, railroads have been required to verify that all safety-related signage is in place and legible. See §§ 238.305(c)(7) and 238.307(c)(12). The APTA emergency signage standard specifies more detailed periodic inspection and maintenance related to emergency egress and rescue access signage. Notably, as with the APTA LLEPM standard, discussed below, the APTA emergency signage standard provides that railroads verify that all emergency signage system components function as intended. In particular, section 10.2.1.2 of the APTA emergency

signage standard addresses photoluminescent (including HPPL) systems in passenger rail cars and provides that passenger railroads:

- Conduct tests and inspections in conformance with APTA standard PR-IM-S-005-98 (previously SS-I&M-005-98), Rev. 2, “Standard for Passenger Compartment Periodic Inspection and Maintenance,” September 2003, a copy of which has been placed in the public docket for this rulemaking;
- Conduct periodic tests and inspections to verify that all emergency signage system components, including power sources, function as intended; and
- Conduct periodic illuminance tests to confirm that photoluminescent components receive adequate charging light no less frequently than once every 8 years, with the first test conducted no later than 8 years after a car has been placed in service for the first time, for only the following components:
 1. HPPL signs/markings placed in areas designed or maintained with normal light levels of less than 5 foot candles; and
 2. Grandfathered PL materials, where the sign/markings is placed in an area designed or maintained with normal light levels of less than 10 foot candles.

If all of the illuminance levels in the first two randomly-selected representative sample cars/areas exceed the minimum required to charge the photoluminescent components set forth in this standard by at least a factor of 2, no further testing is required for the cars/areas represented by the sample car/area tested for the periodic inspection cycle.

FRA has reviewed the APTA emergency signage standard it is incorporating by

reference and has determined that the standard contains appropriate specifications for emergency signage and markings for egress and access so that passenger car occupants may identify and operate emergency exits and emergency responders may identify and use rescue access features. FRA believes that compliance with the APTA standard identified in this section ensures effective use of signage and markings for emergency egress and rescue access.

FRA expects that almost all affected railroads are already in compliance with the APTA emergency signage standard, while some railroads, including railroads that are not members of APTA, are not currently in compliance. To allow railroads that are not currently in compliance with the APTA standard sufficient time to get into compliance, this section is not applicable until one year from the effective date of this final rule. Consequently, to ensure continued application of FRA's existing signage and marking requirements until this section is applicable, in each separate section in which this section is referenced applicability dates have been inserted that conform with the applicability date for this section. FRA's existing signage and marking requirements continue to apply in this interim period.

Section 238.127 Low-Location Emergency Exit Path Marking

To facilitate passenger car evacuation, particularly under conditions of limited visibility, FRA is adding this new section that incorporates by reference APTA's LLEPM standard: PR-PS-S-004-99 (previously SS-PS-004-99), Rev. 2, "Standard for Low-Location Exit Path Marking," October 2007. This section also permits the use of an alternative standard providing at least an equivalent level of safety, if approved by FRA pursuant to § 238.21.

Generally, the APTA LLEPM standard was developed to establish minimum requirements for LLEPM in both existing and new passenger cars to provide visual guidance for passengers and train crewmembers to identify, reach, and operate primary exits during conditions of limited visibility when the emergency lighting system has failed or when smoke conditions obscure overhead emergency lighting. The APTA standard requires that each passenger rail car have an LLEPM system, visible in the area from the floor to a horizontal plane 4 feet (1.22 m) above the aisle of the rail car, to provide directional guidance to passengers to exit an affected car to the adjacent car (or, at the option of the railroad, exit off the train). The LLEPM system, by virtue of its location in or near the rail car floor, is intended to assist passengers and train crewmembers in identifying the path to exit a rail car in an emergency under conditions of darkness and especially smoke.

The requirement for an LLEPM system is also intended to complement the emergency signage that has been required by FRA regulation and thereby increase the overall effectiveness of such signage systems to enable passengers and train crewmembers to locate, reach, and operate emergency exits under a greater range of emergency situations, particularly life-threatening circumstances involving smoke. Much like the APTA emergency signage standard, the APTA LLEPM standard specifies requirements related to the selection of the physical characteristics, informational content, and placement of LLEPM systems for installation within passenger rail cars to provide consistent identification of both primary and, under certain conditions, secondary exits, as well as the path(s) to follow to reach such exits.

As noted above, § 238.307 requires railroads to perform periodic mechanical inspections of passenger equipment, including passenger cars. The periodic mechanical inspection requires the inspection of interior and exterior mechanical components not less frequently than every 184 days. As part of this inspection, railroads have been required to verify that all vestibule steps are illuminated. See § 238.305(c)(9). The APTA LLEPM standard specifies additional periodic inspection and maintenance related to LLEPM signage and markings. Notably, section 9.2 of the APTA LLEPM standard requires railroads to conduct periodic inspections and tests to verify that all LLEPM system components, including power sources, function as intended. See section 9.2. Like the APTA emergency signage standard, the LLEPM standard also requires railroads to test a representative sample of passenger rail cars or areas using a statistically-valid, documented sampling method.

FRA has reviewed the APTA LLEPM standard it is incorporating in this rule and has determined that the standard contains appropriate specifications for LLEPM systems. FRA believes that compliance with the APTA standard identified in this section helps ensure that passenger car occupants are able to identify, reach, and operate primary egress points during an emergency.

FRA expects that almost all affected railroads are already in compliance with the APTA LLEPM standard, while some railroads, including railroads that are not members of APTA, are not currently in compliance. To allow railroads that are not currently in compliance with the APTA standard sufficient time to get into compliance, this section is not applicable until one year from the effective date of this final rule.

Section 238.235 Doors

FRA has removed § 238.235 and moved the requirements of this section to new § 238.112, for user convenience and to consolidate the requirements of this part for conciseness. Section 238.235 principally contained requirements for exterior side doors in passenger cars and features capable of opening the doors to exit or access the cars in an emergency situation. The safety requirements are unchanged. Section 238.112 consolidates all door emergency egress and rescue access system requirements into one section from §§ 238.235, 238.439, and 239.107 that apply, as specified, to all passenger cars. Because all of the requirements in § 238.235 have been moved to new § 238.112, no requirements remain in § 238.235, and it is reserved for future use.

Section 238.303 Exterior calendar day mechanical inspection of passenger equipment

This section contains the requirements related to the performance of exterior mechanical inspections of each passenger car (i.e., passenger coach, MU locomotive, and cab car) and each unpowered vehicle used in a passenger train each calendar day that the equipment is placed in service. FRA is revising paragraph (e)(18) of this section only to update the cross reference to the marking requirements for door emergency egress and rescue access systems from former § 239.107(a) to new § 238.112. The final rule consolidates door emergency egress and rescue access system requirements into new § 238.112, as discussed above. As part of this consolidation, requirements to mark these systems have been moved from former § 239.107(a) to new § 238.112, which in turn references new § 238.125, discussed above. Paragraph (e)(18) has been updated accordingly as a conforming change; no other change is intended.

Section 238.305 Interior Calendar Day Mechanical Inspection of Passenger Cars

This section contains the requirements related to the performance of interior mechanical inspections of passenger cars each calendar day that the cars are placed in service. FRA is clarifying paragraph (a) of this section; adding new paragraphs (c)(11) and (13) to address the inspection of LLEPM systems, as well as the inspection of removable panels and windows in vestibule doors and certain other interior passageway doors; and amending paragraph (d) to reference new paragraph (c)(11).

Paragraph (a) sets forth the general requirement for passenger car interior calendar day mechanical inspections and formerly referenced paragraph (d) of this section as providing an exception to the general requirement for long-distance intercity passenger trains that have been delayed en route. This cross-reference to paragraph (d) was in error and was caused by a previous re-designation of the original paragraph (d) that should have been updated in paragraph (a). See 65 FR 41308. As previously re-designated, paragraph (e) of this section contains the exception. Accordingly, FRA is correcting the reference in paragraph (a) from paragraph (d) to paragraph (e).

Paragraph (c) of this section identifies the various components that require visual inspection as part of the interior calendar day mechanical inspection. Inspection, testing, and maintenance of emergency systems helps ensure that these systems are either available for use in the event of an emergency, or that the train crew is aware that they are not available. In turn, this information helps provide for more effective and safe resolution of emergency situations.

FRA is adding two new paragraphs to paragraph (c). First, paragraph (c)(11) is added to require the daily inspection of LLEPM systems to ensure that they are in place and conspicuous. LLEPM systems are required in new § 238.127. Nonetheless, FRA

has amended paragraph (d) of this section to allow flexibility for safely operating a passenger car in service with a noncompliant LLEPM system found during the car's interior calendar day mechanical inspection until the next required daily inspection, so as not to unduly disrupt normal passenger operations.

Paragraph (c)(13) is also added to ensure that removable panels and windows in vestibule doors and other interior doors used for passage through a passenger car are properly in place and secured, based on a visual inspection performed during the interior calendar day mechanical inspection. Paragraph (c)(13) affords special flexibility for handling noncompliant equipment, provided that the railroad has developed and follows written procedures for mitigating the hazard(s) caused by the noncomplying condition and the train crew is given written notification of the defect. Thus, a passenger car with an inoperative or nonfunctioning removable panel or removable window in a vestibule door or other interior passageway door is permitted to remain in passenger service after the noncompliant condition is discovered until no later than the car's fourth interior calendar day mechanical inspection or next periodic mechanical inspection required under § 238.307, whichever occurs first, or for a passenger car used in long-distance intercity train service, until the eighth interior calendar day mechanical inspection or next periodic mechanical inspection required under § 238.307, whichever occurs first. At that time, the removable panel or removable window in the door must be repaired, or the car must be removed from service.

Section 238.307 Periodic Mechanical Inspection of Passenger Cars and Unpowered Vehicles Used in Passenger Trains

This section contains the requirements related to the performance of periodic mechanical inspections of all passenger cars and all unpowered vehicles used in a passenger train. Paragraph (c) of this section specifically identifies interior and exterior mechanical components that are required to be inspected not less frequently than every 184 days. FRA is modifying paragraph (c)(4) of this section to add requirements for inspecting and testing a representative sample of door removable panels and windows, manual override devices, and retention mechanisms, in accordance with § 238.112. (Please note that existing paragraph (d)(1) of this section contains a separate requirement to inspect manual door releases not less frequently than every 368 days, to determine that all manual door releases operate as intended.) FRA is also relocating the requirement for inspecting and repairing emergency window exits from § 239.107 to this paragraph. In this regard, FRA continues to require that records of emergency window exit inspection, testing, and maintenance be retained for two calendar years after the end of the calendar year to which they relate, as formerly required by § 239.107(c). In particular, FRA is concerned that sufficient records be kept of periodic emergency window exit testing, which FRA is moving from § 239.107(b) to § 238.113(e). Further, FRA is modifying paragraph (c)(5) of this section to add requirements for the inspection, testing, and maintenance of LLEPM systems, as required by § 238.127, to ensure that they are operational.

The inspection, testing, and maintenance of emergency systems help to ensure that these systems are available for use in the event of an emergency. This allows for more effective and safe resolutions of emergency situations.

Section 238.311 Single Car Test

In the NPRM, FRA had proposed to amend this section to update the name of APTA, “American Public Transportation Association,” and its address, 1666 K Street, NW, Washington, DC 20006. However, FRA has decided not to amend this section at this time. FRA’s changes would have been mere technical corrections. Moreover, this section does not address passenger train emergency systems, which are the focus of this rulemaking, but rather the testing of passenger brake equipment. Any revision to this section will be addressed in a separate rulemaking proceeding.

Section 238.439 Doors

This section has contained the requirements for door safety systems for Tier II passenger cars. As noted, FRA is consolidating the requirements of this section applicable to both Tier I and Tier II passenger cars, together with those in its former Tier I counterpart (former § 238.235), and restating them in a single, new section: § 238.112. The requirements that are unique to Tier II passenger equipment remain in this section.

Specifically, FRA is removing former paragraphs (a), (b), (e), and (g) of this section, which are now addressed by the requirements of new § 238.112. The remaining paragraphs, former paragraphs (c), (d), and (f) of this section, are re-designated as paragraphs (a) through (c), respectively. Former paragraphs (c) and (d) have no counterpart in the Tier I equipment requirements and remain in this section. Former paragraph (f), re-designated as paragraph (c), is revised to limit its applicability effectively to existing Tier II passenger cars.

Paragraph (a) of this section, formerly paragraph (c), now requires the status of powered, exterior side doors to be displayed to the crew in the operating cab and, if door interlocks are used, the sensors to detect train motion must nominally be set to operate at

not more than 3 mph. Paragraph (b) of this section, formerly paragraph (d), requires that powered, exterior side doors be connected to an emergency back-up power system. Both paragraphs are otherwise unchanged.

Paragraph (c) of this section, formerly paragraph (f), requires passenger compartment end doors to be equipped with a kick-out panel, pop-out window, or other similar means of egress in the event the doors will not open, or be so designed as to pose a negligible probability of becoming inoperable in the event of car body distortion following a collision or derailment. This paragraph does not apply to such doors providing access to the exterior of a trainset, however, as in the case of an end door in the last car of a train. As revised, this paragraph's applicability is limited to Tier II passenger cars both ordered prior to the effective of this final rule and placed in service within four years after the effective date of this final rule. To date, no kick-out panel, pop-out window, or other similar means of emergency egress has been placed in a Tier II passenger car, on the basis that the end compartment doors, as designed, pose a negligible probability of failure due to car body distortion following a collision or derailment. All new Tier II passenger cars are now subject to the more comprehensive requirement in new § 238.112 related to equipping vestibule doors and other interior doors intended for passage through a passenger car with a removable panel or removable window.

Section 238.441 Emergency Roof Access

This section contains emergency roof access requirements for Tier II passenger cars and Tier II power cars. Please see the 2008 PTES final rule for a full discussion of the requirements of this section. 73 FR 6395-6396.

Specifically, paragraph (a) of this section contains requirements for marking, and providing instructions for, emergency roof access locations in Tier II passenger cars and Tier II power cars ordered prior to April 1, 2009, and placed in service prior to April 1, 2011. This rule amends paragraph (a) to reference the APTA emergency signage standard in new § 238.125 for marking emergency roof access locations and providing instructions for their use. Please see § 238.125 for a discussion of the APTA emergency signage standard relating to the marking of emergency roof access locations. Each emergency roof access location continues to be required to be conspicuously marked with retroreflective material of contrasting color, and legible and understandable instructions must continue to be provided near the emergency roof access location. To enhance the potential use of the required retroreflective material, this paragraph now references the requirements of § 238.125, which incorporates by reference APTA's emergency signage standard for retroreflective material. FRA believes that compliance with the APTA standard identified in § 238.125 will ensure that retroreflective material markings for emergency roof access are conspicuous and that the instructions are legible, thereby facilitating emergency responder access to passenger cars.

Paragraphs (b) and (c) of this section apply, respectively, to Tier II passenger cars and Tier II power cars ordered on or after April 1, 2009, or placed in service for the first time on or after April 1, 2011. Paragraph (b) references the requirements in § 238.123 in full, and paragraph (c) references the marking and instruction requirements in § 238.123. Accordingly, the marking and instruction requirements in § 238.125 apply to the Tier II passenger equipment covered by paragraphs (b) and (c) of this section, by the reference to § 238.125 that is now provided in § 238.123.

Appendix A to Part 238—Schedule of Civil Penalties

This appendix contains a schedule of civil penalties for use in connection with this part. Because such penalty schedules are statements of agency policy, notice and comment are not required prior to their issuance. See 5 U.S.C. 553(b)(3)(A).

Nevertheless, FRA invited comment on the penalty schedule; however, no comments were received.

Accordingly, FRA is amending the penalty schedule to reflect the addition of the following sections to this part 238: § 238.112, Door emergency egress and rescue access systems; § 238.125, Marking and instructions for emergency egress and rescue access; and § 238.127, Low-location emergency exit path marking. FRA is also removing and reserving the entry for § 238.235, whose requirements have been integrated into § 238.112.

B. Amendments to Part 239, Subpart B

Section 239.105 Debriefing and Critique

FRA is clarifying the debriefing and critique requirements in this section by expressly requiring train crew participation in debriefing and critique sessions. This section has required a debriefing and critique session after each passenger train emergency situation or full-scale simulation to evaluate the effectiveness of the railroad's emergency preparedness plan. The railroad is then required to improve or amend its plan, or both, as appropriate, in accordance with the information developed. Employees directly involved in the emergency situation or full-scale simulation have valuable first-hand knowledge of the event. Participation by these employees in the debriefing and critique session is necessary to evaluate the effectiveness of the emergency preparedness

plan, and FRA is clarifying this requirement to reflect this necessary participation.

The rule now specifies that, to the extent practicable, all on-board personnel, control center personnel, and any other employees involved in the emergency situation or full-scale simulation shall participate in the debriefing and critique session. The rule also makes clear the flexibility that exists for employees to participate in these sessions by one or more of the following means: in person; offsite via teleconference; or in writing, by a statement responding to questions provided prior to the session, and by responding to any follow-up questions. FRA believes that these clarifications will help to ensure that the debriefing and critique sessions provide meaningful information for railroads to use in furthering their emergency preparedness planning efforts.

Section 239.107 Emergency Exits

FRA is removing § 239.107 and moving the requirements formerly contained in this section into §§ 238.112 and 238.307. Requirements formerly contained in § 239.107 related to doors have been moved to § 238.112. Requirements formerly contained in § 239.107 and related to windows have been moved to § 238.307. FRA believes that the consolidation of these requirements makes the regulation more user-friendly, which helps facilitate compliance with its requirements. FRA has not made substantive changes to the requirements formerly contained in this section in moving them to these other sections. Of course, FRA notes that it has amended the requirements for emergency exits as discussed in this rule.

Appendix A to Part 239—Schedule of Civil Penalties

This appendix contains a schedule of civil penalties for use in connection with this part. Because such penalty schedules are statements of agency policy, notice and

comment are not required prior to their issuance. See 5 U.S.C. 553(b)(3)(A).

Nevertheless, FRA invited comment on the penalty schedule; however, no comments were received.

Accordingly, FRA has revised the schedule of civil penalties in issuing this rule to reflect revisions made to this part 239. Specifically, FRA is removing and reserving the entry for § 239.107, whose requirements have been integrated into new § 238.112 and into § 238.307.

VI. Regulatory Impact and Notices

A. Executive Orders 12866 and 13563, and DOT Regulatory Policies and Procedures

This final rule has been evaluated in accordance with existing policies and procedures and determined to be non-significant under both Executive Order 12866 and 13563 and DOT policies and procedures. See 44 FR 11034; February 26, 1979. FRA has prepared and placed in the docket a Regulatory Evaluation addressing the economic impact of this final rule. As part of the Regulatory Evaluation, FRA has assessed quantitative estimates of the cost streams expected to result from the implementation of this rule. For the 20-year period analyzed, the estimated quantified costs imposed on industry total \$22.7 million with a present value (PV, 7 percent) of \$13.1 million. In particular, FRA considered the industry costs associated with complying with the three APTA passenger train emergency systems standards incorporated by reference in this rule, installation of removable panels or windows in single-panel vestibule doors of new passenger cars, requirements for bi-parting vestibule doors, and inspection, testing, and maintenance of the emergency systems.

In analyzing the final rule, FRA has applied updated “Guidance on the Economic Value of a Statistical Life in US Department of Transportation Analyses,” March 2013. This policy updates the Value of a Statistical Life (VSL) from \$6.2 million to \$9.1 million and revises guidance used to compute benefits based on injury and fatality avoidance in each year of the analysis based on forecasts from the Congressional Budget Office of a 1.07 percent annual growth rate in median real wages over the next 30 years (2013-2043). FRA also adjusted wage-based labor costs in each year of the analysis accordingly. Real wages represent the purchasing power of nominal wages. Non-wage inputs are not impacted. The cost and benefit drivers for this analysis are labor costs and avoided casualties, both of which in turn depend on wage rates.

FRA believes that \$13.1 million is the best estimate of regulatory cost. For more details on the costing of this rule, please see the Regulatory Evaluation found in the docket. The requirements that are expected to impose the largest burdens relate to emergency lighting, door/removable panels or windows (or bi-parting doors), and emergency egress and rescue access marking and instructions. The table below presents the estimated costs associated with the rule.

| 20-Year Cost for Final Rule | |
|---|-------------|
| Door Removable Panels or Windows, and Bi-Parting Doors | \$4,564,599 |
| Emergency Lighting | \$1,845,309 |
| Emergency Egress and Rescue Access Marking and Instructions | \$4,845,853 |
| Low-Location Emergency Exit Path Markings | \$1,378,352 |
| Debriefing and Critique | N/A |
| Inspection, Testing, and Recordkeeping (APTA Standards) | \$44,750 |

| | |
|--------------|---------------------|
| | |
| Total | \$13,074,863 |

Future costs are discounted to present value using a 7 percent discount rate.

As part of the Regulatory Evaluation, FRA has explained what the likely benefits for this final rule are, and provided a break-even analysis. This rulemaking is expected to improve railroad safety by promoting the safe resolution of emergency situations involving passenger trains, including the evacuation of passengers and crewmembers in the event of an emergency. The primary benefits include a heightened safety environment in egress from a passenger train and rescue access by emergency response personnel after an accident or other emergency. This corresponds to a reduction of casualties resulting from collisions, derailments, and other emergency situations. FRA believes the value of the anticipated safety benefits justify the cost of implementing the rule.

B. Regulatory Flexibility Act and Executive Order 13272

To ensure potential impacts of rules on small entities are properly considered, FRA has developed this final rule in accordance with Executive Order 13272 (“Proper Consideration of Small Entities in Agency Rulemaking”) and DOT’s procedures and policies to promote compliance with The Regulatory Flexibility Act of 1980 (5 U.S.C. 601 et seq.).

The Regulatory Flexibility Act requires an agency to review regulations to assess their impact on small entities. An agency must prepare a regulatory flexibility analysis (RFA) unless it determines and certifies that a rule, if promulgated, would not have a significant economic impact on a substantial number of small entities.

This final rule requires each commuter and intercity passenger railroad to comply

with three APTA standards, as well as requirements for installation of removable panels or windows in single-panel vestibule doors and other interior passageway doors of new passenger cars, bi-parting vestibule doors, and inspection, testing, and maintenance of these emergency systems. The APTA standards are: PR-E-S-013-99 (previously SS-E-013-99), Rev. 1, Standard for Emergency Lighting System Design for Passenger Cars; PR-PS-S-004-99 (previously SS-PS-004-99), Rev. 2, Standard for Low-Location Exit Path Marking (LLEPM); and PR-PS-S-002-98 (previously SS-PS-002-98), and Rev. 3. Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment. Many railroads have already implemented these APTA standards in advance of this rulemaking.

The “universe” of the entities to be considered generally includes only those small entities that are reasonably expected to be directly regulated by this action. This final rule directly affects intercity passenger railroads and commuter railroads. It indirectly impacts manufacturers of passenger cars, marking related to emergency egress and rescue access, and low-location emergency exit path marking.

“Small entity” is defined in 5 U.S.C. 601. Section 601(3) defines a “small entity” as having the same meaning as “small business concern” under Section 3 of the Small Business Act. This includes any small business concern that is independently owned and operated, and is not dominant in its field of operation. Section 601(4) likewise includes within the definition of “small entities” not-for-profit enterprises that are independently owned and operated, and are not dominant in their field of operation. The U.S. Small Business Administration (SBA) stipulates in its size standards that the largest a railroad business firm that is “for profit” may be and still be classified as a “small entity” is 1,500 employees for “Line Haul Operating Railroads” and 500 employees for “Switching and

Terminal Establishments.” Additionally, 5 U.S.C. 601(5) defines as “small entities” governments of cities, counties, towns, townships, villages, school districts, or special districts with populations less than 50,000.

Federal agencies may adopt their own size standards for small entities in consultation with SBA and in conjunction with public comment. Pursuant to that authority, FRA has published a final statement of agency policy that formally establishes “small entities” or “small businesses” as being railroads, contractors, and hazardous materials shippers that meet the revenue requirements of a Class III railroad as set forth in 49 CFR 1201.1-1, which is \$20 million or less in inflation-adjusted annual revenues; and commuter railroads or small governmental jurisdictions that serve populations of 50,000 or less. See 68 FR 24891, May 9, 2003, codified at Appendix C to 49 CFR, part 209. The \$20 million-limit is based on the Surface Transportation Board’s (STB), revenue threshold for a Class III railroad. Railroad revenue is adjusted for inflation by applying a revenue deflator formula in accordance with 49 CFR 1201.1-1. FRA is using this definition for this rulemaking.

FRA developed the requirements contained in this final rule in consultation with an RSAC Working Group and task force that included representatives from Amtrak, individual commuter railroads, individual passenger car manufacturers, sign manufacturers and suppliers, and APTA, which represents the interests of commuter railroads and passenger car manufacturers in regulatory matters.

The level of costs incurred by each organization should generally vary in proportion to the size of their passenger car fleet. For instance, railroads with fewer passenger cars have lower overall costs associated with implementing these standards. In

the United States, there are currently 2 intercity passenger railroads, and 28 commuter railroad operations. The two intercity passenger railroads, Amtrak and the Alaska Railroad, are not considered to be small entities as Amtrak is a Class I railroad and the Alaska Railroad is a Class II railroad. Additionally, the Alaska Railroad is owned by the State of Alaska, which has a population in excess of 50,000.

Most commuter railroads are part of larger transportation organizations that receive Federal funds and serve major metropolitan areas with populations greater than 50,000. However, two commuter railroads do not fall in this category and are considered small entities. The impact on these two small railroads is discussed in the following section.

The first small entity impacted by this regulation is a commuter train operation that provides express service to and from a sporting event approximately seven times per year. A Class III railroad owns and operates the 6 bi-level passenger cars used for this commuter operation. The impact on this entity may include upgrades related to achieving compliance with the 2007 APTA standards for emergency lighting, emergency signage, and low-location exit path markings. The costs associated with completing these upgrades for the railroad are estimated to range between \$14,482 and \$28,694, depending on the existing level of compliance and could be spread over 2 to 3 years. Since this railroad provides service under contract to a State institution, it may be able to pass some or all of the compliance cost on to that institution. FRA published this analysis in the Initial Regulatory Flexibility Analysis (IRFA) that accompanied the NPRM and requested comments on the Analysis but did not receive any on this estimate. Thus, the small entity itself is not significantly impacted.

The second small entity impacted by this regulation is a commuter railroad that is owned by a Class III railroad. Out of its entire fleet of 9 cars, FRA estimates that 4 cars may need emergency lighting upgrades to comply with the new emergency lighting requirement. The costs associated with the upgrades of these 4 cars are estimated to be \$18,758, which could be spread over 2 to 3 years. FRA also published this estimate in the IRFA that accompanied the NPRM and requested comments on the Analysis but did not receive any on this estimate.

The final rule requires railroads to test a representative sample of passenger railcars in accordance with the APTA LLEPM standard, using the procedures in Annex F or another statistically-valid, documented sampling method. The estimated cost of inspection/recordkeeping is \$1,500 per car over the 20-year period analyzed. This cost was included in the total cost for each of the small entities above. This regulation only requires that a small percentage of each fleet be tested. Due to the size of the fleet of each of these small entities, it is estimated that only one car per fleet will need to be tested. The recordkeeping burden on the railroad industry is estimated to be 5 additional minutes per new car introduced to the fleet. FRA assumed that a “Maintenance of Equipment & Stores”² employee would prepare the records. Neither of these railroads is operating newly-built cars. They both operate cars purchased from other passenger railroads.

FRA believes that the two small entities directly impacted will not be affected significantly. One of the entities should be able to pass these costs on to a public entity. The other entity will likely only need to upgrade the emergency lighting in four cars, and

² STB Data Statement No. B-300 for Year 2012 indicates that “Maintenance of Equipment & Stores” personnel earn, on average, a “straight time rate” of \$27.20 per hour.

FRA does not believe that will have a significant financial impact on their operations.

During the public comment period following publication of the NPRM, FRA did not receive any comments discussing the IRFA or Executive Order 13272. FRA certifies that the final rule will not have any significant economic impact on the competitive position of small entities, or on the small entity segment of the railroad industry as a whole.

Pursuant to the Regulatory Flexibility Act (5 U.S.C. 605(b)), FRA certifies that this final rule will not have a significant economic impact on a substantial number of small entities. Although a substantial number of small railroads will be affected by the final rule, none of these two entities will be significantly impacted.

C. Paperwork Reduction Act

The information collection requirements in this final rule are being submitted to the Office of Management and Budget (OMB) for review and approval in accordance with the Paperwork Reduction Act of 1995 (44 U.S.C. 3501 et seq.). The sections that contain both new and current information collection requirements, and the estimated time to fulfill each requirement, are summarized in the following table:

| CFR Section | Respondent Universe | Total Annual Responses | Average Time Per Response | Total Annual Burden Hours |
|-------------|---------------------|------------------------|---------------------------|---------------------------|
|-------------|---------------------|------------------------|---------------------------|---------------------------|

| | | | | |
|---|--------------|------------------------------|---|--------------|
| 238.112 – Door emergency egress and rescue access systems (New requirements) - Conspicuously marking/posting instructions on emergency egress doors - Marking/posting instructions on emergency responder access doors - Marking/posting instructions on removable panels/windows in car vestibule and other interior passageway doors - Periodic testing: representative sample – removable panels/windows/etc. | 30 railroads | 45,804 markings/instructions | 15 minutes | 11,451 hours |
| | 30 railroads | 30,536 markings | 15 minutes | 7,634 hours |
| | 30 railroads | 1,340 panel markings | 15 minutes | 335 hours |
| | 30 railroads | 17 tested cars | 90 minutes | 26 hours |
| 238.113 – Emergency window exits - Markings (Current requirement) - Periodic testing: representative sample of emergency window exits on passenger cars (Current requirement) | 30 railroads | 662 markings | 60 minutes | 964 hours |
| | 30 railroads | 17 tested cars | 90 minutes 120 minutes 30 minutes | 9 hours |
| 238.114 – Rescue access windows - Markings/instructions on each access window (Current requirement) | 30 railroads | 1,092 markings | 45 minutes | 819 hours |
| 238.121 – Emergency communications: intercom system - Posting legible/understandable operating instructions at/near each intercom (Current requirement) | 30 railroads | 116 marked intercoms | 5 minutes | 10 hours |
| 238.123 – Emergency roof access - Marking/instructions of each emergency roof access location (Current requirement) | 30 railroads | 232 marked locations | 30 minutes | 116 hours |
| 238.303 – Exterior calendar day mechanical inspection of passenger equipment - Replacement markings of rescue access related exterior markings, signs, instructions (Current requirement) | 30 railroads | 150 markings | 20 minutes | 50 hours |
| 238.303 – Records of non-complying conditions (Current requirement) | 30 railroads | 150 records | 2 minutes | 5 hours |

| | | | | |
|---|--------------|---|------------|-------------|
| 238.305 – (Current requirements) Interior calendar day inspection of passenger cars - Non-complying end/side doors - written notification to crew of condition + notice on door - Non-complying public address/intercom systems: written notification to crews - Records of public address/intercom system non-complying conditions New requirements: - Written procedure for mitigating hazards of non-complying conditions relating to removable panels/windows in vestibule and other interior passageway doors - Written notification to train crew of non-complying condition relating to panels/windows in vestibule and other interior passageway doors | 30 railroads | 260 written notifications + 260 notices | 1 minute | 9 hours |
| | 30 railroads | 300 written notifications | 1 minute | 5 hours |
| | 30 railroads | 300 records | 2 minutes | 10 hours |
| | 30 railroads | 30 written procedures | 40 hours | 1,200 hours |
| | 30 railroads | 458 notices | 2 minutes | 15 hours |
| 238.307 – Periodic mechanical inspection of passenger cars - Records of the inspection, testing, and maintenance of emergency window exits (Current requirement) - Emergency roof markings and instructions - replacements (Current requirement) | 30 railroads | 7,634 car inspections/ records | 5 minutes | 636 hours |
| | 30 railroads | 32 markings | 20 minutes | 11 hours |
| 238.311 – Single car test - Copies of APTA Standard SS-M-005-98 to railroad head training person (Current requirement) - Copies to other railroad personnel | 30 railroads | 30 copies | 15 minutes | 8 hours |
| | 30 railroads | 360 copies | 2 minutes | 12 hours |

All estimates include the time for reviewing instructions, searching existing data sources, gathering or maintaining the needed data, and reviewing the information. For information or a copy of the paperwork package submitted to OMB, contact Mr. Robert Brogan, Information Clearance Officer, Federal Railroad Administration, at 202-493-6292 (Robert.Brogan@dot.gov), or Ms. Kimberly Toone, Records Management Officer, Federal Railroad Administration, at 202-493-6132 (Kimberly.Toone@dot.gov).

Organizations and individuals desiring to submit comments on the collection of information requirements should direct them to the Office of Management and Budget,

Office of Information and Regulatory Affairs, Washington, DC 20503, Attention: FRA Desk Officer. Comments may also be sent via e-mail to the Office of Management and Budget at the following address: oir_a_submissions@omb.eop.gov.

OMB is required to make a decision concerning the collection of information requirements contained in this final rule between 30 and 60 days after publication of this document in the Federal Register. Therefore, a comment to OMB is best assured of having its full effect if OMB receives it within 30 days of publication.

FRA is not authorized to impose a penalty on persons for violating information collection requirements that do not display a current OMB control number, if required. FRA intends to obtain current OMB control numbers for any new information collection requirements resulting from this rulemaking action prior to the effective date of this final rule. The OMB control number, when assigned, will be announced by separate notice in the Federal Register.

D. Federalism Implications

Executive Order 13132, “Federalism” (64 FR 43255, Aug. 10, 1999), requires FRA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.” “Policies that have federalism implications” are defined in the Executive Order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.” Under Executive Order 13132, the agency may not issue a regulation with federalism implications that imposes substantial direct compliance costs and that is not required by statute, unless the

Federal government provides the funds necessary to pay the direct compliance costs incurred by State and local governments, the agency consults with State and local governments, or the agency consults with State and local government officials early in the process of developing the regulation. Where a regulation has federalism implications and preempts State law, the agency seeks to consult with State and local officials in the process of developing the regulation.

This rule has been analyzed in accordance with the principles and criteria contained in Executive Order 13132. This rule will not have a substantial effect on the States or their political subdivisions; it does not impose any substantial direct compliance costs; and it will not affect the relationships between the Federal government and the States or their political subdivisions, or the distribution of power and responsibilities among the various levels of government. Therefore, the consultation and funding requirements of Executive Order 13132 do not apply. Nevertheless, State and local officials were involved in developing this rule. The RSAC, which recommended the proposals addressed in this rule, has as permanent members two organizations directly representing State and local interests, AASHTO and ASRSM.

However, this rule could have preemptive effect by operation of law under certain provisions of the Federal railroad safety statutes, specifically the former Federal Railroad Safety Act of 1970 (former FRSA), repealed and re-codified at 49 U.S.C 20106, and the former Locomotive Boiler Inspection Act (LIA) at 45 U.S.C. 22-34, repealed and re-codified at 49 U.S.C. 20701-20703. The former FRSA provides that States may not adopt or continue in effect any law, regulation, or order related to railroad safety or security that covers the subject matter of a regulation prescribed or order issued by the

Secretary of Transportation (with respect to railroad safety matters) or the Secretary of Homeland Security (with respect to railroad security matters), except when the State law, regulation, or order qualifies under the “local safety or security hazard” exception to section 20106. Moreover, the former LIA has been interpreted by the Supreme Court as preempting the field concerning locomotive safety. See *Napier v. Atlantic Coast Line R.R.*, 272 U.S. 605 (1926) and *Kurns v. Railroad Friction Products Corp.*, 132 S. Ct. 1261 (2012).

E. Environmental Impact

FRA has evaluated this regulation in accordance with its Procedures for Considering Environmental Impacts (FRA’s Procedures) (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 regulation 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)(20) of FRA’s Procedures. 64 FR 28545, 28547; May 26, 1999. Certain classes of FRA actions have been determined to be categorically excluded from the requirements of these Procedures as they do not individually or cumulatively have a significant effect on the human environment. Promulgation of railroad safety rules and policy statements that do not result in significantly increased emissions or air or water pollutants or noise or increased traffic congestion in any mode of transportation are excluded.

In accordance with section 4(c) and (e) of FRA’s Procedures, the agency has further concluded that no extraordinary circumstances exist with respect to this regulation

that might trigger the need for a more detailed environmental review. As a result, FRA finds that this regulation is not a major Federal action significantly affecting the quality of the human environment.

F. Unfunded Mandates Reform Act of 1995

Pursuant to Section 201 of the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4, 2 U.S.C. 1531), 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).” Section 202 of the Act (2 U.S.C. 1532) further requires that “before promulgating any general notice of proposed rulemaking that is likely to result in the promulgation of any rule that includes any Federal mandate that may result in 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 final rule will not result in the expenditure, in the aggregate, of \$100,000,000 or more (as adjusted annually for inflation) in any one year, and thus preparation of such a statement is not required.

G. Trade Impact

The Trade Agreements Act of 1979 (Pub. L. 96-39, 19 U.S.C. 2501 et seq.) prohibits Federal agencies from engaging in any standards or related activities that create unnecessary obstacles to the foreign commerce of the United States. Legitimate domestic

objectives, such as safety, are not considered to be unnecessary obstacles. The statute also requires consideration of international standards and, where appropriate, that they be the basis for U.S. standards.

FRA has assessed the potential effect of this rulemaking on foreign commerce and believes that its requirements are consistent with the Trade Agreements Act. The requirements are safety standards, which, as noted, are not considered unnecessary obstacles to trade. Moreover, FRA has sought, to the extent practicable, to state the requirements in terms of the performance desired, rather than in more narrow terms restricted to a particular system design, so as not to limit different, compliant designs by any manufacturer—foreign or domestic.

H. Privacy Act

Anyone is able to search the electronic form of any comment or petition received into any of FRA's dockets by the name of the individual submitting the comment or petition (or signing the comment or petition, if submitted on behalf of an association, business, labor union, etc.). Please see the privacy notice at <http://www.regulations.gov/#!privacyNotice>. You may review DOT's complete Privacy Act Statement in the Federal Register published on April 11, 2000 (65 FR 19477-19478).

List of Subjects

49 CFR Part 238

Incorporation by reference, Passenger equipment, Railroad safety, Reporting and recordkeeping requirements.

49 CFR Part 239

Passenger equipment, Railroad safety.

The Rule

For the reasons discussed in the preamble, FRA amends parts 238 and 239 of chapter II, subtitle B of title 49, Code of Federal Regulations as follows:

PART 238— [AMENDED]

- 1. 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 1.89.

- 2. Section 238.5 is amended by adding in alphabetical order definitions of “End-frame door” and “Vestibule door,” and by revising the definitions of “APTA” and “Vestibule” to read as follows:

§ 238.5 Definitions.

* * * * *

APTA means the American Public Transportation Association.

* * * * *

End-frame door means an end-facing door normally located between, or adjacent to, the collision posts or similar end-frame structural elements.

* * * * *

Vestibule means an area of a passenger car that normally does not contain seating, is located adjacent to a side exit door, and is used in passing from a seating area to a side exit door.

Vestibule door means a door separating a seating area from a vestibule. End-frame doors and doors separating sleeping compartments or similar private compartments from a passageway are not vestibule doors.

* * * * *

3. Section 238.112 is added to read as follows:

§ 238.112 Door emergency egress and rescue access systems.

Except as provided in § 238.439—

(a) 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:

(1) Capable of releasing the door to permit it to be opened without power from inside the car;

(2) Located adjacent to the door which it controls; and

(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 leaves is required to respond to the manual override device.

(b) Each Tier I passenger car ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, and all Tier II passenger cars shall have a minimum of two exterior side doors, one in each side of the car. Each such door shall provide a minimum clear opening with dimensions of 30 inches horizontally by 74 inches vertically. A set of dual-leafed doors is considered a single door for purposes of this paragraph. Each powered, exterior side door on each such passenger car shall have a manual override device that is:

(1) Capable of releasing the door to permit it to be opened without power from both inside and outside the car;

(2) Located adjacent to the door which it controls; and

(3) 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.

Note to paragraph (b): The Americans with Disabilities Act (ADA) Accessibility Specifications for Transportation Vehicles also contain requirements for doorway clearance (See 49 CFR part 38).

(c) A manual override device used to open a powered, exterior door may be protected with a cover or a screen capable of removal without requiring the use of a tool or other implement.

(d)(1) Prior to January 28, 2015, all door exits intended for emergency egress shall either be lighted or conspicuously and legibly marked with luminescent material on the inside of each car, and legible and understandable instructions shall be provided for their use at or near each such door.

(2) On or after January 28, 2015, all door exits intended for emergency egress shall be marked, and instructions provided for their use, as specified in § 238.125.

(e)(1) Prior to January 28, 2015, all doors intended for access by emergency responders shall be marked on the exterior of the car with retroreflective material, and legible and understandable instructions shall be posted at or near each such door.

(2) On or after January 28, 2015, all doors intended for access by emergency responders shall be marked, and instructions provided for their use, as specified in § 238.125.

(f) Vestibule doors and other interior doors intended for passage through a passenger car. The requirements of paragraphs (f)(1) through (6) of this section apply

only to passenger cars ordered on or after January 28, 2014, or placed in service for the first time on or after January 29, 2018.

(1) *General.* Except for a door providing access to a control compartment and a bi-parting door, which is subject to the requirements in paragraph (f)(3) of this section, each vestibule door and any other interior door intended for passage through a passenger car shall be equipped with a removable panel or removable window in the event the door will not open in an emergency, or the car is on its side and the door is difficult to open. If the door is powered, it shall have a manual override device that conforms with the requirements of paragraphs (f)(4) through (6) of this section.

(2) *Removable panels and windows—(i) Ease of operability.* Each removable panel or removable window shall be designed to permit rapid and easy removal from each side of the door during an emergency situation without requiring the use of a tool or other implement.

(ii) *Dimensions.* Removal of the panel or window shall create an unobstructed opening in the door with minimum dimensions of 21 inches horizontally by 28 inches vertically.

(iii) *Location.* Each removable panel or removable window shall be located so that the lowest point of the opening created by removing the panel or window is no higher than 18 inches above the floor.

(3) *Bi-parting doors.* Each powered, bi-parting vestibule door and any other interior, powered bi-parting door intended for passage through a passenger car shall be equipped with a manual override device and mechanism to retain each door leaf in the

open position (e.g., ratchet and pawl, or sprag). Each manual override device shall conform with the requirements of paragraphs (f)(4), (f)(5)(ii), and (f)(6) of this section.

(4) *Manual override devices.* Each manual override device shall be:

(i) Capable of releasing the door or door leaf, if the door is bi-parting, to permit it to be opened without power;

(ii) Located adjacent to the door or door leaf, if the door is bi-parting, it controls; and

(iii) Designed and maintained so that a person may readily access and operate the override device from each side of the door without the use of a tool or other implement.

(5) *Marking and instructions.* (i) Each removable panel or removable window in a vestibule door or other interior door intended for passage through a passenger car shall be conspicuously and legibly marked with luminescent material on each side of the door as specified in section 5.4.2 of APTA PR-PS-S-002-98, Rev. 3, "Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment," Authorized October 7, 2007, or an alternative standard providing at least an equivalent level of safety, if approved by FRA pursuant to § 238.21. Legible and understandable operating instructions shall be posted on each side of the door at each such panel or window. The incorporation by reference of this APTA standard was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the incorporated document from the American Public Transportation Association, 1666 K Street, NW., Washington, DC 20006, www.aptastandards.com. You may inspect a copy of the document at the Federal Railroad Administration, Docket

Clerk, 1200 New Jersey Avenue, SE., Washington, DC or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(ii) For bi-parting doors, each manual override device and each retention mechanism shall be conspicuously and legibly marked with luminescent material. Legible and understandable operating instructions for each manual override device and each retention mechanism shall be posted at or near each such device or mechanism.

(6) *Testing.* At an interval not to exceed 184 days, as part of the periodic mechanical inspection, each railroad shall test a representative sample of the door removable panels, removable windows, manual override devices, and retention mechanisms on its cars, as applicable, to determine that they operate as intended. The sampling method must conform with a formalized statistical test method.

4. Section 238.113 is amended by revising paragraph (d) and adding paragraph (e) to read as follows:

§ 238.113 Emergency window exits.

* * * * *

(d) Marking and instructions. (1) Prior to January 28, 2015, each emergency window exit shall be conspicuously and legibly marked with luminescent material on the inside of each car to facilitate egress. Legible and understandable operating instructions, including instructions for removing the window, shall be posted at or near each such window exit.

(2) On or after January 28, 2015, each emergency window exit shall be marked, and instructions provided for its use, as specified in § 238.125.

(3) If window removal may be hindered by the presence of a seatback, headrest, luggage rack, or other fixture, the instructions shall state the method for allowing rapid and easy removal of the window, taking into account the fixture(s), and this portion of the instructions may be in written or pictorial format. This paragraph (d)(3) applies to each emergency window exit subject to paragraph (d)(1) or (2) of this section.

(e) Periodic testing. At an interval not to exceed 184 days, as part of the periodic mechanical inspection, each railroad shall test a representative sample of emergency window exits on its cars to determine that they operate as intended. The sampling method must conform with a formalized statistical test method.

5. Section 238.114 is amended by revising paragraph (d) to read as follows:

§ 238.114 Rescue access windows.

* * * * *

(d) Marking and instructions. (1) Prior to January 28, 2015, each rescue access window shall be marked with retroreflective material on the exterior of each car. A unique and easily recognizable symbol, sign, or other conspicuous marking shall also be used to identify each such window. Legible and understandable window-access instructions, including instructions for removing the window, shall be posted at or near each rescue access window.

(2) On or after January 28, 2015, each rescue access window shall be marked, and instructions provided for its use, as specified in § 238.125.

6. Section 238.115 is revised to read as follows:

§ 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:

(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) Operating all emergency lighting for a period of at least 90 minutes without a loss of more than 40% of the minimum illumination levels specified in this paragraph (a).

(b)(1) As further specified in paragraph (b)(2) of this section, on or after January 1, 2017, emergency lighting shall be provided in each passenger car in accordance with the minimum requirements specified in APTA PR-E-S-013-99, Rev. 1, “Standard for Emergency Lighting System Design for Passenger Cars,” Authorized October 7, 2007, or an alternative standard providing at least an equivalent level of safety if approved by FRA pursuant to § 238.21. The incorporation by reference of this APTA standard was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the incorporated document from the American Public Transportation Association, 1666 K Street, NW, Washington, DC 20006, www.aptastandards.com. You may inspect a copy of the document at the Federal Railroad Administration, Docket Clerk, 1200 New Jersey Avenue, SE, Washington, DC or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(2) No later than December 31, 2015, at least 70 percent of each railroad’s passenger cars that were ordered prior to September 8, 2000, and placed in service prior to September 9, 2002, shall be in compliance with the emergency lighting requirements provided in paragraph (b)(1) of this section.

7. Section 238.121 is amended by revising the first sentence of paragraph (a)(2), paragraph (b)(2), and paragraph (c) introductory text to read as follows:

§ 238.121 Emergency communications.

* * * * *

(a) * * *

(2) New Tier I and all Tier II passenger cars. Each Tier I passenger car ordered on or after April 1, 2008, or placed in service for the first time on or after April 1, 2010, and all Tier II passenger cars shall be equipped with a PA system that provides a means for a train crewmember to communicate by voice to passengers of his or her train in an emergency situation. * * *

(b) * * *

(2) Marking and instructions. The following requirements apply to each passenger car:

(i) Prior to January 28, 2016, the location of each intercom intended for passenger use shall be conspicuously marked with luminescent material and legible and understandable operating instructions shall be posted at or near each such intercom.

(ii) On or after January 28, 2016, each intercom intended for passenger use shall be marked in accordance with section 5.4.2 of APTA PR-PS-S-002-98, Rev. 3, "Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment," Authorized October 7, 2007, or an alternative standard providing at least an equivalent level of safety, if approved by FRA pursuant to § 238.21. Legible and understandable operating instructions shall be posted at or near each such intercom. The incorporation by reference of this APTA standard was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the incorporated document from the American Public Transportation Association, 1666 K Street, NW., Washington, DC 20006, www.aptastandards.com. You may inspect a copy of the document at the Federal Railroad Administration, Docket Clerk, 1200 New Jersey

Avenue, SE., Washington, DC or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

(c) Back-up power. PA and intercom systems in Tier I passenger cars ordered on or after April 1, 2008, or placed in service for the first time on or after April 1, 2010, and in all Tier II passenger cars shall have a back-up power system capable of—

* * * * *

8. Section 238.123 is amended by redesignating paragraph (e) introductory text as paragraph (e)(1), redesignating paragraphs (e)(1) and (2) as paragraphs (e)(1)(i) and (ii), revising the first sentence of newly redesignated paragraph (e)(1), and by adding paragraph (e)(2) to read as follows:

§ 238.123 Emergency roof access.

* * * * *

(e) Marking and instructions. (1) Prior to January 28, 2015, each emergency roof access location shall be conspicuously marked with retroreflective material of contrasting color. * * *

* * * * *

(2) On or after January 28, 2015, each emergency roof access location shall be marked, and instructions provided for its use, as specified in § 238.125.

9. Section 238.125 is added to read as follows:

§ 238.125 Marking and instructions for emergency egress and rescue access.

On or after January 28, 2015, emergency signage and markings shall be provided for each passenger car in accordance with the minimum requirements specified in APTA PR-PS-S-002-98, Rev. 3, “Standard for Emergency Signage for Egress/Access of Passenger Rail Equipment,” Authorized October 7, 2007, or an alternative standard providing at least an equivalent level of safety, if approved by FRA pursuant to § 238.21. The incorporation by reference of this APTA standard was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the incorporated document from the American Public Transportation Association, 1666 K Street, NW., Washington, DC 20006, www.aptastandards.com. You may inspect a copy of the document at the Federal Railroad Administration, Docket Clerk, 1200 New Jersey Avenue, SE., Washington, DC or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

10. Section 238.127 is added to read as follows:

§ 238.127 Low-location emergency exit path marking.

On or after January 28, 2015, low-location emergency exit path marking shall be provided in each passenger car in accordance with the minimum requirements specified in APTA PR-PS-S-004-99, Rev. 2, “Standard for Low-Location Exit Path Marking,” Authorized October 7, 2007, or an alternative standard providing at least an equivalent level of safety, if approved by FRA pursuant to § 238.21. The incorporation by reference of this APTA standard was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. You may obtain a copy of the

incorporated document from the American Public Transportation Association, 1666 K Street, NW., Washington, DC 20006, www.aptastandards.com. You may inspect a copy of the document at the Federal Railroad Administration, Docket Clerk, 1200 New Jersey Avenue, SE., Washington, DC or at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, call 202-741-6030, or go to:

http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html.

§ 238.235 [Removed and reserved]

11. Section 238.235 is removed and reserved.

12. Section 238.303 is amended by revising paragraph (e)(18) introductory text to read as follows:

§ 238.303 Exterior calendar day mechanical inspection of passenger equipment.

* * * * *

(e) * * *

(18) All rescue-access-related exterior markings, signage, and instructions required by §§ 238.112 and 238.114 shall be in place and, as applicable, conspicuous or legible, or both.

* * * * *

13. Section 238.305 is amended by revising paragraph (a), revising paragraph (c) introductory text, adding paragraphs (c)(11) and (13), and revising paragraph (d) introductory text to read as follows:

§ 238.305 Interior calendar day mechanical inspection of passenger cars.

(a) Except as provided in paragraph (e) of this section, each passenger car shall receive an interior mechanical inspection at least once each calendar day that it is placed in service.

* * * * *

(c) As part of the interior calendar day mechanical inspection, the railroad shall verify conformity with the following conditions, and nonconformity with any such condition renders the car defective when discovered in service, except as provided in paragraphs (c)(8) through (13) and paragraph (d) of this section.

* * * * *

(11) Low-location emergency exit path markings required by § 238.127 are in place and conspicuous.

* * * * *

(13) Removable panels and removable windows in vestibule doors and in other interior doors used for passage through a passenger car are properly in place and secured, based on a visual inspection. A noncomplying passenger car may remain in passenger service until no later than the car's fourth interior calendar day mechanical inspection or next periodic mechanical inspection required under § 238.307, whichever occurs first, or for a passenger car used in long-distance intercity train service until the eighth interior calendar day mechanical inspection or next periodic mechanical inspection required under § 238.307, whichever occurs first, after the noncomplying condition is discovered, where it shall be repaired or removed from service; provided—

(i) The railroad has developed and follows written procedures for mitigating the hazard(s) caused by the noncomplying condition. The railroad's procedures shall

include consideration of the type of door in which the removable panel or removable window is located, the manner in which the door is normally opened, and the risk of personal injury resulting from a missing, broken, or improperly secured removable panel or removable window; and

(ii) The train crew is provided written notification of the noncomplying condition.

(d) Any passenger car found not to be in compliance with the requirements contained in paragraphs (c)(5) through (11) of this section at the time of its interior calendar day mechanical inspection may remain in passenger service until the car's next interior calendar day mechanical inspection, where it must be repaired or removed from passenger service; provided, all of the specific conditions contained in paragraphs (c)(8) through (10) of this section are met and all of the following requirements are met:

* * * * *

14. Section 238.307 is amended by revising paragraphs (c)(4) and (5) and (e)(1) introductory text to read as follows:

§ 238.307 Periodic mechanical inspection of passenger cars and unpowered vehicles used in passenger trains.

* * * * *

(c) * * *

(4)(i) A representative sample of the following emergency systems properly operate:

(A) Door removable panels, removable windows, manual override devices, and retention mechanisms, as applicable, in accordance with § 238.112; and

(B) Emergency window exits, in accordance with § 238.113.

(ii) This portion of the periodic mechanical inspection may be conducted independently of the other requirements in this paragraph (c); and

(iii) Each railroad shall retain records of the inspection, testing, and maintenance of the emergency window exits for two calendar years after the end of the calendar year to which they relate.

(5) With regard to the following emergency systems:

(i) Emergency lighting systems required under § 238.115 are in place and operational; and

(ii) Low-location emergency exit path marking systems required under § 238.127 are operational.

* * * * *

(e) * * *

(1) A record shall be maintained of each periodic mechanical inspection required to be performed by this section. This record shall be maintained in writing or electronically, provided FRA has access to the record upon request. The record shall be maintained either in the railroad's files, the cab of the locomotive, or a designated location in the passenger car. Except as provided in paragraph (c)(4) of this section, the record shall be retained until the next periodic mechanical inspection of the same type is performed and shall contain the following information:

* * * * *

15. Section 238.439 is amended by adding introductory text, removing paragraphs (a), (b), (e), and (g), redesignating paragraphs (c), (d), and (f) as paragraphs (a) through (c), revising newly redesignated paragraph (c) to read as follows:

§ 238.439 Doors.

In addition to the requirements of § 238.112—

* * * * *

(c) For a passenger car ordered prior to January 28, 2014, and placed in service prior to January 29, 2018, a passenger compartment end door (other than a door providing access to the exterior of the trainset) shall be equipped with a kick-out panel, pop-out window, or other similar means of egress in the event the door will not open, or shall be so designed as to pose a negligible probability of becoming inoperable in the event of car body distortion following a collision or derailment.

16. Section 238.441 is amended by adding a sentence at the end of paragraph (a) to read as follows:

§ 238.441 Emergency roof access.

(a) * * * On or after January 28, 2015, such markings shall also conform with the requirements specified in § 238.125.

* * * * *

17. Appendix A to part 238 is amended by adding the entries for new §§ 238.112, 238.125, and 238.127 in numerical order and removing and reserving the entry for § 238.235.

The additions read as follows:

Appendix A to Part 238—Schedule of Civil Penalties^{1, 2}

| | | | | | | | Willful | |
|--|---|---|---|---|---|---|-----------|-----------|
| Section | | | | | | | Violation | Violation |
| * | * | * | * | * | * | * | | |
| SUBPART B—SAFETY PLANNING AND GENERAL REQUIREMENTS | | | | | | | | |
| * | * | * | * | * | * | * | | |
| 238.112 Door emergency egress and rescue access | | | | | | | | |
| systems..... | | | | | | | 2,500 | 5,000 |
| * | * | * | * | * | * | * | | |
| 238.125 Marking and instructions for emergency egress and rescue | | | | | | | | |
| access..... | | | | | | | 2,500 | 5,000 |
| * | * | * | * | * | * | * | | |
| 238.127 Low-location emergency exit path marking | | | | | | | | |
| | | | | | | | 2,500 | 5,000 |
| * | * | * | * | * | * | * | | |

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 \$16,000 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 \$105,000 for any violation where circumstances warrant. See 49 CFR part 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.

² The penalty schedule uses section numbers from 49 CFR part 238. If more than one item is listed as a type of violation of a given section, each item is also designated by a “penalty code,” which is used to facilitate assessment of civil penalties, and which may or may not correspond to any subsection designation(s). For convenience, penalty citations will cite the CFR section and the penalty code, if any. FRA reserves the right, should litigation become necessary, to substitute in its complaint the CFR citation in place of the combined CFR and penalty code citation, should they differ.

PART 239—[AMENDED]

18. The authority citation for part 239 is revised to read as follows:

Authority: 49 U.S.C. 20102-20103, 20105-20114, 20133, 21301, 21304, and 21311; 28 U.S.C. 2461, note; and 49 CFR 1.89(c), (g), (m).

19. Section 239.105 is amended by revising paragraph (a) to read as follows:

§ 239.105 Debriefing and critique.

(a) General. Except as provided in paragraph (b) of this section, each railroad operating passenger train service shall conduct a debriefing and critique session after each passenger train emergency situation or full-scale simulation to determine the effectiveness of its emergency preparedness plan, and shall improve or amend its plan, or both, as appropriate, in accordance with the information developed. The debriefing and critique session shall be conducted within 60 days of the date of the passenger train emergency situation or full-scale simulation. To the extent practicable, all on-board personnel, control center personnel, and any other employees involved in the emergency situation or full-scale simulation shall participate in the session either:

- (1) In person;
- (2) Offsite via teleconference; or
- (3) In writing, by a statement responding to questions provided prior to the session, and by responding to any follow-up questions.

* * * * *

§ 239.107 [Removed and reserved]

20. Section 239.107 is removed and reserved.

Appendix A to Part 239 [Amended]

21. Appendix A to part 239 is amended by removing and reserving the entry for § 239.107.

Issued in Washington, DC, on November 14, 2013.

Karen J. Hedlund,
Deputy Administrator.

[FR Doc. 2013-27731 Filed 11/27/2013 at 8:45 am; Publication Date: 11/29/2013]