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49 CFR Part 216 et al.

Passenger Equipment Safety Standards; Final Rule

DEPARTMENT OF TRANSPORTATION

Federal Railroad Administration

49 CFR Parts 216, 223, 229, 231, 232, and 238

[FRA Docket No. PCSS–1, Notice No. 5]

RIN 2130–AA95

Passenger Equipment Safety Standards

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

ACTION: Final rule.

SUMMARY: FRA is issuing comprehensive Federal safety standards for railroad passenger equipment. The purpose of these safety standards is to prevent collisions, derailments, and other occurrences involving railroad passenger equipment that cause injury or death to railroad employees, railroad passengers, or the general public; and to mitigate the consequences of any such occurrences, to the extent they cannot be prevented. The final rule promotes passenger train safety through requirements for railroad passenger equipment design and performance; fire safety; emergency systems; the inspection, testing, and maintenance of passenger equipment; and other provisions for the safe operation of railroad passenger equipment. The final rule addresses passenger train safety in an environment where technology is advancing and equipment is being designed for operation at higher speeds. The final rule amends existing regulations concerning special notice for repairs, safety glazing, locomotive safety, safety appliances, and railroad power brakes as applied to passenger equipment.

The final rule does not apply to tourist and historic railroad operations. However, after consulting with the excursion railroad associations to determine appropriate applicability in light of financial, operational, or other factors unique to such operations, FRA may prescribe requirements for these operations that are similar to or different from those affecting other types of passenger operations.

DATES: This regulation is effective July 12, 1999. The incorporation by reference of certain publications listed in the rule is approved by the Director of the Federal Register as of July 12, 1999.

ADDRESSES: Any petition for reconsideration should reference FRA Docket No. PCSS–1, Notice No. 5, and be submitted in triplicate to the Docket Clerk, Office of Chief Counsel, FRA, 1120 Vermont Avenue, Mail Stop 10, Washington, D.C. 20590.

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I. Introduction

Passenger railroads offer the traveling public one of the safest forms of transportation available. In the eight-year period 1990–1997, there were 0.89 passenger fatalities for every billion miles of passenger transportation by rail. Nevertheless, collisions, derailments, and other such occurrences continue to occur, often as a result of factors beyond the control of the passenger railroad. Further, the rail passenger environment is rapidly changing. Worldwide, passenger equipment operating speeds are increasing. Passenger trainsets designed to European safety standards have been proposed for operation in the United States-and a few are in operation. Overall, these trainsets do not meet the structural standards that are common for passenger equipment operating in the United States. FRA believes that adherence to such common standards by the nation's passenger railroads has in large measure contributed to the high level of safety at which rail passenger service is currently provided in the United States. However, these standards generally do not have the force of law.

Effective Federal safety standards for freight equipment have long been in place, but equivalent Federal safety standards for passenger equipment have not existed. Further, the Association of American Railroads (AAR) currently sets industry standards for the design and maintenance of freight equipment that add materially to the safe operation of such equipment. However, over the years, the AAR has discontinued the development and maintenance of industry standards for railroad passenger equipment.

FRA must necessarily be vigilant in ensuring that passenger trains continue to be designed, built, and operated with a high level of safety. In general, the railroad operating environment in the United States requires passenger equipment to operate commingled with very heavy and long freight trains, often over track with frequent grade crossings used by heavy highway equipment. European passenger operations, on the other hand, are intermingled with freight equipment of lesser weight than in North America. In many cases, highway-rail grade crossings also pose lesser hazards to passenger trains in Europe due to lower highway vehicle weight. FRA is concerned with the level

of safety provided by passenger equipment designed to European and other international standards when such equipment is operated in the United States.

A clear set of Federal safety standards for railroad passenger equipment is needed that is tailored to the nation's operating environment in order to provide for the safety of rail operations in the United States and to facilitate sound planning for these operations. In furtherance of this safety objective, FRA is pleased by the American Public Transit Association's (APTA) initiative to continue the development and maintenance of voluntary industry standards for the safety of railroad passenger equipment. These standards will complement FRA's safety standards and, thus, will work together to provide an even higher level of safety for rail passengers, rail employees, and the public as a whole.

II. Statutory Background

In September, 1994, the Secretary of Transportation 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 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). Section 215 of the Act, as now codified at 49 U.S.C. 20133, requires:

(a) MINIMUM STANDARDS.—The Secretary of Transportation shall prescribe regulations establishing minimum standards for the safety of cars used by railroad carriers to transport passengers. Before prescribing such regulations, the Secretary shall consider—

(1) the crashworthiness of the cars;

(2) interior features (including luggage restraints, seat belts, and exposed surfaces) that may affect passenger safety;

(3) maintenance and inspection of the cars;

(4) emergency response procedures and equipment; and

(5) any operating rules and conditions that directly affect safety not otherwise governed by regulations.

The Secretary may make applicable some or all of the standards established under this subsection to cars existing at the time the regulations are prescribed, as well as to new cars, and the Secretary shall explain in the rulemaking document the basis for making such standards applicable to existing cars.

(b) INITIAL AND FINAL REGULATIONS.—(1) The Secretary shall prescribe initial regulations under subsection (a) within 3 years after the date of enactment of the Federal Railroad Safety Authorization Act of 1994. The initial regulations may exempt equipment used by tourist, historic, scenic, and excursion railroad carriers to transport passengers.

(2) The Secretary shall prescribe final regulations under subsection

(a) within 5 years after such date of enactment.

(c) PERSONNEL.—The Secretary may establish within the Department of Transportation 2 additional full-time equivalent positions beyond the number permitted under existing law to assist with the drafting, prescribing, and implementation of regulations under this section.

(d) CONSULTATION.—In prescribing regulations, issuing orders, and making amendments under this section, the Secretary may consult with Amtrak, public authorities operating railroad passenger service, other railroad carriers transporting passengers, organizations of passengers, and organizations of employees. A consultation is not subject to the Federal Advisory Committee Act (5 U.S.C. App.), but minutes of the consultation shall be placed in the public docket of the regulatory proceeding.

The Secretary of Transportation has delegated these rulemaking responsibilities to the Federal Railroad Administrator. 49 CFR 1.49(m).

III. Passenger Equipment Safety Standards Working Group

Consistent with the intent of Congress that FRA consult with the railroad industry in prescribing these regulations, FRA invited various organizations to participate in a working group to focus on the issues related to railroad passenger equipment safety and assist FRA in developing Federal safety standards. The Passenger Equipment Safety Standards Working Group (or the ''Working Group'') first met on June 7, 1995, and has assisted FRA throughout the rulemaking process. Since its initial meeting, the Working Group has evolved so that its membership includes representatives from the following organizations:

American Association of Private Railroad Car Owners, Inc. (AAPRCO)
American Association of State Highway and Transportation Officials (AASHTO)
APTA
AAR
Brotherhood of Locomotive Engineers (BLE)
Brotherhood Railway Carmen (BRC)
FRA
Federal Transit Administration (FTA) of DOT
National Railroad Passenger Corporation (Amtrak)
National Association of Railroad Passengers (NARP)
Railway Progress Institute (RPI)
Safe Travel America (STA)
Transportation Workers Union of America (TWU)
United Transportation Union (UTU), and
Washington State Department of Transportation (WDOT)

The Working Group is chaired by FRA, and supported by FRA program, legal, and research staff, including technical personnel from the Volpe National Transportation Systems Center (Volpe Center) of the Research and Special Programs Administration of DOT. FRA has included vendor representatives designated by RPI as associate members of the Working Group. FRA has also included the AAPRCO as an associate Working Group member. The National Transportation Safety Board (NTSB) has designated staff members to advise the Working Group.

In developing proposed safety standards for passenger equipment operating at speeds greater than 125 mph but not exceeding 150 mph, FRA formed a subgroup (the ''Tier II Equipment Subgroup'') of Working Group members representing interests associated with the provision of rail passenger service at such high speeds. The full Working Group recommended the formation of a smaller subgroup to consider Tier II passenger equipment standards, as a number of Working Group members found the operation of high-speed passenger equipment to be outside their immediate interest and expertise. FRA invited representatives from organizations including Amtrak, the BLE, BRC, RPI, and UTU to participate in developing the Tier II standards.

In accordance with 49 U.S.C. 20133(d), the evolving positions of the Working Group members—as reflected in the minutes of the group's meetings and associated documentation, together with data provided by the members during their deliberations—have been placed in the public docket of this rulemaking.

IV. Proceedings to Date

On June 17, 1996, FRA published an Advance Notice of Proposed Rulemaking (ANPRM) concerning the establishment of comprehensive safety standards for railroad passenger equipment (61 FR 30672). The ANPRM provided background information on the need for such standards, offered preliminary ideas on approaching passenger safety issues, and presented questions on various topics including: system safety programs and plans; passenger equipment crashworthiness;

inspection, testing, and maintenance requirements; training and qualification requirements for mechanical personnel and train crews; excursion, tourist, and private equipment; commuter equipment and operations; train make-up and operating speed; tiered safety standards; fire safety; and operating practices and procedures.

FRA's commitment to developing proposed regulations through the Working Group necessarily influenced the role and purpose of the ANPRM. FRA specifically asked that members of the Working Group not respond formally to the ANPRM. The issues and ideas presented in the ANPRM had already been placed before the Working Group, and the Working Group had commented on drafts of the ANPRM. As a result, FRA solicited the submission of written comments that might be of assistance in developing a proposed rule from interested persons not involved in the Working Group's deliberations.

FRA received 12 comments in response to the ANPRM. These comments were shared with the Working Group and were taken into consideration by the members of the group as they advised FRA during the development of a Notice of Proposed Rulemaking (NPRM). The Working Group worked intensively, and concluded with a meeting in Philadelphia on September 30-October 2, 1996. Working Group members agreed to the preparation of a NPRM reflecting partial consensus on a number of the issues in the rulemaking. However, the industry parties were unable to agree on any option with respect to inspection requirements for power brakes or daily inspection of equipment. Further, one labor organization later advised FRA that it could not participate in a consensus on less than the full range of issues in the rulemaking.

FRA prepared in draft an NPRM and shared it with the Working Group members on March 19, 1997. The NPRM was then enriched with discussions of issues and options reflecting concerns of Working Group members in response to the draft, and some changes were incorporated into the proposed rule.

On September 23, 1997, FRA published the NPRM (1997 NPRM) in the **Federal Register** to add a new part, 49 CFR part 238 (Passenger Equipment Safety Standards), and to amend 49 CFR parts 216 (Special Notice and Emergency Order Procedures: Railroad Track, Locomotive and Equipment), 223 (Safety Glazing Standards—Locomotives, Passenger Cars and Cabooses), 229 (Railroad Locomotive Safety Standards), 231 (Railroad Safety Appliance Standards), and 232 (Railroad Power Brakes and Drawbars). 62 FR 49728. The proposed part 238 set forth comprehensive Federal safety standards for the safety of railroad passenger equipment, including equipment design and performance standards for passenger and crew survivability in the event of a passenger train accident, as well as inspection, testing, and maintenance standards for passenger equipment.

The 1997 NPRM generated written comments from 34 separate parties, and all of these comments may be found in the public docket of the rulemaking. The written comments included a request by the New York Department of Transportation (NYDOT) to extend the comment period for 90 days. The NYDOT sought this additional time to more thoroughly review the proposed rule, and secure expert testimony and empirical data on the proposed rule's possible impact on the high-speed intercity rail passenger program in the State of New York. FRA did not grant the request, however, particularly because FRA had planned to convene the Working Group in the interim and needed to assemble the comments on the rule for discussion within the Working Group. FRA asked the NYDOT to submit its comments by the close of the comment period on November 24, 1997, and it did so. FRA did explain to the NYDOT that it would consider comments submitted after the formal close of the comment period to the extent possible without incurring additional expense or delay in issuing the final rule, and FRA has done so.

FRA held a public hearing on the proposed rule in Washington, D.C. on November 21, 1997, at which nine parties submitted oral comments. These parties consisted of: APTA; the BRC; the BLE; Amtrak; Renfe Talgo of America, Inc. (Talgo); WDOT; NARP; the Omniglow Corporation; and The Institute of Electrical and Electronics Engineers, Inc. (IEEE). A copy of the transcript of this hearing is available in the public docket of this rulemaking.

As noted earlier, FRA convened the Passenger Equipment Safety Standards Working Group following the close of the comment period to consider the comments received in response to the 1997 NPRM and help develop the final rule. This continued the consultative process FRA has used throughout the rulemaking. Notice of the Working Group meetings was available through the FRA Docket Clerk, as stated in the NPRM, *see* 62 FR 49729, and the meetings were open to the public.

The Working Group met in full in Washington, D.C., on December 15–16, 1997. A smaller body of the Working Group met again on January 6, 1998, to discuss in particular high-speed passenger equipment safety issues, as well as brake inspection, testing and maintenance issues for long-distance intercity passenger trains. Minutes of these meetings, including copies of the discussion documents circulated at the meetings, are available in the public docket of the rulemaking. *See* 63 FR 28496; May 26, 1998. FRA received one set of written comments on the minutes of the meetings, which FRA had prepared, and these comments are also available in the same docket.

V. Discussion of Specific Comments and Conclusions

A. Application of the Final Rule to Rapid Transit Operations and ''Light Rail''

In the 1997 NPRM, FRA proposed applying the rule to rapid transit operations in an urban area, unless those operations are not connected with the general system of railroad transportation. In other words, FRA made clear that its rule would apply to rapid transit operations over the general system. The Utah Transit Authority (UTA), in commenting on the NPRM, expressed concern with the inclusion of rapid transit operations, including light rail transit, in the proposed rule. The UTA stated that the rule provided no definition of what is meant by the phrase ''not connected with the general railroad system of transportation.'' As a result, the UTA requested that the final rule provide such a definition. Further, the UTA requested that any such definition take into account rail operations that are time-separated or physically separated (using derails and electric locks), or both, so that under such circumstances rapid transit systems would not be considered connected with the general railroad system of transportation and, therefore, be excluded from the rule.

In response to the 1997 NPRM, New Jersey Transit (NJT) commented that by permitting FRA to rule on whether a transit agency may operate light rail service over a freight right-of-way, FRA's jurisdiction would be expanded in conflict with FTA's mandate in 49 C.F.R. part 659. NJT explained that the Intermodal Surface Transportation Efficiency Act of 1991, Public Law 102–240, and 49 C.F.R. part 659 promulgated in its pursuance, required states to designate an agency of the state, other than a transit agency, to oversee and implement requirements concerning all fixed-guideway systems not under FRA's jurisdiction.

The safety jurisdictions of FRA and FTA are mutually exclusive. FTA's regulatory authority to issue regulations creating a state safety oversight program applies only to ''rail fixed guideway mass transportation systems not subject to regulation by the Federal Railroad Administration.'' 49 U.S.C. 5330(a). Consistent with DOT Secretary of Transportation Rodney Slater's concept of One-DOT and the need to assure seamless application of intermodal transportation policies, FRA and FTA are jointly developing a proposed policy statement outlining the scope of FRA's jurisdiction over ''light rail'' operations that share the use of rights-of-way with conventional railroads. As discussed later in this document, the two agencies will be soliciting input from rail operators and other interested entities during the development of this policy statement.

FRA's safety jurisdiction is very broad and extends to all types of railroads except for urban rapid transit operations not connected to the general railroad system. The term ''railroad'' is defined by statute as follows:

In this part—

(1) ''railroad''—

(A) Means any form of nonhighway ground transportation that runs on rails or electromagnetic guideways, including—

(i) Commuter or other short-haul railroad passenger service in a metropolitan or suburban area and commuter railroad service that was operated by the Consolidated Rail Corporation on January 1, 1979; and

(ii) High speed ground transportation systems that connect metropolitan areas, without regard to whether those systems use new technologies not associated with traditional railroads; but

(B) does not include rapid transit operations in an urban area that are not connected to the general railroad system of transportation.

49 U.S.C. 20102.

The statutory definition of the term ''railroad'' makes certain elements of FRA's safety jurisdiction quite clear:

- FRA, with one exception, has jurisdiction over all railroads regardless of the type of equipment they use, their connection to the general railroad system of transportation, or their status as a common carrier engaged in interstate commerce. FRA will, for example, assert jurisdiction over high-speed intercity rail service even if completely separated from the general railroad system that now exists and magnetic levitation systems that are not urban rapid transit.
- Commuter and other short-haul railroad passenger operations in a metropolitan or suburban area (except for one type of short-haul operation, *i.e.*, urban rapid transit) are railroads within FRA's jurisdiction whether or not they are connected to the general railroad system. For operations on or over the general system, the commuter/rapid transit distinction has no jurisdictional relevance—all general system operations are within FRA's exercise of jurisdiction. Because the only urban rapid transit operations that FRA intends to cover under this rule are those on the general system, there is no need to expand on the commuter/rapid transit distinction here.
- Rapid transit operations in an urban area that **are not connected** to the general railroad system are not within FRA's jurisdiction. This is the sole exception to FRA's jurisdiction over all railroads. There is no exception for ''light rail,'' a term not found in the statute. Although FRA could assert jurisdiction over a rapid transit operation based on any connection it has to the general railroad system, FRA believes there are certain connections that are too minimal to warrant the exercise of its jurisdiction. For example, a rapid transit system that has a switch for receiving shipments from the general system railroad is not one over which FRA would assert jurisdiction. This assumes that the switch is used only for that purpose. In that case, any entry onto the rapid transit line by the freight railroad would be for a very short distance and solely for the purpose of dropping off or picking up cars. In this situation, the rapid transit line is in the same situation as any shipper or consignee; without this sort of connection, it cannot receive goods by rail. Absent a change in policy, FRA will not attempt to apply this rule to rapid transit systems with these sorts of connections. However, if such a system is properly considered a rail fixed guideway system, FTA's rules (49 CFR 659) will apply to it.
- Rapid transit operations in an urban area that **are connected** to the general railroad system of transportation are within FRA's jurisdiction. FRA will assert jurisdiction over a rapid transit operation that is conducted on or over the general system. It does not matter that the rapid transit operation occupies the track only at times when the freight, commuter, or intercity passenger railroad that shares the track is not operating. While such time separation could, as explained in the 1997 NPRM, provide the basis for waiver of certain of FRA's rules, it does not mean that FRA will not assert jurisdiction. However, FRA will assert jurisdiction over only the portions of the rapid transit system that are conducted on the general system. For example, a rapid transit line that operates over the general system for a portion of its length but has significant portions of street railway that are not part of the general system would be subject to FRA's rules only with respect to the general system portion. The remaining portions would not be subject to FRA's rules. If the non-general system portions of the rapid transit line are considered a ''rail fixed guideway system'' under 49 CFR part 659, those rules, issued by FTA, would apply to them.

As discussed above, it is the nature and location of the railroad operation, not the nature of the equipment, that determines whether FRA has jurisdiction under the safety statutes. Light rail operations that operate on the general system are always within that statutory jurisdiction. They are not within the sole statutory exception (urban rapid transit not connected to the general system) so they are railroads under the safety statutes. The greatest risk inherent in the shared use of the trackage is a collision between the light rail equipment and conventional equipment. The light rail vehicles are not designed to withstand such a collision with far heavier equipment. Were such a crash to occur with either or both equipment operating at high speeds, the consequences for passengers in the light rail vehicle(s) would likely be catastrophic.

In the past, FRA has withheld exercise of its jurisdiction with respect to light rail operations over general system trackage where there was full time separation (freight operations limited to nighttime hours). The recent proliferation of proposals for light rail operations on the general system and the issuance of this final rule establishing the first comprehensive Federal standards for railroad passenger equipment call for changing this approach. Moreover, recent developments have indicated that FRA's current approach assumes a degree of separation that is unlikely to be maintained over time. Proposals for limited overlap, deadhead movement of transit equipment, etc., have demonstrated the complexity of using common trackage for disparate purposes. Accordingly, FRA has asked that new transit starts that propose using the general rail system trackage submit appropriate waiver applications to FRA; such applications should be submitted as early as possible. As previously noted, FTA and FRA are working toward the development of a joint policy statement on the appropriate scope of FRA's jurisdiction over ''light rail'' that shares rights-of-way with conventional railroads. The agencies foresee an approach intended

to dovetail FRA's safety regulations with the FTA state safety oversight program where that is appropriate and FTA jurisdiction is applicable. The agencies would work together to ensure coordination of decision making. Before general implementation, the policy statement will be discussed with the affected communities of interest and may be published (together with any needed regulatory amendments) for formal comment in the **Federal Register**. At the same time this joint policy is issued, FRA plans to issue a separate proposed statement of policy that, among other things, will provide guidance on how light rail operators may seek waivers of FRA's rules. In the interim, the policy expressed in this preamble will guide FRA's actions with respect to this rule (subject to an appropriate period of consultation and adjustment with respect to the two time-separated shared use projects currently in operation).

FRA does, however, recognize that lower speed rail operations that do not operate over highway-rail grade crossings and that totally preclude the sharing of trackage between light rail equipment and conventional equipment provide an operating environment that does not require the structural standards needed for commingled passenger and freight operations. Accordingly, the final rule (in § 238.201) provides that passenger equipment, including locomotives, are not subject to the structural requirements of the rule if they are used exclusively on a rail line (A) with no public highway-rail grade crossings, (B) on which no freight operations occur at any time, (C) on which only passenger equipment of compatible design is utilized, and (D) on which trains operate at speeds no higher than 79 mph. FRA will discuss with the Working Group in Phase II of the rulemaking what structural standards are appropriate for such operations.

B. Static End Sstrength Requirement: Application to Existing Equipment

In § 238.203 of the 1997 NPRM, FRA generally proposed that on or after January 1, 1998, all passenger equipment shall be required to have a minimum static end strength (or ''buff'' or ''compressive'' strength) of 800,000 pounds. As some commenters recognized, FRA intended the date of January 1, 1998, to represent the effective date of the final rule. Yet, in light of the actual publication date of the 1997 NPRM, the date of January 1, 1998, appeared anachronistic, and FRA should have modified the NPRM to make its intent more explicit. A number of commenters nonetheless raised concerns with the application of this section-whether the date were January 1, 1998, or later-since FRA proposed to apply the static end strength requirement to existing passenger equipment.

APTA recommended, in its comments on the rule, that FRA modify the proposal so that the requirement apply on or after the effective date of the final rule to passenger equipment placed in service for the first time. APTA stated that the AEM–7 locomotive and the RTG model turbo train could not meet the requirement as proposed. APTA estimated that the purchase of replacement equipment could take up to four years and would cost more than $500 million.

Amtrak commented that the proposed requirement to have buff loading apply to the existing rail fleet is not justified based on the industry's experience. Amtrak did agree that, in order to move the industry forward on crash energy management, new equipment must be built to a uniform strength standard. Amtrak stated that it currently operates AEM–7 locomotives that do not meet the proposed requirement. In addition, Amtrak was not sure it had available the appropriate technical information on whether its fleet of Heritage equipment conformed to the proposal. At the public hearing, though, Amtrak did explain that it had no evidence that its fleet of passenger cars did not comply with the proposal. (See transcript of public hearing, pages 173–174).

The Northeast Illinois Regional Commuter Railroad Corporation (Metra), in its comments on the rule, recommended that the static end strength provision apply only to new passenger equipment orders placed on or after January 1, 1998. Metra explained that it was awaiting delivery of cars under construction, that some of the cars may be built after January 1, 1998, and that a change order would cause a series of problems.

In commenting on the 1997 NPRM, Talgo expressed concern that FRA proposed applying the static end strength requirement to existing passenger equipment in service on or after January 1, 1998. Talgo stated that this proposal would render unusable its two trainsets then in service on lease to the WDOT. Additionally, Talgo explained that it was well underway in manufacturing five new trainsets—two for the WDOT, one for Amtrak, and two others for future sale in the U.S. market—that would likewise be rendered unusable in their current form. Talgo stated that neither it nor any other manufacturer of rail equipment could have anticipated the proposed regulation's immediate application of broad structural design changes. Citing discussions within the Working Group and the comments of other parties, Talgo asserted that other passenger equipment manufacturers and operators likewise assumed that modifications in basic structural standards would be applicable only to equipment purchased after January 1, 1999, or placed in service after January 1, 2001, and that much existing passenger equipment operating in the United States would be unable to comply with the structural requirements scheduled for early implementation. Talgo also stated that FRA did not properly identify the economic impact of its proposal on Talgo equipment. Talgo requested that FRA modify the rule so that the static end strength requirement and other structural requirements apply only to passenger equipment ordered on or after January 1, 1999, or placed in service for the first time on or after January 1, 2001.

The WDOT commented that FRA's proposal appeared to be directly targeted at the State of Washington and Amtrak's purchase of Talgo trains under manufacture. WDOT stated that imposition of the proposal in the middle of the construction process, without ''grandfathering,'' appeared to reveal an effort to make its Talgo equipment non-compliant. WDOT recommended that the rule be modified so that the static end strength provision only apply to passenger equipment ordered after January 1, 1999. The NARP, in its comments on the proposed rule, shared WDOT's opposition to imposing the static end strength requirement on existing passenger equipment, and it recommended instead applying the requirement under a time-table similar to that proposed generally for structural requirements—*i.e.*, ordered on or after January 1, 1999, or placed in service for the first time on or after January 1, 2001. The NARP believed that the proposal could cancel WDOT's rail passenger program and thereby lead to countless, unnecessary highway deaths involving people that otherwise would have been on a WDOT passenger train.

In commenting on the 1997 NPRM, the State of Vermont Agency of Transportation (VAOT) explained that it was in the process of implementing new passenger rail service with used rail diesel cars manufactured by Budd. The cars were originally built to meet the AAR buff strength requirement, according to the VAOT, but it could not assure that the vehicles meet the standards today. The VAOT requested that the Budd cars be grandfathered because they were manufactured to AAR standards, built prior to April 1,

1956, and have a proven service record. The VAOT believed it fair for the rulemaking to grandfather these cars as being compliant at the time ordered by VAOT. Similarly, the NYDOT recommended in its comments on the proposed rule that the structural requirements apply only to new equipment, citing its intent to operate rebuilt turboliner equipment in the Empire Corridor through a cooperative effort with FRA and Amtrak. Further, the North Carolina Department of Transportation (NCDOT) expressed concern in its comments on the proposed rule that the rulemaking would require its fleet of rebuilt passenger, food service and specialty cars to undergo additional renovations and retrofitting to comply with the rule. NCDOT commented that its trainsets were designed to meet the passenger equipment safety standards in effect at the time of their order, and that the proposed regulation has the potential to thwart its rail passenger initiative.

In the final rule, FRA is retaining the 800,000-pound static end strength requirement for most new and existing passenger equipment. However, the final rule does provide that the static end strength standard and other structural standards do not apply to equipment used exclusively on a rail line (A) with no public highway-rail grade crossings, (B) on which no freight operations occur at any time, (C) on which only passenger equipment of compatible design is utilized, and (D) on which trains operate at speeds no higher than 79 mph. See § 238.201. Furthermore, the final rule creates a presumption that passenger equipment in service in the United States as of the effective date of the final rule meets the 800,000-pound static end strength requirement, unless the railroad operating the equipment knows, or FRA can show, that the equipment was not built to this 800,000-pound strength requirement. See § 238.203(b). Under this formulation, for example, Amtrak's fleet of Heritage passenger cars are presumed to comply with the static end strength requirement on the basis of Amtrak's testimony at the public hearing on the NPRM.

FRA has decided that it is in the best interest of safety to apply the buff strength requirement to existing passenger equipment and effectively regulate the use of passenger equipment not possessing at least 800,000 pounds of buff strength as specified in this rule. As noted, the operating environment in the United States requires railroad passenger equipment to operate commingled with heavy and long freight trains, often over track with frequent grade crossings used by heavy highway equipment. FRA has serious concerns about the operation in such an environment of passenger equipment not possessing a minimum buff strength of 800,000 pounds. As a result, and in response to Talgo's and WDOT's comments on this rule, FRA cannot avoid directly addressing the current operation in the United States of the passenger trainsets manufactured by Talgo unless FRA disregards its duty to provide for the safety of rail passenger transportation. Since FRA has raised the issue of compressive strength on passenger equipment with all affected parties since well before the inception of this rulemaking, it would strain credulity to assert that a requirement for 800,000 pounds of compressive strength could truly be a matter of surprise in a rulemaking on railroad passenger equipment safety.

Making the 800,000-pound compressive strength requirement applicable to existing passenger equipment creates a bright line that will help bring needed clarity to the growing number of situations where light rail equipment is likely to be used on the general railroad system of transportation. Operation on the general system of this equipment, which is built to standards far lower than the 800,000-pound standard specified in this rule, presents enormous safety risks to the occupants of the equipment, absent imposition of strict conditions designed to virtually eliminate the risk of a light rail/conventional equipment collision. The need to address these risks as a condition of operation will be made perfectly clear by imposition of the buff strength requirement across the board. Light rail operators will have to seek a waiver of the requirement and will have to plan their operations in such a way as to maximize the likelihood of obtaining such a waiver. (A petition for grandfathering approval of the equipment could also be filed in certain cases, as discussed below.)

In regulating the use of passenger equipment not possessing a minimum buff strength of 800,000 pounds as specified in this final rule, the rule permits non-compliant passenger equipment to be continued in service for a six-month period following publication of the rule in order to permit the filing of a grandfathering petition with FRA; if a petition is filed within this six-month period, operation may continue for up to an additional six months while the petition is being processed. Grandfathering approval of non-compliant equipment is limited to usage of the equipment on a particular rail line or lines. Before grandfathered equipment can be used on another rail line, a railroad must first file and secure approval of a grandfathering petition for such usage. *See* discussion under § 238.203 for the contents of the petition and the approval process. FRA will approve a petition for ''grandfathering'' if it complies with the requirements of § 238.203 and the proposed usage of the equipment is in the public interest and consistent with railroad safety. Amtrak and WDOT may file petitions for grandfathering approval of their Talgo-manufactured passenger equipment, in accordance with the requirements of § 238.203.

C. United States International Treaty Obligations

The United States is a party to the General Agreement on Tarriffs and Trade (GATT). One of the GATT agreements is the Agreement on Technical Barriers to Trade (TBT), originally concluded in 1979 and approved by the United States Congress in the Trade Agreements Act of 1979, Pub. L. No. 96–39 (July 26, 1979). A new TBT Agreement was reached as a result of the 1994 Uruguay Round of GATT multinational trade negotiations, and subsequently approved by the United States Congress in the Uruguay Round Agreements Act, Pub. L. No. 103–465 (December 8, 1994). The TBT Agreement seeks to avoid creating unnecessary obstacles to trade, while recognizing the right of signatory countries to establish and maintain technical regulations for the protection of human, animal, and plant life or health. The TBT Agreement has been codified into law at 19 U.S.C. 2531 *et seq*.

In commenting on the NPRM, Talgo believed that a number of the proposed structural standards were inconsistent with the TBT Agreement in that domestic industry would be favored by adopting the *de facto* standards of North American passenger equipment. Talgo stated that many requirements in the proposed rule seem to have been developed exclusively with domestically-manufactured equipment in mind, ''arbitrarily making compliance with the rules by other, non-U.S. manufactured equipment—such as Talgo equipment—extremely difficult.'' Talgo also asserted that domestic industry would be favored under the implementation schedule of the rule by noting FRA's statements in the NPRM that several of the proposed structural requirements chosen for early implementation reflect the current construction practice for North American passenger equipment. Talgo contended that the implementation

schedule disregards that, solely because imported equipment has been designed differently, it cannot satisfy the requirements at once.

FRA believes that this final rule is consistent with the United States' obligations under the TBT Agreement, and that Talgo's concerns arise, in part, from a misunderstanding of FRA's use of the term ''North American passenger equipment.'' Article 2.1 of the TBT Agreement, cited by Talgo in its comments, states:

> Members shall ensure that in respect of technical regulations, products imported from the territory of any Member shall be accorded treatment no less favorable than that accorded to like products of national origin and to like products originating in any other country.

A ''technical regulation'' refers to mandatory product standards, and FRA agrees with Talgo that the structural standards in this rule fall under this definition. See Annex 1 to the TBT Agreement, ''Terms and Their Definitions for the Purpose of this Agreement, 1.'' However, the impact of this rule on Talgo passenger equipment, specifically its passenger cars, has nothing to do with the fact that the equipment originates in a foreign country, Spain, as opposed to the United States.

Through this rule, FRA is not favoring rail passenger cars that are domestically manufactured over those of foreign origin since, as far as FRA is aware, there is currently no domestic manufacturer of rail passenger cars in the United States. (The General Electric Company and the General Motors Corporation manufacture locomotives in the United States—not rail passenger cars; and neither entity is being favored by FRA in this rule over foreign manufacturers of locomotives.) Of course, a significant portion of the nation's rail passenger car fleet—the oldest portion—has been manufactured in the United States. Yet, over the years, manufacturers from Japan, Canada, and other countries have exported passenger cars to the United States for service on the nation's railroads. Overall, these imported rail passenger cars have possessed the same minimum structural strength as their domestic forebearers; they have been constructed to standards that are common to North American passenger equipment, *i.e.*, passenger equipment operated in North America. The five Talgo trainsets noted earlier have not been so constructed. FRA's use of the term North American passenger equipment (or United States passenger equipment, for that matter) was not intended to refer to passenger equipment manufactured in North America in distinction to passenger equipment manufactured elsewhere.

Talgo also commented that, to a significant extent, the proposed requirements were design-based and phrased in a number of places in variables dependent on design rather than performance. In this regard, Talgo believed the proposed rule violates Article 2.8 of the TBT Agreement, which states: ''Wherever appropriate, Members shall specify technical regulations based on product requirements in terms of performance rather than design or descriptive characteristics.'' Talgo asserted that the rule can and should be stated in terms of variables relating to the performance of the equipment rather than its design, and that the rule should accommodate different engineering designs, such as its articulated, lightweight trainsets.

The principal structural requirement of the final rule, which existing Talgo-manufactured passenger cars do not meet, is in fact a performance-based requirement. As further specified in § 238.203, the rule requires that new and existing passenger cars must possess a minimum static end strength of 800,000 pounds. The rule does not dictate how a passenger car must be constructed to meet this requirement, as long as the car can resist the specified 800,000-pound load. This formulation is consistent with the requirements of 19 U.S.C. 2532(3), which states:

> Performance Criteria.—Each Federal agency shall, if appropriate, develop standards based on performance criteria such as those relating to the intended use of a product and the level of performance that the product must achieve under defined conditions, rather than on design criteria, such as those relating to physical form of the product or the types of material of which the product is made.

(Of course, the rule does require that the body structure of a passenger car be designed, *to the maximum extent possible*, to fail by buckling or crushing, or both, of structural members when overloaded in compression rather than by fracture of structural members or failure of structural connections. *See* § 238.203(c). Yet, in any regard, FRA believes it unsafe to design a passenger car to fail first by fracture of structural members or failure of structural connections, as the ability of the car structure to absorb collision energy is negated.)

FRA recognizes that the five Talgo trainsets were designed to international standards that require lesser compressive strength. Talgo has pointed out that these trainsets will be configured in the same manner as two leased trainsets formerly operated in the State of Washington. These trains are intended to be pulled by a conventional locomotive and have unoccupied units at the front and rear of the trainsets which are available to absorb initial crash energy. Talgo contends that this configuration provides equivalent protection from loss of occupied volume in a rear-end or head-on collision when compared with conventional cars which would be occupied by passengers or crew. FRA has provided a process for WDOT and others to secure grandfathering approval regarding the compressive strength requirement for passenger equipment placed in use prior to November 8, 1999, as previously noted. However, as explained below, FRA is unable to relax the minimum compressive strength requirement for passenger equipment simply on the basis of train configuration, since to do so would diminish the safety provided for the rail travelling public as a whole.

FRA believes the minimum static end strength requirement in the final rule is not inconsistent with the TBT Agreement, in that it fulfills FRA's objective of protecting human safety and only restricts the use of equipment not meeting that objective because of the performance of the equipment—not because of the origin of the equipment. In this regard, 19 U.S.C. 2531(b) provides in part:

> No standards-related activity of any * * * Federal agency * * * shall be deemed to constitute an unnecessary obstacle to the foreign commerce of the United States if the demonstrable purpose of the standards-related activity is to achieve a legitimate domestic purpose including * * * the protection of legitimate health or safety * * * and if such activity does not operate to exclude imported products which fully meet the objectives of such activity.

Having a passenger car possess a minimum compressive strength of 800,000 pounds, along with other features, has evolved as a result of a long history of efforts by railroads and suppliers to learn the hard lessons taught by a difficult operating environment in the United States. Passenger train collisions and derailments may occur in a variety of different scenarios and implicate structural features of passenger equipment in similarly numerous ways. The rule cannot be applied in a general way to both (1) except any consist of passenger cars from the same compressive strength requirements applicable to all other passenger cars solely because the passenger car consist is buffered at each end by an unoccupied car and linked by articulated connections, and (2) provide

for the safety of the occupants of passenger cars.

Further, over the past few years, FRA has funded the most extensive and detailed research and analysis ever conducted by a public body in the United States concerning passenger car safety. That effort has included attention to international practice, particularly for high-speed equipment. However, given existing data and analysis, FRA is unable to specify an alternate performance standard for passenger car compressive strength that would meet FRA's safety objectives and be equally applicable to passenger cars of any design that might some day be proffered for use in the United States. Nor, so far as FRA is aware, has any government or international body achieved a similar feat. Certainly doing so within the time available to issue standards under the 1994 statutory mandate would not have been possible.

FRA notes that Talgo further commented that the early implementation dates proposed for certain structural requirements are inconsistent with Article 2.12 of the TBT Agreement in that a sufficient amount of time would not be provided foreign producers to modify their products' design or manufacturing processes to comply with new or significantly revised regulatory requirements. Article 2.12 provides:

> Except in those urgent circumstances referred to in [Article 2] paragraph 10 [of the TBT Agreement], Members shall allow a reasonable interval between the publication of technical regulations and their entry into force in order to allow time for producers in exporting Members * * * to adapt their products or methods of production to the requirements of the importing Member.

In the final rule, the compressive strength requirement takes effect sooner than any other principal structural requirement, and it applies to both new and existing passenger cars and locomotives. If any provision of the rule were found to be inconsistent with Article 2.12 of the TBT Agreement, then, it would most likely be the compressive strength requirement. However, the United States Congress has expressly authorized applying the requirements of the final rule to existing passenger cars, provided only that the basis for doing so is explained in the rulemaking document. *See* Section 215 of the Federal Railroad Safety Authorization Act of 1994, above, as codified at 49 U.S.C. 20133 (''The Secretary may make applicable some or all of the standards established under this subsection [, 49 U.S.C. 20133(a),] to cars existing at the time the regulations are prescribed.''). FRA has made the compressive strength requirement applicable to existing passenger cars as explained in the preamble. However, through the submission of appropriate data and analysis, and approval by FRA as further specified in § 238.203, discussed below, certain passenger cars not possessing the minimum compressive strength of 800,000 pounds may operate on the general railroad system of transportation, and the rule does afford a reasonable time for that information to be gathered.

In providing the possibility that some equipment now being used which does not meet the buff strength requirement of this rule might continue to be used (''grandfathered''), FRA intends to permit only very safe operations to occur. Petitioners will need to demonstrate—through a quantitative risk assessment that incorporates design information, engineering analysis of the equipment's static end strength and of the likely performance of the equipment in derailment and collision scenarios, and risk mitigation measures to avoid the possibility of collisions or to limit the speed at which a collision might occur, or both, that will be employed in connection with the usage of the equipment on a specified rail line or lines—that use of the equipment, as utilized in the service environment for which recognition is sought, is in the public interest and is consistent with railroad safety. In this regard, FRA notes that passenger equipment not possessing the minimum static end strength specified in this rule does not have the same capacity to absorb safely within its body structure the compressive forces that develop in a collision as equipment meeting the standard. The engineering analysis submitted by the petitioner should address how these forces will be dissipated in a manner that does not jeopardize occupant safety in collision scenarios.

D. Non-Conventional Passenger Equipment

As noted above, commenters have requested that FRA specify design-neutral or performance-based requirements so that the safety of all passenger equipment may be evaluated on the same basis. In comments in this docket, Talgo has suggested substituted (and reduced) force levels that it believes are appropriate for inclusion in the final rule in lieu of those proposed for truck-to-carbody attachment and anti-climbing arrangements, for instance. As explained, FRA has specified the compressive strength requirement as fairly as we are able in consideration of the safety of the rail travelling public. FRA has also done so with respect to the other structural requirements in the rule.

FRA recognizes that the existing Talgo trainsets presents unique challenges in terms of describing appropriate force levels in several regards. FRA understands that the Talgo trainsets are articulated, low-floor trainsets with independently rotating wheels. The car bodies are made from light-weight aluminum extrusions. In contrast, the vast majority of passenger carrying equipment used on the nations's railroads is individually suspended, has automatic couplers, has a higher floor height above the rail, has wheels fixed to an axle, and is constructed with a steel underframe made up from fabricated members. FRA has conducted, and continues to conduct, research which addresses the influence of carbody construction, suspension configuration, and coupling arrangement on the crashworthiness, derailment tendency, and other safety-related aspects of Talgo and other non-conventional equipment.

Developing safety regulations requires detailed technical knowledge of the system being regulated. At the time this rule is being written, FRA is unable to specify alternative performance-based standards with respect to the structural requirements in this rule that would meet FRA's safety objectives for passenger equipment of any design. Areas of particular technical concern with regard to the Talgo trainsets, which need to be resolved by FRA through an ongoing exchange of information, include the nature of its articulated connection and its potential to allow override in a collision, and the welding of the aluminum extrusions which make up the body shell. The Talgo tilt trainsets have characteristics that are unique, or nearly unique, that may either reduce or increase vulnerability in a derailment or collision. For instance, the articulated design of the trainset may tend to keep the train in line in the case of a derailment where the decelerations are reasonably uniform throughout the length of the train, preventing secondary impacts. On the other hand, the absence of major structural members in the floor of the passenger units could be a serious problem should the train be involved in a collision with freight train cars or lading that has fouled the track on which the passenger train is travelling, as a result of the freight train having derailed. In this regard, the absence of major structural members in the floor of the Talgo passenger units increases their vulnerability to penetration by the

trainset's trucks, should the trucks separate from the train.

Historically, the United States industry requirement for a minimum compressive strength has reinforced a pattern of passenger car construction resulting in use of stiff, quite substantial underframes that have served other practical purposes in derailments and collisions, including prevention of car body buckling, prevention of harm to passengers from failure of the floor structure and entry of debris, and resistance to penetration of the car from the side where the primary impact was at the floor level. Both with respect to compressive strength and other structural requirements that the Talgo trainset may not be able to meet, it is important to ensure that alternative means of achieving crashworthiness are just as successful as the standards described in this final rule.

Creating alternative performance-based standards for a particular type of passenger equipment requires a very early dialogue and technical information exchange. In the summer of 1995, FRA convened the first meeting of equipment manufacturers (including representatives of Canadian, European and Japanese consortia) to discuss passenger safety standards. That meeting led to designation of equipment manufacturer representatives as associate members of the Passenger Equipment Safety Standards Working Group. Although notified along with a number of other manufacturers of passenger equipment, Talgo representatives did not participate in the process. (For its part, the WDOT did not formally indicate to FRA an interest in participating in the rulemaking until after the Working Group had tentatively agreed on the structural standard proposals—FRA received a letter from the WDOT commenting on the ANPRM on September 4, 1996. However, AASHTO had participated from the beginning of the rulemaking.) Talgo did not enter the discussions directly until publication of the NPRM in September of 1997, and was still in the process of providing engineering data through October of 1998. Given the timing of this latest submission of data to FRA, approximately ten-months after the close of the public comment period on the NPRM, FRA has not had the opportunity to fully evaluate the information provided by Talgo for purposes of this rule.

FRA appreciates Talgo's recent undertakings to conform any future trainsets (beyond the five trainsets noted earlier) built for North American service to the 800,000-pound static end strength requirement and any other applicable requirements in this rule. FRA will be pleased to work with Talgo and members of the Working Group in Phase II of the rulemaking to determine whether different performance-based regulations are appropriate. In the interim, FRA has provided a special approval process in § 238.201 for considering whether the new generation of Talgo equipment and any other passenger equipment of special construction provide an equivalent level of safety with the Tier I standards (other than the static end strength requirements) contained in the final rule. See the discussion in the section-by-section analysis of § 238.201 for an explanation of the special approval process.

E. System Safety

FRA believes that passenger railroads should carefully evaluate their operations with a view toward enhancing the safety of those operations. The importance of formal safety planning has been recognized in Emergency Order No. 20 (61 FR 6880; Feb. 22, 1996) and the rule on passenger train emergency preparedness (63 FR 24630; May 4, 1998). In furtherance of safety planning, the 1997 NPRM contained a set of system safety requirements to be applied to all intercity passenger and commuter rail equipment. See 62 FR 49760. FRA intended that each individual passenger railroad be required to develop a system safety plan and a system safety program tailored to its specific operation, including train speed. FRA explained, however, that the Working Group did not reach consensus on system safety requirements for Tier I equipment; whereas the Tier II Subgroup did reach full consensus on system safety program requirements for Tier II equipment. Strong support did exist among Working Group members to apply formal system safety planning to Tier I equipment, yet views differed as to whether system safety planning should be required by law.

In particular, the 1997 NPRM noted that APTA objected to FRA issuing any regulations governing system safety plans because commuter railroads have voluntarily agreed to adopt such safety plans. 62 FR 49734. FRA also explained its understanding that APTA's system safety approach will be more comprehensive than what FRA proposed and address each commuter railroad's system more as an integrated whole, not focused principally on rail equipment. See 62 FR 49734. FRA therefore invited comment on APTA's suggestion that commuter railroads be allowed to regulate themselves in this area; whether FRA should mandate the contents of system safety plans; whether the areas FRA proposed to require railroads to address were appropriate; whether additional areas should be added; and to what extent FRA should propose to enforce portions of the system safety plans. FRA further asked whether the rule should require that system safety plans be comprehensive and address the entire railroad system in which the equipment operates, as well as whether the emergency preparedness planning requirements contained in the passenger train emergency preparedness rulemaking be expressly integrated with the system safety planning requirements contained in this part. *Id.* at 49733–4.

In commenting on the rulemaking, APTA believed FRA's approach to system safety short-sighted in that it would apply only to the equipment component of the commuter railroad system and therefore ignore track, signal system, other infrastructure, and operating practices components. Further, APTA questioned FRA's general focus in the system safety plan (on fire safety; software safety; inspection, testing and maintenance; training; and new equipment) prior to having a railroad identify its major safety risks through its individual system level analysis. APTA stated that it supports a true system safety approach that allows each railroad to determine its own major safety risks and addresses all the components of the passenger rail system—not just the equipment component.

As an alternative to Federal regulation, APTA proposed a system safety program based on system safety plans—developed using MIL–STD–882C as a guide—that would be submitted by its individual member railroad properties and audited by APTA. APTA explained it would invite FRA to observe the audits and the follow-up actions taken by the commuter railroads in response to the audits. APTA requested that FRA hold Federal requirements for commuter railroad system safety plans in abeyance for a 3-year probationary period—corresponding to one complete audit cycle—while FRA observes and evaluates the program.

Amtrak commented that it supports APTA's position on system safety for both Tier I and Tier II equipment. Amtrak believed it appropriate for FRA to start with a voluntary system safety approach and then, based on actual experience, follow up with specific regulations in the future. Amtrak believed FRA needs to allow the industry the time to establish the

culture and process that allows system safety to function without creating an unwarranted bureaucratic burden.

In its comments on the 1997 NPRM, Metra agreed with the value of a system safety plan, but believed that such plans should not be regulated. Metra recommended the rule contain only a top-level system safety plan requirement for railroads to identify the most serious safety risks within their specific operations, and then allow each railroad to create its own programs to reduce those risks. Metra explained that a railroad's system safety plan should project beyond current practice to continuously improve that practice and that Federal enforcement of such a plan would continually find violations because current practice would not reflect the ideals set forth in the plan. Metra believed that FRA regulation would make a system safety plan a useless tool for improving safety, as the plan would be limited to mimicking Federal regulation and describing current practice. In addition, Metra noted that a system safety plan is distinct from a document that describes current practice for routine and regulated activities. Metra proposed that this document, a safety policy, reference all current-practice safety-related procedures and require railroads to adhere to them.

Bombardier commented that the 1997 NPRM does not provide the latitude for each railroad to tailor or customize its system safety plan to its individual operations and needs. Further, Bombardier believed that the NPRM confuses the requirements for the railroad's system safety plan with those required for equipment acquisition. If FRA insists that the rule contain a requirement for a system safety plan, according to Bombardier, it should be limited to requiring each railroad to develop its own plan based on MIL-STD–882C or APTA's Manual for the Development of a System Safety Plan for Commuter Railroads. Separately, the rule should require a system safety plan specifically addressing equipment procurement.

The BRC commented that FRA must mandate the contents of system safety plans to ensure that vital topics are included in such plans. Further, the BRC believed FRA must have the power to enforce compliance with system safety plans. Otherwise, the BRC believed the plans themselves would amount to little more than suggested operating practices. The BRC also believed that FRA must review each railroad's system safety plan and approve it only if it complies with Federal regulations. Similarly, the UTU commented that the 1997 NPRM's provisions on system safety plans is the most important section of the rule. The UTU believed FRA should continue to treat it as such and not allow it to be weakened.

The NTSB commented that it supports FRA mandating the contents of system safety plans for minimal consistency and oversight, rather than allowing the railroads to regulate themselves in this area, so that important safety elements are consistently included in each safety plan. The NTSB believed that the system safety plans should be comprehensive and address the entire railroad system in which the passenger equipment operates. The NTSB observed that if the industry does not have a comprehensive system safety plan, it may not be able to identify, track, monitor, or rectify situations that can lead to unsafe conditions. Further, the NTSB remarked that system safety should be a continuous, iterative process that has a built-in feedback mechanism and should be used throughout the program's life cycle to arrive at the best plan possible.

The NTSB noted that it has made safety recommendations urging FRA to include specific safety requirements in a system safety plan. It urged FRA to incorporate the following recommendations into FRA's general requirements for system safety plans:

> Require carriers to train employees in emergency procedures to be used after an accident, to establish priorities for emergency action, and to conduct accident simulation to test the effectiveness of the program, inviting civic emergency personnel participation. (R–76–29)
>
> Develop and validate through simulated disaster exercises a model emergency response plan for the guidance of the railroad industry in formulating individual plans to be utilized by their train crewmembers in the event of an emergency. (R–80–6)

In this regard, FRA did issue final regulations governing the preparation, adoption, and implementation of emergency preparedness plans by railroads connected with the operation of passenger trains, in the passenger train emergency preparedness rulemaking. *See* 63 FR 24630, May 4, 1998. That rule specifically requires emergency preparedness plans to address such subjects as communication, employee training and qualification, joint operations, tunnel safety, liaison with emergency responders, on-board emergency equipment, and passenger safety information. The plan adopted by each affected railroad is also subject to formal review and approval by FRA.

FRA believes the approach taken in the emergency preparedness rulemaking in requiring railroads to adopt a safety plan addressing specific topics is more appropriate than imposing a general requirement for railroads to adopt a comprehensive system safety plan. FRA believes this is consistent with the view of the commenters to mandate the contents of safety program plans for minimal consistency and oversight, so that important safety elements are included in each safety plan. At the same time, focusing the safety planning requirements and streamlining the rule will facilitate the regulated community's understanding of the rule's requirements and thereby aid in its compliance. As further specified, the final rule will require that each railroad adopt safety program plans addressing:

- Fire safety;
- Employee training and qualifications;
- Equipment inspection, testing, and maintenance;
- Pre-revenue service acceptance testing of equipment; and
- Train hardware and software safety.

In addition, more particular safety planning requirements are imposed on Tier II passenger equipment, as discussed below, reflecting both the greater risks to safety from operating the equipment at such high speeds and the importance of advanced planning in order to meet new safety challenges.

As FRA recognized in the 1997 NPRM, FRA's proposed approach to system safety focused principally on rail passenger equipment. This was not a pure system safety approach, inasmuch as FRA did not focus on safety planning for others elements of the railroad infrastructure such as the track and signal system, or for a host of items including platform safety, security and trespasser prevention.

FRA will closely monitor Tier I railroad operations in their development and adherence to voluntary, comprehensive system safety plans. FRA has already established a liaison relationship with APTA and has already begun participating in system safety plan audits on commuter railroads. FRA is using this involvement to enrich FRA's Safety Assurance and Compliance Program (SACP) efforts on these railroads—which, unlike the triennial audit process for system safety plans, is a continuous activity with frequent on-property involvement by FRA safety professionals. FRA will reconsider its decision not to impose a general requirement for system safety plans on Tier I railroad operations if the need to do so arises. FRA expects that

Tier I railroad operations will be able to integrate the specific safety planning requirements contained in this final rule into their own system safety plans, in the same way the railroads will incorporate into their plans the emergency planning requirements contained in 49 CFR part 239.

FRA is retaining more extensive safety planning requirements for Tier II railroad operations. These requirements are directed at ensuring the safety of the equipment in its operating environment and that the introduction of novel technology is thoroughly analyzed prior to procurement of the equipment. Tier II railroad operations will be operations with new characteristics that require special attention and have heightened safety risks due to the speed of the equipment. In particular, each railroad must a have safety program plan for the operation of its Tier II passenger equipment prior to placing the equipment into revenue service. In addition, each railroad must have a safety program plan for each procurement of Tier II passenger equipment or major upgrade or introduction of new technology in Tier II passenger equipment. The railroad must also receive FRA approval of a pre-revenue service acceptance testing plan, as well as FRA approval prior to placing such new or modified equipment into revenue service.

In general, however, the final rule does not require that FRA approve a railroad's safety plans required under the rule. As noted, FRA believes it best to focus its resources on Tier II passenger equipment operations due to their special circumstances. Further, FRA approval may not be necessary when, by operation of the rule, each railroad must independently comply with specific safety planning requirements or face sanction from FRA. Under 49 CFR § 238.11 of the final rule, any person who violates any requirement of this part or causes the violation of any such requirement is subject to a civil penalty.

F. Side Exit Doors on Passenger Cars

In the 1997 NPRM, FRA generally proposed that new passenger cars have a minimum of four exterior side doors—or the functional equivalent of four such doors—each door permitting at least one 95th-percentile male to pass through at a single time. *See* 62 FR 49807 (§ 238.237), and 62 FR 49820 (§ 238.441). Exterior side doors are the primary means of egress from a passenger train, yet there is no Federal requirement that a passenger car be equipped with such doors. FRA does recognize that in an emergency passengers would generally be able to move through a passenger car's end doors to seek refuge in adjacent cars. In fact, it is safer for passengers to remain on a train unless doing so in itself risks their safety, because of hazards along the railroad right-of-way such as electrified rails and other trains. However, the tragic September 22, 1993 Amtrak train derailment near Mobile, Alabama, and the February 16, 1996 collision involving MARC and Amtrak passenger trains near Silver Spring, Maryland, show that in a life-threatening situation passengers have no alternative but to exit the train. All of the 42 passenger fatalities in the Mobile, Alabama train derailment resulted from asphyxia due to drowning (NTSB Railroad-Marine Accident Report 94/01), and the deaths of at least eight of the eleven persons killed in the Silver Spring, Maryland train collision resulted from the fire that ensued (NTSB Railroad Accident Report (RAR) 97/02). FRA is not suggesting that the cars involved in those accidents lacked a sufficient number of emergency exits; nevertheless, these are examples of instances where passengers have died because they could not leave the train. (However, the NTSB did note in its investigation report of the Silver Spring, Maryland 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.'' *Id.* at page 63. The 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.)

So that each passenger car has sufficient doorway openings to allow passengers and crewmembers to exit quickly in a life-threatening situation, FRA proposed requiring that passenger cars be equipped with side doors. Exiting a passenger train through a functioning emergency window exit is slower than exiting a train through a functioning door, and presents a risk of non-fatal injury. FRA made clear in the 1997 NPRM that the proposed side door requirement was not a recommendation of the Working Group, although FRA believed such a requirement necessary at least as an interim measure. *See* 62 FR 49770. FRA also recognized that existing designs of passenger cars do not always provide for four side doors, and, in fact, the proposed requirement did not specifically require that passenger cars have four side doors. For instance, the requirement would have been met if a passenger car had two double-wide doors that permit two 95th-percentile males to pass through each such door at the same time—the functional equivalent of four side doors having openings of the same size in the aggregate. FRA invited comments concerning the extent to which existing designs of passenger cars could not comply with the proposed requirement, noting that modifications to the proposal may be necessary based on the information supplied. Further, as a long-term approach, FRA explained that it is investigating an emergency evacuation performance requirement similar to that used in commercial aviation where a sufficient number of emergency exits must be provided to evacuate the maximum passenger load in a specified time for various types of emergency situations.

In its comments on the 1997 NPRM, APTA stated that the proposed requirement would eliminate certain types of cars as well as certain desirable car design safety features. Specifically, Amtrak would not be able to procure Viewliner cars and NJT would not be able to increase the number of Comet IV cab cars with extra structural protection for train operators, according to APTA. APTA recommended that the rule text be modified to include passenger car end doors in the calculation of the required number of door exits. APTA believed this would encourage structural changes that involve the elimination of a side door to provide additional protection to train operators and allow Amtrak to continue its Viewliner cars in service.

Amtrak, in commenting on the proposal, expressed particular concern that the proposed requirement would prevent the future construction of its Bi-Level Superliner equipment in a configuration that maximizes the equipment's economic performance. Amtrak noted that its current policy calls for equipping every window in such equipment with at least one emergency pane, and that the proposed requirement would not take that into consideration. Amtrak supported APTA's recommended modification to the rule text.

The NARP also questioned the proposed side exterior door requirement for passenger cars. The NARP noted that the most common way to exit a car in an emergency is through the car's end doors, and it suggested that emergency window exits are probably more reliable than additional doors, believing the

doors are more likely to be rendered inoperable. The NARP stated that research should focus on the relationship between a car's seating capacity and layout and its emergency-exit capacity. The NARP opposed requiring four doors on a 44-foot Talgo car, and saw little benefit from adding additional doors to a Superliner dining car without a costly stairwell installation. The NARP asserted that a requirement for four side doors may be economically fatal for a single-level dining car, and advised instead that one side door may be provided in the hallway opposite the kitchen and a second side door placed in the kitchen.

In commenting on the proposal, WDOT believed it not appropriate to require four side doors on a 44-foot Talgo passenger car, which is approximately half the length of conventional passenger cars. WDOT stated that a Talgo passenger car has two exterior doors for a maximum of 36 people in each car, while an Amtrak Horizon coach has four exterior doors and seats 72 passengers. WDOT maintained that the rule should reflect these differences or provide clear, concise performance-based standards in the alternative. In this regard, WDOT found the term ''functional equivalent'' as used in the rule to be vague and in need of better definition. Further, WDOT commented that, traditionally, dining and bistro cars have not had exterior side doors; and requiring such doors in these cars would significantly decrease the amount of available dining space, decrease revenue-generating space, and add substantial costs. WDOT recommended FRA remove dining and bistro cars from any exterior side door requirement as it would decrease the amount of available dining space and thereby reduce passenger convenience, comfort and satisfaction. Talgo similarly commented that the proposed requirement should be modified to state that the functional equivalent of four side doors in a car of conventional length is two side doors in a car of half the length, and that dining and bistro cars be exempted from any requirement.

In response to the proposal in the NPRM, Bombardier recommended that the wording of the rule be changed to require that each passenger car have a minimum of two side doors. Bombardier noted that on Amtrak's high-speed trainsets (HST), the passenger cars that will be positioned next to the power cars are equipped with only two exterior side doors, both of which are located on the end nearest to the power car. In the event of an evacuation, Bombardier explained that passengers could exit through those side doors as well as through the door at the opposite end of the car. Bombardier believed the use of such end doors should be considered in determining the time needed to evacuate a passenger car, and it noted in this regard that intercity passenger cars generally carry fewer passengers than commuter cars.

Based on the comments received, FRA has decided to modify the requirement for exterior side doors on Tier I passenger cars ordered on or after September 8, 2000 or placed in service for the first time on or after September 9, 2002, and for any Tier II passenger car placed in service. The final rule requires that each such passenger car have a minimum of two exterior side doors, and each door must have a minimum clear opening of 30 inches horizontally by 74 inches vertically. Since the minimum number of required side doors has been reduced from that proposed in the NPRM, this provision should not hinder railroads from removing the locomotive engineer's exterior side door in cab car and MU locomotive control compartments for purposes of adding to the structural integrity of the equipment. As the BLE raised in its comments on the rule, removing this side door allows for a continuous side sill structure along the control compartment, thereby enhancing the compartment's structural integrity and reducing the risk the compartment will be crushed in a corner or side impact. A dining car or other food service car is subject to the side door requirement as a passenger car under this rule, since FRA believes that all passenger cars must have exterior side doorway openings to allow for passenger and crew escape in a life-threatening situation, and also permit emergency rescue access.

Unlike the proposed rule, FRA has specified the dimensions of the doorway opening in inches rather than retain the language referencing a 95th-percentile adult male. This modification clarifies the rule for the regulated community in that what constituted a 95th-percentile adult male was originally not defined. FRA believes that a doorway with a minimum clear opening of 30 inches horizontally by 74 inches vertically will provide passage for a large, fully-clothed person and accommodate emergency response personnel equipped with fire and rescue gear. For instance, see the discussion below of § 238.113 (Emergency window exits) for detail on the sizes of adult backboards used by emergency responders to evacuate injured persons. FRA has specified the vertical dimension of 74 inches based on the height of the 95th-percentile adult male (72.8 inches) stated in Table 2 of Public Health Service Publication No. 1000, Series 11, No. 8, ''Weight, Height, and Selected Body Dimensions of Adults,'' June 1965. (A copy of this document has been placed in the public docket for this rulemaking.) The stated height of 72.8 inches was recorded for adult males not wearing shoes, and FRA has adjusted for this. FRA did not find this Public Health Service Publication that useful for purposes of specifying a horizontal dimension of the doorway as the stated body dimensions were, in effect, recorded without clothing (see page 5)—and of course did not address the size of equipment carried by emergency response personnel. FRA notes that the Americans with Disabilities Act (ADA) Accessibility Specifications for Transportation Vehicles also contain requirements for doorway width clearance (See 49 CFR part 38). These ADA requirements apply by their own force independent of the requirements of this rule.

Further, unlike the proposed rule, the final rule no longer provides that a passenger car may have the functional equivalent of the specified number of side doors. Each passenger car must have at least two separate, exterior side doorway openings. This will increase the likelihood that at least one of a passenger car's side doorway openings will allow passage in the event a train collision or derailment results in either, or both, structural damage to—or blockage of—the door. In this regard, railroads should consider where the passenger car side doors are located so as to facilitate passenger and crew escape in a life-threatening situation.

FRA reemphasizes that this requirement is only an interim measure that will prevent passenger cars from being introduced into service without side exterior doors. In Phase II of the rulemaking, FRA will focus on formulating a systems approach to emergency egress that provides for a sufficient number of emergency exits to evacuate the maximum passenger car load in a specified time for various types of emergency situations. FRA will evaluate with the Working Group whether APTA's recommended approach to emergency egress under development in APTA's PRESS Task Force should be incorporated into the Phase II rulemaking.

G. Fuel Tank Standards

Locomotive diesel fuel tanks are vulnerable to damage from collisions, derailments, and debris on the roadbed due to their location on the underframe and between the trucks of locomotives. Damage to the tank frequently results in spilled fuel, creating the safety problem

of an increased risk of fire and the environmental problem of cleanup and restoration of the spill site. Although 49 CFR 229.71 does require a minimum clearance of 2.5 inches between the top of the rail and the lowest point on a part or appliance of a locomotive, such as a fuel tank, FRA regulations do not address the safety of fuel tanks in particular.

In 1992, the NTSB issued a report identifying concerns regarding safety problems caused by diesel fuel spills from ruptured or punctured locomotive fuel tanks. Entitled ''Locomotive Fuel Tank Integrity Safety Study,'' the NTSB report cited in particular a collision involving an Amtrak train and an MBTA commuter train on December 12, 1990, as both trains were entering a station in Boston, Massachusetts. (NTSB Safety Study-92/04.) Fuel spilled from a tank which had separated from an Amtrak locomotive during the collision. The fuel ignited. Smoke and fumes from the burning diesel fuel filled the tunnel, increasing the hazard level in the post-crash phase of the accident, and hindering emergency response activity. As a result of the safety study, the NTSB made several safety recommendations to FRA, including in particular that FRA:

> Conduct, in conjunction with the Association of American Railroads, General Electric, and the Electro-Motive Division of General Motors, research to determine if the locomotive fuel tank can be improved to withstand forces encountered in the more severe locomotive derailment accidents or if fuel containment can be improved to reduce the rate of fuel leakage and fuel ignition. Consideration should be given to crash or simulated testing and evaluation of recent and proposed design modifications to the locomotive fuel tank, including increasing the structural strength of end and side wall plates, raising the tank higher above the rail, and using internal tank bladders and foam inserts. (Class II, Priority Action) (R–92–10)
>
> Establish, if warranted, minimum performance standards for locomotive fuel tanks based on the research called for in recommendation R–92–10. (Class III, Longer Term Action) (R–92–11)

The NTSB reiterated Safety Recommendation R–92–10 in a letter to FRA dated August 28, 1997, conveying the NTSB's final safety recommendations arising from the February 16, 1996, collision between a MARC commuter train and an Amtrak passenger train. During the collision, the fuel tank on the lead Amtrak locomotive ruptured catastrophically. The fuel sprayed into the exposed interior of the MARC cab control car and ignited, engulfing the car. (Letter at 12.)

As explained in FRA's report to Congress on locomotive crashworthiness and working conditions, FRA believes that fuel tank design has a direct impact on safety. Minimum performance standards for locomotive fuel tanks should be included in Federal safety regulations. Accordingly, FRA proposed in the 1997 NPRM that AAR Recommended Practice No. 506 (RP–506), *Performance Requirements for Diesel-Electric Locomotive Fuel Tanks,* be incorporated into the rule as the external fuel tank requirements for Tier I passenger locomotives. FRA believes that RP–506 represents a good, interim safety standard for Tier I passenger locomotives. In the final rule, FRA has restated the requirements of RP–506 as Appendix D to part 238, as explained below, and has thereby incorporated it into the final rule.

FRA does note that further study may yield additional safety improvements for locomotive fuel tank design, and in September of 1997 FRA convened a Locomotive Crashworthiness Working Group of the Railroad Safety Advisory Committee (RSAC) to develop standards regarding a broad range of crashworthiness issues for both passenger and freight locomotives, including fuel tanks. Freight locomotive fuel tanks can cause a risk to passengers in the event of a train-to-train collision involving a passenger and a freight train. Therefore, in addition to the economy that can be achieved from standard fuel tank design requirements for the entire industry, industry-wide design requirements benefit both public and employee safety. Based on currently available information through the Locomotive Crashworthiness Working Group, it appears that locomotives built with AAR RP–506-compliant fuel tanks are performing well in derailments and highway-rail crossing collisions.

In its comments on the proposed rule, the NTSB agreed that external fuel tanks on Tier I locomotives should incorporate at a minimum, and on an interim basis, RP–506. Yet, the NTSB believed that more demanding safety standards for passenger locomotives be included in the permanent Tier I fuel tank regulations, specifically: higher ground clearance, compartmentalization, and a bottom skid plate. The NTSB noted that the advantages of higher fuel tank ground clearance were shown in Amtrak derailments in Kingman, Arizona, and Garden City, Georgia. According to the NTSB, investigation of both accidents revealed that essentially no fuel loss occurred in the involved locomotive units (GE Models P40 and P42), despite a substantial accumulation of debris beneath the fuel tanks that may have otherwise damaged current, conventional frame-suspended fuel tanks. The NTSB attributed the maintenance of fuel tank integrity to higher than typical fuel tank ground clearance, not found in conventionally designed, frame-suspended fuel tanks. Accordingly, the NTSB specifically recommended that fuel tank regulations should require higher ground clearance for both Tier I and Tier II operations. In light of the strong potential safety benefits associated with higher locomotive fuel tank ground clearance, FRA will carefully consider with the Working Group how best to implement the NTSB's recommendation in Phase II of this rulemaking.

In addition, FRA invited comments whether the proposed rule should require that locomotive fuel tanks be compartmentalized. The Working Group specifically discussed requiring whether the interior of fuel tanks be divided into a minimum of four separate compartments so that a penetration in the exterior skin of any one compartment results in loss of fuel only from that compartment. The Working Group recommended that such a requirement be addressed in the second phase of the rulemaking, to allow for additional research to remedy fuel feeding disruptions that may result from the compartmentalization of fuel tanks. Commenters were therefore requested to provide the results of specific research and operating experience showing how compartmentalization can be practically accomplished. Commenters were also asked to explain why the issue of compartmentalization should or should not be addressed in the final rule of this first phase of the rulemaking.

The NTSB commented that it supported continued research for fuel tank compartmentalization to remedy fuel loss during derailments. It stated that compartmentalization is required in aviation applications, where fuel tanks within the airframe contour must be able to resist rupture and retain fuel under inertial forces prescribed for emergency landing conditions (citing 14 CFR 25.963). Therefore, research should be conducted to determine if similar successes can be attained in railroad application, according to the NTSB. The BLE also commented that it supports requirements for compartmentalized fuel tanks on all passenger locomotives. Noting that diesel fires create devastating results in passenger train accidents, the BLE believed every effort should be made to avoid them, including using the most advanced technology possible. Further, APTA commented that it believes fuel tank compartmentalization has the potential to reduce the amount of fuel

spilled in a railroad accident; recommended that FRA consider requiring compartmentalized fuel tanks on new locomotives if the technical difficulties resulting in interruptions in fuel flow are resolved; and suggested that FRA make a priority to resolve these technical difficulties. In accordance with these comments, FRA will carefully consider with the Working Group in Phase II of the rulemaking a requirement to compartmentalize fuel tanks on new locomotives, drawing upon research conducted and experience gained in the interim through the Locomotive Crashworthiness Working Group and the APTA PRESS Task Force.

H. Train Interior Safety

Based on previous research results, the interior passenger protection requirements for Tier I and II passenger equipment rely on ''compartmentalization'' as a passenger protection strategy. Such a strategy has the advantages of being passive, *i.e.*, requiring no action to be taken on the part of the occupants, of being effective for a range of occupant sizes, and potentially being effective in a wide range of interior configurations. Research results indicate that during a collision the interior environment of a passenger coach car is substantially less hostile than the interiors of automobiles and aircraft. Owing to this lower hostility in a collision environment, the interior of a typical passenger coach car can provide a level of protection to passengers without active restraints at least as effective in preventing fatality as that protection afforded to automobile and transport aircraft passengers with active restraints. See the discussion on train interior safety in the NPRM for more detail. 62 FR 49745–49749.

Conclusions from the research previously conducted on passenger protection in train collisions show that lap belts and shoulder restraints, if used, provide the highest level of occupant protection of those protection strategies studied—greater than the level of protection afforded by compartmentalization. However, as noted in the NPRM, FRA believes that more research is necessary to determine the feasibility and effectiveness of these active restraints, as well as the impact on seat design and strength necessary to support the loads associated with use of the restraints. In this regard, FRA requested information and comment from interested parties whether there is any existing research or experience which would justify active seat restraints in this phase of the rulemaking. See 62 FR 49745.

In comments on the NPRM, Simula Technologies, Inc., (Simula) stated that there may be a potential for a higher level of occupant protection offered by passive or active restraints than by compartmentalization. Simula noted that cost effectiveness considerations differ when considering the application of occupant protection strategies to a train crew as compared to passengers. For instance, it believed that the relatively high expense of passive restraints may be justified for one or two crewmembers in a particularly severe environment—for instance, a locomotive cab. Simula agreed with FRA that more research is needed to determine the most cost effective means of providing occupant safety improvements.

APTA, in its comments on the NPRM, believed that FRA has taken the correct approach in not mandating active seat restraints in this stage of the rulemaking. APTA found accurate the description of the physics of passenger motion during a collision which was contained in the preamble of the NPRM. APTA noted that active seat restraints provide the most benefit in high passenger deceleration situations, such as in automobile collisions; whereas, in the case of the low decelerations of passenger train collisions, other types of protection measures such as compartmentalization to minimize the distance a passenger travels before striking an interior surface and padding of interior surfaces can be as effective as active seat restraints in protecting passengers from secondary collisions.

In its comments on the NPRM, the BRC stated that, ideally, passenger equipment should have seat belts or other restraints to keep occupants from striking seats from behind or striking other interior surfaces and occupants. The BRC believed this to be a true cause of serious injury and death during rapid decelerations in collisions and derailments. The BRC further commented that a seat must be strong enough to hold an occupant utilizing such restraints and yet resist the force(s) of other unrestrained occupants striking the seat. In addition, a member of the public commented that Amtrak should provide its passengers with lap belts and shoulder harnesses, noting that they can reduce injuries to all occupants when used.

FRA has continued to pursue research into implementing seat belts and shoulder restraints in intercity and commuter passenger equipment. The purpose of this research is to develop the information required by FRA to determine if occupant restraints should be required in future regulations. This research is being conducted in three steps: preliminary design studies; design development; and engineering modeling, construction, and testing. The first step of the research has been completed. Principal conclusions from the research to date are that an existing inter-city passenger coach seat can be modified to accept lap and shoulder belts. In particular, for Amtrak's traditional seat design, appropriate modification of the connections between the seat and floor, and between the seat pan and seat back, allow it to support the loads associated with two restrained 95th-percentile adult males occupying the seats as well as the loads associated with being struck from behind by two 95th-percentile adult males. Such seats can be designed to compartmentalize safely an unrestrained single 5th-percentile adult female striking the seat from behind.

Existing three-position commuter seat designs cannot be modified to accept lap and shoulder belts. The additional loads associated with the third restrained and the third unrestrained occupant cause multiple structural failures for existing three-position commuter seat designs—these designs simply fold up under the load. In order to meet weight requirements, advanced structural materials and fabrication techniques are likely to be required to develop a three-position commuter seat design which can support the loads associated with three restrained 95th-percentile adult males in the seats and the loads associated with being struck from behind the seats by three 95th-percentile adult males.

For the intercity passenger coach seat, FRA currently plans to complete work on the details of the necessary modifications to Amtrak's traditional seat design, modify accordingly four to six pairs of seats for testing, and then dynamically sled test these seats. For the commuter seat, a study is planned to develop an engineering model design of a three-position commuter car passenger seat which incorporates lap and shoulder belts. Composite structures and advanced manufacturing techniques will be considered in this study. Principal design considerations include the need to address secondary collision loads, as well as manufacturing and maintenance costs, weight, and durability.

In the second phase of the rulemaking, FRA and the Working Group will reevaluate the feasibility and effectiveness of requiring active restraints such as lap belts and shoulder harnesses in passenger equipment, based on the results of the ongoing research.

I. Fire Safety

In 1984, FRA published guidelines recommending test methods and performance criteria for the flammability, smoke emission, and fire endurance characteristics for categories and functions of materials to be used in the construction of new or rebuilt rail passenger equipment. *See* 49 FR 33076, Aug. 20, 1984; 49 FR 44582, Nov. 7, 1984. The guidelines were originally developed by the Volpe Center for the Urban Mass Transit Administration (UMTA now FTA) of DOT in the late 1970s, and were intended for application to rail transit vehicles. *See* 47 FR 53559, Nov. 26, 1982; 49 FR 32482, Aug. 14, 1984. FRA recommended applying the guidelines to intercity and commuter rail cars, due to the similarity of use for many of the materials in these cars.

The intent of the guidelines is to prevent fire ignition and to maximize the time available for passenger evacuation if fire does occur. FRA later reissued the guidelines in 1989 to update the recommended test methods. *See* 54 FR 1837, Jan. 17, 1989. Test methods cited in the FRA guidelines include those of the American Society for Testing and Materials (ASTM) and the Federal Aviation Administration (FAA). In particular, the ASTM and FAA testing methods provide a useful screening device to identify materials that are especially hazardous.

FRA sought comments in the ANPRM on the need for more thorough guidelines or Federal regulations concerning fire safety. *See* 61 FR 30696. FRA noted that fire resistance, detection, and suppression technologies have all advanced since the guidelines were first published. In addition, FRA explained that a trend toward a systems approach to fire safety is evident in most countries with modern rail systems. In response, the National Fire Protection Association (NFPA) commented that perhaps more thorough guidelines are needed, or at least should be evaluated. Fire Cause Analysis also responded that, at a minimum, more in depth guidelines based on current system safety procedures and available fire safety engineering techniques are needed. The commenter noted in particular that Federal maintenance standards related to fire safety are necessary to ensure that materials carefully qualified for use in rail passenger vehicles because of their fire safety characteristics are not replaced with either substandard materials or materials whose origin and fire performance cannot be determined.

The 1997 NPRM addressed fire safety by proposing to make FRA's fire safety guidelines mandatory for the construction of new passenger equipment as well as the refurbishing of existing equipment. *See* 62 FR 49803. As explained below in the discussion of this final rule, FRA has simplified and revised the table of tests and performance criteria for the flammability and smoke emission characteristics of materials used in passenger cars and locomotive cabs. In addition, FRA has clarified in the final rule the application of the required tests and performance criteria. As proposed in the NPRM, the final rule also furthers fire safety through a fire protection plan and program to be carried out by each operating railroad, which will include conducting a fire safety analysis of existing passenger equipment and taking appropriate action to reduce the risk of personal injuries.

As noted in the NPRM, the National Institute of Standards and Technology (NIST) of the United States Department of Commerce is conducting research under the direction of FRA and the Volpe Center involving the fire safety of rail passenger vehicles. The NIST project is investigating the use of alternative fire testing methods and computer hazard analysis models to identify and evaluate approaches to passenger train fire safety. The evaluation is examining the effects and tradeoffs of passenger car and system design (including materials), fire detection and suppression systems, and passenger egress time. A peer review committee has been established to provide project guidance and review interim results and reports. The committee includes representatives from FRA, the Volpe Center, the NFPA, builders of rail passenger vehicles, producers of materials, Amtrak and commuter railroads, and testing laboratories.

In the first phase of the NIST project, selected materials which satisfy the testing methods referenced in FRA's fire safety guidelines were evaluated using the ASTM E1354 Cone Calorimeter.[1] The Cone Calorimeter provides a measurement of heat release rate (the amount of energy that a material produces while burning), specimen mass loss, smoke production, and combustion gases. For a given confined space such as a rail car interior, the air temperature and risk of harm to passengers are increased as the heat release rate increases. As a result, even if passengers do not come in direct contact with a fire, they may likely be injured from the high temperatures, high heat fluxes, and large amounts of toxic gases emitted by materials involved in the fire. The results of the Phase I tests showed a strong correlation between the FRA-cited test data and the Cone Calorimeter test data.

Phase I test data were used in the second phase of the NIST project to perform a fire hazard analysis of selected passenger train fire scenarios. Also included in this analysis were data obtained from tests of larger interior components, including seat assemblies, using the ASTM E 1537 Furniture Calorimeter. The analysis employed computer modeling to assess the impact on passenger train fire safety for a range of construction materials and system design. The interim report documenting Phase II is in final preparation by NIST. In the final phase of the project, selected real-scale proof tests using an Amfleet coach rail car and interior assemblies will be performed to verify the small-scale (bench-scale) criteria and hazard analysis studies in actual end use configurations.

Overall, the NIST research effort follows upon FRA-sponsored studies by the National Bureau of Standards in 1984 and NIST in 1993 which noted, among their findings, that the performance of individual components of a rail passenger car in a real-world fire environment may be different from that experienced in bench-scale tests due to vehicle geometry and materials interaction.[2] The results of the NIST research project will help in developing a broad set of performance criteria for materials using the Cone Calorimeter and the Furniture Calorimeter in a context similar to that provided generally in the table of FRA fire safety requirements contained in Appendix B to part 238. In addition, unlike data derived from most test methods referenced in Appendix B, heat release rate and other measurements obtained from the Cone Calorimeter and the Furniture Calorimeter can be used in a fire modeling methodology to evaluate the contribution of materials to the overall fire safety of a passenger train. Although FRA has targeted for consideration in the second phase of the

[1] ''Fire Safety of Passenger Trains: Phase I Material Evaluation (Cone Calorimeter).'' (DOT/FRA/ORD/–98/01–DOT–VNTSC–FRA–98–2, January, 1999). A copy of the report has also been placed in the public docket of this rulemaking.

[2] ''Fire Tests of Amtrak Passenger Rail Vehicle Interiors.'' (NBS Technical Note 1193, May 1984); ''Fire Safety of Passenger Trains: A Review of U.S. and Foreign Approaches.'' (DOT/FRA/ORD–93/23—DOT–VNTSC–FRA–93–26, December, 1993). The 1993 report is available to the public through the National Technical Information Service, Springfield, VA 22161. A copy of both reports have been placed in the public docket for this rulemaking.

rulemaking a broad set of performance criteria employing the Cone Calorimeter and Furniture Calorimeter for materials used in passenger cars and locomotive cabs, FRA has introduced use of the Cone Calorimeter and Furniture Calorimeter in a limited manner in this final rule as explained below in the discussion of Appendix B to part 238.

FRA notes that the ASTM has developed a standard which describes how to evaluate fire hazard assessment techniques (ASTM E 1546, Guide for the Development of Fire Hazard Assessment Standards). An ASTM group, the E–5.17 Subcommittee on Transportation, is currently completing a document entitled ''Standard Guide for Fire Hazard Assessment of Rail Passenger Vehicles.'' The proposed guide is intended to provide an alternative approach to ensuring an equivalent level of fire safety using a performance-based approach which examines fire scenarios, as well as design considerations, to evaluate the potential fire hazard of a rail transportation vehicle. One of the principal issues related to the proposed guide is that calculation methods are suggested which use models that have not been validated for application to rail cars. In this regard, the results of the NIST fire safety research will be helpful for the ASTM subcommittee, as NIST is using the Hazard I computer model to develop correlations between small-scale tests of materials and full-scale tests of rail cars.

In the NPRM, FRA explained that the NFPA publishes a standard (NFPA 130) covering fire protection requirements for fixed guideway transit systems and for life safety from fire in transit stations, trainways, vehicles, and outdoor maintenance and storage areas. *See* 62 FR 49744–5. (A copy of the 1997 edition of this standard has been placed in the public docket for this rulemaking.) However, this standard has not historically been applied to passenger railroad systems, including those that provide commuter service (NFPA 130 1–1.2). FRA noted that an APTA representative on the Working Group who is a member of the NFPA initiated an NFPA-sponsored task force to revise the scope of NFPA 130 to cover all rail passenger transportation systems, including intercity and commuter rail, and revise other provisions as necessary. The NFPA task force met several times in 1997 and 1998, and submitted recommended revisions to the NFPA 130 Committee in August, 1998. Although the NFPA 130 Committee accepted the task force recommendations in principle, the standard revision approval process will not be complete until late 1999.

In its comments on the NPRM, the NFPA urged FRA to adopt NFPA 130 upon completion of its revision. The NFPA cited the National Technology Transfer and Advancement Act of 1995, Pub. L. 104–113, and one of its provisions which requires, in general, that Federal agencies ''use technical standards that are developed or adopted by voluntary consensus standards bodies'' (Section 12, paragraph (d)(1)). In the second phase of this rulemaking, FRA will consider with the Working Group the incorporation of NFPA 130, as revised, into this rule.

In response to the NPRM, FRA received a number of other comments on the provisions of the rule related to fire safety. Those comments on the proposed fire protection plan and program are noted in particular, below, in the discussion of 49 C.F.R. § 238.103 in the final rule. In regard to the proposed table of tests and performance criteria for the flammability and smoke emission characteristics of materials used in passenger cars and locomotive cabs contained in Appendix B to part 238, Fire Cause Analysis commented on the advisability of making such tests and performance criteria mandatory without considerable and detailed enabling language. Fire Cause Analysis noted in particular that the table of tests and performance criteria in Appendix B contained confusing and overlapping component and function categories for materials; that application of the tests and performance criteria to ''small parts'' requires special consideration to provide flexibility for car builders; and that the fire performance of electrical wiring and cable was not expressly addressed in the NPRM, although addressed by NFPA 130.

A member of the public commented that he considered FRA's fire safety guidelines good in some but not all respects. The commenter stated in particular that the current acceptance levels of smoke emission are inadequate to protect passengers from toxic levels of smoke; and that permitting glazing and lighting lenses to have a flame spread index of 100 with flaming running and flaming dripping is not justified based on the location of these objects, ease of ignition, and Btu content of polycarbonate. Nonetheless, the commenter recommended adoption of the guidelines into law, noting that some vendors, car builders, and agencies operating rail equipment have not taken the guidelines seriously. Otherwise, the commenter believed that the fire safety guidelines will be discounted.

APTA, in its comments on the NPRM, supported the proposed materials selection criteria for new equipment (as well as the proposed fire safety program for new equipment discussed below). APTA also recommended that FRA consider updating the fire safety standards based on the work of the NFPA 130 task force and the research being conducted by the NIST. The BRC, in its comments on the NPRM, stated that interior materials in passenger equipment must be required to meet strict standards for flammability and smoke emission. The BRC believed that compliance with the current guidelines alone is insufficient for safety, and that additional technology, preventative measures, and fire safety standards must be considered.

In the final rule, FRA has not significantly changed the table of test methods and performance criteria for the flammability and smoke emission characteristics of materials used in passenger cars and locomotive cabs, as contained in Appendix B to part 238. FRA has sought to maintain the current high levels of safety provided by the fire safety guidelines, while developing a more workable framework for their use as a regulation. In fact, as part of the NIST fire safety research, specific input on the 1989 FRA fire safety guidelines was solicited from rail system operators, car builders, and consultants at a workshop held at the NIST Building and Fire Research Lab (BFRL) in July, 1997. (The minutes of that workshop are contained in Follow-Up Workshop Notes.[3]) This input was used to help simplify and revise the table of tests and performance criteria contained in Appendix B. In summary, the specific changes FRA has made to the table in the final rule include:

- Reorganizing table component and function categories;
- Adding a dynamic testing requirement for cushions;
- Adding a new test method for evaluating seat assemblies;
- Providing a test exception and test alternative for small component parts;
- Adding express requirements for wire and cable testing;
- Updating test methods for elastomers;
- Providing an alternative test method for smoke generation;
- Adding express requirements for structural assemblies other than floors; and
- Renumbering and adding notes to the table to reflect the changes.

[3] ''Follow-Up Notes: NIST/CFR FRA Project, Meeting/Workshop of 7/23/97.'' September 15, 1997. Prepared by J. Zicherman. A copy of this document has been placed in the public docket for this rulemaking.

The discussion of Appendix B to part 238, below, provides a detailed explanation of the changes made to the table of test methods and performance criteria for the flammability and smoke emission characteristics of materials used in passenger cars and locomotive cabs.

VI. Inspection and Testing of Brake Systems and Mechanical Components

A. Background Prior to 1997 NPRM

In 1992, Congress amended the Federal rail safety laws by adding certain statutory mandates related to power brake safety. These amendments specifically address the revision of the power brake regulations and state in pertinent part:

(r) POWER BRAKE SAFETY.—(1) The Secretary shall conduct a review of the Department of Transportation's rules with respect to railroad power brakes, and not later than December 31, 1993, shall revise such rules based on such safety data as may be presented during that review.

* * * * *

Pub. L. No. 102–365, § 7; codified at 49 U.S.C. 20141, superseding 45 U.S.C. 431(r).

In response to the statutory mandate, various recommendations to improve power brake safety, and due to its own determination that the power brake regulations were in need of revision, FRA published an ANPRM on December 31, 1992, concerning railroad power brake safety. *See* 57 FR 62546. The ANPRM provided background information and presented questions on various subjects related to intercity passenger and commuter train operations, including: training of testing and inspection personnel; electronic braking systems; cleaning, oiling, testing, and stenciling (COT&S) requirements; performance of brake inspections; and high speed passenger train brakes. Following publication of the ANPRM, FRA conducted a series of public workshops. The ANPRM and the public workshops were intended as fact-finding tools to elicit views of those persons outside FRA charged with ensuring compliance with the power brake regulations on a day-to-day basis.

Furthermore, on July 26, 1993, the NTSB made the following recommendation to FRA: ''Amend the power brake regulations, 49 Code of Federal Regulations 232.12, to provide appropriate guidelines for inspecting brake equipment on modern passenger cars.'' (R–93–16). The recommendation arose out of the NTSB's investigation of the December 17, 1991, derailment of an Amtrak passenger train in Palatka, Florida. The derailed equipment struck two homes and blocked a street north of the Palatka station. The derailment resulted in eleven passengers sustaining serious injuries and 41 others receiving minor injuries. In addition, five members of the operating crew and four onboard service personnel received minor injuries. By letter dated September 16, 1993, FRA told the NTSB that it was in the process of reviewing and rewriting the power brake regulations and would consider the NTSB's recommendation during the process.

Based on comments and information received, FRA published a Notice of Proposed Rulemaking in 1994 (1994 NPRM) regarding revision of the power brake regulations. The 1994 NPRM contained specific requirements related to intercity passenger and commuter train operations, including: general design requirements; movement of defective equipment; employee qualifications; inspection and testing of brake systems and mechanical components; single car testing requirements and periodic maintenance; operating requirements; and requirements for the introduction of new train brake system technology. *See* 59 FR 47676, 47722–53, September, 16, 1994. Following publication of the 1994 NPRM, FRA held a series of public hearings in 1994 to allow interested parties the opportunity to comment on specific issues addressed in the 1994 NPRM. Due to the strong objections raised by a large number of commenters, FRA announced by notice published on January 17, 1995, that it would defer action on the 1994 NPRM and permit the submission of additional comments prior to making a determination as to how it would proceed in this matter. *See* 60 FR 3375.

After review of all the comments submitted, FRA determined that in order to limit the number of issues to be examined and developed in any one proceeding it would proceed with the revision of the power brake regulations via three separate processes. In light of the testimony and comments received on the 1994 NPRM, emphasizing the differences between passenger and freight operations and the brake and mechanical equipment utilized by the two, FRA decided to separate passenger equipment power brake and mechanical standards from freight equipment power brake standards.

As passenger equipment power brake and mechanical standards are a logical subset of passenger equipment safety standards (*see* 49 U.S.C. 20133(c)), FRA requested the Passenger Equipment Safety Standards Working Group to assist FRA in developing appropriate power brake and mechanical standards for passenger equipment. The 1997 NPRM, upon which this final rule is based, was developed by FRA in consultation with this Working Group.

In addition, FRA determined that a second NPRM covering freight equipment power brake standards would be developed with the assistance of FRA's RSAC. *See* 61 FR 29164, June 7, 1996. Furthermore, in the interest of public safety and due to statutory as well as internal commitments, FRA determined that it would separate the issues related to two-way end-of-train-telemetry devices from both the passenger and freight issues. FRA convened a public regulatory conference and published a final rule on two-way end-of-train devices on January 2, 1997. *See* 62 FR 278.

Beginning in December of 1995, the Passenger Equipment Safety Standards Working Group adopted the additional task of attempting to develop power brake and mechanical inspection and maintenance standards applicable to intercity passenger and commuter train operations and equipment. The Working Group met on four separate occasions, for a total of ten days of meetings, with a good portion of these meetings being devoted to discussion of power brake and mechanical inspection and maintenance issues. From the outset, a majority of the members, as well as FRA, believed that any requirements developed by the group regarding the inspection and testing of the brake and mechanical equipment should not vary significantly from the current requirements and should be consistent with current industry practice.

FRA's accident/incident data related to intercity passenger and commuter train operations support the assumption that the current practices of these operations in the area of power brake inspection, testing, and maintenance are for the most part sufficient to ensure the safety of the public. Between January 1, 1990 and October 31, 1996, there were only five brake related accidents involving commuter and intercity passenger railroad equipment. No casualties resulted from any of these accidents and the total damage to railroad equipment totaled approximately $650,000, or $96,000 annually. In addition, between January 1, 1995 and October 31, 1996, FRA inspected approximately 13,000 commuter and intercity passenger rail units for compliance with 49 CFR part 232. The defect ratio for these units during this period was approximately 0.8 percent. Furthermore, during this same period FRA inspected approximately 6,300 locomotives for

compliance with 49 CFR part 229. The brake defect ratio for these units was approximately 4.65 percent. Consequently, the defect ratio for brake related defects on locomotives and other passenger equipment during this period was approximately 2.08 percent.

The existing regulations covering the inspection and testing of the braking systems on passenger trains are contained in 49 CFR part 232. The current regulations do provide some requirements relevant to passenger train operations, including: initial terminal inspection and testing, intermediate inspections, running tests, and general maintenance requirements. *See* 49 CFR 232.12, 232.13(a), 232.16, and 232.17. However, most of the existing regulations are written to address freight train operations and do not sufficiently address the unique operating environment of commuter and intercity passenger train operations or the equipment currently being used in those operations. Therefore, it has been necessary for FRA to provide interpretations of some of the current regulations in order to address these unique concerns.

Currently, all non-MU (multiple unit) commuter trains that do not remain connected to a source of compressed air overnight and all MU commuter trains equipped with RT–5 or similar brake systems must receive an initial terminal inspection of the brake system pursuant to § 232.12(c)–(j) prior to the train's first departure on any given calendar day. All non-MU commuter trains that remain connected to a source of compressed air over-night are permitted to receive an initial terminal inspection of the brake system sometime during each 24-hour period in which they are used. Furthermore, all intercity passenger trains must receive an initial terminal inspection of the brake system at the point where they are originally made up and must receive an intermediate inspection in accordance with § 232.12(b) every 1,000 miles.

There are currently no regulations which specifically require the inspection of the mechanical components on passenger equipment. Although the current regulations do not contain any mechanical inspection requirement of passenger equipment, virtually every passenger railroad currently performs some type of daily mechanical inspection on its passenger equipment with highly qualified personnel. For several years Amtrak has been conducting voluntary mechanical safety inspections of passenger train components.

As noted previously, most of the members of the Working Group believed that any requirements developed by the group regarding the inspection, testing, and maintenance of the brake and mechanical equipment should not vary significantly from the current requirements and should be consistent with current industry practice. However, the Working Group was unable to reach consensus on any power brake or mechanical equipment standards, despite the positing of multiple alternatives, use of a facilitator, and the foundation provided by the 1994 NPRM. The Working Group identified and discussed options with which the agency and labor can agree, and others with which FRA and the railroads can agree. However, bridging the gap between those various options proved elusive. Consequently, as the Working Group could not reach any type of consensus on the inspection and testing requirements, it was determined that FRA would address these issues unilaterally, based on the information and discussions provided by the Working Group and the information gathered from the 1994 NPRM.

B. 1997 NPRM on Passenger Safety Equipment Standards

During the Working Group discussions, labor representatives, particularly the BRC, insisted that a comprehensive power brake inspection must be performed prior to a train's first run on a given calendar day. The BRC also believed that it is necessary for the first inspection of the day to determine whether the brake shoes and the disc pads actually apply as intended. The BRC further contended that in order to perform a comprehensive inspection equivalent to an initial terminal inspection the train must be walked or otherwise inspected on a car-to-car basis and that these principal inspections should be performed only by carmen or other qualified mechanical personnel as they are the only employees sufficiently trained to perform the inspections. Rail labor representatives also advocated a daily inspection of all safety-related mechanical components with pass/fail criteria or limits written into the Federal safety standards much like the requirements contained in 49 CFR part 215 addressing freight equipment.

Representatives of intercity passenger and commuter railroads expressed the desire to have the flexibility to conduct comprehensive in-depth inspections of the brake and mechanical system sometime during the day in which the equipment is utilized. These parties argued that safety would be better served by allowing the railroads the flexibility to conduct these inspections on a daily basis as it would allow the railroads to conduct the inspections at locations that are more conducive to permitting a full inspection of the equipment than many of the outlying locations where trains are stationed overnight and where the ability to observe all the equipment may be hampered. It was further contended that, if the railroads are allowed some flexibility in conducting these type of inspections, then the equipment can be moved to a location where a fully qualified mechanical inspector can perform detailed inspections under optimum conditions.

Several parties also pointed out that, with proper maintenance, ''tread brake units'' and other friction brake components, commonly used in commuter train operations, are highly reliable and that the non-functioning of any individual unit would in no way compromise the overall safety of the train. Furthermore, permitting the inspection of brake components in the middle of the day, rather than at the beginning of the day, involves no greater safety risk to passengers because friction brake systems and their components degrade in performance based largely on use, and nothing short of a continuous brake inspection can guarantee 100-percent performance at all times. Railroad representatives suggested an inspection scheme that would permit an in-depth, comprehensive brake inspection to be performed sometime during the day in which the equipment is used with a brake inspection being performed prior to the first run of the day verifying the continuity of the trainline by performing a set and release on the rear car of the train.

APTA and other passenger railroad representatives strongly maintained that specific inspection criteria or limits related to the mechanical components of passenger equipment were not necessary. During the ongoing meetings of the Working Group, FRA repeatedly requested that railroad representatives provide a recommended list of mechanical components and criteria for their inspection. These representatives consistently responded with very broad requirements basically limited to inspections for obvious and visible defects. Although passenger railroad representatives did not object to the safety principle of a mechanical inspection, they did not want their operations to be bound by a rigid list of components and criteria for the inspection.

Based on consideration of all of the information outlined above, FRA published an NPRM on Passenger Equipment Safety Standards on September 23, 1997. *See* 62 FR 49728.

This NPRM contained specific proposals related to the inspection, testing, and maintenance of both the brake and mechanical components on passenger equipment. The proposal attempted to balance the concerns of rail labor representatives and representatives of intercity and commuter railroads.

1. Proposed Brake System Inspections

In the 1997 NPRM, FRA proposed to abandon the terminology related to the power brake inspection and testing requirements contained in the current regulations, and proposed to identify various classes of inspections based on the duties and type of inspection required. *See* 62 FR 49737, 49774–77, 49810–11. FRA believed that this type of classification system would avoid confusion with the power brake inspection and testing requirements applicable to freight operations and would avoid the connotations historically attached to the current terminology. FRA also believed that this approach was better suited for providing operational flexibility to commuter operations while maintaining the safety provided by the current inspection and testing requirements. Although FRA proposed a change in the terminology used to describe the various power brake inspections and tests, the requirements of the inspections and tests closely tracked the current requirements with some modifications made to address the unique operating environment of, and equipment operated in, commuter and intercity passenger train service. Members of the Working Group appeared receptive to this kind of classification system and discussed various options using some of this terminology. Consequently, FRA proposed four different types of brake inspections, ''Class I,'' ''Class IA,'' ''Class II,'' and ''running brake test,'' that were to be performed by commuter and intercity passenger railroads some time during the operation of their equipment.

In the proposal, FRA also divided passenger train operations into two distinct types for purposes of brake inspections and testing. FRA recognized that there were major differences in the operations of commuter or short-distance intercity passenger trains, and long-distance intercity passenger trains. Commuter and short-distance intercity passenger trains tend to operate for fairly short distances between passenger stations and generally operate in relatively short turn-around service between two terminals several times in any given day. In contrast, long-distance intercity passenger trains tend to operate for long distances, with trips between the beginning terminal and ending terminal taking a day or more and traversing multiple states with relatively long distances between passenger stations. Consequently, FRA proposed the terms ''commuter train,'' ''short-distance intercity passenger train,'' and ''long-distance intercity passenger train'' in order to identify the inspection and testing requirements associated with each. *See* 62 FR 49737–38, 49774–76, 49810–11. For the most part, commuter and short-distance intercity passenger trains were treated similarly, whereas long-distance intercity passenger trains had slightly different proposed inspection and testing requirements. In addition, FRA proposed slightly different requirements with regard to the movement of defective equipment in long-distance intercity passenger trains (see the discussion below on the ''Movement of Equipment with Defective Brakes'').

The proposed Class I brake test basically required an inspection similar to an initial terminal inspection as currently described at § 232.12(c)-(j), but was somewhat more extensive and specifically aimed at the types of equipment being used in commuter and intercity passenger train service. *See* 62 FR 49738–39, 49774–76, 49810. The proposed Class I brake test would require an inspection of the application and release of the friction brakes on each side of each car as well as an inspection of the brake shoes, pads, discs, rigging, angle cocks, piston travel, and brake indicators if the equipment is so equipped. The Class I brake test would also require testing of the communication signal system and the emergency braking control devices. In recognition of the advanced technology and various designs used in many of these operations, which make observation of the piston travel virtually impossible, FRA proposed to permit the inspection of the piston travel to be conducted either through direct observation of the clearance between the brake shoe and the wheel or by observation of a brake actuator. Furthermore, FRA proposed to require a brake pipe leakage test only when leakage will affect service performance.

As FRA proposed that Class I brake tests be comprehensive inspections of the braking system, FRA believed that commuter and short-distance intercity passenger train operations should be permitted some flexibility in conducting these inspections. Consequently, FRA proposed that commuter and short-distance intercity passenger train operations perform a Class I brake test sometime during the calendar day in which the equipment is used. FRA believed that the flexibility permitted by the proposed requirement would allow railroads to move equipment to locations that are most conducive to the inspection of the brake equipment and would allow railroads to combine the daily mechanical inspections with the brake inspection for added efficiency.

In the NPRM, FRA recognized the differences between commuter or short-distance intercity operations and long-distance intercity passenger train operations. FRA noted that long-distance intercity passenger trains do not operate in shorter turn around service over the same sections of track on a daily basis for the purpose of transporting passengers from major centers of employment. Instead, these trains tend to operate for extended periods of time, over long distances with greater distances between passenger stations and terminals. Further, these trains may operate well over 1,000 miles in any 24 hour period. Thus, FRA believed that the opportunity for conducting inspections on these trains was somewhat diminished. Therefore, FRA determined that a thorough inspection of the braking system on these types of operations must be conducted prior to the train's departure from an initial starting terminal. Consequently, FRA proposed that a Class I brake inspection be performed on long-distance intercity passenger trains prior to departure from an initial terminal. *See* 62 FR 49810. FRA did not believe there would be any significant burden placed on these operations as the current regulations require that an initial terminal inspection be performed at these locations.

FRA also recognized that these long-distance intercity passenger trains could conceivably travel significant distances if Class I inspections were required only once every 24 hours the equipment is in service as proposed for commuter and short-distance intercity passenger trains. Thus, FRA believed that some outside mileage limit had to be placed on these trains between brake inspections. Under the current regulations a passenger train is permitted to travel no farther than 1,000 miles from its initial terminal, at which point it must receive an intermediate inspection of brakes that includes an application of the brakes and the inspection of the brake rigging to ensure it is properly secured. *See* 49 CFR 232.12(b). However, in recognition of the improved technology used in passenger train brake systems combined with the comprehensive nature of the proposed Class I brake tests and mechanical safety inspections being

performed by highly qualified inspectors, FRA proposed to permit long-distance passenger trains to travel up to 1,500 miles between Class I brake tests. Under FRA's proposal a comprehensive Class I brake test would be performed once every calendar day that the equipment is used or every 1,500 miles, which ever occurred first. *See* 62 FR 49739, 49775, 49810.

FRA also proposed that the brake inspection and testing intervals proposed for long-distance passenger trains apply to all Tier II equipment (i.e., equipment operating at speeds greater than 125 mph but not exceeding 150 mph), regardless of whether it is used in short-or long-distance intercity trains. As FRA's proposal permitted operators of Tier II equipment to develop inspection and testing criteria and procedures, these operations would be required to develop a brake test that is equivalent to a Class I brake test for Tier II equipment. Due to the speeds at which this equipment will be allowed to operate, FRA believed it was a necessity that an equivalent Class I brake test be performed on Tier II equipment before it departs from its initial terminal. Similarly, FRA proposed that the equivalent Class I brake test be performed every calendar day in which Tier II equipment is used or every 1,500 miles, whichever comes first. *See* 62 FR 49739, 49784, 49821.

The proposed Class IA brake test was somewhat less comprehensive than the proposed Class I brake test but included a detailed inspection of the brake system to verify the continuity of the brake system and the proper functioning of the brake valves on each car. A Class IA brake test would be similar to the intermediate brake inspection currently required for freight trains prescribed at § 232.13(d)(1). The proposed Class IA brake test would generally require a walking inspection of the set and release of the brakes on each car; however, the proposal allowed brake indicators to be used to verify the set and release if the railroad determined that operating conditions pose a safety hazard to an inspector walking along the train. The Class IA brake test also required a leakage test if leakage affects service performance, as well as an inspection of: angle cocks; piston travel, if determinable; brake indicators; emergency brake control devices; and communication of brake pipe pressure changes at the rear of train to the controlling locomotive. *See* 62 FR 49738–39, 49776–77, 49810.

FRA proposed that a Class IA brake test would be performed prior to a commuter or short-distance intercity passenger train's first departure on any given day. FRA believed that the proposed Class IA brake was sufficiently detailed to ensure the proper functioning of the brake system yet not so intensive that it would require individuals to perform an inspection for which they are not qualified. Although FRA tended to agree with the position advanced by many labor representatives that some sort of car-to-car inspection must be made of the brake equipment prior to the first run of the day, FRA did not agree that it is necessary to perform a full Class I brake test in order to ensure the proper functioning of the brake equipment in all situations. However, contrary to the position espoused by APTA, FRA believed that something more than just a determination that the brakes on the rear car set and release is necessary.

In addition to the proposed Class I and Class IA brake tests, FRA also proposed a Class II brake test. The proposed Class II brake test would be an inspection intended to verify the continuity of the train brake system and would be similar to the intermediate terminal inspection currently prescribed at § 232.13(a). A Class II brake test basically required a set and release of the brakes on the rear car. The proposed Class II test would be required in those circumstances where minor changes to a train consist occur, such as the change of a control stand, the removal of cars from the consist, the addition of previously tested cars, and the situations in which an operator first takes control of the train. *See* 62 FR 49739, 49777, 49811.

FRA also proposed that a running brake test be conducted as soon as conditions safely permit it to be conducted after a train receives a Class I, Class IA, or Class II brake test. FRA believed that this test should be conducted in accordance with each railroad's operating rules. The proposed ''running brake test'' requirement was similar to the ''running test'' requirements currently contained at § 232.16. *See* 62 FR 49740, 49777, 49811.

2. Proposed Mechanical Inspections

In the 1997 NPRM, FRA proposed three types of mechanical inspections, these included: a calendar day exterior and interior inspection, and a periodic inspection. *See* 62 FR 49771–73, 49807–09. The proposed exterior calendar day mechanical inspection for passenger cars and unpowered vehicles used in passenger trains was patterned after a combination of the current calendar day inspection required for locomotives under the Railroad Locomotive Safety Standards and the pre-departure inspection for freight cars under the Railroad Freight Car Safety Standards. *See* 49 CFR 229.21 and 215.13, respectively. FRA proposed that the calendar day mechanical inspection apply to all passenger cars and all unpowered vehicles used in passenger trains (which includes, e.g., not only coaches, MU locomotives, and cab cars but also any other rail rolling equipment used in a passenger train), and that all exterior mechanical inspections be performed by highly qualified personnel. A mechanical safety inspection of freight cars has been a longstanding Federal safety requirement, and FRA believed that the lack of a similar requirement for passenger equipment created a serious void in the current Federal railroad safety standards.

Rail labor representatives advocated a daily inspection of all safety-related mechanical components with pass/fail criteria or limits written into the Federal safety standards much like the requirements contained in 49 CFR part 215, whereas APTA and other passenger railroad representatives on the other hand strongly maintained that specific inspection criteria or limits are not necessary. During the meetings of the Working Group, FRA repeatedly requested that railroad representatives provide a recommended list of mechanical components and criteria for their inspection. These representatives consistently responded with very broad requirements basically limited to inspections for obvious and visible defects. Although passenger railroad representatives did not object to the safety principle of a mechanical inspection, they did not want their operations to be bound by a rigid list of components and criteria for the inspection.

FRA agreed with labor representatives that a specific list of components to be inspected with enforceable inspection or pass/fail criteria needed to be included as part of the proposed Passenger Equipment Safety Standards. In the 1997 NPRM, FRA identified the components that were to be inspected as part of the exterior calendar day mechanical safety inspection and provided measurable inspection criteria for the components. The proposal required the railroad to ascertain that each passenger car, and each unpowered vehicle used in a passenger train conforms with the conditions enumerated in the proposal. The Working Group members generally agreed that the components contained in the proposal represented valid safety-related components that should be frequently inspected by railroads.

However, members of the Working Group had widely different opinions regarding the criteria to be used to inspect the components. Therefore, as FRA was not provided any clear guidance from the Working Group, FRA selected inspection criteria based on the locomotive calendar day inspection and the freight car safety pre-departure inspection required by 49 CFR parts 229 and 215, respectively. FRA believed that passenger equipment should receive an inspection which is at least equivalent to that received by locomotives and freight cars. The components and conditions identified by FRA to be included in the exterior calendar day mechanical inspection included: couplers; suspension system; trucks; side bearings; wheels; jumpers; cable connections; buffer plates; products of combustion; batteries; diaphragms; and secondary brake systems. *See* 62 FR 49807–08.

FRA also proposed that each railroad perform an interior calendar day mechanical inspection by individuals qualified by the railroad to do so. FRA originally contemplated requiring the interior inspections to be performed by highly qualified personnel to track the exterior calendar day mechanical inspection requirements. However, after several discussions with members of the Working Group and several other representatives of passenger railroads, FRA determined that the training and experience typical of a mechanical inspector is not necessary and often does not apply to inspecting interior safety components of passenger equipment. In addition, the most economical way to accomplish the mechanical inspection is to combine the exterior inspection with the Class I brake test and then have a crew member or train coach cleaner combine the interior mechanical inspection with coach cleaning. FRA listed the following components that were to be inspected as part of the interior calendar day mechanical inspection: trap doors; end and side doors; manual door releases; safety covers, doors and plates; vestibule step lighting; and safety-related signs and instructions. *See* 62 FR 49808.

Because FRA intended the daily exterior and interior mechanical inspections to serve as the time when the railroad repairs defects that occurred en route, FRA further proposed that safety components not in compliance with this part would be required to be repaired before the equipment was permitted to remain in or return to passenger service after the performance of the mechanical inspections. In other words, FRA intended for the flexibility to operate defective equipment in passenger service to end at the calendar day mechanical inspection.

Initially, FRA considered requiring a more extensive list of components to be checked at each interior calendar day mechanical inspection. However, based on discussions conducted with the Working Group, FRA determined that the daily inspection and repair of some interior items could be burdensome to the railroads without producing an offsetting safety benefit. As a result, FRA proposed a periodic mechanical inspection for passenger cars in order to reduce the frequency with which certain components require inspection. FRA proposed that the following components be inspected for proper operation and repaired, if necessary, as part of the periodic maintenance of the equipment: emergency lights; emergency exit windows; seats and seat attachments; overhead luggage racks and attachments; floor and stair surfaces; and hand-operated electrical switches. *See* 62 FR 49808–09.

FRA determined that virtually all passenger railroads have defined periodic maintenance intervals for all of the equipment they operate with intervals varying from 60 to 180 days, depending on the type of equipment and the service in which it is used. Although FRA did not intend to limit the railroad's flexibility to set periodic maintenance intervals, FRA believed that an outside limit had to be placed on the performance of the periodic mechanical inspection. Thus, FRA proposed that the periodic mechanical inspection be performed at least every 180 days, as that appeared to be the outside limit of currently established maintenance cycles.

In addition to the daily and periodic mechanical inspections, FRA also proposed extensive requirements regarding the performance of single car tests on passenger equipment. FRA believed that the proposed single car test has proven itself effective in uncovering brake system problems that are the root cause of certain wheel defects or that have been caused by repairs made to the brake system. The current regulations require that a single car test be performed on passenger cars whenever they are on a shop or repair track. As the current requirement carries the potential of permitting a railroad to avoid the performance of the test by calling a repair track something other than a repair track, FRA believed it was prudent to base the requirement to perform a single car test on the type of defect or repair involved rather than the location where the defect is repaired. Therefore, FRA proposed a list of defective conditions and the repair or replacement of certain components which would trigger the requirement to perform a single car test. *See* 62 FR 49774, 49809. In an attempt to promote the prompt repair of defective equipment, FRA proposed some flexibility in the performance of the test by permitting cars to be moved to a location where the test could be performed if repairs were made at a location that could not perform the test.

3. Proposed Qualifications of Inspection and Testing Personnel

In the 1997 NPRM, FRA proposed the terms ''qualified person'' and ''qualified mechanical inspector'' to differentiate between the type of personnel that will be permitted to perform certain brake or mechanical inspections required in the proposal. A ''qualified person'' was defined as a person determined by the railroad to have the knowledge and skills necessary to perform one or more functions required under this part. Whereas, a ''qualified mechanical inspector'' was defined as a ''qualified person'' who as a part of the training, qualification, and designation program required by the proposal had received instruction and training that included ''hands-on'' experience (under appropriate supervision or apprenticeship) in one or more of the following functions: trouble-shooting, inspection, testing, and maintenance or repair of the specific train brake and other components and systems for which the inspector is assigned responsibility. Further, the mechanical inspector was to be a person whose primary responsibility includes work generally consistent with those functions. *See* 62 FR 49754.

As FRA intended for Class I brake inspections and exterior calendar day mechanical inspections to be in-depth inspections of the entire braking system and the safety-critical mechanical components, which most likely will be performed only one time in any given day in which the equipment is used, and because of the flexibility FRA proposed in the performance of such inspections, FRA proposed that these inspections had to be performed by individuals possessing not only the knowledge to identify and detect a defective condition in all of the brake equipment required to be inspected but also the knowledge to recognize the interrelational workings of the equipment and the ability to ''troubleshoot'' and repair the equipment. Consequently, FRA proposed that only qualified mechanical inspectors would be permitted to

perform Class I brake tests and exterior calendar day mechanical inspections.

As the definition of qualified mechanical inspector required the person's primary responsibility to be the inspection, testing, or maintenance of passenger equipment, the definition largely ruled out the possibility of train crew members becoming qualified mechanical inspectors because the primary responsibility of a train crew member is generally the operation of the train. FRA intended the definition to allow the members of the trades associated with the testing and maintenance of equipment such as carmen, machinists, and electricians to become qualified mechanical inspectors. However, FRA made clear that membership in labor organizations or completion of apprenticeship programs associated with these crafts was not required to be designated a qualified mechanical inspector. The two primary qualifications were the possession of the knowledge required to do the job and a primary work assignment inspecting, testing, or maintaining the equipment.

FRA included a clear definition of ''qualified person'' to allow railroads the flexibility of having train crews perform Class IA, Class II, and running brake tests and interior calendar day mechanical inspections. A qualified person had to be trained and designated as able to perform the types of brake and mechanical inspections and tests that the railroad assigned to him or her. However, a qualified person did not need the extensive knowledge of brake systems or mechanical components or be able to trouble-shoot and repair them. The qualified person was considered to be the ''checker.'' He or she was to possess the knowledge and experience necessary to be able to identify brake system problems.

C. Overview of Comments Relating to Proposed Inspection and Testing Requirements

Those parties filing comments, presenting testimony and participating in the Working Group meetings with regard to the proposed inspection and testing requirements have provided the agency with a wealth of facts and informed opinions, and have been extremely helpful to FRA in resolving the issues. Most commenters provided testimony or written comments on more than one issue and generally were supported by the positions of other commenters. Rather than attempt to paraphrase each commenter's response to each of the proposed regulatory sections, FRA believes it would be better, and more understandable, to provide a brief overview of the thrust of the comments received in this portion of the preamble and provide general FRA conclusions while addressing the specific comments of various parties in the section-by-section analysis. For purposes of discussion, the comments are grouped in three categories: (1) railroad management representatives; (2) railroad labor representatives; and (3) other commenters.

Railroad management representatives, APTA and its member railroads and Amtrak, generally agreed with the concept of performing the proposed comprehensive daily brake and mechanical inspections. However, these representatives raised a number of concerns with the proposed inspections. Commenters for APTA believed that the proposed requirement to perform a Class IA brake test prior to the first run of the day for commuter and short-distance intercity trains is unnecessary and adds no value to the proposed inspection scheme. APTA recommends that a Class I brake test remain valid for up to 12 hours after it is performed, if the train remains intact with compressors running, and that the performance of a Class II brake test prior to the first departure would be sufficient to ensure the proper operation of the brake system. APTA contends that the performance of a Class II brake test prior to departure would detect any brake problems caused by vandalism and that commuter railroads have been operated safely in this fashion for years.

Railroad management representatives also raised issues concerning the performance of the proposed exterior calendar day mechanical inspection. The major concern of these commenters was that the proposal was unclear as to whether trainsets had to be uncoupled or placed over a pit to perform the inspections. These commenters recommended that the rule text explicitly state that the inspection is to be performed to the extent possible without uncoupling the cars or placing the cars over an elevated pit. APTA representatives also recommended that some of the items proposed in the exterior calendar day mechanical inspection be moved to the periodic mechanical inspection as they could not reasonably be seen without uncoupling the car or placing it over an elevated pit. These included certain requirements related to the inspection of the couplers, the truck and car body assembly, and the center castings on trucks. Some commenters also recommended elimination of the requirement that all secondary braking systems be working, since that could not be known until the train is in operation and the system is attempted to be used.

APTA representatives also commented on the proposed requirements for performing single car tests. APTA recommended that FRA adopt the new single car test procedures recently developed by the PRESS brake committee rather than the outdated AAR standard. These commenters also recommended that the replacement or repair of certain proposed components not trigger the requirement to perform a single car test since most of the brake system is not disturbed by the repairs and some sort of partial test could sufficiently demonstrate proper operation of the brake system. These commenters also sought the flexibility not to perform the test if a wheel defect is known to be caused by other than a brake-related problem. APTA further recommended that railroads be permitted to perform single car tests from the locomotive control stands.

The major issue raised by railroad management representatives addressed FRA's proposal that all Class I brake tests and all exterior calendar day mechanical inspections be performed by a qualified mechanical inspector (QMI). APTA representatives objected to the use of this designation for several reasons and recommended the alternative term ''qualified maintenance person.'' The main objection of these commenters relates to the requirement that a QMI's primary responsibility must be the inspection, testing, maintenance, troubleshooting, or maintenance of the brake system or mechanical components. These commenters also object to FRA's statement that the definition of QMI largely rules out the possibility of train crew members being designated as QMIs. These commenters contend that any person who is properly trained can perform the inspections proposed by FRA. These commenters also object to the use of the term qualified mechanical inspector based on the concern that such a title might lead employees designated as such to seek premium pay due to the title bestowed.

APTA representatives contend that the proposed definition of QMI violates the Administrative Procedure Act (APA), exceeds FRA's statutory authority, and is counter to the Railway Labor Act. These commenters contend that the Administrative record does not support a finding by FRA that only employees whose ''primary responsibility'' includes work in the area of troubleshooting, testing, inspecting, maintenance, or repair to train brake and other components are capable of performing Class I and

exterior mechanical inspections. These commenters also contend that FRA's proposed definition is counter to FRA's statutory mandate not to prescribe employee qualifications except where clearly necessary for safety reasons. *See* 49 U.S.C. 20110. Furthermore, it is contended that the proposed definition is counter to the Railway Labor Act because it impinges upon the exclusive jurisdiction of the National Mediation Board to make final determinations over employee classes or crafts and to interpret collective bargaining agreements. In essence, this argument contends that by limiting the employees who can perform a Class I brake test or an exterior mechanical inspection, FRA is in effect making an employee class or craft designation.

A concern raised by Metra is interrelated to the proposed QMI requirement, in that Metra seeks flexibility or relief from the QMI requirement on weekends. Metra contends that train crews perform most of the brake tests conducted by the railroad on weekends and have been for several years. Metra claims that there is no data showing a decrease in safety on Metra during weekend operations to support FRA's proposal that these brake inspections must be performed by a QMI rather than a train crew member. Metra seeks relief from the QMI requirement on weekends for railroads which have established a successful operating history of performing the tests with qualified persons rather than QMIs.

Rail labor representatives, while generally supportive of the proposed inspection and testing requirements, also raised a number of concerns related to the proposed requirements. Labor representatives objected to the proposed Class IA brake test and continued to insist that railroads should be required to conduct a full Class I brake test prior to the first run of the day. These commenters also advocated against providing any leeway for weekend operations with regard to the proposed inspections and tests, claiming that in many instances equipment used on weekends is used more rigorously than when used during the week and, therefore, quality inspections are probably more important. Labor representatives also noted that FRA failed to address what tests or inspections are to be performed on equipment added to an en route passenger train. Furthermore, these commenters supported the concept of requiring that QMIs perform all Class I brake tests and exterior mechanical inspections but recommended that FRA develop a clear and unequivocal definition of QMI which specifically excludes train crew members from the definition.

Labor representatives agreed with APTA representatives that FRA should adopt the single car testing procedures developed through the PRESS brake committee. These representatives believed that the newly developed procedures were better than the existing AAR procedures but stressed that the test must be conducted whenever any of the items listed in the NPRM occurred. Labor commenters believed a single car test should be performed prior to permitting a car to be moved and that the test should not be permitted to be performed with a locomotive.

The primary concern raised by labor representatives, particularly the BRC, involves the proposed 1,500-mile inspection interval for performing Class I brake tests on long-distance intercity passenger trains. Although the BRC agrees that the current 1,000-mile inspection should be replaced with the proposed Class I brake test, the BRC objects to extending the distance between brake tests to 1,500 miles. The BRC claims that the proposed increase is not justified by the facts. The BRC contends that an inspection at 1,000 mile intervals is necessary to ensure the safety of passenger train operations due to the numerous defective conditions being found during 1,000 mile inspections. As support for this contention, the BRC submitted information compiled by a carman stationed at Union Station in Washington, D.C. from January 1996 through February of 1997 who allegedly performed 1,000-mile inspections at this location. The BRC also cited other specific examples of defective equipment being moved in passenger trains. Based on this information and extrapolating similar conditions across the country, the BRC contends that numerous defective conditions are uncovered at 1,000 mile brake inspections and that there is no safety justification for extending the distance between brake inspections.

Amtrak responded to the information provided in the BRC's submission regarding defects found during inspections at Washington, D.C. in January 1996 through February 1997. Amtrak contends that Washington, D.C. is not a 1,000-mile inspection point and thus, should not be used to determine the appropriate interval for brake inspections. Amtrak also contends that the data presented was not sufficiently detailed to determine if the listed defects violated the railroad's standards for equipment operating en route. Amtrak contends that based upon their records 66 percent of the 609 cars identified by the BRC were in trains that terminated at Washington, DC and should not be considered in determining brake inspection intervals. Of the 204 cars alleged to be defective and that were part of trains which run through Washington, DC, Amtrak records show that only 7 of the cars were shopped at Washington, DC and that 110 additional cars were shopped within 7 days after the date of the reported defect. In almost all cases the repairs were made at a location other than Washington, DC, which was frequently the end destination for the train. Amtrak concludes that the defects reported by the BRC at Washington, DC constitute items from an in-bound inspection but were not true defects that required shopping a car from an en route train.

Amtrak provided additional information containing a summary of the set-outs which took place on the railroad during the period from March 1997 to February 1998 for safety and non-safety related causes. This information showed that 301 cars were set-out by Amtrak during this period. Of those 301 cars that were set-out, only 29 were set-out at intermediate (1,000 mile) inspection points and only 15 of those 29 were for brake-related defects. Therefore, Amtrak contends that 90 percent of the cars that were set-out were set-out en route and were not found during intermediate inspections. During this same period Amtrak conducted 1,000-mile inspections on approximately 130,000 cars. Consequently, Amtrak contends that the annual defect rate at intermediate inspection points for this period was 0.02 percent and that it was costing Amtrak approximately $175,000 per defect found to conduct 1,000-mile inspections.

The BRC submitted a response to the information provided by Amtrak. In this submission the BRC contends that Amtrak's analysis regarding the reported defects is faulty and self-serving. This commenter contends that all the defects found at Union Station must be considered when evaluating an extension of the 1,000-mile inspection regardless of whether Union Station is a 1,000-mile inspection point and regardless of the distance traveled by the cars involved. The BRC contends that any defective conditions found are indicative of what will be traveling past 1,000-mile inspection locations should the distance between brake inspections be extended to 1,500 miles. The BRC further contends that Amtrak's analysis regarding the number of cars set-out at intermediate inspections is flawed for

several reasons. The BRC claims that intermediate inspection points cited by Amtrak are not 1,000-mile inspection locations and that the same type of inspection is not performed. (FRA's review of Amtrak's submission indicates that when Amtrak referred to intermediate inspection points it was referring to 1,000 mile inspection locations.) Further, it is contended that looking solely at the number of cars set-out at these locations is improper because it does not take into account the defects that are repaired while a car remained entrained. The BRC reasserted its position that the data does not support an extension of the 1,000-mile inspection interval and, if anything, the data supports reducing the inspection requirement to 500 miles.

D. General FRA Conclusions

After consideration of all the comments submitted, both in writing and through oral testimony and discussion within the Working Group, FRA intends for the requirements regarding the inspection and testing of passenger equipment contained in the final rule to closely track the proposed requirements contained in the 1997 NPRM. In this final rule, FRA will make slight modifications to the proposed requirements in an attempt to clarify the requirements, to cover areas that were not adequately addressed, and to address the specific comments submitted. FRA generally believes that the approach taken in the NPRM to the inspection and testing of passenger equipment incorporates the current best practices of the industry, effectively balances the positions of the various parties involved, and increases the overall safety of passenger train operations.

1. Brake and Mechanical Inspections

FRA intends to modify the Class I brake test and the exterior calendar day mechanical inspection requirements to ensure the proper operation of all cars added to a train while en route. FRA is adding certain provisions to require the performance of a Class I brake test and an exterior mechanical inspection on each car added to a passenger train at the time it is added to the train unless documentation is provided to the train crew that a Class I brake test and an exterior mechanical inspection was performed on the car within the previous calendar day and the car has not been disconnected from a source of compressed air for more than four hours. FRA is adding this requirement in order to address the concerns raised by various labor representatives that no provisions were provided in the proposal to address circumstances when cars are added to an en route train. If a car has received such inspection, the railroad will be required to perform a Class II brake test at the time the car is added to the train. FRA believes that these provisions will ensure the integrity of the brakes and mechanical components on every car added to an existing train and should not be a burden for railroads since cars are generally added to passenger trains at major terminals with the facilities and personnel available for conducting such inspections. Furthermore, these inspection requirements are very similar to what is currently required when a freight car is added to a train while en route. *See* 49 CFR §§ 215.13 and 232.13.

FRA is also modifying the requirements for when a Class IA brake test must be performed. FRA continues to believe that some type of car-by-car inspection must be performed prior to a passenger train's first run of the day if the train was used in passenger service the previous day without any brake inspection being performed after it completed service and before it laid-up for the evening. However, FRA agrees with the comments submitted by APTA representatives that the need for such an inspection is minimized if a Class I brake test is performed within a relatively short period of time prior to the first run of the day and the train has not been used in passenger service since the performance of that inspection. From a safety standpoint, it appears to be unnecessary to require the performance of a second comprehensive brake test when the equipment has not been used and has remained on a source of compressed air since the last comprehensive brake test was performed. In such circumstances, FRA believes that the performance of a Class II brake test would be sufficient to determine if there are any problems with the braking system due to vandalism or other causes since the last comprehensive Class I brake test. Furthermore, as APTA's comments point out, commuter railroads have been safely operated in a fashion similar to this for a number of years. Consequently, the final rule will require the performance of a Class II brake test prior to the first run of the day if a Class I brake test was performed within the previous twelve hours and the train has not been used in passenger service and has not been disconnected from a source of compressed air for more than four hours since the performance of the Class I brake test.

FRA will also include certain minimal recordkeeping requirements related to the performance of the interior and exterior calendar day and periodic mechanical inspection provisions. FRA believes that proper and accurate recordkeeping is a cornerstone of any inspection process and is essential to ensuring the performance and quality of the required inspections. Without such records the inspection requirements would be difficult to enforce. Although recordkeeping was discussed in the Working Group and FRA believes them to be an integral part of any inspection requirement, FRA inadvertently omitted any such requirements in the NPRM specifically related to mechanical inspections. This omission was brought to FRA's attention through verbal and written comments provided by various interested parties.

FRA is also making minor changes and clarifications to the proposed exterior calendar day mechanical inspection. In the final rule, FRA is explicitly stating that the exterior mechanical inspection is to be performed to the extent possible without uncoupling the trainset and without placing the equipment over a pit or on an elevated track. This explicit statement is being added in response to APTA's concerns regarding what would constitute proper performance of these inspections. FRA intended the inspection to be very similar to the freight car safety inspection currently required pursuant to Part 215. FRA also recognizes that certain items contained in the proposed exterior mechanical inspection could not have been easily inspected without proper shop facilities. Therefore, FRA is moving some of the exterior mechanical inspection requirements related to couplers and trucks to the periodic mechanical inspection requirements as these periodic inspections will likely be performed at locations with facilities available that are more conducive to inspecting the specific components. The changes made in the final rule were discussed with the Working Group at the December 15–16, 1997 meeting.

FRA is also adding various provisions related to the performance of periodic mechanical inspections. As noted above, FRA is moving certain items from the exterior calendar day mechanical inspection to the periodic mechanical inspections as they cannot be easily inspected without proper shop facilities. In the NPRM, FRA proposed that a periodic mechanical inspection be performed every 180 days. After a review of the industry's practices regarding the performance of periodic mechanical-type inspections, FRA believes that the items removed from the calendar day mechanical inspection as well as some of the items previously

proposed in the 180 day periodic mechanical inspection should be and are currently inspected on a more frequent basis by the railroads. As it is FRA's intent in this proceeding to attempt to codify the current best practices of the industry, FRA believes that the current intervals for inspecting certain components should be maintained. Therefore, FRA will require the periodic inspection of certain mechanical components, floors, passageways, and switches on a 92-day basis. Furthermore, FRA will also require a 92-day inspection of emergency lighting systems as they are critical to the safety of passengers in the event of an accident or derailment. FRA is adding an inspection of the roller bearings to the 92-day inspection. Although this component was inadvertently left out of the 1997 NPRM, they were covered in the 1994 NPRM; and FRA believes that roller bearings are an integral part of the mechanical components and must be part of any mechanical inspection scheme. Furthermore, several labor commenters recommended inspections criteria similar to that contained in 49 CFR part 215, which specifically addresses the condition of roller bearings. *See* 49 CFR § 215.115. As roller bearings are best viewed in a shop facility context, FRA is adding the inspection of this component to the 92-day periodic mechanical inspection, which is consistent with the current practices of the industry.

FRA will also retain a semi-annual periodic inspection for certain components as proposed in the 1997 NPRM. FRA proposed a 180-day periodic inspection, but in order to remain consistent with the 92-day inspection scheme, FRA will require a 184-day periodic inspection of certain components, including: seats; luggage racks; beds; and emergency windows. FRA removed the inspection of the couplers from the calendar day inspection and added them to the 184-day inspection requirement. FRA is placing the coupler inspection at this interval rather than the 92-day interval in order to reduce the amount of coupling and uncoupling that will be required. FRA is also extending the inspection interval related to manual door releases. Due to the general reliability of these devices and because they are partially inspected on a daily basis, FRA believes that an annual inspection of the releases will ensure their proper operation. Thus, FRA will require an inspection of the manual door releases every 368 days.

Although FRA has established certain periodic inspection intervals in order to establish a default interval, FRA intends to make clear that FRA will allow railroads to develop alternative intervals for performing such inspections for specific components or equipment based on a more quantitative reliability assessment completed as part of their system safety programs. FRA expects that railroads will utilize reliability-based maintenance programs as appropriate, given this opportunity to do so. As successful reliability based maintenance programs are dynamic, it is expected that, in the process of defining and documenting the reliable use of equipment or specific components, over time, continued assessments may indicate a need to increase or decrease inspection intervals. FRA will only permit lengthened inspection intervals beyond the default intervals when such changes are justified by a quantitative reliability assessment. The previously described inspection intervals are based on sound but limited information provided to FRA that FRA believes represents a combination of operating experience, analytical analyses, knowledge and intuition. FRA does expect that railroads will collect and respond to additional data throughout the operating life of the equipment. (A detailed discussion of reliability-based maintenance programs is contained in the section-by-section discussion of § 238.307.)

FRA is also modifying the proposed requirements related to the performance of single car tests. Based on the recommendations of representatives from both rail labor and rail management, FRA will reference the single car testing procedures which were developed by APTA PRESS rather than the AAR single car testing procedures referenced in the 1997 NPRM. The single car test procedures were issued by APTA on July 1, 1998 and are contained in APTA Mechanical Safety Standard SS–M–005–98. The single car test procedures issued by APTA are more comprehensive and better address passenger equipment than the older AAR recommended practices. In the 1997 NPRM, FRA proposed to require the performance of single car tests on all passenger cars and other unpowered vehicles used in passenger trains. However, the definition of passenger cars includes self-propelled vehicles such as MU locomotives, to which FRA did not intend to apply the proposed single car test requirements. Thus, FRA is modifying the language of the single car test requirements to clarify that the testing requirements apply to nonself-propelled passenger cars and unpowered vehicles used in passenger trains.

FRA is also modifying some of the circumstances under which a single car test is required to be performed. FRA agrees with several of the commenters that the 1997 NPRM may have been over-inclusive in listing the components whose repair, replacement, or removal would trigger the performance of a single car test. Thus, in accordance with the discussions conducted with the Working Group in mid-December of 1997, FRA is amending the list of brake components to include only those circumstances where a relay valve, service portion, emergency portion, or pipe bracket is removed, repaired, or replaced. Whenever any other component previously contained in the 1997 NPRM is removed, repaired, or replaced FRA will require that only that portion that is renewed or replaced be tested. FRA believes that the items removed from the previously proposed list can generally be removed, replaced, or repaired without affecting other portions of the brake system and, thus, the need to perform a single car test is reduced. FRA also will not mandate the performance of a single car test for wheel defects, other than a built-up tread, if the railroad can establish that the wheel defect is due to a cause other than a defective brake system. Thus, the burden will fall on the railroad to establish and maintain sufficient documentation that a wheel defect is due to something other than a brake-related cause. FRA intends to make it clear that if the railroad cannot establish the specific non-brake related cause for a wheel defect, it is required to perform a single car test.

2. Qualified Maintenance Person

An issue related to the inspection and testing requirements on which FRA has received extensive comment, particularly from APTA representatives, is the proposed definition of ''qualified mechanical inspector (QMI).'' FRA recognizes the concern raised by some commenters that the term QMI might result in employees designated as such to seek some sort of premium pay status. Although FRA is not overly swayed by this concern, FRA is changing the term in the manner suggested by these commenters to ''qualified maintenance person (QMP).'' FRA believes that the term used to describe the individual responsible for conducting certain brake and mechanical inspections has little bearing on the qualifications or knowledge of the individual and, thus, is not adverse to accommodating a change in the term. However, but for clarifying language, FRA is not changing

the underlying definition of what is required to be designated as a QMP.

The major concern raised by APTA representatives centered on the requirement contained in the definition of a QMI that the person's ''primary responsibility'' include work in the area of troubleshooting, testing, inspecting, maintenance, or repair to train brake systems and other components. These commenters believed that anyone who is properly trained can perform the required inspections regardless of the amount of time actually spent engaged in the activity.

The entire concept of QMI (or QMP) is premised on the idea that flexibility in the inspection of passenger equipment, flexibility in the movement of defective equipment and slight reductions in periodic maintenance could be provided if the mechanical components and brake system were inspected on a daily basis by highly qualified individuals. Thus, the requirement that a highly qualified person perform certain brake and mechanical inspections is part of a package which includes flexibility in the performance of brake and mechanical inspections, permits wider latitude in the movement of defective equipment, and provides reductions in the periodic maintenance that is required to be performed on certain equipment. Therefore, FRA expects the highly qualified person to be an individual who can not only identify a particular defective condition but who will have the knowledge and experience to know how the defective condition affects other mechanical components or other parts of the brake system and will have an understanding of what might have caused a particular defective condition. FRA believes that in order for a person to become highly proficient in the performance of a particular task that person must perform the task on a repeated and consistent basis. As it is almost impossible to develop and impose specific experience requirements, FRA believes that a requirement that the person's primary responsibility be in one or more of the specifically identified work areas and that the person have a basic understanding of what is required to properly repair and maintain safety-critical brake or mechanical components is necessary to ensure the high quality inspections envisioned by the rule.

FRA disagrees with the contentions raised by APTA representatives that the definition of QMI (or QMP) violates the APA and exceeds FRA's statutory authority. Contrary to the assertions made by APTA representatives, the administrative record together with FRA's independent knowledge of the passenger rail industry do support a requirement that only a QMI (or QMP) conduct Class I brake tests and exterior mechanical inspections. Except for limited weekend service operated by Metra, virtually every passenger train operation affected by this rule currently conducts daily brake and mechanical inspections utilizing employees who, except for training on the requirements of this rule, would meet the definition of a QMI (or QMP). That is, the employees who are currently responsible for conducting the major daily brake and mechanical inspections on virtually all passenger trains meet the ''primary responsibility'' requirement contained in the definition of QMI (or QMP). Therefore, the industry's current practice acknowledges and supports the need to conduct daily inspections with employees whose primary responsibility is the troubleshooting, inspection, testing, maintenance, or repair of train brake systems or other mechanical components. Furthermore, due to the flexibility provided in this rule for conducting brake and mechanical inspections and moving defective equipment as well as the extension of certain periodic maintenance, FRA believes that the current best practices of the railroads with regard to brake and mechanical inspections must be maintained, especially as they relate to the quality of the personnel performing the inspections and the continuity of observation provided by a dedicated work force (which is important to detection of developing hazards in the fleet).

FRA further believes that APTA's contention that the definition of QMI (or QMP) violates the Railway Labor Act is due to a misunderstanding of the definition. FRA is not attempting to make any determinations over employee classes or crafts or to interpret collective bargaining agreements. In the 1997 NPRM, FRA stated that the definition would allow the members of trades associated with testing and maintenance of equipment such as carmen, machinists, and electricians to become QMIs (or QMPs). However, FRA further stated that membership in a labor organization or completion of an apprenticeship program associated with a particular craft is not required. FRA made clear that the two overriding qualifications are possession of the knowledge required to do the job and a primary work assignment inspecting, testing, or maintaining the equipment.

FRA also intends to clarify the meaning of ''primary responsibility'' as used in the definition of QMP. As a rule of thumb FRA will consider a person's ''primary responsibility'' to be the task that the person performs at least 50 percent of the time. Therefore, a person who spends at least 50 percent of the time engaged in the duties of inspecting, testing, maintenance, troubleshooting, or repair of train brakes systems and other mechanical components could be designated as a QMP, if the person is properly trained to perform the tasks assigned and possesses a current understanding of what is required to properly repair and maintain the safety-critical brake or mechanical components for which they are assigned responsibility. However, FRA will consider the totality of the circumstances surrounding an employee's duties in determining a person's ''primary responsibility.'' For example, a person may not spend 50 percent of his or her day engaged in any one readily identifiable type of activity; in those situations FRA will have to look at the circumstances involved on a case-by-case basis.

The definition of QMP largely rules out the possibility of train crew members being designated as these highly qualified inspectors since the primary responsibility, as defined above, of virtually all current train crew personnel is the operation of trains and for the most part train crew personnel do not possess a current understanding of what is required to properly repair and maintain the safety-critical brake or mechanical components that are inspected during Class I brake tests or exterior calendar day mechanical inspections. However, contrary to the contentions raised by APTA, there is nothing in the rule which prevents a railroad from utilizing employees who are not designated as QMPs from conducting brake and mechanical inspections provided those inspections are not intended to constitute the required Class I brake test or the exterior calendar day mechanical inspection. Furthermore, the rule provides that certain required brake and mechanical inspections (Class IA brake tests, Class II brake tests, running brake tests, and interior calendar day mechanical inspections) may be performed by a properly ''qualified person'' and do mandate the use of a QMP. FRA believes that these are the types of inspections which train crew members are currently assigned to perform and have been performing effectively for years. Consequently, FRA believes that the inspection requirements and the qualification requirements contained in this rule are merely a codification of the current best practices of the passenger

train industry and are necessary to ensure the continued safety of those operations while providing the industry some flexibility in the performance of certain inspections and in the movement of defective equipment as well as providing slight increases in periodic maintenance cycles for some equipment.

FRA does not intend to provide any special provisions for weekend operations with regard to the conducting of Class I brake tests and calendar day mechanical inspection by QMPs as suggested in the comments by some APTA representatives. The rationale for requiring daily brake and mechanical attention by highly qualified inspectors, a proposition generally accepted by Working Group members, appears to apply equally to weekend periods. In fact based on FRA's experience, equipment used on weekends is generally used more rigorously than equipment used during weekday operations. At present only one commuter operation (Metra) has raised significant concerns regarding weekend operations. Although there is no specific data suggesting that existing weekend operations on Metra, which involves having many of the brake inspections conducted by train crew members, have created a safety hazard, FRA has found it virtually impossible to draft and justify provisions providing limited flexibility for Metra that do not create potential loopholes that could be abused by other passenger train operations that have not had the apparent safety success of Metra. Moreover, based on FRA's independent investigation of Metra's operation, it is believed that the impact of this final rule on Metra's weekend operations will be significantly less than that indicated in APTA's written comments and originally perceived by Metra. FRA believes that most of the personnel needed by Metra to conduct its weekend operations in accordance with this final rule are available to Metra or its contractors and that minor adjustments could be made to its weekend operations that might avoid significant new expense.

As the concerns regarding weekend operations appear to involve just one commuter operation and because the precise impact on that operation is not known or available at this time, FRA believes that the waiver process would be the best method for evaluating any lingering concerns that may be raised by that operator. This would afford FRA an opportunity to provide any appropriate relief based on the specific needs and the safety history of the individual railroad without opening the door to potential abuses by other railroads that are not similarly situated.

3. Long-Distance Intercity Passenger Trains

FRA is also retaining the requirements proposed in the 1997 NPRM related to the performance of Class I brake tests on long-distance intercity passenger trains. FRA will require that a Class I brake test be performed on long-distance intercity passenger trains prior to the trains' departure from an originating terminal and once every 1,500 miles or every calendar day, whichever occurs first. After reviewing the information and comments submitted by labor representatives, the information and comments provided by Amtrak, and based upon the independent information developed by FRA, FRA believes that the enhanced inspection scheme contained in this final rule will ensure the continued safety of long-distance intercity passenger trains.

Contrary to the statements made in the comments submitted by some labor representatives, FRA is not merely increasing the distance between brake inspections. Rather, FRA is increasing both the quality and the content of the inspections that must be performed on long-distance intercity passenger trains and, thus, increasing the safety of such trains. Under the current regulations these passenger trains are required to receive an initial terminal brake inspection at the point where they are originally assembled; from that point the train must receive an intermediate brake inspection every 1,000 miles. The current 1,000-mile inspection merely requires the performance of a leakage test, an application of the brakes and the inspection of the brake rigging on each car to ensure it is properly secured. *See* 49 CFR 232.12(b). The current 1,000-mile brake inspection does not require 100 percent operative brakes prior to departure and does not require piston travel to be inspected. The current regulations also do not require the performance of any type of mechanical inspection on passenger equipment at 1,000-mile inspection points or at any other time in the train's journey. Thus, under the current regulations a long-distance intercity passenger train can travel from New York to Los Angeles on one initial terminal inspection, a series of 1,000-mile inspections, and no mechanical inspections.

Whereas, this rule will require the performance of a Class I brake test, which is more comprehensive than the current initial terminal inspection, at the point where the train is originally assembled and will require the performance of another Class I brake test every 1,500 miles or every calendar day thereafter, whichever comes first, by highly qualified inspectors. Thus, at least every 1,500 miles or every calendar day a long-distance passenger train will be required to receive a brake inspection which is more comprehensive than the current initial terminal inspection and which requires that the train have 100 percent operative brakes and have piston travel set within established limits. Furthermore, this rule will require the performance of an exterior and interior mechanical inspection every calendar day that the train is in service. Consequently, the inspection scheme proposed in the 1997 NPRM and retained in this final rule will, in FRA's view, increase the safety and better ensure the integrity of the brake and mechanical components of long-distance passenger trains.

FRA also believes that some recognition must be given to the various types of advanced braking system technologies used on many long-distance intercity passenger trains. Many of these advanced technologies are not found with any regularity in freight operations. Dynamic brakes are typically employed on these types of trains to limit thermal stresses on friction surfaces and to limit the wear and tear on the brake equipment. Furthermore, the brake valves and brake components used on today's long-distance passenger trains are far more reliable than was the case several decades ago. Other technological advances utilized with regularity by these passenger trains include:

- The use of brake cylinder pressure indicators which provide a reliable indication of the application and release of the brakes.
- The use of disc brakes which provide shorter stopping distances and decrease the risk of thermal damage to wheels.
- The ability to cut out brakes on a per-axle or per-truck basis rather than a per car basis, thus permitting greater use of those brakes that are operable.
- Brake ratios that are 2½ times greater than the brake ratios of loaded freight cars.

The reliability and performance of brake systems on these passenger trains enhance the safety of these trains and, when combined with other aspects of this discussion, support FRA's determination that these brake systems can be safely operated with the inspection intervals that were proposed in the 1997 NPRM. Although some of the technologies noted above have existed for several decades, most of the technologies were not in wide spread use until after 1980. Furthermore, most

of the noted technological advances just started to be integrated into one efficient and reliable braking system within the last decade. Consequently, the technology incorporated into the brake equipment used in today's long-distance intercity passenger trains has increased the reliability of the braking system and permits the safe operation of the equipment for extended distances even though a portion of the braking system may be inoperative or defective.

FRA also disagrees with the contentions raised by certain labor representatives that the facts and data do not support the 500 mile extension in the brake inspection interval even with the more comprehensive inspection scheme. These commenters recommend that the current 1,000-mile brake inspection interval be retained together with the increased inspection regiment. These commenters contend that due to the large number of defects being found at 1,000-mile inspections that the need to retain the inspection is justified. As an example and support for this position, the BRC submitted information containing numerous defective conditions compiled by carmen stationed at Union Station in Washington D.C. from January 1996 through February of 1997 that the carmen allegedly found on trains traveling through Union Station. After reviewing the documentation submitted, FRA does not believe the information supports the conclusion that 1,000-mile brake inspections must be maintained and that it would be unsafe to extend the distance between brake inspections under the inspection scheme contained in this final rule.

Due to the lack of detail contained in the information submitted by the BRC, it is impossible to determine whether the vast majority of the alleged defective conditions were defective under the Federal regulations or whether the conditions were merely in excess of Amtrak's voluntary maintenance standards or operating practices. In addition, based on the description of some of the conditions, they would not be considered defective conditions under current Federal regulations. Furthermore, the vast majority of the conditions alleged in the document were not power brake defects, and thus, under the current regulations, would not have been required to have been inspected at a 1,000-mile inspection, nor do the current regulations mandate any type of mechanical inspection on passenger equipment. Moreover, as the vast majority of the alleged conditions were mechanical and wheel defects, FRA believes that these types of defective conditions will be addressed by the exterior calendar day mechanical inspection contained in this final rule which will be required to be performed every calendar day that a piece of equipment is in service.

FRA agrees with the comments submitted by the BRC that the data and information submitted by Amtrak regarding the allegedly defective equipment found at Washington, D.C., does not fully address whether the cars identified by carmen at that location were defective and does indicate that at least many of the cars were repaired for the defective condition noted within several days after moving through Washington, D.C. However, contrary to the conclusions reached by labor representatives, the fact that a car remained in service with an alleged defective mechanical or brake condition does not necessarily mean the train involved was in an unsafe condition or that the equipment was being moved illegally. The current regulations regarding freight mechanical equipment and the existing statutory mandates regarding the movement of equipment with defective safety appliances and brakes permit the movement of a certain amount of defective equipment to certain locations provided it is determined by a qualified person that such a movement can be made safely or that a sufficient percentage of the brakes remain operative. *See* 49 U.S.C. 20303, 49 CFR 215.9. As this final rule will specifically address the inspection of the mechanical components on passenger equipment and the movement of defective mechanical components, which is not covered by existing regulations, FRA believes that the amount of defective equipment being operated will be reduced significantly and will be handled safely in revenue trains. Although FRA agrees that the information submitted by Amtrak regarding the number of cars set out at 1,000-mile inspection points does not reflect the true number of defects being found during the inspections, FRA does find it significant that a very small percentage of cars set-out by Amtrak are set-out at 1,000-mile inspection locations and that most set-outs occur en route. (In its April 17, 1998 letter, Amtrak used the term intermediate inspections which upon FRA's review of the information provided was intended to describe 1,000-mile inspection locations.)

FRA also feels it is necessary to make clear that the number of cars alleged to have been found in defective condition at Union Station in Washington D.C. is not indicative of a safety problem on long-distance intercity passenger trains. Assuming that all of the cars contained in BRC's submission were in fact defective as alleged, it appears that approximately 750 cars were defective. However, the information also reveals that approximately 1,300 trains were inspected, thus, using a conservative estimate of 10 cars per train, approximately 13,000 cars were inspected. Therefore, approximately only 6 percent of the cars inspected were found to contain either a mechanical or brake defect. Furthermore, of the approximate 750 cars alleged to have been found defective, only approximately 20 percent of those cars contained a power brake-related defect. Consequently, only about 1–2 percent of the total cars inspected contained a power brake-related defect. Moreover, from the information provided it appears that none of the trains contained in the BRC submission were involved in any type of accident or incident related to the defective conditions alleged.

FRA believes that the key to any inspection scheme developed for long-distance intercity passenger trains is the quality of the inspection which is performed at a train's point of origin. FRA is convinced that if a train is properly inspected with highly qualified inspectors and has 100 percent operative brakes at its point of origin, then the train can easily travel up to 1,500 miles between brake inspections without significant deterioration of the braking system. FRA independently monitored a few long-distance intercity passenger trains running from New York to Miami, New York to New Orleans, and New York to Chicago and found that when the trains departed from their point of origin with a brake system that was defect free they arrived at destination without any defective conditions existing on the trains' brake system. These findings are consistent with FRA's experience in inspecting long-distance intercity passenger trains over the last several years. It should be noted that during this independent monitoring, FRA did find some trains that after receiving initial terminal inspections still contained some defective conditions on the brake system. Although FRA believes that none of the defective conditions found would have prevented the safe operation of the trains, FRA recognizes that FRA as well as the railroads must be vigilant in ensuring that quality brake system inspections are performed on a train at its point of origin and at each location where a Class I brake test is required to be performed. Consequently, due to the comprehensive nature of Class I brake tests and the exterior

calendar day mechanical inspection combined with the technological advances incorporated into the braking systems utilized in these types of trains and after a review of the data and information provided and based on FRA's experience with these types of operations, FRA intends to retain the proposed 1,500 mileage interval for the performance of Class I brake tests in this final rule.

VII. Movement of Defective Equipment

A. Background

The current regulations do not contain requirements pertaining to the movement of equipment with defective power brakes. The movement of equipment with these types of defects is currently controlled by a specific statutory provision originally enacted in 1910, which states:

> (a) GENERAL.— A vehicle that is equipped in compliance with this chapter whose equipment becomes defective or insecure nevertheless may be moved when necessary to make repairs, without a penalty being imposed under section 21302 of this title, from the place at which the defect or insecurity was first discovered to the ***nearest available place at which the repairs can be made—***
>
> (1) on the railroad line on which the defect or insecurity was discovered; or
>
> (2) at the option of a connecting railroad carrier, on the railroad line of the connecting carrier, if not further than the place of repair described in clause (1) of this subsection.

49 U.S.C. 20303(a) (emphasis added).

Although there is no limit contained in 49 U.S.C. 20303 as to the number of cars with defective equipment that may be hauled in a train, FRA has a longstanding interpretation which requires that, at a minimum, 85 percent of the cars in a train have operative brakes. FRA bases this interpretation on another statutory requirement which permits a railroad to use a train only if Aat least 50 percent of the vehicles in the train are equipped with power or train brakes and the engineer is using the power or train brakes on those vehicles and on all other vehicles equipped with them that are associated with those vehicles in a train.'' 49 U.S.C. 20302(a)(5)(B). As originally enacted in 1903, section 20302 also granted the Interstate Commerce Commission (ICC) the authority to increase this percentage, and in 1910 the ICC issued an order increasing the minimum percentage to 85 percent. *See* 49 CFR 232.1, which codified the ICC order.

As virtually all freight cars are presently equipped with power brakes and are operated on an associated trainline, the statutory requirement is in essence a requirement that 100 percent of the cars in a train have operative power brakes, unless being hauled for repairs pursuant to 49 U.S.C. 20303. Consequently, FRA currently requires that equipment with defective or inoperative air brakes make-up no more than 15 percent of the train and that, if it is necessary to move the equipment from where the railroad first discovered it to be defective, the defective equipment be moved no farther than the nearest place on the railroad's line where the necessary repairs can be made or, at the option of the receiving carrier, to a repair point that is no farther than the repair point on the delivering line.

The requirements regarding the movement of equipment with defective or insecure brakes noted above can and do create safety hazards as well as operational difficulties in the area of commuter and intercity passenger railroad operations. As the provisions regarding the movement of defective brake equipment were written almost a century ago, they do not address the realities of these types of operations in today's world. Strict application of the requirements has the potential of causing major disruptions of service and serious safety and security problems. For example, requiring repairs to be made at the nearest location where the necessary repairs can be made could result in passengers being discharged between stations where adequate facilities for their safety are not available or in the overcrowding of station platforms and trailing trains due to discharging passengers from a defective train at a location other than the passenger's destination. In addition, strict application of the statutory requirements could result in the moving of trains with defective brake equipment against the current of traffic during busy commuting hours. Irregular movements of this type increase the risk of collisions on the railroad. Furthermore, many of today's commuter train operations often utilize six cars or less in trains and in many instances operate just two-car trains. Consequently, the necessity to cut out the brakes on one car can easily result in noncompliance with the 85-percent requirement for hauling the car for repairs, thus prohibiting the train's movement and resulting in the same type of safety problems noted above.

B. Overview of 1997 NPRM

In the NPRM, FRA attempted to recognize the nature of commuter and intercity passenger operations and the importance of addressing the safety of passengers, as well as avoiding disruption of this service, when applying the requirements regarding the movement of equipment with defective brakes on a day-to-day basis. In addition, the representatives of commuter and intercity passenger train operations participating in the proceeding requested that the regulations be brought up to date, recognizing that brakes will have to be cut out en route from time to time (e.g., because of damage from debris on the track structure or because of sticking brakes), and that contemporary braking systems and established stopping distances provide a very considerable margin of safety. Representatives from APTA proposed a method of updating the existing requirements regarding the movement of commuter passenger equipment with defective brakes to bring them more in line with the realities of today's operations. FRA believed that the restrictions proposed by APTA were very conservative and effectively ensure a high level of safety in light of the reliability of braking systems currently used in commuter and intercity passenger train operations. FRA believed that affirmatively recognizing appropriate movement restrictions would actually enhance safety, since compliance with the existing restrictions is potentially unsafe.

FRA recognized that some of the restrictions proposed in the NPRM were not in accord with the requirements contained in 49 U.S.C. 20303(a). Therefore, FRA proposed the utilization of the authority granted in 49 U.S.C. 20306 to exempt passenger train operations covered by this part from the statutory requirements contained in 49 U.S.C. 20303(a) permitting the movement of equipment with defective or insecure brakes only if various requirements are met, including the requirement that the movement for repair be only to the nearest location where the necessary repairs can be made. FRA believed that the granting of this exemption was justified based on the technological advances made in the brake systems and equipment used in passenger operations, and was necessary for these operations to make efficient use of the technological advances and protect the safety of the riding public. *See* 62 FR 49740–42, 49756–58. Although FRA recognized that it could be argued that the purpose of section 20306 is too narrow to comprehend the instant application, FRA believed that the use of the provision as contemplated in this proposal was consistent with the authority granted the Secretary of Transportation. As noted previously, the

statutory requirements regarding the movement of equipment with defective brake equipment were written nearly a century ago and, in FRA's opinion, were focused generally on the operation of freight equipment and did not contemplate the types of commuter and intercity passenger train operations currently prevalent throughout the nation. Since the original enactment in 1910 of the provisions now codified at 49 U.S.C. 20303(a), there have been substantial changes both in the nature of the operations of passenger trains as well as in the technology used in those operations.

In the NPRM, FRA noted that contemporary passenger equipment incorporates various types of advanced braking systems; in some cases these include electrical activation of brakes on each car (with pneumatic application through the train line available as a backup). Dynamic brakes are also typically employed to limit thermal stresses on friction surfaces and to limit the wear and tear on the brake equipment. Furthermore, the brake valves and brake components used today are far more reliable than was the case several decades ago. In addition to these technological advances, the brake equipment used in commuter and intercity passenger train operations incorporate advanced technologies not found with any regularity in freight operations. These include:

- The use of brake cylinder pressure indicators which provide a reliable indication of the application and release of the brakes.
- The use of disc brakes which provide shorter stopping distances and decrease the risk of thermal damage to wheels.
- The ability to effectuate a graduated release of the brakes due to a design feature of the brake equipment which permits more flexibility and more forgiving train control.
- The ability to cut out brakes on a per-axle or per-truck basis rather than a per car basis, thus permitting greater use of those brakes that are operable.
- The use of a pressure-maintaining feature on each car which continuously maintains the air pressure in the brake system, thereby compensating for any leakage in the trainline and preventing a total loss of air in the brake system.
- The use of a separate trainline from the locomotive main reservoir to continuously charge supply reservoirs independent of the brake pipe train line.
- Brake ratios that are 2½ times greater than the brake ratios of loaded freight cars.

Although some of the technologies noted above have existed for several decades, most of the technologies were not in wide spread use until after 1980. Furthermore, most of the noted technological advances just started to be integrated into one efficient and reliable braking system within the last decade. In addition to the technological advances, commuter and intercity passenger train operations have experienced considerable growth in the last 15 years necessitating the need to provide more reliable and efficient service to the riding public. Since 1980, the number of commuter operations providing rail service has almost doubled and the number of daily passengers serviced by passenger operations has more than doubled over the same time period. Furthermore, commuter and intercity passenger train operations conduct more frequent single car tests, COT&S, and maintenance of the braking systems than is generally the practice in the freight industry. Consequently, FRA concluded that the technology incorporated into the brake equipment used in today's commuter and intercity passenger train operations has increased the reliability of the braking system and permits the safe operation of the equipment for extended distances even though a portion of the braking system may be inoperative or defective.

FRA also proposed an exemption for passenger train operations from a long-standing agency interpretation, based on a 1910 ICC order codified at 49 CFR 232.1, that prohibits the movement of a train for repairs under 49 U.S.C. 20303 if less than 85 percent of the train's brakes are operative. FRA found that many passenger operations utilize a small number of cars in their trains and the necessity to cut out the brakes on just one car can easily result in noncompliance. FRA believed that the proposed speed restrictions would compensate for the loss of brakes on a minority of cars. *See* 62 FR 49740–42, 49756–58.

Based on the preceding discussions, FRA proposed various restrictions on the movement of vehicles with defective brake equipment which allow commuter and intercity passenger train operations to take advantage of the efficiencies created due to the advanced braking systems these operations employ as well as the improvements made in brake equipment over the years, while ensuring if not enhancing the safety of the traveling public. *See* 62 FR 49756–58, 49796–98. FRA proposed to permit trains to be operated with up to 50 percent inoperative brakes to the next forward passenger station or terminal based on the percentage of operative brakes, which may have resulted in movements past locations where the necessary repairs could be made. However, to ensure the safety of these trains with lower percentages of operative brakes, FRA also proposed various speed restrictions and other operating restrictions, based on the percentage of operative brakes. FRA believed that the proposed speed restrictions were very conservative and ensured a high level of safety. In fact, test data established that with the proposed speed restrictions the stopping distances of those trains with lower percentages of operative brakes were shorter than if the trains were operating at normal speed and had 100 percent operative brakes. Consequently, FRA believed that the proposed approach to the movement of equipment with defective brakes not only enhanced the overall safety of train operations but benefitted both the railroads, by providing operational flexibility, and the traveling public, by permitting them to get to their destinations in a more expedient and safe fashion.

FRA also proposed various requirements to ensure that equipment being hauled for repairs is adequately identified. Currently, there is no requirement that equipment with defective power brakes be tagged or otherwise identified, although most railroads voluntarily engage in such activity. Furthermore, the current regulations regarding freight cars and locomotives contain tagging requirements for the movement of equipment not in compliance with those parts. *See* 49 CFR 215.9 and 229.9. Therefore, FRA proposed specific requirements related to the identification of equipment with defective power brakes through either the traditional tags which are placed in established locations on the equipment or by an automated tracking system developed by the railroad. *See* 62 FR 49796–98. FRA also proposed that certain information be contained whichever method was used by a railroad. FRA believed that the proposed tagging or tracking requirements add reliability, accountability, and enforceability to ensure the timely and proper repair of equipment with defective power brakes.

FRA also proposed a new method for calculating the percentage of operative power brakes (operative primary brakes) in a train. Although the statute discusses the percentage of operative brakes in terms of a percentage of vehicles, the statute was written nearly a century ago and at that time the only way to cut out the brakes on a car or locomotive was to cut out the entire unit. See 49 U.S.C. 20302(a)(5)(B).

Today, virtually every piece of equipment used in passenger service can have the brakes cut out on a per-truck or per-axle basis. Consequently, FRA merely proposed a method of calculating the percentage of operative brakes based on the design of passenger equipment used today, and thus, a means to more accurately reflect the true braking ability of the train as a whole. FRA believed that the proposed method of calculation was consistent with the intent of Congress when it drafted the statutory requirement and simply recognized the technological advancements made in braking systems over the last century. Consequently, FRA proposed that the percentage of operative brakes would be determined by dividing the number of axles in the train with operative brakes by the total number of axles in the train. Furthermore, for equipment utilizing tread brake units (TBU), FRA proposed that the percentage of operative brakes be determined by dividing the number of operative TBUs by the total number of TBUs. *See* 62 FR 49757, 49797.

The NPRM also contained proposed provisions regarding the movement of equipment with other than power brake defects. *See* 62 FR 49758–59, 49798–99. There are currently no statutory or regulatory restrictions on the movement of passenger cars with defective conditions that are not power brake or safety appliance related. The proposed provisions contained in the NPRM were similar to the provisions for moving defective locomotives and freight cars currently contained in 49 CFR 229.9 and 215.9, respectively. As these provisions have generally worked well with regard to the movement of defective locomotives and freight cars and in order to maintain consistency, FRA modeled the proposed movement requirements on those existing requirements. FRA proposed to allow passenger railroads the flexibility to continue to use equipment with non-safety-critical defects until the next scheduled calendar day exterior mechanical inspection. However, FRA intended for the calendar day mechanical inspections to be the tool used by railroads to repair all reported defects and to prevent continued use of defective equipment to carry passengers.

In the NPRM, FRA intended for 49 CFR 229.9 to continue to govern the movement of locomotives used in passenger service which develop defective conditions, not covered by part 238, that are not in compliance with part 229. FRA also did not intend to alter the current statutory requirements contained in 49 U.S.C. 20303 regarding the movement of passenger equipment with defective or insecure safety appliances. Consequently, in the NPRM, FRA required that passenger equipment that develops a defective or insecure safety appliance continue to be subject to all the statutory restrictions on its movement. It should be noted that the proposed requirements applicable to Tier I equipment merely referenced the Railroad Safety Appliance Standards (49 CFR part 231); however, FRA proposed separate safety appliance requirements for Tier II passenger equipment.

FRA proposed that passenger equipment that is found with conditions not in compliance with this part, other than power brake defects, be moved only after a QMI has determined that the equipment is safe to move and determined any restrictions necessary for the equipment's safe movement. FRA also allowed railroads to move equipment based on an assessment made by a QMI in communication with on-site personnel. FRA proposes this based on the reality that mechanical personnel are not readily available at every location on a railroad's line of road. However, FRA further proposed that if a QMI does not actually inspect the equipment to determine that it is safe to move, then, at the first forward location where a QMI is on duty, an inspector will perform a physical inspection of the equipment to confirm the initial assessment made while in communication with on-site personnel previously.

The NPRM also required the tracking of defective equipment in either of two ways. One option was to tag the equipment in a manner similar to what is currently required under § 215.9 for freight cars. The second option was to record the specified information in an automated tracking system. The latter alternative was offered to provide railroads some flexibility and was made in recognition of advances in electronic recordkeeping.

C. Discussion of Comments on the 1997 NPRM and General FRA Conclusions

1. Movement of Equipment With Defective Brakes

Labor representatives raised several concerns, both in their written comments and at the Working Group meetings, regarding the proposed provisions related to the movement of passenger equipment with defective power brakes. These commenters objected to FRA's use of the authority granted in 49 U.S.C. 20306 to exempt passenger train operations covered by this part from the statutory requirements contained in 49 U.S.C. 20303(a) permitting the movement of equipment with defective or insecure brakes only if various requirements are met, including the requirement that the movement for repair be only to the nearest location where the necessary repairs can be made. These commenters contend that the statutory provisions contained in 49 U.S.C. 20306 were not intended to permit FRA to waive the movement for repair provisions contained in the Safety Appliance Acts for an entire segment of the industry. Furthermore, these commenters contend that FRA is improperly relying on technological advances that exist on passenger trains to invoke the authority under 49 U.S.C. 20306 because many of the technological advances cited by FRA do not currently exist or are not currently used on a large portion of the passenger fleet. Labor representatives contend that passenger equipment which develops defective brake equipment should only be permitted to move to a location where the passengers can be off-loaded with appropriate speed restrictions.

Labor representatives also objected to FRA's statement that the term ''power brake defect'' does not include a failure to inspect such a component. These commenters claim that FRA's exclusion of the failure to properly inspect a brake component eliminates an important means of enforcement necessary to ensure that proper power brake inspections are performed. It is claimed that by excluding the failure to inspect from being a power brake defect, FRA has eliminated any incentive for railroads to ensure that trains have operative brakes because there will be little financial repercussion to continuing to use improperly inspected equipment. These commenters also objected to the proposed provision that requires the railroad operating long-distance intercity passenger trains to designate those location where power brake repairs will be conducted. It is claimed that by allowing the carriers to designate such locations the carrier is in absolute control of how far defective equipment will travel and abuse of the provision may occur. Labor representatives also objected to allowing railroads to use automated tracking systems to record information regarding defective equipment. These commenters believe that tagging the equipment must be required in order for inspectors to readily identify defective equipment. It is further contended that an automated tracking system is susceptible to manipulation, abuse and reduces accountability. One commenter recommended that FRA add further restrictions on the use and movement of

cars with defective brakes at the front or rear of the train.

Railroad representatives and APTA representatives did not provide many comments on the proposed provisions related to the movement of passenger equipment with defective brakes. These commenters did note that there was not a major benefit to the railroads with being able to haul certain defective equipment to the next forward terminal as proposed. These commenters did recommend that FRA provide the railroads at least two years to develop and implement the defect reporting and tracking system proposed in the NPRM.

After considering the written comments submitted and the information provided at the Working Group meetings, FRA has determined that some minor changes need to be made to the requirements proposed in the NPRM regarding the movement of equipment with defective power brakes. In order to avoid the legal implications involved with employing the statutory authority contained at 49 U.S.C. 20306 for exempting equipment from the statutory requirements related to safety appliances and power brakes, and because railroad representatives acknowledged that the flexibility provided through reliance on the exemption is minimal, FRA will not rely on the statutory exemption provision contained at 49 U.S.C. 20306 in this final rule and will modify the movement for repair provisions accordingly. FRA will retain the exemption for passenger train operations from a long-standing agency interpretation that prohibits the movement of a train for repairs under 49 U.S.C. 20303 if less than 85 percent of the train's brakes are operative. The interpretation is based on a 1910 ICC order codified at 49 CFR 232.1, FRA believes that this requirement is overly restrictive when applied to passenger train operations as many passenger operations utilize a small number of cars in their trains and the necessity to cut out the brakes on just one car can easily result in noncompliance. FRA believes that the retention of the speed restrictions contained in the proposal will fully compensate for the loss of brakes on a minority of cars. FRA rejects the BRC's recommendation that passenger trains with defective brakes be permitted to move no farther than the next passenger station because such a stringent requirement is unnecessary, more restrictive that the current statutory mandate regarding the movement of defective brake equipment, and is radically counter to the way passenger trains currently handle defective equipment.

FRA intends to retain those portions of the movement for repair requirements that are consistent with the existing statutory provisions regarding the movement of equipment with power brake defects and revise those that are contrary. Therefore, passenger trains operating with 75–99 percent operative brakes will not be permitted to travel to the next forward terminal as proposed, but will be permitted to travel only to the next forward location were the necessary repairs to the brake equipment can be effectuated as mandated in the existing statute. In FRA's view, all of the other proposed methods for moving defective power brake equipment are consistent with and are in accordance with the current statutory requirements and can be retained. For example, FRA will retain the provisions which permit a passenger train with 50–75 percent operative brakes to be moved at reduced speeds to the next forward passenger station. Although the percentage of operative brakes is lower than currently permitted by FRA's longstanding agency interpretation (which FRA believes is fully compensated for by the speed restrictions), FRA believes that the movement of the defective equipment to the next passenger station is in accordance with the statutory requirement as the safety of the passengers must be considered in determining the nearest location where necessary repairs can be made. In addition, permitting passenger trains to continue to the next forward location where the necessary repairs can be performed is also consistent with the statutory requirement as such movement is necessary to ensure the safety of the traveling public by protecting them from the hazards incident to performing movements against the current of traffic. Furthermore, retention of the movement provisions related to long-distance intercity passenger trains and long-distance Tier II equipment are consistent with the current statutory requirements as these provisions permit the movement of defective brake equipment on these trains only to the next passenger station or the next repair location, with various speed restrictions depending on the percentage of operative brakes.

FRA will also retain the requirement that operators of long-distance passenger trains designate the locations where repairs can be conducted on the equipment. Although FRA agrees that this provision puts the control of what locations constitute repair locations in the hands of the railroad, FRA believes that the operators of these long-distance intercity trains are in the best position to determine which locations have the necessary expertise to handle the repairs of the somewhat advanced braking systems utilized in passenger trains. Due to the unique technologies used on the brake systems of these operations and the unique operating environments, the facilities and personnel necessary to conduct proper repairs on this equipment are somewhat specialized and limited. Moreover, FRA is retaining the broad performance-based requirement that railroads operating this equipment designate a sufficient number of repair locations to ensure the safe and timely repair of the equipment. Contrary to the beliefs of some labor commenters, FRA believes that this performance standard provides FRA sufficient grounds to institute civil penalty enforcement actions or take other enforcement actions if, based on its expertise and experience, FRA believes the railroad is failing to designate an adequate number of repair locations.

Rather than attempt to develop a standard applicable to all situations in the context of short-distance intercity and commuter trains, which FRA does not believe can be accomplished, FRA intends to approach the issue of what constitutes the next forward location where repairs can be effectuated based on a case-by-case analysis of each situation. FRA believes that its field inspectors are in the best position to determine whether a railroad exercised good faith in determining when and where to move a piece of defective equipment. In making these determinations both the railroad as well as FRA's inspectors must conduct a multi-factor analysis based on the facts of each case. In determining whether a particular location is a location where necessary repairs can be made or whether a location is the next forward repair location in a passenger train context, the accessibility of the location, the ability to safely make the repairs at that location, and the safety of the passengers are the overriding factors that must be considered in any analysis. These factors have a multitude of sub-factors which must be considered, such as: the type of repair required; the safety of employees responsible for conducting the repairs; the safety of employees responsible for getting the equipment to or from a particular location; the switching operations necessary to effectuate the move; the railroad's recent history and current practice of making repairs (brake and non-brake) at a particular location; relevant weather

conditions; potential overcrowding of passenger platforms; and the overcrowding of trailing trains.

FRA will also retain the requirement that equipment found with conditions not in compliance with this part must be appropriately tagged or recorded in an automated tracking system. Although FRA is sensitive to the concerns raised by labor representatives regarding the use of automated tracking systems, FRA believes that provisions must be provided to allow railroads to take advantage of existing and developing technologies regarding the electronic maintenance and retention of records. Although railroad and FRA inspectors may require additional training on the use of electronic records, FRA believes that the use of such a medium to track defective equipment can expedite the identification and repair of defective equipment and, thus, reduce the time that defective equipment is operated in passenger service. In response to labor's concerns, the final rule contains a provision which will give FRA the ability to monitor and review a railroad's automated tracking system and will provide FRA the ability to prohibit or revoke a railroad's ability to utilize an automated tracking system in lieu of directly tagging defective equipment if FRA finds that the automated tracking system is not properly secure, inaccessible to FRA or a railroad's employees, or fails to adequately track and monitor the movement of defective equipment. Furthermore, if the automated tracking system developed and implemented by a railroad does not accurately and adequately record the information required by this part, the railroad will be in violation of the movement for repair provisions and subject to civil penalty liability.

In response to one labor commenter's concerns, FRA is slightly modifying the provisions related to the operation of trains with defective brakes on the front or rear car. In the NPRM, FRA proposed that if the power brakes on the front or rear unit become inoperative then a qualified person must be stationed at the handbrake on the unit. *See* 62 FR 49797. FRA recognizes that in some instances the handbrake on a car located at the front or rear of a train may not be accessible to a member of the train crew or may be located outside the interior of the car and, thus, unsafe for a crew member to operate while the train is in motion. FRA also recognizes that in many circumstances when a car at the front or rear of the train has inoperative brakes certain speed restrictions should be placed on the train; however, FRA believes that railroads are in the best position to determine what the appropriate speed restriction should be given the circumstances involved. Consequently, FRA is modifying the requirements for the use of such cars and will add provisions requiring that appropriate speed restrictions be imposed and that equipment with inaccessible handbrakes or with handbrakes located outside the interior of a car be removed or repositioned in the train at the first possible location.

FRA believes that the concern raised by certain labor representatives regarding FRA's definition of ''power brake defect'' is due to a lack of understanding of the proposed rule as well as a misunderstanding of the current regulations. Under the current power brake regulations the unit of violation for failure to inspect is the train not individual cars, although FRA can take a separate violation for each car containing a defective condition upon departure after the train received or should have received an initial terminal inspection or for each car not identified as defective after the performance of an intermediate inspection. Moreover, the failure to inspect a piece of equipment cannot be cured through any of the proposed provisions regarding the movement of defective equipment. That is, if a railroad fails to inspect a piece of equipment as required, the railroad cannot avoid civil penalty liability by moving the equipment in accordance with the proposed provisions. Furthermore, the final rule contains specific civil penalties for a railroad's failure to perform inspections as required. Railroads will also continue to be subject to potential civil penalty for any car found in defective condition after it has performed or should have performed a Class I or Class IA brake test and any car not properly moved or identified as defective at other times. The final rule will also retain the proposed provision providing that passenger equipment will be considered ''in use'' prior to departure but after it has received or should have received an inspection required by this part. Thus, FRA inspectors will no longer have to wait until a piece of equipment departs a location before issuing a civil penalty, a practice continually criticized by both labor and railroad representatives.

In addition, the NPRM as well as this final rule provides FRA inspectors the ability to issue Special Notices for Repair, which enable an FRA inspector to remove an unsafe piece of equipment from service until appropriate action is taken by the railroad. *See* 62 FR 49790. This enforcement tool is not currently available to FRA inspectors in the area of power brakes and mechanical components on passenger equipment and could be used in circumstances where passenger equipment is not inspected prior to being placed in service. Consequently, the final rule will not only retain all of the enforcement tools available to FRA under the current regulations but will include other methods for ensuring compliance by the railroads and provide both a financial and operational incentive for railroads to properly inspect passenger equipment.

Some of the members of the Working Group, particularly those representing labor organizations, expressed concern that any alteration of the movement for repair provisions made in the context of commuter and intercity passenger train operations may have a spillover effect into the freight industry. FRA wishes to make clear that it has no intention, at this time, of providing freight operations the flexibility to handle defective brake equipment that it is providing passenger operations. As noted above, many of the advanced brake system technologies currently used in passenger service are not used in the freight context. Furthermore, even if freight operations were to make similar advances in the braking equipment they employ, this development on the freight side may not create the efficiencies created in the passenger train context since the operating environments of freight trains and passenger trains differ significantly. More importantly, the special safety considerations relative to passengers are not present in freight operations.

2. Movement of Equipment With Other Than Power Brake Defects

Railroad representatives expressed some concerns regarding the provisions related to the movement of equipment with other than a power brake defect. The primary recommendation of these commenters was that FRA should revise the proposed provisions to require the use of a ''qualified maintenance person'' (qualified mechanical inspector (QMI) in the NPRM) only when a potentially safety-critical running gear defect is involved. These commenters believed that the requirement to have the car inspected by a QMP whenever a nonsafety-critical running gear component becomes defective would impose unnecessary, significant delays to their operations and is counter to current operating practices. These commenters contended that a ''qualified person'' as defined in the proposal would be sufficient to determine the safety implications in moving many of the mechanical components covered by the rule if they were to become defective en route. For example, it was noted that

a highly qualified inspector was not necessary to determine whether a car that experiences a defective door, cracked window, or burnt out light bulbs could or should remain in service. Railroad representatives also sought additional flexibility in the movement of equipment with a nonsafety-critical running gear defect from a calendar day mechanical inspection.

Labor representatives also raised a number of concerns with the provisions related to the movement of equipment with other than power brake defects. One concern raised by these commenters indicated that FRA should not allow railroads to determine which mechanical components are ''safety-critical'' as such an approach would create a massive loophole and render some of the movement restrictions unenforceable. These commenters also voiced concerns over FRA's proposal that an off-site mechanical inspector could make an assessment regarding the safety of moving a certain piece of equipment based on the communication with on-site personnel. Although these commenters appeared to recognize the flexibility provided by such an approach, they raised concerns that such an approach is ripe for abuse and would require a mechanical inspector to rely on the observation of personnel lacking the necessary training and expertise. The commenters believed that further restrictions need to be placed on these communications but they failed to specify any specific restrictions that could be utilized. Labor representatives again raised concerns over FRA's allowance of an automated tracking system in lieu of direct tagging of defective equipment. These commenters reiterated their concerns that such a system can be easily manipulated and removes accountability from the system of repairing defective equipment.

After review of the comments submitted and provided orally at the Working Group meetings, FRA has made some modest changes in the final rule regarding the movement of equipment with non-power brake defects. FRA agrees with the comments of railroad representatives that the NPRM may have been over-reaching in requiring a QMP to make a determination regarding the safety of moving a piece of defective equipment for any of the mechanical components addressed in this regulation. However, FRA also agrees with the comments submitted by labor representatives that railroads should not determine what components are considered safety-critical. Therefore, FRA will require a determination regarding the safety of moving a piece of equipment by a QMP whenever a potential running gear defect is involved. FRA rejects the language proposed by APTA that the defect be a potentially ''safety-critical'' running gear defect as FRA believes that any defect to a running gear component is potentially safety-critical. In order to avoid confusion, FRA is providing an explicit definition of ''running gear defect.'' FRA is defining the term to mean any defective condition which involves a truck component, the propulsion system, the draft system, a wheel or a wheel component. In the final rule, FRA will permit the use of a qualified person to determine the safety and establish appropriate movement restrictions on continued use of equipment which involves non-running gear defects.

FRA will also provide very limited flexibility to the railroads to operate defective equipment from a location where a calendar day mechanical inspection was performed in order to effectuate repairs. FRA intends for the calendar mechanical inspection to be as comprehensive as possible and to be the time when all defective components are identified and repaired. In order to ensure that these daily inspections are performed by highly qualified personnel, FRA has provided the railroads with considerable flexibility to perform these inspections at locations that are best suited to a quality and comprehensive inspection. Therefore, FRA will permit the movement of defective equipment from these inspection locations with very stringent restrictions. Equipment containing running gear defects may only be moved from such locations if it is not in passenger service and is in a non-revenue train. Equipment containing non-running gear defects may be moved in a revenue train provide the equipment is locked-out and empty. Any equipment moved must also be properly identified and moved in accordance with any movement restriction imposed. FRA believes these stringent movement restrictions will provide railroads limited flexibility to move defective equipment to a location where it can best be repaired but will limit a railroad's desire or ability to move defective equipment from these inspection locations and will encourage the performance of the calendar day mechanical inspections at locations where repairs to equipment can be conducted.

FRA has also retained the requirement that the QMP may make his or her determination regarding the continued use of equipment containing a potential running gear defect based on the description provided by on-site personnel. Although FRA recognizes the concerns raised by labor representatives, FRA believes that the rule must recognize the reality of current operations and acknowledge the fact that mechanical personnel are not readily available at every location on a railroad's line of road. Furthermore, when such off-site determinations are made the rule requires that the equipment only be moved to the next forward location where the equipment can be inspected by a QMP to verify the description of the defect provided by the on-site personnel.

FRA is also adding a provision to the requirements dealing with the movement of equipment with other than power brake defects to address the inspection of roller bearings on a car whose truck is involved in a derailment. The added requirement prohibits a railroad from continuing in service a piece of passenger equipment that has a roller bearing whose truck was involved in a derailment unless the bearing is inspected and tested in accordance with the stated provisions. The added provision is identical to the requirement currently contained in 49 CFR § 215.115(b). Although the existing provision is applicable to freight cars, virtually every passenger train operation follows the provisions contained in that section prior to returning a piece of equipment to service after it was involved in a derailment and, thus, should not result in any added burden to the industry. FRA believes that the practice is critical to ensuring the proper operation of the roller bearing after a derailment occurs and should be incorporated into this final rule.

FRA also intends to make clear that the movement of equipment with a defective safety appliance will continue to be governed by the statutory provisions contained at 49 U.S.C. 20303. As noted previously this provision permits the movement of defective equipment to the nearest location where the necessary repairs can be made. The determination of what constitutes the nearest location where the necessary repairs can be effectuated in a safety appliance context is identical to the analysis required when dealing with a power brake defect. In making these determinations both the railroad as well as FRA's inspectors must conduct a multi-factor analysis based on the facts of each case. In determining whether a particular location is a location where necessary repairs can be made or whether a location is the nearest repair location in a passenger train context, the accessibility of the location, the ability to safely make the repairs at that location, and the safety of the

passengers are the overriding factors that must be considered in any analysis. These factors have a multitude of sub-factors which must be considered, such as: the type of repair required; the safety of the passengers if a move against the current of traffic is conducted; the safety of employees responsible for conducting the repairs; the safety of employees responsible for getting the equipment to or from a particular location; the switching operations necessary to effectuate the move; the railroad's recent history and current practice of making repairs (brake and non-brake) at a particular location; relevant weather conditions; potential overcrowding of passenger platforms; and the overcrowding of trailing trains. Therefore, in many circumstances trains will be permitted to continue to the next forward location where the necessary repairs can be performed as such movement is necessary to ensure the safety of the traveling public by protecting them from the hazards incident to performing movements against the current of traffic.

VIII. FRA's Passenger Train Safety Initiatives

This final rule is part of several related and complementary efforts by FRA to improve the safety of rail passenger service. FRA has issued regulations governing emergency preparedness and emergency response procedures for rail passenger service in a separate rulemaking proceeding, designated as FRA No. PTEP–1. *See* 63 FR 24630, May 4, 1998. FRA formed a separate working group (the Passenger Train Emergency Preparedness Working Group) to assist FRA in the development of such regulations. This related proceeding has addressed some of the issues FRA originally identified in the ANPRM on passenger equipment safety. Persons wishing to receive more information regarding this other rulemaking should contact Mr. Edward R. English, Director, Office of Safety Assurance and Compliance, FRA, 1120 Vermont Avenue, Mail Stop 25, Washington, D.C. 20590 (telephone number: 202–493–6300), or David H. Kasminoff, Esq., Trial Attorney, Office of Chief Counsel, FRA, 1120 Vermont Avenue, Mail Stop 10, Washington, D.C. 20590 (telephone: 202–493–6043).

Further, in response to the separate collisions involving New Jersey Transit and MARC trains in early 1996, FRA issued Emergency Order No. 20 (Notice No. 1) on February 20, 1996, requiring prompt action to immediately enhance passenger train operating rules and emergency egress and to develop an interim system safety plan addressing the safety of operations that permit passengers to occupy the leading car in a train. 61 FR 6876, Feb. 22, 1996. Both the New Jersey Transit and MARC train collisions involved operations where a cab car occupied the lead position in a passenger train. The Emergency Order explained that in collisions involving the front of a passenger train, operating with a cab car in the forward position or a multiple unit (MU) locomotive, *i.e.*, a self-propelled locomotive with passenger seating, presents an increased risk of severe personal injury or death as compared with locomotive-hauled service when the locomotive occupies the lead position in the train and thereby acts as a buffer for the trailing passenger cars. This risk is of particular concern where operations are conducted at relatively higher speeds, where there is a mix of various types of trains, and where there are numerous highway-rail crossings over which large motor vehicles are operated. Accordingly, the Emergency Order required in particular that ''railroads operating scheduled intercity or commuter rail service * * * conduct an analysis of their operations and file with FRA an interim safety plan indicating the manner in which risk of a collision involving a cab car is addressed.'' 61 FR 6879.

The Emergency Order also noted that there is a need to ensure that emergency exits are clearly marked and in operable condition on all passenger lines, regardless of the equipment or train control system used. Although FRA Safety Glazing Standards, 49 CFR part 223, require that passenger cars have a minimum of four emergency window exits ''designed to permit rapid and easy removal during a crisis situation,'' the Silver Spring collision raised concerns that at least some of the occupants of the MARC train attempted unsuccessfully to exit through the windows. The Emergency Order requires ''that any emergency windows that are not already legibly marked as such on the inside and outside be so marked, and that a representative sample of all such windows be examined to ensure operability.'' 61 FR 6880. On February 29, 1996, FRA issued Notice No. 2 to Emergency Order No. 20 to refine three aspects of the original order, including providing more detailed guidance on the emergency egress sampling provision. 61 FR 8703, Mar. 5, 1996.

In addition, FRA submitted a report to Congress on locomotive crashworthiness and working conditions on September 18, 1996, and subsequently referred the issues raised in the report to the RSAC. FRA established RSAC in March of 1996, to provide FRA with advice and recommendations on railroad safety matters. *See* 61 FR 9740, Mar. 11, 1996. RSAC consists of 48 individual representatives, drawn from 27 organizations representing various rail industry perspectives, and two associate nonvoting representatives from the agencies with railroad safety regulatory responsibility in Canada and Mexico. In September of 1997, FRA convened the Locomotive Crashworthiness Working Group through RSAC to make recommendations as to the best way to address the findings of FRA's report to Congress, including developing standards regarding a broad range of crashworthiness issues for both passenger and freight locomotives. In the context of improving railroad communications, RSAC established a working group to specifically address communication facilities and procedures, with a strong emphasis on passenger train emergency requirements. The final rule that resulted from this effort was published on September 4, 1998, reflecting the consensus recommendations of the RSAC. 63 FR 47182.

FRA notes that, in its comments on the NPRM, Siemens Transportation Systems, Inc., (Siemens) stated that much of the safety standard changes for passenger rail cars could be scaled back if more consideration were given to the technology that is available for crash avoidance safety systems. Siemens believed the principal safety focus should be on efforts to avoid collisions in the first place, such as those at highway-rail grade crossings and with other trains.

FRA recognizes that rail passenger safety involves the safety of the railroad system as a whole. FRA does have active rulemaking and research projects in a variety of contexts, including signal and train control systems, and grade crossing safety. FRA also has existing regulations governing both railroad and grade crossing signal system safety, for example. (See 49 C.F.R. parts 233–236.) Nevertheless, this final rule is designed to address the specific statutory mandate that minimum standards be prescribed for the safety of cars used to transport railroad passengers, as noted above.

IX. Section-by-Section Analysis

This section-by-section analysis will explain the provisions of the final rule and the changes made from the 1997 NPRM. Of course, a number of the issues and provisions involving this rule have been discussed and addressed in detail in the preceding discussions. Accordingly, the preceding discussions should be considered in conjunction

with those below and will be referred to as appropriate.

Amendments to 49 CFR Part 216

Part 216 authorizes certain FRA and participating State inspectors to issue Special Notices for Repair, under specified conditions, for freight cars with defects under part 215, locomotives with defects under parts 229 or 230 or 49 U.S.C. chapter 207, and track with defects under part 213. The revisions to part 216 contained in this final rule will create a fourth category of Special Notices for Repair: for passenger equipment with defects under part 238. Consequently, if an inspector determines that noncomplying passenger equipment is ''unsafe for further service'' and issues a Special Notice for Repair, the railroad will be required to take the passenger equipment out of service, to make repairs to bring the equipment into compliance with part 238, and to report the repairs to FRA. The final rule also makes conforming changes to part 216 reflecting this new enforcement tool.

This final rule also includes various technical amendments to update part 216 to reflect the following: (1) Internal organizational changes within FRA; (2) the division of former part 230, Locomotive Inspection Regulations, into parts 229 and 230 and the redesignation of those portions of former part 230 related to non-steam locomotives as part 229, Railroad Locomotive Safety Standards; and (3) the repeal, reenactment without substantive change, and recodification of the Federal railroad safety laws in 1994. *See* 45 FR 21092, Mar. 31, 1980; Pub. L. 103–272, July 5, 1994.

Amendments to 49 CFR Parts 223, 229, 231, and 232

FRA is making conforming changes to the applicability sections of FRA's Railroad Locomotive Safety Standards, Railroad Safety Appliance Standards, and railroad power brakes and drawbars regulations that were necessitated by provisions contained in this new part 238. In this final rule, FRA has adjusted the application of provisions in parts 229, 231, or 232 or has deleted certain provisions in those parts to avoid duplication of provisions in part 238. FRA has not deleted the passenger train brake test and maintenance requirements from part 232, at this time, because part 238 will not cover certain operations subject to part 232, e.g., tourist, historic, scenic, and excursion railroad operations on the general system. Moreover, the requirements contained in part 232 will continue to apply to passenger operations until the requirements contained in part 238 become effective to such operations. FRA is also making a technical amendment to part 223 so as to reference the additional emergency window exit and window safety glazing requirements found in part 238.

49 CFR Part 238

Subpart A—General

Section 238.1 Purpose and Scope

Paragraph (a) states the purpose of the rule to prevent collisions, derailments, and other occurrences involving railroad passenger equipment that cause injury or death to railroad employees, railroad passengers, and the general public; and to mitigate the consequences of such occurrences to the extent they cannot be prevented. Paragraph (b) states that the regulations in this part provide minimum standards for the subjects addressed. FRA has nonetheless specified in places throughout the regulatory text that the prescribed requirements are only minimum standards so as to reinforce this principle. Railroads and other persons subject to this part may adopt and enforce more stringent requirements, so long as they are not inconsistent with this part.

Paragraph (c) contains the dates upon which railroads covered by this part will be required to comply with the requirements contained in this final rule related to the inspection, testing, maintenance, training, and movement of defective equipment. FRA recognizes the interrelationship between the proper training of railroad personnel and the implementation of the inspection, testing, maintenance and movement of defective equipment provisions contained in the final rule. FRA realizes that in order for railroads to comply with the requirements related to the inspection, testing, and maintenance requirements and the requirements regarding the movement of defective equipment, the railroads must first be provided a sufficient amount of time to develop and implement a proper training program. Based on information received by FRA, it appears that many railroads are in the initial stages of developing training programs or modifying existing programs to meet the requirements of this final rule and that this process should be completed within a year. After the development of the training programs the railroads will need several months to a year to rotate their employees through the programs in order not to disrupt the operation of their railroads. Thus, FRA believes that 26 months is a sufficient amount of time for railroads to develop and train their employees as required by this final rule. Consequently, FRA will require compliance with the inspection, testing, and maintenance provisions as well the movement of defective equipment provisions after that same 26 month period.

FRA also recognizes that there are certain aspects of the inspection, testing, and maintenance requirements as well as the movement of defective equipment provisions that provide operational flexibility to the railroads. Due to this flexibility, FRA believes that some railroads will desire the ability to begin operations under the inspection, testing, and maintenance requirements and the movement of defective equipment provisions as soon as their employees have been properly trained. Therefore, FRA has included provisions which allow a railroad to notify FRA in writing that it is willing to begin compliance with the inspection, testing, and maintenance requirements and the movement of defective equipment provisions some time earlier than the 26 months provided. FRA wishes to make clear that it does not intend for railroads to take advantage of the flexibility provided under some of the provisions unless the railroad is willing to comply with all the requirements contained in those provisions. Thus, in order to begin operating under any of the provisions contained in subpart D, except the maintenance requirements contained in §§ 238.309 and 238.311, or to operate defective equipment under §§ 238.15 or 238.17, the railroad must be performing all of the requirements contained in those sections and that subpart.

As the maintenance requirements regarding the periodic performance of COT&S and the performance of single car tests, contained in §§ 238.309 and 238.311, are separable from the inspection requirements, FRA will permit railroads to request earlier application of those two sections. However, in order to begin operation under either of these two sections, the railroad must be willing to operate in accordance with all of the provisions in both sections. That is, the provisions contained in §§ 238.309 and 238.311 must be implemented as a package and cannot be implemented separately, except for the requirements related to the performance of COT&S on locomotives. This paragraph makes clear that the requirements related to the performance of COT&S on MU locomotives and conventional locomotives will become effective September 9, 1999. As discussed in more detail in the section-by-section analysis of § 238.309, FRA believes that the extensions of COT&S contained in

paragraphs (b) and (c) of § 238.309 are supported either by the tests conducted by Metro-North or are a practice that has been approved by waiver for several years. Furthermore, there is no corresponding single car testing requirement applicable to MU and conventional locomotives.

As a point of clarification, FRA makes clear that a railroad will be subject to compliance under the existing inspection, testing, and maintenance provisions contained in part 232 of this chapter until the railroad is required to operate under the inspection and testing provisions of this part (i.e., 26 months) or until the railroad voluntarily commits to operate under the provisions of this part.

Section 238.3 Application

As a general matter, in paragraphs (a)(1) and (a)(2), the rule applies to all railroads that operate intercity passenger train service on the general railroad system of transportation or provide commuter or other short-haul passenger train service in a metropolitan or suburban area; that is, the rule applies to commuter or other short-haul service described in paragraph (a)(2) regardless of whether that service is connected to the general railroad system. A public authority that indirectly provides passenger train service by contracting out the actual operation to another railroad or independent contractor would be regulated by FRA as a railroad under the provisions of this rule. In order to avoid confusion, FRA has omitted proposed paragraph (a)(3) regarding the rule's applicability to rapid transit operations as these types of operations, which are merely a subset of ''commuter or other short-haul rail passenger train service,'' are sufficiently covered under paragraphs (a)(1) and (a)(2) in the final rule. Paragraph (b) makes explicit the liability imposed by statute, 49 U.S.C. 20303, on a railroad that owns track over which another railroad hauls or uses equipment with a power brake or safety appliance defect. Under paragraph (b), a railroad that permits operations over its trackage by passenger equipment subject to this part that does not comply with a power brake provision of this part or a safety appliance provision of this part is subject to the power brake and safety appliance provisions of this part with respect to such operations that it permits.

This section contains no explicit reference to private cars. Rather than addressing the scope of applicability of part 238 to private cars in this section, FRA has indicated in the particular substantive sections of the rule whether private cars are covered, according to the terms of those sections. FRA has applied certain requirements of the rule to private cars that operate on railroads subject to this part. FRA has taken into account the burden imposed by requiring private car owners and operators to conform to the requirements of this part. Further, FRA recognizes that private cars are often hauled by railroads such as Amtrak and commuter railroads which often impose their own safety requirements on the operation of the private cars. Accordingly, FRA has limited the application of the rule only to those requirements necessary to ensure the safe operation of the passenger train that is hauling the private car. For instance, private cars are subject to brake inspection, testing, and maintenance requirements.

The rule is structured to apply to intercity, commuter and other short-haul service, but not to tourist, scenic, historic, and excursion operations. The term ''tourist, scenic, historic, or excursion operations'' is defined in § 238.5 to mean ''railroad operations that carry passengers, often using antiquated equipment, with the conveyance of the passengers to a particular destination not being the principal purpose.'' The term refers to the particular physical operation, not to the nature of the railroad company as a whole that conducts the operation. As a result, part 238 exempts not only a recreational train ride by a tourist railroad company that employs five people but also a recreational train ride by the Union Pacific Railroad Company, a Class I freight railroad. FRA has not yet had the opportunity to fully consult with tourist and historic railroad operators and their associations to determine the appropriate applicability of the provisions contained in this final rule to such railroad operations. The Federal Railroad Safety Authorization Act of 1994 directs FRA to examine the unique circumstances of tourist railroads when establishing safety regulations. The Act, which amended 49 U.S.C. 20103, states that:

> In prescribing regulations that pertain to railroad safety that affect tourist, historic, scenic, or excursion railroad carriers, the Secretary of Transportation shall take into consideration any financial, operational, or other factors that may be unique to such railroad carriers. The Secretary shall submit a report to Congress not later than September 30, 1995, on actions taken under this subsection.

Pub. L. 103–440, § 217, 108 Stat. 4619, 4624, November 2, 1994. In its 1996 report to Congress entitled ''Regulatory Actions Affecting Tourist Railroads,'' FRA responded to the direction in the statutory provision and also provided additional information related to tourist railroad safety for consideration of the Congress.

Section 215 of the 1994 Act specifically permits FRA to exempt equipment used by tourist, historic, scenic, and excursion railroads to transport passengers from the initial regulations required to be prescribed by November 2, 1997. 49 U.S.C. 20133(b)(1). FRA is addressing the passenger equipment safety concerns for these unique types of operations through the Tourist and Historic Railroads Working Group formed under RSAC. Any requirements applicable to these operations will be part of a separate rulemaking proceeding.

FRA notes that the Syracuse, Binghamton and New York Railroad Corporation (SBNY) commented on the application of the rule to its passenger shuttle and excursion service on approximately ten miles of trackage shared with rail freight traffic in the city of Syracuse and county of Onondaga, New York. SBNY commented that, although it understands its excursion service would be exempt from the rule, its shuttle operations appear to fall directly within the proposed regulation. SBNY believed that applying the proposed regulations to its shuttle service would impose a significant and unbearable burden with little if any improvement in safety. SBNY asked that the rule expressly except from its application passenger train operations on track that is limited to operating speeds of 30 mph or less.

FRA believes the SBNY is properly characterized as a commuter or other short-haul railroad subject to this part. FRA has not adopted SNBY's recommendation to change the application of the final rule so as to except passenger train operations on track that is limited to operating speeds of 30 mph or less. First of all, any such operation must already comply with existing regulations affecting railroad passenger equipment safety, such as the locomotive safety standards (49 C.F.R. part 229), and standards on railroad power brakes and drawbars (49 C.F.R. part 231). Second, many provisions of the final rule itself cannot logically be distinguished in any manner on the basis of operating speed. For instance, materials in locomotives and passenger cars should be required to comply with the testing standards for flammability and smoke emissions characteristics to protect against sources of ignition—no matter the operating speed of the equipment. Finally, FRA notes that

SBNY operates conventional diesel multiple-unit passenger equipment built to AAR standards. Accordingly, the railroad should not experience burdens related to structural standards. If there are unique factors present with regard to SBNY's equipment, the waiver process may provide a way of accommodating those differences.

The requirements of this rule do not apply to circus trains. In its comments on the NPRM, Feld Entertainment, Inc., (Feld), parent company of Ringling Bros. and Barnum & Bailey circus (Ringling Bros.), supported the rule's consideration of the special circumstances of certain classes of rail carriers, such as private passenger cars and circus trains. Feld stated on behalf of Ringling Bros. that it suspended the use of rim-stamped straight-plate wheels on its tread-braked passenger cars following the 1994 derailment of a circus train in Lakeland, Florida. See 62 FR 49743. Feld also stated that Ringling Bros. takes seriously its commitment to the safety of its employees and animals. FRA anticipates deferring further consideration of applying any of the requirements in this final rule to circus trains to the Tourist and Historic Railroads Working Group.

Section 238.5 Definitions

This section contains a set of definitions to introduce the regulations. FRA intends these definitions to clarify the meaning of important terms as they are used in the text of the rule. Several of the definitions involve new or fundamental concepts which require further discussion.

''Brake indicator'' means a device, actuated by brake cylinder pressure, which indicates whether brakes are applied or released on a car. The use of brake indicators in the performance of brake tests is a controversial subject. Rail labor organizations correctly maintain that brake indicators are not fully reliable indicators of brake application and release on each car in the train. Further, railroads correctly maintain that reliance on brake indicators is necessary because inspectors cannot always safely observe brake application and release. FRA believes that brake indicators serve an important role in the performance of brake tests. FRA has specified three different types of brake tests—Class I, Class IA, and Class II (described below)—that must be performed on passenger equipment. Railroads should perform Class I brake tests so that the inspector is able to actually observe brake application and release. However, FRA believes that during the performance of a Class IA brake test, railroads may rely on brake indicators if they determine that the inspector cannot safely make a direct observation of the brake application or release.

''Primary brake'' and ''secondary brake'' are complementary definitions. ''Primary brake'' refers to ''those components of the train brake system necessary to stop the train within the signal spacing distance without thermal damage to friction braking surfaces,'' while ''secondary brake'' refers to ''those components of the train brake system which develop supplemental brake retarding force that is not needed to stop the train within signal spacing distances or to prevent thermal damage to wheels.'' FRA provides these definitions to help draw the line between safety and economics of brake systems. Railroads have long held that the dynamic portion of a blended brake is not a safety system. Under the provisions in this final rule, railroads must demonstrate through testing and analysis that the dynamic brake fits the definition of a secondary brake. Defective primary braking systems are a serious safety problem that railroads must address immediately. Defective secondary braking systems, as defined in § 238.5, are not a serious safety concern, because, by definition, their failure does not result in unacceptable thermal inputs into friction brake components. Accordingly, FRA intends to allow railroads more flexibility in dealing with defective secondary braking systems.

Three brake tests are fundamental to this final rule. A ''Class I brake test'' means a complete passenger train brake system test as further specified in § 238.313. The Class I test is the most complete test. It must be performed once each calendar day that a passenger train is in service by a qualified maintenance person. The Class I test is intended to replace the current initial terminal brake test. *See* 49 CFR 232.12(c)-(j). The Class I test is much more tailored to the specific designs of passenger equipment than the initial terminal brake test that is required now.

A ''Class IA brake test'' means a test and inspection (as further specified in § 238.315) of the air brake system on each car in a passenger train to ensure the air brake system functions as intended in response to the command sent through the train line. The Class IA test is a somewhat less complete test than the Class I test and is intended to be very similar to the current 1,000-mile brake test. An important difference between the Class I and Class IA tests is that the Class IA test may be performed by qualified persons as long as they have been properly trained and designated by the railroad to perform the inspection. The Class IA test allows commuter railroads the flexibility to have trains depart their first run of the day from an outlying point without having to station qualified maintenance persons at all outlying points. If railroads take advantage of the flexibility offered by the Class IA test, they must follow-up with a Class I test sometime during the day.

A ''Class II train brake test'' means a test (as further specified in § 238.317) of brake pipe integrity and continuity from controlling locomotive to rear car. The Class II brake test is a simple set-and-release test intended to replace the passenger train intermediate terminal air brake test. *See* 49 CFR 232.13(b). The Class II test is also tailored to the special design of the passenger equipment.

The concept of ''ordered'' is vital to the correct application of this final rule. As applied to the acquisition of equipment, the term means that the acquiring entity has given a notice to proceed to manufacture the equipment that represents a firm financial commitment to compensate the manufacturer for the contract price of the equipment or for damages if the order is nullified. Equipment is not ordered if future exercise of a contract option is required to place the remanufacturing process in motion. Many of the provisions of this final rule, particularly structural requirements, will apply only to newly constructed equipment. When FRA applies certain requirements only to passenger equipment ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002, FRA intends to ''grandfather'' in this regard any equipment that is both ordered before September 8, 2000, and placed in service for the first time before September 9, 2002. FRA believes this approach will allow railroads to minimize, or avoid altogether, any costs associated with changes to existing orders and yet limit the delay in realizing the safety benefits of the requirements in this rule.

FRA's definition of ''passenger car'' goes beyond its traditional meaning. ''Passenger car'' means rail rolling equipment intended to provide transportation for members of the general public and includes a self-propelled car designed to carry passengers, baggage, mail, or express. This term includes a cab car, an MU locomotive, and a passenger coach. A cab car and an MU locomotive are also a ''locomotive'' under this rule. In the context of articulated equipment, ''passenger car'' means that segment of the rail rolling equipment located

between two trucks. This term does not include a private car. ''Passenger coach'' means rail rolling equipment intended to provide transportation for members of the general public that is without propelling motors and without a control stand; therefore, passenger coaches are a subset of passenger cars. ''Control stand'' is defined in *The Railroad Dictionary of Car and Locomotive Terms* (Simmons-Boardman Publishing Corp. 1980), as '''[t]he upright column upon which the throttle control, reverser handle, transition lever, and dynamic braking control are mounted within convenient reach of the engineer on a locomotive. The air gauges and some switches are also included on the control stand.''

''Passenger equipment'' is the most inclusive definition. It means all powered and unpowered passenger cars, locomotives used to haul a passenger car, and any other rail rolling equipment used in a train with one or more passenger cars. ''Passenger equipment'' includes a (1) passenger coach, (2) cab car, (3) MU locomotive, (4) locomotive not intended to provide transportation for members of the general public that is used to power a passenger train, and (5) any non-self-propelled vehicle used in a train with one or more passenger cars. The term therefore covers a baggage car, express car, freight car, mail car or a private car when used in a train with one or more passenger cars. In the context of articulated equipment, ''passenger equipment'' means that segment of rail rolling equipment located between two trucks that is used in a train with one or more passenger cars. However, this term does not include a freight locomotive when used to haul a passenger train due to failure of a passenger locomotive.

It should be noted that the definition of passenger equipment has been somewhat modified from that which was proposed in the NPRM. *See* 62 FR 49794. The change in the definition is based on comments from the AAPRCO and the American Short Line Railroad Association (ASLRA), and clarifies FRA's intent with regard to private cars. Under the final rule, FRA makes clear that a private car is considered ''passenger equipment'' for purposes of this rule only when it is used in a train with one or more passenger cars. Consequently, a private car will not be considered ''passenger equipment'' under the rule when the private car is being used alone; or used in a train consisting only of private cars or freight cars, or both. This approach is consistent with FRA's intent in drafting the NPRM, and fully incorporates the AAPRCO's and ASLRA's comments.

FRA has also modified the definition of ''passenger equipment'' so that the term does not include a freight locomotive when used to haul a passenger train due to failure of a passenger locomotive. At the Working Group meeting in December, 1997, the AAR had raised the concern that the proposed rule did not provide an exclusion for a freight locomotive used to haul a passenger train for relief purposes. FRA believes that a limited exception is warranted for a freight locomotive used to haul a passenger train due to the failure of the passenger train's own motive power; FRA does not wish for the passenger train to be stranded. FRA has modified the definition of the term ''locomotive'' accordingly in this final rule.

In the context of articulated equipment, FRA has clarified that ''passenger equipment'' means that segment of rail rolling equipment located between two trucks that is used in a train with one or more passenger cars. In the NPRM, FRA had used similar language in the definition of ''unit'' (see 62 FR 49796). Since the definition of ''unit'' itself draws upon the definition of ''passenger equipment,'' FRA has decided to insert this clarifying language here.

The terms ''passenger station'' and ''terminal'' are crucial to understanding the requirements related to the inspection of equipment and the movement of defective equipment contained in this final rule. ''Passenger station'' means a location designated in the railroad's timetable where passengers are regularly scheduled to get on or off any train. Under certain carefully controlled conditions, the rule permits a passenger train with defective equipment to move to the next forward passenger station. This flexibility is allowed to prevent railroads from discharging passengers in potentially unsafe locations and to minimize schedule impacts where this can safely be done. By contrast, ''terminal'' means a train's starting point or ending point of a single scheduled trip, where passengers may embark or disembark a train; normally, a ''terminal'' is a point where the train would reverse direction or change destinations.

The concepts of ''qualified person'' and ''qualified maintenance person'' are vital to understanding the required inspection, testing, and maintenance provisions of the rule. A ''qualified person'' is a person determined by the railroad to have the knowledge and skills necessary to perform one or more functions required under this part. With the proper training, a train crewmember could be a qualified person.

A ''qualified maintenance person'' is a ''qualified person'' who as a part of the training, qualification, and designation program required under § 238.111 has received instruction and training that includes ''hands-on'' experience (under appropriate supervision or apprenticeship) in one or more of the following functions: trouble-shooting, inspection, testing, maintenance or repair of the specific train brake and other components and systems for which the inspector is assigned responsibility. This person shall also possess a current understanding of what is required to properly repair and maintain the safety-critical brake or mechanical components for which the person is assigned responsibility. Further, the qualified maintenance person shall be a person whose primary responsibility includes work generally consistent with the above-referenced functions and is designated to: (1) conduct Class I brake tests under this part; (2) conduct exterior calendar day and periodic mechanical inspections on MU locomotives or other passenger cars and unpowered vehicles under this part; or (3) determine whether equipment not in compliance with this part may be moved as required by § 238.17.

As noted in detail in the preceding general preamble discussion, FRA is slightly modifying the terminology and definition of these highly qualified inspectors from that proposed in the 1997 NPRM in order to address the concerns by some commenters and to clarify the definition as much as possible. In the 1997 NPRM, FRA proposed the term ''qualified mechanical inspector'' (QMI) to describe these highly qualified inspectors. FRA recognizes the concern raised by some commenters, that the term QMI might result in employees designated as such to seek some sort of premium pay status. Although FRA is not overly swayed by this concern, FRA is changing the term in the manner suggested by these commenters to ''qualified maintenance person (QMP).'' FRA believes that the term used to describe the individual responsible for conducting certain brake and mechanical inspections has little bearing on the qualifications or knowledge of the individual and, thus, is not adverse to accommodating a change in the term. However, but for clarifying language, FRA is not changing the underlying definition of what is required to be designated as a QMP.

The definition contained in this final rule clarifies the intent of the NPRM by specifically stating that a QMP must be properly trained and have a primary responsibility in the function of trouble-shooting, inspection, testing,

maintenance, or repair of the specific train brake and other components and systems for which the inspector is assigned responsibility. The slightly modified definition also clarifies that a QMP also possess a current understanding of what is required to properly repair and maintain the safety-critical brake or mechanical components for which the person is assigned responsibility.

The major concern raised by APTA representatives centered on the requirement contained in the definition of a QMI that the person's ''primary responsibility'' include work in the area of troubleshooting, testing, inspecting, maintenance, or repair to train brake systems and other components. These commenters believed that anyone who is properly trained can perform the required inspections regardless of the amount of time actually spent engaged in the activity. The entire concept of QMP (or QMI) is premised on the idea that flexibility in the inspection of passenger equipment, flexibility in the movement of defective equipment and slight reductions in periodic maintenance could be provided if the mechanical components and brake system were inspected on a daily basis by highly qualified individuals. Thus, the requirement that a highly qualified person perform certain brake and mechanical inspections is part of a package which includes flexibility in the performance of brake and mechanical inspections, permits wider latitude in the movement of defective equipment, and provides reductions in the periodic maintenance that is required to be performed on certain equipment. Therefore, FRA expects the highly qualified person to be an individual who can not only identify a particular defective condition but who will have the knowledge and experience to know how the defective condition affects other mechanical components or other parts of the brake system and will have an understanding of what might have caused a particular defective condition. FRA believes that in order for a person to become highly proficient in the performance of a particular task that person must perform the task on a repeated and consistent basis. As it is almost impossible to develop and impose specific experience requirements, FRA believes that a requirement that the person's primary responsibility be in one or more of the specifically identified work areas and that the person have a basic understanding of what is required to properly repair and maintain safety-critical brake or mechanical components is necessary to ensure the high quality inspections envisioned by the rule. FRA notes the frequent contention of railroad representatives that mechanical forces are intimately familiar with the vehicles in the fleet for which they are responsible. FRA wishes to continue this record of careful attention to those fleets, which will tend to help ensure that developing problems are identified early and are dealt with across those fleets.

FRA disagrees with the contentions raised by APTA representatives that the definition of QMP violates the Administrative Procedure Act and exceeds FRA's statutory authority. Contrary to the assertions made by APTA representatives, the administrative record together with FRA's independent knowledge of the passenger rail industry do support a requirement that only a QMP conduct Class I brake tests and exterior mechanical inspections. Except for limited weekend service operated by Metra, virtually every passenger train operation affected by this rule currently conducts daily brake and mechanical inspections utilizing employees who, except for training on the requirements of this rule, would meet the definition of a QMP. That is, the employees who are currently responsible for conducting the major daily brake and mechanical inspections on virtually all passenger trains meet the ''primary responsibility'' requirement contained in the definition of QMP. Therefore, the industry's current practice acknowledges and supports the need to conduct daily inspections with employees whose primary responsibility is the troubleshooting, inspection, testing, maintenance, or repair of train brake systems or other mechanical components. Furthermore, due to the flexibility provided in this rule for conducting brake and mechanical inspections and moving defective equipment as well as the extension of certain periodic maintenance, FRA believes that the current best practices of the railroads with regard to brake and mechanical inspections must be maintained, especially as it relates to the quality of the personnel performing the inspections.

FRA further believes that APTA's contention that the definition of QMP violates the Railway Labor Act is due to a misunderstanding of the definition. FRA is not attempting to make any determinations over employee classes or crafts or to interpret collective bargaining agreements. As was made clear in the 1997 NPRM, the definition would allow the members of trades associated with testing and maintenance of equipment such as carmen, machinists, and electricians to become QMPs. However, membership in a labor organization or completion of an apprenticeship program associated with a particular craft is not required. FRA makes clear that the two overriding qualifications are possession of the knowledge required to do the job and a primary work assignment involving the troubleshooting, inspecting, testing, maintaining, or repairing the equipment.

FRA is also clarifying the meaning of ''primary responsibility'' as used in the definition of QMP. As a rule of thumb FRA will consider a person's ''primary responsibility'' to be the task that the person performs at least 50 percent of the time. Therefore, a person who spends at least 50 percent of the time engaged in the duties of inspecting, testing, maintenance, troubleshooting, or repair of train brakes systems and other mechanical components could be designated as a QMP, provided the person is properly trained to perform the tasks assigned and possesses a current understanding of what is required to properly repair and maintain the safety-critical brake or mechanical components for which the person is assigned responsibility. However, FRA will consider the totality of the circumstances surrounding an employee's duties in determining a person's ''primary responsibility.'' For example, a person may not spend 50 percent of his or her day engaged in any one readily identifiable type of activity; in those situations FRA will have to look at the circumstances involved on a case-by-case basis.

The definition of QMP largely rules out the possibility of train crew members from being designated as these highly qualified inspectors since the primary responsibility, as defined above, of virtually all current train crew personnel is the operation of trains, and for the most part, train crew personnel do not possess a current understanding of what is required to properly repair and maintain the safety-critical brake or mechanical components that are inspected during Class I brake tests or exterior calendar day mechanical inspections. However, contrary to the contentions raised by APTA there is nothing in the rule which prevents a railroad from utilizing employees who are not designated as QMPs from conducting brake and mechanical inspections provided those inspections are not intended to constitute the required Class I brake test or the exterior calendar day mechanical inspection. Furthermore, the rule provides that certain required brake and mechanical

inspections (Class IA brake tests, Class II brake tests, running brake tests, and interior calendar day mechanical inspections) may be performed by a properly ''qualified person'' and do not mandate the use of a QMP. FRA believes that these are the types of inspections which train crew members are currently assigned to perform and have been performing effectively for years. Consequently, FRA believes that the inspection requirements and the qualification requirements contained in this rule are merely a codification of the current best practices of the passenger train industry and are necessary to ensure the continued safety of those operations while providing the industry some flexibility in the performance of certain inspections and in the movement of defective equipment as well as providing slight increases in periodic maintenance for some equipment.

The term ''running gear defect'' has been added to the final rule's list of definitions. A running gear defect is defined as any defective condition which involves a truck component, a propulsion system component, a draft system component, a wheel or a wheel component. This term is important for understanding the restrictions regarding the movement of equipment with other than power brake defects. FRA agrees with the comments of railroad representatives that the 1997 NPRM may have been over-reaching in requiring a qualified mechanical inspector to make a determination regarding the safety of moving a piece of defective equipment for any of the mechanical components addressed in this regulation. However, FRA also agrees with the comments submitted by labor representatives that railroads should not determine what components are considered safety-critical. Therefore, FRA has modified the movement of defective equipment provisions in this final rule to require a determination regarding the safety of moving a piece of equipment by a qualified maintenance person (as discussed above) whenever a potential running gear defect is involved. FRA rejects the language proposed by APTA that the defect be a potentially ''safety-critical'' running gear defect as FRA believes that any defect to a running gear component is potentially safety-critical. In order to avoid confusion, FRA is providing an explicit definition of running gear defect. In the final rule, FRA is permitting the use of a qualified person to determine the safety and establish appropriate movement restrictions on continued use of equipment which involves non-running gear defects.

Definitions of the various types of trains covered by this final rule are extremely important to understand how FRA intends for the rule to be applied. The most general definition is that of a ''passenger train.'' The definition makes two points very clear. First, the final rule does not apply to tourist and excursion railroads; and, second, the provisions of the rule do apply to non-passenger carrying units included in a passenger train.

An important distinction highlighted in these definitions is the difference between a ''long-distance intercity passenger train'' and a ''short-distance intercity passenger train.'' ''Long-distance intercity passenger train'' means a passenger train that provides service between large cities more than 125 miles apart and is not operated exclusively in the National Railroad Passenger Corporation's (Amtrak) Northeast Corridor between Washington D.C. and Boston, Massachusetts. ''Short-distance intercity passenger train'' means a passenger train that provides service exclusively on the Northeast Corridor or between cities that are not more than 125 miles apart. This distinction attempts to recognize the special set of operating conditions on the Northeast Corridor in light of the need to treat long-distance trains differently than short-distance trains. Additionally, APTA advised FRA that there are commuter rail systems that operate trains over 100 miles in distance on a single run, and thus recommended the use of the 125-mile distance in these definitions.

The definition of the term ''in service'' is modeled after the definition of that term in the Railroad Freight Car Safety Standards. *See* 49 CFR 215.5(e). Passenger equipment that is in service includes passenger equipment ''in passenger service,'' meaning ''carrying, or available to carry, fare-paying passengers,'' as well as all other passenger equipment unless it falls into one of the following four categories:

(a) Is being handled in accordance with §§ 238.15, 238.17, 238.305(c)(5), or 238.503(f), as applicable;

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

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

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

The term ''in service'' is important because if the train or passenger equipment is not in service, it is not subject to a part 238 civil penalty.

FRA has revised the definition of ''skin'' to reflect more appropriately its meaning in the broad sense as the outer covering of a fuel tank and a rail vehicle as a whole, not just the forward-facing end of a locomotive. Moreover, as noted below in the discussion of § 238.209 (Forward-facing end structure of locomotives), the exclusion from the definition of ''skin'' originally included as part of the definition itself proposed in the NPRM has instead been incorporated into the appropriate rule text for clarity at § 238.209 and § 238.409 (Forward end structures of power car cabs).

The last definition that warrants discussion is ''vestibule.'' FRA intends ''vestibule'' to mean an area of a passenger car that normally does not contain seating and that is used for passage between the seating area and the side exit doors. The definition of ''vestibule'' is important to determine the requirements for side door emergency-release mechanisms. For instance, a powered side door in a vestibule that is partitioned from the passenger compartment of a Tier I passenger car must have a manual override feature as specified in § 238.235 by December 31, 1999.

Section 238.7 Waivers

This section sets forth the procedures for seeking waivers of compliance with the requirements of this rule. Requests for such waivers may be filed by any interested party. In reviewing such requests, FRA conducts investigations to determine if a deviation from the general criteria can be made without compromising or diminishing rail safety. This section has been modified from that proposed in the 1997 NPRM to keep it consistent with the general waiver provisions contained in other Federal regulations issued by FRA. FRA recognizes that circumstances may arise when the operation of passenger equipment that does not meet the standards contained in this rule is appropriate and in the public interest.

Section 238.9 Responsibility for Compliance

General compliance requirements are contained in this section. Paragraph (a). Paragraphs (a)(1) and (a)(2) prohibit a railroad subject to part 238 from committing a series of specified acts with respect to a train or a piece of passenger equipment while the train or passenger equipment is in service if it has a condition that does not comply with part 238 or if it has not been inspected and tested as required by part 238. In particular, consistent with 49 U.S.C. chapter 203, paragraph (a)(1) imposes a strict liability standard with respect to violations of the safety

appliance and power brake provisions of part 238. In addition to the acts prohibited by paragraph (a)(2) (that is, the use, haul, offering in interchange, or accepting in interchange of defective or not properly inspected equipment), paragraph (a)(1) prohibits a railroad from merely permitting the use or haul on its line of such equipment if it does not conform with the safety appliance and power brake provisions. *See* § 238.3(b). By contrast, paragraph (a)(2) imposes a lower standard of liability for using, hauling, delivering in interchange, or accepting in interchange a train or passenger equipment that is defective or not properly inspected, in violation of another provision of this part; a railroad subject to this part is liable only if it knew, had notice, or should have known of the existence of either the defective condition of the equipment or the failure to inspect and test. Finally, paragraph (a)(3) establishes a strict liability standard for noncompliance with any other provision of this part.

Paragraph (b). In accordance with the ''use'' or ''haul'' language previously contained in the Safety Appliance Acts (49 U.S.C. chapter 203) and with FRA's general rulemaking authority under the Federal railroad safety laws, FRA in paragraph (b) makes clear that passenger equipment will be considered ''in use'' prior to departure but after it receives or should have received the necessary tests and inspections required for movement. FRA will no longer wait for a piece of equipment with a power brake defect to be hauled before issuing a violation, a practice frequently criticized by the railroads. FRA believes that this approach will increase FRA's ability to prevent the movement of defective equipment that creates a potential safety hazard to both the public and railroad employees. FRA does not feel that this approach increases the railroads' burden since equipment should not be operated if it is found in defective condition in the pre-departure tests and inspections, unless permitted by the regulations.

Paragraph (c). This paragraph clarifies FRA's position that the requirements contained in this final rule are applicable not only to any ''railroad'' subject to this part but also to any ''person,'' as defined in § 238.5, that performs any function required by this final rule. Although various sections of the final rule address the duties of a railroad, FRA intends that any person who performs any action on behalf of a railroad or any person who performs any action covered by the final rule is required to perform that action in the same manner as required of a railroad or be subject to FRA enforcement action. For example, private car owners and contract shops that perform duties covered by these regulations would be required to perform those duties in the same manner as required of a railroad.

Section 238.11 Civil Penalties

This section identifies the civil penalties that FRA may impose upon any person, including a railroad or an independent contractor providing goods or services to a railroad, that violates any requirement of this part. These penalties are authorized by 49 U.S.C. 21301, 21302, and 21304. The penalty provision parallels penalty provisions included in numerous other safety regulations issued by FRA. Essentially, any person who violates any requirement of this part or causes the violation of any such requirement will be subject to a civil penalty of at least $500 and not more than $11,000 per violation. Civil penalties may be assessed against individuals only for willful violations, and where a grossly negligent violation or a pattern of repeated violations creates an imminent hazard of death or injury to persons, or causes death or injury, a penalty not to exceed $22,000 per violation may be assessed. In addition, each day a violation continues will constitute a separate offense. Furthermore, a person may be subject to criminal penalties under 49 U.S.C. 21311 for knowingly and willfully falsifying reports required by these regulations. FRA believes that the inclusion of penalty provisions for failure to comply with the regulations is important in ensuring that compliance is achieved. The final rule includes a schedule of civil penalties as appendix A to this part. Because the penalty schedule is a statement of policy, notice and comment was not required prior to its issuance. *See* 5 U.S.C. 553(b)(3)(A).

It should be noted that this section has been modified slightly from that proposed in the 1997 NPRM. The modifications were made to address the statutory requirements contained in the Federal Civil Penalties Inflation Adjustment Act of 1990, Pub. L. 101–410 Stat. 890, 28 U.S.C. 2461 note, as amended by the Debt Collection Improvement Act of 1996, Pub. L. 104–134, April 26, 1996, which required agencies to adjust for inflation the maximum civil monetary penalties within the agencies' jurisdiction. Consequently, the resulting $11,000 and $22,000 maximum penalties were determined by applying the criteria set forth in sections 4 and 5 of the statute to the maximum penalties otherwise provided for in the Federal railroad safety laws.

Section 238.13 Preemptive Effect

Section 238.13 informs the public as to FRA's views regarding what will be the preemptive effect of the final rule. While the presence or absence of such a section does not in itself affect the preemptive effect of a final rule, it informs the public about the statutory provision which governs the preemptive effect of the rule. Section 20106 of title 49 of the United States Code provides that all regulations prescribed by the Secretary relating to railroad safety preempt any State law, regulation, or order covering the same subject matter, except a provision necessary to eliminate or reduce an essentially local safety hazard that is not incompatible with a Federal law, regulation, or order and that does not unreasonably burden interstate commerce. With the exception of a provision directed at an essentially local safety hazard, 49 U.S.C. 20106 will preempt any State regulatory agency rule covering the same subject matter as the regulations in this final rule.

Section 238.15 Movement of Passenger Equipment With Defective Power Brakes

This section contains the requirements for movement of passenger equipment with a power brake defect without civil penalty liability under this part. (Railroads remain liable, however, ''in a proceeding to recover damages for death or injury of a railroad employee arising from the movement of'' the defective equipment. *See* 49 U.S.C. 20303(c).) A ''power brake defect,'' as defined in paragraph (a), ''is a condition of a power brake component, or other primary brake component, that does not conform with this'' rule. The term does not include a failure to properly inspect such a component.

Labor representatives objected to FRA's determination that the term ''power brake defect'' does not include a failure to inspect such a component. These commenters claim that FRA's exclusion of the failure to properly inspect a brake component eliminates an important means of enforcement necessary to ensure that proper power brake inspections are performed. It is claimed that by excluding the failure to inspect from being a power brake defect, FRA has eliminated any incentive for railroads to ensure that trains have operative brakes because there will be little financial repercussion to continuing to use improperly inspected equipment.

FRA believes that the concern raised by certain labor representatives regarding FRA's definition of ''power brake defect'' under this section is due to a lack of understanding of the rule as

well as a misunderstanding of the existing regulations. Under the current power brake regulations the unit of violation for failure to inspect is the train not individual cars, although FRA can take a separate violation for each car containing a defective condition upon departure after the train received or should have received an initial terminal inspection or for each car not identified as defective after the performance of an intermediate inspection. Moreover, the failure to inspect a piece of equipment cannot be cured through any of the provisions contained in this final rule regarding the movement of defective equipment. Thus, if a railroad fails to inspect a piece of equipment as required, the railroad cannot avoid civil penalty liability by moving the equipment in accordance with the movement for repair provisions. Furthermore, the final rule contains specific civil penalties for a railroad's failure to perform inspections as required. Therefore, railroads will also continue to be subject to potential civil penalty for any car found in defective condition after it has performed or should have performed a Class I or Class IA brake test, and for any car not properly moved or identified as defective at other times.

The final rule also retains the provision stating that passenger equipment will be considered ''in use'' prior to departure but after it has received or should have received an inspection required by this part. *See* § 232.9. Thus, FRA inspectors will no longer have to wait until a piece of equipment departs a location before issuing a civil penalty, a practice continually criticized by both labor and railroad representatives. In addition, this final rule provides FRA inspectors the ability to issue Special Notices for Repair, which enable an FRA inspector to remove an unsafe piece of equipment from service until appropriate action is taken by the railroad. *See* Amendments to 49 CFR part 216. This enforcement tool is not currently available to FRA inspectors in the area of power brakes and mechanical components on passenger equipment and could be used in circumstances where passenger equipment is not inspected prior to being placed in service. Consequently, the final rule not only retains all of the enforcement tools available to FRA under the current regulations but includes other methods for ensuring compliance by the railroads and provides both a financial and operational incentive for railroads to properly inspect passenger equipment.

Paragraph (b)(1). This paragraph addresses the movement for repair of equipment with a power brake defect found during a Class I or IA brake test or, for Tier II equipment, the equivalent of a Class I or IA brake test. This paragraph allows railroads the flexibility to move passenger equipment with a power brake defect found during such a test if the following three conditions are satisfied: (1) If the train is moved for purposes of effecting repair of the defect, without passengers; (2) the applicable operating restrictions set forth in paragraph (d) are complied with; and (3) the information concerning the defect is recorded on a tag affixed to the equipment or in an automated defect tracking system as specified in paragraph (c)(2).

Paragraph (b)(2). This paragraph permits railroads to move, for purposes of scrapping or sale, passenger equipment with a power brake defect found during a Class I or IA brake test (or the Tier II equivalent) if each of the following conditions is satisfied: if the movement is without passengers, if the speed of the movement is 15 mph or less, and if the railroad's air brake or power brake instructions are followed when making the movement. This provision allows railroads to move surplus equipment without having to request permission for one-time moves from FRA, as is currently required. FRA has not had any serious safety concerns with the methods currently used by railroads to move this equipment and does not believe its limited resources should be tied up in approving these types of moves.

Paragraph (c), generally. This paragraph addresses the use of passenger equipment with a power brake defect that develops en route from a location where a Class I or IA brake test (or the Tier II equivalent) was performed on the equipment. The two basic requirements are that, at the location where the railroad first finds the defect, specified information (such as the nature of the defect and the destination where the defect will be repaired) must be placed on tags attached to the equipment or in a computer tracking system and that the railroad must observe the applicable operating restrictions in paragraph (d). A third requirement, found in paragraph (c)(4), is a special conditional requirement, applying only if the defect causes any brakes to be cut out or renders the brakes inoperative. This provision was slightly modified from what was proposed in order to prevent a railroad from avoiding the requirements contained in this subsection by simply not cutting-out an inoperative brake. Consequently, the language was modified so that the provision includes situations where a defect renders the brakes inoperative, not just situations where brakes are cut-out.

Paragraph (c)(2) requires that equipment being hauled for repairs be adequately identified. Currently, there is no requirement that equipment with defective power brakes be tagged or otherwise identified, although most railroads voluntarily engage in such activity. Furthermore, the current regulations regarding freight cars and locomotives contain tagging requirements for the movement of equipment not in compliance with those parts. *See* 49 CFR 215.9 and 229.9. Consequently, FRA is requiring the identification of equipment with defective power brakes through either the traditional tags which are placed in established locations on the equipment or by an automated tracking system developed by the railroad. Certain information must be contained whichever method is used by a railroad. FRA believes that the tagging or automated tracking requirements add reliability, accountability, and enforceability for the timely and proper repair of equipment with defective power brakes.

FRA is retaining the requirement that equipment found with conditions not in compliance with this part must be appropriately tagged or recorded in an automated tracking system. Although FRA is sensitive to the concerns raised by labor representatives regarding the use of automated tracking systems, FRA believes that provisions must be provided to allow railroads to take advantage of existing and developing technologies regarding the electronic maintenance and retention of records. Although railroad and FRA inspectors may require additional training on the use of electronic records, FRA believes that the use of such a medium to track defective equipment can expedite the identification and repair of defective equipment and, thus, reduce the time that defective equipment is operated in passenger service. In response to labor's concerns, a new paragraph (c)(3) has been added which contains a provision giving FRA the ability to monitor and review a railroad's automated tracking system and provides FRA the ability to prohibit or revoke a railroad's ability to utilize an automated tracking system in lieu of directly tagging defective equipment if FRA finds that the automated tracking system is not properly secure, is inaccessible to FRA or a railroad's employees, or fails to adequately track and monitor the movement of defective equipment. urthermore, if the automated tracking

system developed and implemented by a railroad does not accurately and adequately record the information required by this part, the railroad will be in violation of the movement for repair provisions and subject to civil penalty liability.

In addition, under paragraph (c)(4), if the defect causes the brakes on the equipment to be cut out, then the railroad must first find out what percentage of the power brakes in the train are cut out or inoperative in some other way, using the formula in paragraph (d)(1). Next, the railroad must notify the person responsible for the movement of trains of the percentage of operative brakes and the movement restrictions imposed by paragraph (d), inform the railroad's mechanical department about the brake defect, and walk the train to confirm the percentage of operative brakes at the next point where it is safe to do so. Slight modification was made to paragraph (c)(4)(ii) and (iii) replacing the term ''dispatcher'' with the phrase ''person responsible for the movement of trains'' as some railroads do not use the term dispatcher and the term mechanical ''desk'' was removed as it is unnecessary and covered by the term ''mechanical department.''

Paragraph (d)(1). This paragraph explains the term ''inoperative power brakes'' and contains a new method for calculating the percentage of operative power brakes (operative primary brakes) in a train. Regarding the term itself, a cut-out power brake is an inoperative power brake, but the failure or cutting out of a secondary brake system (as defined in § 238.5) does not result in inoperative power brakes. For example, failure of dynamic brakes does not render a power brake inoperative unless the dynamic brakes are in fact primary brakes. Although the statute discusses the percentage of operative brakes in terms of a percentage of vehicles, the statute was written nearly a century ago and at that time the only way to cut out the brakes on a car or locomotive was to cut out the entire unit. *See* 49 U.S.C. 20302(a)(5)(B). Today, virtually every piece of equipment used in passenger service can have the brakes cut out on a per-truck or per-axle basis. Consequently, FRA is merely providing a method of calculating the percentage of operative brakes based on the design of passenger equipment used today, and, thus, a means to more accurately reflect the true braking ability of the train as a whole. FRA believes that the method of calculation contained in this final rule is consistent with the intent of Congress when it drafted the statutory requirement and simply recognizes the technological advancements made in braking systems over the last century. Consequently, FRA intends to require the percentage of operative brakes to be determined by dividing the number of axles in the train with operative brakes by the total number of axles in the train. Furthermore, for equipment utilizing tread brake units (TBU), FRA requires that the percentage of operative brakes be determined by dividing the number of operative TBUs by the total number of TBUs.

Paragraphs (d)(2)–(d)(4), generally. These paragraphs contain various speed and other operating restrictions based on the percentage of operative brakes in order to permit passenger railroads the flexibility to efficiently move passengers without compromising safety. FRA believes that the movement restrictions contained in these paragraphs actually enhance the safety of the riding public. The requirements retain the basic principle that a train carrying passengers shall not depart a location where major brake inspections or tests are performed on a train unless the train has 100 percent operational brakes.

As previously noted in the general discussion, FRA has determined that some minor changes need to be made to the requirements proposed in the 1997 NPRM regarding the movement of equipment with defective power brakes. In order to avoid the legal implications involved with employing the statutory authority contained at 49 U.S.C. 20306 for exempting equipment from the statutory requirements related to safety appliances and power brakes, and because railroad representatives acknowledged that the flexibility provided through reliance on the exemption is minimal, FRA will not rely on the statutory exemption provision contained at 49 U.S.C. 20306 in this final rule and has modified the movement for repair provisions accordingly.

FRA will retain the exemption proposed in the 1997 NPRM for passenger train operations from a long-standing agency interpretation that prohibits the movement of a train for repairs under 49 U.S.C. 20303 if less than 85 percent of the train's brakes are operative. This interpretation is based on a 1910 ICC order codified at 49 CFR 232.1. FRA believes that this requirement is overly restrictive when applied to passenger train operations as many passenger operations utilize a small number of cars in their trains and the necessity to cut out the brakes on just one car can easily result in noncompliance. FRA believes that the retention in this final rule of the proposed speed restrictions will fully compensate for the loss of brakes on a minority of cars. FRA rejects the BRC's recommendation that passenger trains with defective brakes be permitted to move no further than the next passenger station because such a stringent requirement is unnecessary, more restrictive than the current statutory mandate regarding the movement of defective brake equipment, and is radically counter to the way passenger trains currently handle defective equipment.

FRA is retaining those portions of the proposed movement for repair requirements that it believes are fully consistent with the existing statutory provisions regarding the movement of equipment with power brake defects and has revised those that are contrary to the statutory provisions. Therefore, passenger trains operating with 75–99 percent operative brakes will not be permitted to travel to the next forward terminal as proposed, but will be permitted to travel only to the next forward location where the necessary repairs to the brake equipment can be effectuated as mandated in the existing statute. In FRA's view, all of the other proposed methods for moving defective power brake equipment are consistent with and are in accordance with the current statutory requirements and will be retained. For example, FRA is retaining the provision which permits a passenger train with 50–75 percent operative brakes to be moved at reduced speeds to the next forward passenger station. Although the percentage of operative brakes is lower than currently permitted by FRA's longstanding agency interpretation (which FRA believes is fully compensated for by the proposed speed restrictions), FRA believes that the movement of the defective equipment to the next passenger station is in accordance with the statutory requirement as the safety of the passengers must be considered in determining the nearest location where necessary repairs can be made. In addition, permitting passenger trains to continue to the next forward location where the necessary repairs can be performed is also consistent with the statutory requirement as such movement is necessary to ensure the safety of the traveling public by protecting them from the hazards incident to performing movements against the current of traffic and recognizes the hazards incident to overcrowding platforms and trailing trains. Furthermore, retention of the movement provisions related to long-distance intercity passenger trains and long-distance Tier II equipment is

consistent with the current statutory requirements as these provisions permit the movement of defective brake equipment on these trains only to the next passenger station or the next repair location, with various speed restrictions depending on the percentage of operative brakes.

FRA recognizes that there are major differences in the operations of commuter or short-distance intercity passenger trains, and long-distance intercity passenger trains. Commuter and short-distance intercity passenger trains tend to operate for fairly short distances between passenger stations and generally operate in relatively short turn-around service between two terminals several times in any given day. On the other hand, long-distance intercity passenger trains tend to operate for long distances, with trips between the beginning terminal and ending terminal taking a day or more and traversing multiple States with relatively long distances between passenger stations. Consequently, the final rule contains slightly different requirements with regard to the movement of defective brake equipment in long-distance intercity passenger trains.

FRA believes that passenger railroads can safely and efficiently operate trains with en route brake failures under the strict set of conditions in this final rule. FRA has long held that the industry can safely operate trains at normal track speeds with as low as 85 percent effective brakes as long as the inoperative brakes were due to failures which occurred en route or due to defective cars being picked up en route and being moved for repairs. The only change in this final rule to current practice is the additional flexibility for certain passenger operations to move their equipment with a lower percentage of operative brakes, under strict speed restrictions, and recognition of the safety need to allow passenger trains to move to the nearest forward location capable of performing the repairs.

Paragraph (d)(2). This paragraph contains operating requirements for the movement of any passenger train that develops en route brake failures resulting in 74 to 50 percent operative brakes. In these circumstances, FRA will allow the train to proceed only to the next passenger station at a reduced speed, not to exceed 20 mph, to discharge passengers before proceeding without passengers to the nearest location where the necessary repairs can be made. This provision recognizes the dangers of unloading passenger at locations other than passenger stations by allowing railroads to move the equipment to a location with the facilities to handle the discharge of passengers. Furthermore, engineering evidence and test data demonstrate that the reduced speed more than compensates for the reduced braking force. At the reduced speed, even with only 50 percent effective brakes, a train is able to stop in a much shorter distance than the same train traveling at the maximum operating speed with 100 percent operative brakes.

Paragraphs (d)(3)(i) and (ii). FRA will also permit commuter, short-distance intercity, and short-distance Tier II passenger trains experiencing en route brake failures resulting in 99 to 75 percent operative brakes to continue in service only to the next forward location where the necessary repairs can be effectuated. FRA will permit these passenger trains to continue in service past a repair location to the next forward passenger station only if the repair location does not have the facilities to safely unload passengers. However, FRA will require the speed of the train with 84 to 75 percent operative brakes to be reduced to 50 percent of the train's maximum operating speed or 40 mph, whichever is less. Engineering evidence and test data demonstrate that the reduced speed more than compensates for the reduced braking force. At the reduced speed, even with only 75 percent effective brakes, a train is able to stop in a much shorter distance than the same train traveling at the maximum operating speed with 100 percent operative brakes. APTA also presented engineering evidence and test data that demonstrated that stopping distances remained well within signal spacing distances with a large margin of safety even for trains with as low as 85 percent effective brakes. Consequently, FRA will not impose speed restrictions on trains operating with 85 to 99 percent operative brakes.

Paragraph (d)(4). This paragraph contains the operating restrictions on moving equipment with defective brakes in long-distance intercity passenger trains. This paragraph permits the movement of defective brake equipment in these trains only to the nearest forward location designated as a repair location for this equipment by the operating railroad in the list required by § 238.19(d). FRA will also permit long-distance intercity passenger trains to continue in service past a designated repair location to the next forward passenger station only if the designated repair location does not have the facilities to safely unload passengers. Although FRA is permitting the continued operation of long-distance intercity passenger trains that develop en route brake failures resulting in 99 to 85 percent operative brakes at normal speeds, the final rule contains a speed restriction of no greater than 40 mph when the en route brake failures result in 84 to 75 percent operative brakes. Therefore, these trains gain flexibility in being permitted to move a greater percentage of defective equipment than currently allowed and are able to move that equipment to the next forward repair location rather than the ''nearest'' repair location as currently required. See 49 U.S.C. 20303(a). As noted previously, FRA believes that the safety of the traveling public mandates the flexibility of permitting passenger trains to continue to the next forward repair location or passenger station because requiring trains to reverse directions and perform back hauls to the nearest repair location increases the risk of collision on the railroad.

In this final rule, FRA is retaining the proposed requirement that operators of long-distance passenger trains designate the locations where repairs can be conducted on the equipment. Although FRA agrees that this provision puts the control of what locations constitute repair locations in the hands of the railroad, FRA believes that the operators of these long-distance intercity trains are in the best position to determine which locations have the necessary expertise to handle the repairs of the somewhat advanced braking systems utilized in passenger trains. Due to the unique technologies used on the brake systems of these operations and the unique operating environments, the facilities and personnel necessary to conduct proper repairs on this equipment are somewhat specialized and limited. Moreover, FRA is retaining the broad performance-based requirement that railroads operating this equipment designate a sufficient number of repair locations to ensure the safe and timely repair of the equipment. Contrary to the beliefs of some labor commenters, FRA believes that this performance standard provides FRA sufficient grounds to institute civil penalty enforcement actions or take other enforcement actions if, based on its expertise and experience, FRA believes the railroad is failing to designate an adequate number of repair locations.

Furthermore, rather than attempt to develop a standard applicable to all situations in the context of short-distance intercity and commuter trains, which FRA does not believe can be accomplished, FRA will approach the issue of what constitutes the next forward location where repairs can be effectuated based on a case-by-case

analysis of each situation. FRA believes that its field inspectors are in the best position to determine whether a railroad exercised good faith in determining when and where to move a piece of defective brake equipment. In making these determinations both the railroad as well as FRA's inspectors must conduct a multi-factor analysis based on the facts of each case. In determining whether a particular location is a location where necessary repairs can be made or whether a location is the next forward repair location in a passenger train context, the accessibility of the location, the ability to safely make the repairs at that location, and the safety of the passengers are the overriding factors that must be considered in any analysis. These factors have a multitude of sub-factors which must be considered, such as: the type of repair required; the safety of employees responsible for conducting the repairs; the safety of employees responsible for getting the equipment to or from a particular location; the switching operations necessary to effectuate the move; the railroad's recent history and current practice of making repairs (brake and non-brake) at a particular location; relevant weather conditions; potential overcrowding of passenger platforms; and the overcrowding of trailing trains.

Paragraph (e). This paragraph contains the operating restrictions on passenger trains with inoperative power brakes on the front or rear unit of the train. Similar provisions were contained in the 1997 NPRM and included in each of the various operating restriction contained in paragraph (d). In order to make the rule easier to understand, FRA has added this paragraph to the final rule and removed the repetitious language from each of the provisions contained in paragraph (d). As noted in the general preamble discussion above, FRA is slightly modifying the provisions related to the operation of trains with defective brakes on the front or rear car. In the 1997 NPRM, FRA proposed that if the power brakes on the front or rear unit become inoperative then a qualified person must be stationed at the handbrake on the unit. *See* 62 FR 49797. FRA recognizes that in some instances the handbrake on a car located at the front or rear of a train may not be accessible to a member of the train crew or may be located outside the interior of the car and, thus, unsafe for a crew member to operate while the train is in motion. FRA also recognizes that in many circumstances when a car at the front or rear of a train has inoperative brakes certain speed restrictions should be placed on the train; however, FRA believes that railroads are in the best position to determine what the appropriate speed restriction should be given the circumstances involved. Therefore, FRA is modifying the requirements for the use of such cars and paragraph (e) requires that appropriate speed restrictions be imposed with inoperative brakes on the front or rear unit and that trains containing equipment with inaccessible handbrakes or with handbrakes located outside the interior of a car be operated at restricted speed (i.e. 20 mph) and that the defective equipment be removed or repositioned in the train at the first possible location. The operating restrictions contained in this paragraph are consistent with current industry practice and should not impose any additional burden to the industry.

It should be noted that the provisions contained in 49 U.S.C. 20303(c) continue to remain applicable to a railroad when hauling equipment with defective or insecure power brakes or other safety appliances pursuant to the requirements contained in this final rule. This section of the statute contains the liability provisions attendant with the movement of equipment with defective or insecure safety appliances, including power brakes.

Section 238.17 Movement of Passenger Equipment With Other Than Power Brake Defects

This section contains the requirements for the movement of passenger equipment with a condition not in compliance with part 238, excluding a power brake defect and including a safety appliance defect, without civil penalty liability under this part. (Railroads remain liable, however, under 49 U.S.C. 20303(c), as described in the discussion of the previous section.)

As previously noted, there are currently no statutory or regulatory restrictions on the movement of passenger cars with defective conditions that are not power brake or safety appliance defects. The provisions contained in this section are similar to the provisions for moving defective locomotives and freight cars currently contained in 49 CFR 229.9 and 215.9, respectively. As these provisions have generally worked well with regard to the movement of defective locomotives and freight cars and in order to maintain consistency, FRA has modeled these movement requirements on those existing requirements. FRA is allowing passenger railroads the flexibility to continue to use equipment with non-safety-critical defects until the next scheduled calendar day exterior mechanical inspection. However, FRA intends the calendar day mechanical inspection to be the tool used by railroads to repair all reported defects and to prevent continued use of defective equipment to carry passengers. (Compare § 238.17(b) with § 238.17(c).) FRA intends for 49 CFR 229.9 to continue to govern the movement of locomotives used in passenger service which develop defective conditions, not covered by part 238, that are not in compliance with part 229. Part 229 will continue to cover (non-steam) locomotives that are used by the tourist railroads until such railroads are covered by part 238.

After review of the comments submitted and provided orally at the Working Group meetings, FRA is making some modest changes in this final rule regarding the movement of equipment with non-power brake defects. FRA agrees with the comments of railroad representatives that the 1997 NPRM may have been over-reaching in requiring a QMP to make a determination regarding the safety of moving a piece of defective equipment for any of the mechanical components addressed in this regulation. However, FRA also agrees with the comments submitted by labor representatives that railroads should not determine what components are considered safety-critical. Therefore, FRA will require a determination regarding the safety of moving a piece of equipment by a QMP (as discussed above) whenever a potential running gear defect is involved. FRA rejects the language proposed by APTA that the defect be a potentially ''safety-critical'' running gear defect as FRA believes that any defect to a running gear component is potentially safety-critical. In order to avoid confusion, FRA is providing an explicit definition of ''running gear defect.'' FRA is defining the term to mean any condition not in compliance with this part which involves a truck component, a propulsion system component, a draft system component, a wheel or a wheel component. In this final rule, FRA will permit the use of a qualified person to determine the safety and establish appropriate movement restrictions on continued use of equipment which involves non-running gear defects.

In paragraph (b), FRA is providing very limited flexibility to railroads to operate defective equipment from a location where a calendar day mechanical inspection was performed in order to effectuate repairs. FRA intends for the calendar day mechanical inspection to be as comprehensive as possible and to be the time when all

defective components are identified and repaired. In order to ensure that these daily inspections are performed by highly qualified inspectors, FRA has provided the railroads with considerable flexibility to perform these inspections at locations that are best suited to a quality and comprehensive inspection. Therefore, FRA will permit the movement of defective equipment from these inspection locations only with very stringent restrictions. Equipment containing running gear defects may only be moved from such locations if it is not in passenger service and is in a non-revenue train. Equipment containing non-running gear defects may be moved in a revenue train provided the equipment is locked-out and empty, except that the equipment may be used and occupied by a member of the train crew to the extent necessary to safely operate the train. Any defective equipment moved from such locations must also be properly identified as required in paragraph (c)(4) and moved in accordance with any movement restriction imposed. FRA believes these stringent movement restrictions will provide railroads limited flexibility to move defective equipment to a location where it can best be repaired but will limit a railroad's desire or ability to move defective equipment from these inspection locations and will encourage the performance of the calendar day mechanical inspections at locations where repairs to equipment can be conducted.

Paragraph (c) contains the requirements regarding the movement of passenger equipment that develops a condition not in compliance with this part, other than a safety appliance defect, while en route to its destination after its calendar day mechanical inspection was performed. This paragraph has been slightly modified from that proposed in the 1997 NPRM in order to recognize the differing requirements for running rear defects and non-running gear defects as noted in the discussion above. Paragraph (c)(1) retains the requirement that the QMP may make the determination regarding the continued use of equipment containing a potential running gear defect based on the description provided by on-site personnel. Although FRA recognizes the concerns raised by labor representatives, FRA believes that the rule must recognize the reality of current operations and acknowledge the fact that mechanical-type personnel are not readily available at every location on a railroad's line of road. Furthermore, when such off-site determinations are made the rule requires that the equipment only be moved to the next forward location where the equipment can be inspected by a QMP to verify the description of the defect provided by the on-site personnel. Paragraph (c)(2) also permits determinations regarding the continued use of equipment containing non-running gear defects to be made by a qualified person based on a description provided by on-site personnel. In cases where non-running gear defects are involved, FRA will not require that the equipment be inspected at the next forward location by a qualified person as the safety impact of such defects should be readily identifiable based upon a description by on-site personnel and can be adequately addressed via radio communication.

Paragraph (c)(4) contains the requirements for identifying defective equipment. This paragraph permits the identification and tracking of defective equipment in either of two ways. One option is to tag the equipment in a manner similar to what is currently required under § 215.9 for freight cars. The second option is to record the specified information in an automated tracking system. Although FRA is sensitive to the concerns raised by labor representatives regarding the use of automated tracking systems, FRA believes that provision must be made to allow railroads to take advantage of existing and developing technologies regarding the electronic maintenance and retention of records. Although railroad and FRA inspectors may require additional training on the use of electronic records, FRA believes that the use of such a medium to track defective equipment can expedite the identification and repair of defective equipment and, thus, reduce the time that defective equipment is operated in passenger service. In response to labor's concerns, paragraph (c)(5) has been added to this final rule and contains a provision which gives FRA the ability to monitor and review a railroad's automated tracking system and provides FRA the ability to prohibit or revoke a railroad's ability to utilize an automated tracking system in lieu of directly tagging defective equipment if FRA finds that the automated tracking system is not properly secure, is inaccessible to FRA or a railroad's employees, or fails to adequately track and monitor the movement of defective equipment. Furthermore, if the automated tracking system developed and implemented by a railroad does not accurately and adequately record the information required by this part, the railroad will be in violation of the movement for repair provisions contained in this section and subject to civil penalty liability.

Paragraph (d) contains a requirement that was inadvertently omitted from the 1997 NPRM but which is integral to the movement of equipment which has been involved in a derailment. This paragraph addresses the inspection of roller bearings on a car whose truck is involved in a derailment. As the proper operation and condition of a vehicle's roller bearing is a key element in ensuring the safe movement of the vehicle, FRA believes it is vital that this provision be included in these final regulations. The added requirement prohibits a railroad from continuing in service a piece of passenger equipment that has a roller bearing whose truck was involved in a derailment unless the bearing is inspected and tested in accordance with the provisions stated. The added provision is identical to the requirement currently contained in 49 CFR § 215.115(b). Although the existing provision is applicable to freight cars, virtually every passenger train operation follows the provisions contained in that section prior to returning a piece of equipment to service after it was involved in a derailment and, thus, should not result in any added burden to the industry. FRA believes that the practice is critical to ensuring the proper operation of the roller bearing after a derailment occurs and should be incorporated into this final rule.

Paragraph (e) contains the special statutory restrictions on the movement of passenger equipment with a safety appliance defect, other than a power brake defect. FRA does not intend to alter the current statutory requirements contained in 49 U.S.C. 20303 regarding the movement of passenger equipment with defective or insecure safety appliances. *See* §§ 238.229, 238.429, 238.431. Consequently, in paragraph (e), FRA is requiring that passenger equipment that develops a defective or insecure safety appliance continue to be subject to all the statutory restrictions on its movement. Under the current statutory language—

> A vehicle that is equipped in compliance with this chapter whose equipment becomes defective or insecure nevertheless may be moved when necessary to make repairs * * * from the place at which the defect or insecurity was first discovered to the nearest available place at which the repairs can be made—
>
> (1) on the railroad line on which the defect or insecurity was discovered; or
>
> (2) at the option of a connecting railroad carrier, on the railroad line of the connecting carrier, if not farther than the place of repair described in clause (1) of this subsection.

49 U.S.C. 20303(a). It should be noted that the safety appliance requirements applicable to Tier I equipment merely references the Railroad Safety Appliance Standards (49 CFR part 231); however, FRA has mandated separate safety appliance requirements for Tier II passenger equipment. *See* §§ 238.429 and 238.431.

As noted previously, the statutory provisions related to the movement of equipment with defective or insecure safety appliances permit the movement of such equipment to the nearest location where the necessary repairs can be made. The determination of what constitutes the nearest location where the necessary repairs can be effectuated in a safety appliance context is identical to the analysis required when dealing with a power brake defect. In making these determinations both the railroad as well as FRA's inspectors must conduct a multi-factor analysis based on the facts of each case. In determining whether a particular location is a location where necessary repairs can be made or whether a location is the nearest repair location in a passenger train context, the accessibility of the location, the ability to safely make the repairs at that location, and the safety of the passengers are the overriding factors that must be considered in any analysis. These factors have a multitude of sub-factors which must be considered, such as: the type of repair required; the safety of the passengers if a move against the current of traffic is conducted; the safety of employees responsible for conducting the repairs; the safety of employees responsible for getting the equipment to or from a particular location; the switching operations necessary to effectuate the move; the railroad's recent history and current practice of making repairs (brake and non-brake) at a particular location; relevant weather conditions; potential overcrowding of passenger platforms; and the overcrowding of trailing trains. Therefore, in many circumstances trains will be permitted to continue to the next forward location where the necessary repairs can be performed as such movement is necessary to ensure the safety of the traveling public by protecting them from the hazards incident to performing movements against the current of traffic.

Section 238.19 Reporting and Tracking Defective Equipment

This section contains the reporting and tracking requirements that passenger railroads must maintain regarding defective passenger equipment. FRA is requiring that each railroad develop and maintain a system for reporting and tracking equipment defects. Paragraph (a) of this section requires that, for each equipment defect discovered by the railroad on equipment used by the railroad, the system record the following information: the number by which the equipment is identified, type of defect, when the defect occurred, the determination made by a qualified person or a qualified maintenance person on handling the equipment, the name of such person, any operating restrictions placed on the equipment, and finally how and when the defect was corrected. FRA has not identified any specific method or means by which a railroad should gather and maintain the required information. FRA believes that each railroad is in the best position to determine the method of obtaining the required information which is most efficient and effective based on its specific operation. Thus, railroads could maintain this information either in some type of written medium or electronically in conjunction with some type of automated tracking system.

FRA believes that the reporting and tracking of defective equipment is an essential feature of any effective system safety program. Railroad managers are able to utilize such systems to ensure that the railroad complies with safety regulations, does not use unsafe equipment, makes needed repairs, and has failure data to make reliability-based decisions on maintenance intervals. Furthermore, most passenger railroads currently have some sort of reporting and tracking system in place. FRA recognizes that some railroads may have to incur additional initial costs to develop or improve defect reporting and tracking systems; however, FRA believes these costs can be recouped through the increased operating efficiency that an effective recording and tracking system provides.

Paragraph (a) makes clear that railroads have this tracking system in place within 26 months after publication of the final rule in the **Federal Register**. APTA recommended that railroads be provided a two-year phase-in period for this requirement to become effective. As the requirements for tracking defective equipment are contingent on completion of a railroad's training of its employees, FRA will provide the same time period for implementation of the reporting and tracking system. However, FRA believes that APTA's recommendation was based on a misunderstanding that the defect tracking system had to be an automated electronic system. As the previous discussion makes clear, the defect tracking system need not be an electronic automated system but could consist of a written records retention system. Thus, even if a railroad needs two or more years to develop an automated tracking system, the railroad could utilize a written tracking system while the automated system is being developed. Virtually all railroads currently track their defective equipment by some means; FRA believes that these current methods of compiling data could be slightly modified to include—or already include—all of the information required by this section.

Paragraph (b) requires that railroads maintain the required information for a period equal to one periodic maintenance interval for each specific type of equipment. FRA believes that this minimum retention period will ensure that the records remain available when they are most needed, but will not place a burdensome record storage requirement on railroads. However, FRA strongly encourages railroads to keep these records for longer periods of time because they form the basis for future reliability-driven decisions concerning test and maintenance intervals.

In paragraph (d), FRA retains the previously proposed requirement that railroads operating long-distance passenger trains and Tier II passenger equipment maintain a list of the locations where repairs can be made to the equipment's power brake components. Although FRA agrees that this provision puts the control of what locations constitute repair locations in the hands of the railroad, FRA believes that the operators of these long-distance intercity trains and Tier II passenger equipment are in the best position to determine which locations have the necessary expertise to handle the repairs of the somewhat advanced braking systems utilized in these passenger trains. Due to the unique technologies used in the brake systems of these operations and the unique operating environments, the facilities and personnel necessary to conduct proper repairs on this equipment are somewhat specialized and limited. Moreover, this final rule retains the broad performance-based requirement that railroads operating this equipment designate a sufficient number of repair locations to ensure the safe and timely repair of the equipment. Contrary to the beliefs of some labor commenters, FRA believes that this performance standard provides FRA sufficient grounds to institute civil penalty enforcement actions or take other enforcement actions if, based on its expertise and experience, FRA believes the railroad is failing to

designate an adequate number of repair locations.

Section 238.21 Special Approval Procedure

This section contains the procedures to be followed when seeking to obtain FRA approval of an alternative standard under §§ 238.103 (fire safety), 238.223 (fuel tanks), 238.309 (periodic brake equipment maintenance), 238.311 (single car test), 238.405 (longitudinal static compressive strength), or 238.427 (suspension system); for approval of alternative compliance under § 238.201 (covers structural standards other than the static end strength requirement); and for special approval of pre-revenue service acceptance testing plans as required by § 238.111. Procedures for obtaining FRA approval of inspection, testing, and maintenance programs for Tier II equipment under § 238.503 are found at § 238.505. FRA has revised this section in the final rule from that which was proposed in the NPRM, consistent with other changes made in the final rule.

FRA intends to entertain petitions for alternative compliance under § 238.201 to allow operation of equipment that complies with the static end strength requirement (§ 238.203) but does not fully comply with the other final standards in subpart C of part 238, provided the petitioner can demonstrate ''equivalent safety'' in that the equipment will operate at a level of safety that is at least equivalent to that afforded by the provision(s) of subpart C for which alternate compliance is sought. Equivalent safety may be afforded by features or measures that compensate for equipment that does not meet such standard(s) on its own. Equivalent safety is met when railroad employees, passengers, and the general public are no more at risk from passenger equipment that does not specifically meet the requirement(s) for which alternative compliance is sought, but is protected by compensating features or measures, than when the equipment specifically complies with the requirement(s) itself.

FRA recommends that the risk assessment portion of a railroad's system safety program be used to demonstrate equivalent safety. The burden would be on the petitioning railroad to perform a comparative risk assessment and to prove equivalent safety. FRA has experience with two instances involving different passenger equipment operations where a comparative risk assessment has been used successfully. Amtrak commissioned a comparative risk assessment between current Northeast Corridor operations and proposed operations involving the HST at speeds up to 150 mph. The risk assessment demonstrated that proposed countermeasures such as enhancements to the train control system and the increased structural strength and the crash energy management design of the HST should compensate for the increased operating speed. The comparative risk assessment quantitatively showed that, with the safety improvements included in the Amtrak plan, passengers were no more at risk travelling on the HST at 150 mph on the Northeast Corridor than if they were travelling on an existing Amtrak passenger train at a lesser speed on the same corridor.

The second instance is the proposed Florida Overland Express (FOX) operation of a French TGV high speed rail system in Florida that was being considered until January 1999. The State of Florida has withdrawn its support for the project, and work on the project has ceased. Nonetheless, FOX had performed a comparative risk assessment of three operations: the HST on the Northeast Corridor, the TGV on high speed lines in France, and the proposed FOX operation in Florida. *See* FRA Docket: RM Pet. 97–1. The analysis showed the TGV operation in France to pose less risk to passengers than the HST on the Northeast Corridor, and the proposed FOX operation to be even safer than the TGV in France. The FOX risk assessment suggested that collision avoidance provided by a dedicated right-of-way with no grade crossings more than compensated for the increased speed and decreased structural strength of the proposed equipment.

FRA cites these two instances as examples of what is expected to demonstrate equivalent safety for proposed operations when a petition for alternative compliance is submitted in accordance with § 238.201. Any such analysis would need to be predicated on a detailed engineering analysis of the crashworthiness of the vehicles proposed to be employed, permitting FRA to assess the gap in safety between those vehicles and equipment built to the specific requirements of subpart C. FRA would also expect an analysis showing the effectiveness of clearly compensating features or measures, such as closing grade crossings, providing absolute separation of lighter rail equipment from heavy rail equipment, or using highly capable signal and train control systems that significantly reduce the probability of accidents caused by human error. FRA would provide advice and guidance to organizations wishing to demonstrate equivalent safety, but the burden of performing a comparative risk assessment and establishing that the operation provides equivalent safety is on the entity proposing to operate equipment that does not fully comply with the standards in subpart C.

Section 238.23 Information Collection

This provision shows which sections of this part have been approved by the Office of Management and Budget (OMB) for compliance with the Paperwork Reduction Act of 1995. *See* 44 U.S.C. 3501 *et seq.* A more detailed discussion of the information collection requirements in this part is provided below.

Subpart B—Safety Planning and General Requirements

Section 238.101 Scope

This subpart contains safety planning requirements and other generally applicable requirements for all passenger equipment subject to this part.

Section 238.103 Fire Safety.

This section contains the fire safety planning and analysis requirements for passenger equipment, as well as the requirements for the materials used in passenger equipment. This section is comprised of parts of proposed sections 238.105 and 238.115 in the NPRM, which FRA has combined together in this final rule as APTA had suggested in its comments.

Paragraph (a)(1) contains the fire safety requirements for materials used in constructing passenger cars and cabs of locomotive ordered on or after September 8, 2000, or placed in service for the first time on or after September 9, 2002. Such materials shall comply with the test performance criteria for flammability and smoke emission characteristics as specified in Appendix B to this part, or alternative standards issued or recognized by an expert consensus organization after special approval of FRA's Associate Administrator for Safety under the procedures specified in section 238.21. Paragraph (a)(1) is based on proposed § 238.115(a)(1) in the NPRM. *See* 62 FR 49803.

In the final rule, paragraph (a)(1) expressly applies to materials used in constructing a passenger car or a locomotive cab, unlike the wording of proposed § 238.115(a)(1) in the NPRM, *see* 62 FR 49803, which expressly applied to all materials used in constructing the *interior* of a passenger