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Report to Congressional Requesters

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RAIL TRANSPORTATION

Federal Railroad Administration's New Approach to Railroad Safety

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Resources, Community, and
Economic Development Division

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The Honorable James L. Oberstar
Ranking Democratic Member
Committee on Transportation and
Infrastructure
The Honorable Robert E. Wise, Jr.
Ranking Democratic Member
Subcommittee on Railroads
Committee on Transportation and
Infrastructure
The Honorable Bruce F. Vento
House of Representatives

In response to your request, this report provides information on operational and safety trends in the railroad industry, and describes how the Federal Railroad Administration (FRA) has responded to these trends by developing a new partnering approach for improving safety on the nation's rail lines.

As arranged with your offices, unless you publicly announce its contents earlier, we plan no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies of this report to interested congressional committees, the Secretary of Transportation, and the Administrator of FRA. We will also make copies available to others upon request.

If you or your staffs have any questions, I can be reached at (202) 512-2834. Major contributors to this report are listed in appendix V.

John H. Anderson, Jr.
Director, Transportation Issues

Executive Summary

Purpose

In 1980, the Congress passed the Staggers Rail Act, which fostered substantial changes in the railroad industry. By 1995, fewer large freight railroads accounted for most of the industry's revenue and train miles. At the same time, these freight railroads substantially reduced their workforce and track networks. In response, the Congress and railroad labor have raised concerns that these changes in the industry could compromise safety.

The Ranking Democratic Member of the House Committee on Transportation and Infrastructure, the Ranking Democratic Member of that Committee's Subcommittee on Railroads, and Representative Bruce F. Vento asked GAO to describe (1) relationships that existed between operational and safety trends in the railroad industry from 1976 to 1995 and (2) the Federal Railroad Administration's (FRA) approach to improving safety on the nation's rail system. GAO was not able to identify any direct relationships between operational and safety trends because of limitations in the data that were available for the 1976 to 1995 period. Therefore, this report provides information on safety trends for the entire railroad industry and describes how FRA has responded to both operational and safety trends to develop a new partnering approach to improving safety on the nation's rail lines. In addition, chapter 1 provides information on operational trends in the freight industry.

Background

In 1995, the railroad industry consisted of Amtrak (the nation's largest passenger railroad), 14 large freight railroads—collectively known as class I railroads—as well as over 600 regional and smaller railroads. The industry had changed significantly since the Staggers Rail Act made it federal policy that railroads would rely, where possible, on competition and the demand for services, rather than on regulation to establish reasonable rates. Prior to the act, several of the largest freight railroads were earning a negative rate of return on investment and at least three were bankrupt. The deregulation contributed to changes in the composition and operation of the rail industry. From 1976 through 1995, the nation's largest freight railroads cut costs; increased the tonnage each train carried and the distance this tonnage was carried; downsized their workforce; and eliminated, sold, or abandoned thousands of miles of unprofitable or little-used track.

Since 1970, FRA has been responsible for regulating all aspects of passenger and freight railroad safety under the Federal Railroad Safety Act

of 1970, as amended.[1] In that capacity, FRA prescribes regulations and issues orders that relate to railroad equipment, track, signal systems, operating practices, and those aspects of railroad workplace safety that pertain primarily to the movement of trains. The Occupational Health and Safety Administration (OSHA) regulates those aspects of railroad workplace safety that are typical of any industrial workplace. FRA also enforces the Hazardous Materials Transportation Act as it pertains to the transportation of hazardous materials by rail.

Results in Brief

Railroad safety has improved significantly over the past 20 years. Reported accident and injury rates are down 70 and 74 percent, respectively, from 1976 levels. Railroad industry representatives attribute the reductions to improvements made to the railroads' plant and equipment. However, labor representatives expressed concern that, despite this progress, heavier loads and increased traffic may adversely affect rail safety in the future. Rail safety data indicate that the progress in reducing accidents has slowed in recent years. While preliminary data for 1996 show improvements in key safety statistics, about 1,000 people die each year as a result of grade-crossing accidents and trespassing, 11,000 railroad employees are injured, and thousands of people are evacuated from their homes as a result of the hazardous materials that are released during train accidents.

FRA instituted an important shift in its safety program in 1993 to address safety problems in the rail industry. Rather than using violations and civil penalties as the primary means to obtain compliance with railroad safety regulations, FRA has emphasized cooperative partnerships with other federal agencies, railroad management, labor unions, and the states. The partnering efforts generally focus on the nation's larger railroads and have resulted in FRA inspectors' conducting fewer site-specific inspections of the railroad industry overall. While the preliminary data for 1996 show improvements, it is too early to determine if FRA's new approach will sustain a long-term decline in accidents and fatalities. In addition, FRA has allocated fewer resources to responding to concerns about the level of workplace injuries for railroad employees and railroad bridge safety.

[1]In 1994, the Federal Railroad Safety Act of 1970, and other federal railroad safety statutes, were repealed, codified, and reenacted as chapters 201-213 of title 49, United States Code.

Principal Findings

Safety on the Nation's Railroads Has Generally Improved

Safety on the nation's railroads has improved since 1976, although the most rapid decrease in accidents occurred before 1987. FRA and industry officials attribute these improvements to advancements in technology, increased investment focused on a downsized infrastructure, and a more scientific approach toward reducing injuries. However, class I freight railroads, which account for most of the industry's revenue and train-miles, are now using fewer people, locomotives, and cars to haul more tonnage over fewer miles of track. Labor officials believe that these changes in operations could lead to more rail collisions and accidents as a result of greater congestion and fewer qualified employees to perform essential maintenance. While current safety trends are positive, it is uncertain how further advancements in technology or reductions in employment will affect safety in the future.

Nonetheless, further improvements in safety are needed, since more than 1,000 people die each year as a result of fatal collisions between cars and trains or as a result of trespassers on railroad property being struck by trains. Hazardous materials releases resulting from train accidents showed no clear trends between 1978 and 1995. About 261,000 people were evacuated across the United States because of rail-related hazardous materials releases occurring over these years. Concerns remain about evacuations because the volume of chemical traffic increased by over one-third from 1976 to 1995.

FRA's New Safety Strategy Involves Partnerships

Beginning in 1993, FRA reassessed its safety program to leverage the agency's resources and established a cooperative approach that focused on results to improve railroad safety. With rail traffic expected to grow through the remainder of the 1990s and beyond, FRA anticipated the need for new approaches to enhance site-specific inspections. As a result, FRA formalized this shift with the establishment of three new initiatives. First, in 1994, FRA took the lead responsibility for coordinating the Department of Transportation's multiagency plans to reduce fatalities at rail-highway crossings. Second, in 1995, FRA formally established the Safety Assurance and Compliance Program through which the agency works cooperatively with railroad labor and management to identify and solve the root causes of systemic problems facing the railroads. Third, in 1996, FRA established the Railroad Safety Advisory Committee to develop recommendations for

the agency's more complex or contentious rulemakings by seeking consensus among the parties affected by the rulemakings.

It is too early to determine if FRA's collaborative efforts will produce a sustained decline in rail accidents and fatalities. FRA credits its grade-crossing plan with contributing to a 19-percent drop in fatalities in 1996. Whether the plan contributed to the decline is uncertain: Past trends indicate that the total number of railroad fatalities declined by 34 percent from 1976 to 1983 (from 1,630 to 1,073) but then fluctuated within a range of 1,036 and 1,324 deaths between 1983 and 1995. FRA has implemented its Safety Assurance and Compliance Program with 33 railroads. This method has improved the safety on many large railroads, but Norfolk Southern Corporation has refused to participate until FRA substantiates safety problems at the railroad. With regards to the Advisory Committee, the FRA Administrator has referred seven major rulemaking tasks to it. While the committee has developed proposed regulations on track safety and radio communications standards, efforts to develop freight power brake regulations have encountered problems in the negotiations among FRA, railroad labor, and railroad management.

To accommodate the new initiatives, FRA has shifted some of its resources away from site-specific inspections, which have historically served as FRA's primary means of ensuring compliance with safety regulations. The 53,113 inspections conducted in 1995 were 23 percent below the 68,715 inspections conducted in 1994. As a result, a greater number of railroads are not receiving inspections, and inspectors are conducting fewer reviews of the railroads' own inspection efforts.

In addition, there are two important areas of railroad safety that FRA's collaborative approach does not systematically address: workplace safety for railroad employees and the structural integrity of railroad bridges. While a 1978 policy statement by FRA provides guidance on which workplace safety issues FRA and OSHA should cover, the two agencies' inspection presence on railroad property varies greatly. FRA routinely inspects the railroads' track, equipment, and operating practices. In contrast, OSHA inspectors visit railroad property only in response to an employee or union complaint about working conditions or when investigating a workplace accident. In January 1997, FRA revised its injury reporting requirements to capture additional information on workplace injuries, including where an injury occurred, what activity was being performed at the time, and what was the probable cause of the injury. According to FRA, the new information will provide better data for future

rulemakings. Because these requirements only recently became effective, FRA has yet to accumulate sufficient data for analysis. Once sufficient data are collected, the agency will be able to determine the causes of the most frequent and serious injuries and focus efforts on corrective actions.

FRA does not have regulations governing the structural integrity of the 100,700 railroad bridges in the nation. Instead, a 1995 Statement of Agency Policy provides guidelines for railroads to use for the formulation of their own bridge management programs. FRA inspectors do not cite specific defects for bridge conditions, nor do they recommend violations, as they do for track, signal, or equipment problems. Instead, FRA inspectors call conditions to the attention of railroad bridge maintenance and engineering officials. According to FRA, inspectors normally use informal procedures to advise railroad personnel of bridge problems. If a bridge condition presents a hazard of death or personal injury, and the bridge owner does not correct the condition, FRA exercises its emergency authority to restrict or prohibit train operation over the bridge. The railroad industry agrees with FRA's policy that regulations are not needed to address issues related to structural conditions of bridges. Railroad labor officials disagree and note that bridge safety is equally as important as track safety, for which FRA has regulations.

Recommendations

GAO recommends that the Secretary of Transportation direct the FRA Administrator to, in cooperation with the industry, where appropriate, (1) analyze injury data collected under the revised reporting requirements to determine the workplace safety issues that lead to the most numerous or the most serious injuries; (2) in areas where efforts to obtain voluntary corrective action do not address the causes of these injuries, consider developing regulations; and (3) use appropriate mechanisms, including the Safety Assurance and Compliance Program, to ensure that a finding of potential structural problems on a bridge is properly addressed by the bridge owner.

Agency Comments and GAO's Response

GAO provided a draft of this report to the Department of Transportation (DOT) for its review and comment. GAO met with departmental officials, including the FRA Administrator, Deputy Administrator and Associate Administrator for Safety. The officials indicated that they agreed with many portions of the draft report's historical perspective but said that the report did not adequately reflect the more recent accomplishments and potential of the Safety Assurance and Compliance Program. The officials

said that this program represents a fundamentally new approach to working with railroads to ensure regulatory compliance and accelerate safety improvements. The officials explained that although old methods of encouraging regulatory compliance contributed to a substantial reduction in railroad accidents between 1978 and 1986, the agency had determined that further progress would require new approaches.

FRA officials maintained that the Safety Assurance and Compliance Program provides the tools to leverage its limited resources while achieving continued safety improvements. The approach was based on President Clinton's directive to federal regulatory agencies that inspection and enforcement programs be designed to achieve results, not punishment. The officials indicated that the program establishes a framework for FRA to work cooperatively with railroad management and labor to identify and solve key safety issues. The officials indicated that while the program provides new tools to further enhance railroad safety, FRA will continue to make full use of all the enforcement options at its disposal as necessary and has begun to focus on enforcement where it is most likely to reduce accidents, injuries, and hazardous materials releases. FRA officials produced statistics that they maintain demonstrate the program's substantial accomplishments during the 3 years since its initial implementation. Finally, while agreeing with two of GAO's three recommendations, FRA commented on GAO's recommendation that the agency consider developing regulations to address the issues that continue to cause the most numerous or serious workplace injuries. FRA officials said that the agency would limit its consideration of regulations to those areas that are related to train operations.

In response to FRA's comments, GAO included additional information on the accomplishments the agency's new rail safety program has achieved by highlighting safety statistics for 1993 through 1996 and providing detailed information on the successes with the Safety Assurance and Compliance Program. GAO also included FRA's performance goals for improving rail safety that illustrate how rail safety has improved since 1993. However, reaching conclusions on FRA's new safety program by isolating safety improvements over the most recent 3-year period ignores past trends in railroad safety. Over the past 20 years, noteworthy reductions in railroad accidents, fatalities, and injuries were often followed by periods in which railroad safety subsequently worsened. As GAO concluded, it is too early to tell if FRA's efforts will sustain improvements in railroad safety over an extended period of time. Finally, GAO disagrees with FRA's contention that the agency should limit its consideration of regulations to those areas that

are related to train operations. FRA would have matters related to non-train operations under the purview of OSHA. But should FRA's analysis of workplace safety data show a preponderance of non-train-related injuries, the agency should not foreclose the need to consider regulations covering such injuries. Additional agency comments are included in chapter 3. FRA officials had additional technical and clarifying comments that GAO incorporated throughout the report, where appropriate.

Contents

Figures

Abbreviations

AAR	Association of American Railroads
DOT	Department of Transportation
FRA	Federal Railroad Administration
OSHA	Occupational Safety and Health Administration
RSAC	Railroad Safety Advisory Committee
SACP	Safety Assurance and Compliance Program

Introduction

The Federal Railroad Administration (FRA) enforces federal railroad safety statutes under a delegation of authority from the Secretary of Transportation. FRA's mission is to protect railroad employees and the public by ensuring the safe operation of freight and passenger trains. In 1980, the Congress passed the Staggers Rail Act, which fostered substantial changes in the railroad industry. By 1995, fewer large railroads accounted for most of the industry's revenue and train miles. At the same time, these railroads substantially reduced their workforce and track networks.

The Federal Railroad Administration

FRA has three major safety-related activities: (1) administering safety statutes, regulations, and programs, including the development and promulgation of standards and procedures, technical training, administration of postaccident and random testing of railroad employees, and management of rail-highway grade-crossing projects; (2) conducting research on railroad safety and national transportation policy; and (3) enforcing federal safety statutes, regulations, and standards by inspecting railroad track, equipment, signals, and railroad operating practices. FRA also enforces the provisions of the Hazardous Materials Transportation Act as it applies to rail.

FRA's Rulemaking Procedures

The impetus for rulemaking may come from the Congress; FRA's research programs; inspections; the National Transportation Safety Board's recommendations; or railroad management, employees, or unions. FRA's Office of Safety develops safety rules that are promulgated following requirements, such as those of the Administrative Procedure Act, that are contained in statutes and orders and are generally applicable to executive branch agencies, and other statutes and orders that are specifically applicable to the Department of Transportation (DOT) or FRA, such as the Federal Railroad Safety Act of 1970. Chapter 3 discusses FRA's rulemaking procedures in detail.

FRA's Research and Development Programs

FRA's research and development programs provide scientific and technological support for its rulemaking activities. FRA sponsors research on safety and performance improvements to freight and passenger equipment, operating practices, track structure, track components, railroad bridge and tunnel structures, signal and train control systems, and track-vehicle interaction. FRA also conducts research on the safety of

high-speed ground transportation, including the development of safety performance standards.

FRA's Enforcement Procedures

FRA has an inspection system and the legal tools to enforce federal railroad safety statutes and regulations. FRA's 270 railroad inspectors, who operate under eight regional administrators, specialize in one of five disciplines: motive power (e.g., locomotives) and equipment, track, signals, hazardous materials, and operating practices. Several states, whose railroad inspectors meet federal qualification standards, augment FRA's inspection force with about 130 additional inspectors.

When a condition or operating practice does not comply with federal statutes, regulations, or orders, an inspector may verbally recommend corrective action or prepare a defect report. As a result, the railroad usually takes corrective action. When the inspector determines that the best method of obtaining compliance is to assess a civil penalty, the inspector prepares a violation report, which is essentially a recommendation for a civil penalty—FRA's most frequently utilized enforcement tool.

In deciding whether to recommend civil penalties, an inspector is allowed to exercise considerable judgment under FRA's regulations. For example, the inspector may consider the degree of variation from the standard, the railroad's general history of compliance, its general level of current compliance, and the kind and degree of potential hazard under specific circumstances. If the inspector observes defects that are likely to result in injury, property damage, or loss of life, he or she is more likely to recommend civil penalties. Recommendations for civil penalties are reviewed at the regional level and by FRA's Chief Counsel. Although a schedule of initial civil penalties exists for specific infractions, the final monetary assessment is negotiated between FRA and the railroad considering several statutory settlement criteria, including the gravity of the violation and the violator's culpability and ability to pay.[1] In addition, individuals may be subject to civil penalties for willful violations of statutes, regulations, or orders. Generally, penalties can be assessed for up to $10,000 per violation. When the violation is a continuing one, each day that the violation continues constitutes a separate offense. In 1995, FRA closed over 1,300 civil penalty cases and collected over $5 million in fines.

[1]Due to certain statutory requirements, cases brought under the Hazardous Materials Transportation Act involve the use of more formal administrative procedures.

The Federal Railroad Safety Act of 1970 and related safety statutes also provide FRA with more severe enforcement tools. FRA's most severe enforcement tool is the emergency order, which the agency may issue when an unsafe condition or practice, or a combination of unsafe conditions or practices, causes an emergency situation involving a hazard of death or personal injury. FRA issued an emergency order in February 1996 after fatal commuter railroad accidents in Silver Spring, Maryland, and Secaucus, New Jersey, in which several people died. Among other things, the emergency order required prompt action by passenger and commuter railroads to develop emergency egress procedures that included the identification, labeling, and safe operation of passenger emergency exits. According to FRA's Assistant Chief Counsel, the agency has issued 20 emergency orders since 1970.

The agency also has the authority to issue compliance orders. FRA has used this authority on a few occasions to achieve specific remedial actions directed at improving compliance in specific areas. Unlike an emergency order, however, FRA can issue compliance orders only after providing an opportunity for a hearing.

Among its other enforcement tools, FRA also has the authority to issue special notices requiring repairs and taking unsafe track or equipment out of service. FRA issues about 80 to 100 special notices per year. FRA may also seek injunctive relief. The U.S. Attorney General, acting on behalf of the Secretary of Transportation, may seek a federal district court order to restrain violations or enforce rules and standards issued under the railroad safety laws. According to FRA's Assistant Chief Counsel, the agency has used this authority only once, to gain access to the property of a hazardous materials shipper that was attempting to place unacceptable restrictions on the access of FRA inspectors to its facilities.

Changes in the Freight Railroad Industry

FRA oversees an industry that has changed substantially over the past 20 years. The 88 class I freight railroads that operated in 1976 declined to 14 in 1995, owing to mergers and acquisitions. The Staggers Rail Act of 1980 accelerated changes in the freight industry. The act provided the railroads with greater flexibility to negotiate freight rates and respond to market conditions. The act made it federal policy that freight railroads would rely, where possible, on competition and the demand for services, rather than on regulation to establish reasonable rates. As a result of changes fostered by the act, today's freight industry has fewer large railroads; hauls more

tonnage over fewer miles of track; and employs fewer people, locomotives, and railcars.

Large Railroads Continue to Merge While Total Train Miles Decline

From 1976 through 1995, the number of class I freight railroads declined due to mergers and acquisitions. In 1976, 88 class I freight railroads—the nation's largest railroads—accounted for 98 percent of the industry's freight revenue, according to the Association of American Railroads (AAR), and 89 percent of its train miles. Many of these railroads were earning a negative rate of return or were moving toward insolvency; several bankrupt northeastern railroads were consolidated into the Consolidated Railroad Corporation, known as Conrail. In addition, years of declining profits had led to deferred maintenance on rights-of-way and the deterioration of railroad plant and equipment. Total train miles, a standard measure of rail activity has declined for the entire industry since 1976. However, in 1995, class I freight train miles were higher than 1976 levels.

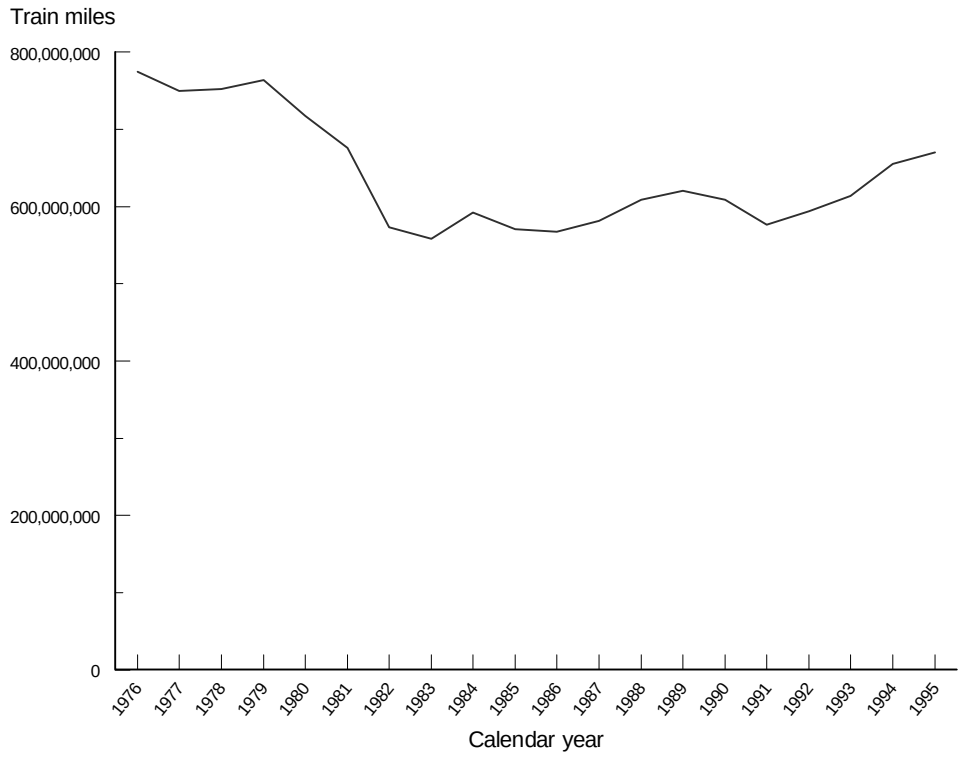
By 1995, mergers, acquisitions, and changes in the definition of a class I railroad had reduced the number of such railroads to 15—Amtrak (the nation's largest passenger railroad) and 14 freight railroads. In spite of the reduction in the number of class I freight railroads, these railroads still accounted for 91 percent of the industry's freight revenue and 82 percent of its train miles in 1995. The 14 class I freight railroads were the Atchison, Topeka, and Santa Fe Railway; Burlington Northern Railroad Co.; Chicago and North Western Railway Co.; Consolidated Rail Corp.; CSX Transportation; Denver and Rio Grande Western Railroad; Grand Trunk Western Railroad, Inc.; Illinois Central Railroad Co.; Kansas City Southern Railway Co.; Norfolk Southern Corp.; Soo Line Railroad Co.; Southern Pacific Transportation Co.; St. Louis Southwestern Railway Co.; and Union Pacific Railroad Co.

Since 1995, the trend in mergers has continued. Burlington Northern/Santa Fe was created on September 22, 1995 from the merger of the Burlington Northern Railroad Co. and the Atchison, Topeka, and Santa Fe Railway. The two railroads officially began operating as a single railroad in 1996. The merger of Union Pacific Railroad Co. and Southern Pacific Transportation Co. in 1996 reduced the number of class I freight railroads to 10. In 1997, CSX Transportation and Norfolk Southern Railway Co. proposed to purchase Conrail, which could further reduce the number of class I freight railroads. FRA officials believe that within the next 5 to 10 years, the remaining class I freight railroads could be merged into two transcontinental railroads.

As the class I freight railroads merged, the number of regional and local railroads increased. FRA believes that the number of these types of railroads will continue to grow as the number of class I freight railroads shrinks due to mergers and acquisitions.

While the number of class I freight railroads has declined and the number of nonclass I freight railroads has increased, overall industry operations are still below 1976 levels. As figure 1.1 shows, total train miles, commonly used by FRA and the railroad industry to measure the level of rail activity, fell 28 percent—from 774.8 million in 1976 to a low of 558.2 million in 1983.

Figure 1.1: Total Train Miles, Calendar Years 1976 Through 1995



Source: FRA.

Train miles have declined overall for the railroad industry. Since 1991, total train miles have risen to 669.8 million, which is still below 1976 levels. However, 1995 class I freight train miles exceeded their 1976 levels. In 1976, class I freight train miles were 424.8 million, compared with 458.3 million in 1995—an increase of 8 percent.

Tonnage on the Nation's Railroads Has Increased

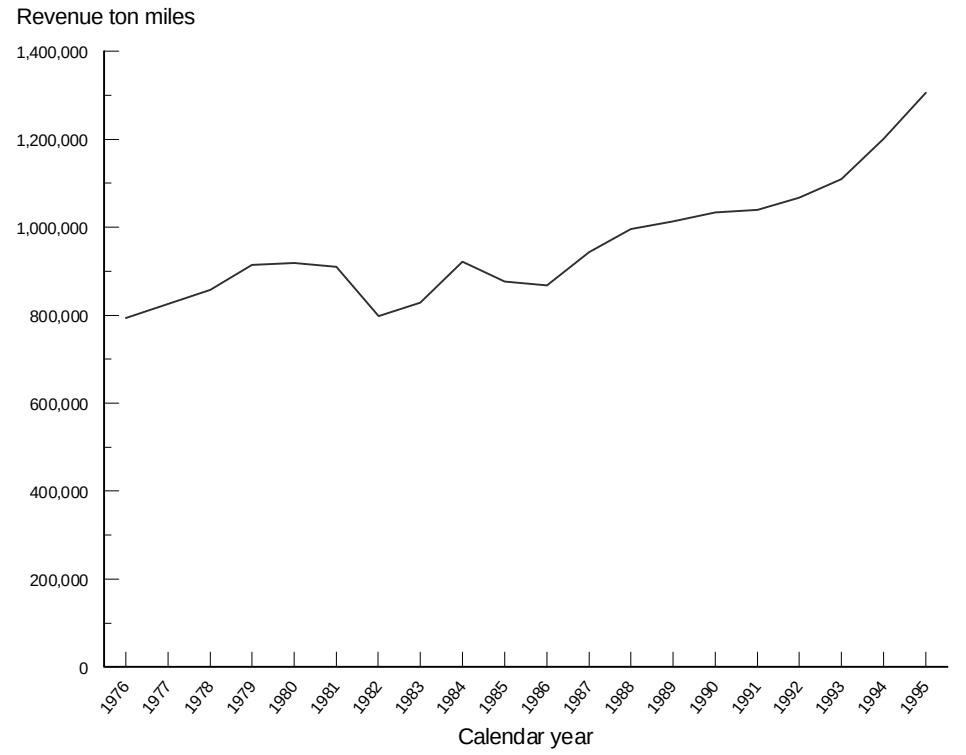
Class I railroads have experienced growth in freight tonnage. In part, this growth has occurred because of deregulation of the rail industry as well as improvements in technology that enabled railroads to carry heavier loads over longer distances. In addition, class I freight railroads invested heavily in their infrastructure in the 1980s, improving both the capacity of their track and freight cars. Industry experts believe that rail traffic will continue to grow through 2006.

Since 1976, class I freight railroads have increasingly been able to carry more tonnage over longer distances. For example, in 1995, each train hauled an average of 2,870 tons—up from 1,954 tons in 1976, and the average length of haul was 843 miles—up from 564 miles in 1976. As a result, the class I freight railroads were able to increase revenue ton miles[2] by 64 percent.[3] As shown in figure 1.2, revenue ton miles increased from 794 billion in 1976 to over 1.3 trillion in 1995.

[2]A revenue ton mile is the movement of 1 ton of revenue freight 1 mile.

[3]The revenue ton mile totals exclude Amtrak.

Figure 1.2: Class I Freight Railroads' Revenue Ton Miles, Calendar Years 1976 Through 1995



Source: AAR.

Railroad officials said that improvements in railroad technology have allowed railroads to increase the average tonnage carried per train without requiring additional locomotives or freight cars. For example, class I freight railroads have replaced many of their older locomotives with newer ones that are more powerful and have better traction. As a result, these railroads have been able to reduce the number of locomotives in service by 32 percent. Also, while the average number of revenue tons per train load increased from 1976 to 1995, the average number of cars per train remained unchanged. The increase in tons carried per train resulted, in part, from the construction of lighter-weight cars made from aluminum, rather than steel. The freight railroads also upgraded their track in the 1980s by replacing it with stronger rails and improved track ties. In addition, advancements in the strength of freight car wheel assemblies

have allowed the industry to use larger and longer freight cars and increase their maximum gross load capacity from 263,000 to 315,000 pounds. Railroads have also introduced double-stacked cars for their intermodal service, thereby increasing the carrying capacity of these cars.

Rail traffic is expected to continue to grow. In response to a draft of this report, FRA officials indicated that total rail tonnage is expected to increase at a rate of 1.5 percent annually through 2006. Coal, chemicals, farm products, and intermodal traffic, which account for roughly 60 percent of rail tons originated, are expected to increase over this period due to strong demand. FRA officials believe that coal traffic will increase as the demand for coal increases, particularly for electricity generation, and that the demand for chemicals by textile and paper mills and tire producers will fuel the growth in chemical traffic. Farm product traffic—mostly for grain shipments—is forecasted to increase with higher crop yields for domestic production as well as a greater number of exports. Finally, FRA officials believe that intermodal traffic—which grew at a rate of 5 percent per year from 1986 through 1995—will continue to grow, but at a slower rate.

Reductions in Class I Freight Railroad Workforce

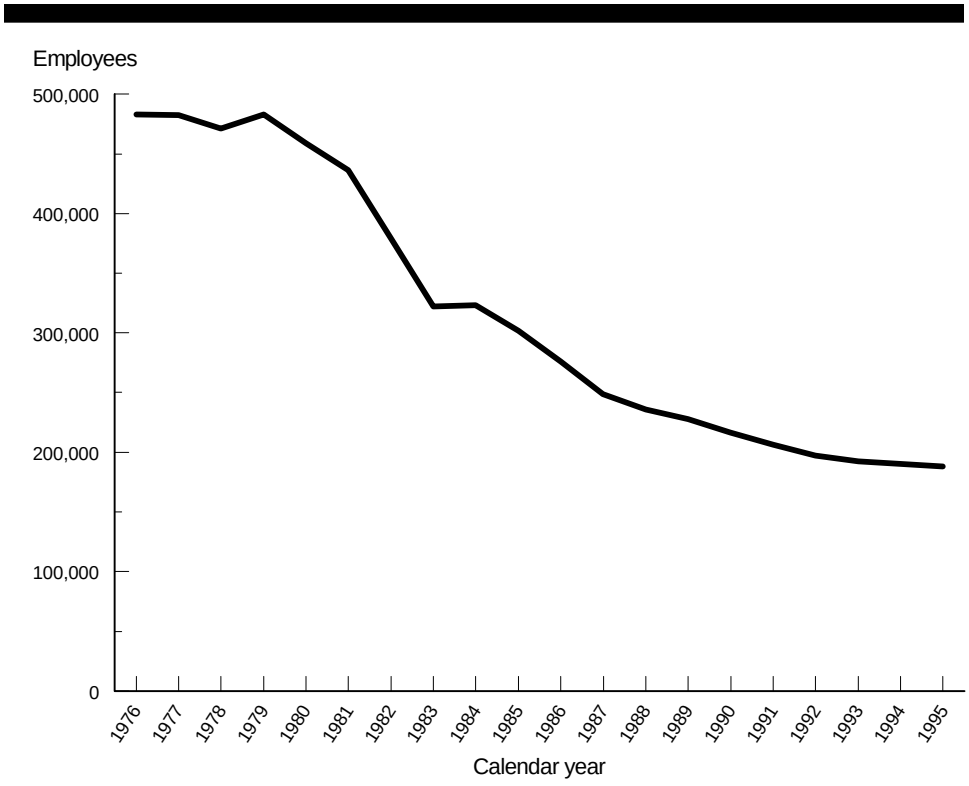
Class I freight railroad employment has declined by more than 60 percent since 1976 and is forecast to continue declining over the next 10 years. Meanwhile, nonclass I freight railroad employment has increased. New technology, compromises from labor, and railroad mergers have each contributed to the class I freight railroads' ability to diminish their workforces.

From 1976 through 1995, class I freight railroads reduced their workforce by 61 percent—from 483,000 to 188,000 employees (see fig. 1.3).[4] According to FRA, some of the decline in class I freight railroad employment was offset by a growth in regional railroad and short-line employment. However, total employee hours worked across the entire industry—not just for the class I freight railroads—declined by 52 percent during this period, suggesting that employment did not entirely shift from large to small railroads.[5] As table 1.1 shows, downsizing affected all categories of railroad employees.

[4]Employment statistics exclude contractors.

[5]Average annual employment totals were not available for the entire industry.

Figure 1.3: Class I Freight Railroad Employment, Calendar Years 1976 Through 1995



Source: AAR and the Railroad Retirement Board.

Table 1.1: Change in Class I Freight Railroad Employment by Category, Calendar Years 1976 Through 1995

Employment category	Calendar year 1976	Calendar year 1995	Percent change
Executives, officials, and staff assistants	16,105	10,708	–34
Professional and administrative	99,312	26,940	–73
Maintenance-of-way and structures[a]	86,901	40,033	–54
Maintenance-of-equipment and stores[b]	102,996	37,106	–64
Transportation (other than train and engine)[c]	34,130	9,597	–72
Transportation (train and engine)[d]	143,438	63,831	–55
Total	482,882	188,215	–61

[a]Employees who maintain track, signal systems, buildings, and bridges.

[b]Employees who maintain or repair locomotives and freight cars.

[c]Employees such as dispatchers and telegraphers.

[d]Employees such as engineers, conductors, and brakemen.

Source: AAR and the Railroad Retirement Board.

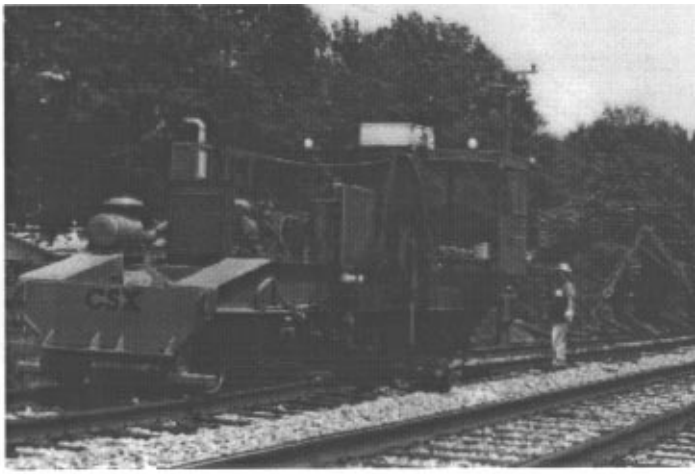
In a response to a draft of this report, FRA officials said that the Railroad Retirement Board estimates that class I railroad employment will continue to decline to 143,000 by 2006—a 24-percent decline from 1995 employment levels. Regional and short-line employment was also forecast to decline.

According to railroad industry representatives, technology innovations, labor concessions, and railroad mergers enabled the class I freight railroads to achieve this reduction. For example:

- Modern maintenance-of-way equipment has reduced the number of maintenance-of-way and structures employees in a tie gang (a group of railroad employees assembled to conduct track maintenance) from between 7 and 15 to between 3 and 5. Figure 1.4 shows examples of modern maintenance-of-way equipment.

Figure 1.4: Examples of Modern Maintenance-Of-Way Equipment

Tamper/liner, used to smooth the surface of the ballast and align the track.



Tie inserter, used to remove and replace wooden ties.

Source: AAR.

- End-of-train devices—electronic boxes that monitor brake-line pressure and are attached to the train's last car—have replaced almost all cabooses and their crews, resulting in a 25-percent reduction in train crew size.
- Electronic waybilling and computerization have considerably reduced the need for clerical personnel to track the location and contents of freight cars.
- Improvements in traffic control systems have increased line capacity.
- Labor concessions reduced the average train crew size from four to two or three—including the elimination of the fireman position (a position that was important during the era of steam locomotives)—allowed greater distances before a crew change, and allowed employees to perform tasks in more than one craft.[6]
- Mergers have contributed to the reduction in class I freight railroads from 88 in 1976 to 14 in 1995. With these mergers came reductions in employment.
- The Staggers Rail Act made it easier for railroads to abandon unprofitable or duplicative lines or sell them to short-line and regional railroads. The

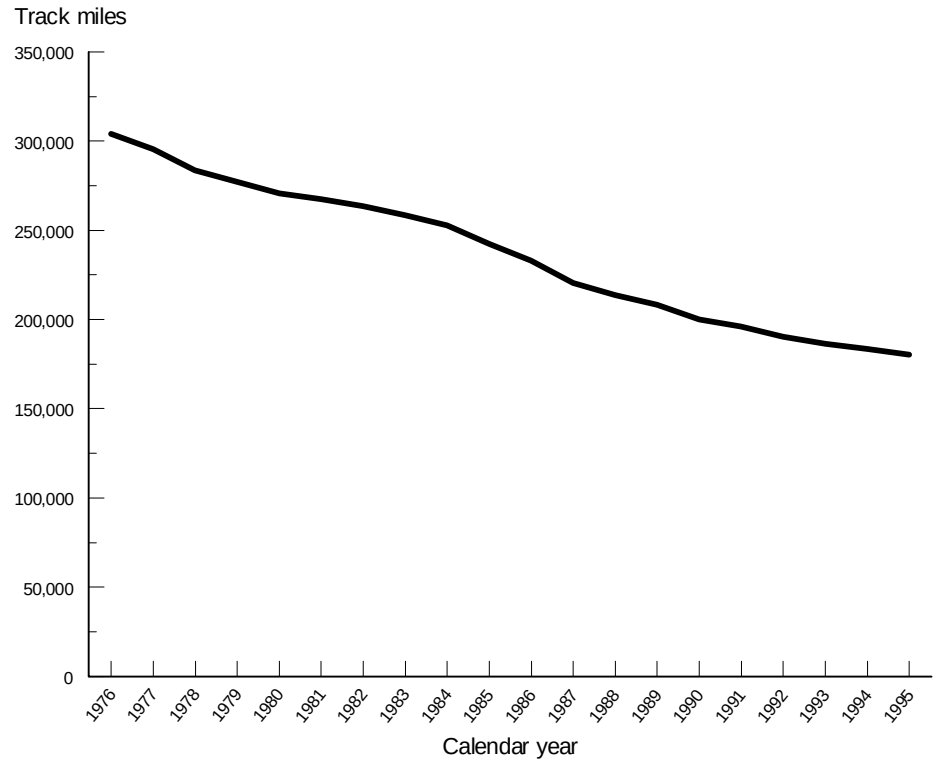
[6]A craft constitutes a particular type of job. For example, electrical workers and welders would belong to different crafts.

elimination of these lines allowed the larger railroads to make further employment reductions.

Reductions in Miles of Track Owned by Class I Freight Railroads

The Staggers Rail Act of 1980 made it easier for freight railroads to cease unprofitable operations. Accordingly, the class I freight railroads eliminated, abandoned, or sold 41 percent of their trackage (see fig. 1.5). According to AAR, class I freight railroad traffic was not distributed evenly over the entire network that they owned in the 1970s. Most of the track that the class I freight railroads eliminated was little-used and expensive to maintain. However, most of the traffic has been and still is on the main lines. In addition to reductions in employment, the reduction in track miles has allowed the class I freight railroads to concentrate their capital investments on improving their high-volume main-line corridors. The railroads are enlarging or eliminating tunnels, increasing bridge clearances, and expanding electronic signal systems over more main-line corridors. For example, Conrail and the state of Pennsylvania completed a 3-year capacity improvement project along Conrail's main line from Pittsburgh to Philadelphia. This project increased tunnel and bridge clearances along the corridor, which enabled Conrail to use double-stacked container cars and thereby move more commerce into Philadelphia.

Figure 1.5: Miles of Track Owned by Class I Freight Railroads, Calendar Years 1976 Through 1995



Source: AAR.

FRA officials said that the total rail network is projected to decline slightly each year. The net effect of the slow decrease in the rail network, together with the slight increase in traffic on the main lines, will be to increase the concentration of rail traffic on some lines.

Objectives, Scope, and Methodology

In view of the changes that have occurred in the railroad industry over the past 20 years and concerns about overall safety in the railroad industry, the Ranking Democratic Member of the House Committee on Transportation and Infrastructure, the Ranking Democratic Member of that Committee's Subcommittee on Railroads, and Representative Bruce F. Vento asked us to describe (1) relationships that exist between

operational and safety trends in the railroad industry from 1976 to 1995 and (2) FRA's approach to improving safety on the nation's rail system.

To address the first objective, we obtained information on the operational trends in the railroad industry from the AAR and safety statistics from FRA's annual safety bulletins for 1976 through 1995 (the most recent edition available). FRA officials also provided us with preliminary safety statistics for 1996. Because of time limitations, we did not perform a reliability assessment on the automated database that is the source for FRA's bulletins. AAR and FRA are the primary sources for information on operational and safety trends in the railroad industry for the 20-year period of our review. However, the data from AAR and FRA are not directly comparable because they cover different aspects of the railroad industry. AAR's data provide important information on how the freight industry has changed since 1976, such as the miles of track owned and number of locomotives and cars used. AAR collects these data only for the class I freight railroads. In contrast, FRA's safety data cover the entire industry—both freight and passenger (including commuter) railroads. FRA's 20-year data could not be segregated to isolate safety statistics only for the class I freight railroads. Although class I freight railroads account for 91 percent of the industry's freight revenue and 82 percent of its train miles, any direct comparison with safety data that are not limited specifically to class I freight railroads would be inconclusive. Accordingly, we were not able to reach conclusions on whether there are direct relationships between operational trends in the freight industry and safety trends for the entire industry. However, chapter 1 provides information on operational trends in the freight industry. Chapter 2 provides information on safety trends in the entire industry and presents the views of FRA, rail management, and labor unions on how freight operational changes might have affected railroad safety. Chapter 3 then describes how FRA has responded to these operational and safety trends and developed a new partnering approach to improving safety on the nation's rail lines.

We also discussed operational and safety issues with FRA's Administrator and Deputy Administrator and officials from three headquarters offices—Chief Counsel, Safety Enforcement, and Safety Analysis; officials of the National Transportation Safety Board; railroad labor representatives; officials at AAR; Operation Lifesaver[7]; the Chemical Manufacturers Association; Railroad Retirement Board; and the National

[7]An organization that receives private and federal funds to conduct rail-highway grade-crossing safety programs throughout the country.

Railroad Construction and Maintenance Association. We also reviewed several reports by the National Transportation Safety Board.

To address the second objective, we met with FRA officials and reviewed FRA documents on the new programs and associated activities. Our review included the October 1996 agency report to the Congress assessing the benefits of the current safety program, as well as FRA notices in the Federal Register and rulemaking dockets. In gauging industry reaction to FRA's new programs, we met with officials of AAR, the American Short Line Railroad Association, the Regional Railroads of America, and several labor organizations. Finally, in order to examine how FRA's new programs have affected resources available to oversee the railroad industry, we obtained and analyzed data on FRA's inspection activities contained in the Railroad Inspection Reporting System database for calendar years 1992 through 1995. (See app. I for more details on this system.)

To obtain a first-hand perspective of railroad operations and of how FRA's safety strategy is being implemented in the field, we interviewed FRA's regional administrators and inspectors in two field offices. We also interviewed officials and observed operations at the Burlington Northern/Santa Fe Railway, a class I railroad; the Maryland Midland Railway, a small railroad; and the Belt Railway of Chicago and Houston's Port Terminal Railroad Association, both of which perform switching and terminal operations for larger railroads. Additionally, we observed research activities at AAR's Transportation Test Center in Pueblo, Colorado.

For information on workplace safety, we interviewed officials from FRA and the Department of Labor's Occupational Safety and Health Administration (OSHA). We also talked with officials in several states that have the authority to operate their own occupational health and safety programs: California, Kentucky, Minnesota, Vermont, and Wisconsin. We also reviewed appropriate legislation, regulations, and agency documents governing workplace safety oversight. We conducted our work from July 1996 through June 1997 in accordance with generally accepted government auditing standards.

We provided a draft of this report to DOT for its review and comment. We met with FRA's Administrator, Deputy Administrator, and Associate Administrator for Safety. FRA's comments and our response are provided in the executive summary and the end of chapter 3.

Railroad Safety Trends

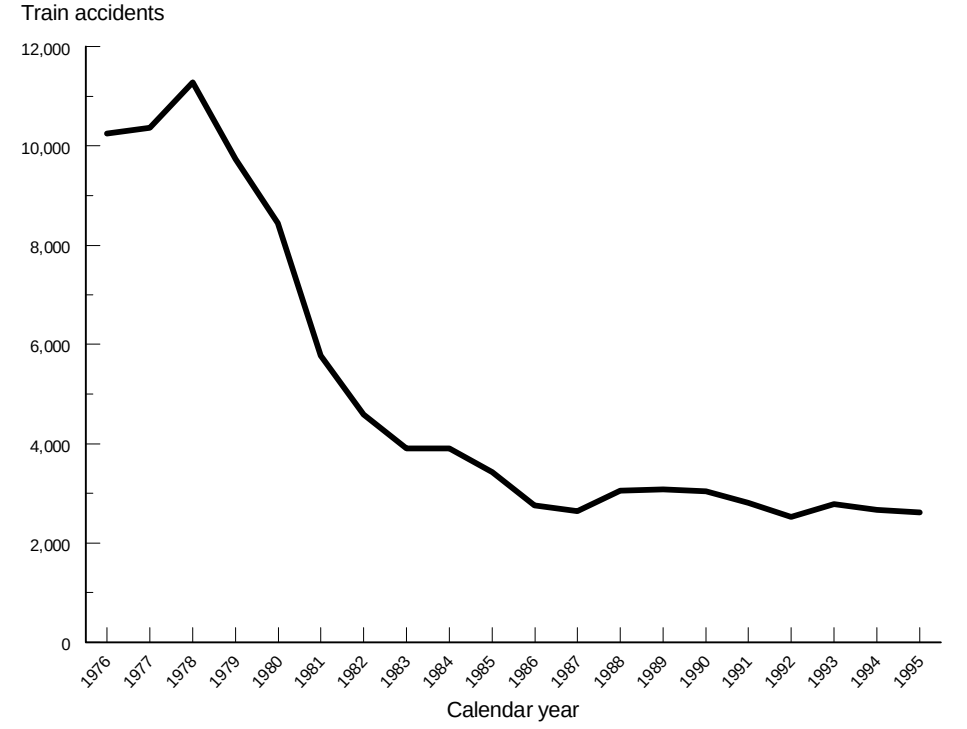
Railroad safety has generally improved over the past 20 years. Railroad accident rates are down from 1976 levels, but the rate of decline has slowed since 1987. Further improvements in safety are needed, since, in 1995, over 1,000 people died in railroad accidents and incidents, 11,000 railroad employees were injured, and nearly 3,000 people were evacuated from their homes as a result of hazardous materials released from train accidents.

Train Accidents Have Declined by 74 Percent

As shown in figure 2.1, the number of train accidents declined from 10,248 in 1976 to 2,619 in 1995—a 74-percent reduction. The number of accidents per million train miles showed similar improvements with a 70-percent decline during this same period.[1] While the number of accidents declined rapidly prior to 1987, progress continued at a slower rate from 1987 to 1995. As chapter 1 noted, class I freight railroads, which account for most of the industry's freight revenue and more than three-quarters of its train miles, are using fewer people, locomotives, and cars to haul more tonnage over fewer miles of track. On the one hand, labor officials contend that these changes could lead to more rail collisions and accidents as a result of greater congestion and fewer qualified employees to perform essential maintenance. In addition, FRA inspectors have observed signs of degraded maintenance on some railroads in their recent inspections. On the other hand, AAR and rail management contend that (1) most congestion is confined to rail yards and (2) the railroads have employed better scheduling and technology to maintain the rail infrastructure. In addition, detailed safety statistics show continued reductions in accidents resulting from collisions, derailments, track problems, and human errors.

[1]Showing accidents per million train miles takes into account changing rail activity over the years.

Figure 2.1: Total Train Accidents, All Railroads, Calendar Years 1976 Through 1995



Source: FRA.

Rail Labor Believes That Congestion and Lack of Maintenance Could Affect Rail Accidents

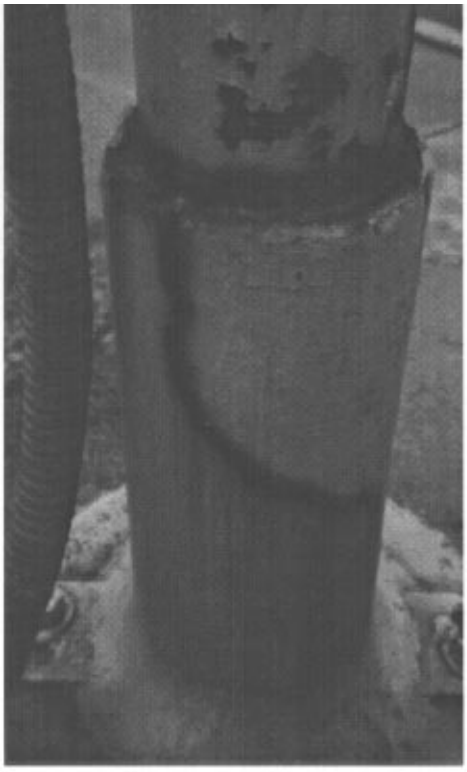
Between 1976 and 1995, the number of train miles for class I freight railroads increased by 7 percent, while these railroads decreased the number of track miles they owned by 41 percent during the same period. These changes suggest that more traffic is being concentrated on substantially fewer miles of track, resulting in more congestion and the potential for more collisions. In addition, a senior rail labor official said that reductions in railroad dispatchers (employees who control train movements) lend further concern about their ability to ensure safety. Some class I railroads have created large control centers from which dispatchers direct train movements throughout the railroad's network. According to the official, dispatchers in these centers have larger territories to control and are less familiar with their territories than in the past when they covered smaller territories. These factors increase the chances that a dispatcher could direct two trains to occupy the same location at the same time.

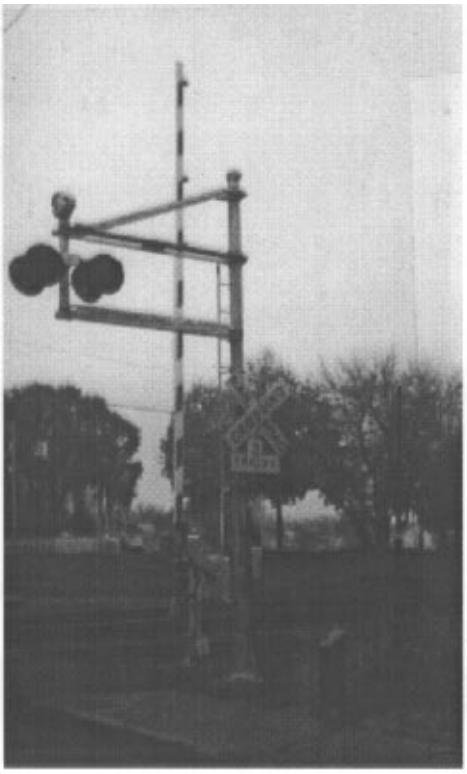
In addition to the reduction in dispatchers, labor officials say that reductions in maintenance crews could affect accident and collision rates. For example, the number of maintenance-of-equipment and stores employees at class I railroads declined by 64 percent from 1976 through 1995. Many of these employees are carmen who repair and maintain railcars. Railroad labor officials contend that the reduction in qualified carmen to maintain railcars has resulted in the railroads' using unqualified train crews to inspect trains prior to departing terminals. As a result, labor officials said that railroads are dispatching unsafe trains.

In addition, a labor representative noted that maintenance requirements for track have increased substantially as the industry has increased the amount of tonnage carried in each car. While the installation of heavier rail has mitigated some of the effects of heavier loads, fasteners and ties need more frequent attention. Labor-saving devices have reduced the need for some employees, but labor officials believe that such devices are oriented toward major renewal projects, rather than day-to-day maintenance. As a result, maintenance crews tend to spend much of their time attending to crises. Finally, the officials told us that increases in traffic volume are making it more difficult to complete needed maintenance on the rail lines, although machinery that gets to the work site faster and does the job faster has helped.

FRA inspectors have observed safety problems on some class I freight railroads which they attribute to reduced maintenance. For example, the trackage on one class I freight railroad, which in previous years had exceeded FRA's safety standards, had subsequently degraded to the point at which it minimally met the standards. In the case of another class I freight railroad, FRA inspectors found that the railroad did not have sufficient signal maintainers to test the systems and make necessary repairs. As a result, inspectors found signal structures that had decayed to a condition such that railroad employees could not climb them to perform routine inspections. The inspectors also observed signal wires that were not properly covered and thereby exposed to poor weather conditions. Figure 2.2 shows these conditions.

Figure 2.2: Examples of Neglected Maintenance





Corroded signal pole that could break while employees are performing maintenance on the signals that it supports. Photo at left is a close-up of the pole pictured at the right.

Signal wires lying on the ground, subject to damage by vehicles or by workers walking or tripping over them.

Source: FRA.

Our analysis of AAR's data for class I freight railroads lends some support to the inspectors' observations. Although class I freight railroads had 41 percent less track to maintain in 1995 than in 1976, during this same period these railroads eliminated 54 percent of the employees who maintain the track, resulting in fewer maintenance employees per track mile. For example, in 1976, these railroads employed 86,901 maintenance-of-way and structures employees to maintain 304,100 miles of track—a ratio of 29 employees per 100 miles of track. In 1995, these railroads employed 40,033 maintenance-of-way and structures employees to maintain 180,419 miles of track—a ratio of 22 employees per 100 miles

of track. As a result, the number of maintenance-of-way and structures employees per 100 miles of track dropped by 22 percent from 1976 through 1995 for class I freight railroads.

Representatives from labor unions said that railroads must make more investments in technologies that will improve safety. Labor officials noted that positive train separation—a system designed to prevent collisions—is one safety investment that the railroads should make.

Railroad Management Believes That Mergers and Technology Improvements May Lessen Rail Accidents

According to a senior AAR official, congestion on the railroads' main lines has not increased significantly. Although the railroads have eliminated, sold, or abandoned many miles of track, the AAR official said that most of the traffic today remains concentrated over the same main lines used 20 years ago. In addition, FRA and railroad officials said that most congestion occurs in and around rail yards. In locations where main-line congestion has become a problem, the railroads are adding capacity as needed, according to railroad and AAR officials. However, AAR was not able to provide expenditure data on the railroads' total investments made to increase rail-line capacity. In addition, FRA did not have data that showed where congestion exists on the nation's rail lines.

According to a senior official of a class I railroad, railroads are cooperating with one another to reduce potential congestion. For example, the Union Pacific and Southern Pacific Railroads have converted parallel tracks to one-way operations in opposite directions, thereby greatly increasing the tracks' combined capacity. The official said that mergers of major railroads have resulted in other similar arrangements. Mergers have also eliminated some of the need to interchange cars at freight yards, which allows trains to avoid some of the more congested areas.

According to AAR officials, advancements in the strength of freight car wheel assemblies have allowed the industry to use larger and longer freight cars and increase their maximum gross load capacity from 263,000 to 315,000 pounds. These heavier loads place more stress on the rails, which could imply the need for additional maintenance. However, AAR officials said that the impact of these cars on the rail infrastructure is mitigated by new cars that are constructed with lighter materials. The officials also said that reducing the amount of track that the class I freight railroads owned allowed them to concentrate their capital investments on maintaining their remaining track and associated signal systems. Part of

this capital investment involved the installation of stronger rail and better ties to stand up to the increased loads. AAR officials believe that these factors have reduced accidents caused by track and signal defects.

AAR officials also said that neither congestion nor employment reductions have adversely affected railroads' ability to perform maintenance on the tracks. By carefully scheduling maintenance windows and using labor-saving devices that get the job done using fewer employees, the railroads have been able to maintain tracks in spite of heavier traffic. For example, in one instance, a railroad arranged for advance delivery of its coal and shut down a complete line for a week. By working around the clock, the railroad completely rebuilt the line over the course of the week.

AAR officials noted that if safety problems were occurring, they would show up in statistical data. As table 2.1 shows, while the overall accident rate declined more rapidly between 1976 and 1987, it continued to decline by 2 percent per year after 1987. In addition, collisions and accidents caused by failed equipment, signals, or track defects also continued to decline.

Table 2.1: Comparison of Average Annual Decline in Types of Accidents and Causes of Accidents Per Million Train Miles, Calendar Years 1976 Through 1987 and 1987 Through 1995

Types and causes of accidents	Average annual percentage decline	
	1976-87	1987-95
All accidents	9	2
Collisions	10	4
Accidents caused by failed equipment	11	6
Accidents caused by signal or track defects	10	2
Accidents caused by human error	6	0

Source: GAO's analysis of FRA's data.

AAR also contends that the slowing of improvements in the accident rate should not be attributed to employee reductions but to railroads' having already addressed the easiest-to-solve safety problems. Most of the reductions in railroad employees who inspect, repair, and operate trains occurred by the end of 1987. AAR noted that further reductions in accidents will be more difficult to achieve.

For example, human factors-caused accidents, which declined by an annual average rate of 6 percent between 1976 and 1987, showed no decline from 1987 through 1995.[2] AAR recognizes that human factors-caused accidents continue to be a problem. One class I freight railroad commissioned a study on employee fatigue in an effort to better understand how to reduce these types of accidents further. However, FRA's preliminary data for 1996 show a 19-percent reduction in human factors-caused accidents from 1995 levels. In addition, railroad labor noted that statistical data may overstate the role of human error in rail accidents. Labor officials told us that railroad management favors placing the blame on the operator whenever possible, when the accident may have actually been caused by faulty track or equipment. If such cases had been reported as equipment- or track-caused accidents, human factors-caused accidents could have declined between 1987 and 1995, rather than remaining unchanged on average and may have declined even more sharply in 1996.

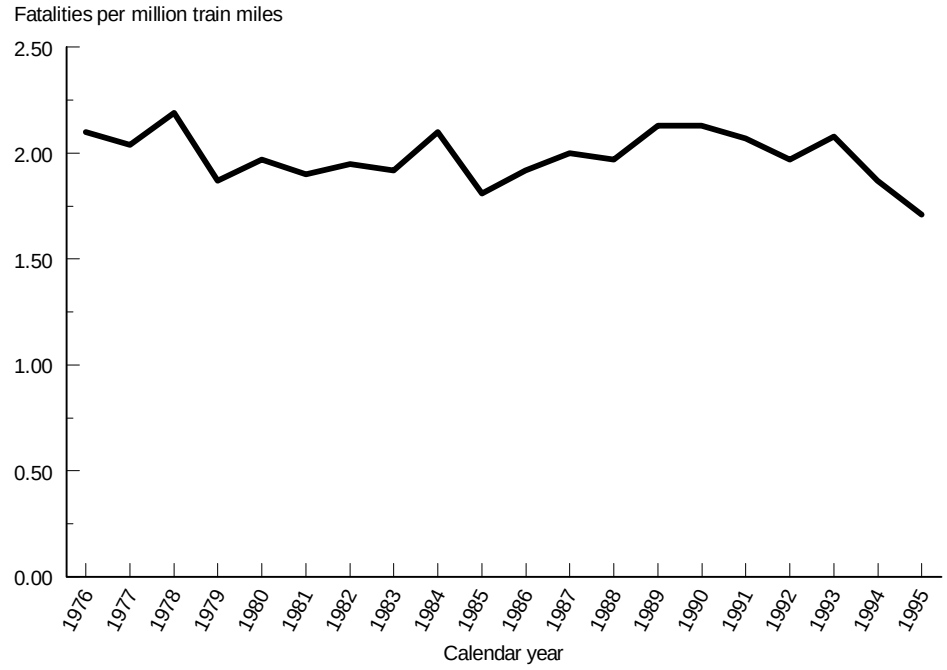
Trends in Fatalities Have Been Stagnant Until Recently

In 1993, the fatality rate per million train miles stood at 2.08, only 1 percent lower than the 1976 rate.[3] However, beginning in 1994, the fatality rate declined significantly and in 1995 stood at 1.71 fatalities per million train miles, as shown in figure 2.3. Additionally, when factoring in risk exposure, which FRA defines as motor vehicle miles traveled multiplied by the train miles, the accident rate declined in most years since 1976. Despite this progress, about 1,100 people were killed in 1995 on the nation's rail lines. Most of these deaths (94 percent) were the result of either fatal collisions between cars and trains at highway grade crossings or trespassers killed by trains while on railroad property.

[2]Human factors-caused accidents are those caused by operator error, such as missing a stop signal or exceeding speed restrictions.

[3]The fatality rates are presented per million train miles to take into account changing rail activity over the years.

Figure 2.3: Rail-Related Fatalities Per Million Train Miles, All Railroads, Calendar Years 1976 Through 1995



Source: FRA.

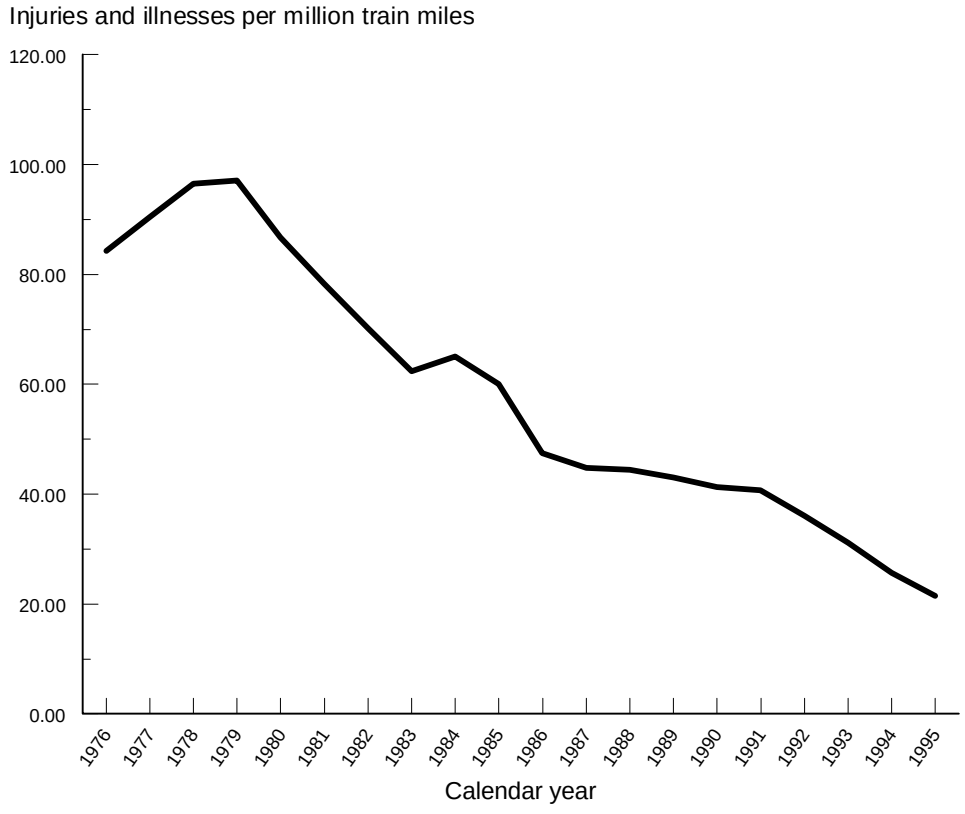
Since 1993, declines in the fatality rates at grade crossings and for trespassers contributed to the drop in the overall fatality rate. This decline coincides with DOT's implementation of its Grade Crossing Safety Action Plan in June 1994. We reported on DOT's efforts to improve rail-highway crossing safety in 1995.[4] The report described engineering, educational, and enforcement methods that federal and state governments and the railroad industry could pursue to improve rail crossing safety. Chapter 3 contains additional information on DOT's plans.

[4]Railroad Safety: Status of Efforts to Improve Railroad Crossing Safety (GAO/RCED-95-191, Aug. 3, 1995).

Injuries and Illnesses Continue a Steady Downward Trend

In addition to overall declines in accidents and fatalities, rail-related injuries and illnesses per million train miles declined since 1976. Railroads must report injuries that require medical treatment or result in work restrictions and lost work days.[5] As figure 2.4 shows, the injury and illness rate per million train miles declined from 84.32 in 1976 to 21.56 in 1995—a 74-percent drop. This reduction resulted in 50,891 fewer injuries and illnesses in 1995 than in 1976. Three-quarters of these injuries and illnesses affected railroad employees.

Figure 2.4: Total Rail-Related Injuries and Illnesses Per Million Train Miles, All Railroads, Calendar Years 1976 Through 1995



Source: FRA.

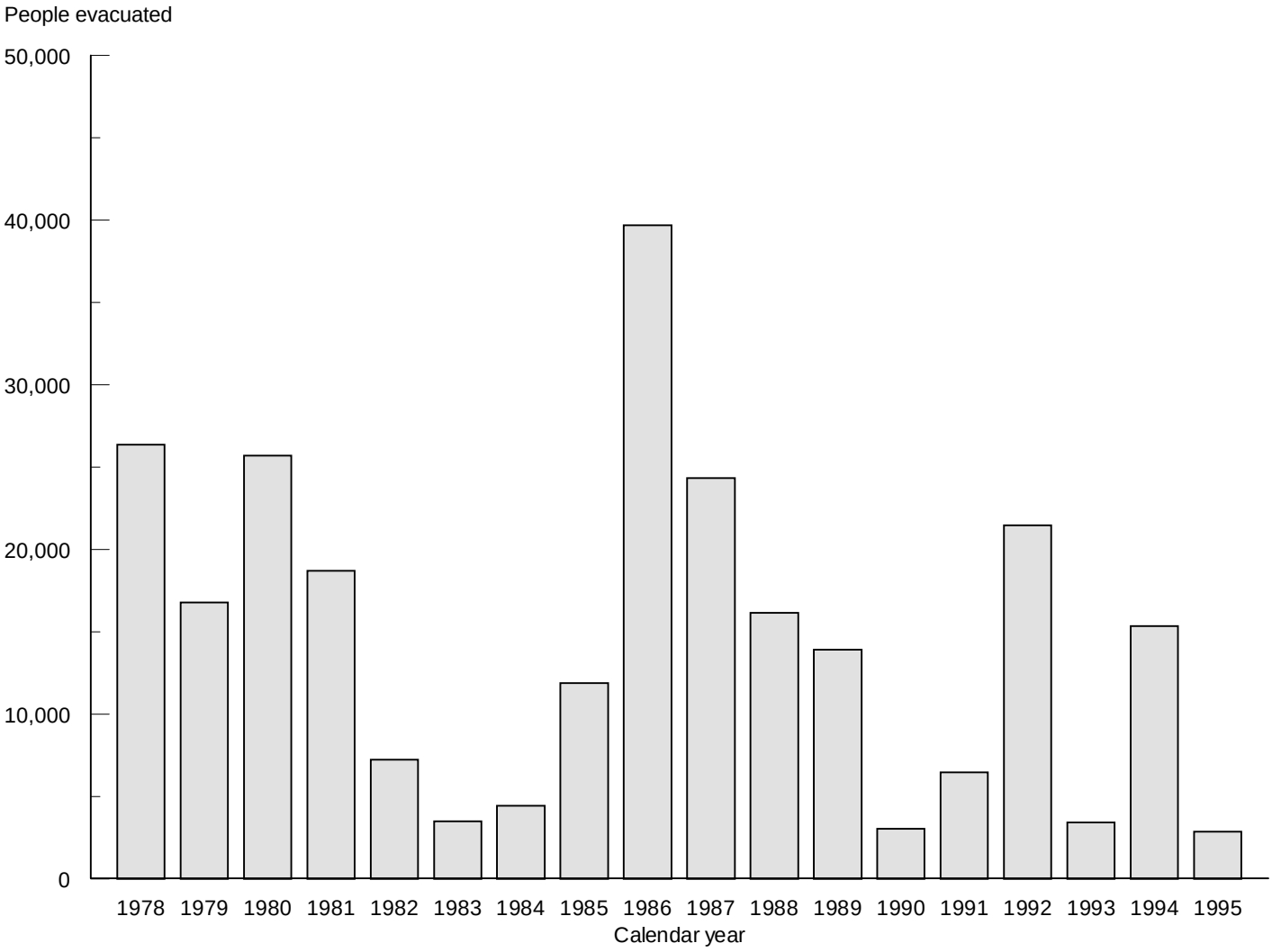
[5]FRA's data combine injuries and illnesses. Injury and illness rates are presented per million train miles to take into account changing levels of rail activity over the years.

According to industry representatives, as the railroads reduced their number of employees, the chances for workers to be injured declined as well. Additionally, railroads began to implement experimental safety programs aimed at reducing lost work days for those remaining employees. One railroad, for example, began an experimental "napping strategy" to reduce the affects of fatigue, whereby train engineers are permitted short naps while other crew members remain alert. Despite the improvements in employee safety, about 11,000 railroad employee injuries and illnesses were reported to FRA in 1995. Workplace safety is discussed in chapter 3.

Thousands of People Are Evacuated Due to Hazardous Materials Releases

Each year thousands of people are evacuated because train accidents caused the release of hazardous materials. As figure 2.5 shows, the number of people evacuated ranged from 2,852 in 1995 to 39,701 in 1986. The figure also shows that hazardous materials releases resulting from train accidents are often random events and episodic; the number of people evacuated relates to whether or not the spill occurred near a population center. For example, a hazardous material release resulting from a Baltimore and Ohio Railroad accident in Miamisburg, Ohio, contributed to the large number of evacuations in 1986. When a tank car filled with poisonous phosphorous derailed, the resulting chemical releases forced 30,000 people to evacuate their homes. Between 1978 and 1995, about 261,000 people were evacuated across the United States because of rail-related hazardous materials releases—an average of about 14,500 people evacuated each year. If the 1986 evacuations were excluded, the annual average would fall to 13,039. Concerns remain about evacuations because the volume of chemical traffic has increased by over one-third from 1976 to 1995.

Figure 2.5: Number of People Evacuated Due to Hazardous Materials Releases, Calendar Years 1978 Through 1995



Note: These data reflect evacuations reported to FRA by the railroads. These data may differ from information reported by the National Transportation Safety Board, which uses evacuations reported by the local municipalities.

Source: FRA.

In recent years, the rail and chemical industries have improved tank cars to lessen the chances that they will release hazardous materials during accidents. For example, manufacturers have reinforced the ends of tankcars, adding metal jackets with thermal protection systems to those transporting certain hazardous materials to resist puncture during accidents. In addition, researchers found that during derailments, adjoining cars would uncouple from hazardous materials cars allowing the ends of the cars to ram into one another. As a result, new couplers were designed and installed on tank cars to make them less likely to uncouple during a derailment. These and other improvements were mandated in a series of rules issued by DOT over the past 20 years. FRA's data show that the collective efforts of FRA and the industry, combined with fewer derailments, helped to reduce hazardous materials releases per million train miles by 77 percent from 1978 to 1995.

FRA Has Shifted to a Partnership Approach to Improve Railroad Safety

In response to operational and safety trends within the railroad industry, in 1993, FRA began to institute an important shift in its safety program. Rather than using violations and civil penalties as important means to improve railroad safety, FRA now emphasizes cooperative partnerships with railroad management, labor, the states, and other federal agencies to reduce railroad accidents, fatalities, and injuries. Accordingly, FRA has developed cooperative plans to reduce grade-crossing accidents, promote voluntary industry compliance with federal safety statutes and regulations, and achieve consensus on complex and contentious railroad safety rules. The partnering efforts generally focus on the nation's larger railroads and have resulted in FRA inspectors' conducting fewer site-specific inspections of the railroad industry overall. While preliminary data for 1996 shows improvements in key safety statistics, it is too early to determine if FRA's new approach will sustain a long-term decline in accidents and fatalities. In addition, there are two important areas of railroad safety that FRA's collaborative approach does not systematically address: workplace safety for railroad employees and the structural integrity of railroad bridges.

FRA Has Established Three Key Initiatives to Improve Rail Safety

Beginning in 1993, FRA reassessed its safety program to leverage the agency's resources and establish a cooperative approach that focused on results to improve railroad safety. With rail traffic expected to grow through the remainder of the 1990s and beyond, FRA anticipated the need for new approaches to enhance its site-specific inspections. As a result, FRA formalized this shift from inspection to collaboration with the establishment of three new initiatives. First, in 1994, FRA took the lead responsibility for coordinating DOT's multiagency plans to reduce fatalities at rail-highway crossings. Second, in 1995, FRA formally established a Safety Assurance and Compliance Program through which the agency works cooperatively with railroad labor and management to identify and solve the root causes of systemic problems facing the railroads. Third, in 1996, FRA established the Railroad Safety Advisory Committee to develop recommendations for the agency's more complex or contentious rulemakings by seeking consensus among the affected parties.

DOT Works With Industry and States to Improve Rail-Highway Crossing Safety

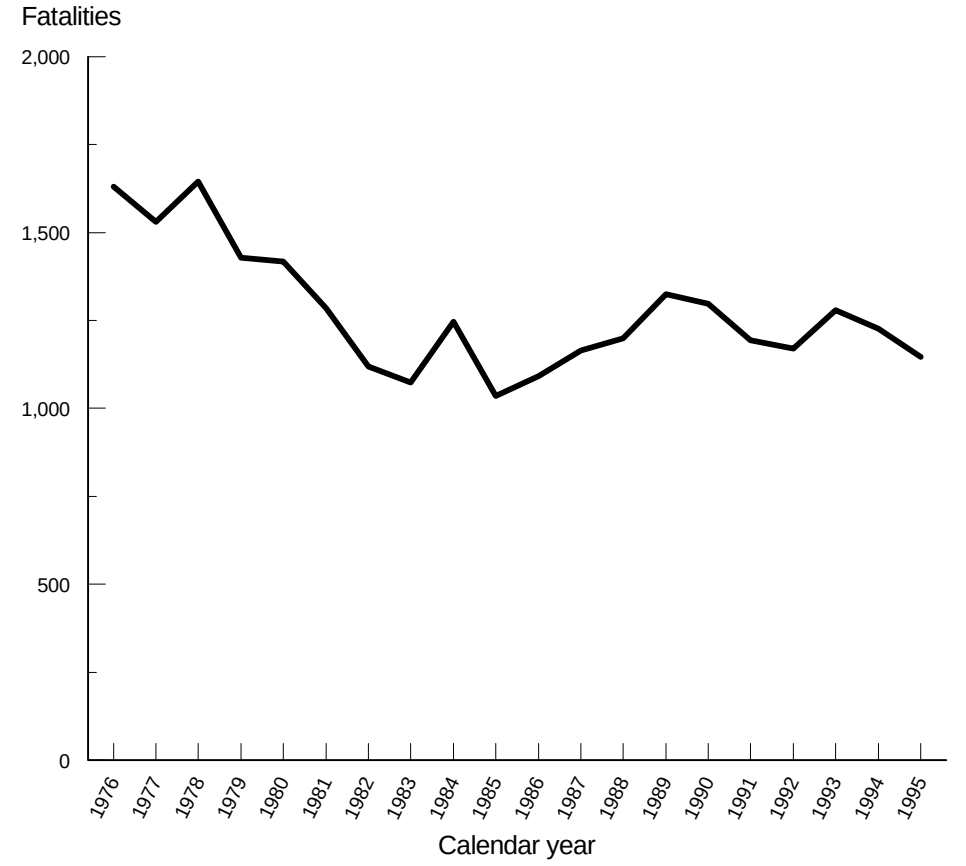
About 94 percent of railroad fatalities occur as a result of either fatal collisions between cars and trains at highway grade crossings or trespassers killed by trains while on railroad property. Since many federal, state, and local agencies have enforcement or coordinating roles in reducing these fatalities, FRA cannot reduce fatality rates solely through its own rulemaking and enforcement actions. Accordingly, FRA took the lead

role, in 1994, when DOT initiated the Rail-Highway Crossing Safety Action Plan—an effort targeting federal, state, and industry efforts in improving rail-highway crossing safety and reducing fatalities among trespassers. To successfully implement the plan, FRA is working with the Federal Highway, National Highway Traffic Safety, and Federal Transit Administrations; the states, railroads, and the Congress to strengthen education and research activities; enhance federal, state, and local enforcement efforts; and increase or preserve federal rail-highway crossing safety funds. In the action plan, DOT established a 10-year goal to reduce the number of rail-highway grade-crossing accidents and fatalities by 50 percent. As of January 1997, DOT agencies were making progress in implementing 52 of the 55 proposals included in the action plan. Of the 52 proposals, 15 were complete; some of the remaining were intended to be continuing efforts.

In March 1996, the DOT released a second report focusing on grade-crossing safety. That report, titled Accidents That Shouldn't Happen, focused on developing solutions to communications and coordination problems among the many agencies involved in ensuring grade crossing safety. Such problems had been cited in the investigation of the collision in October 1995 between a school bus and a commuter train in Fox River Grove, Illinois, in which seven students died. The report made 24 recommendations directed at improving communications and coordination between railroads and highway authorities and developing or expanding options in each of these areas. DOT has continued to monitor and encourage the implementation of these recommendations.

As shown in figure 3.1, the number of fatalities in the railroad industry has declined since 1976.

Figure 3.1: Railroad Industry Fatalities, Calendar Years 1976 Through 1995



Source: GAO's analysis of FRA's data.

The period of decline in fatalities began with the establishment of the Rail-Highway Crossing Program in 1974 (also known as the section 130 program because of its origin in title 23 of the United States Code). Over the next 23 years, the Congress appropriated about $5.8 billion (in constant 1997 dollars) for states to improve safety at rail-highway crossings. According to DOT officials, during the early years of the program, states were able to focus their initial efforts on the most dangerous crossings, thereby contributing to a significant reduction in deaths in the late 1970s and early 1980s.

The steady decline in railroad fatalities stopped in 1983, followed by several years in which increases in deaths in one year were followed by sharp drops in the next year. FRA estimates that total fatalities declined to 1,022 in 1996—the lowest level in 20 years. In addition, rail-highway grade-crossing collisions declined by 15 percent between 1993 and 1996. FRA attributed the improved statistics to their safety initiatives which includes the rail-highway crossing program. Whether the plan contributed to the decline is uncertain: Past trends indicate the total number of railroad fatalities declined by 34 percent from 1976 to 1983 (from 1,630 to 1,073) but then fluctuated within a range of 1,022 and 1,324 deaths between 1983 and 1996. Additionally, when normalized for risk—taking into account the annual change in vehicle and train miles—collision and fatality rates continued a steady rate of decline, rather than declining more rapidly in recent years.

Safety Assurance and Compliance Program Seeks Voluntary Cooperation of Railroad Management and Labor

In 1994, FRA began the Safety Assurance and Compliance Program (SACP) with the Chicago and Northwestern Railroad and Southern Pacific Railroad. These initial reviews were followed by FRA's announcement in March 1995 formally establishing the SACP process. FRA initiated the program in response to a period of little decline in accident statistics and the belief that a continuation of existing approaches would not produce any further declines. In commenting on a draft of this report, FRA officials also said that SACP is an outgrowth of President Clinton's directive to federal regulatory agencies that their inspection and enforcement programs be designed to achieve results, not punishment. SACP seeks to address safety problems at the level where they originate: If a problem is systemic in nature, FRA seeks a systemwide solution to the problem's root causes. When solutions are identified, they are embodied in the SACP action plan; FRA then monitors to ensure that commitments are fulfilled. While most major railroads are participating in the SACP process, one major railroad—Norfolk Southern—has refused to participate until FRA substantiates safety problems at the railroad.

The SACP process consists of four elements: a safety profile, senior management meetings, a safety action plan, and a safety audit. First, rail labor and management work with FRA and states to develop a safety profile of the railroad. The safety profile takes 2 to 6 months to prepare, depending on the size of the railroad and the complexity of the relevant issues. The profile includes descriptions of the railroad's safety strengths and weaknesses, reported accidents, summaries of previous inspections, summaries of "listening sessions" with railroad labor and management,

and other safety concerns. Once FRA identifies the root causes of any systemic safety issues raised in the safety profile, it requests a meeting with the railroad's senior management and labor representatives. During the meeting, FRA presents the safety profile, which FRA, rail management, labor, and the states will use to negotiate the details of the safety action plan. FRA expects the railroads to develop these plans within 30 to 60 days. The action plan then becomes the "informal contract" under which the railroad voluntarily remedies its safety problems. Although the length of time that specific railroads require to complete their action plans varies on the basis of the complexity of the issues, FRA expects the railroads to complete the plans within 1 year.

FRA inspectors monitor the railroad's compliance with the safety action plan through a safety audit, in conjunction with their routine site-specific inspections. During this period, unless a particular violation is severe, FRA suspends the assessment of civil penalties for defects related to systemic problems as long as the railroad is making a good-faith effort to identify the problems and develop its action plan. If FRA finds that the railroad is not making a good-faith effort in executing its action plan, FRA is likely to process the civil penalties that it held in abeyance. FRA officials believe that the threat of this enforcement is an important tool for motivating the industry toward FRA's goal of zero accidents and zero injuries. FRA officials believe that this focus results in more significant improvements in safety than what the agency achieved under its traditional site-specific inspections.

Initially, FRA planned on closing out SACP activities at a railroad once the railroad addressed the safety defects cited in the safety profile. However, FRA has found that the SACP has established lines of communication with railroad labor and management and between railroad labor and management. Because the safety profiles are discussed in meetings with senior railroad management, these high-level managers have become involved in the safety process. FRA officials said that SACP has also helped gain the railroads' voluntary cooperation in taking corrective action on safety issues that are not covered under FRA's safety regulations. Accordingly, FRA plans to continue to use the process to identify systemic problems and root causes in the future. Over time, FRA expects that a railroad will develop a series of action plans, which FRA will monitor for completion.

According to FRA, it has been able to use the SACP process to successfully address systemic problems at larger railroads. For example, FRA initiated a

SACP with Burlington Northern/Santa Fe Railroad in the aftermath of a February 1, 1996, derailment in Cajon Pass, California. When the train's braking systems failed, the subsequent derailment and fire killed two crew men and closed Interstate 15 for several days. A similar accident had occurred at the same location 14 months earlier. After the February accident, FRA sent 56 inspectors to conduct a safety compliance review of the railroad in conjunction with the California Public Utilities Commission. During the 8-day review, FRA prevented the railroad from operating any trains until safety problems were resolved. FRA identified 13 specific safety issues and required the railroad's management, in conjunction with labor, to develop an action plan to remedy these issues. According to FRA, the railroad successfully addressed all of the issues during the following months.

Following the first Cajon Pass accident, the railroad had agreed to install two-way end-of-train devices on those trains operating in the Cajon Pass area. According to FRA, such a device might have prevented the second accident. The derailed train in the second accident had a two-way end-of-train device but it was not switched on. FRA found that the safety culture of the railroad had eroded to the point that supervisors and employees found it acceptable to operate trains with inoperative two-way end-of-train devices and to cut other corners in mechanical inspections and repairs.

According to FRA, its review resulted in changes in the railroad's operating rules for the Cajon Pass area, improved quality control practices, redistribution of supervisory personnel to ensure an equal quality of supervision over all shifts, and a review of event recorder data on every train descending from the pass to ensure that rules were followed. FRA credits the SACP for the progress that has been made in changing the railroad's culture and believes that such changes could not have occurred if FRA had only enforced existing regulations.

As of January 1997, FRA had conducted initial SACP meetings with management at 33 railroads and planned to initiate SACPs at 21 additional railroads by the end of fiscal year 1997 (see app. II). FRA does not plan to conduct a SACP assessment of all of the more than 600 railroads in the United States. Instead, according to the Director of the Office of Safety Analysis, FRA inspectors are expected to look for root causes of defects found at smaller railroads through FRA's traditional site-specific inspections. FRA cites improvements in safety statistics since 1993 as evidence that the SACP is improving safety throughout the nation's railroad

system. From 1993 through 1996, rail-related fatalities declined by 20 percent, employee injuries declined by about 40 percent, and train accident rates declined by 16 percent.

However, SACP still depends on the cooperation of the railroads. For example, Norfolk Southern has not participated in the SACP. The railroad's position is that until FRA can identify specific areas of noncompliance, it will not participate. FRA officials do not believe that the issue is closed and plan to discuss the matter again with Norfolk Southern at a later date. FRA officials said that they may need to apply a more traditional enforcement approach if Norfolk Southern continues to rebuff the agency's SACP initiatives.

Premature to Assess Results From Actions of FRA's Railroad Safety Advisory Committee

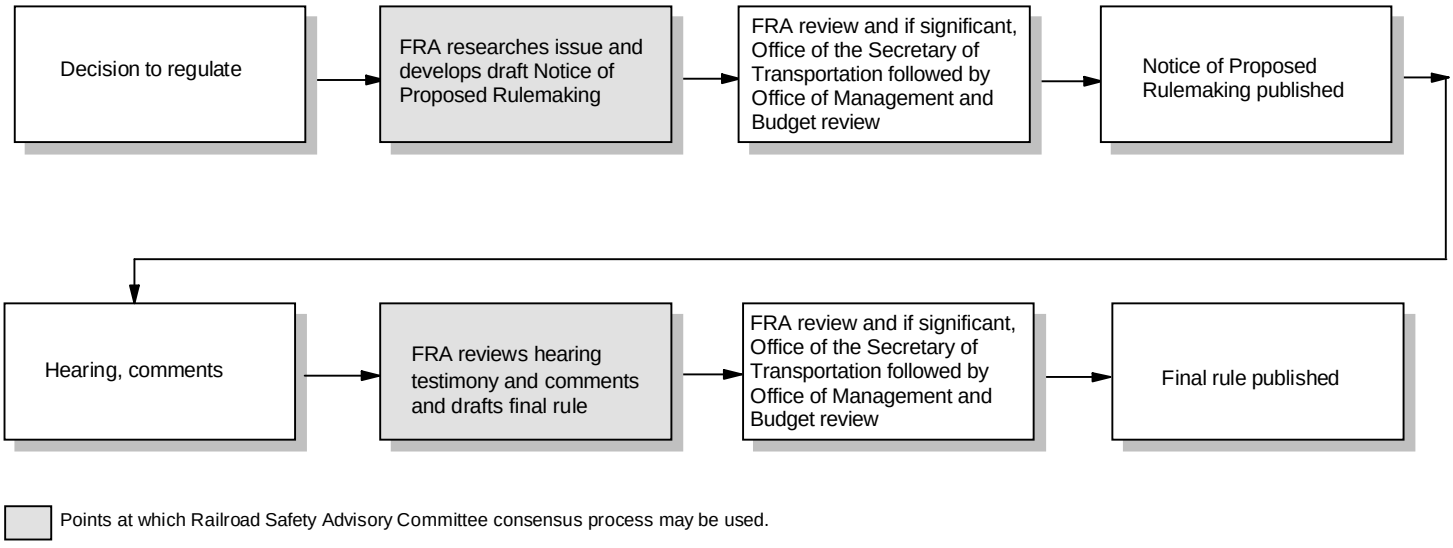
In March 1996, FRA established a Railroad Safety Advisory Committee consisting of representatives from railroad management, labor unions, and others representing various rail industry perspectives, to provide FRA with recommendations on important rail safety issues through a consensus-based process. FRA decided to form the committee based on what the agency believed to be a successful experience in developing its Roadway Worker Safety rule through a collaborative process. FRA uses the Advisory Committee to obtain input from those most affected by regulatory decisions, improve the quality of rules, reduce the time required to complete them, and reduce the likelihood of litigation after they are promulgated. Since the inception of the committee, the FRA Administrator has referred seven major rulemaking tasks to it, most of which were for rulemakings initiated prior to its establishment. FRA has not yet issued any final rules developed by the committee. However, the committee has proposed revisions to the track safety standards that the Congress mandated FRA to complete by September 1995. In addition, the committee has proposed revisions to the radio communications standards. While it is too early to measure the committee's success in meeting FRA's objectives, efforts to develop freight power brake regulations have encountered problems in the negotiations between FRA and the industry.

The Advisory Committee is composed of 48 representatives from 27 member organizations. The committee is chaired by FRA's Associate Administrator for Safety and includes representatives of the Association of American Railroads, the American Short Line Railroad Association, state governments, and numerous labor groups. In addition, the Mexican Transport Minister and the Canadian Transport Minister have one nonvoting seat each.

Once FRA refers a regulatory task to the Advisory Committee, it forms a working group that represents the membership of the full committee. The working group in turn can establish task forces to pursue specific issues. For each task assigned, the working group addresses the relevant facts, defines the safety problem presented, develops a range of options, and decides upon a recommendation. Once the working group has achieved unanimous consensus, it presents its recommendation to the full committee. If the full committee accepts the recommendation by either unanimous or majority consensus, it is sent to the FRA Administrator, who can in turn, accept, reject, or modify the recommendation. Of the seven rulemaking tasks that have been referred to the committee, two have been referred to the Administrator.

As shown in figure 3.2, when FRA has made a decision to regulate, the Advisory Committee can provide recommendations with respect to either the agency's proposed or final action, or both. FRA will refer these matters separately to the committee on a case-by-case basis.

Figure 3.2: Chronology of FRA's Rulemaking Procedures



Source: GAO's analysis.

As the figure shows, the committee's participation supplements rather than eliminates required steps in the rulemaking process. For example, under departmental procedures and executive orders, significant proposed rules are reviewed and approved by the Office of the Secretary and the Office of Management and Budget (OMB) before FRA issues notices of proposed rulemaking.[1] In addition, a 60-day public comment period and public hearing are provided. Furthermore, significant final rules are reviewed and approved by the Office of the Secretary and OMB before publication. However, FRA officials believe that since the affected parties are directly involved in the development of rules through consensus, there will be fewer and less contentious comments on notices of proposed rulemaking, fewer public hearings on proposed rules, fewer changes to proposed rules, and less litigation after rules are finalized.

As table 3.1 shows, FRA has referred seven rulemaking tasks to the committee.

[1]DOT defines the term "significant regulation" to include any regulation that involves important departmental policy. For OMB's review, Executive Order 12866 defines the term significant regulation to include an action likely to result in a rule that may raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the executive order.

Table 3.1: FRA's Rulemaking Actions Assigned to the Advisory Committee

Title	Source of decision to regulate	Legal deadline	Date rule was tasked to the Advisory Committee
Locomotive Crashworthiness and Working Conditions	Rail Safety Enforcement and Review Act-9/3/92	Final rule or report, 3/3/95	10/31/96[a]
Qualification and Certification of Locomotive Engineers	Petitions to reconsider aspects of an existing rule	None	10/31/96
Track Safety Standards	Rail Safety Enforcement and Review Act-9/3/92	Final, 9/1/95	4/1/96[b]
Reinvention of Steam Locomotive Inspection Regulations	Reinventing government effort	None	7/24/96
Radio Communication-Advanced Train Control System	Rail Safety Enforcement and Review Act-9/3/92[c]	None	4/1/96[d]
Freight Power Brakes	Rail Safety Enforcement and Review Act-9/3/92	Final, 12/31/93	4/1/96
Track Motor Vehicle and Roadway Equipment Safety	Petition to develop a rule	None	10/31/96

[a]The Rail Safety Enforcement and Review Act required FRA to complete a rulemaking proceeding to consider prescribing regulations in this area within 30 months of enactment. The act required FRA to report to the Congress if it decided, based on the rulemaking proceeding, not to prescribe regulations. FRA reported the results of its investigation to the Congress in September 1996 and subsequently referred the matter to the Advisory Committee.

[b]The Advisory Committee voted to recommend a proposal to the FRA Administrator in November 1996. FRA published a Notice of Proposed Rulemaking on July 3, 1997.

[c]The Rail Safety Enforcement and Review Act required a safety inquiry regarding railroad radio standards and procedures, and FRA committed to revise its rules based on this study.

[d]The Advisory Committee voted to recommend a proposal to the FRA Administrator in April 1997. FRA published a Notice of Proposed Rulemaking on June 26, 1997.

Source: GAO's analysis. (See app. III for full inventory of FRA's rulemaking actions.)

Most of the tasks referred to the committee were complex or controversial rulemaking activities that FRA had been working on for several years. For example, FRA had been working on the Locomotive Crashworthiness, Track Safety, Radio Communication-Advanced Train Control, and Freight Power Brake rules for 4 years before referring them to the Advisory

Committee. In two cases, FRA had missed the congressional mandate to issue final rules.[2] However, the committee developed a recommendation on track safety standards within 7 months after the FRA Administrator referred the task to it and has recommended revisions to FRA's rules on radio communications. FRA has prepared notices of proposed rulemaking based on both the track and radio communications recommendations. FRA published a Notice of Proposed Rulemaking on track safety standards on July 3, 1997 and a Notice of Proposed Rulemaking on radio communications on June 26, 1997.

If the FRA Administrator believes that the Advisory Committee's action on proposed rules are not progressing or have reached a stalemate, the Administrator can withdraw the task from the committee and direct FRA staff to develop their own proposed rule without benefit of a consensus recommendation. As of June 1997, the Administrator was considering such action due to a stalemate in negotiations on the freight power brake rule. The problems in negotiations centered on who should inspect trains, where trains should be inspected, and how often they should be inspected. In January 1997, FRA issued two technical bulletins that specified how inspectors were to enforce existing power brake rules and inspection requirements under the freight car safety standards. According to FRA officials, the bulletins were intended to give inspectors guidance on when to issue violations on the improper inspection of power brakes and freight cars. However, AAR protested the move by bringing a court challenge and by filing a petition to reconsider with FRA, stating that FRA was promulgating new standards without going through the rulemaking process. As of June 1997, FRA and AAR were still working to resolve the dispute.

Inspection Efforts Have Changed Under the Partnering Approach

The collaborative approach that FRA has adopted for obtaining voluntary compliance with railroad safety rules has shifted some of FRA's resources away from site-specific inspections, which have historically served as FRA's primary means of ensuring compliance with safety regulations. This shift is most evident in the 23-percent decline in the number of inspections conducted between 1994 and 1995. As a result, a greater number of railroads are not receiving inspections, and inspectors are conducting fewer reviews of the railroads' own inspection efforts.

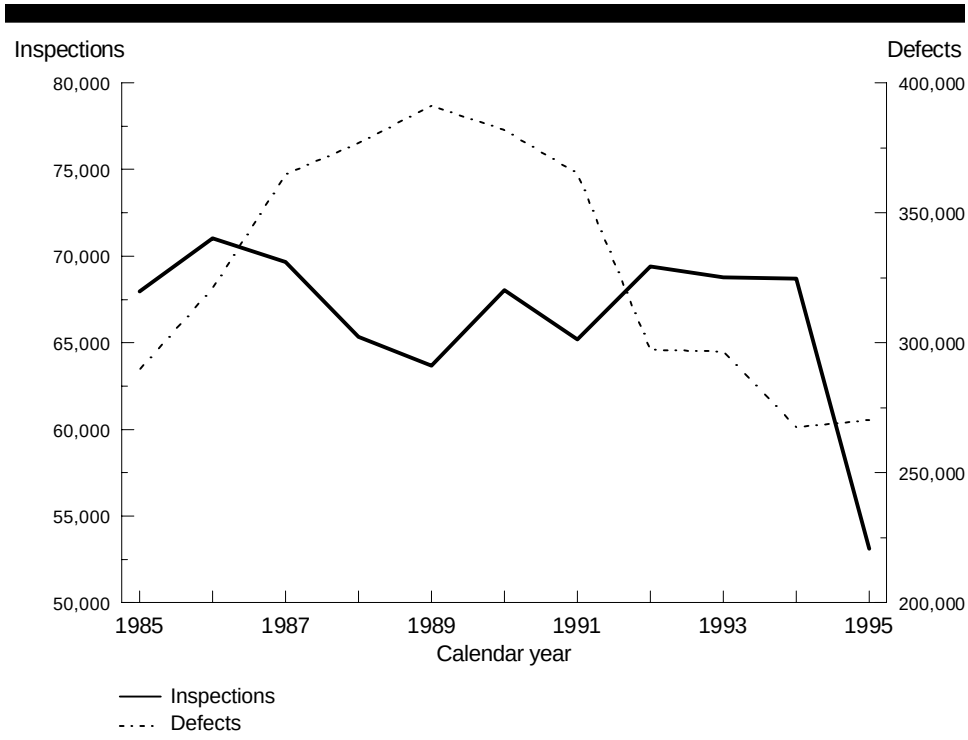
[2]Originally due by March 1995, FRA's report on Locomotive Crashworthiness and Cab Working Conditions was issued in September 1996.

FRA's efforts to increase cooperation with the railroad industry to promulgate and enforce rail safety regulations adds new responsibilities for its 270 inspectors. New responsibilities include participating in SACP activities, such as listening sessions with rail management and labor to identify safety issues and team inspections to develop rail safety profiles. Inspectors also participate in the Advisory Committee's working groups and task forces. Nearly all inspectors participate in SACP either in conducting formal listening sessions with labor, participating in senior management meetings, or focusing on SACP-related issues when conducting routine site-specific inspections.

As figure 3.3 shows, the 67,966 field inspections FRA conducted in 1985 had increased slightly to 69,423 by 1992. However, inspections began to decline in 1993 and declined further to 53,113 by 1995. The number of inspections conducted in 1995 was 23 percent below the 68,715 inspections conducted in 1994.[3] The decline occurred across all of FRA's disciplines (track, equipment, signals, hazardous materials, and operating practices) but most notably in operating practices, which experienced a 41-percent decline. (Operating practices inspectors are responsible for enforcing federal regulations governing the operation of trains.) The number of inspections at class I railroads declined by 24 percent while inspections at smaller railroads declined by 19 percent between 1994 and 1995. Figure 3.3 also shows that after gradually increasing during the late 1980s, the number of defects FRA inspectors cited declined from 391,233 in 1989 to 270,312 in 1995—a 31-percent drop. Defects are instances of noncompliance with federal safety regulations, for which railroads are expected to take corrective action. For example, inspectors would cite defects for cracks found on rail track. According to FRA officials, defects declined because fewer inspections were conducted during this period, and inspectors may have overreacted to FRA's emphasis on cooperation and partnering.

[3]Our data show the number of inspection reports. While FRA inspectors sometimes reported inspections in different disciplines on the same report before 1995, this became a more general practice in 1995 when FRA introduced a new form that was specifically designed to record inspections in more than one discipline. Although the number of forms submitted to FRA declined with the use of the new form, our data reflect the number of inspection reports regardless of the number of forms submitted.

Figure 3.3: Inspections and Defects, Calendar Years 1985 Through 1995



Source: GAO's analysis of FRA's data.

In commenting on a draft of this report, FRA officials said that the agency never intended to eliminate or discourage the use of enforcement tools. In April 1997, FRA issued guidance to all of its safety personnel in an effort to clarify that enforcement—while not an end in itself—is an essential element of SACP. The guidance explains the concept of "focused enforcement," which encourages inspectors to concentrate their enforcement efforts where they will do the most good, that is, where accident trends, inspection data, direct observations, and/or the violation's inherent seriousness indicates that enforcement action is needed to address a significant safety risk.

The decline in total inspections has also resulted in a greater number of railroads not receiving inspections. As table 3.2 shows, the number of railroads that received no inspections by FRA increased from 43 to 95 between 1992 and 1995. Although these railroads only reported nine

accidents during this period, it is FRA's goal to inspect all railroads at least once a year.

Table 3.2: Railroads With No Inspections and Inspections in One or Two Disciplines, Calendar Years 1992 Through 1995

Year	Railroads with no inspections[a]	Railroads with inspections in one or two disciplines[a]
1992	43	187
1993	50	214
1994	66	245
1995	95	271

[a]The number of railroads receiving inspections in each year has been adjusted to combine parent railroads with their subsidiaries.

Source: GAO's analysis of FRA's data.

In addition, many railroads received inspections in only one or two of the five inspection disciplines. As shown in table 3.2, the number of railroads receiving inspections in only one or two disciplines increased from 187 in 1992 to 271 in 1995.

The reduction in total inspections also has resulted in FRA inspectors' conducting fewer reviews of the railroads' own inspections—known as records inspections. Our analysis of FRA's inspection data also found that between 1992 and 1995, the percentage of inspected railroads in which FRA completed a records inspection declined sharply in each discipline. Table 3.3 shows that the drop was most precipitous in 1995.

Table 3.3: Percentage of Railroads That Received Records Inspections, Calendar Years 1992 Through 1995

Amounts in percents

	Percentage of railroads inspected, by type of inspection				
Year	Track	Equipment	Signal	Hazardous materials	Operating practices
1992	60	42	64	34	60
1993	58	43	51	32	54
1994	55	40	44	32	52
1995	32	12	34	21	47

Source: GAO's analysis of FRA's data.

The nation's railroads are primarily responsible for conducting safety inspections of their equipment and facilities and keeping records of their inspections. FRA's responsibility is to monitor the inspection activity of the railroads. FRA's policy advises inspectors to prepare for an inspection by reviewing a railroad's inspection records. According to FRA's policy standards, these records are a good source of information for FRA inspectors about the extent to which a railroad has met the regulatory requirements and about the type of problems the railroad has found.

FRA Does Not Systematically Oversee Workplace and Bridge Safety

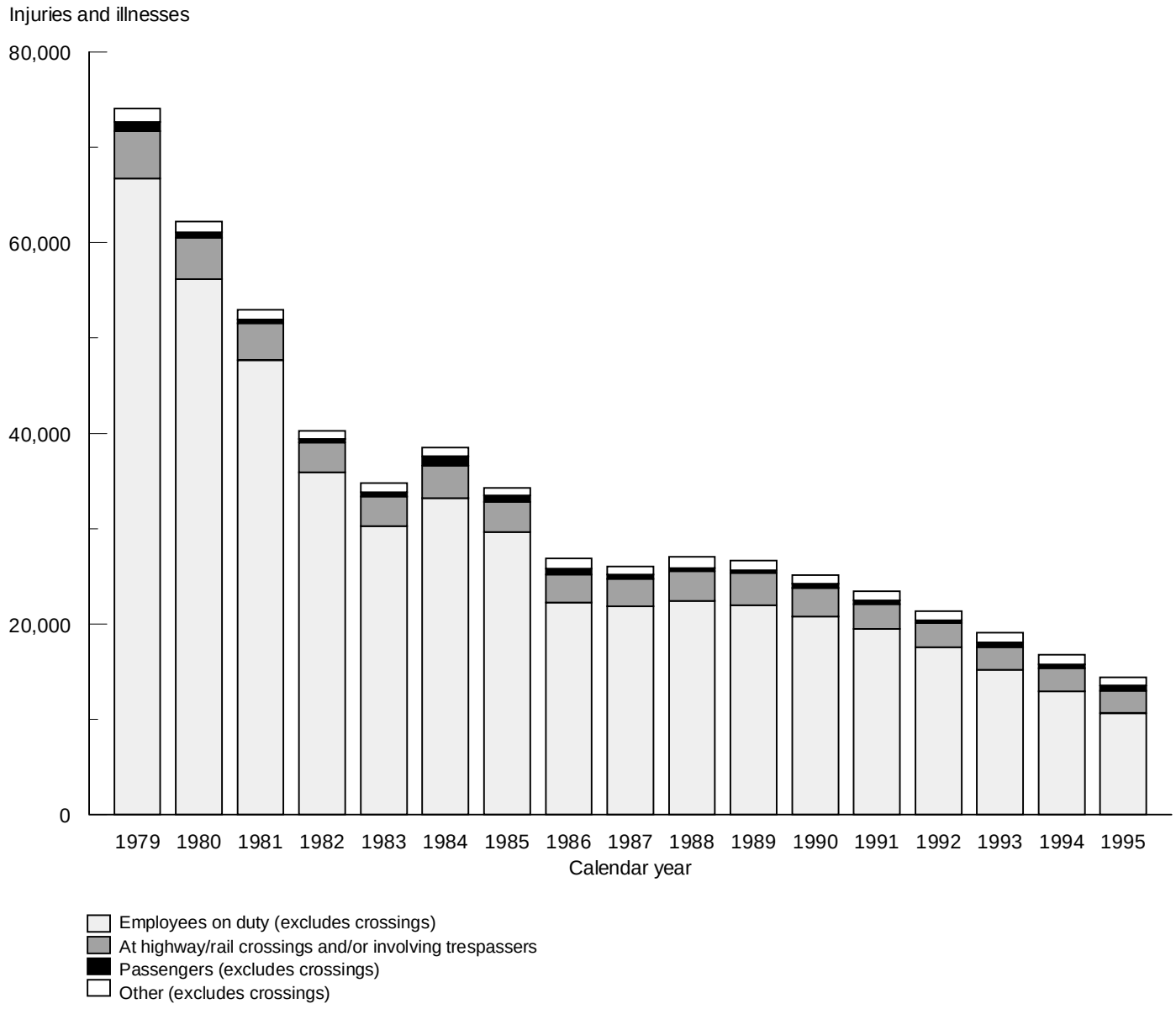
During our review of FRA's rail safety approach, we identified two issues that the agency's partnering or inspection efforts do not systematically address: improving the workplace safety of railroad employees and ensuring that railroad bridges receive inspection oversight comparable to other railroad areas. FRA has chosen not to issue regulations addressing many workplace safety issues, although railroad employees accounted for most of the 14,400 rail-related injuries and illnesses that occurred in 1995. In addition, FRA's 1995 decision not to promulgate bridge safety regulations requires FRA personnel to rely primarily on voluntary correction of potential problems with bridge safety.

Employee Workplace Safety and Health Receive Less Oversight Than Other Aspects of Railroad Safety

The number of rail-related injuries and illnesses has declined from 65,331 in 1976 to 14,440 in 1995. As figure 3.4 shows, most of these injuries and illnesses involve railroad employees.[4] Railroads must report injuries that require medical treatment or result in work restrictions and lost work days.

[4]Data on injuries and illnesses by type of person and occurrence were available only for calendar years 1979 through 1995.

Figure 3.4: Injuries and Illnesses by Type of Person and Occurrence, Calendar Years 1976 Through 1995



Source: GAO's analysis of FRA's data.

Efforts to reduce injuries to workers must rely on the combined efforts of FRA and OSHA.[5] For example, FRA oversees safety issues intrinsic to railroad operations such as ensuring that employees are not struck by moving trains because they did not follow FRA's safety procedures while working on railroad track.[6] OSHA, on the other hand, is responsible for employee safety and health issues that would be associated with any industrial workplace. For example, OSHA would ensure that employees using welding equipment while working on the track used appropriate safety equipment, such as goggles.

While a 1978 policy statement by FRA provides guidance on which workplace safety and health issues FRA or OSHA should cover, the two agencies' inspection presence on railroad property varies greatly. For example, in 1995, FRA conducted over 50,000 inspections of track, railroad equipment, and operating practices related to train operations. In contrast, OSHA inspectors normally visit railroad properties only in response to an employee or union complaint about working conditions or when investigating a workplace accident that resulted in the injury of three or more employees.[7]

Labor representatives expressed concern that because of OSHA's limited resources, certain workplace safety and health issues are not adequately addressed under the split responsibility. For example, labor representatives pointed out that pipe insulation and gaskets often contain asbestos, but there is no guidance from FRA on how to handle these hazardous materials. FRA inspectors told us that they look for unsafe work practices or situations when conducting site inspections. When they observe unsafe work practices, such as an employee welding without proper eye protection, inspectors can point out the problem to railroad supervisory personnel for voluntary compliance. However, FRA inspectors have no authority to cite railroads for workplace safety problems that fall

[5]The Occupational Safety and Health Act of 1970 gave the Secretary of Labor responsibility for promulgating and enforcing occupational safety and health standards. Section 4(b)(1) provides that the act does not apply to working conditions where another federal agency exercises statutory authority to prescribe or enforce standards or regulations affecting occupational safety or health. The Federal Railroad Safety Act of 1970 allows the Secretary of Transportation to develop regulations that parallel standards under the Occupational Safety and Health Act and preempt the Secretary of Labor from enforcing such standards in the railroad industry.

[6]FRA has developed some regulations relating to the safety of railroad employees, such as those concerning safety for roadway and bridge workers.

[7]OSHA administers workplace safety programs in 25 states, while the remaining states administer their own OSHA-approved programs. Some of the state-administered programs follow OSHA's procedures for inspections, while others do not.

under OSHA's jurisdiction if the railroad does not voluntarily comply with the inspector's suggestions.

In January 1997, FRA revised its injury reporting requirements to capture additional information on workplace injuries, including where the injury occurred, what activity was being performed at the time, what tools were used, and what was the probable cause. According to FRA, new codes were developed to isolate injuries and provide better data for future rulemakings. Because these requirements only recently became effective, FRA has yet to accumulate sufficient data for analysis. Once sufficient data are collected, FRA will be able to determine the causes of the most frequent and/or serious injuries and illnesses and focus its efforts and those of the industry on corrective actions. The refined data will also allow FRA to determine if additional regulations are needed. In the interim, FRA will continue to provide to the regions data on workers' injuries along with the accident and inspection data that the regions now receive for planning purposes.

FRA's Policy Relies on Industry to Inspect Railroad Bridges

Rather than issue regulations governing the structural integrity of the nation's 100,700 railroad bridges, FRA is relying on the voluntary cooperation of the railroads. A 1995 policy statement provides railroads with advisory guidelines to use in implementing their own bridge inspection programs. FRA expects its track inspectors to observe structural problems on bridges as they perform their routine inspections and seek cooperative resolutions with the railroad. FRA states that the railroads have generally been responsive in taking corrective action in response to inspectors' observations. However, unlike safety problems with track, signals, or equipment, where inspectors have the discretion to cite defects or recommend violations, inspectors have no such discretion when dealing with potentially serious bridge problems. Their only recourse is to exercise emergency authority to close the bridge if conditions present an imminent hazard of death or personal injury.[8]

FRA was forced to take this action in February 1996 after a New York State railroad inspector fell through a deteriorated bridge. The bridge was owned by a small railroad that operated one locomotive over 1.5 miles of track. FRA tried to reach a cooperative solution with the railroad's owner over a 6-week period, but the railroad did not cooperate. After a bridge engineering consultant investigated the bridge and concluded that it was

[8]As indicated in the 1995 policy statement, FRA maintains the authority to issue emergency, compliance, and disqualification orders, as well as the authority to seek injunctive relief in federal district court.

unsafe for the movement of the railroad's 50-ton locomotive, FRA issued an emergency order to close the bridge. The emergency order continued to be in effect in May 1997.

Although FRA has noted that some smaller railroads have not addressed all of their responsibilities for the safety of their bridges, FRA officials said that bridge regulations are not necessary. In 1995, FRA issued a report that concluded (1) bridges owned by the class I railroads were not in danger of collapse because they were designed and built to support steam locomotives that weigh more than modern locomotives, (2) over the past five decades no fatalities have resulted from railroad bridge failures,[9] (3) the great majority of railroad bridges are under effective management programs conducted by their owners, (4) FRA and industry bridge inspectors do not have the expertise needed to make a proper evaluation of the safety of most rail bridges, and (5) FRA can use emergency orders as an ultimate remedy for hazardous bridge conditions. FRA also noted that railroads have a considerable incentive, even without federal regulations, to maintain their bridges in a safe condition, since the loss of a bridge could not only cause human casualties but would also cause serious economic losses and operating problems for the railroads.

FRA officials said that developing railroad bridge regulations will dilute the agency's capacity to address issues that the agency believes are more important. While AAR agrees with FRA's policy that regulations are not needed, railroad labor officials disagreed and noted that bridge safety is equally as important as track safety, for which FRA has promulgated regulations.

Conclusions

FRA has always faced the challenge of determining how best to deploy its limited resources to oversee the nation's freight railroads. While field inspections and enforcement actions defined the agency's approach in the past, the agency believes that the collaborative approaches it has pursued since 1993 will provide a more effective means to oversee an increasingly productive and growing industry. Railroad stakeholders have expressed initial support for FRA's SACP process and are working to address systemic safety problems within the major railroads. On the other hand, efforts to develop freight power brake regulations through the Advisory Committee

[9]Forty-seven fatalities did occur in a September 1993 accident when a barge tow struck a railroad bridge in Mobile, Alabama, just before an Amtrak passenger train arrived. In other instances, railroad bridges have been struck by motor vehicles or marine vessels, but, according to FRA, no human casualties resulted.

have encountered problems in the negotiations between FRA and the industry.

Similarly, it is unclear how the shift in FRA's resources away from site-specific inspections—the mainstay of FRA's safety program for many years—will affect rail safety. FRA's field inspectors are conducting fewer inspections as a result of their additional partnering responsibilities. These site-specific inspections served an important oversight function and may have contributed to the improvements in rail safety over the past 20 years. FRA believes that inspectors' time is well spent on the partnership efforts. Since these efforts are still evolving, including the role of inspectors, it is too early to assess if they will improve railroad safety over the long term.

FRA's new approach has not yet systematically addressed concerns about improving the workplace safety of railroad employees or ensuring that railroad bridges receive inspection oversight comparable to other railroad areas. FRA's new injury reporting requirements and database could provide the agency with the means to determine the causes of the most numerous or serious injuries and illnesses. FRA and the industry could then work together to develop corrective action. The cooperative arrangements inherent in the SACP provide a vehicle for FRA, labor, and the railroads to jointly seek solutions to workplace injury problems. If the injuries and illnesses do not decrease as a result of these efforts, FRA could consider addressing continuing workplace safety issues through regulations. The SACP process could also provide FRA with the means to address bridge safety problems before they become emergencies. By ensuring that bridge safety problems that track inspectors find are included in the SACP, FRA could quickly elevate the problems to senior railroad management for resolution.

Recommendations

We recommend that the Secretary of Transportation direct the FRA Administrator to, in cooperation with the industry, where appropriate, (1) analyze injury data collected under the revised reporting requirements to determine the workplace safety issues that lead to the most numerous or the most serious injuries; (2) in areas where efforts to obtain voluntary corrective action do not address the causes of these injuries, consider developing regulations; and (3) use appropriate mechanisms, including the Safety Assurance and Compliance Program, to ensure that a finding of potential structural problems on a bridge is properly addressed by the bridge owner.

Agency Comments

In commenting on a draft of this report, FRA officials said that it did not provide detailed information on the accomplishments the agency's new rail safety program had attained since it was initiated in 1993. The officials cited improvements in key safety statistics since 1993 and safety improvements in the operations of many larger railroads as examples of how the agency's new systemic approach has improved rail safety. For example, railroad fatalities declined by 20 percent between 1993 and 1996 compared with a 1.4-percent decline between 1990 and 1993. In addition, the officials said that limitations on its resources and expertise currently constrain the agency's ability to address the workplace safety and bridge safety issues that we cited in the draft report. FRA said that these limitations would affect its ability to continue its present activities, adequately address new issues that will confront the agency, and address concerns about improving workplace safety of railroad employees or ensuring that railroad bridges receive oversight comparable to other railroad areas. Finally, while agreeing with two of our three recommendations, FRA officials commented on our recommendation that the agency consider developing regulations to address the issues that continue to cause the most numerous or serious workplace injuries. The officials said that it would limit its consideration of regulations to those areas that are related to train operations. FRA would have matters related to non-train operations under OSHA's purview.

In response to FRA's comments, we included additional information on the accomplishments the agency's new rail safety program has achieved by highlighting safety statistics for 1993 through 1996 and providing detailed information on the successes with the SACP process. Specifically, we added information on noticeable reductions in railroad fatalities and collisions that occurred during this 3-year period. We also included in appendix IV, FRA's performance goals for improving rail safety in response to the Government Performance and Results Act of 1993. FRA's performance goals and 3-year record show that safety has improved since 1993. However, reaching conclusions on FRA's new safety program by isolating safety improvements over the most recent 3-year period ignores past trends in railroad safety. The past 20 years shows that periods of noteworthy reductions in railroad accidents, fatalities, and injuries were often followed by periods in which railroad safety worsened. As we concluded, it is too early to tell if FRA's efforts will sustain improvements in railroad safety over an extended time. Finally, we disagree with FRA's contention that any workplace safety regulations that it may consider issuing should be limited to train-related operations only. In assessing the more detailed workplace safety information that the agency began

collecting in January 1997, FRA may find a preponderance of non-train-related injuries that warrant the agency's and industry's attention. Accordingly, FRA should not foreclose the need to at least consider regulations that may cover serious injuries that occur away from train operations.

FRA had additional comments that we incorporated throughout the report, where appropriate.

Methodology Used to Analyze Data From the Federal Railroad Administration's Railroad Inspection Reporting System

To analyze the impact of the Federal Railroad Administration's new approach on field inspections, we obtained data from the agency's Railroad Inspection Reporting System. The system contains all records for calendar years 1992 through 1994 for inspections of motive power and equipment, operations and hazardous materials, signal and train control, and track. For calendar year 1995, we obtained data from FRA's current database which combines all of these disciplines into one file. These data included information such as the railroad inspected, geographic region, inspection discipline, defects, and violations recommended. We worked closely with agency officials to develop a list of subsidiary railroads to combine with parent railroads for each year represented in our data, as well as to develop a coding structure designating railroads as class I, group II, or all others. We also worked closely with agency officials to ensure that we were counting the numbers of inspections, records inspections, defects, and recommended violations consistently with FRA's methods of generating statistics describing such activities.

To determine railroads that had not received inspections, we generated a list of railroads from FRA's Operations and Casualty databases for each calendar year 1992 through 1995. We compared this list to the railroads (with subsidiaries combined with parents) from the inspections data we received from FRA. We focused on railroads that received no inspection in any of the five inspection disciplines or that received inspections in only one or two of the five inspection disciplines.

Reliability Assessment of FRA's Inspection Data

We reported the results of our limited reliability assessment of the Railroad Inspection Reporting System as required by the government auditing standards in 1990.[1]

[1]Railroad Safety: New Approach Needed for Effective FRA Safety Inspection Program (GAO/RCED-90-194, July 31, 1990).

Safety Assurance and Compliance Program's Senior Management Meetings

Table II.1: Fiscal Year 1995 Meetings

Railroad	Date of meeting
Chicago and Northwestern	October 25, 1994
Southern Pacific	February 15, 1995
Iowa Interstate	April 26, 1995
Conrail	May 26, 1995
Kansas City Southern	July 12, 1995
Florida East Coast	July 18, 1995
Tri-Rail	July 19, 1995
Union Pacific	August 23, 1995

Source: FRA.

Table II.2: Fiscal Year 1996 Meetings

Railroad	Date of meeting
Montana Rail Link	October 11, 1995
CSX Transportation	October 31, 1995
Dakota, Minnesota, & Eastern	January 25, 1996
Gateway Western	January 31, 1996
Metra (Chicago)	February 22, 1996
Southeastern Pennsylvania Transportation Authority (SEPTA)	March 8, 1996
Wisconsin Central	March 29, 1996
Long Island	April 3, 1996
Springfield Terminal	April 16, 1996
Belt Railway of Chicago	May 28, 1996
Norfolk Southern	June 20, 1996
Alaska	July 16, 1996
New Jersey Transit	July 18, 1996
Rail Tex (Central Oregon and Pacific)	August 6, 1996
Elgin, Joliet & Eastern	August 20, 1996
Metro North	August 27, 1996
Burlington Northern Santa Fe	August 30, 1996
Duluth Missabe and Iron Range	September 23, 1996
Canadian National (Grand Trunk Western /Duluth, Winnipeg, and Pacific)	September 24, 1996
Illinois Central (Chicago Central and Pacific)	September 26, 1996

Source: FRA.

Table II.3: Fiscal Year 1997 Meetings

Railroad	Date of meeting
Metro Link (SCRRRA)	October 17, 1996
Indiana Harbor Belt	November 12, 1996
Canadian Pacific	December 12, 1996
Amtrak	December 4, 1996
Texas Mexican	To be determined
Farmrail/Grainbelt	To be determined
Texas, Oklahoma & Eastern/DeQueen & Eastern	To be determined
North American Rail Net	February 1997
I&M Rail Link	March 1997
Wisconsin Southern	March 1997
Toledo, Peoria, and Western	April 1997
Northern Indiana Commuter	April 1997
Escanaba and Lake Superior	May 1997
Dakota, Missouri Valley, and Western	June 1997
Central Railroad of Michigan	June 1997
Carolina Southern	July 1997
Arizona and California	July 1997
Blue Mountain Reading and Northern	July 1997
Ann Arbor	July 1997
Kyle Railroad	To be determined
Wheeling and Lake Erie	August 1997
Amtrak Capital Corridor	August 1997
Indianapolis and Louisville	August 1997
North Shore Group	September 1997
Red River Valley and Western Railroad	September 1997

Source: FRA.

FRA's Rulemaking Actions

Stage	Title	Source of decision to regulate	Legal deadline	Other
Prerule	Hours of Service Electronic Recordkeeping Project	Reinventing government effort	None	
Proposed rule	Track Motor Vehicle and Roadway Equipment Safety	Petition to develop a rule	None	Tasked to the Railroad Safety Advisory Committee (RSAC) on 10/31/96
Proposed rule	Locomotive Crashworthiness and Working Conditions	Rail Safety Enforcement and Review Act –9/3/92	Final rule or report, 3/3/95	Tasked to RSAC on 10/31/96[a]
Proposed rule	Florida Overland Express High Speed Rail Rule of Particular Applicability	FRA	None	
Proposed rule	Passenger Equipment Safety Standards	Federal Railroad Safety Authorization Act of 1994 –11/2/94	Initial regulations, 11/2/97; final, 11/2/99	
Proposed rule	Whistle-Bans at Highway-Rail Grade Crossings	Title III, Public Law 103-440	Final, 11/2/96	
Proposed rule	Qualification and Certification of Locomotive Engineers	Petitions to reconsider aspects of an existing rule	None	Tasked to RSAC on 10/31/96
Proposed rule	Track Safety Standards	Rail Safety Enforcement and Review Act –9/3/92	Final, 9/1/95	Tasked to RSAC on 4/1/96[b]
Proposed rule	Environmental Impact and Related Procedures	FRA, FTA, and FHWA revisions to environmental regulations	None	
Proposed rule	Reinvention of Steam Locomotive Inspection Regulations	Reinventing government effort	None	Tasked to RSAC on 7/24/96
Proposed rule	Radio Communication-Advanced Train Control System	Rail Safety Enforcement and Review Act-9/3/92[c]	None	Tasked to RSAC on 4/1/96[d]
Proposed rule	Freight Power Brakes	Rail Safety Enforcement and Review Act-9/3/92	Final, 12/31/93	Tasked to RSAC on 4/1/96[e]
Final rule	Rail Passenger Service: Emergency Preparedness	Federal Railroad Safety Authorization Act of 1994 –11/2/94	Initial regulations, 11/2/97; final, 11/2/99	
Final rule[f]	Statement of Policy Regarding Safety of Railroad Bridges	FRA	None	
Final rule	Use of Remotely Controlled Locomotives in Rail Operations	FRA	None	

(continued)

Stage	Title	Source of decision to regulate	Legal deadline	Other
Final rule	Use of One-Person Crews in Railroad Operations	FRA	None	
Final rule	Alcohol/Drug Regulations; Miscellaneous Technical Amendments and Corrections	Reinventing government effort	None	
Final rule	Local Rail Freight Assistance to States	FRA	None	
Final rule	Freight Car Safety Standards: Maintenance-of-Way Equipment	Reinventing government effort	None	
Final rule[g]	Reinvention of Regulations Addressing Discontinuance or Modification of Signal Systems	Reinventing government effort	None	
Final rule[h]	Reinvention of Signal System Reporting Requirements	Reinventing government effort	None	
Final rule[i]	Maintenance, Inspection, and Testing of Grade-Crossing Signal Systems	Reinventing government effort; petitions to reconsider aspects of an existing rule	None	
Rule published on 6/18/96[j]	Railroad Accident Reporting	Reinventing government effort	None	
Rule published on 7/25/96	FRA Hazardous Materials Penalty Guidelines	Senate Report 103-150, Public Law 103-122	Final, 5/1/95[k]	
Rule published on 12/16/96	Roadway Worker Protection	Rail Safety Enforcement and Review Act –9/3/92	Final, 9/1/95	
Rule published on 1/2/97	Power Brake Regulations: Two Way End of Train Telemetry Devices	Rail Safety Enforcement and Review Act –9/3/92	Final, 12/31/93	
Long term	Reinvention of Regulations Addressing Railroad User Fees	Reinventing government effort	None	
Long term	Small Railroads; Policy Statement on Enforcement Program	Small Business Regulatory Enforcement Fairness Act of 1996 - 3/29/96	3/29/97	
Long term	Tourist and Historic Working Group Regulatory Review (Section 610 Review)	FRA, Regulatory Flexibility Act[l]	None	

(continued)

Stage	Title	Source of decision to regulate	Legal deadline	Other
Long term	Amtrak Waste Disposal	The National and Community Service Act of 1990 - 11/16/90	None	
Long term	Protection of Utility Employees	Petitions to reconsider aspects of an existing rule	None	
Long term	Selection and Installation of Grade Crossing Warning Systems	FRA	None	

Note: Rules currently pending for which action was completed in the last 12 months.

[a]The Rail Safety Enforcement and Review Act required FRA to complete a rulemaking proceeding to consider prescribing regulations in this area within 30 months of enactment. The act required FRA to report to the Congress if it decided, based on the rulemaking proceeding, not to prescribe regulations. FRA reported the results of its investigation to the Congress in September 1996 and subsequently referred the matter to the RSAC.

[b]The RSAC voted to recommend a proposal to the FRA Administrator in November 1996. FRA published a Notice of Proposed Rulemaking on July 3, 1997.

[c]The Rail Safety Enforcement and Review Act required a safety inquiry regarding railroad radio standards and procedures, and FRA committed to revise its rules based on this study.

[d]The RSAC voted to recommend a proposal to the FRA Administrator in April 1997. FRA published a Notice of Proposed Rulemaking on June 26, 1997.

[e]Proposals for passenger brake revisions are also being developed with the assistance of a passenger equipment standards working group.

[f]FRA published an Interim Statement of Policy on April 27, 1995.

[g]FRA published an Interim Final Rule on July 1, 1996.

[h]FRA published an Interim Final Rule on July 1, 1996.

[i]FRA published a Final Rule on September 30, 1994, requiring that railroads take actions to protect the travelling public and railroad employees from the hazards posed by malfunctioning highway-rail grade crossing warning systems, and that railroads follow specific standards for maintaining, inspecting, and testing those systems. This rule was effective on January 1, 1995. FRA is making technical changes and minor amendments to this final rule. FRA published an Interim Final Rule on June 20, 1996.

[j]On June 18, November 22, and November 29, 1996, FRA published final rules amending the railroad accident reporting regulations. On December 23, 1996, FRA responded to remaining issues raised in petitions for reconsideration, issued amendments addressing some of those concerns, and made some technical minor amendments.

[k]As stated in the report of the Senate Appropriations Committee on the Department of Transportation's Fiscal Year 1994 appropriations.

[l]Under the Regulatory Flexibility Act, agencies periodically review existing and proposed regulations that have or will have a significant economic impact on a substantial number of small entities. The RSAC's Tourist and Historic Working Group will review existing and proposed regulations for their appropriate applicability to tourist and historic railroads.

Source: Semiannual Regulatory Agenda (Apr. 25, 1997) and FRA.

Key Safety Statistics, Calendar Years 1993 Through 1996, and FRA's Performance Goals

Performance measure	1993	1996[a]	Reduction (percent)	1998 goal	Comparison of 1996 with 1998 goal
Rail-related fatalities	1,279	1,023	20	1,151	–128
Train accidents	2,785	2,511	9.8	2,414	+97
Rail passenger fatalities/ injuries	617	437	29.2	423	+14
Rail employee fatalities/ injuries	15,762	8,949	43.2	11,645	–2,696
Grade crossing accidents	4,892	4,159	15.0	4,377	–218
Trespasser fatalities	523	472	9.8	494	–22
Hazardous materials releases	1,154	1,087	5.8	1,110	–23

[a]1996 data are preliminary.

Source: FRA.

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