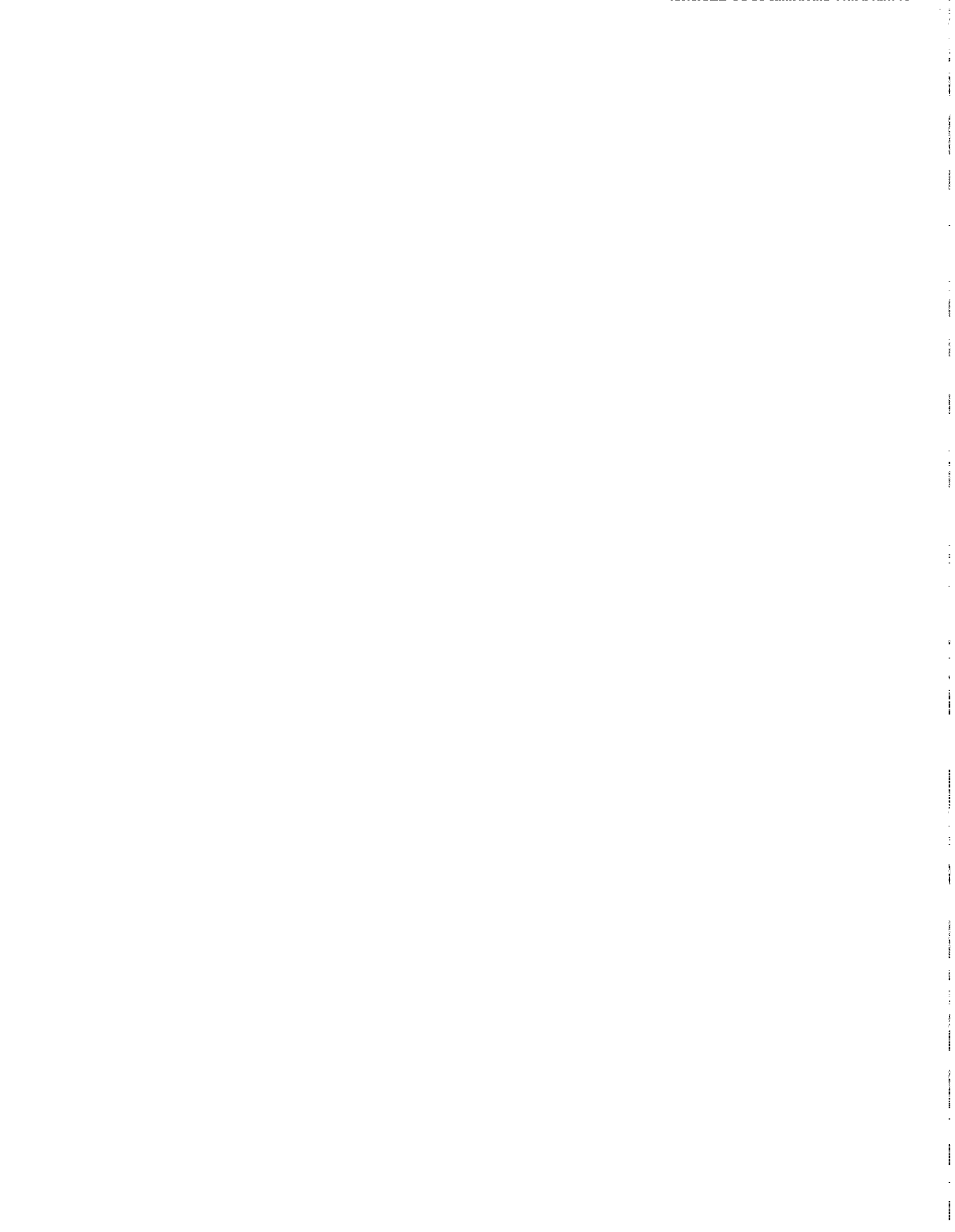


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RAILROAD SAFETY

Continued Emphasis Needed for an Effective Track Safety Inspection Program







United States
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**Resources, Community, and
Economic Development Division**

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Chairman

The Honorable John C. Danforth
Ranking Minority Member
Committee on Commerce, Science
and Transportation
United States Senate

The Honorable John D. Dingell
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The Honorable Carlos J. Moorhead
Ranking Minority Member
Committee on Energy and Commerce
House of Representatives

The Rail Safety Enforcement and Review Act of 1992, Public Law 102-365, enacted September 3, 1992, requires GAO to report to the Congress on the effectiveness of the Department of Transportation's (DOT) enforcement of track safety standards, with particular attention to recent relevant accident experience and data. Within DOT, the Federal Railroad Administration (FRA) establishes and enforces regulations for railroad safety. This report acknowledges the improvement that FRA has made in its track safety program and recommends actions to further strengthen track safety.

We are sending copies of the report to the appropriate congressional committees, the Secretary of Transportation, and the FRA Administrator. We will make copies available to others on request.

This work was performed under the direction of Kenneth M. Mead, Director, Transportation Issues, who can be reached on (202) 512-2834. Major contributors to this report are listed in appendix II.

Keith O. Fultz
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Executive Summary

Purpose

The Rail Safety Enforcement and Review Act of 1992 requires GAO to report to the Congress on the effectiveness of the Department of Transportation's (DOT) enforcement of track safety standards. Within DOT, the Federal Railroad Administration (FRA) sets standards and develops regulations for the safety of the nation's 635 railroads and over 200,000 miles of track.

Since 1987, GAO has issued many reports identifying weaknesses in FRA's rail safety inspection and enforcement programs and recommended improvements in the data and methods used to oversee the rail industry. This report addresses (1) the improvement FRA has made in its track inspection program by correcting problems noted in past GAO reports and (2) the implementation problems that still limit the effectiveness of track inspections. In addition, this report addresses an emerging rail safety issue requiring FRA's attention—federal oversight of track not currently subject to track safety standards (excepted track).

Background

FRA's rail safety program has three basic components: planning, staffing, and evaluation. The planning component, FRA's new National Inspection Plan, is a computer model that incorporates risk factor data—derived from past inspections, accident and injury reports, and records of passenger, hazardous materials, and total freight traffic—to produce hourly inspection goals for each railroad, by state. The staffing component will allow FRA to implement these inspection goals by indicating where inspectors are needed most to ensure the timely inspection of high-risk track: track on which many accidents have occurred, track located near population centers, or track used to carry passengers or hazardous materials. The evaluation component, which collects data on how much track is inspected each year, enables FRA to determine whether it is meeting the inspection goals. Wherever a gap exists between the planning and evaluation components, FRA is to develop strategies, including plans for reallocating its inspectors, to ensure that the goals are met.

Results in Brief

FRA has improved its track inspection program, and its strategy for correcting the weaknesses that GAO identified in previous reports is sound. To further strengthen rail safety, FRA needs to incorporate site-specific data on passenger and hazardous materials traffic in its inspection plan and improve the reliability of accident and injury data. These data are critical in setting inspection goals and targeting inspection time to high-risk track. Currently, because of gaps and inaccuracies in the plan's

data, FRA regional officials do not view the plan's goals as providing them with a systematic basis for developing annual strategies for targeting inspections to high-risk track. In addition, the usefulness of the staffing and evaluation components is limited, since they rely on the plan's questionable data.

FRA has enhanced its daily oversight of track safety activities. Communication with participating states improved after FRA agreed with the states on ways to avoid duplicative inspections. In addition, inspectors have applied track safety regulations and reported track defects more consistently since GAO last reviewed this issue. However, FRA has not always enforced its policy that inspectors examine track inspection records to review a railroad's compliance history before physically inspecting track.

FRA faces a difficult challenge in revising the safety standards for excepted track. FRA intended designations of excepted track to apply to little-used lines that, for economic reasons, could not be brought up to minimal safety standards. However, the number of reported accidents and cited defects on excepted track has increased, and FRA is concerned that railroads have abused the excepted track provision. The track safety regulations do not allow FRA inspectors to write violations for excepted track and do not require railroads to fix cited defects.

Principal Findings

FRA's Track Inspection Strategy Contains Weaknesses and Opportunities

The National Inspection Plan, the cornerstone of FRA's new inspection strategy, was revised in 1992 to better target FRA's routine inspections of high-risk track. However, an important element of the plan, a Regional Inspection Points program, was not completed. This program was intended to incorporate data on the volume of rail, passenger, and/or hazardous materials traffic carried on each route. In response to budget constraints, FRA stopped collecting these data and substituted data on the miles of track inspected over 3 years in its inspection plan for 1993—a substitution that did not pinpoint which track carried passengers or hazardous materials.

In implementing the inspection plan, FRA recognized that changes in the goals would be needed to compensate for limitations in the risk factor

data. Hence, FRA established a process through which the regions could recommend adjustments to headquarters in the hourly goals for each railroad in a state. However, the regions have not reported some adjustments to headquarters but have relied instead on their inspectors to determine what track to inspect—a practice GAO criticized in the past as unresponsive to the congressional mandate that FRA develop a systematic approach to targeting limited inspection resources to high-risk track. Furthermore, FRA sets its inspection goals in accordance with the location of its inspectors rather than of high-risk track.

FRA Has Enhanced Daily Oversight of Track Safety Activities

GAO recommended in 1990 that FRA inspectors improve communication with state rail inspectors by coordinating their inspection territories and sharing the results of their inspections. During 1993, GAO found that FRA had defined track inspection territories in 12 of the 15 states reviewed. In addition, FRA had revamped its safety training programs and issued new enforcement manuals to reduce variation in inspectors' application of safety standards throughout the rail industry. But because of budget constraints, FRA did not fund its track safety training program in 1993. GAO's analysis of track inspection results from 1989 to 1992 indicates that track inspectors have applied the safety standards more uniformly.

Despite these improvements, FRA and state inspectors examined railroads' track inspection records at only 60 percent of the railroads they visited between 1989 and 1992. FRA policy requires inspectors to prepare for an inspection by reviewing a railroad's track inspection records in order to gain an understanding of the railroad's compliance history. However, FRA inspectors have not always implemented this policy because they have not had access to original inspection records—especially since many railroads began to centralize or automate these records—and they have considered reviews of photocopied or electronic records unacceptable to FRA.

Safety of Excepted Track Has Declined

Federal track safety standards do not apply to about 12,000 miles of track designated by the industry as excepted; travel on such track is limited to 10 miles per hour, no passenger service is allowed, and no train may carry more than five cars containing hazardous materials. The safety of this track has declined over the past few years. GAO found that the number of track-caused accidents on excepted track increased from 22 in 1988 to 65 in 1992—a 195-percent increase. The number of defects cited on excepted track also increased from 3,229 in 1988 to 6,057 in 1992. With few exceptions, FRA cannot compel railroads to correct these defects.

According to FRA, the railroads have applied the excepted track provision far more extensively than envisioned (i.e., on certain yard track and little-used branch lines away from public roads and populous areas). One railroad classified about 80 percent of its 400 miles of track as excepted. Other railroads transported hazardous materials on excepted track through residential areas or intentionally designated track as excepted rather than comply with minimum safety standards. According to FRA, these designations often occurred after the agency advised the railroads that their track did not meet safety standards.

In November 1992, FRA announced its intention to review the excepted track provision. In response, the Association of American Railroads expressed its disapproval of manipulating the excepted track rule to avoid compliance but maintained that FRA already had the necessary enforcement tools. FRA, however, views the existing regulations as inadequate because its inspectors cannot write violations for excepted track and railroads are not required to correct defects.

Recommendations

To overcome the problems identified in FRA's rail safety inspection program, GAO recommends that the Secretary of Transportation direct the FRA Administrator to gather the data needed to successfully implement the National Inspection Plan and continue to improve FRA inspectors' daily oversight of track safety activities. GAO further recommends that FRA strengthen its enforcement authority to allow inspectors to require minimum safety standards on excepted track that poses an imminent hazard. GAO's detailed recommendations appear in chapter 5.

Agency Comments

In commenting on a draft of this report, DOT agreed with most of GAO's findings and concurred wholly or partially with all of GAO's recommendations. However, DOT maintained that the costs of gathering site-specific data on passenger and hazardous materials traffic prevented FRA from including these data in its inspection plan. While continuing to believe that these data are essential to target inspections to high-risk track, GAO modified its recommendation to endorse a pilot program in one FRA region, through which FRA could collect site-specific data and assess the cost-effectiveness of extending this effort nationwide. Additional comments and responses appear in chapter 5 and appendix I.

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Abbreviations

AAR	Association of American Railroads
ANPRM	Advance Notice of Proposed Rulemaking
ATIP	Automated Track Inspection Program
CFR	Code of Federal Regulations
DOT	Department of Transportation
FRA	Federal Railroad Administration
GAO	General Accounting Office
ICC	Interstate Commerce Commission
NIP	National Inspection Plan
NTSB	National Transportation Safety Board
QIP	Quality Improvement Program
RIP	Regional Inspection Points Program

Introduction

Under the Federal Railroad Safety Act of 1970, as amended, the Federal Railroad Administration (FRA) is responsible for regulating all aspects of railroad safety for the nation's 635 railroads and more than 200,000 miles of track.¹ FRA's safety mission includes (1) establishing federal rail safety rules and standards; (2) inspecting railroads' track, signals, equipment, and operating practices; and (3) enforcing federal safety rules and standards. The railroads are primarily responsible for conducting safety inspections of their own equipment and facilities to ensure compliance with federal regulations, while FRA monitors the railroads' actions. The National Transportation Safety Board (NTSB) also plays a role in ensuring railroad safety. Established by the Congress in 1966, NTSB investigates transportation accidents, determines their probable causes, and issues safety recommendations.

FRA's Approach to Railroad Safety

To carry out its safety mission, FRA has established eight regional offices under the direction of an Associate Administrator for Safety. Inspectors specialize in one of five inspection disciplines: track, locomotive power and equipment, operating practices, signal and train control, and hazardous materials. The primary responsibility of the inspectors is to conduct routine inspections of railroads. When an inspection reveals noncompliance with a federal safety regulation, the condition is listed as a defect on an inspection report. When an inspector identifies a defect that poses an immediate safety hazard or when noncompliance persists, a violation report is prepared and submitted to FRA's Office of Chief Counsel to be used to assess a civil penalty against the railroad.²

This report focuses on FRA's track inspection discipline. In 1993, FRA had a total of 56 track inspectors operating out of its regional offices. These track inspectors report to a supervisory track specialist in each region. FRA also had 20 chief inspectors who inspect small railroads in all disciplines, including track. In addition, 29 states have their own track safety inspectors; these inspectors—54 in total—participate with FRA under cooperative agreements to monitor railroads' compliance with the safety regulations. The state inspectors forward their inspection reports to supervisory track specialists in the appropriate FRA regional office. FRA and state track inspectors monitor the performance of the rail industry's track

¹The act directed the Secretary of Transportation to prescribe regulations for all areas of rail safety. The Secretary delegated this responsibility to the FRA Administrator.

²Both defects and violations are instances of regulatory noncompliance; violations are considered more serious. Penalties are not assessed for defects, although railroads are expected to correct the defective conditions.

maintenance workforce of about 25,000, including 5,000 track inspectors. In 1992, the FRA and state track inspectors conducted 17,000 inspections of 348,326 miles of track and identified more than 100,000 track defects.

FRA's track safety standards are contained in part 213, title 49, of the Code of Federal Regulations (49 C.F.R. 213). Last revised in 1982, the standards prescribe minimum safety requirements for railroad track that is part of the general railroad system of transportation. This includes virtually all track over which commercial railroads operate. The standards define (1) track inspection requirements that railroads must follow; (2) the condition of the track structure—such as the roadbed, crossties, rails, and switches—that must be met to operate trains safely at given speeds; and (3) the geometry of curved track, e.g., the gage (distance between rails), alinement, and elevation of outer rails. These standards vary, depending on the track class. The stricter the requirements that must be met, the higher the maximum allowable operating speed. As table 1.1 shows, FRA has defined six classes of track and designated maximum train speeds for each.

Table 1.1: FRA Track Classes and Associated Maximum Operating Speed

Track class	Maximum speed	
	Freight	Passenger
1	10	15
2	25	30
3	40	60
4	60	80
5	80	90
6	110	110

Source: 49 C.F.R. part 213.9(a).

The Rail Safety Enforcement and Review Act of 1992 (which amended the Federal Railroad Safety Act of 1970) required FRA to review and revise its track safety standards. As part of this review, FRA held four workshops in which it discussed revisions to the standards with representatives of the railroad industry, railroad employee unions, and other interested parties. FRA is required to complete its efforts by September 1994.

FRA's Response to Prior General Accounting Office Reports

Since 1987, we have issued many reports identifying weaknesses in FRA's rail safety inspection and enforcement programs. For example, in July 1990, we reported on FRA's progress in meeting the requirements of the Federal Railroad Safety Authorization Act of 1980 that FRA submit to the Congress a system safety plan to carry out railroad safety laws. As part of the plan, FRA was directed to develop an inspection methodology that considered carriers' safety records, population centers, and the volume and usage of track. The statute required the Secretary to give appropriate priority to inspections of track and equipment involving passenger and hazardous materials routes. The House report accompanying this provision stated that FRA should be able, through its national plan, to target safety inspections to high-risk track—track with a high incidence of accidents and injuries, located in populous urban areas, carrying passengers, or transporting hazardous material.

In our 1990 report, we found that the National Inspection Plan (NIP) that FRA had developed did not include volume data on passenger and hazardous materials routes—two important risk factors.³ In an April 1989 report, we also noted problems with another NIP risk factor—accidents and injuries.⁴ We found that the railroads had substantially underreported and inaccurately reported the number of accidents and injuries and their associated costs. As a result, FRA could not integrate inspection, accident, and injury data in its inspection plan to target high-risk locations and thereby achieve maximum effectiveness with its limited inspection resources.

In response to our 1990 report, the FRA Administrator stated that FRA could greatly improve its safety inspection program by

targeting [its] resources more effectively on the basis of the wealth of statistics at [its] command. Given the size of [the] inspector force in relation to the size of the railroad industry, [FRA could] maximize the effect of [its] resources only by deploying them as scientifically and strategically as possible.

We also reported in 1990 that FRA inspectors were not filing safety violations uniformly. We noted that inconsistencies existed because FRA did not provide adequate training for its inspectors and did not provide clear guidance on issuing violations. In addition, we noted communication

³Railroad Safety: New Approach Needed for Effective FRA Safety Inspection Program (GAO/RCED-90-194, July 31, 1990).

⁴Railroad Safety: FRA Needs to Correct Deficiencies in Reporting Injuries and Accidents (GAO/RCED-89-109, Apr. 5, 1989).

problems between federal and state inspectors that resulted in overlapping inspection territories and led state and FRA inspectors to inspect the same track within days of one another. We recommended that FRA routinely exchange inspection plans and periodically meet with state inspectors to discuss their inspection activities.

Objectives, Scope, and Methodology

We conducted our review in response to a requirement of the Rail Safety Enforcement and Review Act of 1992 (P.L. 102-365) that we report to the Congress on the effectiveness of FRA's enforcement of track safety standards. Following discussions with the office of the Senate authorizing Committee,⁵ we agreed to assess FRA's progress in implementing recommendations made in our past reports concerning track safety. Specifically, we sought to determine

- what progress FRA has made in improving its track inspection program by correcting problems noted in our past reports and
- what implementation problems, if any, continue to limit the effectiveness of track inspections.

In addition, over the course of our review we found an emerging issue related to rail safety that FRA must address in the near term. As a result, this report also provides information on FRA's efforts to revise track standards for track not currently subject to federal oversight—excepted track.

To assess the actions FRA has taken to strengthen its track inspection program, we (1) reviewed internal FRA reports and memoranda describing these actions and (2) analyzed the inspection plans and supporting data for calendar years 1992 and 1993. We interviewed officials from three headquarters offices—Safety Enforcement, Safety Analysis, and Office of Policy—about their roles in developing and implementing FRA's new track inspection program strategy. We also reviewed track inspection records and related program documents and interviewed officials from four of FRA's eight regional offices—Atlanta, Georgia; Chicago, Illinois; Kansas City, Missouri; and Philadelphia, Pennsylvania. We selected these regions to provide a geographically balanced view of FRA's inspection and enforcement efforts. In addition, we interviewed an NTSB rail safety official about FRA's track safety program and reviewed NTSB reports on track-caused train accidents.

⁵Senate Committee on Commerce, Science, and Transportation.

To assess the effectiveness of the actions FRA has taken to coordinate its efforts with those of the states, conduct uniform inspections, and resolve other problems identified in our past reports, we interviewed Office of Safety officials, including FRA's state coordination program manager and a recently appointed training official. We reviewed records of training programs and minutes of meetings between FRA and state rail safety officials. We analyzed the results of track inspections for the period from 1989 to 1992. We interviewed officials in FRA's Atlanta, Chicago, Kansas City, and Philadelphia regions to learn how FRA track inspectors planned and carried out their inspections and coordinated their activities with track inspectors in 15 states located in those regions. We also discussed coordination with FRA and related issues with rail safety officials in six states—Illinois, Iowa, Maryland, Missouri, Tennessee, and Virginia—within the four regions, and with officials of the National Association of Regulatory Utility Commissioners.

In addressing the question of excepted track, we interviewed officials in FRA's Office of Safety Enforcement and in the Chicago and Philadelphia regions. We attended FRA workshops in Denver, Colorado; Newark, New Jersey; and Washington, D.C., where FRA discussed proposed revisions to its track safety standards, including revisions to excepted track rules. We reviewed the proceedings of these workshops and obtained and analyzed position papers on excepted track. We also analyzed FRA data on accidents reported and defects cited on excepted track and the results of an FRA special inspection of a railroad with considerable excepted trackage.

Finally, we discussed track quality and related safety issues with representatives of the Brotherhood of Maintenance of Way Employees, the Association of American Railroads, and the American Short Line Railroad Association. FRA used information from several automated systems to plan its inspection activities and to measure the results of those activities. We analyzed data from FRA's Railroad Inspection Reporting System, accident and injury reporting systems, and other systems supporting the NIP.

We conducted our review from January to November 1993 in accordance with generally accepted government auditing standards.

In this report, we present our findings in chapters 2, 3, and 4 and our conclusions and recommendations in chapter 5. We provided both the Department of Transportation (DOT) and FRA with a draft of our proposed report. DOT responded on behalf of both agencies. Its principal observations and our general responses to these observations are

Chapter 1
Introduction

summarized at the end of chapter 5. DOT's written comments appear in full in appendix I, together with our detailed responses to specific comments.

Opportunities Exist to Improve FRA's New Track Inspection Program

FRA has made progress in developing a comprehensive strategy for inspecting the nation's rail tracks as required by the Federal Railroad Safety Authorization Act of 1980¹ and thereby in meeting the law to develop a system safety plan. Its safety program now has three basic components: a revised NIP, a staffing allocation model, and a Quality Improvement Program (QIP) (now being implemented). When fully implemented, the track portion of the inspection program will enable FRA to identify and target limited resources for inspections to high-risk track and evaluate whether its efforts are improving the overall safety of the nation's track.

However, FRA still faces challenges similar to those we cited in our previous reports. First, it has not obtained and incorporated into the NIP site-specific data on two critical risk factors—the volume of passenger traffic and the volume of hazardous materials transported. Second, it has not improved the reliability of another critical risk factor—the reporting of accidents and injuries nationwide. FRA was developing a program to provide this information, but the program was not completed in time for the 1993 or the 1994 NIP. Because of these inadequacies in the NIP, FRA regional offices generally do not view the inspection goals produced by the NIP as providing a systematic basis upon which they can develop annual strategies for targeting inspections to high-risk routes. In addition, the usefulness of the staffing allocation model and the QIP is limited; the proposed staffing model relies on NIP data, and the QIP is intended as a check on the extent to which inspectors are meeting the NIP goals.

FRA's Track Inspection Strategy Has Three Components

FRA's rail safety program has three basic components: planning, staffing, and evaluation. The planning component—a revised NIP—is a computer model that evaluates data on risk factors, including past inspection results, accident and injury information, and the volume of passenger, hazardous materials, and total freight traffic. The NIP produces inspection goals—expressed in hours of inspection time—for each railroad, by state and by discipline. For the track discipline, the NIP is designed to identify which track segments pose the greatest risk of accident or harm to the public and which should therefore receive the most inspection resources.

For the track discipline, seven risk factors are evaluated and given equal weight in the NIP model: (1) regional inspection points, (2) track-caused accidents, (3) track-caused casualties (fatalities and injuries), (4) passenger traffic, (5) freight tonnage, (6) hazardous materials tonnage,

¹Public Law 96-423; 94 Stat. 1811.

and (7) track defects. The Regional Inspection Points (RIP) program is a computer-based program intended to identify and periodically update the universe of inspection points in each discipline to provide a baseline in the NIP for allocating resources. For the track discipline, the RIP program is designed to contain a national inventory of all inspection points (track segments) with data on the physical characteristics of all track in each inspector's territory.

FRA proposes to use the NIP data in a staffing allocation model that will enable the agency to determine how many inspectors are needed in each discipline and how they can best be allocated. The staffing model will also incorporate data from a computer-based program (the QIP) that gathers and develops data on inspectors' workloads. The QIP, which allows FRA to measure progress in meeting NIP goals, consists of daily activity reports that inspectors fill out to show the time they spend inspecting and doing other activities. Track inspectors' reports provide information on the number of miles of track inspected each year and the number of defects cited. Where a gap exists between the planning and evaluation components, FRA is to develop strategies, including plans for reallocating its inspectors, to ensure that its goals are met.

Challenges Remain in Ensuring That the NIP Is Fully Implemented

FRA revised its NIP for 1992 in an attempt to comply with the Federal Railroad Safety Authorization Act of 1980, which required FRA to develop an inspection methodology that considered the volume of passenger and hazardous materials traffic in specific locations and railroads' safety records. FRA has not yet collected information on passenger and hazardous materials traffic and is still working to ensure the reliability of the data submitted by industry on accidents and injuries.

RIP Program Does Not Include Site-Specific Data on Passenger and Hazardous Materials Traffic

In the 1980 act, the Congress required the Secretary to give appropriate priority to inspections of track and equipment involving passenger and hazardous materials routes. FRA developed the RIP data collection program in response to the act and our 1990 report, which concluded that FRA's safety inspection program should incorporate data on the location of track (its proximity to population centers), frequency of track usage, and volume of passenger and/or hazardous materials traffic. FRA began collecting RIP data in all disciplines in early 1991 but had not completed the effort when we conducted our study in 1993. While track inspectors had prepared an inventory of inspection points for each train route, the inventory included only data on physical characteristics, such as miles of

track, type of track, type of traffic, and location. Data on the volume of passenger and hazardous materials traffic and on the frequency of track use were not collected.²

Because the RIP data were unavailable, FRA entered data on the miles of track inspected by FRA inspectors over a recent 3-year period into the 1993 NIP. According to FRA officials, this information was a poor substitute for the RIP data because it could not pinpoint which track carried passenger traffic or hazardous materials. The 1993 NIP noted that FRA intended to collect information on the volume of passenger and hazardous materials traffic, since this information was the cornerstone of the plan. However, FRA safety officials noted that, because of budget constraints, they have indefinitely suspended their efforts to collect the required information. In addition, an FRA official stated that FRA may have to impose a new reporting requirement on the industry to obtain information on hazardous materials; FRA is, however, reluctant to impose such a requirement.

Railroads Do Not Accurately Report Accident/Injury Data

Railroads must report monthly to FRA all accidents involving damages exceeding a biennially adjusted dollar threshold (\$6,300 in 1993), a death, or an injury on railroad property that requires medical treatment (49 C.F.R. 225).³ The NIP includes accident and injury data, since track with a higher preponderance of accidents poses a higher risk to rail safety. In 1989, we reported that some railroads substantially underreported and inaccurately reported accidents and injuries, and we recommended improvements in the internal controls for reporting this information.

FRA agreed with our April 1989 recommendations and increased the number of inspections it conducted for compliance with accident/injury reporting requirements by 50 percent over 1989 levels. In addition, the agency revised its accident/incident reporting guide to clarify the reporting codes and will publish revised rules on the accident/incident reporting requirements. FRA has also audited the large railroads' reporting procedures and a sampling of the smaller railroads' procedures to help

²The volume of passenger traffic is measured in passenger miles, while freight traffic is measured in train miles. A passenger mile is defined as one passenger traveling 1 mile; a train mile is defined as one train traveling 1 mile. Hence, a passenger train that carries 300 passengers a distance of 1 mile equals 300 passenger miles, while a freight train that travels a distance of 1 mile travels 1 train mile.

³Railroads are required to report to FRA all deaths and all injuries that occur on or adjacent to railroad property except for injuries requiring one-time first-aid treatment. Railroads must also report train accidents (which FRA defines as collisions, derailments, and other occurrences) for which damage to railroad equipment and track exceed a current dollar threshold. In addition, railroads are required to report all rail-highway crossing accidents regardless of damage to equipment and track.

determine whether regulatory changes in internal control procedures are needed.

A January 1993 FRA report found that railroads had improved their reporting of more serious injuries. However, this report also found that (1) in many cases, carriers' records were still inaccurate and unreliable, and many reportable employee injuries were not reported; (2) initial accident reports were often not updated to reflect more accurate information; and (3) most nonreporting or inaccurately reporting railroads had internal communication and/or control problems. Other FRA internal reports have identified the underreporting of accidents as a continuing industry problem.

Our review of the accuracy of the accident/injury data base confirmed FRA's internal findings. We assessed whether FRA's data base included information on 39 track-caused accidents that NTSB investigated during 1990 and 1991. FRA's data base included information on all 39 accidents that NTSB investigated.⁴ However, for five accidents, the reports of casualties differed. At our request, FRA followed up on one accident and determined that the railroad had not reported one death and two serious injuries that resulted from the accident. In addition, while NTSB reported \$35.3 million in damages resulting from the 39 accidents, FRA's data base reported only \$26.2 million in damages.⁵ The damages reported by NTSB were over 25 percent higher in 22 of these cases. This finding supports FRA's conclusion that accident reports are not updated as more reliable information on damages becomes available.

FRA safety officials recognize that they have not implemented many proposed corrective actions to improve railroads' reporting of accidents and injuries. In March 1990, FRA issued an Advance Notice of Proposed Rulemaking (ANPRM) on methods to improve rail carriers' reporting. In comments on a draft of this report, FRA stated that it has been developing and will publish a Notice of Proposed Rulemaking to revise its current accident/incident reporting requirements.

⁴NTSB investigates only about 100 of the most serious rail accidents that occur each year; about 3,000 accidents are reported annually to FRA.

⁵To ensure that we were evaluating comparable data, we excluded cargo losses and other damages to nonrailroad property from the NTSB calculation. FRA did not include cargo losses in its report.

Other Risk Factor Data Are Not Comparable or Accurate

Because risk factor data are not collected in a comparable format, their usefulness in the NIP is diminished. While the RIP data identifying track segments to be inspected were intended to be route-specific, the NIP's fourth, fifth, and sixth risk factors—passenger traffic, freight tonnage, and hazardous materials tonnage—were intended to provide state-specific information. We found that some railroads did not separate freight from passenger traffic. In addition, the information in the data base underrepresented the hazardous materials tonnage and total freight tonnage transported on smaller railroads. Errors in the NIP goals have resulted.

For the passenger traffic risk factor, FRA collected data from Amtrak and from commuter and excursion railroads to enter into the NIP. According to the 1993 NIP, these data should represent train miles operated in passenger service. Because FRA had access to Amtrak's schedules, it was able to calculate train miles operated in passenger service for all Amtrak routes. But because schedules for local commuter and excursion lines were not as readily available, FRA relied on data these railroads had already reported to FRA. However, we found that the reported data did not separate passenger and freight train miles. As a result, the method FRA used to collect passenger information is likely to have given disproportionate weight (too many inspection hours) to railroads that operate both passenger and freight trains.

In addition, we found errors in the number of train miles operated in passenger service as reported in the NIP. For example, the Wisconsin Central Railroad operated no regular passenger service in the state of Wisconsin. Nevertheless, the risk factor data showed 2.6 million train miles in passenger service for this railroad for a recent 12-month period. Officials in FRA's Office of Safety Analysis were not able to explain this error. They also could not explain data showing 568,000 passenger train miles for the Iowa Interstate Railroad—a railroad that carried no passengers in 1992.

The method that FRA used to collect statewide information on hazardous materials and overall freight tonnage may also produce errors in the final NIP goals. FRA used sample data reported to the Interstate Commerce Commission (ICC). ICC annually collects a 1-percent sample from the waybills (records of total goods shipped) of Class I railroads.⁶ The records used for the sample cover the entire transportation history of a

⁶The 15 Class I railroads are the nation's largest; each has annual gross operating revenue in excess of \$250 million. In calendar year 1992, these railroads accounted for 87 percent of the nation's total train miles and 78 percent of the reported train accidents.

commodity's movement, which includes movement across non-Class I railroads. According to FRA, the sample would not include shipments that occurred exclusively on non-Class I railroads. As a result, FRA officials said, non-Class I railroads do not have the same chance of being represented in the sample as the Class I railroads. FRA stated that because of the limitations in the waybill sample, they did not use hazardous materials tonnage data to distribute inspection hours between large and small railroads. According to the FRA official responsible for the NIP's operation, the ICC information may contain other errors, since FRA did not determine the overall reliability of the data base.

Data Gaps Limit the NIP's Effectiveness

Because of the NIP's inadequacies, FRA regional officials generally do not view the NIP output as a systematic basis upon which they can develop annual strategies for targeting inspections to high-risk routes. In addition, the usefulness of the staffing allocation model and of the QIP is limited because the proposed staffing model relies on NIP data and the QIP is intended as a check on the extent to which inspectors meet the NIP goals.

Inspectors See Limited Use for the Current NIP Goals

In implementing the NIP, FRA recognized that changes in hourly inspection goals would be needed for various reasons to compensate for limitations in the risk factor data. To control the accuracy and reliability of the NIP goals, FRA established a process through which regional officials could recommend adjustments to the hourly goals for each railroad in the state. Regional officials we spoke with have responded to the adjustment process by either (1) adjusting the NIP goals and reporting the adjustments to headquarters or (2) adjusting the NIP goals and not reporting the adjustments to headquarters. In both cases, the regions have relied primarily on their inspectors to determine where and when inspections are needed—a practice we criticized in our July 1990 report as not being responsive to the congressional mandate for FRA to develop a systematic approach to targeting limited inspection resources to high-risk track.

In part, the regions have relied more on their inspectors than on the NIP goal-setting process because they have questioned the overall usefulness of the NIP goals. For example, the Northeast Illinois Regional Commuter Rail Corporation operated commuter service mainly on track owned and maintained by four other railroads. In 1992 and 1993, the NIP allocated 306 and 205 hours, respectively, for track inspections of this commuter railroad. The FRA Region 4 Director stated that the NIP guidelines required him to transfer the inspection hours from the commuter railroad to the

railroads that owned and maintained the track on which the commuter railroad operated. However, he did not make the transfer because he did not think it served a useful purpose.

The regions have also relied on their own inspectors because they have perceived that headquarters staff have not made adjustments in the NIP when the regions have proposed them. For example, in May 1992, after the Toledo, Peoria and Western Railway Corporation acquired more than 250 miles of track from the Atchison, Topeka and Santa Fe Railway Company in Illinois and Indiana, FRA Region 4 requested that FRA headquarters adjust its inspection hours to reflect the change in ownership. However, the Office of Safety Analysis did not adjust the NIP for either 1992 or 1993. We also found that headquarters staff did not adjust the 1993 NIP to reflect a similar change in ownership, as requested by Region 2.

The regions further questioned the usefulness of the NIP goals after headquarters found errors in the NIP goals for 1993. In April 1993, FRA's Office of Safety Analysis discovered a computer programming error while extracting data on track-caused accidents from the accident/injury data base. Although the office corrected the programming error and recalculated the 1993 NIP goals, it did not issue a revised NIP to the regions. According to an Office of Safety Analysis official, the impact of the error was too minor to issue a revised NIP. However, we found examples in FRA's eight regions in which revisions in the NIP goals could have resulted in a 25-percent increase or decrease in the number of inspection hours for certain railroads.

Usefulness of FRA's Staffing Model and Quality Improvement Program Is Limited

In July 1990, we reported that FRA needed to target its inspection resources to the areas posing the greatest risk. Since then, FRA has been developing a staffing model that will incorporate NIP risk factor data and inspection coverage standards to estimate how many inspectors FRA will need and how it can best allocate its inspectors among the inspection disciplines and regional offices. The NIP data would identify high-risk railroads and indicate the number and location of the routes requiring inspection coverage. Because of the problems cited in the NIP data, we believe the staffing model will not be effective in determining the number and location of the inspectors needed in each discipline.

At the time of our review, the staffing allocation model was still under development, and FRA was allocating its inspection goals according to the current location of its inspectors rather than according to the location of

the railroads or routes that pose the greatest risk to safety. However, even if the limitations in the NIP are addressed, FRA will not be able to move inspectors to the sites that the allocation model determines are most critical. FRA officials stated that it would be too costly to move inspectors on the basis of the allocation model's results. Eventually, through attrition among inspectors and the assignment of new inspectors to the disciplines and regions with the greatest need, FRA expects to implement the goals of the staffing allocation model. However, FRA stated that inspection goals may still be assigned to regions that cannot accomplish their mission with the available staff.

The third component of FRA's rail safety program, the QIP, measures inspectors' productivity and allows FRA to determine the extent to which hourly inspection goals are being achieved. FRA and state inspectors are producing daily activity reports and reporting the information to the QIP data base. Although the QIP information will become important in determining whether the NIP is meeting its intended goals and improving the overall quality of the track inspection program, its usefulness will not be fully realized until the NIP and staffing allocation model are improved.

Use of Other Tools Could Improve FRA's Track Inspection Program

FRA uses an Automated Track Inspection Program (ATIP) vehicle to monitor railroads' compliance with track geometry standards. If targeted properly, the ATIP vehicle could supplement coverage by inspectors in regions where the staffing allocation model showed a shortage of track inspectors to meet the NIP goals. FRA also does not include in its staffing allocation model the 54 state inspectors who assist FRA track inspectors in monitoring railroads' compliance with track safety standards. These state inspectors are not currently included in the NIP.

FRA Has Not Considered ATIP Vehicle in Planning and Implementing NIP Goals

FRA's ATIP vehicle is a self-propelled railcar that contains electronic sensing and data-processing equipment. While traveling up to 80 miles per hour, the vehicle can measure track conditions and geometric defects.⁷ The vehicle produces detailed exception reports listing the specific type and number of geometric defects in the track. In 1991, the ATIP vehicle inspected 21,023 miles of track and identified 15,708 geometric defects—892 alinement, 4,903 gage, and 9,913 cross-level defects.⁸ In

⁷FRA's ATIP vehicle is operated under contract by Ensco, Inc. The contractor received \$500,000 in fiscal year 1993 to operate the ATIP for FRA.

⁸At the time of our review, ATIP results for 1992 were not available.

comparison, FRA's inspectors covered 333,114 miles of track during 1991 routine inspections.

The relationship of the ATP vehicle to other elements of FRA's track inspection program has been unclear since an ATP vehicle was first used in 1974. According to FRA's track enforcement manual, track inspectors should use the ATP vehicle's results for planning and prioritizing their routine inspection visits and should follow up within 60 days of the vehicle's operation to ensure that all defects have been located and corrected. However, the 1993 NIP does not address whether track inspected by the ATP vehicle should receive less routine coverage. The Office of Safety generally schedules the vehicle so that it covers the northern states during the summer (traveling west to east) and southern states during the winter (traveling east to west). This scheduling process is independent of any NIP results that would indicate where inspector resources are insufficient to meet the hourly inspection goals. NTSB noted in its 1985 review of the ATP program that such vehicles, which are also operated by railroads in their track inspections, must be used in a well-planned track survey program to supplement the activities of track inspectors.

FRA Has Not Included State Inspectors in Its Inspection Plans

In our 1990 report, we recommended that FRA include the resources represented by state inspectors in its staffing allocation model. According to the 1993 NIP, state inspectors augment but do not reduce the number of FRA inspectors assigned to a specific state. As a result, according to FRA officials, more track inspections occur in states that have state inspectors. As stated in the 1993 NIP, state resources were not included in federal plans because of funding uncertainties or changes in state inspection priorities. For example, Minnesota state inspectors generally reviewed track rehabilitation efforts rather than monitored railroads' compliance with FRA track safety standards.

However, FRA's Region 3 considered existing state inspector resources in its decision to reallocate federal inspections to understaffed states. The region reallocated inspection time for Florida, which had three state track inspectors, to Georgia and Kentucky, which had no state track inspectors. Thus, although the Office of Safety does not plan to include state inspectors in the NIP planning process, a regional FRA director shifted inspectors to ensure uniform coverage among the various states in the region.

FRA Has Enhanced Daily Oversight of Track Safety Activities

FRA's NIP and track enforcement manual state that, to effectively monitor railroads' compliance with track safety standards on a daily basis, the agency must (1) coordinate its work with that of state rail inspectors, (2) promote compliance by uniformly applying the track safety standards, and (3) review railroads' inspection records. Since we conducted our previous reviews in 1990, we found that FRA had improved coordination with state rail inspectors by clearly defining inspection territories and had ensured more uniform application of track safety standards by redesigning its training program. However, inspectors were reviewing railroads' inspection records at only 60 percent of the railroads they visited, despite the FRA requirement that inspectors review all records before physically inspecting track. In addition, many railroads are consolidating their records at one location, making inspections of records more difficult for FRA and state inspectors.

FRA Has Improved Coordination With State Rail Inspectors

Twenty-nine states have their own track safety inspectors. Under cooperative agreements with FRA, these inspectors monitor the railroads' compliance with track safety standards. FRA believes that state inspectors are an integral part of overall inspection activities and provides guidance to regional managers on how to ensure that FRA and state inspectors work effectively together. We reported in 1990 that poor communication with the states decreased the safety program's efficiency. We recommended that FRA improve communication with the states by coordinating inspection territories and sharing the results of inspections. During 1993, we found that FRA had coordinated its inspection territories with 12 of the 15 states we reviewed.¹ However, FRA provided the results of its safety inspections to only 5 of the 15 states we contacted. Accordingly, in 10 states, the state inspectors did not have complete information on a railroad's responsiveness to prior safety reports before conducting their inspections.

Inspectors Generally Coordinate Inspection Territories

In 12 of the 15 states we reviewed, FRA and state inspectors had effectively coordinated their itineraries. In seven states, FRA and the states had divided the state into mutually exclusive inspection territories. Defining territories prevents overlapping inspections, since each inspector is assigned specific railroads or routes to inspect. For example, Nebraska has three track inspectors—two from FRA and one from the state. The state is divided into three territories, and one inspector is assigned to each

¹The four FRA regions in our study encompass 15 of the 29 states that participate in FRA's track safety inspection program.

territory. FRA regional officials stated that, with defined inspection territories, FRA and state inspectors will not burden the railroads with duplicative inspections.

Five other states coordinated their inspection activities without dividing the state into exclusive territories. In three of the five states, the state inspectors routinely sent their monthly inspection schedules to FRA. In the remaining two states, the FRA and state inspectors communicated informally with one another periodically to avoid duplicating inspection coverage.

FRA and three states did not effectively coordinate their inspections. One state in FRA's Region 6 did not routinely inform FRA of its inspection plans. The region's track specialist stated that he was not able to coordinate with the state. He noted that FRA inspectors working in the state usually receive information from the railroads after a state inspection has occurred. Similarly, FRA Region 3 inspectors found it difficult to coordinate inspection plans with two states. An official from one of the states acknowledged this lack of coordination and said that state and federal inspections often overlapped.

FRA Regions Do Not Always Share Inspection Results With States

The FRA regions in our review did not consistently share information about their inspection activities with state track inspectors. Only 5 of the 15 states received the results of FRA's track inspections. In addition, while three of the four FRA regions invited state inspectors to attend civil penalty settlement conferences, state inspectors did not always attend because of travel limitations.

FRA requires all FRA and state inspectors to review prior FRA track inspection reports in order to understand a railroad's compliance history (responsiveness to the prior inspection reports) before conducting an inspection. While all four FRA regions kept prior track inspection reports on file, only 5 of the 15 states in our review received the results of FRA's track inspections. In some instances, regional track specialists believed that defining territories precluded the need for sharing the results of track inspections with state inspectors. However, FRA and state inspectors with exclusive territories may inspect different sections of track owned by the same railroad. For example, FRA and state inspectors in Illinois had exclusive territories. However, in 1992, FRA and state inspectors both inspected track owned by the Burlington Northern, Conrail, CSX, and Santa Fe railroads in Illinois. Information from all of these inspections

would provide the inspectors with a more complete understanding of the railroads' compliance history.

Inspectors can also obtain a more complete understanding of a railroad's compliance history by attending settlement conferences. When an inspection results in a regulatory violation, FRA meets with the railroad to settle the civil penalty assessment. In three of the four regions we reviewed, FRA invited state inspectors to these settlement conferences, particularly when the state inspector had identified the violations that precipitated the civil penalty. FRA's Region 2 did not invite state inspectors to settlement conferences because in the past the state inspectors had declined when invited. According to FRA officials, by attending these meetings, FRA and state track inspectors can better understand the quality of their violation reports and obtain information on violations that other FRA inspectors have assessed against the railroad.

Because of the costs involved, state inspectors may not always attend settlement conferences. The Manager for Engineering and Safety in the Rail and Water Division of the Iowa Department of Transportation stated that the state's costs for attending are not reimbursed. The FRA Region 6 track specialist said that Iowa state inspectors do not attend settlement conferences. Illinois track inspection officials can attend only settlement conferences held in the state.

FRA Has Applied Track Safety Standards More Uniformly

In July 1990, we reported that FRA and state inspectors had not applied safety rules and standards uniformly throughout the railroad industry. We recommended improved guidance and training to address these problems. In response, FRA revamped its safety training program and issued new enforcement manuals to ensure more uniform inspections. As of February 1993, 73 percent of FRA and state track inspectors had attended the revised classes. Partly as a result of these efforts, the range of defects cited per inspection has declined from 3 to 15 defects per inspection in 1989 to 5 to 8 defects per inspection in 1993.

FRA Has Revised Its Training Program for Federal and State Track Inspectors

In August 1991, FRA hired a Director of Safety Training for the Office of Safety to develop a training program to improve the consistency with which inspectors apply the FRA safety standards. The trainee orientation program was established first. This program trains newly hired inspectors without previous railroad experience in all five inspection disciplines. After 3 years, FRA assigns the trainee to one of the inspection disciplines.

As of February 1993, 25 trainees were participating in this program; 9 trainees were expected to complete the program by the end of 1993. According to FRA officials, since these inspectors will not work independently until they have completed their training, the full effect of the trainee orientation program on consistency may not be known for a few years.

FRA also revised its training program for track inspectors. A basic track course was designed for new hires with previous railroad experience. An advanced track course was designed for experienced FRA and state track inspectors. In the advanced track course, participants learn, for example, how to analyze ATIP-generated data and how to identify defects unique to the structure or geometry of the track. Table 3.1 shows that 73 percent of the track inspectors active as of February 1993 completed one or more of these core courses during 1991 and 1992.

Table 3.1: Training Program Attendance

	Number of inspectors				Total	Percent attending class
	Basic track only	Advanced track only	Both courses	No record of training		
FRA inspectors	6	27	11	12 ^a	56	79
State inspectors	9	19	8	18	54	67
Total	15	46	19	30	110	73

^aThis number includes two inspectors that FRA hired in 1993.

Source: GAO's presentation of data from FRA.

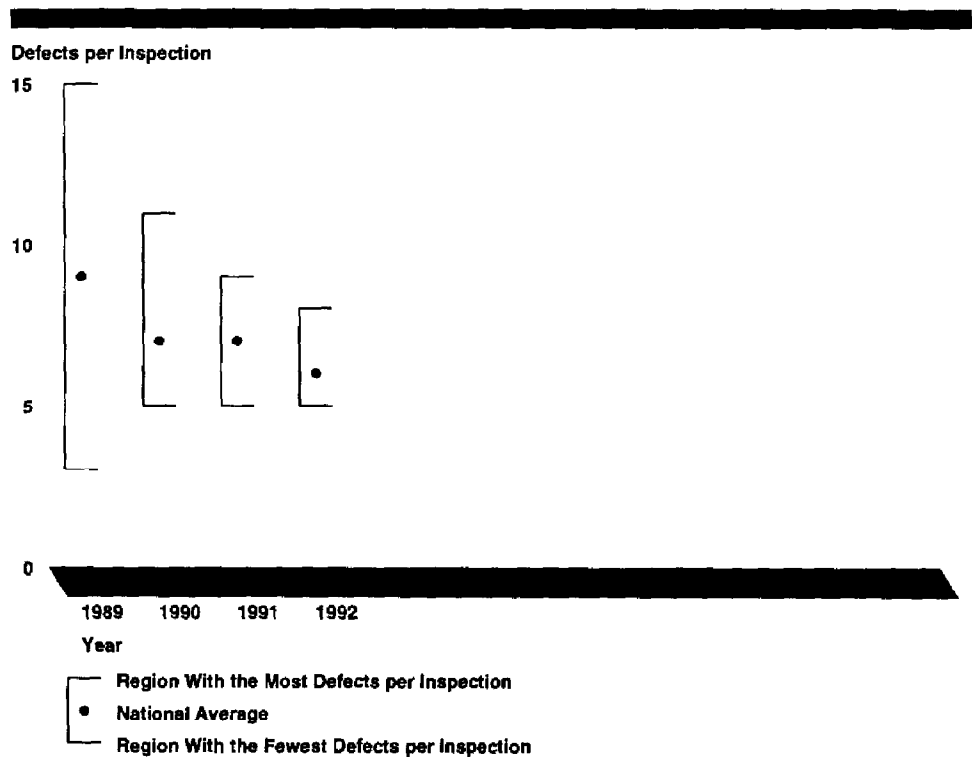
At the time of our review, FRA had not yet evaluated whether the revised training programs had improved the consistency with which inspectors applied the safety standards. In addition, FRA was not able to fund the basic and advanced track courses in 1993. However, in commenting on a draft of this report, FRA stated that it had scheduled a basic track course and an advanced track course for fiscal year 1994. Approximately one-half of the federal and state track inspectors will attend these courses. In addition, FRA has scheduled regional meetings for federal and state inspectors that include training in regulatory compliance and enforcement procedures.

FRA Has Reduced Variation in the Application of Track Safety Standards

We analyzed track inspection results from 1989 to 1992 to determine whether any change had occurred in inspectors' application of track safety standards. We found that the range of defects per inspection cited by the regions had decreased since 1989, indicating that track inspectors may have interpreted the track safety standards more consistently. We also found less variation in the number of violation reports filed—a further indication that inspectors may have applied the standards more consistently.

To compare the range of defects per inspection cited by FRA's regions from 1989 to 1992, we divided the total number of track defects each region found by the total number of track inspections each region conducted. Figure 3.1 shows that, from 1989 through 1992, the range of defects per inspection cited each year narrowed. In 1989, the regions cited from 3 to 15 defects per inspection; in 1992, they cited 5 to 8 defects per inspection.

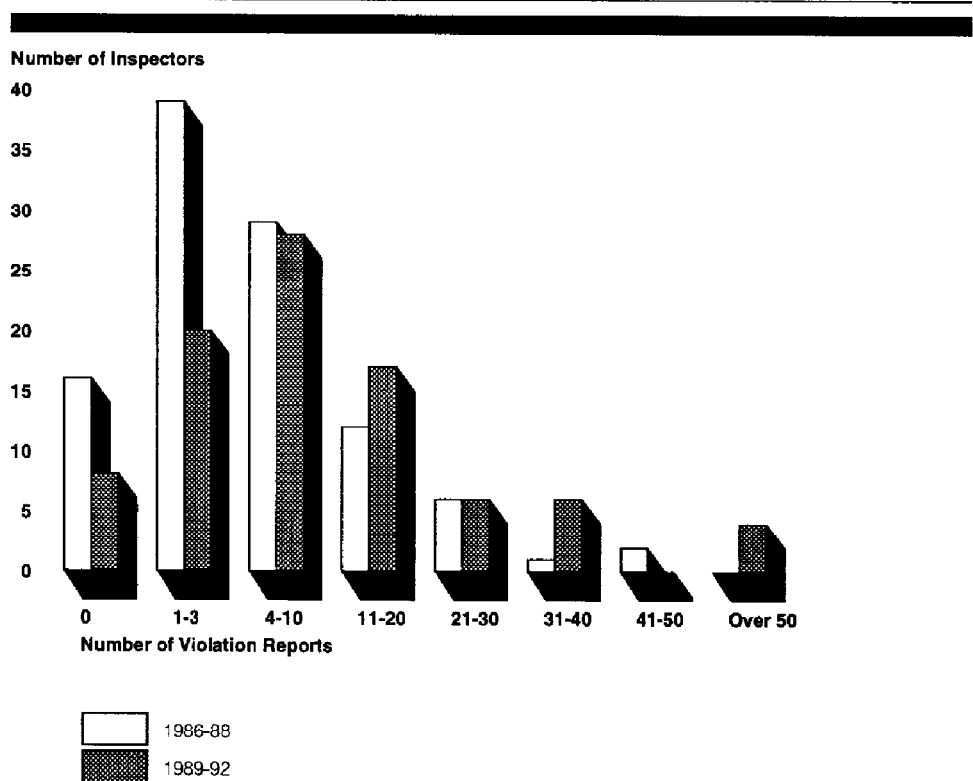
Figure 3.1: Defects per Inspection, 1989-92



Source: GAO's analysis of data from FRA.

We also identified the number of violation reports that FRA and state track inspectors filed from 1989 to 1992 and compared these results with the results of a similar analysis that we performed for our 1990 report to determine whether any change had occurred in the frequency with which track inspectors recommended violations as a result of an inspection. Figure 3.2 compares the number of violation reports filed by FRA and state inspectors from 1986 to 1988, as we reported in 1990, with the number of violation reports filed from 1989 to 1992.

Figure 3.2: Track Inspectors' Violation Reports



Source: GAO's analysis of FRA's violation reports.

The results of the analysis show that the modal class of track inspectors—the violation category with the greatest number of track inspectors—changed from 1 to 3 violation reports to 4 to 10 violation reports. In other words, the frequency with which FRA and state track

inspectors filed violation reports moved toward a more normal distribution. The shift depicted in figure 3.2, from the irregular distribution for 1986-88 to the bell-shaped (normal) distribution for 1989-92, may indicate that track inspectors applied the standards more uniformly during the later period.

Railroads' Track Inspection Records Are Not Reviewed

FRA policy advises FRA and state track inspectors to prepare for an inspection by reviewing a railroad's track inspection records. From 1989 through 1992, FRA and state inspectors examined records for 60 percent of the railroads they visited. As more railroads consolidate their records at one location, FRA and state inspectors may have more difficulty reviewing records.

Inspectors Do Not Always Examine Railroads' Inspection Records

Federal regulations require that railroads maintain and inspect their track in accordance with track safety standards and maintain records of each inspection. FRA and state track inspectors monitor railroads' compliance with track safety requirements. A railroad's track inspection records are a good source of information about the extent to which a railroad has met the regulatory requirements and about the type and location of the track problems. Accordingly, FRA's track enforcement manual recommends that federal inspectors review these records to prepare effectively for a physical track inspection. We analyzed track inspection data for 1989 through 1992 to determine the frequency with which inspectors reviewed records at the railroads they visited. FRA inspectors reviewed the records of 1,202, or 60 percent, of the 1,987 railroads they inspected during the 4-year period. Table 3.2 shows that although FRA inspected about 31 percent more railroads in 1992 than in 1989, the percentage of railroads whose records inspectors reviewed declined by 6 percent.

Table 3.2: Inspection of Railroads' Records

Year	Total number of railroads inspected	Number of railroads whose records inspectors reviewed	Percentage of railroads whose records were inspected
1989	409	270	66
1990	488	300	61
1991	553	308	56
1992	537	324	60
Total	1,987	1,202	60

Source: GAO's presentation of data from FRA's Railroad Inspection Reporting System.

Regional track specialists stated that inspectors first physically inspect track and may review the railroad's records afterwards. The FRA Region 4 track specialist said that most inspectors probably review records only when track conditions indicate that the railroad may not have met standards for frequency of inspection and repair. FRA Region 2 officials said that inspecting records is good winter work when weather conditions are difficult for inspecting track. The track training official said that inspectors are more comfortable working outdoors than in an office searching automated and manual inspection records.

Railroads Are Consolidating and Automating Their Inspection Records

In recent years, many railroads have moved their original track inspection records to a single location, thereby making it difficult for FRA and state inspectors to review these records. In some cases, the states do not allow their inspectors to travel outside the state to conduct their inspections. In addition, both FRA and state inspectors are further constrained by their understanding that FRA requires inspectors to review original inspection reports rather than photocopies.

FRA and state officials stated that obtaining access to railroads' original inspection records is a continuing problem because so many of these records are centrally located. Some railroads maintain photocopies of records at local offices where inspectors may review them. However, according to FRA officials, inspectors can base defect and violation reports only on reviews of original documents. Therefore, even though photocopies may be available locally, inspectors need to travel to review original documents before they can write defect or violation reports, or they need to rely on other FRA or state inspectors to review original records on their behalf.

Gaining access to original records is particularly problematic for state inspectors, who typically cannot travel out of state. For example, three times in the last 10 years, Missouri track inspectors have asked FRA to review the Kansas City Southern's track inspection records located in Shreveport, Louisiana. In 1992, FRA responded by mailing photocopies of all the pertinent records to the Missouri inspector. However, as previously stated, the state inspectors understood that they could not use photocopies as a basis for recommending defects or violations.

Recognizing the trend toward consolidating track inspection records at a few locations, FRA is considering allowing track inspectors to inspect

automated records, thereby allowing access from remote locations.² However, the Director of FRA's Office of Safety stated that FRA would first need to address certain legal and human resource issues, such as how FRA would ensure that railroads have established adequate safeguards against improper access to the system. In addition, the Director stated that FRA must determine the amount and type of training inspectors would require to access and review records in the system. Finally, a rail union official said that FRA would need to ensure that the railroads implemented their automated record-keeping systems consistently.

In its written comments on a draft of this report, DOT said that inspectors may review photocopies of inspection reports and that these copies are equal in value to the originals. According to DOT, FRA will, by technical bulletin, reemphasize the importance of including record reviews as an integral part of the inspection process.

²If FRA suspected that a railroad had falsified an inspection report, FRA would need to review the original report.

Safety Standards on Excepted Track Need to Be Improved

Federal track safety standards do not apply to about 12,000 miles of track designated by the industry as excepted. In an Advance Notice of Proposed Rulemaking (ANPRM) issued in November 1992, FRA noted that it intended to review the excepted track provision and determine whether the provision should be revised.¹ According to industry officials, the railroads will abandon excepted track lines if they are required to meet minimum federal safety standards. However, we found that the number of reported accidents on excepted track almost tripled between 1988 and 1992. During this same period, the percentage of defects doubled for excepted track while remaining constant or declining for all other classes of track. In addition, FRA accident data showed that industry had not always complied with regulations restricting the transport of hazardous materials on excepted track.

Excepted Track Is Not Subject to Track Safety Standards

Since 1982, FRA has allowed railroads to designate segments of track as "excepted," or exempt from many track safety standards. The designation of a track as excepted is left to the discretion of the industry. FRA estimated that the industry had designated about 12,000 miles of track as excepted. When FRA first adopted the regulations, it intended that the provision would apply to certain yard and little-used branch lines on comparatively level terrain. FRA also intended that excepted track would not pass through populated or residential areas where a derailment would endanger persons along the right-of-way. FRA also placed restrictions on the operation of trains over excepted track. Specifically, (1) trains may not operate on the track at speeds greater than 10 miles an hour, (2) passenger trains may not use the track, (3) trains with more than five hazardous materials cars may not use the track, and (4) trains carrying hazardous materials may not use the track if it is located along a public road or highway.

The requirements for excepted track differ considerably from those for track in classes 1 through 6. For example, FRA need not be notified when a track owner designates track as excepted. In contrast, FRA must be notified when a track owner changes the operating speed for a segment of track, because a change in the operating speed effectively changes the track's classification—for example, from a Class 2 track to a Class 1 track. Moreover, for excepted track, the railroads do not have to meet many of the track safety standards that apply to other classes of track. For example, they do not have to maintain structures, such as roadbeds,

¹In commenting on a draft of this report, FRA stated that by December 1994 it would issue a Notice of Proposed Rulemaking revising the safety standards for excepted track.

cross ties, rails, and switches, to a prescribed level, and they do not have to comply with requirements for the geometry of curved track, such as the distance between the rails (gage), the alignment, and the elevation of the outer rails.

The means to correct deficiencies also differ for excepted track and other classes of track. FRA and state inspectors are required to inspect excepted track and note any serious deficiencies on a track inspection report. However, because the excepted track is exempt from the track safety standards, the track owners cannot be compelled to correct the deficiencies noted. In addition, FRA inspectors cannot propose violations for specific track defects; they can propose violations for operational deficiencies, such as traveling more than 10 miles per hour and failing to identify excepted track. Among the approximately 25,000 defects on excepted track reported between 1989 and 1992, only 175 (fewer than 1 percent) were operational deficiencies upon which FRA could propose a violation. The remaining 99 percent were track-related defects that railroads were not required to correct and whose correction FRA could not require by filing a potential violation.

FRA's track enforcement manual states that if the condition of the track continues to constitute a hazard to life and limb and the track owner fails to alleviate the hazard, the inspector is to notify his or her supervisor of the problem. The enforcement manual does not indicate what further actions the supervisor should take to ensure the prompt resolution of the critical problems cited by the inspector.

Industry Cites Additional Costs to Upgrade Excepted Track

The Association of American Railroads (AAR) and the American Short Line Railroad Association stated that it would not be economical for railroads to upgrade their excepted track to meet minimum federal safety standards. The industry designated track as excepted when the low volume of traffic did not generate sufficient revenues to cover the cost of rehabilitating the track.

In a 1993 survey by the American Short Line Railroad Association, 110 railroads estimated that it would cost about \$182 million to upgrade their nearly 4,000 miles of excepted track. The survey indicated that rail service would be abandoned on 66 segments of the excepted track before the railroads would make this investment. In addition, the survey noted that the loss of rail service would affect 637 shippers. According to the Association, railroads will rehabilitate track to meet minimum safety

standards only when sufficient revenues will be generated to cover the cost of maintaining the track. In a similar study in 1993, AAR estimated that it would cost \$100 million to upgrade excepted track to Class 1.

AAR noted in comments on FRA's ANPRM that it did not endorse the industry's manipulation of the excepted track rule or any other section of the regulations to avoid compliance and enforcement. It stated that FRA had the necessary enforcement tools to remedy blatant disregard for the excepted track regulations.

The Number of Accidents and Defects on Excepted Track Is Increasing

The number of accidents and the number of defects cited by inspectors is increasing on excepted track. FRA's accident-reporting system showed that the number of reported track-caused accidents on excepted track increased from 22 in 1988 to 65 in 1992—a 195-percent increase. Reported accidents on excepted track from all causes increased from 57 in 1989 to 106 in 1992.

The number of derailments on excepted track may be understated because railroads are required to report only accidents that reach a damage threshold of \$6,300. An FRA Regional Director stated that, because trains are required to move at slow speeds on excepted track, many derailments on excepted track will not meet the reporting criteria. Even if derailments chronically occur at a location, they may not show up in the reported data. Frequent derailments raise the risk of injury to persons on the train or along the track.

The number of defects cited on excepted track has also increased. Our analysis of data from FRA's Railroad Inspection Reporting System found that the number of defects cited on excepted track had increased from 3,229 in 1988 to 6,057 in 1992 (see fig. 4.1). Meanwhile, from 1988 to 1992, the number of defects on Class 1 track decreased from 58,694 to 50,787, and on Class 2 track from 24,839 to 18,960. During this period, the proportion of defects on excepted track doubled—from 2.6 to 5.8 percent of the defects on all track—while the proportion of defects cited on track classes 1 through 6 either remained constant or declined slightly. On Class 1 track it remained about 50 percent of the defects on all track, and on Class 2 track it declined from about 20 percent to about 18 percent.

Figure 4.1: Number of Defects Cited on
Excepted Track



Source: GAO's presentation of data from FRA's Railroad Inspection Reporting System.

However, the number of defects on excepted track may be understated, since inspectors are required to report only those defects they consider to be serious. For example, in September 1992, a track inspector in Region 4 cited eight defects on a 43-mile section of excepted track owned by the Indiana Hi-Rail Corporation. On the inspection report, the inspector noted that the defects cited were typical of many other conditions that he had observed on the line segment but had not specifically cited as defects. The inspector also noted that it was difficult to inspect the line because about 50 percent of the line segment was covered by vegetation.

FRA Cites Abuses of Excepted Track Provision

In its ANPRM, FRA stated that railroads had applied the excepted track regulation far more extensively than the agency had envisioned in 1982. FRA cited instances in which railroads were repeatedly using excepted track to transport hazardous materials through residential areas or were intentionally designating track as excepted rather than repairing it to comply with minimum safety standards. According to FRA, these

designations often occurred after FRA advised the railroads that they were not in compliance with track safety standards, even though the railroad should have taken remedial action before the FRA inspection.

During workshops on revisions to the track safety standards, FRA provided additional evidence to support its view that railroads had abused the excepted track provision. Workshop participants described a series of problems with a railroad operating over 400 miles of track; about 80 percent of the track was classified as excepted. Hazardous materials were regularly moved over much of the track. FRA had frequently cited the railroad for serious track defects, such as broken rails, damaged ties, and excessive vegetation on the roadway on all routes, including those used to move hazardous materials cars. Because the railroad was not required to correct the defects on the excepted track, it often did not do so.

After a June 1992 derailment that involved hazardous materials cars and caused two injuries, FRA began a comprehensive safety inspection of the railroad. In its December 1992 report, FRA found more than 30 potential violations of safety regulations. On one excepted track segment, FRA inspectors identified 22 track defects that posed an imminent hazard that could lead to a derailment. FRA did not issue violations for the track defects because the track was excepted. However, FRA proposed eight violations on the basis of 55 accident/injury reporting defects. For example, one proposed violation involved the nonreporting of a train derailment because the derailed cars were not repaired and the railroad did not estimate the damages. FRA also found that the railroad had falsified inspection records and listed clerical staff as engineers.

FRA safety officials deferred sending the proposed violations to the Office of Chief Counsel for the assessment of civil penalties, pending the railroad's response to the safety problems found. During a follow-up inspection in June 1993, FRA found some improvements in the railroad's operating procedures but no improvements in track conditions. Some of the continuing track problems were serious. For example, FRA found track crosslevel² variances of more than 6 inches. The maximum crosslevel variance allowed for Class 1 track is only 3 inches. In 1992, the railroad's employees cited crosslevel problems as the cause of 11 railcars overturning during a rerailing operation. In addition, inspectors found broken rails, misaligned track and other geometric defects, excessive vegetation covering the tracks, and substandard tie conditions. Despite

²A crosslevel variance is a difference in elevation between one rail and another. A railroad may, for example, raise the outer rail on a curve to tip the rail cars inward in order to offset the effect of centrifugal force.

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Safety Standards on Excepted Track Need
to Be Improved

these problems, FRA could not issue violations because the track defects occurred on excepted track. FRA decided in November 1993 to allow the railroad until the spring of 1994 to correct the serious safety problems. At that time, FRA will decide whether to process the accumulated violations.

Conclusions, Recommendations, and Agency Comments and Our Evaluation

Conclusions

Since we last reported on the weaknesses in FRA's safety inspection program, the agency has committed significant time and resources to developing a complex strategy to ensure that its resources are targeted to the areas posing the highest risk. As currently developed, FRA's strategy is a major step in the right direction. When fully implemented, the strategy will enable FRA to better target limited inspector resources and further improve the quality of the inspection programs. However, the cornerstone of FRA's new inspection strategy—the National Inspection Plan—is still an incomplete safety plan. The plan's Regional Inspection Points (RIP) program component does not collect site-specific data for two critical risk factors—volume of passenger traffic and volume of hazardous materials traffic. These gaps in the RIP data weaken FRA's overall inspection strategy, since the RIP program feeds into the NIP, the staffing allocation model, and the Quality Improvement Program. Similarly, errors in the accident/injury data base weaken the NIP and, in turn, the other components of the safety enforcement program. Accordingly, FRA needs to focus its resources on completing the RIP program and on improving the reliability of the data on which the overall effectiveness of the NIP model depends. These steps would also reduce the need to artificially adjust NIP goals on the basis of information from FRA's regional offices.

The ATIP vehicle offers the Office of Safety a tool to improve its existing track safety enforcement program. When the overall goal of the safety enforcement program is to develop a systematic approach to targeting inspector resources to high-risk track, the unsystematic scheduling of the ATIP vehicle is inefficient. When the planning, staffing, and evaluation components of the safety enforcement program are fully operational and effective, the ATIP vehicle could help FRA supplement inspection time in regions that have inadequate numbers of federal and state inspectors.

Although FRA has not yet fully implemented its overall track inspection strategy, it has enhanced its daily oversight of track safety. Communication with participating states has improved considerably, resulting in the more efficient and effective use of track inspection resources. FRA regions have reached agreements with most states we reviewed either on defining inspection territories or on otherwise coordinating inspection visits to avoid duplicative inspections. Our analysis of track inspections also showed that from 1989 to 1992 FRA had reduced the variation in its inspectors' application of track safety standards. FRA's redesigned track safety training program and other measures may have promoted more uniform enforcement of track safety

standards. Continued support for the track safety training program is warranted, even though classes were not funded in 1993.

However, some aspects of FRA's daily oversight still need attention. FRA and state track inspectors have not implemented FRA policy and prepared for routine physical inspections by reviewing railroads' track inspection records to identify areas where defects are likely to occur. In addition, opportunities for performing this review have declined as railroads have centralized and automated their track inspection records. Although the Department of Transportation indicated in its written response to our draft report that it considers reviews of photocopied or electronic records equal in value to reviews of original records, the FRA and state inspectors with whom we spoke were not aware of this policy. By clarifying this policy and by issuing a technical bulletin on the importance of reviewing records before physically inspecting track, FRA could facilitate and encourage inspectors' compliance with the FRA regulation requiring record reviews.

FRA faces a difficult challenge in revising the track safety standards for excepted track. Industry associations contend that railroads would abandon lines if excepted track were required to meet a Class I standard because the costs to upgrade this track would exceed the revenues that its use could generate. Current regulations restrict inspectors' ability to enforce a minimal level of safety on excepted track. While inspectors can cite railroads for violating operating deficiencies on excepted track, they cannot issue violations for specific track defects. Even for track defects that constitute a safety danger, the track enforcement manual provides inspectors with no specific guidance on actions they can or cannot take. In addition, the railroads are not required to report designations of excepted track to FRA.

In our opinion, the increase in the number of accidents and defects, together with the examples of abuse of the intent of the excepted track provision cited by FRA, provide strong evidence that changes to the track safety regulations are needed. We acknowledge the railroad industry's concerns about the cost of upgrading excepted track to Class I standards. However, we view the revision of guidance on excepted track as a necessary first step toward helping FRA enforce the current rule. Although further restrictions to the excepted track standards may result from FRA's rulemaking, we believe that, at a minimum, FRA needs to maintain a higher safety threshold for excepted track than it is able to do under the existing regulations.

Recommendations

To overcome the problems we identified in FRA's rail safety inspection program and to ensure that the nation's railroad tracks are safe, we recommend that the Secretary of Transportation direct the FRA Administrator to take the following actions:

- To improve the reliability of the NIP data, (1) establish a pilot program in one FRA region to gather the data on the volume of passenger and hazardous materials traffic needed to complete the RIP program and correct the deficiencies in the accident/injury data base and (2) clarify the role of the ATIP vehicle and target its use to areas with limited federal or state inspector resources.
- Continue to fund training for track inspectors.
- Clarify the extent to which photocopied or electronic inspection records constitute an acceptable basis for reviewing railroads' compliance history and writing defect or violation reports, and emphasize, through a technical bulletin, the importance of reviewing railroads' track inspection records before physically inspecting track.

To strengthen the current regulations governing the excepted track provision and improve safety on excepted track, we recommend that the Secretary of Transportation direct the FRA Administrator to take the following actions:

- Require railroads to notify FRA when they have classified track segments as excepted.
- Allow railroads to apply the excepted track rule only to track that meets the rule's original intent (track located on certain yard and little-used branch lines on comparatively level terrain and track located outside populated or residential areas).
- Provide guidance to track inspectors on options available when excepted track deficiencies constitute an imminent threat of derailment or another safety hazard.

Agency Comments and Our Evaluation

DOT provided written comments on a draft of this report. These comments and our responses appear in appendix I.

Overall, DOT appreciated our recognition of the significant strides that FRA has made in developing and implementing a systematic approach for allocating its track inspection resources. DOT concurred fully with five of our draft report's proposed recommendations—one on funding training, three on strengthening excepted track regulations, and one on

coordinating track safety programs—and it concurred in part with our three remaining recommendations—one on gathering NIP data, one on using the ATIP vehicle, and one on using photocopied records.

Specifically, DOT supported the continuation of funding to train track inspectors, and it agreed with all of our recommendations for improving safety on excepted track. DOT noted that FRA would consider our recommendations on excepted track in preparing a Notice of Proposed Rulemaking for revising track safety standards. DOT also concurred with a proposed recommendation in the draft report that FRA's Office of Policy and Office of Safety coordinate their respective NIP and Rail Network programs. In their comments, DOT stated that FRA has been coordinating these programs. They stated that the Office of Policy is using data provided by the Office of Safety to build the network. Similarly, the Office of Safety uses some of the results of the rail network model in the NIP. Accordingly, we have deleted this recommendation from our final report.

DOT concurred in part with our proposed recommendations for gathering data for the NIP on the volume of passenger and hazardous materials traffic, for clarifying the role of the ATIP vehicle and targeting its use to areas with relatively few inspectors, and for allowing inspectors to review photocopied or electronic inspection records and requiring them to review these or original inspection records before physically inspecting track. In addition, DOT commented on our position that FRA should include state as well as federal track inspectors in its staffing allocation model—a recommendation that we first made in 1990.

DOT's Comments and Our Response on Improving NIP Data

While agreeing with our report's conclusion that FRA could further improve its track inspection program, DOT argued that gathering and maintaining data on the volume of passenger and hazardous materials traffic carried on individual routes would be prohibitively expensive and was not necessary to deploy track inspectors effectively. According to DOT, the data in the NIP are adequate to establish general inspection goals for states and railroads, and FRA and state track inspectors have the experience needed to make site-specific inspection decisions. Our review showed, however, that the NIP goals do not give inspectors the information they need to identify high-risk routes and, as a result, the inspectors question the NIP's usefulness and reliability. Thus, despite DOT's arguments, we continue to believe that additional data are needed to make the NIP goals meaningful for inspectors in the field. Nevertheless, we acknowledge that collecting route-specific data as we originally recommended may place too great a

strain on FRA's resources, and we have therefore modified our draft report to recommend that FRA test the collection of site-specific data in one FRA region.

DOT's Comments and Our Response on the Role of the ATIP Vehicle

According to DOT, the role of the ATIP vehicle is to prioritize track inspectors' activities and not, as we suggest, to supplement inspections. Nevertheless, the railroad industry uses ATIP vehicles to inspect track, and NTSB recommended that FRA use the vehicles to supplement inspectors' activities. Furthermore, as we determined during our review, the ATIP vehicle generates data—including the number of miles covered and the number of defects identified—that FRA had not analyzed before we conducted our review but could analyze routinely to help set inspection priorities.

DOT's Comments and Our Response on the Use of Photocopied Reports

In responding to our recommendation that FRA establish a policy allowing FRA and state inspectors to review photocopied or electronic records of track inspection reports, DOT stated that FRA inspectors may review photocopied reports, which the agency considers equal in value to original reports. However, DOT did not say whether it considered photocopied inspection reports acceptable as a basis for writing defect or violation reports. Since the FRA inspectors we talked to understood that they were required to review original inspection reports before writing defect or violation reports, we believe that FRA needs to clarify the extent to which its inspectors can rely on photocopied or electronic inspection reports.

While agreeing with us that inspectors can derive useful information about a railroad's compliance history by reviewing inspection reports before physically inspecting track, DOT indicated that such reviews were not always practicable because records of inspections were not maintained at all locations where inspections of track were required. DOT further indicated that FRA would issue a technical bulletin reemphasizing the integral role of record reviews in the inspection process. We concur with FRA's approach and have modified the recommendation in our draft report to reflect our concurrence.

DOT's Comments and Our Response on the Use of State Resources

Finally, DOT commented on our suggestion that FRA include state inspectors in its staffing allocation model and allocate its own inspectors as needed to provide complete and uniform coverage throughout a region. In DOT's view, FRA is itself obliged to inspect track throughout a region,

without reference to states' efforts. Furthermore, according to DOT, an allocation policy such as we suggested would lead FRA to assign federal inspectors to nonparticipating states so that participating states would, in effect, be subsidizing nonparticipating states. Participating states would then be likely to withdraw from the program, and their resources would no longer be available to support FRA's inspection efforts.

We agree with DOT that FRA needs to ensure that railroads are maintaining the quality of their track nationwide. We do not agree that some states may perceive the inclusion of state inspectors in FRA's staffing allocation model as leading ultimately to the disproportionate application of federal inspection resources in some nonparticipating states. States have established their own inspection plans because they want independent assurance that the industry is complying with track safety standards. If FRA were to assign fewer federal inspectors to inspect track in a state, it is unlikely that the state would respond by reducing its own inspection coverage. Moreover, FRA's goal is to provide for uniform inspection coverage. The current inspection plan, which does not include state inspectors, could establish disproportionately higher coverage in states that provide state inspectors.

Comments From the Department of Transportation

Note: GAO comments supplementing those in the report text appear at the end of this appendix.



U.S. Department of
Transportation

Assistant Secretary
for Administration

400 Seventh St., S.W.
Washington, D.C. 20590

February 8, 1994

Mr. Kenneth Mead
Director, Transportation Issues
U.S. General Accounting Office
441 G Street, N.W.
Washington, D.C. 20548

Dear Mr. Mead:

Enclosed are two copies of the Department of Transportation's comments concerning the U.S. General Accounting Office draft report titled, "Railroad Safety: Continued Emphasis Needed For An Effective Track Safety Inspection Program," RCED-94-56.

Thank you for the opportunity to review this report. If you have any questions concerning our reply, please contact Martin Gertel on 366-5145.

Sincerely,

for Paul Win
Jon H. Seymour
Enclosures

DEPARTMENT OF TRANSPORTATION (DOT) REPLY
TO
GENERAL ACCOUNTING OFFICE (GAO) DRAFT REPORT
ON
RAILROAD SAFETY:
"Continued Emphasis Needed
for an Effective Track Safety Inspection Program"
RCED-94-56

SUMMARY OF GAO FINDINGS AND RECOMMENDATIONS

The GAO draft report concluded that the Federal Railroad Administration (FRA) has improved its track inspection program and has a sound strategy for addressing issues GAO identified in previous reports. Specifically, the GAO draft report found that FRA has enhanced its daily oversight of track safety activities; communications with participating states has improved, avoiding duplicative inspection; and, the uniformity and consistency of FRA's application of track regulations and reporting of defects has improved. The draft report maintains that additional actions involving data collection and modeling, inspection record review and excepted track enforcement authority could further strengthen FRA's inspection program.

The draft report recommends that the Secretary of Transportation direct the FRA Administrator to take the following actions:

- (1) Gather data on the volume of passenger and hazardous materials traffic needed to complete the Regional Inspection Points (RIP) listing and correct the deficiencies in FRA's accident and injury reporting databases.
- (2) Require the Offices of Safety Analysis and Policy to coordinate their respective National Inspection Plan (NIP) and Rail Network programs.
- (3) Clarify the role of the Automated Track Inspection Program (ATIP) vehicle and target its use to areas with limited Federal and state inspector resources.
- (4) Continue to fund training for track inspectors.

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- (5) Establish a policy that allows FRA and state inspectors to review photocopies or electronic records and require inspectors to review railroad track inspection records before conducting a physical inspection of track.
- (6) Require railroads to notify FRA when they have classified track segments as excepted.
- (7) Allow railroads to apply the excepted track rule only to track that meets the rule's original intent (track located on certain yard and little-used branch lines on comparatively level terrain and track located outside populated or residential areas).
- (8) Provide guidance to track inspectors on options available when excepted track deficiencies constitute an imminent threat of derailment or other safety hazard.

DEPARTMENT OF TRANSPORTATION POSITION

The FRA has worked diligently to develop and implement a strategic and systematic approach for allocating its safety inspection workforce in a manner consistent with Congressional intent and GAO's previous findings. We appreciate the GAO draft report's recognition of the significant strides FRA has made in this area, as well as in significantly improving the consistency and uniformity of our track inspection efforts and our cooperation and coordination with participating states. In response to the draft report's findings, the Department offers the following overall comments, as well as the specific comments included in Attachment I.

NIP Provides a Systematic Basis for Inspector Resource Allocation

The FRA's NIP, built upon its numerous and extensive database and data modeling computer programs, represents enormous progress towards a primarily quantitative method for allocating FRA's inspection resources. While this method is based largely on risk analysis, activity levels, and other key indicators, it was intended to supplement but not supplant the application of sound judgment by experienced professionals. While we agree with the draft report's conclusion that opportunities exist to improve FRA's track inspection program, we maintain that the improvement opportunities afforded by the NIP could be best categorized as fine-tuning and enhancements and not fundamental deficiencies precluding meaningful and effective operations. The FRA is continuing its efforts to complete planned database segments and refine existing segments as well as the data contained therein. It is our intention to ensure that the FRA has the best planning tool possible while mindful of resource constraints.

FRA's modeling process incorporates data regarding hazardous materials and passenger movements. FRA gathers data for the RIP listing through its regional inspection personnel. The RIP has been completed and factored into the 1994 NIP.

See Comment 1.

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Data regarding the volume of hazardous material traffic by railroad within each state provides information regarding the overall flow of hazardous materials. This information is derived from the one-percent Waybill sample and FRA's Network Model. The data specifies traffic flow city pairs but not the specific route. Although the Network Model provides the means to interpolate the most likely specific route for this traffic, these routings change frequently. Passenger data related to the number of miles traveled by state are provided to FRA by Amtrak and the commuter railroads.

The NIP process is intentionally designed to permit regional adjustments to suggested inspection levels. Modeling efforts such as the NIP are necessarily based on historical data. The NIP considers risk factors for passenger traffic, freight tonnage, and hazardous materials tonnage based on state and railroad specific information. Because these risk factors reflect historical data, the model's results could skew resource allocation towards historical traffic volume that may have been rerouted. While the NIP is an invaluable macro planning tool, FRA's regions must be permitted the latitude to adjust specific local levels of inspection effort to reflect dynamic compliance situations and changed traffic patterns. Regional inspection personnel monitor detailed freight and passenger operational data and are aware of recent changes in traffic patterns and flows within their respective territories. Therefore, the regions are best able to determine where within each state to spend the inspection hours allocated under the NIP. Consequently, inspection hours under the NIP are assigned for each railroad within a state. Each region then has the flexibility to assign these inspection hours to specific inspection sites and corridors based on their knowledge of current traffic patterns and volumes.

In FRA's view, gathering route and site-specific information that comports with current traffic patterns and factoring it into the NIP's models for passenger and hazardous materials inspections would be prohibitively expensive and provide only marginal benefit. Railroads are not currently required to report such route specific information. Routes change frequently and such a reporting requirement would impose a heavy cost burden on the carriers that could not be justified by providing an incrementally finer level of detail in the models used to derive FRA's NIP. Similarly, FRA cannot justify the huge investment of inspector time that would be needed to gather such data through the RIP process. In addition, the changeable nature of traffic patterns would require that this data be reverified frequently. Therefore, FRA has concluded that the most efficient and cost effective means to allocate its inspection resources is to rely on the NIP for state and railroad specific allocation, while depending on the knowledge and judgment of its regional inspection personnel to make site-specific inspection decisions.

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See Comment 2.

States Afforded Appropriate Federal Inspection Resources

The FRA allocates Federal railroad track inspection resources based on the results of the NIP in proportion to the amount and type of track, and traffic flow factors. It would not be appropriate to reallocate FRA inspection resources based on whether states decide to fund their own track inspection resources as suggested in the draft report. States fund the salaries and expenses of the state inspectors. Each participating state's legislature has made a decision to fund these inspector resources for their respective state to provide an additional level of railroad safety compliance within their state beyond the level that would be provided by FRA alone. If FRA tried to allocate the combined Federal and state inspector resources based on a nationwide risk assessment determination, we would be moving Federal inspector resources to non-participating states. This would result in participating states subsidizing inspection efforts in nonparticipating states. In addition, allocating Federal resources based on the level of state participation could well be construed as inappropriately augmenting Federal appropriations with state resources. Finally, states have indicated that they would no longer participate in the program and a significant contribution to FRA's inspection efforts would be lost. As an alternative measure, FRA has developed an active outreach program to both participating and nonparticipating states to increase the level of state participation around the country.

See Comment 3.

Policy and Safety Coordinate Modeling Efforts

The FRA's Offices of Policy and Safety Analysis are aware of each office's data analysis and modeling efforts and utilize each other's systems and data for their work. Ultimately, FRA will consider melding the Rail Network Model and the RIP efforts together to form an overall Geographic Information System (GIS). The Office of Policy's Rail Network Model provides a vivid method to graphically display route-specific information on the Nation's rail network. A GIS would bring this technology together with the detailed data in the RIP to graphically present the information contained in FRA's databases. A GIS could be useful for evaluating specific corridors for high speed rail corridors and conducting grade crossing corridor analyses. FRA recognizes that having a complete, current GIS that is linked to all pertinent data bases would be ideal; however, it must be built and maintained within the constraints of available resources. The GIS is subject to the same data gathering and data currency issues faced by the RIP. Gathering route specific data at a sufficiently fine level of detail would be extremely costly. In addition, due to the frequent routing changes, it would have to be updated on an annual basis. As a result, FRA has decided that the most reasonable approach with the greatest likelihood of success would be to construct the system through a gradual, iterative process. Initially, we plan to develop the system for a limited number of routes. Based on our evaluation of the system's utility and effectiveness, we will determine the extent to which the system will be expanded to include additional routes.

See Comment 4.

Excepted Track Requirements Being Revised

FRA data show that the number of defects and track-caused accidents on excepted track has increased in recent years. Other information obtained by FRA indicates that in some instances railroads may have used the excepted track provisions as a long-term alternative to repairing track. The excepted track provisions allow railroads to operate over track which meets certain traffic and location criteria but not necessarily maintenance standards for even Class One track. Although FRA may use its emergency order authority to require a railroad to repair excepted track in instances where the track condition poses an imminent hazard of death or injury, it cannot enforce safety standards simply by citing a railroad for track defects.

FRA is in the process of preparing a notice of proposed rulemaking (NPRM) directed at revising the excepted track regulations. In November 1992, FRA published an advance notice of proposed rulemaking (ANPRM) on this subject and subsequently obtained comments and held public workshops. In finalizing the NPRM now in preparation, FRA will consider GAO's findings and recommendations, as it will consider all other suggestions submitted to the agency during the rulemaking process. We anticipate issuing an NPRM before the end of 1994.

RESPONSE TO GAO DRAFT REPORT RECOMMENDATIONS

Recommendation: Gather data on the volume of passenger and hazardous materials traffic needed to complete the RIP and correct the deficiencies in FRA's accident and injury reporting data bases.

See Comment 1.

Response: Concur-in-part. The RIP has been completed and incorporated into FRA's 1994 NIP. This information is displayed by state and railroad, rather than route or site specific. Gathering and maintaining route-specific hazardous materials volume and passenger traffic would be cost-prohibitive and is not necessary to facilitate effective deployment of personnel. FRA's regions have ready access to detailed operational data such as passenger timetables to guide final allocation of inspection hours in consideration of the frequency of specific passenger operations.

See Comment 5.

Following GAO's 1989 report, FRA took a number of actions to improve the accuracy of the railroad's accident and injury reporting. Specifically, FRA:

- allowed the railroads to update accident and injury reports using magnetic media;
- worked with the Association of American Railroad's Uniformity Committee to clarify the accident and injury reporting codes and make them more descriptive. FRA revised its accident/incident reporting guide to reflect these changes;

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- doubled the amount of inspector time spent monitoring the railroads for compliance with the accident/incident reporting regulations;
- audited the reporting procedures of all the large railroads and a sampling of the smaller railroads to assist in determining needed regulatory changes concerning whether internal control procedure requirements are necessary; and
- has been developing and will publish an NPRM to revise its current accident/incident reporting requirements.

Recommendation: Require the Office of Safety Analysis and Policy to coordinate their respective NIP and Rail Network programs.

See Comment 3.

Response: Concur. FRA has been coordinating these programs. The Office of Policy is using data provided by the Office of Safety to build the Network. Similarly, the Office of Safety uses some of the results of the rail network model in the NIP.

Recommendation: Clarify the role of the ATIP vehicle and target its use to areas with limited Federal and state inspector resources.

See Comment 6.

Response: Concur-in-part. The role of the ATIP vehicle is clearly established. FRA uses the ATIP vehicle as a management tool to prioritize the activities of FRA and state track inspection personnel. Developing an annual inspection plan for the ATIP vehicle is a complex endeavor which considers numerous factors. These include incidence of hazardous material and passenger transport, coverage for the national defense strategic network, traffic volume, accident histories, results of past surveys, time since last survey, and changes in traffic patterns. The availability of inspection resources has not been explicitly considered because ATIP's results are intended to assist in prioritizing inspection activity and not to supplement or replace inspections. While the ATIP is a useful tool, it is not a substitute for inspections as, for example, it does not identify marginal track structural conditions that have yet to result in geometry deviations. In addition, contrary to a statement in the draft report, the ATIP vehicle does not measure internal rail defects.

Recommendation: Continue to fund training for track inspectors.

See Comment 7.

Response: Concur. Inspector training needs are prioritized each year and courses established based on relative needs and available funding. The prioritization is based on information from each of the FRA regions and participating states. Although there were no formal track training courses conducted in fiscal year (FY) 1993, 42 Federal journeyman track inspector students attended formal training concerning either bridge inspection or bridge worker safety. In FY 1994 FRA has scheduled a basic track course and an advanced track course, which about one-half of the Federal and state

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track inspectors will attend. In addition, each FRA region has scheduled regional meetings that include both Federal and state inspectors. These regional meetings include workshops for each inspection discipline. These workshops include training in regulatory interpretations and compliance, and enforcement policies and procedures. The first-line supervisors and track specialists participate in specialists meetings at least semiannually as well as monthly conference calls with FRA Headquarters staff. Interpretations, compliance, and enforcement policies discussed during these specialists meetings and conference calls are disseminated to the journeyman inspectors.

Recommendation: Establish a policy that allows FRA and state inspectors to review photocopies or electronic records and require inspectors to review railroad track inspection records before conducting a physical inspection of track.

Response: Concur-in-part. FRA inspectors may review photocopies of inspection reports. We consider these to be equivalent in value to the originals. The FRA will, if necessary, reinforce this point with regional inspection personnel. FRA also considers it sound inspection practice to review railroad track inspection records before conducting a physical inspection of track. However, due to the fact that records are not maintained at all locations where inspection of track is required, it is not always practical to conduct a records inspection prior to physical inspection of the track. FRA will, by technical bulletin, reemphasize the importance of including records reviews as an integral part of the inspection process.

Recommendation: Require railroads to notify FRA when they have classified track segments as excepted. Allow railroads to apply the excepted track rule only to track that meets the rules' original intent (track located on certain yard and little-used branch lines on comparatively level terrain and track located outside populated residential areas). Provide guidance to track inspectors on options available when excepted track deficiencies constitute an imminent threat of derailment or other safety hazard.

Response: Concur. FRA demonstrated, both in its Track ANPRM published in November 1992 and the public workshops that followed, its commitment to revising the excepted track provisions. FRA will consider GAO's specific recommendations together with public input provided during the ANPRM's notice and comment period, in preparing the Notice of Proposed Rulemaking for revision of the Track Safety Standards. We anticipate issuing an NPRM before the end of 1994.

See Comment 8.

See Comment 4.

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Attachment I

SPECIFIC COMMENTS

The Department offers the following specific comments regarding statements in the draft report.

Page 16, Paragraph 3, Sentence 2

See Comment 9.

COMMENT: FRA's Staffing Allocation Model (SAM) currently enables FRA to allocate existing staff to areas of greatest risk. FRA uses the current SAM in filling inspector vacancies. FRA has used this system for several years.

Page 21, Paragraph 2

See Comment 10.

COMMENT: The one-percent Waybill sample although not entirely accurate, is the best information available. To alleviate the problem of nonrepresentation of small railroads in the Waybill sample, the total freight tonnage and hazmat tonnage was not used in the 1993 NIP model for desegregating activity from large and small railroads. In other words, freight tonnage and hazmat tonnage were not determinants in the percentage of time spent on small as compared to large railroads.

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See Comment 11.

COMMENT: The Illinois Central (IC) incorrectly reported the use of excepted track. The clerk who filled out the accident reports used the "X" for the track class although the clerk did not know the actual track class. This has since been corrected. The IC did not have any accidents on excepted track with more than four cars containing hazardous materials. The FRA now runs a computer program quarterly to flag any accidents where a train with more than four cars containing hazardous materials is in an accident on excepted track. This information is then passed on to the applicable regional office for enforcement action.

The following are GAO's comments on the Department of Transportation's letter dated February 8, 1994.

GAO Comments

1. We agree with the overall framework that DOT has established to respond to the Federal Railroad Safety Authorization Act and our past reports. We agree with DOT that FRA needs to move toward a more quantitative approach to inspections yet still rely on the sound judgment of its inspectors to make site-specific inspection decisions. However, a premise underlying DOT's overall framework is that inspectors need better data to identify which routes pose the highest safety risks. The formulas in the NIP repeatedly emphasize two critical risk factors—the volume of passenger and the volume of hazardous materials traffic. Both FRA and the industry want to ensure that routes carrying these types of traffic are adequately maintained to prevent accidents that will injure passengers or expose populated areas to chemical risks. However, the NIP goals do not give FRA inspectors the information they need to identify these high-risk routes. As we stated in our report, regional inspectors—the intended users of the inspection goals—have questioned the usefulness and reliability of the NIP output because the goals have not matched the inspectors' professional knowledge or have not reflected the adjustments requested by the regions. If the intended users of the NIP goals question their credibility, then the goals need to be improved.

The difference between our views and DOT's centers on the type and amount of data needed to render the NIP goals useful to the inspectors in the field. While DOT sees no need for change, we believe that additional and more accurate data are needed to prevent the expenditure of scarce agency resources to generate goals that inspectors do not always use. We acknowledge that collecting site-specific data in all FRA regions, as we originally recommended, could stretch the agency's resources. We have, therefore, modified our draft report to recommend that, at a minimum, FRA establish a pilot program to collect site-specific data in one FRA region. From its experience in one region, FRA could then extrapolate the costs of collecting site-specific information nationwide. As part of this pilot program, FRA could ask regional inspectors to indicate (1) what information would best help them target inspections to high-risk track and (2) how they could collect site-specific data. In addition, DOT's Bureau of Transportation Statistics could assist FRA in defining cost-effective methods for collecting and analyzing the needed information. We believe that these collective efforts and pilot results could give FRA answers to the questions raised in our report.

2. We agree that a stable federal inspection presence is needed to ensure that railroads are maintaining the quality of the nation's tracks. We do not agree that some states may perceive the inclusion of state inspectors in FRA's staffing allocation model as leading ultimately to the disproportionate application of federal inspection resources in some nonparticipating states. States have established their own inspection plans because they want independent assurance that the industry is complying with track safety standards. Moreover, FRA's argument needs to be weighed against two key factors. First, the scope of FRA's inspection framework is national; including all resources—both state and federal—in the staffing allocation model would provide a clearer picture of the areas needing attention. Second, the feasibility of shifting federal inspectors to states that do not have comparable state inspectors has already been demonstrated by FRA's Region 3. As noted in the report, Region 3 shifted federal inspections from Florida, which had three state inspectors, to Georgia and Kentucky, which had no state inspectors. We believe that Region 3's flexible approach logically extends FRA's progress in coordinating federal and state inspections. In our view, integrating inspection resources would further enhance communication and coordination between federal and state regulators.

3. DOT concurred with our proposed recommendation that FRA's Office of Policy and Office of Safety coordinate their respective NIP and Rail Network programs. In response to DOT's assurance that FRA has been coordinating these programs, we deleted this recommendation from our final report.

4. DOT agreed with all of our recommendations for improving safety on excepted track. DOT noted that FRA would consider our recommendations on excepted track in preparing a Notice of Proposed Rulemaking for revising track safety standards.

5. We have added information in the report to cite the additional actions that FRA has taken to improve the accuracy of the railroads' accident and injury reporting.

6. We based our recommendation that the ATIP vehicle be used to supplement inspections on three facts: (1) the industry uses ATIP vehicles to conduct inspections, (2) NTSB concluded that ATIP vehicles should be used to supplement inspectors' activities, and (3) the data obtained from the ATIP vehicle are clearly underutilized. The last point, in particular, is based on evidence we gathered during our review. For example, the

statistics cited in the report on the number of defects the ATIP vehicle identified in 1991 and the number of miles it covered were generated by FRA only after we requested this information. Until we made our request, FRA had not analyzed ATIP data—data that conceivably could help it set inspection priorities. In addition, as we stated in the report, the NIP, staffing allocation model, and Quality Improvement Program provide the framework for setting FRA's inspection priorities. However, we found no evidence that describes how the ATIP vehicle fits into this new inspection framework. FRA spends approximately \$500,000 each year to support the ATIP contract. At a minimum, using the vehicle to supplement the work of the agency's track inspectors would provide the agency with some concrete benefits.

7. We have updated the report to indicate that, for fiscal year 1994, FRA will provide track training courses.

8. Since the FRA inspectors we talked to understood that they were required to review original inspection reports before writing defect or violation reports, we believe that FRA needs to clarify the extent to which its inspectors can rely on photocopied or electronic inspection reports. DOT further indicated that FRA would issue a technical bulletin reemphasizing the integral role of record reviews in the inspection process. We concur with FRA's approach and have therefore modified our proposed recommendation to reflect our concurrence.

9. We have deleted the reference to the staffing allocation model as an incomplete system. FRA had stated on several occasions that the model would not be completed until the NIP was complete. Now that the model is complete, FRA has the opportunity to integrate state inspection resources into its staffing allocation decisions.

10. We have changed the discussion of the waybill sample to show how FRA used the ICC information in the NIP.

11. We removed information on the Illinois Central railroad, since this information was generated using a data base that FRA subsequently corrected in response to findings in our draft report.

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Related GAO Products

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Railroad Safety: Weaknesses Exist in FRA's Enforcement Program (GAO/RCED-91-72, Mar. 22, 1991).

Financial Management: Internal Control Weaknesses in FRA's Civil Penalty Program (GAO/RCED-91-47, Dec. 26, 1990).

Railroad Safety: FRA's Staffing Model Cannot Estimate Inspectors Needed for Safety Mission (GAO/RCED-91-32, Nov. 21, 1990).

Improvement Needed in FRA's Safety Inspection Program (GAO/T-RCED-91-2, Oct. 5, 1990).

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

Railroad Safety: More FRA Oversight Needed to Ensure Rail Safety in Region 2 (GAO/RCED-90-140, Apr. 27, 1990).

Improvements Needed in FRA's Hazardous Materials Inspection and Safety Reporting Programs (GAO/T-RCED-90-35, Feb. 28, 1990).

Railroad Safety: DOT Should Better Manage Its Hazardous Materials Inspection Program (GAO/RCED-90-43, Nov. 17, 1989).

Improvements Needed in DOT's Hazardous Materials Rail Safety Program (GAO/T-RCED-90-13, Nov. 7, 1989).

Railroad Safety: FRA Needs to Correct Deficiencies in Reporting Injuries and Accidents (GAO/RCED-89-109, Apr. 5, 1989).

Rail Safety: States' Reaction to Proposed Elimination of Inspection Funding (GAO/RCED-87-84FS, Feb. 6, 1987).

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