United States General Accounting Office

GAO

Report to the Honorable William J. Coyne, House of Representatives

April 1990

RAILROAD SAFETY

More FRA Oversight Needed to Ensure Rail Safety in Region 2

GAO/RCED-90-140

GAO

United States
General Accounting Office
Washington, D.C. 20548

Resources, Community, and
Economic Development Division

B-235877.3

April 27, 1990

The Honorable William J. Coyne
House of Representatives

Dear Mr. Coyne:

In November 1988, we issued a report to you and other congressional members entitled Railroad Safety: Accidents in Pennsylvania and Related Federal Enforcement Actions (GAO/RCED-89-52). Concerned about rail safety in Pennsylvania and surrounding states, especially the transportation of hazardous materials, you subsequently asked us to determine the adequacy of selected facets of the Federal Railroad Administration's (FRA) policies and programs. As agreed with your office, we examined (1) FRA's Region 2 hazardous materials inspection program, (2) FRA's assessments of railroad system operations (system assessments) to determine whether they identified more safety defects than routine inspections, (3) FRA regulation of train speeds, (4) the safety of routing trains transporting hazardous materials through Pittsburgh, (5) enforcement actions taken by FRA against railroads as a result of hazardous materials train accidents in Pennsylvania, and (6) the accuracy of railroad reports of evacuations as a result of these train accidents.

Results in Brief

Railroads and rail shippers are required to transport hazardous materials in accordance with safety regulations. The inspection program in FRA Region 2 may not be adequate to ensure that railroads and shippers are adhering to this requirement due to (1) lists of inspection locations that are not updated or complete, (2) lower than expected inspection coverage, and (3) possible insufficient inspector resources. Because Region 2 has no formal inspection goals by which to measure performance, we could not clearly determine whether the inspection program was accomplishing what it should. These problems mirror those we found in FRA's inspection program nationwide.[1]

Regarding system assessments, we found that they identified more hazardous materials defects than did routine inspections. This is to be expected because system assessments are intended to be more comprehensive and also use considerably more resources.

[1]Railroad Safety: DOT Should Better Manage Its Hazardous Materials Inspection Program, GAO/RCED-90-43 (Nov. 17, 1989). Region 2 was one of four FRA regions evaluated for this report.

FRA could better exercise its statutory authority to regulate and enforce train speeds. While FRA has the statutory authority to regulate and enforce all areas of rail safety, including train speeds, it does not cite railroads when inspectors detect speeding during inspections or as the cause of rail accidents unless the track is defective. In their operating rules, railroads declare the track classification that they will meet, and in our opinion, should be held accountable for obeying the maximum speeds corresponding to those classifications. FRA relies on the rail industry to enforce its own speed rules but provides little oversight of railroads' enforcement actions. Without adequate oversight, FRA may not be able to ensure that trains are operated safely and that the public is protected from releases of hazardous materials.

Railroads make their own decisions regarding routing of trains carrying hazardous materials, and FRA does not get involved in these decisions. In the Pittsburgh area, trains carrying hazardous materials often traverse highly populated areas because the route is more direct and the track is generally of higher quality, and therefore safer, than alternate routes. Consequently, rerouting these trains around Pittsburgh would not significantly increase safety.

In 1987 and 1988, nine hazardous materials rail accidents occurred in Pennsylvania. FRA did not issue violations in seven accidents because either no regulation was violated or it did not believe it had the authority or sufficient evidence to issue a violation. FRA issued violations for track and hazardous materials violations in the remaining two accidents. In addition, we determined that railroad reports of evacuations due to hazardous materials releases were generally consistent with other federal investigators' reports, and in our view were reasonably accurate.

Background

The Federal Railroad Safety Act of 1970, as amended, and the Hazardous Materials Transportation Act of 1974, as amended, provide the Secretary of Transportation with the authority to establish and enforce railroad safety regulations and regulations governing the transportation of hazardous materials. The Secretary delegated to the Research and Special Programs Administration (RSPA) the authority to issue regulations concerning the transportation of hazardous materials. The Secretary delegated to FRA the authority for railroad safety and for enforcing regulations governing transporting hazardous materials by rail. FRA has

established a hazardous materials inspection program to enforce railroads' and shippers' compliance with the regulations.[2]

As of March 1990, Region 2 had six hazardous materials inspector positions to cover six states—Delaware, Maryland, Ohio, Pennsylvania, Virginia, and West Virginia—and the District of Columbia. The hazardous materials inspectors identify and inspect shippers, railroads, and rail cars involved in transporting hazardous materials that travel over about 22,000 railroad route miles in the region. In addition, FRA conducts system assessments, which are comprehensive reviews of a railroad's safety operations system-wide. These assessments evaluate operations in all safety disciplines, including hazardous materials. The hazardous materials inspectors are trained for their jobs through both formal classroom and on-the-job training. Classroom training includes such courses as railroad orientation, fundamental and advanced hazardous materials training, hazardous materials emergency response, tank car construction, and accident investigation. On-the-job training supplements inspectors' existing job knowledge gained through previous experience in either hazardous materials inspections or railroad operations that FRA requires as a condition of employment.

Problems in FRA's Region 2 Inspection Program

FRA Region 2 has not established inspection frequency goals and does not maintain complete, up-to-date lists of the inspection points (hazardous materials shippers and railroads) that it should be inspecting. Also, because hazardous materials shippers are not required to register, FRA may never identify and inspect some of these shippers. Seventy percent of the region's inspection points were not inspected in 1987 and 1988.[3] In our view, Region 2 may not have enough inspectors to effectively carry out its inspection program.

Inspection Goals Not Defined

Region 2 has no written goals regarding how often hazardous materials shipper and railroad facilities should be inspected. Region 2 officials said that their inspectors prioritize inspections by placing each inspection point into one of three categories, depending on its risk—A, B, or C; A being the highest risk. We found, however, that (1) the categories, as defined in a memo to inspectors, are strictly a measure of annual volume

[2]Shippers, freight forwarders, and consignees are all involved in the transportation of hazardous materials. In this report, the term "shippers" will be used to refer to all three.

[3]1989 inspection data was not available at the time of our review.

of hazardous materials; (2) no requirement exists for inspection frequency for any category; and (3) inspectors do not use the categories to assign risk. Instead they consider a combination of factors such as volume, type of hazardous materials, and safety history to schedule their inspections. Without clear criteria on the number and frequency of inspections that should be performed, Region 2 cannot know if its inspection coverage is adequate, nor could we determine the adequacy of the region's inspection program.

Although no written inspection goals exist, the inspectors we spoke to said that they believe every inspection point should be visited at least annually. They also said that they inspected 90 percent or more of those sites each year. We determined, however, that Region 2 inspectors did not inspect about 70 percent of their inspection points in both 1987 and 1988. The region has 911 facilities to inspect in 6 territories—387 railroad facilities, 471 shipper facilities, and 53 tank car repair facilities.[4] While inspectors performed more than 1,000 inspections in the region each year, they visited only 566 unique sites in 1987 and 496 in 1988.[5] (The rest were repeat inspections performed because, in the inspectors' opinion, these locations have higher risk.) Some of these inspections—283 in 1987 and 250 in 1988—were performed at locations that appeared on the list of 911 inspection points. The remaining inspections, as discussed in the next section, were performed at facilities not on the inspection point lists.

FRA headquarters officials told us that a goal of inspecting all hazardous materials facilities annually is not reasonable. They also said that improved inspection guidance, including more clearly defined inspection goals, is being developed and will soon be distributed to the regions.

Inspection Point Lists Not Complete or Up-To-Date

Region 2 inspectors do not routinely update the inspection point lists they use to schedule their inspections. They identify new facilities to inspect by reviewing shipping documents, questioning railroad staff, or checking telephone books. In 1987 and 1988 as much as 40 percent of the hazardous materials inspections took place at railroad and shipper facilities in the region that were not subsequently added to inspection lists, as FRA's policy requires. When inspectors do not routinely add such facilities to inspection point lists, the region does not have sufficient

[4]Appendix II shows the region's six hazardous materials territories and associated inspection points.

[5]Appendix III presents detailed statistics on inspection coverage by Region 2 hazardous materials inspectors in 1987 and 1988.

knowledge of the scope of its inspection responsibilities. Also, the inspectors may not regularly inspect these unlisted facilities. FRA would therefore have less assurance that the sites are complying with the regulations and operating safely.

In addition to not routinely updating inspection point lists, inspectors may never identify some rail-related sites that handle hazardous materials. The Region 2 hazardous materials specialist estimated that inspectors identify about 75 to 80 percent of all shippers in their territory. Inspectors said that some small seasonal or intermittent shippers may go undetected because they ship so few tank cars that routine inspection techniques fail to identify them. In our November 1989 report, we stated that such shippers may be more likely to have safety problems than large shippers who have the resources to employ rigorous safety procedures.

In that report we also stated that FRA does not have a definitive source of information on the universe of hazardous materials shippers. RSPA has the authority to require shippers to register, and we recommended in 1980[6] and 1989 that it establish a mandatory shipper registration program in order to determine the universe of organizations it regulates. RSPA has repeatedly declined to establish a program, stating that information on the universe of shippers is already available. We believe that the other information sources are not easily accessible to FRA and other hazardous materials enforcement agencies and that a mandatory shipper registration program is still needed. During this review, FRA officials emphasized that until hazardous materials shippers are required to register with the federal government, FRA will never have a completely accurate listing.

Inspector Staffing May Not Be Sufficient

In addition to the lack of written inspection goals and updated, complete inspection point lists, Region 2 may not have enough hazardous materials inspectors to adequately inspect hazardous materials sites in the region. The region is authorized to have six inspectors, but only four positions were filled in 1989. Even during the previous 2 years when all positions were filled, inspectors did not inspect about 70 percent of the locations on their inspection point lists. Furthermore, if new inspection sites were routinely added to the lists, the number of inspection points for each territory would increase by as much as 11 to 58 percent, based

[6]Programs For Ensuring The Safe Transportation Of Hazardous Materials Need Improvement, CED-81-5 (Nov. 4, 1980).

on 1988 inspections, and the inspection workload would be correspondingly greater.

Our November 1989 report cited problems of inadequate staffing for FRA's hazardous materials inspection program nationwide. In responding to that report, the FRA Administrator agreed with our assessment and said that FRA is adding 10 hazardous materials inspectors by June 1990. The FRA Region 2 Director told us that with a full staff[7] (including a seventh inspector now being sought) and with a proposed realignment of the region's district offices and inspector territories, the region will be able to use its inspector resources more effectively. The realignment would include (1) eliminating the Pittsburgh District Office and incorporating its territory into the Cleveland District and (2) establishing a new district office in Charleston, West Virginia.

These actions may not be sufficient to correct the problem of inadequate resources. The region may have significantly more locations to inspect than inspection point lists suggest, and changing the alignment of the territories will not reduce the number of facilities to be inspected. In our view, Region 2 is hampered by an inaccurate, incomplete list of inspection points for the region. With such a list and clearly defined inspection goals that include frequency of inspections, FRA would be in a better position to realistically determine how many inspectors it needed.

System Assessments Not Comparable to Routine Inspections

Routine inspections and system assessments are different types of FRA rail safety inspections. The results of these inspections with respect to hazardous materials have been somewhat different, with system assessments achieving a more comprehensive analysis of employee training and safety procedures while providing similar findings to routine inspections in other areas. However, FRA is planning changes to its hazardous materials inspection procedure so that routine inspections will result in similar hazardous materials findings as do the system assessments.

A hazardous materials inspector normally performs a routine inspection without assistance, taking less than a day and concentrating primarily on hazardous materials safety features of individual tank cars. In contrast, system assessments require vastly larger investments of resources, taking up to several months and performed by as many as

[7] According to FRA officials, Region 2 hired two hazardous materials inspectors after our review was completed, bringing the region to its authorized level of six.

100 inspectors and specialists from numerous FRA regions. System assessments evaluate all rail safety disciplines: hazardous materials, track conditions, operating practices, motive power and equipment, and signal and train control. Also, they are performed only at railroads, while routine hazardous materials inspections are performed at railroads and shippers.

We compared the non-compliances reported on routine hazardous materials inspections with those identified in Region 2 system assessment reviews that were performed between June 1987 and January 1988 on Consolidated Rail Corporation (Conrail), CSX Corporation, and the Norfolk and Western Railway Company. Routine inspections most often identified problems such as improper (1) shipping papers, (2) securing of tank cars, (3) tank car unloading, and (4) marking and placarding of cars to identify the hazardous contents. The system assessments identified similar instances of non-compliance, but they also regularly addressed railroad employees' safety training programs, supervision, and knowledge and understanding of the hazardous materials requirements. Consequently, the system assessments identified more problems relating to these conditions.

System assessments, by design, are far more comprehensive than routine inspections. We agree with FRA officials who said that they are not intended to be a substitute for routine hazardous materials inspections because they (1) are resource intensive, (2) are performed only occasionally, and (3) are not performed at shipper facilities. In our November 1989 report, we recommended that FRA inspectors place additional emphasis on evaluating safety procedures at shipper and railroad facilities, rather than concentrating on inspecting tank cars. FRA agreed with this recommendation and is revising its hazardous materials inspection guidance accordingly. This action should make the types of hazardous materials problems found in both routine inspections and system assessments more consistent.

FRA Oversight of Speed

FRA has the statutory authority to regulate all areas of rail safety and to enforce such regulations as it has adopted. FRA exercises control over train speeds nationally and in Region 2 through its track regulations. However, because FRA intended that these regulations set track maintenance standards rather than speed limits, FRA believes violations may only be written when a railroad does not maintain the track to the classification that corresponds to the actual train speed. FRA's position is

that inspectors may not issue a speed violation where the track is maintained to its standard, even if a train exceeds the regulatory maximum speed for the track. We believe FRA can better exercise its statutory authority to enforce the maximum speed limits for the classes of track defined in its regulations to better ensure train safety. Also, FRA relies on the rail industry to enforce its own speed rules and provides little oversight of railroad speed enforcement actions.

FRA's Regulatory Authority and Enforcement of Speed

FRA currently addresses speed through its track standard regulations, which establish maintenance standards and maximum speed limits for each of six track classifications. The speed limit depends on the condition of the track and also, in the case of curved track, on the maximum speed the curvature can sustain. The classification of a particular portion of track is set by the railroad (based on the track standard it agrees to meet) and reported to FRA in its operating rules.[8]

FRA inspectors perform radar speed checks to determine if the railroad is operating trains at speeds allowed by the track classification. FRA officials in Region 2 and headquarters told us that inspectors cannot issue violations to railroads for excessive train speeds because the regulations do not directly address speed. They do, however, write track violations to railroads if they find some defect in the track (which would include not maintaining track to the classification that would allow the higher speed). FRA's Assistant Chief Counsel agreed with this position, stating that the FRA regulations are not intended to regulate speed limits but are designed to ensure that a railroad improves its track if it wishes to operate trains at higher speeds. He said that inspectors would therefore not have a legal basis for writing a violation based solely on speed.

This interpretation prohibits inspectors from taking any enforcement action when the tracks are adequately maintained but the trains are operated over the maximum speeds that are allowed by the existing classification or curvature of the track. For example, an FRA investigation determined that one of the nine Pennsylvania hazardous materials accidents was the result of excess speed—60 miles per hour on a curved track that allowed a maximum of 40 miles per hour. FRA officials said that since no defect was found in the track, no violation was issued. However, according to FRA track standards, the curvature of the track

[8]49 C.F.R. 217.7 (Nov. 25, 1974).

would not allow a 60 mph speed, regardless of how well it was maintained. A speeding violation would have been appropriate in this instance if the inspector were permitted to do so under FRA regulations.

In discussing our views with FRA officials, we were told that the track classifications declared by the railroads in their operating rules do not necessarily reflect the level to which the track is actually maintained, and that actual level may change even from day-to-day. As a result, when speeding is detected by FRA, the track must be examined to ensure that it is not actually being maintained to a higher classification standard that would allow the higher speed.

FRA should not have to prove that track does not meet a higher standard before it issues a speed-related violation. In our view, it should be sufficient that the railroad has declared a track to conform to a specific classification. The railroad should be held accountable for operating its trains within the FRA limit for that classification and for notifying FRA of any change in that classification.

FRA Oversight of Railroad Speed Enforcement

FRA oversight of railroads' speed enforcement actions would help ensure that trains are operating at safe speeds and would reduce the risk of accidents that might cause hazardous materials releases. FRA relies on railroads to enforce speed limits if (1) the tracks are maintained to the standard defined by the classification and (2) employees who operate trains at excessive speeds are disciplined. Larger railroads (with 400,000 or more manhours of labor annually) must also provide FRA with an annual report that includes the number of speed tests conducted and the number of failures (speed violations) that occurred.

However, FRA provides little oversight of these enforcement actions and does not set any standards with respect to acceptable speed test failure rates. Also, the railroads are not required to provide information on the amount by which the speed limit was exceeded or the disciplinary actions taken by the railroads. Individual inspectors may review the results of the speed tests prior to performing inspections or systems assessments, but this is not a requirement.

In addition, FRA does not set forth the actions that should be taken when failures occur. FRA headquarters officials said that they informally analyze the speed check reports submitted by the railroads and may take action if, in the reviewer's judgment, the report reflects a serious problem. For example, the reviewer may ask the cognizant FRA inspector to

follow up on the problem in the next inspection. The officials also told us that the railroads clearly know the importance of operating at safe speeds and have sufficient controls to ensure that train operators do not speed. As authorized by the Rail Safety Improvement Act of 1988, however, FRA is proposing a regulation to cite individual train operators (but not the railroad) for violating speed limits.

The three railroads we reviewed reported conducting 43,918 speed tests in 1988, which revealed that 625 trains exceeded posted speeds. Officials at two of these railroads said that they discipline their employees for violating speed limits. However, they said that records of disciplinary actions are only kept in employee personnel files, and they have no central listing of the employees who have been disciplined. Officials at the third railroad told us that they did not discipline employees for the six speed test failures they reported for 1988 because each failure was a first offense.

Nationwide statistics for 1987 and 1988 show that speed was not a frequent cause of rail accidents (about 3 percent of all accidents in both years were either caused by speed or speed was identified as a contributing cause). However, accidental releases of hazardous materials can cause enormous health and environmental damage, and the volume of hazardous materials being moved by rail has increased significantly since 1984. A single accident could have catastrophic consequences. In our opinion, FRA has the statutory authority to regulate and enforce train speeds, and if this authority were better exercised, FRA would have greater assurance that trains are operating at safe speeds, thus reducing the risk of exposing the public to hazardous materials releases.

No Viable Alternative to Routing Hazardous Materials Trains Through Pittsburgh

RSPA has the authority to regulate the routing of trains transporting hazardous materials (which FRA would enforce) but has not established regulations in this area. Consequently, railroads make their own routing decisions. Railroad officials said that they usually select routes (for all cargo—hazardous or otherwise) that (1) have the best quality tracks; (2) are the quickest, shortest and most direct; and (3) avoid high population areas whenever possible. The track quality is considered to be the most important criterion in route selection. This often conflicts with the avoidance of high population areas, however, because the best quality tracks usually traverse areas with high population density.

FRA's hazardous materials routing policy is based on RSPA studies conducted in 1980 which concluded that (1) routing based solely on the

avoidance of populated areas without track upgrading would be counterproductive and (2) the advantage of reducing public exposure to hazardous materials shipments was outweighed by the disadvantages of diverting traffic to less safe track and longer trip lengths. Also, FRA officials expressed concern that the federal regulation of routing could impede railroads' operations and revenues by encouraging shippers to seek other modes of transportation if regulation resulted in lengthened delivery times and increased costs.

Both Conrail and CSX Corporation officials told us that the safest route to transport hazardous materials cargo in the Pittsburgh area is through highly populated Pittsburgh because these tracks are of higher quality and the route is more direct than alternate routes.[9] Officials of the Pittsburgh and Lake Erie Railroad stated that they have no choice about routing because they have only one route available to service their customers.

On the basis of our review of routes to transport hazardous materials in the Pittsburgh area, we believe that the route through the city is safer than the alternative rail routes and that additional FRA involvement in routing decisions would not significantly increase safety in that location.[10] With the assistance of the Region 2 track specialist, we observed that the two alternate routes would involve tracks belonging to as many as four railroads. Using these routes could significantly increase costs to any one railroad if train crew changes and usage fees were required by the railroad owning the track. According to the track specialist, one of the routes is steeply inclined in places and would not be appropriate to carry large freight trains. The other route involves significantly more distance and slower track speeds. Furthermore, the quality of the track for both routes was lower in places than the Pittsburgh route, posing additional safety risks. Finally, we observed that the alternate routes would also traverse populated areas, albeit not Pittsburgh.

[9]Conrail and CSX own most of the track in the Pittsburgh area.

[10]FRA currently has authority only to participate in the development of railroad routing regulations (49 U.S.C. 1804 (b); 49 C.F.R. 1.49 (r)).

Enforcement Actions Taken in Nine Pennsylvania Train Accidents

Nine rail accidents involving the release of hazardous materials occurred in Pennsylvania during 1987 and 1988. FRA issued violations in two of these accidents, one for a track defect and the second for improperly secured valves on hazardous materials tank cars. However, in the second accident, FRA could not cite the railroad for the insufficiently charged air brakes that caused the accident because the violated procedure was a railroad rule, not a federal regulation.

Of the remaining seven accidents where no violations were issued, two had speed related causes, two were caused by track defects, and three had other causes.[11] FRA had sufficient information to issue a violation in one of the speed related accidents, but did not do so because of its interpretation of regulations described earlier with respect to speed. In three other accidents, the regulations governed the causes, but FRA did not investigate or was not able to obtain sufficient evidence to issue violations. In the remaining three accidents, either the regulations did not apply to the cause or the cause was not reported to FRA.

FRA enforcement policy allows inspectors to use their discretion in deciding to issue violations. In a separate review of FRA's nationwide safety enforcement practices, we are evaluating the issues of inspector discretion and safety defects that are not covered by regulations.

Reporting of Evacuations in Region 2 Hazardous Materials Accidents Appears to Be Accurate

We believe the railroads in Region 2 are reasonably accurate in reporting evacuations due to hazardous materials releases. FRA requires railroads to report various types of accident information, including the number of people evacuated. In the nine Pennsylvania accidents, the evacuation data the railroad reported were consistent with the reports of federal accident investigating teams, with one exception. In that instance, the railroad reported 8,000 to 16,000 people evacuated, whereas both the National Transportation Safety Board and FRA investigation reports cited 22,000. The railroad official who wrote the report said that the evacuation figures were based on initial estimates of 8,000 to 16,000 that were reported in the newspaper. We believe the difference between the maximum number of evacuations reported by the railroad and the number reported by the investigators in this instance is not significant enough to warrant a change in reporting procedures.

[11] Appendix IV discusses these seven accidents in greater detail.

Conclusions

The lack of written inspection goals and complete and up-to-date inspection point lists, and possibly inadequate inspector resources hamper the effectiveness of the FRA Region 2 hazardous materials inspection program. Without up-to-date lists and clearly defined goals, neither Region 2 nor we can determine whether inspection coverage is adequate. However, the facts that about 70 percent of the region's listed inspection points were not inspected in 1987 and 1988 and that inspection point lists did not include a significant number of locations that should have been subject to inspection lead us to conclude that the number of inspectors may not be adequate to ensure that hazardous materials shippers and railroads comply with safety regulations. Planned revisions in FRA nationwide guidance and recent additions to the inspector staff may help to correct these deficiencies. Nevertheless, we believe additional emphasis should be placed on updating inspection point lists and establishing clear goals for inspection frequency in Region 2.

We believe FRA could better exercise its statutory authority to regulate and enforce train speeds when inspectors detect speeding during inspections or as the cause of rail accidents where maximum speeds are exceeded and tracks are not defective. In their operating rules, railroads declare the track classifications they will meet, and in our opinion, should be held accountable for obeying the maximum speeds corresponding to those classifications. In addition, without adequate oversight of railroads' speed enforcement or established standards for speed testing and reporting, FRA may not be able to ensure that trains are operated safely and that the public is protected from releases of hazardous materials.

The Administrator of RSPA disagreed with our November 1989 recommendation that a shipper registration program be established. We continue to believe that until such a program is established, there will be no definitive source of shipper information upon which FRA and other transportation agencies can rely to focus their hazardous materials inspection and enforcement activities.

Recommendations

This report identifies deficiencies in the Region 2 hazardous materials inspection program that are consistent with problems discussed in our November 1989 report. In responding to that report, FRA has proposed a number of corrective actions, including hiring additional inspectors, revising inspection goals and guidance, and providing inspectors with

timely, detailed information on past inspection results and recent hazardous materials releases. When implemented, these actions should improve the Region 2 inspection program.

In addition to our previous recommendations, we recommend that the Secretary of Transportation direct the Administrator, FRA, to

- reemphasize in Region 2 that inspectors add newly identified inspection points to their inspection point lists and keep these lists up-to-date so that the inspection goals and priorities could be set to maximize the use of scarce inspector resources,
- establish a policy of enforcing train speed limits by citing railroads for exceeding speed limits permitted by the declared classification or track's curvature, and
- increase oversight of railroad speed enforcement actions by
  - requiring railroads to report information on the amount their speed limits are exceeded in failed tests and the number and types of disciplinary actions taken against employees who speed, and
  - establishing standards for (1) acceptable failure rates in speed tests conducted by railroads, (2) how speed tests should be conducted, and (3) what types of disciplinary action should be taken when failures occur.

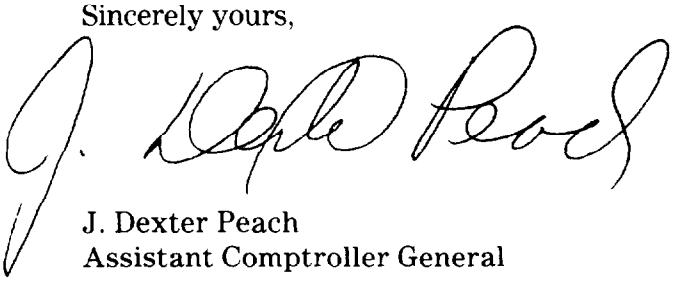
Views of Agency Officials

We discussed our findings with FRA officials and have included their comments in this report where appropriate. In particular, FRA did not agree with our position that FRA should issue violations to railroads for exceeding the maximum speeds allowed by the curvature or declared classification of the track. We believe FRA should better exercise its statutory authority in this regard. FRA officials also pointed out that many of the deficiencies identified in the Region 2 hazardous materials inspection program will be corrected when actions are taken to implement the recommendations of our November 1989 report. Additional comments are contained in appendix V. However, as requested, we did not obtain official comments on this report.

We performed the field work for this review from March to December 1989 in accordance with generally accepted government auditing standards. Appendix I contains details of our objectives, scope, and methodology. As agreed with your office, unless you publicly announce its

contents earlier, we plan no further distribution of this report until 5 days from the date of this letter. At that time we will send copies to the Secretary of Transportation; the Administrator, FRA; and the Administrator, RSPA. This work was performed under the direction of Kenneth M. Mead, Director, Transportation Issues, (202) 275-1000. Other major contributors are listed in appendix VI.

Sincerely yours,



J. Dexter Peach
Assistant Comptroller General

Contents

Abbreviations

Conrail	Consolidated Rail Corporation
FRA	Federal Railroad Administration
GAO	General Accounting Office
RSPA	Research and Special Programs Administration

Objectives, Scope, and Methodology

As a result of his concerns over the safety of rail transportation of hazardous materials in FRA Region 2, Congressman William J. Coyne requested that we review the effectiveness of the Region 2 hazardous materials inspection program. Specifically, we were asked to evaluate (1) the number of inspections, inspection staff resources, and inspector training; (2) problems identified in routine inspections versus system assessments; (3) whether FRA regulation of train speeds is adequate; (4) whether FRA ensures that the routing of trains transporting hazardous materials through Pittsburgh is safe; (5) enforcement actions resulting from accidents involving hazardous materials releases in Pennsylvania; and (6) the accuracy of railroads' reports citing the number of people evacuated as a result of these accidents.

We conducted our review at headquarters offices of DOT's Research and Special Programs Administration and FRA, and the FRA Region 2 offices in Philadelphia and Pittsburgh, Pennsylvania; Cleveland, Ohio; and Baltimore, Maryland. We also contacted officials at three railroads: Conrail, CSX Corporation, and Pittsburgh and Lake Erie Railroad.

To determine the legal authority and responsibility for hazardous materials rail safety, we examined the laws, regulations, and delegations of authority. To review FRA's hazardous materials inspection program, we interviewed FRA's hazardous materials inspectors, specialists, and supervisors in Region 2 and analyzed documents they provided. We also reviewed pertinent FRA operating manuals and other instructions providing guidance to FRA hazardous materials safety inspectors.

To determine the amount of coverage and types of inspections performed, we analyzed inspection point lists and inspection reports. We interviewed five of the six FRA hazardous materials inspectors who worked during 1987 and 1988 and observed one of them as he conducted tank car and facilities inspections in 1989. We also reviewed the training histories of the six inspectors employed by FRA during this time and discussed inspector training with responsible FRA officials.

As part of our analysis of FRA inspections, we obtained information from FRA's hazardous materials inspection data base for calendar years 1987 and 1988. This included statistics on the numbers and locations of inspections performed and the types of defects and violations cited in the inspection reports.

To determine the validity of railroads' decisions to route hazardous materials through Pittsburgh, we reviewed track maps and discussed

conditions and classifications of alternate tracks with the FRA Region 2 track specialist.

To determine the causes of the nine hazardous materials accidents in Pennsylvania in 1987 and 1988, we reviewed and analyzed all available reports and other documentation resulting from the accidents. This included FRA and National Transportation Safety Board investigative reports, FRA inspection reports, and information from FRA's accident/incident data base as well as from the FRA General Counsel's data base on safety violations.

We discussed our findings with FRA officials and have included their comments where appropriate. However, as requested, we did not obtain official comments on this report. Our work was performed from March 1989 through December 1989 in accordance with generally accepted government auditing standards.

FRA Region 2 Hazardous Materials Inspection Territories

Inspection Territory	Inspection Points
Northern Ohio	146
Southern Ohio	166
Eastern Pennsylvania and Delaware[a]	205
Western Pennsylvania	94
West Virginia[a]	103
Virginia, Maryland, and the District of Columbia	197
Total	**911**

[a]These inspector positions were vacant during 1989.

Schedule of Locations Inspected by FRA Region 2 Inspectors, 1987-88

Inspector Territory	No. of Inspection Points in Territory	Inspection Points Visited							
		On List	Percent of Total	Not on List			Unidentified Locations	Total Locations Visited	No. of Inspections Performed
				In Territory	In Region	Outside Region			
Southern Ohio	166	69	42%	39	14	10	5	137	253
Maryland, Virginia and the District of Columbia	197	28	14%	14	6	8	•	56	173
Northern Ohio	146	80	55%	39	16	•	•	135	200
Eastern Pennsylvania and Delaware	205	32	16%	28	1	•	7	68	119
West Virginia	103	39	38%	13	9	23	18	102	198
Western Pennsylvania	94	35	37%	31	2	•	•	68	120
Total - 1987	**911**	**283**	**31%**	**164**	**48**	**41**	**30**	**566**	**1,063**
Southern Ohio	166	43	26%	21	•	4	8	76	205
Maryland, Virginia and the District of Columbia	197	24	12%	20	2	•	1	47	116
Northern Ohio	146	87	60%	30	1	•	•	118	195
Eastern Pennsylvania and Delaware	205	16	8%	28	3	•	16	53	94
West Virginia	103	40	39%	43	•	1	12	96	287
Western Pennsylvania	94	40	43%	55	1	•	•	96	206
Total - 1988	**911**	**250**	**27%**	**197**	**7**	**5**	**37**	**496**	**1,103**
Aggregate Total	1,822	533	29%	361	55	46	67	1,062	2,166

Causes of the Nine Pennsylvania Hazardous Materials Rail Accidents, 1987-88

Nine rail accidents involving the release of hazardous materials occurred in Pennsylvania during 1987 and 1988. FRA issued violations in two of these accidents, one for a track defect and the second for improperly secured valves on hazardous materials tank cars. However, in the second accident, FRA could not cite the railroad for the insufficiently charged air brakes that caused the accident because the violated procedure was a railroad rule, not a federal regulation.

FRA documents show the causes of the remaining seven as follows:

Speed Related - 2

(1) One accident occurred during normal operation. According to the FRA accident report, the train was travelling approximately 60 miles per hour. The track was classified to allow a maximum of 40 miles per hour and posted by the railroad at 30 miles per hour. No defects were found in the track, but the track curvature and elevation would not allow a higher classification that would justify the 60 mile per hour speed. According to FRA, it could not issue a violation based on its position that the track standards are not intended to enforce speed.

(2) One occurred during a coupling operation. The railroad reported that the estimated speed of 12 miles per hour was too fast for the coupling operation. The track maximum was 10 miles per hour. No violation was issued because, as discussed above, FRA does not allow violations to be issued for speeding.

Track Defects - 2

(1) One accident was caused by a worn clip bolt hole. This type of defect is governed by FRA track regulations and potentially could have resulted in a violation. However, an inspector wrote a report on the accident based on oral information provided by the railroad. Because the accident was not formally investigated by FRA, no violation was issued.

(2) Another accident was reported by the railroad to be caused by a "wide gauge" (tracks spread beyond acceptable tolerances). This type of defect is also governed by FRA regulations and could result in a violation. However, FRA did not investigate the accident[1] and no violation was issued.

[1]FRA officials said they do not investigate all accidents.

Other Causes - 3

(1) One accident was caused by an overheated bearing on a rail car. FRA regulations govern the routine inspection of such mechanical equipment. In its investigation, FRA could not determine whether or not the inspections required by the regulations were performed and therefore did not issue a violation.

(2) Another accident was caused by the improper manual operation of a track device used during a coupling operation. FRA determined that blowing snow interfered with the operator's vision and no violation was issued.

(3) A third accident was not investigated by FRA because no damage, injury, or death resulted. No cause was reported by the railroad and no violation was issued.

Views of Agency Officials

We discussed the results of our review with FRA officials in headquarters and Region 2. As discussed in this letter, FRA does not agree with our position that FRA should issue violations to railroads for exceeding the maximum speeds allowed by the curvature or declared classification of the tracks.

Headquarters officials also said that they are taking a number of actions in response to our November 1989 report to correct deficiencies in the hazardous materials inspection program nationwide. FRA's official response to that report included the following proposed actions that relate to the issues discussed in this report:

- Rewriting the Hazardous Materials Enforcement Manual to include a revised approach to conducting shipper and railroad inspections.
- Using FRA's Quality Improvement Program (QIP) to monitor inspector activities to ensure that the inspections being performed are consistent with the Enforcement Manual and the National Inspection Plan.
- Modifying the Office of Safety's current staffing model to use inspection point (workload) and QIP (productivity) data to better project resource needs and allocate resources to locations of greatest risk.
- Adding six hazardous materials inspectors since the subject GAO audit [November 1989 report] and planning to add 10 additional hazardous materials inspectors and 8 hazardous materials specialists nationwide by June 1990.

The actions proposed by FRA may significantly improve the conditions noted in this letter. However, they are still being developed and we are not in a position to comment on their effectiveness at this time.

In response to our position concerning inspection coverage, Region 2 officials said that all inspection points are categorized as "A", "B", or "C." Inspection points in category A are higher risk and should be inspected more frequently than those in category B or C. According to the hazardous materials specialist, inspectors should prioritize their inspections based on these categories. He said that in this way, the region is assured that the highest risk locations are inspected regularly. He also said that he continuously monitors inspection activity and will notify an inspector if he is not covering the inspection points adequately.

We found, however, that instructions to inspectors on the three categories related only to volume of hazardous materials that annually flow through an inspection point location (A = over 500 cars, B = 100 to 499

cars, C = 1 to 99 cars). Furthermore, the instructions did not address expected frequency of inspection for these categories.

We also spoke to two of the Region 2 inspectors concerning their use of the categories in scheduling their inspections. Both said that they use the categories as only one factor in determining how often they would inspect a facility. There are other factors in assessing the risk that would be equally or more important, such as the type of commodity being transported, any recent reports of hazardous materials releases from an inspection point, and the facility's record of past safety performance. A small shipper or railroad might be inspected more frequently than a large one if the risk was determined to be greater. Both inspectors said that they base their scheduling decisions on their own experience, knowledge, and judgement.

The Region 2 director also said that regional policy does not allow discretion in issuing violations for rail accidents if the cause of the accident violated the regulations. There was not sufficient evidence to verify his statement based on the nine accidents we reviewed.

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