

**Rail Safety and Security**

**Senate Committee on Commerce, Science and Transportation**

**Testimony of Joseph H. Boardman, Administrator,**

**Federal Railroad Administration,**

**U.S. Department of Transportation,**

**before the**

**Committee on Commerce, Science, and Transportation,**

**United States Senate**

**On January 18, 2007**

Chairman Inouye, Vice Chairman Stevens, and other members of the Committee, I am pleased to be here today to testify, on behalf of the Secretary of Transportation, about the security of our Nation's passenger and freight railroad network and the efforts that the Department of Transportation (DOT) is making to enhance rail safety and security.

The Federal Railroad Administration's (FRA) primary mission is to promote the safety of the U.S. railroad industry and to reduce the number and severity of accidents and incidents arising from railroad operations. Our railroad safety mission necessarily includes our involvement in railroad security issues.

The U.S. Department of Homeland Security (DHS) and its Transportation Security Administration (TSA) have primary responsibility for transportation security, with FRA providing support in the railroad sector. FRA works closely with TSA and the railroad industry on a daily basis in addressing railroad security and safety issues, participates in the Government Coordinating Council for Rail, and contributed its expertise to the National Strategy for Transportation Security and the National Infrastructure Protection Plan.

My testimony today will provide some background on FRA's railroad safety program, describe the role that FRA plays in railroad security, and discuss railroad safety and security initiatives. We stand ready to work with the Committee in furthering the safety and security of our Nation's railroad network.

**Overview of the Railroad Industry**

The U.S. railroad network is a vital link in the Nation's transportation system and is critical to the economy, national defense, and public health. Passenger and freight

railroads operate over 170,000 route miles of track and employ over 232,000 workers. The rail system is diverse and expansive. Security risks are inherent in its supporting infrastructure, as well as in the people and products moving through it. Most of the larger railroads have their own police force, and they are supplemented by State and local law enforcement.

Amtrak, the Alaska Railroad Corporation, and commuter railroads provide passenger rail service to more than 500 million passengers yearly. Passenger operators face many challenges in their efforts to provide a secure public transportation environment. By definition, the systems are open, providing numerous points of access and egress leading to high passenger turnover and making them difficult to monitor effectively. Amtrak, for example, operates as many as 300 trains per day serving over 500 stations in 46 States, and Amtrak trains use tracks owned by freight railroads except for operations in the Northeast Corridor and in Michigan.

Privately-owned freight railroads connect industries and businesses with each other across the country and with markets overseas, moving 42 percent of all intercity freight, measured in ton-miles, including 67 percent of the coal used by electric utilities to produce power, and chemicals used in manufacturing and water purification. Seven Class I railroads haul over 90 percent of the rail cargo in the U.S., with the remaining 10 percent being transported by 30 regional railroads and over 500 local railroads. Typically railroads move about 1.7 to 1.8 million carloads of hazardous materials (hazmat) yearly, with roughly 105,000 of these carloads being toxic inhalation hazard (TIH) materials, such as chlorine and anhydrous ammonia. Over 64 percent of TIH materials are currently transported by rail. The railroads have an outstanding record in moving all goods safely. The vast majority of hazardous materials shipped by rail every year arrive safely and without incident, and train accidents involving a release of hazardous materials that causes death are infrequent and rare, even while rail traffic volumes have increased steadily. As discussed below, DOT has an aggressive and comprehensive action plan to address the root causes of hazmat accidents, to examine and improve the integrity of rail tank cars used to transport hazmat, and to improve the railroads' hazmat security plans. In addition, DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) annually provides grant funds to States and Indian tribes to assist in the development, improvement, and implementation of hazmat emergency response plans, and to train emergency responders to respond to hazmat accidents and incidents; details on this program are contained in PHMSA's Web site ([hazmat.dot.gov](http://hazmat.dot.gov)). Maintaining a safe and secure railroad transportation system is essential, and safety and security issues are being jointly addressed by the industry, DOT, and TSA.

### **FRA's Railroad Safety Program**

FRA is the DOT agency charged with carrying out the Federal railroad safety laws. The laws provide FRA, as the Secretary's delegate, with very broad authority over every area of railroad safety. In exercising that authority, the agency has issued and enforces a wide range of railroad safety regulations.

Several of FRA's rules have been developed with specific consideration of security concerns. For example, FRA's January 2002 final rule barring most extraterritorial dispatching of U.S. railroad operations is based in part on the agency's concerns about the security of foreign dispatching facilities. Similarly, FRA's rule on passenger train emergency preparedness, discussed more fully below, requires carriers to prepare plans that deal with criminal as well as accidental events.

While most of FRA's rules are focused on the safety of railroad operations and not explicitly based on security concerns, they also necessarily have some bearing on security.

For example, a railroad inspector performing an inspection required by an FRA safety regulation could potentially uncover a hazardous condition that was intentionally caused by terrorist activity. Similarly, Federal passenger and freight equipment standards are intended to ensure that the equipment can withstand forces of derailments and collisions, whether caused by accidents or deliberate acts, thereby helping to protect passengers, employees, and surrounding communities.

In addition, FRA enforces in the rail mode of transportation the Hazardous Materials Regulations, which are promulgated by PHMSA. These regulations include requirements that railroads and other transporters of hazmat, as well as shippers, have and adhere to security plans and also train their employees involved in offering, accepting, or transporting hazmat on both safety and security matters, as discussed more fully below.

To address the key safety issues facing the railroad industry, in May 2005, DOT and FRA launched an aggressive and ambitious National Rail Safety Action Plan with the following strategy:

- Target the most frequent, highest-risk causes of accidents;
- Focus FRA's oversight and inspection resources more precisely; and
- Accelerate research efforts that have the potential to mitigate the largest risks.

FRA's plan includes initiatives in several areas: reducing human factor-caused train accidents, the largest category of train accidents; acting to address the serious problem of fatigue among railroad operating employees; improving track safety; improving emergency preparedness and enhancing hazmat safety, including evaluating and improving the integrity of tank cars used to transport hazmat; and improving highway-rail grade crossing safety.

One of the primary elements of the Action Plan is the implementation of a National Inspection Plan, which uses sophisticated trend analysis to ensure that FRA is properly allocating its inspectors so that they are directing their efforts on areas of greatest safety concern.

A summary of the steps FRA has taken in implementing the Action Plan is attached to my statement.

Though the Action Plan is focused on rail safety, rail security will also be improved. In particular, enhancements to hazmat safety and emergency preparedness will result in enhancements to rail security.

### **FRA's Role in Railroad Security**

FRA's involvement in railroad security predates the terrorist attacks on September 11, 2001. From October 1995 (when a deliberate act of vandalism caused a fatal Amtrak derailment near Hyder, Arizona) through March 2006 (when the USA PATRIOT Improvement and Reauthorization Act of 2005 was enacted), FRA helped develop and worked with Congress to secure the enactment of Federal criminal legislation to deter and punish more effectively terrorist attacks against railroads and mass transportation systems.

Additionally, in 1998 FRA issued a regulation requiring passenger railroads to prepare, and secure FRA approval of, plans to address emergencies, including security threats, to train employees on the plan, and to conduct emergency simulation drills, as noted above and discussed more fully below.

FRA will be exploring leveraging the National Labor College, George Meany Training Campus, to assist in providing security awareness training for railroad employees who are not receiving security training under FRA's emergency preparedness regulation or PHMSA's security regulation.

Since the September 11<sup>th</sup> terrorist atrocities, FRA has been actively engaged in the railroad industry's response to the terrorist threat. The railroads have developed their own security plans, and FRA has worked with the railroads, rail labor, and law enforcement personnel to develop the Railway Alert Network, which permits timely distribution of information and intelligence on security issues.

Working with DOT's Federal Transit Administration (FTA), we have participated in security risk assessments on commuter railroads, and we have conducted security risk assessments of Amtrak as well. FRA's security director works on a daily basis with government agencies and the railroad industry to facilitate communications on security issues, and also participates in security training, reviews security plans, and performs other activities to promote rail security.

For example, FRA intends to conduct at least 15 security training sessions for rail labor organizations in 2007, as well as four sessions at the FBI Academy on railroad security and emergency response for law enforcement personnel.

In September 2004, DOT and DHS entered into a memorandum of understanding (MOU) concerning their respective roles on security issues. The MOU notes that DHS has primary responsibility for security in all modes of transportation but also recognizes that DOT has responsibilities in the area of transportation security.

The MOU reflects the agencies' shared commitment to a systems risk-based approach and to development of practical solutions, recognizing that each agency brings core competencies, legal authorities, resources, and expertise to the railroad mission.

The MOU requires early coordination between the parties on the development of regulations affecting security.

Separate annexes have been signed concerning the implementation of the Homeland Security Council's recommendations concerning TIH materials, and concerning the coordination between FRA and TSA, FTA and TSA, and PHMSA and TSA on security matters.

The FRA-TSA annex provides for close cooperation between the two agencies on railroad security regulations, legislation, research and development, inspection activities, and response to threats to railroad security in order to maximize passenger and freight railroad security while minimizing disruptions to railroad operations to the extent practicable. The agreement provides that if an FRA inspector observes a significant security issue, the information will be provided to TSA and the railroad; similarly, if a TSA inspector observes a significant rail safety issue, the information will be provided to FRA and the railroad.

FRA has one full-time employee addressing rail security matters, and all of our 71 hazmat inspectors and specialists, along with 17 State inspectors, devote a portion of their time to reviewing railroad and shipper security plans for compliance with PHMSA's security regulations discussed below.

### **Freight Railroad Security**

Railroads have voluntarily developed and adopted security plans based on comprehensive risk analyses, and the national intelligence community's best practices, that address the security of not only hazmat but of freight in general. The Association of American Railroads (AAR) has established guidance for the major freight railroads in the form of a model strategic security plan. The railroad industry has also developed a detailed protocol (AAR Circular OT-55-I) on recommended railroad operating practices for transportation of high-risk hazardous materials (including TIH).

FRA, PHMSA, and TSA have jointly worked with the railroad industry to build upon the railroads' security efforts through vulnerability assessments, development of voluntary security action items, and rulemakings. Additionally, FRA has arranged a conference to permit railroads and chemical shippers to discuss routing options for the movement of TIH materials, as explained more fully below.

A special focus for FRA and DOT, collectively, is the security of hazmat transported by rail. A major initiative has been PHMSA's March 2003 regulation requiring each shipper and carrier of significant quantities (placardable amounts) of hazmat to adopt and comply with a security plan. *See* 49 CFR § 172.800 *et seq.*

Under the PHMSA regulation, security plans must include an assessment of security risks and appropriate countermeasures or mitigation strategies, or both, to address those risks. The plans must, at a minimum, address three specific areas: The security of company personnel; unauthorized access to company property; and the security of hazmat shipped or transported by the company from its origin to its destination. To assist railroads that transport hazmat and shippers that offer hazmat for transportation by rail to comply with this regulation, particularly small- and medium-sized companies, PHMSA developed a program on how to write and implement security plans for their companies.

FRA recognizes that railroad and shipper employees' awareness and understanding of the PHMSA regulation and procedures governing the safe and secure transportation of hazmat shipments are critical. Therefore, PHMSA's regulation provides for safety and security training for employees engaged in the transportation of hazmat. Specifically, each shipper and carrier of significant quantities of hazmat is also required to conduct two types of security training for its employees: security awareness training that provides an awareness of risks associated with hazmat transportation and methods designed to enhance hazmat transportation security, and in-depth security training concerning the company's security plan and its implementation. These training requirements are also recurrent; employees must receive the required training at least every three years.

To date, FRA personnel have reviewed more than 6,105 security plans (including plans for shippers by rail and the plans for all Class I freight railroad carriers) and conducted 4,054 inspections for compliance with the security training requirements. Moreover, FRA's security director is currently working with the American Short Line and Regional Railroad Association to provide hazmat security training and conduct security reviews at approximately 125 short line railroads in 2007.

In April 2004, DHS and DOT took specific actions to improve the security of rail shipments of TIH materials. As part of this initiative, DHS and DOT, in cooperation with the railroads, are assessing the vulnerabilities of High Threat Urban Areas (HTUAs) through which TIH materials move by rail in significant quantity. These assessments helped result in the railroads agreeing to voluntarily implement 27 Security Action Items designed to improve the security of rail movements of TIH materials.

The Action Items address system security and access control (i.e., practices affecting the security of railroads and their property), as well as en-route security (the actual movement and handling of railcars containing TIH materials), particularly in HTUAs. Full implementation of the Action Items is expected to raise the security baseline for the transportation of TIH materials. Implementation of the first 24 Action Items had begun when they were announced in June 2006, and implementation of the remaining 3 Action Items dealing with HTUAs had also been initiated when they were announced on November 21, 2006.

In August 2004, DOT and TSA published a notice and request for comments in the Federal Register asking for input on aspects of TIH rail shipments, the DOT security program requirement, and the need for additional regulation. Following review and

consideration of the comments received, PHMSA, in consultation with FRA and TSA, published a notice of proposed rulemaking on December 21, 2006, to revise current requirements for the safe and secure rail transportation of hazmat. *See* 71 FR 76833. Likewise, TSA concurrently proposed enhancements to rail security requirements. *See* 71 FR 76852. Specifically, PHMSA's proposal would require railroads to—

- compile annual data on specified hazmat rail shipments;

- use the data annually to analyze safety and security risks along rail transportation routes where those materials are transported and one possible alternative to each route;

- utilize the analyses in selecting the safest and most secure commercially practicable routes the carrier is authorized to operate over in transporting these materials;

- address the security risks associated with shipments delayed in transit or temporarily stored in transit as part of their security plans;

- notify consignees if there is a significant unplanned delay affecting the delivery of certain types of hazardous material;

- work with shippers and consignees to minimize the time a rail car containing certain types of hazardous materials is placed on track awaiting pick-up or delivery or transfer from one carrier to another;

- notify storage facilities and consignees when rail cars containing certain types of hazardous materials are delivered to a storage or consignee facility; and

- conduct security visual inspections at ground level of rail cars containing hazardous materials to inspect for signs of tampering or the introduction of an improvised explosive device (IED).

PHMSA and FRA will hold two public meetings, one on February 1, 2007, in Washington, D.C., and the second on February 9, 2007, in Dallas, Texas, to obtain oral comments on the proposed requirements.

DHS has provided funding to the Railroad Research Foundation, a nonprofit organization devoted to sustaining a safe and productive railroad industry, to develop a Web-based tool to calculate rail route specific hazmat risks, and assist in route selection decisions. This tool would be available to rail carriers in performing route analysis, and to DOT, TSA, and government emergency planners.

In late 2005, FRA granted a request by the AAR and the American Chemistry Council to convene a section 333 conference to discuss ways to minimize security and safety risks flowing from the transportation by rail of TIH materials. Section 333 of title 49 of the United States Code authorizes the FRA Administrator, as delegate of the Secretary of Transportation, to convene conferences at the request of one or more railroads to address coordination of operations and facilities of rail carriers in order to

achieve a more efficient, economical, and viable rail system. Persons attending a section 333 conference are immune from antitrust liability for any discussions at the conference, and can also receive immunity for any resulting agreements that receive FRA approval. The conference has been carefully structured to minimize antitrust concerns involving the chemical manufacturers and shippers. The conference provides the railroads and chemical manufacturers and shippers with the opportunity to meet and discuss approaches to reduce the amount of TIH materials moved by rail, and to enhance the safety and security of TIH materials that are moved. FRA, PHMSA, and representatives from the Department of Justice, the Federal Trade Commission, TSA, and the Surface Transportation Board (STB) are participating in these discussions. The initial efforts of the conference are focused on chlorine and anhydrous ammonia rail transport because they represent over 80 percent of all TIH rail shipments. FRA has met with the rail carriers to discuss modeling and routing options. Further meetings with the rail carriers, as well as separate meetings with the chlorine and anhydrous ammonia shippers, are planned for early this year. In some instances, the projects agreed to at the conference may need the approval of the STB in order to be implemented.

While we must remain ever vigilant to secure hazmat shipments on our Nation's railroads, for the sake of railroad employees and the public whom we all serve, it bears emphasizing that the vast majority of hazmat shipments arrive at their destinations safely. Considering just chlorine, for example, since 1965 (the earliest data available) there have been at least 2.2 million tank car shipments of chlorine—only 788 of which were involved in accidents (0.036 percent of all the shipments). Of those accidents, there were 11 instances of a catastrophic loss (i.e., a loss of all, or nearly all) of the chlorine lading (0.0005 percent of all the shipments). Of the 11 catastrophic losses, four resulted in fatalities (0.00018 percent of all the shipments).

For all hazardous materials, in the 12 years from 1994 through 2005, hazardous materials released in railroad accidents resulted in a total of 14 fatalities. While one death is obviously too many, the record of transporting these commodities is very good, and we believe the initiatives underway will further improve upon that record.

### **Passenger Railroad Security**

As discussed earlier, in the area of passenger railroad security, FRA requires each railroad that operates intercity or commuter passenger train service or that hosts the operation of such service to adopt and comply with a written emergency preparedness plan approved by FRA. *See* 49 CFR Part 239. The regulation makes clear that an "emergency" includes a security-related situation. Each plan must address employee training and qualification, and provide for both initial and recurrent training. Additionally, each railroad must establish and maintain a working relationship with emergency responders on its line by taking measures such as developing and making available a training program on the plan and inviting the emergency responders to participate in emergency simulations. The regulation requires railroads providing passenger service to periodically conduct full-scale passenger train emergency simulations (with actual equipment and simulated victims) and conduct a debriefing and critique session after

actual or simulated passenger train emergency situations. FRA will continue monitoring passenger railroads for compliance with this regulation and attend each full-scale simulation and follow-up review session, such as one scheduled by the Long Island Rail Road for March with the New York City Fire Department.

In 2003, under the auspices of FRA's Railroad Safety Advisory Committee (RSAC), FRA initiated a review of existing passenger train safety needs and programs for the purpose of developing any necessary recommendations on actions to advance the safety of passenger rail service. The RSAC is a forum for developing recommendations to FRA on rulemakings and other safety program issues, and it includes representatives from all of the rail industry's major groups, State representatives, the National Transportation Safety Board (NTSB), and other stakeholders. As part of this effort, the Passenger Safety Working Group was established, as well as four smaller task forces, notably the Emergency Preparedness Task Force. The Emergency Preparedness Task Force is specifically devoted to consideration of passenger train emergency preparedness issues, and includes representatives from railroads, rail labor organizations, the NTSB, FTA, and TSA. Its efforts helped lead to the issuance of proposed enhancements and additions to FRA's regulations for passenger train emergency systems (emergency systems NPRM). *See* 71 FR 50276; August 24, 2006.

Emergency communication is one of the main focuses of the emergency systems NPRM. Under the proposal, all existing passenger cars would be required to be equipped with a public address system by 2012 that provides a means for a crewmember to communicate to all train passengers in an emergency situation, and all new passenger cars would be required to be equipped with an intercom system that provides a means for passengers and crewmembers to communicate with each other in an emergency situation. An intercom system could be vital in enabling a passenger to quickly alert a crewmember of a security threat, and the crewmember in turn could contact the appropriate authorities to obtain emergency assistance and use the train's public address system to provide any necessary direction to passengers. The proposed rulemaking would also promote passenger and employee safety in an emergency situation—whether resulting from an accidental or an intentional act—by enhancing requirements for emergency window exits in passenger cars and mandating that all passenger cars, including existing cars, have rescue windows for emergency responder access. FRA is in the process of preparing the final rule, which is expected to be issued by the middle of this year. Moreover, a separate regulatory proposal is also in development within the Emergency Preparedness Task Force, focusing on passenger car emergency signage, low-location exit path marking, and emergency lighting. The proposal will be based on American Public Transportation Association (APTA) standards for passenger safety, will augment current Federal requirements, and is expected to be published by the end of 2007.

Complementing FRA's regulations, Amtrak and commuter railroads have instituted their own security plans and conduct security training. FRA assisted Amtrak in the development of its security plan. Specifically, in coordination with Amtrak's Inspector General, FRA contracted with the RAND Corporation to conduct a systematic review and

assessment of Amtrak's security posture, corporate strategic security planning, and programs focusing on the adequacy of preparedness for combating terrorist threats. FRA's security director is currently working with Amtrak to implement the recommendations of the RAND study. APTA is also leading commuter railroads in the development of voluntary industry standards for passenger rail safety and security.

FRA inspectors have conducted basic security reviews of Amtrak and commuter railroad security both after the 2004 train bombings in Madrid and after the 2005 transit bombings in London. In both cases, FRA inspectors were deployed immediately after the bombings to assess the security posture of passenger railroad facilities based on a checklist of major security criteria. In the aftermath of the London bombings, FRA worked closely on these security reviews with TSA's new rail security inspectors. TSA focused primarily on urban rapid transit lines, while FRA inspectors concentrated on commuter and intercity passenger operations; in some situations, inspectors from the two agencies worked jointly. FRA will continue to support TSA in responding to rail security threats.

In partnership with FTA, FRA also participated in security risk assessments on the ten largest commuter railroads and contributed the funding for security risk assessments on three of these railroads. In addition, FRA participated in FTA's "best practices tool kit" initiative, contributing our knowledge of commuter rail operations, infrastructure, and organization to ensure that the recommended security enhancement measures were sound and feasible in a railroad environment. FRA staff worked closely with many of the railroads that receive FTA grant funding, to plan and assist in the development and implementation of security simulations and drills. FRA also devoted staff with both railroad knowledge and facilitation skills to the 17 FTA-sponsored workshops across the country (called "Connecting Communities") to bring together commuter railroads, emergency responders, and State and local government leaders so that they might better coordinate their security plans and emergency response efforts.

### **Research and Development**

FRA conducts and supports research, development, and demonstration projects related to rail safety and rail security through its Office of Research and Development, in cooperation with DHS. Both theoretical and applied research on a wide range of issues has led to impressive results and tangible technology and process improvements.

A recent example of the application of FRA's research efforts to both rail safety and security is the Passenger Rail Vehicle Emergency Evacuation Simulator, or "Rollover Rig." This device, which began operation in 2006, can rotate a full-sized commuter rail car up to 180 degrees to simulate passenger train derailment scenarios. The Rollover Rig is already enhancing the ability of researchers to test strategies for evacuating passenger rail cars and to evaluate the performance of emergency systems in the cars, such as emergency lighting, doors, and windows. In addition, first responders nationwide now have a unique training tool to practice effective passenger rail rescue techniques safely when a rail car is on its side. FRA developed the Rollover Rig at a cost of \$450,000. New Jersey Transit Rail Operations donated the commuter rail car used by

the Rollover Rig, and the Washington Metropolitan Area Transit Authority agreed to house, operate, and maintain the simulator at its emergency response training facility located in Landover, Maryland.

We also continue to look for ways to improve tank car survivability, to reduce the likelihood that a tank car may be breached either by accident or by intentional act. PHMSA's and FRA's efforts to improve tank car survivability have a long and effective history. Working with the industry, all tank cars carrying hazardous materials now have top and bottom shelf couplers, and, as appropriate, tank cars are equipped with head shields, thermal protection, and skid protection for protruding bottom outlets. Tank cars carrying specific product groups, such as TIH and other particularly hazardous substances, are subject to additional requirements which became fully effective July 1, 2006, after a 10-year phase-in period.

Prior to the August 2005 enactment of Section 9005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), FRA had initiated tank car structural integrity research stemming from the circumstances of the 2002 derailment in Minot, North Dakota, involving the release of anhydrous ammonia from a tank car punctured during the derailment. Current research involves a three-step process to assess the effects of various types of train accidents (e.g., a derailment or collision) on a tank car. The first phase is development of a physics-based model to analyze the kinematics of rail cars in a derailment. The second phase is development of a valid dynamic structural analysis model; and the third phase is an assessment of the damage created by a puncture and entails the application of fracture mechanics testing and analysis methods. DOT's Volpe National Transportation Systems Center is doing the modeling work now, and FRA will dovetail this ongoing research with the requirements of Section 9005. FRA, in conjunction with PHMSA, hopes to develop new hazardous material tank car safety standards in 2008, and we are currently consulting with railroads, shippers, and car manufacturers and have solicited public comments to assist us in this effort. In this connection, FRA just signed a Memorandum of Cooperation with Dow Chemical Company, Union Pacific Railroad, and the Union Tank Car Company to participate in their Next Generation Rail Tank Car Project and advance rail tank car safety.

Further, in September 2006, FRA awarded \$200,000 to test sample tank car panels with various coatings to determine their ability to prevent penetration from small arms fire, as well as their ability to self-seal and, thereby, mitigate the severity of any incident. FRA developed the project in coordination with the AAR and DHS, which came up with the idea of applying to tank cars a protective coating like that used to enhance the armor protection of military vehicles in Iraq.

FRA has other research and development projects underway related to rail security which we would be happy to discuss with Committee staff.

## **Conclusion**

FRA will continue to support TSA in carrying out its security responsibilities, and work with the rail industry to secure the Nation's freight and passenger railroad network. Together, DOT, TSA, and the rail industry are helping to ensure that security initiatives and programs are directed at potential threats to the Nation's railroad network and that rail employees and others responsible for its security are prepared to identify and address such threats.

## **Attachment**

### **SUMMARY OF THE STEPS FRA HAS TAKEN TO IMPLEMENT ITS NATIONAL RAIL SAFETY ACTION PLAN**

In response to various rail safety concerns, including some recent major train accidents, such as Graniteville, SC, and the lack of substantial improvement in the train accident rate in recent years, Secretary of Transportation Norman Mineta launched the National Rail Safety Action Plan in May 2005 . FRA has made real and substantial progress in bringing its aggressive and ambitious National Rail Safety Action Plan to fruition. To reduce the number of train accidents caused by human factors (the largest category of train accidents), FRA —

\* Issued a proposed Federal rule in October 2006 that would address top causes of human factor train accidents (such as failing to return a track switch to its proper position, which led to the Graniteville accident). The final rule is expected to be issued in mid-2007.

\* Implemented an ongoing research program to identify human performance problems. Railroads, their employees, and FRA are entering into agreements that permit the employees to report unsafe events that do not result in a reportable accident but could have done so, without the fear of discipline.

\* Made available to railroads and their employees a fatigue model that can assist them in developing crew scheduling practices based on the best current science.

\* Approved the first positive train control system capable of automatically controlling train speed and movements to prevent train collisions and other accidents—the system will be installed on many BNSF Railway Company (BNSF) rail lines.

\* Completed a pilot project, in partnership with BNSF, to develop a low-cost system that electronically monitors, detects, and reports a misaligned switch on mainline track located in non-signaled track territory. BNSF plans expansion of this and other similar systems on other non-signaled lines of their company.

To help prevent track-caused train accidents (the second-leading category), FRA—

\* Developed an automated track inspection system that uses high-resolution video to detect cracks in joint bars and that can be deployed on a hi-rail vehicle to detect visible

cracks in joint bars without having to stop the vehicle. Testing showed that the high-resolution video system detected visual cracks that were missed by the traditional visual inspections. The system was demonstrated to the railroads during summer and fall of 2006.

- \* Issued a final rule requiring track owners to develop and implement a procedure for the detailed inspection of rail joints in continuous welded rail track.

- \* Contracted for the construction of two automated track inspection vehicles, to be delivered in February and March, which will bring FRA's fleet to five, allowing FRA to inspect nearly 100,000 track-miles each year, which triples the present capacity. This additional capability will permit FRA to inspect more miles of major hazardous material (hazmat) and passenger routes, while also having the ability to follow up more quickly on routes where safety performance is substandard.

To improve hazmat safety and emergency response capability, FRA improved emergency responders' timely access to hazmat information. As discussed in FRA's testimony today, FRA also accelerated its tank car structural research, hopes to issue new tank car performance standards in 2008, and has issued an NPRM on passenger train emergency systems.

To strengthen FRA's rail safety inspection and enforcement program, FRA has made better use of data to direct FRA safety inspectors and other resources to where problems are likely to arise. FRA's new National Inspection Plan was fully implemented for all FRA safety disciplines in March 2006, and further training will be provided to FRA safety personnel on how to best use the data during the scheduled national technical conferences this year.

To foster further improvements in highway-rail grade crossing safety, FRA

- \* Built partnerships with State and local agencies by issuing, in May 2005, and extensively distributing a safety advisory describing the roles of the Federal and State governments and of the railroads in crossing safety. The advisory also reminds railroads of their responsibilities in relation to crossing accident reporting and investigation and offers assistance to local authorities in the investigation of crossing collisions where information or expertise within FRA control is required to complete the investigation.

- \* Aided the State of Louisiana in developing a crossing safety action plan. This State has consistently ranked among the top five with the highest number of crossing collisions and fatalities. The State approved the plan in April 2006.

- \* Launched an ongoing public safety inquiry into safety at private crossings.

We would be glad to provide the Committee with additional information on the current status of FRA's implementation of the National Rail Safety Action Plan.

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### **FRA's Role in Railroad Security**

FRA's involvement in railroad security predates the terrorist attacks on September 11, 2001. From October 1995 (when a deliberate act of vandalism caused a fatal Amtrak derailment near Hyder, Arizona) through March 2006 (when the USA PATRIOT Improvement and Reauthorization Act of 2005 was enacted), FRA helped develop and worked with Congress to secure the enactment of Federal criminal legislation to deter and punish more effectively terrorist attacks against railroads and mass transportation systems.

Additionally, in 1998 FRA issued a regulation requiring passenger railroads to prepare, and secure FRA approval of, plans to address emergencies, including security threats, to train employees on the plan, and to conduct emergency simulation drills, as noted above and discussed more fully below.

FRA will be exploring leveraging the National Labor College, George Meany Training Campus, to assist in providing security awareness training for railroad employees who are not receiving security training under FRA's emergency preparedness regulation or PHMSA's security regulation.

Since the September 11<sup>th</sup> terrorist atrocities, FRA has been actively engaged in the railroad industry's response to the terrorist threat. The railroads have developed their own security plans, and FRA has worked with the railroads, rail labor, and law enforcement personnel to develop the Railway Alert Network, which permits timely distribution of information and intelligence on security issues.

Working with DOT's Federal Transit Administration (FTA), we have participated in security risk assessments on commuter railroads, and we have conducted security risk assessments of Amtrak as well. FRA's security director works on a daily basis with government agencies and the railroad industry to facilitate communications on security issues, and also participates in security training, reviews security plans, and performs other activities to promote rail security.

For example, FRA intends to conduct at least 15 security training sessions for rail labor organizations in 2007, as well as four sessions at the FBI Academy on railroad security and emergency response for law enforcement personnel.

In September 2004, DOT and DHS entered into a memorandum of understanding (MOU) concerning their respective roles on security issues.

The MOU notes that DHS has primary responsibility for security in all modes of transportation but also recognizes that DOT has responsibilities in the area of transportation security.

The MOU reflects the agencies' shared commitment to a systems risk-based approach and to development of practical solutions, recognizing that each agency brings core competencies, legal authorities, resources, and expertise to the railroad mission.

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The FRA-TSA annex provides for close cooperation between the two agencies on railroad security regulations, legislation, research and development, inspection activities, and response to threats to railroad security in order to maximize passenger and freight railroad security while minimizing disruptions to railroad operations to the extent practicable. The agreement provides that if an FRA inspector observes a significant security issue, the information will be provided to TSA and the railroad; similarly, if a TSA inspector observes a significant rail safety issue, the information will be provided to FRA and the railroad.

FRA has one full-time employee addressing rail security matters, and all of our 71 hazmat inspectors and specialists, along with 17 State inspectors, devote a portion of their time to reviewing railroad and shipper security plans for compliance with PHMSA's security regulations discussed below.

### **Freight Railroad Security**

Railroads have voluntarily developed and adopted security plans based on comprehensive risk analyses, and the national intelligence community's best practices, that address the security of not only hazmat but of freight in general. The Association of American Railroads (AAR) has established guidance for the major freight railroads in the form of a model strategic security plan. The railroad industry has also developed a detailed protocol (AAR Circular OT-55-I) on recommended railroad operating practices for transportation of high-risk hazardous materials (including TIH).

FRA, PHMSA, and TSA have jointly worked with the railroad industry to build upon the railroads' security efforts through vulnerability assessments, development of voluntary security action items, and rulemakings. Additionally, FRA has arranged a conference to

permit railroads and chemical shippers to discuss routing options for the movement of TIH materials, as explained more fully below.

A special focus for FRA and DOT, collectively, is the security of hazmat transported by rail. A major initiative has been PHMSA's March 2003 regulation requiring each shipper and carrier of significant quantities (placardable amounts) of hazmat to adopt and comply with a security plan. *See* 49 CFR § 172.800 *et seq.*

Under the PHMSA regulation, security plans must include an assessment of security risks and appropriate countermeasures or mitigation strategies, or both, to address those risks. The plans must, at a minimum, address three specific areas: The security of company personnel; unauthorized access to company property; and the security of hazmat shipped or transported by the company from its origin to its destination. To assist railroads that transport hazmat and shippers that offer hazmat for transportation by rail to comply with this regulation, particularly small- and medium-sized companies, PHMSA developed a program on how to write and implement security plans for their companies.

FRA recognizes that railroad and shipper employees' awareness and understanding of the PHMSA regulation and procedures governing the safe and secure transportation of hazmat shipments are critical. Therefore, PHMSA's regulation provides for safety and security training for employees engaged in the transportation of hazmat. Specifically, each shipper and carrier of significant quantities of hazmat is also required to conduct two types of security training for its employees: security awareness training that provides an awareness of risks associated with hazmat transportation and methods designed to enhance hazmat transportation security, and in-depth security training concerning the company's security plan and its implementation. These training requirements are also recurrent; employees must receive the required training at least every three years.

To date, FRA personnel have reviewed more than 6,105 security plans (including plans for shippers by rail and the plans for all Class I freight railroad carriers) and conducted 4,054 inspections for compliance with the security training requirements. Moreover, FRA's security director is currently working with the American Short Line and Regional Railroad Association to provide hazmat security training and conduct security reviews at approximately 125 short line railroads in 2007.

In April 2004, DHS and DOT took specific actions to improve the security of rail shipments of TIH materials. As part of this initiative, DHS and DOT, in cooperation with the railroads, are assessing the vulnerabilities of High Threat Urban Areas (HTUAs) through which TIH materials move by rail in significant quantity. These assessments helped result in the railroads agreeing to voluntarily implement 27 Security Action Items designed to improve the security of rail movements of TIH materials.

The Action Items address system security and access control (i.e., practices affecting the security of railroads and their property), as well as en-route security (the actual movement and handling of railcars containing TIH materials), particularly in HTUAs. Full

implementation of the Action Items is expected to raise the security baseline for the transportation of TIH materials. Implementation of the first 24 Action Items had begun when they were announced in June 2006, and implementation of the remaining 3 Action Items dealing with HTUAs had also been initiated when they were announced on November 21, 2006.

In August 2004, DOT and TSA published a notice and request for comments in the Federal Register asking for input on aspects of TIH rail shipments, the DOT security program requirement, and the need for additional regulation. Following review and consideration of the comments received, PHMSA, in consultation with FRA and TSA, published a notice of proposed rulemaking on December 21, 2006, to revise current requirements for the safe and secure rail transportation of hazmat. *See* 71 FR 76833. Likewise, TSA concurrently proposed enhancements to rail security requirements. *See* 71 FR 76852. Specifically, PHMSA's proposal would require railroads to—

- compile annual data on specified hazmat rail shipments;

- use the data annually to analyze safety and security risks along rail transportation routes where those materials are transported and one possible alternative to each route;

- utilize the analyses in selecting the safest and most secure commercially practicable routes the carrier is authorized to operate over in transporting these materials;

- address the security risks associated with shipments delayed in transit or temporarily stored in transit as part of their security plans;

- notify consignees if there is a significant unplanned delay affecting the delivery of certain types of hazardous material;

- work with shippers and consignees to minimize the time a rail car containing certain types of hazardous materials is placed on track awaiting pick-up or delivery or transfer from one carrier to another;

- notify storage facilities and consignees when rail cars containing certain types of hazardous materials are delivered to a storage or consignee facility; and

- conduct security visual inspections at ground level of rail cars containing hazardous materials to inspect for signs of tampering or the introduction of an improvised explosive device (IED).

PHMSA and FRA will hold two public meetings, one on February 1, 2007, in Washington, D.C., and the second on February 9, 2007, in Dallas, Texas, to obtain oral comments on the proposed requirements.

DHS has provided funding to the Railroad Research Foundation, a nonprofit organization devoted to sustaining a safe and productive railroad industry, to develop a Web-based tool to calculate rail route specific hazmat risks, and assist in route selection decisions.

This tool would be available to rail carriers in performing route analysis, and to DOT, TSA, and government emergency planners.

In late 2005, FRA granted a request by the AAR and the American Chemistry Council to convene a section 333 conference to discuss ways to minimize security and safety risks flowing from the transportation by rail of TIH materials. Section 333 of title 49 of the United States Code authorizes the FRA Administrator, as delegate of the Secretary of Transportation, to convene conferences at the request of one or more railroads to address coordination of operations and facilities of rail carriers in order to achieve a more efficient, economical, and viable rail system. Persons attending a section 333 conference are immune from antitrust liability for any discussions at the conference, and can also receive immunity for any resulting agreements that receive FRA approval. The conference has been carefully structured to minimize antitrust concerns involving the chemical manufacturers and shippers. The conference provides the railroads and chemical manufacturers and shippers with the opportunity to meet and discuss approaches to reduce the amount of TIH materials moved by rail, and to enhance the safety and security of TIH materials that are moved. FRA, PHMSA, and representatives from the Department of Justice, the Federal Trade Commission, TSA, and the Surface Transportation Board (STB) are participating in these discussions. The initial efforts of the conference are focused on chlorine and anhydrous ammonia rail transport because they represent over 80 percent of all TIH rail shipments. FRA has met with the rail carriers to discuss modeling and routing options. Further meetings with the rail carriers, as well as separate meetings with the chlorine and anhydrous ammonia shippers, are planned for early this year. In some instances, the projects agreed to at the conference may need the approval of the STB in order to be implemented.

While we must remain ever vigilant to secure hazmat shipments on our Nation's railroads, for the sake of railroad employees and the public whom we all serve, it bears emphasizing that the vast majority of hazmat shipments arrive at their destinations safely. Considering just chlorine, for example, since 1965 (the earliest data available) there have been at least 2.2 million tank car shipments of chlorine—only 788 of which were involved in accidents (0.036 percent of all the shipments). Of those accidents, there were 11 instances of a catastrophic loss (i.e., a loss of all, or nearly all) of the chlorine lading (0.0005 percent of all the shipments). Of the 11 catastrophic losses, four resulted in fatalities (0.00018 percent of all the shipments).

For all hazardous materials, in the 12 years from 1994 through 2005, hazardous materials released in railroad accidents resulted in a total of 14 fatalities. While one death is obviously too many, the record of transporting these commodities is very good, and we believe the initiatives underway will further improve upon that record.

### **Passenger Railroad Security**

As discussed earlier, in the area of passenger railroad security, FRA requires each railroad that operates intercity or commuter passenger train service or that hosts the operation of such service to adopt and comply with a written emergency preparedness

plan approved by FRA. *See* 49 CFR Part 239. The regulation makes clear that an "emergency" includes a security-related situation. Each plan must address employee training and qualification, and provide for both initial and recurrent training. Additionally, each railroad must establish and maintain a working relationship with emergency responders on its line by taking measures such as developing and making available a training program on the plan and inviting the emergency responders to participate in emergency simulations. The regulation requires railroads providing passenger service to periodically conduct full-scale passenger train emergency simulations (with actual equipment and simulated victims) and conduct a debriefing and critique session after actual or simulated passenger train emergency situations. FRA will continue monitoring passenger railroads for compliance with this regulation and attend each full-scale simulation and follow-up review session, such as one scheduled by the Long Island Rail Road for March with the New York City Fire Department.

In 2003, under the auspices of FRA's Railroad Safety Advisory Committee (RSAC), FRA initiated a review of existing passenger train safety needs and programs for the purpose of developing any necessary recommendations on actions to advance the safety of passenger rail service. The RSAC is a forum for developing recommendations to FRA on rulemakings and other safety program issues, and it includes representatives from all of the rail industry's major groups, State representatives, the National Transportation Safety Board (NTSB), and other stakeholders. As part of this effort, the Passenger Safety Working Group was established, as well as four smaller task forces, notably the Emergency Preparedness Task Force. The Emergency Preparedness Task Force is specifically devoted to consideration of passenger train emergency preparedness issues, and includes representatives from railroads, rail labor organizations, the NTSB, FTA, and TSA. Its efforts helped lead to the issuance of proposed enhancements and additions to FRA's regulations for passenger train emergency systems (emergency systems NPRM). *See* 71 FR 50276; August 24, 2006.

Emergency communication is one of the main focuses of the emergency systems NPRM. Under the proposal, all existing passenger cars would be required to be equipped with a public address system by 2012 that provides a means for a crewmember to communicate to all train passengers in an emergency situation, and all new passenger cars would be required to be equipped with an intercom system that provides a means for passengers and crewmembers to communicate with each other in an emergency situation. An intercom system could be vital in enabling a passenger to quickly alert a crewmember of a security threat, and the crewmember in turn could contact the appropriate authorities to obtain emergency assistance and use the train's public address system to provide any necessary direction to passengers. The proposed rulemaking would also promote passenger and employee safety in an emergency situation—whether resulting from an accidental or an intentional act—by enhancing requirements for emergency window exits in passenger cars and mandating that all passenger cars, including existing cars, have rescue windows for emergency responder access. FRA is in the process of preparing the final rule, which is expected to be issued by the middle of this year. Moreover, a separate regulatory proposal is also in development within the Emergency Preparedness Task Force, focusing on passenger car emergency signage, low-

location exit path marking, and emergency lighting. The proposal will be based on American Public Transportation Association (APTA) standards for passenger safety, will augment current Federal requirements, and is expected to be published by the end of 2007.

Complementing FRA's regulations, Amtrak and commuter railroads have instituted their own security plans and conduct security training. FRA assisted Amtrak in the development of its security plan. Specifically, in coordination with Amtrak's Inspector General, FRA contracted with the RAND Corporation to conduct a systematic review and assessment of Amtrak's security posture, corporate strategic security planning, and programs focusing on the adequacy of preparedness for combating terrorist threats. FRA's security director is currently working with Amtrak to implement the recommendations of the RAND study. APTA is also leading commuter railroads in the development of voluntary industry standards for passenger rail safety and security.

FRA inspectors have conducted basic security reviews of Amtrak and commuter railroad security both after the 2004 train bombings in Madrid and after the 2005 transit bombings in London. In both cases, FRA inspectors were deployed immediately after the bombings to assess the security posture of passenger railroad facilities based on a checklist of major security criteria. In the aftermath of the London bombings, FRA worked closely on these security reviews with TSA's new rail security inspectors. TSA focused primarily on urban rapid transit lines, while FRA inspectors concentrated on commuter and intercity passenger operations; in some situations, inspectors from the two agencies worked jointly. FRA will continue to support TSA in responding to rail security threats.

In partnership with FTA, FRA also participated in security risk assessments on the ten largest commuter railroads and contributed the funding for security risk assessments on three of these railroads. In addition, FRA participated in FTA's "best practices tool kit" initiative, contributing our knowledge of commuter rail operations, infrastructure, and organization to ensure that the recommended security enhancement measures were sound and feasible in a railroad environment. FRA staff worked closely with many of the railroads that receive FTA grant funding, to plan and assist in the development and implementation of security simulations and drills. FRA also devoted staff with both railroad knowledge and facilitation skills to the 17 FTA-sponsored workshops across the country (called "Connecting Communities") to bring together commuter railroads, emergency responders, and State and local government leaders so that they might better coordinate their security plans and emergency response efforts.

### **Research and Development**

FRA conducts and supports research, development, and demonstration projects related to rail safety and rail security through its Office of Research and Development, in cooperation with DHS. Both theoretical and applied research on a wide range of issues has led to impressive results and tangible technology and process improvements.

A recent example of the application of FRA's research efforts to both rail safety and security is the Passenger Rail Vehicle Emergency Evacuation Simulator, or "Rollover Rig." This device, which began operation in 2006, can rotate a full-sized commuter rail car up to 180 degrees to simulate passenger train derailment scenarios. The Rollover Rig is already enhancing the ability of researchers to test strategies for evacuating passenger rail cars and to evaluate the performance of emergency systems in the cars, such as emergency lighting, doors, and windows. In addition, first responders nationwide now have a unique training tool to practice effective passenger rail rescue techniques safely when a rail car is on its side. FRA developed the Rollover Rig at a cost of \$450,000. New Jersey Transit Rail Operations donated the commuter rail car used by the Rollover Rig, and the Washington Metropolitan Area Transit Authority agreed to house, operate, and maintain the simulator at its emergency response training facility located in Landover, Maryland.

We also continue to look for ways to improve tank car survivability, to reduce the likelihood that a tank car may be breached either by accident or by intentional act. PHMSA's and FRA's efforts to improve tank car survivability have a long and effective history. Working with the industry, all tank cars carrying hazardous materials now have top and bottom shelf couplers, and, as appropriate, tank cars are equipped with head shields, thermal protection, and skid protection for protruding bottom outlets. Tank cars carrying specific product groups, such as TIH and other particularly hazardous substances, are subject to additional requirements which became fully effective July 1, 2006, after a 10-year phase-in period.

Prior to the August 2005 enactment of Section 9005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), FRA had initiated tank car structural integrity research stemming from the circumstances of the 2002 derailment in Minot, North Dakota, involving the release of anhydrous ammonia from a tank car punctured during the derailment. Current research involves a three-step process to assess the effects of various types of train accidents (e.g., a derailment or collision) on a tank car. The first phase is development of a physics-based model to analyze the kinematics of rail cars in a derailment. The second phase is development of a valid dynamic structural analysis model; and the third phase is an assessment of the damage created by a puncture and entails the application of fracture mechanics testing and analysis methods. DOT's Volpe National Transportation Systems Center is doing the modeling work now, and FRA will dovetail this ongoing research with the requirements of Section 9005. FRA, in conjunction with PHMSA, hopes to develop new hazardous material tank car safety standards in 2008, and we are currently consulting with railroads, shippers, and car manufacturers and have solicited public comments to assist us in this effort. In this connection, FRA just signed a Memorandum of Cooperation with Dow Chemical Company, Union Pacific Railroad, and the Union Tank Car Company to participate in their Next Generation Rail Tank Car Project and advance rail tank car safety.

Further, in September 2006, FRA awarded \$200,000 to test sample tank car panels with various coatings to determine their ability to prevent penetration from small arms fire, as

well as their ability to self-seal and, thereby, mitigate the severity of any incident. FRA developed the project in coordination with the AAR and DHS, which came up with the idea of applying to tank cars a protective coating like that used to enhance the armor protection of military vehicles in Iraq.

FRA has other research and development projects underway related to rail security which we would be happy to discuss with Committee staff.

### **Conclusion**

FRA will continue to support TSA in carrying out its security responsibilities, and work with the rail industry to secure the Nation's freight and passenger railroad network. Together, DOT, TSA, and the rail industry are helping to ensure that security initiatives and programs are directed at potential threats to the Nation's railroad network and that rail employees and others responsible for its security are prepared to identify and address such threats.

### **Attachment**

#### **SUMMARY OF THE STEPS FRA HAS TAKEN TO IMPLEMENT ITS NATIONAL RAIL SAFETY ACTION PLAN**

In response to various rail safety concerns, including some recent major train accidents, such as Graniteville, SC, and the lack of substantial improvement in the train accident rate in recent years, Secretary of Transportation Norman Mineta launched the National Rail Safety Action Plan in May 2005 . FRA has made real and substantial progress in bringing its aggressive and ambitious National Rail Safety Action Plan to fruition. To reduce the number of train accidents caused by human factors (the largest category of train accidents), FRA —

\* Issued a proposed Federal rule in October 2006 that would address top causes of human factor train accidents (such as failing to return a track switch to its proper position, which led to the Graniteville accident). The final rule is expected to be issued in mid-2007.

\* Implemented an ongoing research program to identify human performance problems. Railroads, their employees, and FRA are entering into agreements that permit the employees to report unsafe events that do not result in a reportable accident but could have done so, without the fear of discipline.

\* Made available to railroads and their employees a fatigue model that can assist them in developing crew scheduling practices based on the best current science.

\* Approved the first positive train control system capable of automatically controlling train speed and movements to prevent train collisions and other accidents—the system will be installed on many BNSF Railway Company (BNSF) rail lines.

\* Completed a pilot project, in partnership with BNSF, to develop a low-cost system that electronically monitors, detects, and reports a misaligned switch on mainline track located in non-signaled track territory. BNSF plans expansion of this and other similar systems on other non-signaled lines of their company.

To help prevent track-caused train accidents (the second-leading category), FRA—

\* Developed an automated track inspection system that uses high-resolution video to detect cracks in joint bars and that can be deployed on a hi-rail vehicle to detect visible cracks in joint bars without having to stop the vehicle. Testing showed that the high-resolution video system detected visual cracks that were missed by the traditional visual inspections. The system was demonstrated to the railroads during summer and fall of 2006.

\* Issued a final rule requiring track owners to develop and implement a procedure for the detailed inspection of rail joints in continuous welded rail track.

\* Contracted for the construction of two automated track inspection vehicles, to be delivered in February and March, which will bring FRA's fleet to five, allowing FRA to inspect nearly 100,000 track-miles each year, which triples the present capacity. This additional capability will permit FRA to inspect more miles of major hazardous material (hazmat) and passenger routes, while also having the ability to follow up more quickly on routes where safety performance is substandard.

To improve hazmat safety and emergency response capability, FRA improved emergency responders' timely access to hazmat information. As discussed in FRA's testimony today, FRA also accelerated its tank car structural research, hopes to issue new tank car performance standards in 2008, and has issued an NPRM on passenger train emergency systems.

To strengthen FRA's rail safety inspection and enforcement program, FRA has made better use of data to direct FRA safety inspectors and other resources to where problems are likely to arise. FRA's new National Inspection Plan was fully implemented for all FRA safety disciplines in March 2006, and further training will be provided to FRA safety personnel on how to best use the data during the scheduled national technical conferences this year.

To foster further improvements in highway-rail grade crossing safety, FRA

\* Built partnerships with State and local agencies by issuing, in May 2005, and extensively distributing a safety advisory describing the roles of the Federal and State governments and of the railroads in crossing safety. The advisory also reminds railroads of their responsibilities in relation to crossing accident reporting and investigation and offers assistance to local authorities in the investigation of crossing collisions where information or expertise within FRA control is required to complete the investigation.

\* Aided the State of Louisiana in developing a crossing safety action plan. This State has consistently ranked among the top five with the highest number of crossing collisions and fatalities. The State approved the plan in April 2006.

\* Launched an ongoing public safety inquiry into safety at private crossings.

We would be glad to provide the Committee with additional information on the current status of FRA's implementation of the National Rail Safety Action Plan.

Maintaining a safe and secure railroad transportation system is essential, and safety and security issues are being jointly addressed by the industry, DOT, and TSA.

### **FRA's Railroad Safety Program**

FRA is the DOT agency charged with carrying out the Federal railroad safety laws. The laws provide FRA, as the Secretary's delegate, with very broad authority over every area of railroad safety. In exercising that authority, the agency has issued and enforces a wide range of railroad safety regulations.

Several of FRA's rules have been developed with specific consideration of security concerns. For example, FRA's January 2002 final rule barring most extraterritorial dispatching of U.S. railroad operations is based in part on the agency's concerns about the security of foreign dispatching facilities. Similarly, FRA's rule on passenger train emergency preparedness, discussed more fully below, requires carriers to prepare plans that deal with criminal as well as accidental events.

While most of FRA's rules are focused on the safety of railroad operations and not explicitly based on security concerns, they also necessarily have some bearing on security.

For example, a railroad inspector performing an inspection required by an FRA safety regulation could potentially uncover a hazardous condition that was intentionally caused by terrorist activity. Similarly, Federal passenger and freight equipment standards are intended to ensure that the equipment can withstand forces of derailments and collisions, whether caused by accidents or deliberate acts, thereby helping to protect passengers, employees, and surrounding communities.

In addition, FRA enforces in the rail mode of transportation the Hazardous Materials Regulations, which are promulgated by PHMSA. These regulations include requirements that railroads and other transporters of hazmat, as well as shippers, have and adhere to security plans and also train their employees involved in offering, accepting, or transporting hazmat on both safety and security matters, as discussed more fully below.

To address the key safety issues facing the railroad industry, in May 2005, DOT and FRA launched an aggressive and ambitious National Rail Safety Action Plan with the following strategy:

- Target the most frequent, highest-risk causes of accidents;
- Focus FRA's oversight and inspection resources more precisely; and
- Accelerate research efforts that have the potential to mitigate the largest risks.

FRA's plan includes initiatives in several areas: reducing human factor-caused train accidents, the largest category of train accidents; acting to address the serious problem of fatigue among railroad operating employees; improving track safety; improving emergency preparedness and enhancing hazmat safety, including evaluating and improving the integrity of tank cars used to transport hazmat; and improving highway-rail grade crossing safety.

One of the primary elements of the Action Plan is the implementation of a National Inspection Plan, which uses sophisticated trend analysis to ensure that FRA is properly allocating its inspectors so that they are directing their efforts on areas of greatest safety concern.

A summary of the steps FRA has taken in implementing the Action Plan is attached to my statement.

Though the Action Plan is focused on rail safety, rail security will also be improved. In particular, enhancements to hazmat safety and emergency preparedness will result in enhancements to rail security.

### **FRA's Role in Railroad Security**

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To date, FRA personnel have reviewed more than 6,105 security plans (including plans for shippers by rail and the plans for all Class I freight railroad carriers) and conducted 4,054 inspections for compliance with the security training requirements. Moreover, FRA's security director is currently working with the American Short Line and Regional Railroad Association to provide hazmat security training and conduct security reviews at approximately 125 short line railroads in 2007.

In April 2004, DHS and DOT took specific actions to improve the security of rail shipments of TIH materials. As part of this initiative, DHS and DOT, in cooperation with the railroads, are assessing the vulnerabilities of High Threat Urban Areas (HTUAs) through which TIH materials move by rail in significant quantity. These assessments helped result in the railroads agreeing to voluntarily implement 27 Security Action Items designed to improve the security of rail movements of TIH materials.

The Action Items address system security and access control (i.e., practices affecting the security of railroads and their property), as well as en-route security (the actual movement and handling of railcars containing TIH materials), particularly in HTUAs. Full implementation of the Action Items is expected to raise the security baseline for the transportation of TIH materials. Implementation of the first 24 Action Items had begun when they were announced in June 2006, and implementation of the remaining 3 Action Items dealing with HTUAs had also been initiated when they were announced on November 21, 2006.

In August 2004, DOT and TSA published a notice and request for comments in the Federal Register asking for input on aspects of TIH rail shipments, the DOT security program requirement, and the need for additional regulation. Following review and consideration of the comments received, PHMSA, in consultation with FRA and TSA, published a notice of proposed rulemaking on December 21, 2006, to revise current requirements for the safe and secure rail transportation of hazmat. *See* 71 FR 76833. Likewise, TSA concurrently proposed enhancements to rail security requirements. *See* 71 FR 76852. Specifically, PHMSA's proposal would require railroads to—

- compile annual data on specified hazmat rail shipments;

- use the data annually to analyze safety and security risks along rail transportation routes where those materials are transported and one possible alternative to each route;

- utilize the analyses in selecting the safest and most secure commercially practicable routes the carrier is authorized to operate over in transporting these materials;

- address the security risks associated with shipments delayed in transit or temporarily stored in transit as part of their security plans;

- notify consignees if there is a significant unplanned delay affecting the delivery of certain types of hazardous material;

- work with shippers and consignees to minimize the time a rail car containing certain types of hazardous materials is placed on track awaiting pick-up or delivery or transfer from one carrier to another;

- notify storage facilities and consignees when rail cars containing certain types of hazardous materials are delivered to a storage or consignee facility; and

conduct security visual inspections at ground level of rail cars containing hazardous materials to inspect for signs of tampering or the introduction of an improvised explosive device (IED).

PHMSA and FRA will hold two public meetings, one on February 1, 2007, in Washington, D.C., and the second on February 9, 2007, in Dallas, Texas, to obtain oral comments on the proposed requirements.

DHS has provided funding to the Railroad Research Foundation, a nonprofit organization devoted to sustaining a safe and productive railroad industry, to develop a Web-based tool to calculate rail route specific hazmat risks, and assist in route selection decisions. This tool would be available to rail carriers in performing route analysis, and to DOT, TSA, and government emergency planners.

In late 2005, FRA granted a request by the AAR and the American Chemistry Council to convene a section 333 conference to discuss ways to minimize security and safety risks flowing from the transportation by rail of TIH materials. Section 333 of title 49 of the United States Code authorizes the FRA Administrator, as delegate of the Secretary of Transportation, to convene conferences at the request of one or more railroads to address coordination of operations and facilities of rail carriers in order to achieve a more efficient, economical, and viable rail system. Persons attending a section 333 conference are immune from antitrust liability for any discussions at the conference, and can also receive immunity for any resulting agreements that receive FRA approval. The conference has been carefully structured to minimize antitrust concerns involving the chemical manufacturers and shippers. The conference provides the railroads and chemical manufacturers and shippers with the opportunity to meet and discuss approaches to reduce the amount of TIH materials moved by rail, and to enhance the safety and security of TIH materials that are moved. FRA, PHMSA, and representatives from the Department of Justice, the Federal Trade Commission, TSA, and the Surface Transportation Board (STB) are participating in these discussions. The initial efforts of the conference are focused on chlorine and anhydrous ammonia rail transport because they represent over 80 percent of all TIH rail shipments. FRA has met with the rail carriers to discuss modeling and routing options. Further meetings with the rail carriers, as well as separate meetings with the chlorine and anhydrous ammonia shippers, are planned for early this year. In some instances, the projects agreed to at the conference may need the approval of the STB in order to be implemented.

While we must remain ever vigilant to secure hazmat shipments on our Nation's railroads, for the sake of railroad employees and the public whom we all serve, it bears emphasizing that the vast majority of hazmat shipments arrive at their destinations safely. Considering just chlorine, for example, since 1965 (the earliest data available) there have been at least 2.2 million tank car shipments of chlorine—only 788 of which were involved in accidents (0.036 percent of all the shipments). Of those accidents, there were 11 instances of a catastrophic loss (i.e., a loss of all, or nearly all) of the chlorine lading (0.0005 percent of all the shipments). Of the 11 catastrophic losses, four resulted in fatalities (0.00018 percent of all the shipments).

For all hazardous materials, in the 12 years from 1994 through 2005, hazardous materials released in railroad accidents resulted in a total of 14 fatalities. While one death is obviously too many, the record of transporting these commodities is very good, and we believe the initiatives underway will further improve upon that record.

### **Passenger Railroad Security**

As discussed earlier, in the area of passenger railroad security, FRA requires each railroad that operates intercity or commuter passenger train service or that hosts the operation of such service to adopt and comply with a written emergency preparedness plan approved by FRA. *See* 49 CFR Part 239. The regulation makes clear that an "emergency" includes a security-related situation. Each plan must address employee training and qualification, and provide for both initial and recurrent training. Additionally, each railroad must establish and maintain a working relationship with emergency responders on its line by taking measures such as developing and making available a training program on the plan and inviting the emergency responders to participate in emergency simulations. The regulation requires railroads providing passenger service to periodically conduct full-scale passenger train emergency simulations (with actual equipment and simulated victims) and conduct a debriefing and critique session after actual or simulated passenger train emergency situations. FRA will continue monitoring passenger railroads for compliance with this regulation and attend each full-scale simulation and follow-up review session, such as one scheduled by the Long Island Rail Road for March with the New York City Fire Department.

In 2003, under the auspices of FRA's Railroad Safety Advisory Committee (RSAC), FRA initiated a review of existing passenger train safety needs and programs for the purpose of developing any necessary recommendations on actions to advance the safety of passenger rail service. The RSAC is a forum for developing recommendations to FRA on rulemakings and other safety program issues, and it includes representatives from all of the rail industry's major groups, State representatives, the National Transportation Safety Board (NTSB), and other stakeholders. As part of this effort, the Passenger Safety Working Group was established, as well as four smaller task forces, notably the Emergency Preparedness Task Force. The Emergency Preparedness Task Force is specifically devoted to consideration of passenger train emergency preparedness issues, and includes representatives from railroads, rail labor organizations, the NTSB, FTA, and TSA. Its efforts helped lead to the issuance of proposed enhancements and additions to FRA's regulations for passenger train emergency systems (emergency systems NPRM). *See* 71 FR 50276; August 24, 2006.

Emergency communication is one of the main focuses of the emergency systems NPRM. Under the proposal, all existing passenger cars would be required to be equipped with a public address system by 2012 that provides a means for a crewmember to communicate to all train passengers in an emergency situation, and all new passenger cars would be required to be equipped with an intercom system that provides a means for passengers and crewmembers to communicate with each other in an emergency situation. An intercom system could be vital in enabling a passenger to quickly alert a

crewmember of a security threat, and the crewmember in turn could contact the appropriate authorities to obtain emergency assistance and use the train's public address system to provide any necessary direction to passengers. The proposed rulemaking would also promote passenger and employee safety in an emergency situation—whether resulting from an accidental or an intentional act—by enhancing requirements for emergency window exits in passenger cars and mandating that all passenger cars, including existing cars, have rescue windows for emergency responder access. FRA is in the process of preparing the final rule, which is expected to be issued by the middle of this year. Moreover, a separate regulatory proposal is also in development within the Emergency Preparedness Task Force, focusing on passenger car emergency signage, low-location exit path marking, and emergency lighting. The proposal will be based on American Public Transportation Association (APTA) standards for passenger safety, will augment current Federal requirements, and is expected to be published by the end of 2007.

Complementing FRA's regulations, Amtrak and commuter railroads have instituted their own security plans and conduct security training. FRA assisted Amtrak in the development of its security plan. Specifically, in coordination with Amtrak's Inspector General, FRA contracted with the RAND Corporation to conduct a systematic review and assessment of Amtrak's security posture, corporate strategic security planning, and programs focusing on the adequacy of preparedness for combating terrorist threats. FRA's security director is currently working with Amtrak to implement the recommendations of the RAND study. APTA is also leading commuter railroads in the development of voluntary industry standards for passenger rail safety and security.

FRA inspectors have conducted basic security reviews of Amtrak and commuter railroad security both after the 2004 train bombings in Madrid and after the 2005 transit bombings in London. In both cases, FRA inspectors were deployed immediately after the bombings to assess the security posture of passenger railroad facilities based on a checklist of major security criteria. In the aftermath of the London bombings, FRA worked closely on these security reviews with TSA's new rail security inspectors. TSA focused primarily on urban rapid transit lines, while FRA inspectors concentrated on commuter and intercity passenger operations; in some situations, inspectors from the two agencies worked jointly. FRA will continue to support TSA in responding to rail security threats.

In partnership with FTA, FRA also participated in security risk assessments on the ten largest commuter railroads and contributed the funding for security risk assessments on three of these railroads. In addition, FRA participated in FTA's "best practices tool kit" initiative, contributing our knowledge of commuter rail operations, infrastructure, and organization to ensure that the recommended security enhancement measures were sound and feasible in a railroad environment. FRA staff worked closely with many of the railroads that receive FTA grant funding, to plan and assist in the development and implementation of security simulations and drills. FRA also devoted staff with both railroad knowledge and facilitation skills to the 17 FTA-sponsored workshops across the country (called "Connecting Communities") to bring together

commuter railroads, emergency responders, and State and local government leaders so that they might better coordinate their security plans and emergency response efforts.

### **Research and Development**

FRA conducts and supports research, development, and demonstration projects related to rail safety and rail security through its Office of Research and Development, in cooperation with DHS. Both theoretical and applied research on a wide range of issues has led to impressive results and tangible technology and process improvements.

A recent example of the application of FRA's research efforts to both rail safety and security is the Passenger Rail Vehicle Emergency Evacuation Simulator, or "Rollover Rig." This device, which began operation in 2006, can rotate a full-sized commuter rail car up to 180 degrees to simulate passenger train derailment scenarios. The Rollover Rig is already enhancing the ability of researchers to test strategies for evacuating passenger rail cars and to evaluate the performance of emergency systems in the cars, such as emergency lighting, doors, and windows. In addition, first responders nationwide now have a unique training tool to practice effective passenger rail rescue techniques safely when a rail car is on its side. FRA developed the Rollover Rig at a cost of \$450,000. New Jersey Transit Rail Operations donated the commuter rail car used by the Rollover Rig, and the Washington Metropolitan Area Transit Authority agreed to house, operate, and maintain the simulator at its emergency response training facility located in Landover, Maryland.

We also continue to look for ways to improve tank car survivability, to reduce the likelihood that a tank car may be breached either by accident or by intentional act. PHMSA's and FRA's efforts to improve tank car survivability have a long and effective history. Working with the industry, all tank cars carrying hazardous materials now have top and bottom shelf couplers, and, as appropriate, tank cars are equipped with head shields, thermal protection, and skid protection for protruding bottom outlets. Tank cars carrying specific product groups, such as TIH and other particularly hazardous substances, are subject to additional requirements which became fully effective July 1, 2006, after a 10-year phase-in period.

Prior to the August 2005 enactment of Section 9005 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU), FRA had initiated tank car structural integrity research stemming from the circumstances of the 2002 derailment in Minot, North Dakota, involving the release of anhydrous ammonia from a tank car punctured during the derailment. Current research involves a three-step process to assess the effects of various types of train accidents (e.g., a derailment or collision) on a tank car. The first phase is development of a physics-based model to analyze the kinematics of rail cars in a derailment. The second phase is development of a valid dynamic structural analysis model; and the third phase is an assessment of the damage created by a puncture and entails the application of fracture mechanics testing and analysis methods. DOT's Volpe National Transportation Systems Center is doing the modeling work now, and FRA will dovetail this ongoing research with the requirements

of Section 9005.FRA, in conjunction with PHMSA, hopes to develop new hazardous material tank car safety standards in 2008, and we are currently consulting with railroads, shippers, and car manufacturers and have solicited public comments to assist us in this effort. In this connection, FRA just signed a Memorandum of Cooperation with Dow Chemical Company, Union Pacific Railroad, and the Union Tank Car Company to participate in their Next Generation Rail Tank Car Project and advance rail tank car safety.

Further, in September 2006, FRA awarded \$200,000 to test sample tank car panels with various coatings to determine their ability to prevent penetration from small arms fire, as well as their ability to self-seal and, thereby, mitigate the severity of any incident. FRA developed the project in coordination with the AAR and DHS, which came up with the idea of applying to tank cars a protective coating like that used to enhance the armor protection of military vehicles in Iraq.

FRA has other research and development projects underway related to rail security which we would be happy to discuss with Committee staff.

### **Conclusion**

FRA will continue to support TSA in carrying out its security responsibilities, and work with the rail industry to secure the Nation's freight and passenger railroad network. Together, DOT, TSA, and the rail industry are helping to ensure that security initiatives and programs are directed at potential threats to the Nation's railroad network and that rail employees and others responsible for its security are prepared to identify and address such threats.

### **Attachment**

#### **SUMMARY OF THE STEPS FRA HAS TAKEN TO IMPLEMENT ITS NATIONAL RAIL SAFETY ACTION PLAN**

In response to various rail safety concerns, including some recent major train accidents, such as Graniteville, SC, and the lack of substantial improvement in the train accident rate in recent years, Secretary of Transportation Norman Mineta launched the National Rail Safety Action Plan in May 2005 . FRA has made real and substantial progress in bringing its aggressive and ambitious National Rail Safety Action Plan to fruition. To reduce the number of train accidents caused by human factors (the largest category of train accidents), FRA—

\* Issued a proposed Federal rule in October 2006 that would address top causes of human factor train accidents (such as failing to return a track switch to its proper position, which led to the Graniteville accident). The final rule is expected to be issued in mid-2007.

\* Implemented an ongoing research program to identify human performance problems. Railroads, their employees, and FRA are entering into agreements that permit the employees to report unsafe events that do not result in a reportable accident but could have done so, without the fear of discipline.

\* Made available to railroads and their employees a fatigue model that can assist them in developing crew scheduling practices based on the best current science.

\* Approved the first positive train control system capable of automatically controlling train speed and movements to prevent train collisions and other accidents—the system will be installed on many BNSF Railway Company (BNSF) rail lines.

\* Completed a pilot project, in partnership with BNSF, to develop a low-cost system that electronically monitors, detects, and reports a misaligned switch on mainline track located in non-signalized track territory. BNSF plans expansion of this and other similar systems on other non-signalized lines of their company.

To help prevent track-caused train accidents (the second-leading category), FRA—

\* Developed an automated track inspection system that uses high-resolution video to detect cracks in joint bars and that can be deployed on a hi-rail vehicle to detect visible cracks in joint bars without having to stop the vehicle. Testing showed that the high-resolution video system detected visual cracks that were missed by the traditional visual inspections. The system was demonstrated to the railroads during summer and fall of 2006.

\* Issued a final rule requiring track owners to develop and implement a procedure for the detailed inspection of rail joints in continuous welded rail track.

\* Contracted for the construction of two automated track inspection vehicles, to be delivered in February and March, which will bring FRA's fleet to five, allowing FRA to inspect nearly 100,000 track-miles each year, which triples the present capacity. This additional capability will permit FRA to inspect more miles of major hazardous material (hazmat) and passenger routes, while also having the ability to follow up more quickly on routes where safety performance is substandard.

To improve hazmat safety and emergency response capability, FRA improved emergency responders' timely access to hazmat information. As discussed in FRA's testimony today, FRA also accelerated its tank car structural research, hopes to issue new tank car performance standards in 2008, and has issued an NPRM on passenger train emergency systems.

To strengthen FRA's rail safety inspection and enforcement program, FRA has made better use of data to direct FRA safety inspectors and other resources to where problems are likely to arise. FRA's new National Inspection Plan was fully implemented for all FRA safety disciplines in March 2006, and further training will be provided to FRA

safety personnel on how to best use the data during the scheduled national technical conferences this year.

To foster further improvements in highway-rail grade crossing safety, FRA

\* Built partnerships with State and local agencies by issuing, in May 2005, and extensively distributing a safety advisory describing the roles of the Federal and State governments and of the railroads in crossing safety. The advisory also reminds railroads of their responsibilities in relation to crossing accident reporting and investigation and offers assistance to local authorities in the investigation of crossing collisions where information or expertise within FRA control is required to complete the investigation.

\* Aided the State of Louisiana in developing a crossing safety action plan. This State has consistently ranked among the top five with the highest number of crossing collisions and fatalities. The State approved the plan in April 2006.

\* Launched an ongoing public safety inquiry into safety at private crossings.

We would be glad to provide the Committee with additional information on the current status of FRA's implementation of the National Rail Safety Action Plan.