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before the
Subcommittee on Railroads, Pipelines, and Hazardous Materials,
Committee on Transportation and Infrastructure,
U.S. House of Representatives

January 30, 2007

Chairwoman Brown, Ranking Member Shuster, and other members of the Subcommittee, I am very pleased to be here today on behalf of the Secretary of Transportation to testify about the reauthorization of the Federal Railroad Administration's (FRA) safety program. My testimony will begin with an overview of how FRA is working daily to reduce both the frequency and the severity of railroad accidents. My testimony will then highlight the real and substantial progress FRA has made in implementing our National Rail Safety Action Plan. Finally, I will touch on our passenger safety rulemakings and other key safety initiatives.

FRA's Railroad Safety Program

FRA is the agency of the U.S. Department of Transportation (DOT) charged with carrying out the Federal railroad safety laws. These 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 safety regulations covering a railroad network that employs more than 232,000 workers, moves more than 42 percent of all intercity freight, and provides passenger rail service to more than 500 million persons each year. FRA's regulations address such topics as track, passenger equipment, locomotives, freight cars, power brakes, locomotive event recorders, signal and train control systems, maintenance of active warning devices at highway-rail grade crossings, accident reporting, alcohol and drug testing, protection of roadway workers, operating rules and practices, locomotive engineer certification, positive train control, and use of train horns at grade crossings. FRA currently has active rulemaking projects on a number of important safety topics, many of which will be described later in this testimony. FRA also enforces the Hazardous Materials Regulations, promulgated by DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA), as they pertain to rail transportation.

FRA has an authorized inspection staff of about 400 persons nationwide, distributed across its eight regions. In addition, about 160 inspectors employed by the approximately 30 States that participate in FRA's State participation program also perform inspections for compliance with the Federal rail safety laws. Each inspector is an expert in one of five safety disciplines: Track; Signal and Train Control; Motive Power and Equipment; Operating Practices; or Hazardous Materials. FRA also has 18 full-time highway-rail grade crossing safety positions in the field. Every year FRA's inspectors conduct thousands of inspections, investigate more than 100 railroad accidents, investigate hundreds of complaints, develop recommendations for thousands of enforcement actions, and engage in a range of educational outreach activities on

railroad safety issues, including educating the public about highway-rail grade crossing safety and the dangers of trespassing on railroad property.

FRA closely monitors the railroad industry's safety performance, and the agency uses the extensive data gathered to guide its accident prevention efforts. FRA strives to continually make better use of the wealth of available data to achieve the agency's strategic goals. FRA also sponsors collaborative research with the railroad industry to introduce innovative technologies to improve railroad safety. Finally, under the leadership of the U.S. Department of Homeland Security (DHS), FRA actively plays a supportive role in the Federal effort to secure the Nation's railroad transportation system.

The National Rail Safety Action Plan

As detailed in the appendix to my testimony, the railroad industry's overall safety record has improved during recent decades, and most safety trends are moving in the right direction. However, significant train accidents continue to occur, and the train accident rate has not shown substantive improvement in recent years. Moreover, several major freight and passenger train accidents in 2004 and 2005 (such as those at Macdona, Texas; Graniteville, South Carolina; and Glendale, California) raised specific concerns about railroad safety issues deserving government and industry attention.

In May 2005, DOT and FRA announced the National Rail Safety Action Plan, a blueprint to comprehensively address critical safety issues facing the railroad industry with the following strategy:

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

The Action Plan includes initiatives intended to:

- Reduce train accidents caused by human factors;
- Address fatigue;
- Improve track safety;
- Enhance hazardous materials safety and emergency preparedness;
- Strengthen FRA's safety compliance program; and
- Improve highway-rail grade crossing safety.

The causes of train accidents are generally grouped into five categories: human factors; track and structures; equipment; signal and train control; and miscellaneous. In the 5 years from 2001 through 2005, the great majority of train accidents resulted from human factor causes or track causes. Accordingly, human factors and track are the major target areas for improving the train accident rate.

Reducing Train Accidents Caused by Human Factors

Development of Rulemaking to Address Leading Causes of Human Factor Accidents

Accidents caused by human factors constitute the largest category of train accidents, accounting for 37 percent of all train accidents in the 5 years from 2001 through 2005. Some human factors are addressed squarely by FRA regulations. For example, FRA's regulations on alcohol and drug use by operating employees were the first such standards in American industry to incorporate chemical testing, and they have been very successful in reducing accidents resulting from the use of illicit substances. FRA also has regulations on locomotive engineer certification, and enforces the Federal hours of service restrictions, which are wholly governed by statute. However, FRA has been concerned that several of the leading causes of human factor accidents are not presently covered by any specific Federal rule, and these causes can have serious consequences.

In May 2005, FRA asked its Railroad Safety Advisory Committee (RSAC) to develop recommendations for a new human factors rule to address the leading causes of human factor accidents. This effort helped lead to FRA's issuance of a Notice of Proposed Rulemaking (NPRM) in October 2006, to Federalize core railroad operating rules governing the handling of track switches, leaving cars in the clear, and shoving rail cars. *See* 71 FR 60371. Overall, the rule proposes to establish greater accountability on the part of railroad management for the administration of railroad programs of operational tests and inspections, and greater accountability on the part of railroad supervisors and employees for compliance with those operating rules that are responsible for approximately half of the train accidents related to human factors. FRA believes this will contribute positively to railroad safety, by emphasizing the importance of compliance with fundamental operating rules and providing FRA a more direct means of promoting compliance. The final rule is expected to be issued later this year.

The final rule is intended to supersede Emergency Order No. 24, which FRA issued in October 2005, in response to an increasing number of train accidents caused by hand-operated, main track switches in non-signaled territory being left in the wrong position and the potential for catastrophic accidents, such as the one in Graniteville, South Carolina, in January 2005, which resulted in nine deaths. The Emergency Order requires special handling, instruction and testing of railroad operating rules pertaining to hand-operated main track switches in non-signaled territory, and is expected to remain in place until the final rule addressing the major causes of human factor accidents is promulgated and becomes effective.

Launch of "Close Call" Pilot Research Project

"Close calls" are unsafe events that do not result in a reportable accident but could have done so. FRA is working to better understand these phenomena. In March 2005, FRA completed an overarching Memorandum of Understanding (MOU) with railroad labor organizations and management to develop pilot programs to document the occurrence of close calls. In other industries, such as aviation, adoption of close-call reporting systems that shield the reporting employee from discipline (and the employer from punitive regulatory sanctions) has contributed to major reductions in accidents. In August 2005, FRA and DOT's Bureau of

Transportation Statistics (BTS) entered into an MOU stipulating that BTS will act as a neutral party to receive the close-call reports and maintain the confidentiality of the person making the report. Four railroads have expressed interest in taking part in this project, and participating railroads will be expected to develop corrective actions to address the problems that may be revealed. Union Pacific Railroad Company (UP) has signed an Implementing MOU for its North Platte Service Unit to be the first site for this project. A kickoff meeting with UP is slated for early next month, and data collection is expected to begin immediately thereafter. Discussions are also underway with BNSF Railway Company (BNSF) and Canadian Pacific Railway for second and third sites for this project.

Development and Implementation of Promising Technologies to Improve Safety

Technology can be a tremendous aid to safety, providing a safety net when human beings err or become incapacitated.

- Positive Train Control (PTC) System. PTC systems are capable of automatically preventing train collisions (with positive stop protection), preventing overspeed derailments, and protecting roadway workers within their authorities. Recognizing the safety benefits of PTC systems, as well as their potential to improve rail efficiency by safely increasing the capacity of high-density rail lines, FRA issued a final rule in 2005 setting out Performance Standards for Processor-Based Signal and Train Control Systems. *See* 49 CFR Part 236. Earlier, FRA worked with Amtrak and other stakeholders to assist in the development of PTC systems in support of high-speed passenger rail. The results included the Advanced Civil Speed Enforcement System, which, combined with cab signals and automatic train control, safeguard operations up to 150 mph on the Northeast Corridor. In addition, the Incremental Train Control System was deployed on Amtrak's Michigan line and currently supports operations up to 95 mph (planned for 110 mph when validation and verification work is complete on the final system).

  - This month, FRA approved operational use of the first PTC system intended for general use, BNSF's Electronic Train Management System. The rail industry is actively advancing the implementation of PTC technology as other railroads—among them, UP, Norfolk Southern Railway Company, CSX Transportation, Inc. (CSX), and the Alaska Railroad—are all making significant strides to develop PTC systems. The Association of American Railroads (AAR) will play a critical role in finalizing interoperability requirements for these technologies.

- Switch Point Monitoring System and Other Systems. There are steps that can be taken short of PTC to reduce risk in non-signalized territory while PTC systems are deployed. In November 2005, FRA partnered with BNSF through a $1 million Switch Point Monitoring System pilot project. The main objective of the project is to develop a low-cost system that electronically monitors for and reports a misaligned switch on main line track located in dark (non-signaled) territory. The project involves the installation of wireless communication devices at 49 switches along a 174-mile section of non-signaled BNSF track between Tulsa and Avard, OK. Train

dispatchers at an operations center in Fort Worth, TX, are monitoring the devices to detect when the hand-operated switches are set in the wrong position. If a switch is misaligned, the dispatcher directs a train to slow down or stop until railroad crews in the field confirm it is safe to proceed. Along with the human factors rulemaking, this new switch monitoring system may prevent future train accidents such as the one at Graniteville, which resulted from an improperly lined main track switch in non-signaled territory.

- BNSF is also demonstrating rail integrity circuits, which can detect broken rails and alert the dispatcher much in the same way as the switch point monitoring technology. Both of these technologies are "forward-compatible" with PTC, meaning that they can be integrated into PTC as it is deployed on the subject territories.

- Electronically Controlled Pneumatic (ECP) Brakes. In 2005, 14 percent of main track, human factor-caused-accidents involved improper train handling or misuse of the automatic braking system. A significant number of these events might have been avoided if locomotive engineers were given a more suitable air brake system to use as a tool. During the 1990s, the AAR led an industry effort to develop ECP brakes, which use an electronic train line to command brake applications and releases. ECP brakes apply uniformly and virtually instantaneously throughout the train, provide health status information on the condition of brakes on each car, respond to commands for graduated releases, and entirely avoid runaway accidents caused by depletion of train-line air pressure. ECP brakes shorten stopping distances on the order of 40 to 60 percent, depending on train length and route conditions. In turn, shortened stopping distances mean that some accidents that occur today might be avoided entirely, and some others might be reduced in severity. (I would hasten to add that our ongoing safety analysis confirms that most grade crossing accidents, in particular, could not be prevented by ECP brakes, because motorist actions become manifest only seconds before the collision.)

  - FRA commissioned a study released last year that identified and quantified significant business benefits that could be realized with this technology through greater operational efficiencies and suggested a migration plan that would start with unit train operations, logically focused initially on the Powder River Basin coal service. Since then, FRA has been working with the AAR, railroads, vendors and the coal sector to generate momentum toward implementation of this cost- and, potentially, life-saving technology. In this regard, ECP brakes are one of the key features of FRA's Advanced Concept Train, a train specially designed and equipped with other improvements that is helping to demonstrate the potential of these new technologies across the Nation. FRA is also planning to develop a revised set of requirements for train air brakes that are more suitable for this new technology, by issuing a notice of proposed rulemaking some time in the near future. Until a final rule is issued amending the train air brake requirements, we remain ready to review and respond to requests for relief from railroads interested in proceeding with ECP technology, and are in the process of reviewing one now.

Addressing Fatigue

Fatigue has long been a fact of life for many railroad operating employees, given their long and often unpredictable work hours and fluctuating schedules. Train crews may legally work an enormous number of hours in a week, month, or year. While commuter train crews often have some predictability in their work schedules, crews of freight trains rarely do. The long hours, irregular work/rest cycles, and lack of regular days off, combined, have a very deleterious effect on employee alertness. Railroads are necessarily 24-hour businesses, and the effects of "circadian rhythms" challenge the alertness of even well-rested employees, particularly in the early morning hours. The hours of service law, originally enacted in 1907 and last substantially amended in 1969, sets certain maximum on-duty periods (generally 12 hours for operating employees) and minimum off-duty periods (generally 8 hours, or if the employee has worked 12 consecutive hours, a 10-hour off-duty period is required). However, the limitations in that law, although ordinarily observed, do not seem adequate to effectively control fatigue.

I appreciate the Subcommittee's recognition of the importance fatigue has on railroad safety by devoting a separate hearing on this matter next month. As a result, I will not take up the Subcommittee's time on this issue at this hearing and look forward to sharing with the Subcommittee in depth FRA's current efforts and plans to address railroad fatigue.

Improving Track Safety

Track-caused accidents are the second-largest category of train accidents, comprising 34 percent of all train accidents. Some of the leading causes of track-caused accidents are difficult to detect during normal railroad inspections. Broken joint bars, for example, are a leading cause, but the kinds of cracks in those bars that foreshadow a derailment-causing break are difficult to spot with the naked eye. Similarly, broken rails account for some of the most serious accidents, but the internal rail flaws that lead to many of those breaks can be detected only by specialized equipment.

Demonstration of New Technology to Detect Cracks in Joint Bars

FRA is developing an automated, high-resolution video inspection system for joint bars that can be deployed on a hi-rail vehicle to detect visual cracks in joint bars without having to stop the vehicle. In October 2005, a prototype system that inspects joint bars on both sides of each rail was successfully demonstrated. Testing showed that the high-resolution video system detected cracks that were missed by the traditional visual inspections. The system was then enhanced with new features to improve the reliability of joint bar detection and to add capabilities to include the Global Positioning System coordinates for each joint to facilitate future inspection and identification. Additionally, software was developed to scan the images automatically, detect the cracked joint bar, and then send a message to the operator with an image of the broken joint bar. The new features were implemented and the system was tested and demonstrated in the summer of 2006. This year, FRA intends to make additional enhancements to increase the operating speed and implement a more rugged, simple, and robust detection system.

Requirements for Enhanced Capability and Procedures to Detect Track Defects

FRA is also addressing joint bar cracks on the regulatory front. As a direct result of a Congressional mandate in the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and of National Transportation Safety Board (NTSB) recommendations arising out of various accidents involving cracked joint bars, FRA published an interim final rule (IFR) in November 2005 concerning the inspection of joints in continuous welded rail (CWR) track. Subsequently, after soliciting public comment and advice from RSAC's Track Safety Standards Working Group, FRA issued a final rule in October 2006, which adopted portions of the IFR and made changes to other provisions. The final rule requires track owners to develop and implement a procedure for the detailed inspection—including on-foot inspection—of CWR rail joints, to identify joint bar cracks and joint conditions that can lead to the development of these cracks. Track owners must now also create and submit fracture reports to FRA whenever a cracked or broken joint bar is discovered in CWR track. Based on the data that FRA will collect from the fracture reports, FRA will establish a program to review the root causes of joint bar failure. In addition, the rule encourages railroads to develop and adopt automated methods to improve the inspection of rail joints in CWR track.

Deployment of Two Additional Automated Track Inspection Vehicles

Subtle track geometry defects, such as rails being uneven or too far apart, are difficult to identify during a typical walking or hi-rail inspection. That is why FRA has developed automated track inspection and research vehicles to enhance the capability to identify problems, and ensure that they are addressed, before a train accident occurs. In May 2005, FRA added the T-18 vehicle to its fleet. Two more inspection vehicles with similar technology are currently being readied (one that is self-propelled and one that is towed), and they are expected to be delivered within the next 2 months. Once fully operational, they will allow FRA to inspect nearly 100,000 track-miles each year, three times as much as FRA currently inspects. This additional capability will permit FRA to inspect more miles of major hazardous materials (hazmat) and passenger routes, while also having the ability to follow up more quickly on routes where safety performance is substandard.

Improving Hazardous Materials Safety and Emergency Response Capability

The railroad industry's record on transporting hazmat is very good. The industry transports nearly two million shipments of hazmat annually, ordinarily without incident. However, the Graniteville accident in 2005, which alone involved nine deaths as the result of a chlorine release, demonstrates the potential for catastrophic consequences from train accidents. The agency is actively engaged in a variety of activities intended to reduce the likelihood that a tank car may be breached if an accident does occur, complementing our effort to reduce the likelihood of train accidents. Realizing that we cannot prevent all accidents, FRA has developed initiatives to ensure that emergency responders will be fully prepared to minimize the loss of life and damage when an accident or release does occur.

It is important to emphasize that these safety initiatives are in addition to and complement efforts by FRA, DHS and its Transportation Security Administration (TSA), and PHMSA to

provide for the security of hazmat transported by rail. A major component of this effort 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*. Last December, in consultation with FRA and TSA, PHMSA published an NPRM to revise current requirements for the security of hazmat transported by rail, with particular focus on toxic inhalation hazard materials, such as chlorine and anhydrous ammonia. *See* 71 FR 76833. This proposal would require consideration of both safety and security in evaluating routing of hazardous materials and the mitigation of hazards on the routes selected. PHMSA and FRA will hold two public meetings, one on February 1, in Washington, D.C., and the second on February 9, in Dallas, Texas, to obtain oral comments on the proposed requirements, with a view to issuing a final rule.

The safety and security of hazmat transported by rail are often intertwined, and I would be glad to provide the Subcommittee with additional information concerning the many security initiatives in this area.

Enhancements to Emergency Response Readiness

Emergency responders presently have access to a wide variety of information regarding hazmat transported by rail. Railroads and hazmat shippers are currently subject to the hazard-communication requirements of the Hazardous Materials Regulations. In addition, these industries work through the American Chemistry Council's Transcaer® (Transportation Community Awareness and Emergency Response) program to familiarize local emergency responders with railroad equipment and product characteristics. PHMSA publishes the Emergency Response Guidebook, with the intention that it may be found in virtually every fire and police vehicle in the United States.

In March 2005, with FRA encouragement, the AAR amended its Recommended Operating Practices for Transportation of Hazardous Materials (now Circular No. OT-55-I) to expressly state that local emergency responders, upon written request, will be provided with a list ranking the top 25 hazardous materials transported by rail through their communities. This is an important step to allow emergency responders to plan for, and better focus their training on, the type of rail-related hazmat incident that they could potentially encounter.

In July 2005, again with FRA encouragement, CSX and CHEMTREC (the chemical industry's 24-hour resource center for emergency responders) entered into an agreement to conduct a pilot project to see if key information about hazmat transported by rail could be more quickly and accurately provided to first responders in the crucial first minutes of an accident or incident. The project is designed so that if an actual hazmat rail accident or incident occurs, CHEMTREC watchstanders, who interact with emergency response personnel, will have immediate access to CSX computer files regarding the specific train, including the type of hazmat being carried and its exact position in the train consist. CSX has advised that there has been sufficient use of the current system to begin evaluating the project, and that is scheduled to being early this year. FRA is also working through the AAR to encourage the other major railroads to participate in a similar project.

In addition, another pilot project is underway to evaluate the use of Railinc Corporation's Freightscope, a program that provides equipment search capabilities for hazmat shipments. The system was installed at CHEMTREC in December 2006, and it has the potential to more rapidly provide information about hazmat shipments on shortline and regional railroads to CHEMTREC watchstanders to improve information availability and reduce delays in emergency response. The pilot project is scheduled to last a year, and includes various tests to determine the system's effectiveness. Two tests have already been conducted with good results.

Improvements in Tank Car Integrity through Research and Development

Prior to the August 2005 enactment of 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 the development of a physics-based model to analyze the kinematics of rail cars in a derailment. The second phase is the 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 (Volpe Center), part of the Research and Innovative Technology Administration (RITA), is doing the modeling work now, and FRA will dovetail this ongoing research with the requirements of the statute. FRA, in conjunction with PHMSA, hopes to develop new hazardous material tank car safety standards in 2008.

In addition to focusing on strengthening the structural integrity of the tank car to reduce the probability that a collision will result in release of a hazardous commodity, the project is also evaluating technology such as pushback couplers, energy absorbers, and anti-climbing devices designed to prevent a train derailment in the first place. We are currently consulting with railroads, shippers, and car manufacturers and have solicited public comments in this initiative.

To further these efforts, FRA just signed a Memorandum of Cooperation with Dow Chemical Company, UP, and the Union Tank Car Company to participate in their Next Generation Rail Tank Car Project. The agreement provides for extensive information sharing and cooperation between ongoing FRA and industry research programs to improve the safety of rail shipments of hazardous commodities such as toxic inhalation hazards and high-risk gases and liquids.

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.

Strengthening FRA's Safety Compliance Program

Implementation of National Inspection Plan

FRA continually seeks ways to direct its inspection and enforcement efforts toward the issues and locations most in need of attention. To this end, FRA instituted the National Inspection Plan (NIP), an inspection and allocation program that uses predictive indicators to assist FRA in allocating inspection and enforcement activities within a given region by railroad and by State. In essence, it makes use of existing inspection and accident data in a way that identifies potential safety "hot spots" so they can be corrected before a serious accident occurs. In April 2005, Operating Practices, Track, and Motive Power and Equipment became the first FRA safety disciplines to use the NIP, since the corresponding accident causes (human factors, track, and motive power and equipment) together account for a total of about 84 percent of all train accidents. This was followed by the Signal and Train Control and Hazardous Materials disciplines in March 2006. A reduction in both the number and the rate of train accidents is expected once the NIP has had time to take its full effect and FRA refines its application in response to actual experience.

Revisions to Schedules of Civil Penalties for Safety Violations

In December 2006, FRA published proposed statements of agency policy that would amend the 25 schedules of civil penalties issued as appendixes to FRA's safety regulations, to reflect more accurately the safety risks associated with violations of the rail safety laws and regulations, as well as to make sure that the civil penalty amounts are consistent across all safety regulations. *See* 71 FR 70589. While the minimum and maximum civil penalty amounts that may be assessed for all rail safety violations have been adjusted in recent years, the guideline penalty amounts for specific rail safety violations have not. FRA therefore decided to reevaluate the penalty amounts in the schedules using a severity scale with particular consideration to the likelihood that an accident or incident would result from, and/or be aggravated by, a failure to comply with a specific regulatory provision. Because the schedules are statements of agency policy, FRA has authority to issue the revisions without having to follow the notice and comment procedures of the Administrative Procedure Act. Nevertheless, FRA is providing members and representatives of the general public an opportunity to comment on the proposed revisions before amending them. This initiative will complement FRA and PHMSA's evaluation of guideline penalty amounts for specific violations of the Hazardous Materials Regulations, and adjustments in guideline penalty amounts made, while revising the minimum and maximum civil penalty amounts for violations of the hazmat transportation laws pursuant to Title VII of SAFETEA-LU. *See* 71 FR 77293.

Fostering Further Improvements in Highway-Rail Grade Crossing Safety

Deaths in highway-rail grade crossing accidents are the second-leading category of fatalities associated with railroading. (Trespasser fatalities are the leading category.) The number of grade crossing deaths has declined substantially and steadily in recent years. However, the growth in rail and motor vehicle traffic continues to present challenges.

Issuance of Safety Advisory 2005-03

In May 2005, FRA issued Safety Advisory 2005-03, which describes the roles of the Federal and State governments and of the railroads in grade crossing safety. It also specifically reminds railroads of their responsibilities to report properly to FRA any accident involving a grade crossing signal failure; to maintain records relating to credible reports of grade crossing warning system malfunctions; to preserve the data from all locomotive-mounted recording devices following grade crossing accidents; and to cooperate fully with local law enforcement authorities during their investigations of such accidents. FRA also offers assistance to local authorities in the investigation of crossing accidents where information or expertise within FRA control is required to complete the investigation. FRA has extensively distributed this advisory through national law enforcement organizations and through contacts with local agencies.

Development of State-Specific Grade Crossing Safety Action Plans

In June 2004, DOT and FRA issued an Action Plan for "Highway-Rail Crossing Safety and Trespass Prevention" that sets forth a series of initiatives in the areas of engineering, education, and enforcement to reduce and prevent highway-rail grade crossing accidents. As one of these initiatives, FRA began working with the State of Louisiana in March 2005 to develop its own action plan for grade crossing safety, to address high numbers of grade crossing accidents and deaths at the State level. The action plan focuses on reducing collisions between trains and motor vehicles at grade crossings where multiple collisions have occurred. After a cooperative effort between the Louisiana Department of Transportation and Development, Federal Highway Administration, FRA, and other stakeholders, the State approved the action plan in April 2006. The State of Texas is currently working with FRA to develop a similar, State-specific action, and FRA is encouraging other States with high numbers of grade crossing accidents and deaths to do the same.

Focus on Pedestrian Safety

In addition, FRA will work with the grade crossing safety community to determine appropriate responses to pedestrian fatalities at grade crossings. Early in 2006, the Transportation Research Board devoted an entire session of its annual meeting to pedestrian grade crossing safety issues in order to capture information on how to improve safety in this area. By this spring, FRA will publish a compilation of information on existing pedestrian safety devices currently being used in the Nation so that those making decisions on methods to improve pedestrian safety may have resource material available.

Inquiry on Safety of Private Grade Crossings

In June 2006, FRA initiated an inquiry into the safety of private grade crossings. Approximately 10 percent of grade crossing collisions occur at privately-owned crossings. However, there is little governmental safety oversight of these crossings, at either the State or Federal level. As a result, in cooperation with appropriate State agencies, FRA has been soliciting oral statements at a series of public meetings throughout the Nation on issues related to the safety of private grade crossings, including current practices concerning responsibilities for

safety at these crossings, the adequacy of warning devices at the crossings, and the relative merits of a more uniform approach to improving safety at private crossings. The next and final meeting is scheduled to be held in Syracuse, New York, on February 15. FRA has also opened a public docket on these issues, so that interested parties may submit written comments for public review and consideration. The statements made and comments received will help inform decisions on what action needs to be taken to address the safety of private grade crossings.

Passenger Rail Safety Initiatives

While the National Rail Safety Action Plan focuses on improving the safety of freight railroad operations and grade crossings, FRA has also been making important progress on the safety of railroad passengers. Let me summarize some of the agency's recent passenger rail safety initiatives.

Passenger Safety Rulemakings

FRA is hard at work on several rulemakings specifically designed to improve rail passenger safety. First, as a result of consensus recommendations from RSAC, in August 2006 FRA proposed new passenger rail safety standards to improve evacuation of passengers from trains, provide additional ways for rescuers to access the passenger car in case of an emergency, and enhance onboard emergency communication systems. FRA is in the process of preparing the final rule, which is expected to be issued some time in the near future. 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 under development is based on American Public Transportation Association (APTA) standards for passenger safety and is intended to augment current Federal requirements. FRA is also preparing a proposed rule to implement the RSAC's recommendations to enhance structural strength requirements for the front of cab cars and multiple-unit locomotives. These enhancements would include the addition of "energy deformation" requirements specified in revised APTA standards for front-end collision posts and corner posts for this equipment.

Passenger Safety Research and Development

- Crash Energy Management (CEM) Systems. Research has shown that passenger rail equipment crashworthiness in train-to-train collisions can be significantly increased if the equipment structure is engineered to crush in a controlled manner. For several years, FRA has been advancing this engineering approach, termed CEM, with strong support from RITA's Volpe Center. First use of this concept on the North American continent was in design of Amtrak's Acela Express trainset. In March 2006, FRA successfully conducted the last of a series of full-scale passenger train crash tests at FRA's Transportation Technology Center in Pueblo, Colorado, to evaluate new CEM technology that might be applied to conventional equipment. In this test, a passenger train that had been equipped with a CEM system that included sacrificial crush zones in unoccupied spaces, pushback couplers designed to retract and absorb energy, and specially designed anti-climbers to keep the train in line, better protected the spaces

intended to be occupied by passengers and train crewmembers. Also tested were new passenger seats with special padding and new tables with crushable edges, to help prevent and mitigate passenger injuries. Use of this integrated CEM technology is expected to save lives by more than doubling the speed at which all passengers are expected to survive a train crash.

- The Southern California Regional Rail Authority (Metrolink) is in the process of procuring a new fleet of cars utilizing CEM technology. Metrolink's procurement is being facilitated by the completed work of an RSAC working group, the CEM Working Group, specially tasked in May 2005 to develop a detailed technical specification for implementing CEM technology in passenger rail cars. The South Florida Regional Transportation Authority (SFRTA) has joined Metrolink in procuring equipment using this specification, and FRA expects other passenger railroads to include the specification in future procurements of their own.

- Rollover Rig. In May 2006, FRA unveiled a state-of-the-art Passenger Rail Vehicle Emergency Evacuation Simulator, also known as a "Rollover Rig." It has the unique ability to roll a full-sized, commuter rail car up to 180 degrees, effectively turning it upside down, 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.

Collision Hazard Analysis

"Collision Hazard Analysis" is a specific type of safety review that seeks to identify collision hazards and to develop reasonable solutions to eliminate or mitigate these hazards. Collision hazards include conditions and activities that increase the risk of collisions between trains or other on-track equipment, between trains and motor vehicles/pedestrians, or between trains and fixed objects along the right of way. FRA strongly believes that the performance of a Collision Hazard Analysis will strengthen and support the passenger rail system safety process that grew out of the combined experience of the agency and the commuter railroads under Emergency Order No. 20. FRA and the Volpe Center have partnered with APTA to conduct important pilot projects regarding Collision Hazard Analysis. During the first pilot project, FRA, the Volpe Center, and APTA worked cooperatively to train and mentor a hazard analysis team at Tri-Rail, SFRTA's commuter service, which volunteered to be the first commuter railroad to conduct this analysis. The Tri-Rail project proved very successful and served as the model for a Collision Hazard Analysis pilot project on the Virginia Railway Express, completed last fall. The effort was also very successful and provided further insight into the collision hazard analysis process. Based on positive experiences on both pilot projects, FRA strongly advocates that all

commuter operators undertake a Collision Hazard Analysis. The analysis is especially useful for "New Start" rail projects where design and operational decisions can be readily influenced.

The Gap

Recent attention has been focused on passenger safety at stations with high-level platforms where there are gaps between passenger car doorways and the platform. On August 5, 2006, a young woman fell into a gap between the platform and the Long Island Rail Road (LIRR) commuter train she was exiting from, and was ultimately struck and killed by another train. FRA staff conducted an informal survey of standards used for determining gap distance, and found a great deal of variation in standards among commuter railroads. Visits to station platforms at six selected railroads found considerable variations in gap length. Setting and maintaining an acceptable gap is a complicated process affected by passenger equipment types, track maintenance, track curvature, and platform configuration. The gap is also affected when freight trains or specialized equipment must use the same track used for passenger boarding.

FRA has made this issue a priority. FRA has established an RSAC task force on General Passenger Safety to specifically address safety concerns associated with platform gaps and other matters directly affecting passenger safety on or around station platforms, and to make any necessary recommendations to FRA for regulatory action. The first meeting of the task force is scheduled for February 13 and 14.

Conclusion

FRA's approach to enhancing the safety of rail transportation is multifaceted. In combination, the strategies for comprehensive safety assurance and hazard mitigation that I have discussed today are providing FRA with an effective and cost-based decisionmaking process to collect information that FRA believes will make rail operations safer for the public and the rail transportation industry. I look forward to discussing with the Subcommittee strategies and priorities for making our Nation's railroad system even safer.

APPENDIX

The Railroad Industry's Safety Record

The railroad industry's overall safety record is very positive, and most safety trends are moving in the right direction. While not even a single death or injury is acceptable, progress is continually being made in the effort to improve railroad safety. This improvement is demonstrated by an analysis of the Federal Railroad Administration's (FRA) database of railroad reports of accidents and incidents that have occurred over the nearly three decades from 1978 through 2005. (The low point of rail safety in recent decades was 1978, and 2005 is the last complete year for which nearly final data are available.) Between 1978 and 2005, the total number of rail-related accidents and incidents has fallen from 90,653 to 13,969, an all-time low representing a decline of 85 percent. Between 1978 and 2005, total rail-related fatalities have declined from 1,646 to 888, the second-lowest number on record and a reduction of 46 percent. From 1978 to 2005, total employee cases (fatal and nonfatal) have dropped from 65,193 to 5,643, the record low; this represents a decline of 91 percent. In the same period, total employee deaths have fallen from 122 in 1978 to 25 in 2005, a decrease of 80 percent.

Contributing to this generally improving safety record has been a 71 percent decline in train accidents since 1978 (a total of 3,225 train accidents in 2005, compared to 10,991 in 1978), even though rail traffic has increased. (Total train-miles were up by 5 percent from 1978 to 2005.) In addition, the year 2005 saw only 37 train accidents out of the 3,225 reported in which a hazardous material was released, with a total of only 50 hazardous material cars releasing some amount of product, despite about 1.7 million movements of hazardous materials by rail.

In other words, over the last approximately three decades, the number and rate of train accidents, total deaths arising from rail operations, employee fatalities and injuries, and hazardous materials releases all have fallen dramatically. In most categories, these improvements have been most rapid in the 1980s, and tapered off in the late 1990s. Causes of the improvements have included a much more profitable economic climate for freight railroads following deregulation in 1980 under the Staggers Act (which led to substantially greater investment in plant and equipment), enhanced safety awareness and safety program implementation on the part of railroads and their employees, and FRA's safety monitoring and standard setting (most of FRA's safety rules were issued during this period). In addition, rail remains an extremely safe mode of transportation for passengers. Since 1978, more than 10.7 billion passengers have traveled by rail, based on reports filed with FRA each month. The number of rail passengers has steadily increased over the years, and since 2000 has averaged more than 500 million per year. Twelve rail passengers were killed in train collisions and derailments in 2005, including ten that died in the Glendale, California tragedy. On a passenger-mile basis, with an average about 15.5 billion passenger-miles per year since the year 2000, rail travel is about as safe as scheduled airlines and intercity bus transportation and is far safer than private motor vehicle travel. Rail passenger accidents–while always to be avoided–have a very high passenger survival rate.

As indicated previously, not all of the major safety indicators are positive. Grade crossing and rail trespasser incidents continue to cause a large proportion of the deaths associated with railroading. Grade crossing and rail trespassing deaths accounted for 93 percent of the 888

total rail-related deaths in 2005. In recent years, rail trespasser deaths have replaced grade crossing fatalities as the largest category of rail-related deaths. In 2005, 467 persons died while on railroad property without authorization, and 357 persons lost their lives in grade crossing accidents. Further, significant train accidents continue to occur, and the train accident rate per million train-miles has not declined at an acceptable pace in recent years. It actually rose slightly in 2003 and 2004 (to 4.05 and 4.38, respectively) compared to that in 2002 (3.76), although it dropped in 2005 (to 4.08). As stated in the main testimony, the causes of train accidents are generally grouped into five categories: human factors; track and structures; equipment; signal and train control; and miscellaneous. The great majority of train accidents are caused by human factors and track. In recent years, most of the serious events involving train collisions or derailments resulting in release of hazardous material, or harm to rail passengers, have resulted from human factor or track causes. Accordingly, the National Rail Safety Action Plan makes human factors and track the major target areas for improving the train accident rate.