Written Statement of
Jo Strang,
Associate Administrator for Safety,
Federal Railroad Administration,
U.S. Department of Transportation
before
the Subcommittee on Surface Transportation and
Merchant Marine Infrastructure, Safety, and Security,
Committee on Commerce, Science, and Transportation,
U.S. Senate

May 22, 2007

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Chairman Lautenberg, Ranking Member Smith, and other Members of the Subcommittee, I am very pleased to be here today, on behalf of the Secretary of Transportation and Administrator Boardman, to discuss the reauthorization of the Federal Railroad Administration's (FRA) rail safety program.

In February, the Administration presented its rail safety reauthorization bill, the Federal Railroad Safety Accountability and Improvement Act. In March, Chairman Oberstar of the House Committee on Transportation and Infrastructure introduced the Administration bill, by request, for himself and Ranking Member Mica and the leaders of the Subcommittee on Railroads, Pipelines, and Hazardous Materials. We are very grateful, Chairman Lautenberg, that in the same month you also introduced the Administration bill, by request, for yourself and Senator Smith. The Administration bill has been designated as H.R. 1516 and S. 918, respectively.

In addition to proposing to reauthorize FRA's vital safety mission, this bill calls for important—and in some cases historic—substantive changes in the rail safety laws that we expect will materially improve safety. I look forward to working with you to help secure their enactment.

Before I discuss the major provisions of the bill, 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, and I will touch on our passenger safety rulemakings and other key safety initiatives.

I. 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, the use of locomotive horns at grade crossings, and many other subject areas. 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 and trespass prevention specialist positions in the field. Every year FRA's inspectors conduct tens of thousands of inspections, investigate more than 100 railroad accidents, investigate thousands of complaints of specific alleged violations, 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 Federal efforts to secure the Nation's railroad transportation system.

II. The National Rail Safety Action Plan (Action Plan)

A. Genesis and Overview of the Action Plan

As detailed in Appendix A to my testimony, the railroad industry's overall safety record has improved dramatically over the past few decades, and most safety trends are moving in the right direction. However, serious train accidents still 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.

As a result of these concerns, in May 2005, the U.S. Department of Transportation (DOT) and FRA initiated the National Rail Safety Action Plan (Action Plan), a comprehensive and methodical approach to address critical safety issues facing the railroad industry. The Action Plan's goals broadly stated are:

- 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 causes of train accidents are generally grouped into five categories: human factors; track and structures; equipment; signal and train control; and miscellaneous. From 2002 through 2006, the vast majority of train accidents resulted from human factor causes or track causes. Accordingly, human factors and track have been our primary focus to bring about further improvements in the train accident rate.

Overall, the Action Plan includes initiatives intended to:

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

Allow me to discuss the progress that has been made in fulfilling the Action Plan's objectives and how that is advancing FRA's railroad safety mission.

B. Implementation of Action Plan Initiatives

1. Reducing Train Accidents Caused by Human Factors

Accidents caused by human factor causes constitute the largest category of train accidents, accounting for 39 percent of all train accidents in the five years from 2002 through 2006. Preventing such accidents is a high priority under the Action Plan.

a. Development of Rulemaking to Address Leading Causes of Human Factor Accidents

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. As a result, 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.

The NPRM proposes to establish greater accountability on the part of railroad management for the administration of programs of operational tests and inspections, and greater accountability on the part of railroad supervisors and employees for compliance with those railroad 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 complying with fundamental railroad operating rules and providing FRA a more direct means of promoting compliance with those rules.

The final rule is expected to be issued later this year, and it 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, SC, in January 2005, which resulted in nine deaths. The emergency order requires special handling of hand-operated main track switches in non-signaled territory, as well as instruction and testing of employees in railroad operating rules pertaining to such track switches, and is expected to remain in place until the final rule addressing the major causes of human factor accidents is promulgated and becomes effective.

The final rule will complement existing FRA regulations that address other human factor causes. 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 at present are wholly governed by statute.

b. *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 other industries, such as aviation, adoption of close-call or "near miss" reporting systems that shield the reporting employee from discipline (and the employer from punitive regulatory sanctions) has contributed to major reductions in accidents. 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. Pilot programs would be established at three freight railroad sites and on one passenger railroad. 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. By studying and closely analyzing these reports, we hope to enrich our understanding of the factors involved in such events and to discern whether there are identifiable patterns that influence safety outcomes.

Union Pacific Railroad Company (UP) signed an MOU for its North Platte Service Unit to be the first site for this project. The first report from this site was received in February 2007, and as of April 2007, BTS is receiving approximately two reports per day from this site. This rate of reporting close calls greatly exceeds expectations based on prior close call reporting systems, and indicates that the implementation was extremely successful at this site. Canadian Pacific Railway Ltd. (CP) and railroad labor representatives in Portage, WI, have recently produced a draft MOU to implement a close-call reporting system, and FRA anticipates that this CP site will become active by the end of September 2007. BNSF Railway Company (BNSF) and several labor unions have been exploring participation in the project as the third freight railroad site, but a final decision is still pending. Several passenger railroads have also been considering participation in the project. FRA anticipates that all four sites will be active by the end of FY 2008.

c. Development and Implementation of Promising Technologies to Improve Safety through Redundant Safety Systems

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

- Positive Train Control (PTC) Systems. 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 entitled, "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).

- In January 2007, 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 (NS), 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 accident risk in non-signalized (dark) territory. In November 2005, FRA partnered with BNSF through a $1 million Switch Point Monitoring System pilot project to develop a low-cost system that electronically monitors, detects, and reports a misaligned switch on mainline track located in non-signaled territory. These mechanisms are designed to provide an additional layer of protection to avert the consequences of an improperly lined switch. 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, Oklahoma. Train dispatchers at an operations center in Fort Worth, Texas, 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. Thus far, no unsafe failures have been reported, and BNSF plans expansion of this and similar types of systems to other non-signaled territory. Along with the human factors rulemaking, this new switch monitoring system may prevent future train accidents such as the one at Graniteville, SC, 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. 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 length of 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 that the severity of those that do occur in the future might be reduced.

- 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. The study also suggested a migration plan that would start with unit train operations, 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-saving and, potentially, life-saving technology. In this regard, ECP brakes are one of the key features of FRA's Advanced Concept Train, a research-and-development prototype 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 sometime 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.

    - In March FRA approved a waiver request from BNSF and NS to install ECP brake systems on trains to demonstrate the safety and efficacy of the technology. While providing that proper safeguards be in place, the waiver permits trains equipped with ECP brakes to travel up to 3,500 miles without stopping to undergo certain routine brake inspections—more than double the distance allowed by current Federal regulations. FRA will carefully monitor the railroads' compliance with the waiver, which will enable FRA to gather extensive data, including data that could be useful in developing the rulemaking.

2. 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 laws, originally enacted in 1907 and last substantially amended in 1969, set 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, FRA does not believe that the limitations in those laws are adequate to effectively control fatigue. The hours of service laws must be replaced with sound, scientifically-based regulations; later in my testimony I will discuss in detail the Administration proposal to bring about this long-overdue change. The proposal would allow for the use of modern learning on fatigue, including research FRA accelerated under the Action Plan.

a. Accelerate research on railroad crew work history to validate a fatigue model for possible use to improve crew scheduling.

On November 29, 2006, FRA announced the release of a study which provides a strong, scientific rationale for evaluating railroad employee work schedules to address worker fatigue. The goal of the research was to determine if a fatigue model can accurately and reliably predict an increased risk of human error that could contribute to the occurrence of a train accident. The study documents, for the first time, the significant circadian influence on accidents caused by human factors (there is no circadian influence on accidents not caused by human factors). The study also documents a significant linear relationship between fatigue predicted by the model and the risk of a human factors accident. No relationship was found between fatigue and accidents not caused by human factors. FRA expects this information will aid the railroad industry in improving crew scheduling practices in order to reduce that risk. A model for detecting the point at which the risk of fatigue becomes hazardous could become an important part of a railroad's fatigue management plan. A similar approach is currently utilized by the U.S. Department of Defense.

The National Transportation Safety Board (NTSB) has emphasized the role of sleep disorders in transportation accidents, and FRA recognizes that providing fatigue management information alone may not be sufficient. In October 2004, FRA published a safety advisory in the Federal Register, urging railroads to address sleep disorders through progressive company policies. Last September, FRA's RSAC adopted a task to develop recommendations on medical standards for safety-critical railroad employees. Parallel with this RSAC effort, FRA has awarded a contract to UP to conduct a sleep disorder assessment project. Findings and recommendations from this project are anticipated to be completed later this year. Management of sleep disorders is among the important elements of that effort, which is now well underway.

3. Improving Track Safety

Track-caused accidents are the second-largest category of train accidents, comprising 33 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.

a. 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 (GPS) 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.

b. 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 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.

c. 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 vehicles to enhance its capability to identify problems, and ensure that they are addressed, before a train accident occurs. In April, FRA began operating its two newest vehicles: the T19 (which is self-propelled), and the T20 (which is locomotive-towed). These new vehicles use a variety of technology to measure track geometry flaws. The measurements are recorded in real-time and at operating speed. Problem areas are identified by the GPS location and shared immediately with the railroad so appropriate corrective actions can be taken in a timely manner

Along with the T16, T17 and T18, FRA now has five automated track inspection vehicles that will allow the agency to inspect nearly 100,000 track-miles each year, tripling the present capacity. In particular, FRA will be better able to focus its automated track inspection activities on high-volume rail lines that carry hazardous materials and passenger trains as well as to improve its ability to follow up more quickly on routes where safety performance by a railroad is substandard.

4. Improving Hazmat 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 Macdona, TX accident in 2004 and the Graniteville, SC accident in 2005, which together involved 12 deaths as the result of chlorine releases, demonstrate the potential for catastrophic consequences from certain 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 are 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, working closely with FRA and TSA, PHMSA published an NPRM to enhance the safety and security of certain highly hazardous materials transported by rail. See 71 FR 76833. Specifically, this proposal would require rail carriers of certain explosive, toxic inhalation hazard, and radioactive materials to assess the safety and security of the routes currently used for these materials and alternative routing options, and to make routing decisions based on those assessments. The comment period for the NPRM closed February 20, 2007. PHMSA and FRA have reviewed the comments, including comments presented at

two public meetings, and are in the process of drafting a final rule. PHMSA and FRA are coordinating with TSA to ensure regulatory consistency between the two rules.

As Administrator Boardman testified before the Committee in January on the general topic of rail security, the safety and security of hazmat transported by rail are often intertwined. I would be glad to update the Subcommittee on the many other security-related initiatives in this area, such as the section 333 conference on ways to minimize safety and security risks from the transportation by rail of TIH materials.

a. 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 incidents 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. FRA is also working through the AAR to encourage the other major railroads to participate in a similar project.

Finally, 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.

b. Improvements in Tank Car Integrity through Research and Development and Rulemaking

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, ND, which involved the release of anhydrous ammonia from tank cars punctured during the derailment. Current research being conducted for FRA by the Volpe National Transportation Systems Center (Volpe Center), part of DOT's Research and Innovative Technology Administration (RITA), 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. This research is also studying the relative strength of various types of steel used to construct tank cars.

In addition to research on strengthening the structural integrity of the tank car to reduce the potential that a collision will result in release of a hazardous commodity, the research is also evaluating the compatibility of new designs with the existing fleet to assure that new hazards are not unintentionally introduced. Several accident scenarios have been defined which will help focus research into improving the performance of secondary tank-to-tank impacts after an event has occurred. Specifically, work is concentrated on increasing the energy required to puncture a tank car for impacts to the side shell or head of the tank car. For impacts in yards, the research is evaluating technology such as pushback couplers, energy absorbers, and anti-climbing devices, designed to prevent the train from derailing.

With the assistance of this ongoing research, FRA, in conjunction with PHMSA, is working to develop new hazardous material tank car safety standards in accordance with Section 9005 of SAFETEA-LU. We are currently consulting with railroads, shippers, and car manufacturers and have concluded three public meetings to gather information and views.

To further these efforts, FRA 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, including toxic inhalation hazards and high-risk gases and liquids. Full-scale destructive testing of tank cars is also underway to establish a baseline for performance of existing cars and to help validate and refine FRA's predictive model for tank car crashworthiness. Two full-scale tests have been conducted to date at the Transportation Technology Center (TTC) in Pueblo, Colorado—the first on April 11, 2007, and the second on April 26, 2007—and I would be glad to provide the Committee with additional information about this significant research.

5. Strengthening FRA's Safety Compliance Program

a. 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. The NIP was fully implemented across all of FRA's safety 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.

b. 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. The proposed revisions are intended 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.

Although the schedules are statements of agency policy, and FRA has authority to issue the revisions without having to follow the notice and comment procedures of the Administrative Procedure Act, FRA has provided members and representatives of the general public an opportunity to comment on the proposed revisions before amending them. FRA has received mixed comments on the proposals, and is currently evaluating all of the comments received in preparing final statements of agency policy.

6. 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.

a. Issuance of Safety Advisory 2005-03

In May 2005, FRA issued Safety Advisory 2005-03, which describes the respective 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 is also committed to providing technical 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.

b. 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. FRA is encouraging other States with high numbers of grade crossing accidents and deaths to do the same, and is currently working with the State of Texas to develop such a plan.

c. Focus on Pedestrian Safety

In addition, FRA will work within 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. Later 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 useful resource material available.

d. Inquiry on Safety of Private Grade Crossings

In June 2006, FRA initiated an inquiry into the safety of private highway-rail 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. Four meetings have been held, and the final meeting will take place in Syracuse, New York, on July 26. 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.

C. 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 highlight the agency's initiatives.

1. 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, to provide additional ways for rescuers to access the passenger car in case of an emergency, and to enhance onboard emergency communication systems. FRA is in the process of preparing the final rule, which is expected to be issued sometime in the near future. Moreover, a separate regulatory proposal is also in development within RSAC, focusing on passenger car emergency signage, low-location exit path marking, and emergency lighting. That proposal 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.

2. Gap Concerns

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 issues such as platform gaps, safe boarding and debarking, and passenger casualties associated with the "second train." The full task force has met twice and will also address other matters directly affecting passenger safety on or around station platforms and make any necessary recommendations to FRA for regulatory action.

3. 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 the 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 a full-scale passenger train crash test at the TTC 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 typically 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 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.

- In addition, FRA is working with APTA in developing industry-wide standards for applying CEM technology, such as push-back couplers and deformable anti-climbers, to conventional passenger cars. To help support this effort, a full-scale impact test of a multi-level passenger car into the rigid barrier at the TTC is planned for July 2007, as testing to date has involved single-level passenger cars. Data obtained from this test is expected to help specify the performance of multi-level passenger cars in conjunction with push-back couplers or deformable anti-climbers, or both.

- 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.

4. 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.

III. ADMINISTRATION'S RAIL SAFETY BILL (H.R. 1516, S. 918)

The Administration's rail safety reauthorization bill**,** the Federal Railroad Safety Accountability and Improvement Act, would reauthorize appropriations for FRA to carry out its rail safety mission for four years. FRA has made a full copy of the proposal available on our web site at http://www.fra.dot.gov/us/content/48, including the supporting analysis for each section. Let me take this opportunity to discuss the major provisions of the Administration bill and how they will further FRA's safety efforts.

A. Authorizes Safety Risk Reduction Program and Protects Confidentiality of Risk Analyses Produced

In order to enhance the accountability of railroads in assuming full responsibility for their own safety, the bill would authorize appropriations for the addition of a safety risk reduction program to supplement FRA's current safety activities and seeks Congressional endorsement of this pilot program. Since rail-related accidents, injuries, and deaths are already at low levels, FRA needs to augment our traditional behavior-based and design-specification-based regulations with a robust safety risk reduction program to drive down those key measures of risk at a reasonable cost and in a practical manner.

In the safety context, a risk reduction program is intended to make sure that the systems by which railroads operate and maintain their properties are adequate to meet or exceed safety objectives. FRA continues to place greater emphasis on developing models of how railroads can systematically evaluate safety risks, in order to hold them more accountable for improving the safety of their operations, including implementing plans to eliminate or reduce the chance for workers to make mistakes that can lead to accidents or close calls. A safety risk reduction program could unify previous voluntary efforts in the human factors arena while extending similar techniques to management of risk in other arenas such as track safety.

To encourage railroads to produce thorough, as opposed to superficial, risk analyses, a companion provision in the bill would bar public disclosure by FRA of records required under the safety risk reduction program, except for Federal law enforcement purposes. Also in order to promote the preparation of serious risk analyses by railroads, the provision would forbid discovery by private litigants in civil litigation for damages of any information compiled or collected under the program, and would forbid admission into evidence of the same information in civil litigation by private

parties for damages. An example would be a commuter railroad that undertakes a hazard analysis and has a crossover near a bridge abutment. It is unlikely that the railroad would be able to remove the hazard (a derailment could send the cars into the fixed structure) but it could mitigate the risk by reducing speeds and training.

FRA is mindful that any restriction of public access to information may be controversial and requires careful scrutiny. However, we are convinced that assuring confidentiality is essential to promote full disclosure by the railroads and their employees to make such programs meaningful and bring about tangible improvements in safety.

B. Grants Rulemaking Authority over Hours of Service

As discussed earlier, human factors cause more than a third of all train accidents, constituting the largest category of train accident causes. Fatigue is at least a contributing factor in one of every four serious human factor train accidents. We believe that fatigued crewmembers have played an increasing role in railroad accidents over the past decade through poor judgment, miscommunication, inattentiveness, and failure to follow procedures. Our challenge is to ensure that crewmembers have adequate opportunity to rest, are free of disorders that can disrupt sleep, and are fully engaged in maintaining alertness.

However, the statutory provisions that govern the hours of service of railroad train crews, dispatchers, and signal maintainers are antiquated—essentially a century old—and woefully inadequate to address present realities. For example, under those laws, train crews may work eight hours on duty and eight hours off duty perpetually. Engineers and conductors often work 60 to 70 hours a week, and may be called to work during the day or night, which may disrupt sleep patterns and reduce their ability to function. See Appendix B.

Moreover, those hours of service laws contain no substantive rulemaking authority. The lack of regulatory authority over duty hours—authority that other DOT agencies have with respect to their modes of transportation—has precluded FRA from making use of scientific learning on this issue of sleep-wake cycles and fatigue-induced performance failures. Behavioral science has progressed to the point that computer models can accurately predict the likely effect of given sleep and rest patterns on employee performance. The models provide useful guidance to aid employee scheduling, and, as I discussed earlier, FRA published a validation report of one such model in 2006. Yet, only UP is making use of a sleep model to evaluate its own crew scheduling practices. Most railroads have yet to integrate use of such models in their operations and have refrained from making public commitments to use this capability in the future. Further, over the past 15 years, the history of attempts by rail labor and management to improve fatigue management has not been marked by sustained progress.

We recognize that specific amendments to the hours of service laws might mitigate fatigue. Yet, we believe that sincere attempts at short-term relief can also create constraints and unintended consequences that may limit the ability to provide optimal solutions downstream. Treating limbo time as on-duty time, for instance, may force carriers to reduce the length of many assignments to avoid the possibility of "violations" under circumstances where safety could not be seriously compromised, and may increase the cost of any further reforms. Hours of service issues are surprisingly complex, and they need to be properly considered within the overall context of fatigue prevention and management. FRA is committed to making significant progress in this area, but we need the regulatory authority to do so.

We strongly recommend that the existing hours of service laws be replaced with flexible regulations based on a modern, scientific understanding of fatigue. Today, I am here asking for your support for legislation that will permit us to put into action what we have learned. The Administration bill first proposes to sunset the hours of service laws, but retain their protections as interim regulations embodying their substantive provisions. Next, the proposal calls for FRA, as the Secretary's delegate, to review the problem of fatigue with the assistance of the Railroad Safety Advisory Committee, and to develop as necessary new, science-based requirements that can help us reduce human factor-caused accidents and casualties. We believe revised "benchmark" limits are needed on work hours, and requirements for rest periods, to provide simple guidance for fixed schedules, where that will suffice.

The bill would also authorize FRA to permit railroads to comply with an approved fatigue management plan as an alternative to complying with the "benchmark" limits" in the regulations. With the tools now available, we will be able to recognize fatigue management approaches that include careful evaluation of a wide variety of more flexible work schedules by validated techniques. In fact, we believe most safety-critical railroad employees would be protected by performance-based fatigue management programs that will enhance safety while holding down costs.

For public and employee safety, it is time to make a long-overdue change and grant us the rulemaking authority over hours of service to directly address the major cause of far too many train accidents.

C. Promotes Highway-Rail Grade Crossing Safety

Accidents at highway-rail grade crossings account for more than a third of all rail-related fatalities. The bill seeks to prevent highway-rail grade crossing collisions and make crossings safer through two main provisions.

1. Requires Reports by Railroads and States to DOT on the Characteristics of Highway-Rail Grade Crossings

Currently, reporting to the DOT National Crossing Inventory is strictly voluntary. FRA is the custodian of the inventory and the quality of the data is only as good as what States and railroads have historically reported. Too much data in the inventory has been outdated. The bill would remedy this by requiring that railroads and States provide the Secretary with current information regarding the country's approximately 230,000 highway-rail grade crossings. Mandatory reporting would make this unique national database more up to date and complete, which would help (i) States better rank their crossings by risk and channel resources to the most dangerous crossings first, and (ii) DOT and transportation researchers identify the most promising ways to reduce crossing casualties. The bill would therefore require initial reports on all previously unreported crossings and periodic updates on all crossings.

2. Fosters Introduction of New Technology to Improve Safety at Public Highway-Rail Grade Crossings

Fewer than half of the 140,000 public highway-rail grade crossings have active warning devices, which are expensive to install and maintain. Perversely, improvements at one crossing are often cited in tort actions to prove the inadequacy of protections at another crossing. Under the Administration bill, if the Secretary has approved a new technology to provide advance warning to highway users at a grade crossing, the Secretary's determination preempts any State law concerning the adequacy of the technology in providing the warning. FRA believes that this proposal would help encourage the creation and deployment of new, cost-effective technology at the Nation's approximately 80,000 public grade crossings that still lack active warning devices. For instance, under an FRA waiver the Twin Cites and Western Railroad Co. and its supplier successfully demonstrated a warning system designed for lower-volume roadways and rail lines using dedicated locomotives. The system uses GPS and a data radio link between the locomotive and each crossing. This product is now being commercialized by a major signal supplier.

D. Expands FRA's Authority to Disqualify Individuals Unfit for Safety-Sensitive Service

Another provision of the bill would expand FRA's existing disqualification authority to cover individuals who are unfit for safety-sensitive service in the railroad industry because of a violation of the Hazardous Materials Regulations related to transporting hazmat by rail. Currently, FRA may disqualify an individual only for a violation of the rail safety laws or regulations, not the Hazardous Materials Regulations, even though violation of the Hazardous Materials Regulations may involve a greater potential accident risk or consequence (in the event of an accident). This proposal would logically extend our disqualification authority over railroad employees and complement current initiatives to strengthen FRA's safety compliance program.

E. Protects Rail Safety Regulations from Legal Attack on the Ground that They Affect Security and Repeals Statutory Requirement for DHS to Consult with DOT when Issuing Security Rules that Affect Rail Safety

The bill would also bar legal challenges to DOT safety regulations on the basis that they affect rail security. In many cases, rail safety and security are intertwined, and part of the justification for certain DOT regulations is that they enhance rail security. The bill would clarify the scope of the Secretary's safety jurisdiction and help deter or quickly rebuff any challenge that DOT has exceeded its statutory authority in issuing such regulations.

Of course, DHS would continue to exercise primary responsibility for the promulgation of rail security regulations. In this regard, the bill would repeal the statutory provision that, when issuing security rules that affect rail safety, DHS must consult with DOT. We believe the provision is unnecessary and confusing in light of other statutes, executive orders, and existing inter-Departmental cooperation under the DOT-DHS Memorandum of Understanding and its related annexes on rail security.

F. Clarifies the Secretary's Authority to Issue Temporary Waivers of Rail Safety Regulations Related to Emergencies

The bill would clarify that FRA, as the Secretary's delegate, may grant a temporary waiver without prior notice and an opportunity for public comment and hearing, if the waiver is directly related to an emergency event or needed to aid in recovery efforts and it is in the public interest and consistent with railroad safety. While FRA's normal practice is to set aside time for public comment and hearing on waiver petitions, this appreciably slows down issuance of waivers necessary for emergency response and recovery efforts. Yet granting a waiver without such procedures risks legal challenge. The provision would free FRA from this dilemma and allow the agency to support emergency response and recovery efforts by dispensing with prior notice and an opportunity for comment and hearing, and by otherwise expediting the process for granting waivers. Further, the relief granted would be temporary (a maximum of nine months), and the normal waiver procedures would have to be followed to extend the temporary relief granted should doing so be necessary.

G. Authorizes the Monitoring of Railroad Radio Communications

Currently, FRA is permitted to monitor railroad radio communications only in the presence of an authorized sender or receiver, such as a railroad employee. Yet, when railroad employees know that FRA is present, they tend to be on their best safety behavior. Therefore, FRA cannot be sure whether the level of compliance observed is normal, and we are less able to identify what are, under ordinary circumstances, the most frequent and serious instances of noncompliance. Access to candid communications off site would yield a truer picture of compliance levels.

The bill would address this concern by letting FRA safety inspectors monitor and record railroads' radio communications over their dedicated frequencies outside of the presence of railroad personnel for the purpose of accident prevention (including accident investigation) and, with certain exceptions, to use the information received. The exceptions would be that the information (1) may generally not be used as direct evidence in any administrative or judicial proceeding, and (2) may not be released under the Freedom of Information Act. The information may, however, be used as background material for further investigation. Nor should there be concern that the information communicated is personal information. Railroad operating rules and procedures already require that all radio communications relate to railroad operations and prohibit railroad employees from using the radio for personal use.

As FRA's objective of accident prevention is ordinarily fulfilled daily by conducting safety inspections of railroad operations and enforcing the rail safety laws, monitoring of radio communications would not only help achieve that objective, but would greatly improve the efficiency of those inspections, the accuracy of the results, and the effective deployment of FRA's limited inspection resources based on those more accurate results.

H. Clarifies and Relaxes the Existing Statutory Provision on Moving Certain Defective Equipment for Repair

Finally, I would like to mention that the bill would amend a complicated statutory provision that states the conditions for hauling a railroad car or locomotive with a safety appliance or power brake defect for repair without civil penalty liability, including the requirement that equipment be back-hauled to the nearest available repair point. Back hauls required by statute can be both unsafe (because of the hazards related to switching a car out of one train and into another train), and inefficient (because the car is stopped from moving toward its destination and forced to go to a different place that is physically closer than the next forward point for repair). The proposal would allow the equipment to be moved to the next forward point of repair under clear regulatory safeguards for moving defective equipment that are more consistent with the movement-for-repair provisions applicable to vehicles with other types of defects, such as Freight Car Safety Standards defects.

Further, the bill would also define some key statutory terms and then provide FRA, as the Secretary's delegate, with rulemaking authority to define others. Currently, FRA may provide only guidance on the meaning of these terms, and this has contributed to an atmosphere of uncertainty about the requirements of the statute in day-to-day application. For example, FRA has received many complaints over the years that cars have been hauled past a repair point that FRA does not consider to be a repair point. This proposal would, therefore, help dispel such uncertainty and promote understanding and

compliance with the provisions governing the safe movement of equipment with a safety appliance or power brake defect.

The Administration's bill does not include a provision that would revise the preemption provision at 49 U.S.C. § 20106. *While this is a very important issue, of interest to many on the Committee, I would ask that the Committee oppose the provision included as Section 3 of H.R. 1401.* This provision would overturn longstanding Supreme Court precedents, and ultimately be detrimental to railroad safety. It would eliminate national uniformity of regulation. It was clearly the intention of Congress in enacting section 20106 to establish national uniformity of regulation, which is a fundamental keystone of the railroad safety statutes. Railroads would instead be forced to attempt to comply with an endless number of ever changing and potentially conflicting state and local standards adopted by individual juries. If the Committee needs further information to address this important issue, FRA staff would be glad to provide assistance.

I would like to emphasize that, while all of the provisions I have discussed are among the major provisions of the bill, there are other significant provisions I have not mentioned today that will also enhance rail safety. These include providing FRA rail security officers with greater access to Federal, State, and local law enforcement databases, officer-protection warning systems, and communications for the purpose of performing the Administrator's civil and administrative duties to promote safety, including security, and for other purposes authorized by law. All of these provisions are set forth in the bill the Secretary presented in February, and I would be glad to discuss each of them in detail with you.

IV. Conclusion

FRA's approach to enhancing the safety of rail transportation is multifaceted. FRA personnel strive daily to implement comprehensive initiatives for safety assurance and hazard mitigation under the National Rail Safety Action Plan to make rail operations safer for the public and the rail transportation industry. The Administration's Federal Railroad Safety Accountability and Improvement Act would enable FRA not only to continue these efforts but to enhance safety systematically in many ways. I look forward to working with the Subcommittee to bring about the enactment of the Administration's bill, and to help make our Nation's railroad system ever safer. Thank you.

Appendix A

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 2006. See 49 CFR part 225. (The worst year for rail safety in recent decades was 1978, and 2006 is the last complete year for which preliminary data are available.) Between 1978 and 2006, the total number of rail-related accidents and incidents has fallen from 90,653 to 12,940, an all-time low representing a decline of 86 percent. Between 1978 and 2006, total rail-related fatalities have declined from 1,646 to 913, a reduction of 44 percent. From 1978 to 2006, total employee cases (fatal and nonfatal) have dropped from 65,193 to 5,065, the record low; this represents a decline of 92 percent. In the same period, total employee deaths have fallen from 122 in 1978 to 16 in 2006, a decrease of 87 percent.

Contributing to this generally improving safety record has been a 74-percent decline in train accidents since 1978 (a total of 2,864 train accidents in 2006, compared to 10,991 in 1978), even though rail traffic has increased. (Total train-miles were up by 8.5 percent from 1978 to 2006.) In addition, the year 2006 saw only 28 train accidents out of the 2,834 reported in which a hazardous material was released, with a total of only 69 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 almost 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 11.2 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. Although 12 passengers died in train collisions and derailments in 2005, none did in 2006. 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 97 percent of the 913 total rail-related deaths in 2006. In recent years, rail trespasser deaths have replaced grade crossing fatalities as the largest category of rail-related deaths. In 2006, 525 persons died while on railroad property without authorization, and 365 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 4.1) and 2006 (to 3.54).

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.

Appendix B

Scientific Learning Demonstrating Inadequacy of Hours of Service Laws

The following four examples illustrate some of the ways in which the existing hours of service statutory regime fails to reflect the latest scholarship on the subject of fatigue.

First, current scientific information indicates that to feel well rested most people need approximately eight hours of sleep per night. The current hours of service laws require a minimum off-duty period of only 10 hours if an employee in train and engine service has worked 12 consecutive hours in the previous 24-hour period. If an employee works 11 hours and 59 minutes or less, the laws require a minimum rest period of only eight hours. Very few employees work 12 consecutive hours; therefore, most may legally be called back to duty with only eight hours off duty. During that off-duty time, the employee must travel to and from work and attend to personal needs such as bathing and eating. Crew-calling practices allow the employee to be called as little as two hours prior to the beginning of the next duty period. Given these circumstances, it is certain that the current law permits employees to work with less than eight hours of sleep per night.

An FRA study of locomotive engineers' sleep and work patterns found that the average locomotive engineer obtained 7.13 hours of sleep per night.[1] Another FRA study of train handling performance conducted on a highly realistic locomotive simulator by locomotive engineers working under schedules that conformed with the hours of service laws[2] found that engineers who worked ten hours and had 12 hours off duty, slept an average of only 6.1 hours. A similar group of engineers who also worked ten hours, but had only 9.3 hours off duty, slept an average of only 4.6 hours. Again, most people need about eight hours of sleep per night; therefore, for most people, the amount of sleep these engineers received was insufficient even though their schedules fully conformed with the hours of service laws.

Second, scientific information also shows that the quantity and quality of sleep vary with the time of day. Most people sleep best at night; however, the current hours of

[1] Pollard, J. K. 1996. Locomotive engineer's activity diary. Report Number DOT/FRA/RRP-96/02.

[2] Thomas, G. R., Raslear, T. G., and Kuehn, G. I. 1997. The effects of work schedule on train handling performance and sleep of locomotive engineers: A simulator study. Report Number DOT/FRA/ORD-97-09.

service laws do not take the time of day when sleep can occur into account. Under those laws, engineers who quit work at dawn and have to sleep during the daytime, when it is harder to sleep, get the same minimum eight or ten hours off as engineers who quit work in the evening and have the relative luxury of sleeping at night. The study by Pollard referenced earlier found that engineers, in fact, obtain the least sleep if their on-duty period ends between 5:00 a.m. and noon.

Third, most mammals, including human beings, have an approximately 24-hour sleep-wake cycle known as a "circadian rhythm." Rapid changes in the circadian pattern of sleep and wakefulness disrupt many physiological functions such as hormone releases, digestion, and temperature regulation. Human function can be affected, performance may be impaired, and a general feeling of debility may occur until realignment is achieved. The maximum work periods and minimum off-duty periods specified in the current hours of service laws force sleep-wake cycles into a less-than-24-hour pattern that is highly unnatural and very difficult to adapt to. Jet lag when flying east is the most commonly experienced syndrome similar to the experience of consistently working on a less-than-24-hour cycle.

Fourth, recent studies "suggest that sleep loss (less than 7 hours per night) may have wide-ranging effects on the cardiovascular, endocrine, immune, and nervous systems, including the following:

- Obesity in adults . . .
- Diabetes and impaired glucose tolerance
- Cardiovascular disease and hypertension
- Anxiety symptoms
- Depressed mood
- Alcohol use[.]"[3]

In other words, sleep loss, which the current hours of service regime permits railroad operating employees to suffer, contributes not only to the safety risk of fatigue, but also to a gamut of heath risks, including the risk of serious health problems such as diabetes, cardiovascular disease, and hypertension.

[3] Institute of Medicine of the National Academies. Sleep Disorders and Sleep Deprivation: an Unmet Public Health Problem (2006), p. 59.