The National Rail Safety Action Plan sets a new, determined course for improving railroad safety in America. It builds on our past successes and responds to emerging concerns. Growth in both freight and vehicle traffic has created new challenges, but we must keep our nation's network of rails moving safely and efficiently in order to keep the American economy moving.

U.S. Department of Transportation Secretary Norman Y. Mineta

May 16, 2005

Introduction

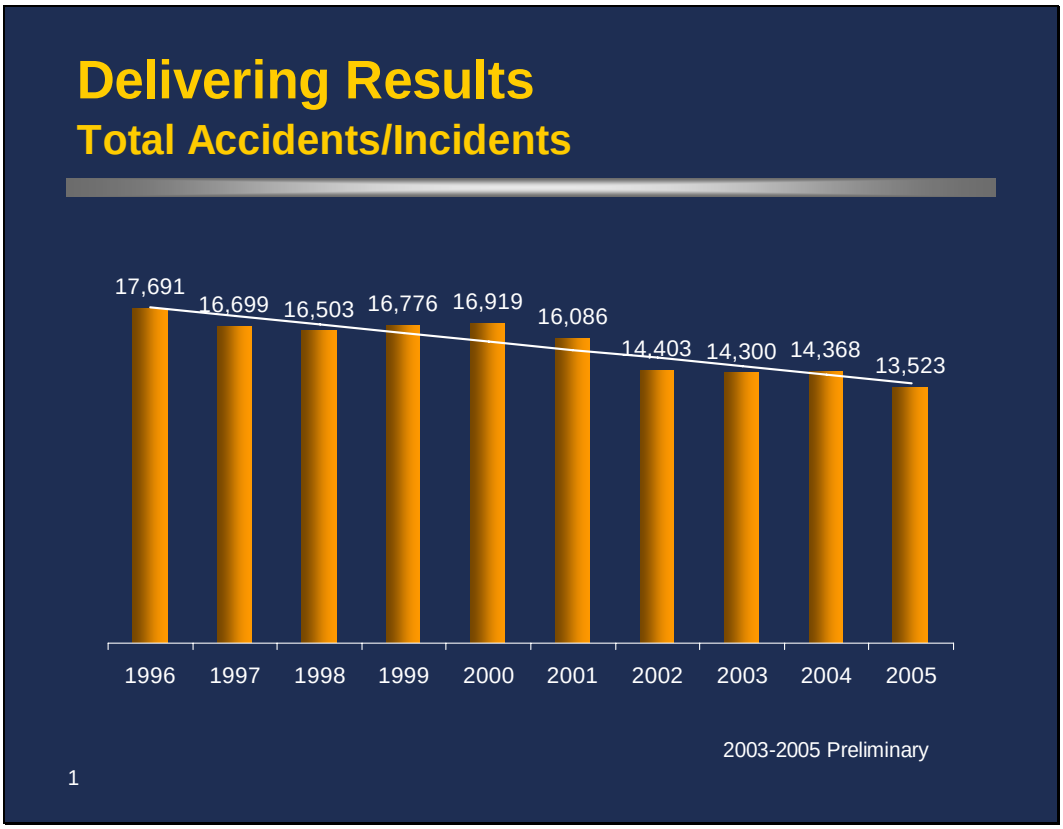
The railroad industry's overall safety record has improved over the last decade and most safety trends are moving in the right direction. However, significant train accidents continue to occur, and the train accident rate has not shown substantive improvement in recent years. Moreover, several major freight and passenger train accidents in 2004 and 2005 have raised public awareness and specific concerns about railroad safety issues deserving government and industry attention.

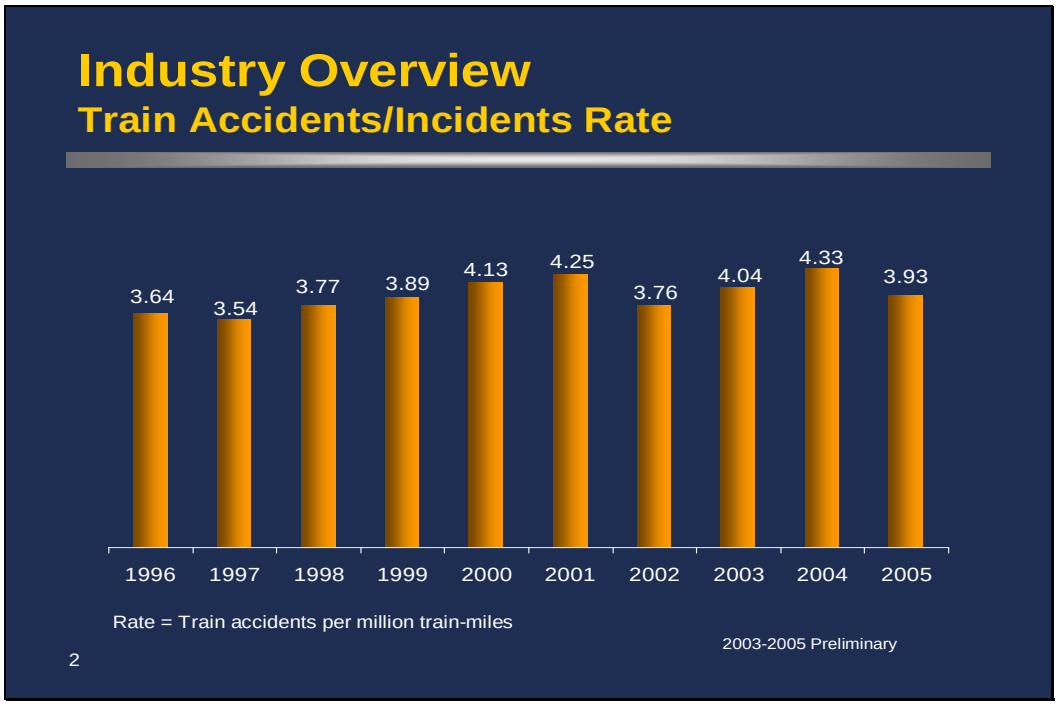
On May 16, 2005, the U.S. Department of Transportation (DOT) and the Federal Railroad Administration (FRA) launched an aggressive and proactive National Rail Safety Action Plan to address these safety issues by:

- Targeting the most frequent, highest-risk causes of train accidents;
- Focusing FRA oversight and inspection resources more precisely; and
- Accelerating research efforts that have the potential to mitigate the largest risks.

The action plan includes initiatives in several areas: reducing human factor-caused train accidents including: the serious problem of fatigue among railroad operating employees; improving track safety; enhancing hazardous materials safety and emergency preparedness; better focusing FRA resources (inspections and enforcement) on areas of greatest safety concern; and improving highway-rail grade crossing safety.

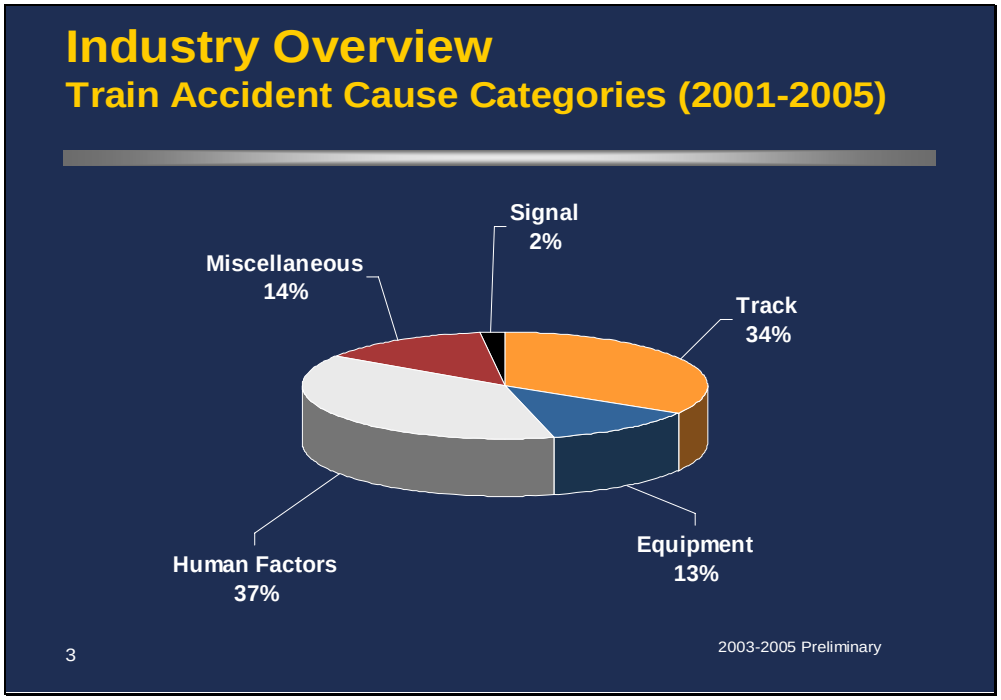
This report details the substantial progress made by FRA to successfully implement the various elements of the action plan during the past year.


Delivering Results
Total Accidents/Incidents
17,691
16,699
16,503
16,776
16,919
16,086
14,403
14,300
14,368
13,523
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2003-2005 Preliminary
1


Industry Overview
Train Accidents/Incidents Rate
3.64
3.54
3.77
3.89
4.13
4.25
3.76
4.04
4.33
3.93
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
Rate = Train accidents per million train-miles
2003-2005 Preliminary
2

Causes of Train Accidents

The causes of train accidents are generally grouped into five categories: human factors, track and structures, equipment, signal and train control, and miscellaneous. Two categories of accidents–those caused by human factors and those caused by defective track–comprise more than 70 percent of all train accidents and a very high percentage of serious train accidents. Accordingly, both are the primary target areas for improving the train accident rate. In recent years, most of the serious events involving train collisions or derailments resulting in release of hazardous materials, or harm to rail passengers, have been caused by human factor or track causes.



Reducing Human Factor Accidents

ACTION ITEM:	Issue proposed federal rule addressing top causes of human factor train accidents
STATUS:	Notice of Proposed Rulemaking to be published September 2006

Human factors constitute the largest category of train accidents, accounting for 37 percent of all train accidents over the last five years. Analysis of train accident data has revealed that a small number of particular kinds of human errors account for an inordinate number of human factor-caused accidents. The leading cause was improperly

lined switches. Other top causes include shoving rail cars without a person on the front of the move to monitor conditions ahead, leaving cars in a position that obstructs (fouls) a track, and failure to secure a sufficient number of handbrakes. At present, few of these kinds of mistakes are prohibited by federal regulations. Instead, most are addressed by each railroad's own operating rules, which subject employees who violate them to discipline, including dismissal. Currently, FRA regulations require railroads to train their employees on these rules and to test them periodically on their compliance with those rules.

The frequency with which these common human factor errors result in accidents requires a concentrated effort to reduce such events. FRA believes a federal regulation prohibiting these actions will provide heightened visibility and operational focus leading to a reduction in their frequency. Even though the vast majority of these accidents occur on low speed tracks and do not often involve loss of life, they always create the potential for serious injury and death.

In May 2005, FRA asked the Railroad Safety Advisory Committee (RSAC) to develop recommendations for a new human factor rule. In February 2006, RSAC reported that good progress on a number of issues had been made; however, it was unable to reach a consensus recommendation. FRA thanked the members of RSAC for the guidance provided and is now drafting the Notice of Proposed Rulemaking targeted for publication in September 2006.

Further, in October 2005, needing to take immediate action to address an increasing number of train accidents caused by hand-operated track switches being left in the wrong position, FRA issued Emergency Order No. 24 mandating that railroads retrain and periodically test employees on switch operating procedures and increase communication among crewmembers regarding the position of the switch. This Emergency Order is expected to remain in place until the proposed rule regarding human factor caused accidents becomes effective.

ACTION ITEM: Establish "Close Call" pilot project to learn from incidents that could have caused a train accident but did not

STATUS: Target date to begin data collection July 2006

In March 2005, FRA completed an overarching Memorandum of Understanding (MOU) with railroad labor organizations and management to develop pilot programs to document "close calls" (i.e., unsafe events that do not result in a reportable accident but could have). 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) have contributed to major reductions in accidents.

In August 2005, a MOU between FRA and the DOT Bureau of Transportation Statistics (BTS) was signed stipulated that BTS will act as a neutral party to receive the close call reports and maintain the confidentiality of the person making the report. In October 2005, a contract to evaluate the close call data was awarded to Altarum Institute of Alexandria, Va. The aggregate data may prove useful in FRA decision-making concerning regulatory and other options to address human factor-caused accidents.

Four railroads have expressed interest in being part of this project. Educational efforts are underway to ensure that key stakeholders (local rail management and labor) at each potential site understand the purpose of the program and what would be required of them. Specifically, participating railroads will be expected to develop corrective actions to address the problems that may be revealed. An Implementing MOU with the first site is under discussion and data collection is expected to begin in July 2006.

Addressing Fatigue

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

STATUS: Target date for final report August 2006

Fatigue has long been a fact of life for many railroad operating employees, given their long and often unpredictable work hours and fluctuating schedules. The hours of service law 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).

FRA knowledge of the industry's work patterns and the developing science of fatigue mitigation, combined with certain National Transportation Safety Board investigations indicating employee fatigue as a major factor, have persuaded FRA that fatigue is very likely at least a contributing factor in a significant number of human factor accidents. To try to obtain better information on the subject, FRA revised its own accident investigation procedures in 2004 to ensure that FRA investigators collect information on employees' sleep/rest cycles and evaluate fatigue as a factor.

Ongoing research is aimed at validating and calibrating a fatigue model (which has

already been proven in the laboratory by the Department of Defense) that can be used to more precisely determine the role of fatigue in human factors accidents and improve crew scheduling by evaluating the potential for fatigue given actual crew management practices. When the model is properly validated, it will be made available to railroads and their employees as the foundation for developing crew scheduling practices based on the best current science.

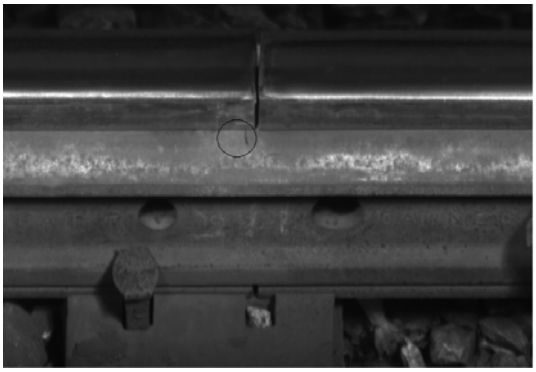
After consultation with the railroads, and a peer review of the plan revealed problems with the proposed data set, it was determined that the original target date of December 2005 for a final report could not be met. All issues have now been resolved and analysis of the data is currently underway. The final report is targeted for release in August 2006.

Improving Track Safety

ACTION ITEM: Demonstrate vehicle-mounted photo imaging technology to analyze rail joint bars to detect cracks that lead to derailments

STATUS: Field testing began in October 2005

Track-caused accidents comprised 34 percent of all train accidents over the last five years. Some of the leading track causes of train accidents are very difficult to detect in 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 very hard to spot with the naked eye. Similarly, broken rails account for some of the most serious accidents, but the internal flaws that lead to many of those breaks can be detected only by specialized equipment.



FRA is developing an automated high-resolution video joint bar inspection system that can be deployed on a hi-rail maintenance vehicle that will 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 visual cracks that were missed by the traditional visual inspections.

In 2006, the system is being enhanced with new developments to improve the reliability of joint bar detection system and adding capabilities to include global positioning satellite (GPS) coordinates for each joint for future inspection and identification. Additionally, software is being developed and tested to automatically scan the images, detect the cracked joint bar and sends a message to the operator with the image of broken joint bar.

ACTION ITEM: Deploy two additional automated track inspection vehicles

STATUS: First new track inspection vehicle to be delivered September 2006
Second new track inspection vehicle to be delivered January 2007

Subtle track geometry defects, such as uneven rails or rails being too wide 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 improve the ability to identify problems, and ensure they are repaired, before a train accident occurs.

In May 2005, FRA added the T-18 to its fleet. Two more inspection vehicles with similar technology are currently being constructed (one self-propelled and one that gets towed). They are expected to be delivered in September 2006 and January 2007. Once fully operational they will allow FRA to inspect nearly 100,000 track-miles each year, tripling the present capacity. This additional capability will permit FRA to inspect more miles of major hazardous materials 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

ACTION ITEM: Identify technology to improve safety in dark (non-signaled) track territory

STATUS: Dark territory switch point monitoring system pilot project November 2005

The rail industry's safety record on transporting hazardous materials is very impressive. The industry transports roughly 1.7 million shipments of hazardous materials annually, ordinarily without incident. FRA is engaged in a variety of activities intended to both reduce the likelihood that a train accident will result in a hazardous materials release and to ensure that, if a release occurs, local emergency responders will be fully prepared to minimize the damage and loss of life that might occur.

In November 2005, FRA partnered with BNSF Railway in 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, detects, and reports a misaligned switch on the mainline track located in dark, or non-signaled, track territory.

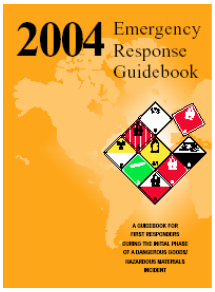
The project involves the installation of wireless communication devices at 49 switches along a 174-mile section of non-signaled BNSF track between Tulsa and Avard, Oklahoma. Train dispatchers at an operations center in Fort Worth, Texas, are monitoring the devices to identify when the hand-operated switches are set in the wrong position. If a switch is misaligned, the dispatcher directs a train to stop until railroad crews in the field confirm it is safe to proceed. No unsafe failures of the system have been reported to date. A final report is expected in August 2006.

Along with the planned human factor rule, this new switch monitoring system may prevent potential train collisions and derailments such as the January 2005 accident in Graniteville, South Carolina, where a misaligned switch incorrectly routed a train carrying chlorine onto a siding causing it to collide with a standing train, releasing chlorine gas and killing nine people.

ACTION ITEM: Ensure emergency responders have access to key information about hazardous materials transported by rail

STATUS: Rail commodity lists provided to first responders March 2005
Rail haz-mat accident information pilot project July 2005

Emergency responders presently have access to a wide variety of information regarding hazardous materials transport by rail. Railroads and hazardous materials shippers are currently subject to hazard communication requirements of the federal hazardous materials regulations. In addition these industries work through the American Chemistry Council's Responsible Care Program to familiarize local emergency responders with railroad equipment and product characteristics and the Association for American Railroads (AAR) offers hazardous materials incident response training. The DOT Pipeline and Hazardous Materials Safety Administration publishes the *Emergency Response Guidebook*, with the intention that it may be found at virtually every firehouse in the United States.



Despite this apparent abundance of available information on hazardous materials shipments by rail, the information available to first responders is often general in nature and not necessarily specific to the local needs of the community.

In March 2005, with FRA encouragement, the AAR amended its Recommended Operating Practices for Transportation of Hazardous Materials (Circular No. OT-55-G) to expressly provide that local emergency responders, upon written request, will be provided with a ranked listing of the top 25 hazardous materials transported by rail through their community. This is an important step to allow emergency responders to plan, and better focus their training, for the type of rail-related hazardous materials incident that they would be more likely to encounter.

In July 2005, again with FRA encouragement, CSX Transportation 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 hazardous materials on the train 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 hazardous materials rail accident or incident occurs, Chemtrec will have immediate access to CSX computer files regarding that specific train, including the type of hazardous materials being carried and their exact position in the train consist.

During the six-month pilot project there was minimal opportunity to effectively test the program so all parties have agreed to continue the arrangement for an additional 18-month period. FRA is also working through the AAR to encourage the other major railroads to participate in a similar project.

ACTION ITEM: Accelerate research into hazardous materials rail tank car structural integrity

STATUS: Funding added to complete research in 2007 rather than 2008
Dynamic Fracture Toughness Testing February 2006

FRA, in collaboration with the railroad industry through the AAR Tank Car Committee, is conducting research involving three major activities: (1) modeling of dynamic forces acting on tank cars in accidents and assessing the subsequent damage, (2) material testing to determine fracture behavior of tank car steels, and (3) risk ranking to prioritize the tank cars that are perceived to be most vulnerable to catastrophic failure. Originally scheduled to be finished in 2008, FRA has provided an additional $400,000 to move the target completion date forward to August 2007.

The first project, modeling of dynamic forces in train accidents, is ongoing and will assess items including train makeup, train speed, configuration of rail car pileup, the effect of having different types of impacting objects (i.e., couplers and wheels) strike different parts of various tank car models, and the effect of various levels of pressurization, among other elements. It is expected to be completed August 2007.

The second project, material testing for dynamic fracture toughness, is testing the amount of stress required to propagate an existing flaw on the tank car steel and evaluating the ability of the steel to resist fracture. Researchers are testing 34 steel samples from tank cars segregated by decades of manufacture (e.g., 1960s, 1970s, and 1980s). In February 2006, actual testing of the samples began at the Southwest Research Institute laboratories located in San Antonio, Texas. It is expected to be completed in August 2006.

The third project, ranking the vulnerability of hazardous materials tank cars to catastrophic failure, represents the end purpose of this research. Risk is a complex concept, and therefore the methods used to rank the factors that affect risk vary in complexity. Preliminary low-level analyses are ongoing. Higher-level analysis can be conducted after the research on dynamic forces and testing for fracture toughness has been completed. The final hazardous materials tank car risk analysis is expected to be completed by September 2007.

Strengthening the FRA Compliance Program

ACTION ITEM: Make better use of data to direct FRA safety inspectors and other resources to where problems are likely to arise

STATUS: New National Inspection Plan fully implemented March 2006

The National Inspection Plan (NIP) is an inspection 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 such a way to identify potential safety "hot spots" so they can be corrected before a serious accident occurs.

In April 2005, Human Factors, Track and Motive Power & Equipment became the first FRA safety disciplines to use the NIP since combined they account for 84 percent of all train accidents. This was followed by Signals & Train Control and Hazardous Materials in March 2006. A reduction in both the number of accidents and the accident rate is expected once the NIP has had time to take its full effect and FRA refines its application to real-world experience.

Fostering Further Improvements in Highway-Rail Grade Crossing Safety

ACTION ITEM: Build partnerships with state/local agencies and emphasize railroad responsibilities concerning safety at highway-rail grade crossings

STATUS: Safety Advisory 2005-03 issued May 2005

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.

In May 2005, FRA issued Safety Advisory 2005-03 describing the roles of the Federal and state governments and of the railroads in highway-rail grade crossing safety. It also specifically reminds railroads of their responsibilities to properly: report any accident involving grade crossing signal failure; maintain records relating to credible reports of grade crossing warning system malfunctions; preserve the data from all locomotive mounted recording devices following highway-rail grade crossing collisions;

and cooperate fully with local law enforcement authorities during their investigations of such accidents. In the Safety Advisory, FRA also offers assistance to local authorities in the investigation of highway-rail grade crossing collisions 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.

In addition, FRA will work with the grade crossing safety community to determine appropriate responses to the growth in pedestrian fatalities at highway-rail grade crossings, which accounted for a substantial portion of the increase in crossing fatalities in 2004.

ACTION ITEM: Assist state of Louisiana in development of a Highway-Rail Grade Crossing Safety Action Plan

STATUS: Louisiana approved Action Plan April 2006

In June 2004, the U.S. DOT Secretary 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 these accidents and incidents.

In March 2005, FRA began working with the state of Louisiana in developing its own action plan for highway-rail crossing safety. Louisiana has the distinction of consistently being among the top five states in the nation with the highest number of grade crossing collisions and fatalities. The action plan focuses on reducing vehicle-train collisions at grade crossings where multiple collisions have occurred. Last year's devastating hurricane season delayed Louisiana's final approval of the action plan until April 2006.

Passenger Rail Safety Initiatives

While the National Rail Safety Action Plan focuses on improving the safety of freight railroad operations, the FRA has also been making important progress on passenger rail safety initiatives during the past year.

In May 2006, FRA unveiled the Passenger Rail Vehicle Emergency Evacuation Simulator, or "Rollover Rig," which can rotate a full-sized commuter rail car up to 180 degrees to simulate passenger train derailment scenarios. It provides researchers the ability to test new passenger rail evacuation strategies and safety components such as emergency lighting, doors, and windows.

In addition, first responders now have a unique training tool to safely practice effective passenger rail rescue techniques when the rail car is on its side at various angles. FRA developed the simulator at a cost of $450,000, New Jersey Transit donated the commuter rail car, and the Washington Metropolitan Area Transit Authority has agreed to house, operate, and maintain the simulator at its emergency response training facility located in Landover, Maryland.

And, in March 2006, FRA successfully conducted the final in a series of full-scale passenger train collisions at its testing facility in Pueblo, Colorado, to test new Crash Energy Management technology. The passenger train was equipped with crush zones which absorb the force of a crash to better protect passenger seating areas and operators' spaces. The crush zones have stronger end frames that act as bumpers to distribute crash forces throughout an entire train so passengers feel less of the impact. Other devices tested include newly designed couplers, which join two cars together and are built to retract and absorb energy to keep trains upright on the tracks during a crash. New passenger seats and chairs designed with special padding and crushable edges also were tested. This technology will more than double the train speed at which all passengers are expected to survive a train crash, from just 15 miles per hour to at least 36 miles per hour.