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RAILROAD SAFETY

HEARING

BEFORE THE

SUBCOMMITTEE ON SURFACE TRANSPORTATION AND MERCHANT MARINE

OF THE

COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

JULY 10, 2002

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ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

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RAILROAD SAFETY

WEDNESDAY, JULY 10, 2002,

U.S. SENATE,
SUBCOMMITTEE ON SURFACE TRANSPORTATION AND
MERCHANT MARINE,
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,
Washington, DC.

The Subcommittee met, pursuant to notice, at 9:30 a.m. in room SR–253, Russell Senate Office Building, Hon. John B. Breaux, Chairman of the Subcommittee, presiding.

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM LOUISIANA

Senator BREAUX. The Subcommittee will come to order. Good morning everyone. Thanks to our witnesses for being with us. I am very pleased that we could assemble here this morning for this hearing on the issue of the safety of the Nation's railroads. We have called this hearing because of a rash of severe train accidents over the past several months. It seemed that we were becoming frequent witnesses to these accidents on the rails where they involve a freight train, Amtrak passenger train, like the Auto Train, or a commuter train like the Metrolink in Los Angeles. We also offer our condolences to the accident victims and their families that have been affected by these tragedies.

We all know the railroad industry provides a vital transportation service in the United States. Our freight railroad system plays a significant role in our economy by efficiently moving goods around the country. Our national passenger rail system provides a vital link for passengers and serves as a foundation for the expansion of the high speed rail service across the entire country. Its importance is clearly deserving of attention, and to that end I am very pleased to be a cosponsor of S. 1991, legislation by our distinguished Chairman which provides long term solutions for Amtrak and also develops our passenger rail infrastructure.

With the sprawling network of infrastructure, railroads operate, of course, in every State. This presents challenges for addressing safety risks. My state of Louisiana, this year alone through April, has seen 24 reportable train accidents involving over $1 million in damages, two injuries, and a total of 63 cars carrying hazardous material and 18 of these derailed or were damaged.

Luckily, none of these accidents resulted in fatalities or the release of any hazardous materials. Louisiana has seen its share over the years of severe rail accidents. In May of the year 2000 in Eunice, Louisiana, a Union Pacific freight train derailed causing ex-

plosions, fire, the release of hazardous materials, evacuation of about 3,500 families, people, from the surrounding area and over $35 million in damages.

NTSB found that the accident was caused because of the UP's ineffective track inspection procedures and inadequate management oversight, but other recent incidents have involved even more tragic loss of life and raised even more persistent and widespread safety issues. Today we seek not answers, necessarily, to any one of these tragic accidents, but what can be done to prevent tragedies in the future as we in the Congress consider a greater role for passenger rail in our transportation system.

I have every confidence that the causes of these unfortunate events will be uncovered and corrective actions taken. I wish to further explore what is being done to solve any underlying safety issues, and what can be done by federal and state authorities and the private sector to increase the safety of all of our Nation's rail carriers.

Specifically today the witnesses will address the technologies and practices available now, and in the near future, to improve rail safety. For example, I understand that rail projects involving positive train control technology are developing. I would like to hear a progress report on this effort. In addition, the Committee should hear the witness' views on whether the President's safety measures are adequate to ensure rail safety, especially where both passenger and freight trains share the same track.

I also look forward to the testimony of Hon. Allan Rutter, the Federal Railroad Administrator, and Hon. Marion Blakey, who is chairman of the National Transportation Safety Board. I hope they will enlighten us on the status of several of the rail safety rulemakings that may prevent some of these accidents and limit fatalities in others.

Finally, we will listen with interest to representatives from the industry, what are the views of the American Association of Railroads, the Brotherhood of Locomotive Engineers, and Amtrak on current track inspection requirements and practices. How do these groups view the promise for existing technology, like the positive train controls to prevent accidents.

All of these witnesses today have the knowledge and experience about the industry and about these safety efforts, so we look forward to hearing from our distinguished witnesses, and we recognize the distinguished Chairman of the full Committee, Senator Hollings, for any comments he may have.

STATEMENT OF HON. ERNEST F. HOLLINGS, U.S. SENATOR FROM SOUTH CAROLINA

The CHAIRMAN. Mr. Chairman, thank you very much for this very important hearing on safety. Number 1, I noted that my counterpart, the distinguished Chairman on the House side, Don Young, has a letter to the editor in the morning Washington Post asking for reforms and a complete cleaning out of Amtrak. I do not mind cleaning out all except the Chairman himself, or whatever his title is, Mr. Gunn. David Gunn is the best reform we have had in my 31 years around here.

With respect to Amtrak, if they needed any cleaning out, we ought to clean out ourselves. What we have done is played games for the last 31 years. The best example is already this year we have appropriated $28.5 billion for airlines alone, and in the entire 31 years we never have appropriated $28 billion for rail service, and particularly passenger service, so it brings into focus exactly what we have been doing. We do not mind spending $400 billion for highways, or $28½ billion in this particular year that we have appropriated for the airlines. Now we are going to have auditing, we have got to have consultants to find out where we are going to have savings, we have got to do this.

We have got to look at ourselves and realize that you have got to make a command decision as to whether or not you want a passenger rail service in this country, and this Committee by a vote of 20 to 3, Mr. Chairman, has voted categorically in a bipartisan fashion to have in the United States a modern high speed rail service, and along that line we have got to go immediately to the tinkering again by the administration which, kicking and screaming, has yet to come into the room of passenger rail service in this country.

Specifically on safety, only 9 months after 9/11, we appropriated some moneys for safety, and just for the tunnels going in to New York. They only gave us the money last week, 9 months later. Otherwise, on the loans, they are playing a game. They are trying to dismantle long term, long haul service, passenger service, which is needed, as conditions for the loans, plus a bunch of other silly conditions. Like they are really concerned that this thing is being operated right. What they are trying to do is put it out of business.

They have yet to come up with a long term Amtrak bill, or passenger service bill to submit to the Congress. We have been talking and talking. We have had three hearings, we have had a vote in this Committee, and we continue to work on it then along comes the Secretary of Transportation like the perils of Pauline, like they are saving it. They are going to give them a $100 million loan, they are going to keep them alive.

Well, the Congress is going to keep them alive. They are going to have to veto it, because we are going to put the money in it. We are putting the money in there, and we are going for this 12/21, our bill on high speed long term passenger service in the United States. If anyone has any criticisms I wish they would give them to us, because it is not supposed to be a perfect bill, but it does include the reforms.

It is not that we had not thought this Committee studied and we put in the provisions with respect to financing. We require a 5-year financial plan. We put in the independent auditor that they are trying to get down to corporate America. We put that in our particular bill, S. 1991. Otherwise we put in a $1-1/2 billion for the high speed corridor development.

I ask unanimous consent that we include this sort of cheat sheet that summarizes all the reforms. The administration would give to the American public the idea that we have got an indolent Congress that has not thought of reforming Amtrak. We have thought of all the reforms. We have taken the best advice from the witnesses here appearing this morning. We determined to move for-

ward at some time this year and not save Amtrak, but by gosh, institute a passenger service in this United States of America.

Like I say, by way of emphasis, I think the best reform that we have had so far, Mr. Chairman, is Mr. David Gunn, the newly appointed head of Amtrak. I think he knows way more about all of this train operation, and he is not going to be fudging like all the other particular executives we have had over the 30-years that yeah, we can get by, yeah, we're going to do it. They knew that it was impossible, but politically they did not want to tell us, and they did not tell us, and that is why we are to blame as much as Amtrak is to blame. The Congress on both sides of the aisle, and that has got to stop. We have got to go to work.

Thank you.

Senator BREAUX. Thank you, Mr. Chairman. For equal time, Senator McCain.

STATEMENT OF HON. JOHN McCAIN,
U.S. SENATOR FROM ARIZONA

Senator MCCAIN. Thank you, Mr. Chairman. If blame is to be apportioned, the record is very clear on my continued skepticism about the previous Amtrak presidents, the skepticism about and even strong disagreements with the statements that were made before this committee by Mr. Worthington, and my predictions that proved out to be exactly true that, despite our, quote, bail-outs, close quotes, that Amtrak would be back again in deep financial trouble, so there is blame to be apportioned.

I will let the record show that this Member—this Member was very clear as to the difficulties that Amtrak was suffering, and the delusions and illusions that were perpetrated on a glidepath. Just a few months ago, the Amtrak executives assured this committee they were on the glidepath to financial stability. This statement demonstrates one of the most outrageous lacks of candor that I have observed in 20 years here in the Congress.

I hope that Mr. Rutter and Amtrak's new president, Mr. Gunn, will discuss Amtrak's current financial situation. Prior to the 4th of July recess there was an uproar over whether Amtrak would have been shut down by now. The administration provided a $100 million loan and is expected to seek additional assistance from Congress to keep Amtrak running through September. I hope Administrator Rutter will be able to tell us specifically what the administration is requesting of Congress. That was very unclear in the last hearing appearance by Secretary of Transportation Mineta.

I hope that he and Mr. Gunn will also further explain to us what the emergency financial needs are, and how they define what needs were an emergency. I am also interested in knowing what additional reforms the administration recommends to be required as a condition of Amtrak receiving additional financial assistance.

There is no question in my mind that Amtrak will get the money it needs to keep operating. After 31 years of subsidies that were to have ended by 1973, there is no reason to think Amtrak will not get what it is seeking, but why Amtrak waited until the eleventh hour to notify Congress of its desperate financial situation is beyond me. I can understand how Mr. Gunn could not have known much sooner, because he had only recently joined Amtrak, but

what about the rest of Amtrak's management and, more importantly, what about Amtrak's board of directors?

I believe an important first step toward reform is to call for the resignation of the members of the Amtrak reform board who were appointed to oversee Amtrak and meet the directives of the Amtrak Reform and Accountability Act. After all, these individuals are responsible for Amtrak's repeated claims that it was on a glide path to self-sufficiency, claims that, according to Mr. Gunn, were fictional.

It is the same board that paid a high-powered consulting firm over $10 million for an analysis of where Amtrak should be headed, and how Amtrak could cut expenses. That report never saw the light of day, probably because the consultant recommended that Amtrak become a private company, and prepare for competition, similar to the recommendations made by the bipartisan Amtrak Reform Council.

Another point here. The Amtrak Reform Council made recommendations. None of those recommendations that I know of were included in the legislation that passed through this Committee. I will attempt on the floor to get some of those recommendations of the Amtrak Reform Council incorporated in any further bail-out. Considering the attention being paid to actions taken by the boards of directors of private corporations, we should be especially concerned about the Amtrak board, whose decisions affect a corporation that receives millions of dollars annually from the American taxpayer. I believe these board members have failed to fulfill their fiduciary obligation and should be asked to step down, just as those overseeing private corporations have recently been asked to do.

On June 28, I joined 13 other members in writing President Bush to recommend five short-term reforms as a condition of any additional Amtrak funding. I will be interested in hearing both Administrator Rutter's and Mr. Gunn's views on these modest proposals, which include:

Transmitting all funds to the Department of Transportation to administer and distribute to Amtrak only under formal grant agreements. Such agreements tighten the purse strings and ensure that funds are spent as intended.

Prohibiting Amtrak from incurring any new debt obligations unless approved by the DOT Secretary or the Director of the Office of Management and Budget.

Directing Amtrak to prepare a contingency plan approved by DOT to ensure that commuter and freight operations on the Northeast Corridor as well as commuter service operated by Amtrak under contract continue, even if Amtrak ceases intercity operations.

Directing DOT to establish a commission similar in structure to a Base Realignment and Closure Commission to evaluate Amtrak's route structure and develop standards to determine what routes should be operated, and requiring Amtrak in an effort to protect the investment of the American taxpayers to provide to the Federal Government any available non-leveraged collateral in exchange for Federal assistance.

If Amtrak's latest financial crisis is not a wake-up call for reform, I do not know what it is. It is truly a sad commentary on Amtrak's management and board that during the 5 years and $6.2 billion in Federal and State subsidies Amtrak has received since its last reauthorization, the company is once again on the verge of bankruptcy, despite repeated assurances that it would be free of operating subsidies once that authorization period ended.

One additional point. The money that we use to subsidize the airlines and highways come directly from user fees, from those that use the airlines and highways. Rail passenger uses comprises 1/2 of 1 percent of all traffic passengers in America. We are asking this money for Amtrak to be taken out of general revenues. I think it is a significantly different situation. I am 'convinced that without major reform in another 5 years or even sooner, we are certain to face yet another Amtrak bail-out. I will not give up hope that Congress will embrace real change for our Nation's national passenger rail service.

Thank you, Mr. Chairman.

[The prepared statement of Sen. McCain follows:]

PREPARED STATEMENT OF HON. JOHN MCCAIN, U.S. SENATOR FROM ARIZONA

Thank you, Mr. Chairman. This hearing is certainly timely. In a span of less than 3 months, there have been 13 serious rail accidents involving Amtrak, commuter authorities, and several freight railroads, which have resulted in eight fatalities, over 500 injuries, and the evacuation of all 2,200 residents of Potterville, Michigan. In addition to these accidents, there was a hazardous materials release last January in Minot, North Dakota, that killed one and seriously injured 13 others. And it was just a year ago that a CSX train derailed in the Howard Street Tunnel in Baltimore, leaking hydrochloric acid, lighting several carloads of paper on fire and disrupting the city for several days.

While the recent spate of accidents is alarming, statistically, rail safety has made great progress. Historically, there appears to have been a fairly strong correlation between safety in the freight rail industry and the industry's financial stability. Since the Staggers Rail Act of 1980 partially deregulated the railroads, the rate of train accidents has declined 64%, the rate of employee injuries and fatalities has fallen 57%, and grade crossing fatalities have been reduced by 50%. I am concerned that the recent accidents could be a sign of the end to these positive trends.

I am interested in hearing from today's witnesses and learning their views on what needs to be done to better protect the safety and security of the both rail employees and passengers, as well as the general public. I also recognize that yesterday, the Administration submitted its proposal to reauthorize our federal rail safety programs and hope that our Committee will be able to work together to move this important reauthorization during the limited time remaining this session.

In addition to focusing our attention on railroad safety, today's hearing also provides us the opportunity to question Administrator Rutter and Amtrak's new president, David Gunn, about Amtrak's current financial situation—an opportunity we would not otherwise have been given. Prior to the July 4th recess, there was an uproar over whether Amtrak would have been shut down by now. The Administration provided a $100 million loan and is expected to seek additional assistance from Congress to keep Amtrak running through September.

I hope Administrator Rutter will be able to tell us specifically what the Administration is requesting of Congress. I also hope he and Mr. Gunn will further explain to us what the emergency financial needs are, and how they defined what needs were an emergency. I am also interested in knowing what additional reforms the Administration recommends be required as a condition of Amtrak receiving additional financial assistance.

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cause he had only recently joined Amtrak. But what about the rest of Amtrak's management and, more importantly, what about the Amtrak Board of Directors?

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- Directing Amtrak to prepare a contingency plan, approved by DOT, to ensure that commuter and freight operations on the Northeast Corridor, as well as commuter services operated by Amtrak under contract, continue even if Amtrak ceases intercity operations;
- Directing DOT to establish a commission, similar in structure to a Base Realignment and Closure Commission, to evaluate Amtrak's route structure and develop standards to determine what routes should be operated; and,
- Requiring Amtrak, in an effort to protect the investment of the American taxpayers, to provide to the federal government any available non-leveraged collateral in exchange for federal assistance.

If Amtrak's latest financial crisis isn't a wake-up call for reform, I don't know what is. It is truly a sad commentary on Amtrak's management and Board that during the five years and $6.2 billion in federal and state subsidies Amtrak has received since its last reauthorization, the company is once again on the verge of bankruptcy despite repeated assurances that it would be free of operating subsidies once that authorization period ended.

I am convinced that without major reform, in another five years—or even sooner—we are certain to face yet another Amtrak bailout. I will not give up hope that Congress will embrace real change for our nation's passenger rail system.

Senator BREAUX. Thank you very much, Senator McCain.

Welcome to both of our witnesses, Ms. Blakey and Mr. Rutter. We have your prepared statements, and Mr. Rutter, I notice you have a 39-minute statement. Ms. Blakey, yours is shorter, but nevertheless we would like you to try and summarize your statement so we can proceed to questions.

Ms. Blakey, welcome.

STATEMENT OF HON. MARION C. BLAKEY, CHAIRMAN, NATIONAL TRANSPORTATION SAFETY BOARD

Ms. BLAKEY. Thank you very much, and I am delighted to be here.

Chairman Breaux, Senator Hollings, Senator McCain, it is a pleasure to appear before you. As you know, the National Transportation Safety Board's most important products are our safety

recommendations. It is a proven fact that our safety recommendations do save lives but unfortunately many of the recommendations we have made in the rail area have yet to be implemented. For this reason, I recently began meeting with all of the administrators of the Department of Transportation, Administrator Rutter included. Our goal has been to close satisfactorily many of the open recommendations from the NTSB, including as many as possible of those on our most wanted list of safety recommendations.

As many of you know, the most wanted list contains those issues that we believe are most urgent and have the greatest potential to advance safety. Over the last few weeks, I have had what I consider to be very successful meetings with a number of the administrators. We are coming to look at the recommendations in two groups, those that we can close satisfactorily immediately, based upon progress to date, and those that may take 2 years. When you look back over this list of recommendations, many of them have been open for a decade, and so what we are trying to do is speed up this progress.

Today, I would like to talk with you, therefore, about two specific areas in the rail arena that we think are most critical from the standpoint of safety improvements. These are, in addition to grade crossings, which I will touch on, but in the interest of brevity I will go to those two specifics. We think these are the ones that have the greatest potential to save lives. Here we are talking about one that I know you are familiar with, positive train control, and here we have important recommendations on the books which we would like to ask for your support to achieve those goals.

Positive train control has been on our most wanted list of safety improvements since 1990. As you know, PTC systems, as they are known, prevent train collisions by automatically stopping a train when the engineer does not comply with a missed signal. Simply put, they have the ability to eliminate almost all rail collisions.

Let me tell you briefly about a recent collision that could have been prevented had PTC been in place. This is one I am personally very familiar with, because it is one that I was the Board Member on the scene of the accident. As you all may recall, on April 23, in Placentia, California, Burlington Northern's Santa Fe freight train collided head on with a Metrolink commuter train. It resulted in the deaths of two Metrolink commuters.

The NTSB learned that the BNSF train had failed to comply with two signals, first a yellow, then a red. The train was traveling between 40 and 50 miles an hour when it passed the red signal very fast, and it was not until the engineer saw the Metrolink train ahead that he actually applied the emergency brakes.

Sadly, this kind of accident, and this accident specifically, could have been prevented with PTC. A PTC system would have stopped the train after it passed the yellow signal. It would have definitely had the train completely braked by the time it reached that red signal.

This is not to say that progress has not been made. Since the mid-1990's, more than $267 million has been spent on PTC systems by both industry and Government, and we are encouraged by the efforts of some of the railroads to implement these systems. In addition, we recognize that the FRA has a commitment and a real

support of the goal of implementing PTC as soon as possible. In fact, in 2001 the FRA published an NPRM to facilitate the development and implementation of the national differential global positioning satellite system, which is critical in making the system possible, and this is real progress.

Mr. Chairman, the Safety Board recognizes the complexities and the costs that are involved in implementing positive train control. We are sensitive to these issues, but we genuinely believe much more can be done, and it can be done more quickly. We have got to increase the current pace of development. After 12 years, it is still on the most wanted list, and there is no industry-wide plan for the integration of these kinds of systems. In fact, the rail lines that primarily serve freight carriers remain largely unprotected. We ask for your support, therefore, to help us encourage industry to speed up this pace.

The other important issue I wanted to touch on briefly is track safety. Over the years, the Board has issued numerous recommendations to address track safety. In fact, according to the FRA, of the 2,962 reported train accidents in 2001, 1,115 were track-related. Two recent track-related accidents being investigated by the board occurred in Crescent City, Florida, and in Minot, North Dakota.

On April 18, an Amtrak Auto Train en route from Sanford, Florida, to Lorton, Virginia, derailed in Crescent City, Florida, killing four passengers. Shortly after the accident, the engineer told Safety Board investigators that he saw a misaligned track, but he saw it only approximately 60 feet in front of him and the train derailed shortly thereafter. Sixty feet is not enough to be able to stop a train. We are currently investigating many aspects of this accident, but one of the big focuses, of course, is track conditions.

The other recent accident, and many of you will remember this, was on January 18 in Minot, North Dakota, when a Canadian Pacific railway freight train that was pulling tank cars filled with anhydrous ammonia derailed. Approximately 250,000 gallons of ammonia were released, killing one person in Minot. The release created a massive vapor cloud 5 miles long, 2-1/2 miles wide, 350 feet high.

The Minot fire chief estimated that the vapor cloud affected 15,000 people, or 40 percent of the population of the city. We were very lucky in this case—it happened in the middle of the night. Most of the population was indoors and they were asleep, therefore we did not have the kind of effect on the population we would have at just about any other time of day.

We are currently investigating this accident and we will hold hearings next Monday and Tuesday, the 15th and 16th, to address the issues involved in that particular accident. But to go to the broad point, what can we do to prevent these types of accidents, our most recent safety recommendation was issued in April following the Board's investigation of a train derailment in Eunice, Louisiana.

As a result of this accident, we have asked the FRA to consider the volume of hazardous material shipments made over tracks when they are looking at the question of the frequency and type of inspections that they order. We think this is critical. I am con-

fident that by addressing this issue and other issues that I mentioned today we can greatly reduce the number of injuries and the number of fatalities on our Nation's rail system.

Thank you, and I would be happy to respond to questions.

[The prepared statement of Ms. Blakey follows:]

PREPARED STATEMENT OF HON. MARION C. BLAKEY, CHAIRMAN, NATIONAL TRANSPORTATION SAFETY BOARD

Good morning Chairman Breaux and Members of the Subcommittee. It is a pleasure to represent the National Transportation Safety Board (NTSB) before you today on the subject of railroad safety.

According to the Association of American Railroads, there are more than 600 freight railroads operating today in Canada, Mexico, and the United States. North American railroads operate over 173,000 miles of track, and generate $42 billion in annual revenues. In the United States, railroads account for more than 40 percent of all freight transportation.

Federal Railroad Administration (FRA) data show that in 1996, there were 2,443 reportable train accidents, and in 2001 there were 2,962 reportable train accidents. Although there was a marked decrease in railroad fatalities in 1999—from 1,008 to 932—this figure has risen to 966 in 2001. Mr. Chairman, as railroad traffic and the amount of hazardous materials being transported continue to increase, the railroad industry and government must remain vigilant with their efforts to prevent accidents.

I want today to discuss three areas of concern to the Board—positive train control, track safety, and grade crossing safety.

The NTSB's safety recommendations are the most important results of its accident investigations. It is clear that adoption of our safety recommendations saves lives. We are working closely with the FRA to increase its current recommendation acceptance rate of about 71.5%, and to that end I met with Administrator Rutter on June 7, 2002, to discuss which of the open safety recommendations can and should be accomplished within the next two years. I believe the meeting was productive and will result in accomplishing several open safety recommendations.

Since its creation in 1990, the Safety Board's Most Wanted list has highlighted safety recommendation issues that have the greatest potential to save lives. Positive train control (PTC) systems have been on the list since 1990. PTC systems prevent train collisions by automatically interceding in the operation of a train when the engineer does not comply with a required signal indication. In past accidents, engineers failed to comply with signals because of poor visibility, distractions, or other human performance failures, such as fatigue. As you are aware, problems associated with human fatigue is also a Most Wanted issue.

Over the years, the Safety Board has repeatedly investigated railroad collisions that could have been prevented by a PTC system. Since 1969, when the Safety Board made its first safety recommendation related to PTC systems, the Board has investigated 15 relevant major railroad accidents related to PTC and completed a safety study—resulting in 36 positive train control-related safety recommendations. Without the installation of PTC systems, preventable collision accidents will continue to occur and will continue to place railroad employees and the traveling public at risk.

The most recent safety recommendation regarding PTC was issued in May 2001 as a result of the collision that occurred January 17, 1999, near Bryan, Ohio. Since that safety recommendation was issued, the NTSB has launched investigators to six railroad collision accidents that may have been prevented had PTC systems been in place, including a recent head-on collision that occurred between a freight train and a commuter train in Placentia, California, on April 23, 2002.

As you may recall, at 8:20 a.m. a Burlington Northern Santa Fe (BNSF) freight train collided with a Metrolink commuter train, resulting in the fatal injuries of two Metrolink passengers. The BNSF train was traveling between 40 and 50 miles per hour when the engineer saw the Metrolink commuter train on the track put the train into emergency braking. Despite application of the train's emergency brakes, the BNSF train struck the Metrolink commuter train at 20 miles per hours, pushing it backward more than 300 feet and derailing its front passenger car.

Since the mid 1990s, more than 267 million dollars have been spent on PTC systems by industry and government. The Safety Board is encouraged by the efforts of some railroads to implement PTC systems that have a collision avoidance compo-

nent, and several projects have advanced past the developmental phase into revenue service. For instance:

- Amtrak continues installation of the Advanced Civil Speed Enforcement System along the high-density Northeast Corridor (with 198 miles completed);
- Amtrak is also installing the Incremental Train Control System on the Michigan line between Chicago and Detroit (with 76 miles completed);
- New Jersey Transit continues installation of the Advanced Speed Enforcement System (with plans to install it on all 540 miles system-wide); and
- The Illinois Department of Transportation, the FRA, the AAR, and the Union Pacific are working to install a PTC system on the Chicago to St. Louis Corridor.

In September 1999, the FRA's Railroad Safety Advisory Committee (RSAC) completed a report titled "Implementation of Positive Train Control Systems. The report noted that:

- Approximately 40 to 60 accidents could be prevented by PTC each year;
- Approximately 7 fatalities and 55 injuries could be prevented annually by PTC;
- Testing has shown that PTC is successful; and
- PTC systems can be designed to provide interoperability among many systems.

As a result of the RSAC report, in August 2001, the FRA published a notice of proposed rulemaking (NPRM) to facilitate development and implementation of the National Differential Global Positioning System (GPS) Network. Previous PTC testing established that a properly augmented GPS can provide a viable, low cost trainborne location determination system for PTC.

Mr. Chairman, the Safety Board acknowledges progress in this area, and we recognize the complexities and costs involved in the implementation of PTC on the Nation's railroads. However, the safety Board is not satisfied with the current pace of development and implementation of collision avoidance technologies. It is important to remember that not only are we seeking to eliminate the fatalities and injuries in these collisions, but the devastating financial and environmental costs of hazardous materials accidents. To date, no plan for industry-wide integration has been developed. And, while progress has been particularly slow along rail lines that primarily serve freight carriers, even those lines with significant passenger traffic remain largely unprotected today—some 12 years after PTC was first placed on the Safety Board's Most Wanted list.

Track safety is also an issue that has been addressed by the Board in numerous railroad accidents. According to the FRA, of the 2,962 reportable train accidents in 2001, 1,115 were track-related. Mr. Chairman, when Mr. Bob Chipkevich, Director of the Board's Office of Railroad, Pipeline, and Hazardous Materials Investigations, testified before this Subcommittee in March 2001, he commended the FRA for its efforts to revise track standards. He expressed concern, however, that the rule to revise track safety standards did not mandate the use of advanced track inspection technology, such as track geometry cars. We believe data identified by track geometry cars would enable a track inspector to more effectively identify track anomalies, monitor those track segments with potential defects, and monitor the results of track work performed.

The most recent railroad accident report adopted by the Board in which track conditions and inspection were issues resulted from an accident that occurred May 27, 2000, in Eunice, Louisiana. The derailment of a Union Pacific (UP) freight train resulted in explosions, fire, the release of hazardous materials, and the evacuation of about 3,500 people from the surrounding area. Total damages exceeded $35 million.

After the derailment, a thorough inspection of the jointed rail territory revealed track conditions that did not meet the requirements for the type of track used. Furthermore, it was more than likely that these track conditions existed for some time. The FRA's records for the 5 years preceding the accident documented a history of weak tie conditions and cracked joint bars in the jointed rail section at the accident location. During a walking inspection in 1996, the FRA discovered 36 broken joint bars and identified several areas with weak crossties. FRA inspectors inspected the track in January 1999 and discovered areas with insufficient crossties and defective joint bars. Although an FRA inspector found that the situation had been corrected in a follow-up inspection in March 1999, he found defective tie conditions at 11 locations and 2 cracked joint bars in other areas.

During the Safety Board's investigation, Union Pacific advised NTSB staff that the track at the scene was inspected daily. A post-accident inspection by the Safety Board's investigative team, however, revealed numerous track defects—including

403 cracked and broken splice bars. Since this accident Union Pacific has implemented a more stringent inspection program for jointed track.

Track issues are also being examined as part of our investigations of recent train derailments that occurred on January 18, 2002, in Minot, North Dakota, and on April 18, 2002, at Crescent City, Florida.

The derailment and release of hazardous materials in Minot, North Dakota, occurred on January 18, 2002, at approximately 1:39 a.m., central standard time. The accident involved a Canadian Pacific Railway freight train with two locomotives and 112 cars, 31 of which derailed. Several tank cars were breeched, releasing more than 250,000 gallons of anhydrous ammonia, creating a vapor cloud that was estimated to be 5 miles long, 2 ½ miles wide, and about 350 feet high. The accident resulted in one fatality. The Minot Rural Fire Department Fire Chief estimated that the anhydrous ammonia vapor cloud affected approximately 15,000 people, or 40 percent of the population of the City of Minot.

The train's operating crew stated that while traveling at approximately 40 miles per hour they felt a rough spot and were attempting to slow the train when the derailment occurred. The Board will hold a public hearing this summer regarding this accident and track issues will be addressed. We will keep the Committee advised of any developments as they occur.

Track issues are also being looked into as a result of the derailment in Crescent City, Florida, which involved an Amtrak auto train en route from Sanford, Florida, to Lorton, Virginia. The accident occurred on April 18, 2002, at approximately 5:40 p.m. eastern daylight time. The Amtrak train was operating over CSX Transportation track and was carrying 418 passengers and a crew of 34 at the time of the accident. The accident resulted in 4 passenger fatalities and over 28 injuries. The engineer told Safety Board investigators that he was operating under a clear signal indication when he saw a misaligned track approximately 60 feet in front of the engine. Before he could initiate the train's emergency brakes, he was thrown to the side of the locomotive cab. He then initiated the emergency brakes and felt the train derail.

The NTSB believes that the FRA needs to increase track inspections, and recommended—as a result of the Eunice, Louisiana, accident—that the FRA modify its track inspection program to consider the volume of hazardous materials shipments made over the tracks in determining the frequency and type of track inspections. We look forward to receiving the FRA's response.

Mr. Chairman, I would be remiss if I did not discuss a long-standing safety concern of the Board's—grade crossing safety. Data indicate that every 160 minutes a collision between a train and a car or a truck occurs at one of the more than 259,000 highway/rail grade crossings in the United States, resulting in 419 fatalities in 2001.

The most recent railroad/highway grade crossing accident report adopted by the Board involved an accident that occurred on March 15, 1999, in Bourbonnais, Illinois, which resulted in 11 fatalities. The Safety Board's investigation revealed that the truckdriver had ample time to safely stop his truck and avoid an accident, but likely as a result of fatigue, he failed to respond appropriately to the signals and instead decided to cross ahead of the train.

On-going grade crossing accidents include accidents that occurred November 20, 2000, in Intercession City, Florida, that involved an Amtrak train and an oversize/overweight tractor-trailer combination vehicle at a protected crossing, and May 14, 2002, in Coosawhatchie, South Carolina, that involved an Amtrak train and a tractor-trailer carrying logs at an unprotected crossing.

Ideally, the Safety Board believes that closing crossings or separating rail traffic from highway traffic through bridges and overpasses are the most effective means to eliminate accidents between highway vehicles and trains. The Safety Board recognizes that closures or traffic separation is not always possible. Therefore, the NTSB has also recommended that grade crossings be equipped with active devices that warn motorists of on-coming trains. We have seen, however, that even those crossings with flashing lights and gates do not prevent all accidents. Many Board investigations of accidents that occurred at active crossings have involved drivers who did not comply with train-activated warning devices installed at the crossings. Drivers often drove around lowered crossing gates or ignored flashing lights. Because of these deliberate actions by drivers, the Safety Board believes strong consideration should be given to the installation of devices that will prevent motorists from driving around lowered gates or median barriers.

As a result of the grade crossing accident in Bourbonnais, Illinois, the NTSB recommended that the Department of Transportation provide Federal highway safety incentive grants to States to advance innovative pilot programs. These programs are designed to increase enforcement of grade crossing traffic laws at both active and

passive crossings. We recognize that not all passive grade crossings will be upgraded in the near future with active warning devices, and we believe that education and enforcement, such as the use of cameras to catch violators who drive around the gates, must be a part of any effective grade crossing improvement plan. Many motorists fail to understand the level of risk at grade crossings, and do not realize that a 150-car train traveling at 50 miles per hour will take about 1½ miles to stop. The Safety Board fully supports the education efforts of Operation Lifesaver® and other endeavors to provide information about grade crossing safety to drivers, and has recommended that grade crossing questions be included on all drivers' license tests.

Thank you, Mr. Chairman. I will be happy to respond to any questions.

Senator BREAUX. Thank you, Ms. Blakey. We will go on to Mr. Rutter's statement. Please summarize, if you can.

STATEMENT OF HON. ALLAN RUTTER, ADMINISTRATOR, FEDERAL RAILROAD ADMINISTRATION

Mr. RUTTER. Thank you, Chairman Breaux. I appreciate the opportunity to appear before you today to discuss the current state of railroad safety in the Nation's railway industry.

As FRA Administrator, nothing is more important to me than railroad safety. Simply put, safety is what we are all about. It is the very reason for our existence. FRA's primary mission is to oversee and promote the safety and integrity of our Nation's freight and passenger railroad systems. We are responsible for administering and enforcing laws and regulations relating to rail safety through our headquarters personnel as well as more than 400 safety professionals throughout the field.

With that as background, I feel comfortable in reporting to this body that our Nation's rail system is among the safest modes of transportation in the world. However, as recent accidents indicate, even a single railroad incident has the potential to result in injury or, worse, loss of life.

To truly appreciate the safety of today's industry, it is important to look at the tremendous progress which has been achieved in past years, a great deal of which is due to the efforts of Members of this body. During the last two decades, the rate and number of accidents, employee injuries and fatalities, and train accidents with a hazardous material release have all declined significantly.

Between 1978 and 2001, the number of train accidents and the train accident rate dropped by more than 70 percent. Train accidents dropped from nearly 11,000 to just shy of 3,000, and the train accident rate dropped from 14.62 accidents per million train-miles to 4.17.

During the same period, the number of train accidents involving the release of hazardous materials declined nearly 80 percent. Just this past year, in 2001, we saw the lowest number of employee fatalities and injuries in the history of the industry, and while our numbers for 2002 are preliminary, so far total accidents and incidents have dropped by 22 percent.

With all that said, I in no way want to minimize the recent accidents, and I assure you that they have our attention. Each of the victims involved in these accidents had a name, and had family members. If nothing else, we owe it to these families to find out what went wrong, and to do all we can to make sure that these types of accidents do not happen again. My job, and the job of my colleagues, is to see that every railroad employee leaves work in

the same condition as he or she was when they began their shift, and that a commuter passenger arrives safely at his or her final destination.

Fortunately, I believe that these most recent accidents, though tragic, may not represent a trend. In working to determine what the problems are and why they are occurring, FRA does not rely on statistics alone. We are focusing on the underlying factor or factors which may have contributed to an accident happening in the first place, and how those factors can be mitigated.

We have changed the way we do business, focusing our inspection efforts and our enforcement tools where they will do the most good in terms of reducing the likelihood of train accidents and injuries. Our focus is more on accidents that result in death or injury, rather than on minor accidents, most of which happen in yards or terminals, which might be referred to as "fender benders". Now, instead of just handing out fines, we are working with all stakeholders, rail labor and management, suppliers and contractors, as well as other interested parties, all in the name of safety.

For example, when Amtrak began reporting a reduction in force earlier in this year, FRA immediately intensified efforts to work with Amtrak to see that these cuts did not affect basic safety. When certain railroads have had continuing incidents, we meet with the company's management to coordinate an effort to address these problems. We recently announced an industry-wide effort to work with the railroads to increase efficiency testing to reduce human factor-caused train accidents by ensuring the train crews are alert and complying with safety and operating rules.

Under performance budgeting, Congress saw fit to provide us with greater resources in the form of additional inspectors, which have been very helpful in addressing these issues. In addition to those actual performance matters, one of the most important ways we benefit from safety partnerships is in our rulemaking process. Our Railroad Safety Advisory Committee, or RSAC, gives all of the affected groups the opportunity to shape rules from their outset.

Unfortunately, one area of rail safety that continues to plague us is grade crossing and trespasser incidents, which account for 95 percent of all train-related fatalities. It is my opinion that only through an intensified and targeted educational effort, along with aggressive enforcement of State and local laws, and greater funding for physical improvements, will we begin to see those numbers decline.

In closing, while we will not be satisfied until we reach zero injuries and zero fatalities, I believe progress has been and will continue to be made in improving the safety of America's rail industry. We at FRA are totally committed to aggressive and proactive action to this end, and I would be glad to answer any questions you may have for me.

[The prepared statement of Mr. Rutter follows:]

PREPARED STATEMENT OF HON. ALLAN RUTTER, ADMINISTRATOR, FEDERAL RAILROAD ADMINISTRATION

Mr. Chairman and members of the subcommittee, I appreciate the opportunity to appear before you to discuss the state of railroad safety on our nation's railroads. On behalf of the Federal Railroad Administration (FRA), the agency charged with administering the nation's railroad safety laws, I extend my deepest sympathy to

the families of the people who died in recent accidents and to those who were injured. My testimony will explain how FRA's railroad safety program is working daily to reduce the likelihood and severity of accidents such as these and will demonstrate that the state of railroad safety is generally very positive.

FRA's safety mission can be simply stated: help prevent fatalities, injuries, and property damage related to railroad operations and releases of hazardous materials from rail cars, and enhance the security of railroad operations. Under the Federal Railroad Safety Act of 1970, FRA's jurisdiction extends to all areas of railroad safety. We have issued rules on a wide range of subjects including track, signal and train control, locomotives and other equipment, grade crossing signal devices, and operating practices, and we enforce those rules as well as rules related to hazardous materials transportation by rail. We conduct inspections of railroad operations to determine the level of compliance with the laws and regulations, and use a variety of enforcement tools when necessary to encourage compliance. We help educate the public about safety at highway-rail grade crossings and the dangers of trespassing on railroad property. FRA has its own accident investigation authority, and works closely with the National Transportation Safety Board (NTSB) on those accidents that NTSB investigates. FRA investigates a broader range of railroad accidents than NTSB, including those involving three or more deaths at a highway-rail grade crossing, an employee fatality, damages that exceed $1,000,000, or serious injuries to passengers.

FRA tracks the railroad industry's safety performance very closely by requiring reports of accidents and injuries, investigating major accidents, and inspecting railroads and hazardous materials shippers extensively. FRA's safety data base is available on its Web site (see *www.fra.dot.gov*). FRA uses this information to guide its accident prevention efforts and continually strives to make better use of the wealth of available data to achieve its mission.

The Current State of Railroad Safety Across the Nation

As judged by most indicators, the long-term safety trends on the nation's railroads are very favorable. While not even a single death or injury is acceptable, progress is being made in the effort to improve railroad safety. Based on preliminary figures, last year marked all-time safety records in several important categories. Overall, the total number of rail-related accidents and incidents and the total accident/incident rate were the lowest on record. Also, 2001 saw the lowest number of railroad employee fatalities (22) and injuries (7,575) on record and the lowest overall employee casualty rate (3.19 per 200,000 employee hours). In the period between 1978 and 2001, the number of reported train accidents dropped from 10,991 to 2,962, and the train accident rate fell from 14.62 accidents per million train-miles to 4.17 accidents. Also during this period, the number of train accidents involving a release of hazardous material declined from 140 to 31 despite a significant increase in the number of hazardous materials tank car shipments to more than two million per year. Since 1990, a period in which railroads have transported more than 20 million hazardous materials shipments, three persons have died as a result of the release of hazardous material lading in a train accident.

In other words, over the last two decades the number and rate of train accidents, total deaths arising from rail operations, employee fatalities and injuries, and hazardous materials releases and deaths related to those releases all fell dramatically. In most categories, these improvements were most rapid in the 1980s, and tapered off in the 1990s. (See the attached graph of train accidents and their rate since 1978.) Causes of the improvements 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.

Similarly, the grade crossing safety picture has shown great progress. In 1990, a total of 698 persons died in highway-rail grade crossing collisions. In 2001, the number was down to 419 despite an increase in exposure due to increased highway and rail traffic. Here, too, improvement has resulted from a variety of sources, including public investment in crossing warning devices and greater awareness of the risks present at crossings on the part of highway users, which was brought about by joint efforts of railroads, employees, FRA, the states, our Department of Transportation partners (Federal Highway Administration, Federal Transit Administration, Federal Motor Carrier Safety Administration, and the National Highway Traffic Safety Administration), and Operation Lifesaver®.

Despite the impression one might get from news accounts of recent accidents, rail remains an extremely safe mode of transport for passengers. In the five-year period between 1997 and 2001, just two passengers were killed in train collisions and

derailments, and 13 more in grade crossing collisions, out of the 2.3 billion passengers who rode our nation's commuter and intercity passenger trains. According to the National Safety Council (see attached chart on passenger death rates), the number of deaths per 100 million railroad passenger-miles is quite comparable to the rate for airline passengers, both of which are a fraction of the rate for automobile passengers. Given the strength of rail passenger equipment and the fact that rail passengers are distributed throughout a train in such a way as to minimize the impact of a collision or derailment for many, rail passenger accidents-while always to be avoided—have a very high survival rate.

Unfortunately, not all of the major safety indicators are positive. In recent years, rail trespasser deaths have replaced grade crossing fatalities as the largest category of deaths associated with railroading. In 2001, a total of 508 persons died while on railroad property without authorization, which was an increase of nearly 10 percent over the previous year. Track safety has also emerged as a growing problem. The number and rate of "track-caused" accidents have actually increased over the last few years. For the first time in many years, in 2001, track causes actually exceeded human factors as the largest category of train accident causes. In that year, track causes were cited in about 38 percent of all reported train accidents, while human factors accounted for about 34 percent, equipment causes were responsible for about 14 percent, signal-related factors were causal in about one percent, and miscellaneous causes accounted for the remainder.

Any discussion of the railroad accident data, however, must take into account the fact that, under the current reporting threshold, any train mishap resulting in at least $6,700 in damage to railroad equipment or structures must be reported as a "train accident." This means that many "fender benders" and mechanical malfunctions that pose no danger to either the public, railroad workers, or railroad operations meet the reporting threshold and are classified by FRA as train accidents. For example, FRA recently analyzed the number of train accidents in its database that occurred on Amtrak's Northeast Corridor over the past five years. While the raw data contained 101 events that were classified as train accidents, closer examination revealed that 84 incidents involved mechanical malfunctions or damage to the overhead electrical equipment. These malfunctions cause a loss of electrical power that interrupts train service but causes no harm to the passengers. There were also three cases of vandalism to trains, five cases of trains striking debris and animals on the track, three incidents in which no passenger train was involved, and one fire caused by a cigarette in restroom debris. In fact, of the 101 total accidents reported on Amtrak's Northeast Corridor over the five-year period, there were only three train derailments, two of which occurred at very low speeds, and there were two cases where an Amtrak train struck unsecured equipment protruding from passing freight trains.

Another factor to consider when discussing train accidents is that the severity of accidents can vary greatly. More than half of all train accidents occur in yards where train speeds are low, resultant damages are minor, and casualties are rare. Consider, for example, that train accidents, as FRA uses the term, resulted in only six of the 966 deaths associated with railroading in 2001. The vast bulk of those fatalities involved grade crossing incidents (419 deaths) and trespassers (508 deaths). Given the limited usefulness of the aggregate data, FRA tries to continually mine the accident and inspection data at its disposal to find where the major pockets of risk exist and then determine how its actions can produce the biggest safety returns.

FRA is also quite concerned at the number of recent train collisions in which human performance appears to be a primary contributing factor. Since the Placentia, California collision in April of this year, there have been seven more serious collisions. In many of these cases, we believe that compliance with the railroad's own operating rules on signals and restricted speed may have prevented the accident. As explained more fully below, FRA has recently launched a nationwide, focused effort to examine how the railroads are implementing their own programs for testing their employees' compliance with these important safety rules.

FRA's Safety and Security Program

FRA's safety program is the heart and soul of the agency. The program has several elements: setting safety standards, ensuring compliance with those standards, focusing attention on serious safety problems whether or not covered by current standards, educating the rail industry on the federal standards and the public on rail safety issues, focusing on emerging security issues, investigating accidents and employee fatalities, conducting research and development on safety issues, and setting the tone for safety efforts in the industry.

The program's most important element, of course, is its people. Our Office of Safety headquarters staff of 100 works on the gamut of activities including rulemaking, compliance, data analysis, and program management. Our field force of 486 (which includes safety inspectors, support staff, and managers) works on inspection and compliance activities, investigations, and outreach to communities and the public on safety issues. More than 160 certified state safety inspectors from 30 states supplement the efforts of our field forces in all of these areas. Supporting the Office of Safety is the Safety Law Division of the Office of Chief Counsel, our Office of Administration (which provides human resource, budget, information technology, and procurement support), our public affairs staff, and our research and development office.

Setting Safety Standards

Congress has authorized FRA, as the delegate of the Secretary of Transportation, to issue necessary regulations and orders for every area of railroad safety. Since FRA's inception in 1967, the agency has issued a wide range of standards on subjects such as track safety, signal inspection, freight car safety, passenger car safety, locomotive safety, power brakes, alcohol and drug testing, operating rules and practices, accident reporting, hours of service recordkeeping, railroad communications, roadway worker and bridge worker protection, engineer qualifications, grade crossing signal maintenance, and passenger train emergency preparedness. FRA also assists the Department of Transportation's Research and Special Programs Administration (RSPA), which issues hazardous materials standards for all modes of transportation, in developing standards for rail transportation of those materials.

In 1996, FRA established the Railroad Safety Advisory Committee (RSAC) to develop consensus recommendations on safety issues. RSAC contains representatives from all major groups interested in railroad safety, including railroads and their associations, railroad labor organizations, the states, suppliers, and public interest groups. The NTSB and representatives from Mexico and Canada are associate members of the committee, as are a number of groups added to ensure RSAC's diversity. FRA seeks RSAC's recommendations on specific tasks; on each task, RSAC can decide whether or not to accept it and begin work. On those tasks it accepts, RSAC members appoint a working group of those most involved with the subject covered by the task. If the working group's recommendations are unanimously adopted by that group and by a majority of the full RSAC, they are sent to the FRA Administrator. While FRA is free to accept or reject RSAC's recommendations, we fully engage ourselves in the working group process to ensure that the recommendations are consistent with FRA's goals for the rulemaking project. As a result, our proposed and final rules that arise from RSAC recommendations usually incorporate those recommendations substantially.

This consensus approach to rulemaking has produced notable successes: revised track safety standards that include rules for high speed operations, revised communication standards reflecting technological advances in the field, and updated certification standards for locomotive engineers. More important, RSAC has helped engender a cooperative approach to developing new safety rules in which the railroad industry's major players have the opportunity to shape FRA's, and each other's, thinking from the start and feel more invested in the final product.

FRA's recent standard-setting accomplishments include the first standards for passenger cars, issued in 1999, which were the product of a rule-specific consensus process separate from RSAC; power brake standards for freight service, which FRA issued in 2001 without the benefit of consensus recommendations after an unsuccessful attempt to achieve consensus; and, issued just this year, the first standards for locomotive cab sanitation, which are the product of the RSAC process. Late in 2001, we issued an interim final rule establishing a United States locational requirement for dispatching domestic train operations.

FRA has several important regulatory projects under development. We are developing, through the RSAC process, standards for processor-based signal and train control systems (discussed more fully below), which will lay the foundation for integrating such systems into the existing rail network. We hope to have a final rule out this year. We are also using the RSAC process to develop revised event recorder standards to facilitate movement to a new generation of recorders and standards for the crashworthiness of locomotives. One major rulemaking on which we are not using the RSAC process is our final rule on the use of train horns at grade crossings. While very broad-based, RSAC membership is not sufficiently broad to include all the interests that might be directly affected by this rule. Instead, to address this sensitive subject, we held a dozen public hearings across the country and a technical conference and have engaged in extensive outreach with local communities.

Whether or not we employ the consensus process of RSAC, in all of our standard-setting activities we strive to avoid unnecessary regulation, consider all reasonable options, and issue rules that embody a fitting balance between benefits and burdens, are clearly stated, and are enforceable. However, neither the consensus rulemaking process nor the more traditional process is designed for quick action. Rulemaking can take a very long time. My philosophy is to try to do fewer things better and more quickly rather than trying to write simultaneously every rule that might have found its way onto the agency's agenda. This fits with the Department's renewed emphasis on rulemaking timeliness, which entails enhanced methods of coordinating and monitoring regulatory projects and tighter control of the clearance process.

Encouraging Compliance and Safety Improvements

The railroads, of course, have the responsibility for compliance with the standards FRA sets and to perform the necessary inspections and tests to ensure that they do comply. There are more than 650 railroads in the nation operating more than 1,000,000 pieces of equipment over more than 200,000 miles of track. FRA's inspection force cannot possibly observe all railroad activity. Instead, FRA monitors railroads to determine their level of compliance with those standards and employs a variety of tools to encourage compliance. We start with the assumption that railroads and their employees want to do the safe thing for their own benefit, not just because a law or regulation requires it. And we also understand that the Code of Federal Regulations is not the sole source of wisdom on safe practices; there are, in fact, safety problems not covered by existing rules that require a solution nonetheless.

FRA calls its approach to compliance the Safety Assurance and Compliance Program (SACP). The basic principles of SACP are to look for root causes of safety problems, try to develop solutions to those problems cooperatively with railroad management and employees, and focus both inspection activity and the use of enforcement tools on the most serious safety risks, as revealed by our inspections and our accident data. On each of the major railroads, SACP teams include FRA inspectors and managers, railroad officials, and employee representatives. The SACP teams provide a forum for resolving both compliance issues and safety problems not within the four corners of existing rules. Issues can be resolved through informal agreements or formal action plans. At the same time, FRA continues its normal review of railroad activities through regular inspections of facilities, vehicles, operations, and records and investigation of complaints.

FRA's policy is one of focused inspection and enforcement. That is, we try to concentrate our inspection efforts on detecting conditions that are leading causes of accidents, injuries, and hazardous materials releases, and, where noncompliance is found, we try to focus our enforcement efforts on violations that may cause such events. Where routine inspections reveal minor defects that pose little risk, FRA will certainly address the noncompliance with the railroad but is not likely to take enforcement action. Where a railroad has acknowledged the existence of a serious safety problem, developed a plan for alleviating it, and implemented that plan in a timely way, FRA will ordinarily take no enforcement action in the absence of some immediate hazard. However, FRA is very likely to use its enforcement tools where FRA discovers serious safety violations causing an immediate and unacceptable risk that the railroad should have found and corrected on its own. FRA is also likely to take enforcement action where, even though there is no immediate hazard, FRA has identified serious rail safety problems requiring concerted action by the railroad to prevent an unacceptable risk from developing, and the railroad has failed to make a good faith effort to implement a specific remedial program to fix those safety problems by a date certain, despite having agreed to do so.

Where enforcement appears necessary to encourage compliance, the tool we use will depend on the circumstances. Civil penalties are the most frequently used tool. In fiscal year 2001, for example, FRA collected over $7.6 million in penalties from railroads and hazardous materials shippers. Our Office of Chief Counsel, based on the recommendations of our field inspectors and working closely with the Office of Safety, assesses and collects these penalties. As the safety statutes encourage us to do, we settle nearly all of these cases through negotiations with railroads and shippers, and determine settlement amounts by applying the settlement criteria stated in the safety statutes. The settlement negotiations provide an excellent forum for addressing the most current and serious compliance issues that have not been resolved through more cooperative methods.

FRA has several other enforcement tools. Our inspectors can issue special notices removing locomotives or freight cars from service until they are repaired, or lowering the speed of track to a speed at which the track segment is in compliance with the standards. We sometimes enter into compliance agreements with railroads in

which the railroad promises specific remedial actions and, should it fail to deliver on its promise, agrees to the imposition of a compliance order, emergency order, or particular fines. The FRA Administrator can address an imminent safety hazard by issuing an emergency order, with opportunity for review of the order after its issuance. Civil penalties are available against individuals who willfully violate the safety regulations, and FRA may disqualify individuals from safety-sensitive service if their violation of safety regulations demonstrates their unfitness for such service. Criminal penalties apply for certain willful violations of the hazardous materials rules and knowing and willful violations of recordkeeping or reporting requirements. We have made increased use of these criminal penalties in recent years, especially for serious violations of the rules concerning proper documentation of hazardous materials shipments.

Accident Investigations

Nearly a century ago, Congress gave FRA's predecessor, the Interstate Commerce Commission (ICC), the authority to investigate railroad accidents. FRA inherited that authority and continues to implement it. Where the NTSB decides to investigate, its investigation generally has priority over those of all other federal agencies, but does not extinguish the investigative authority of those agencies. In those cases, which usually involve the most serious accidents, our investigators work closely with NTSB and serve on NTSB's teams. As previously noted, FRA also investigates a broader category of accidents and incidents than does NTSB.

Most or all of the recent accidents that concern this Committee are still under investigation by NTSB , FRA, or both. Final determinations of probable cause will not be issued for some time. I refer you to NTSB's testimony for any details of its investigations that the Board may be able to share at this time.

The final, detailed reports that NTSB and FRA produce concerning accidents are a very important tool in identifying risks and determining what actions FRA may need to take to reduce those risks. While FRA pays very close attention to major accidents to determine what conditions might require immediate agency action, those accidents sometimes involve such unique combinations of causal factors and often take so long to analyze effectively that they do not offer immediate insights into actions that might prevent similar accidents. However, because FRA's role is regulatory and not just investigative, where FRA gleans any useful information from investigations while they are underway, we use it immediately to try to prevent a recurrence.

Research and Development

FRA has an extensive research and development (R&D) program. Although that program resides in our Office of Railroad Development rather than our Office of Safety, its primary mission is to serve the safety program. Our R&D efforts also serve the railroad industry, railroad employees, and suppliers of railroad equipment. FRA owns the Transportation Technology Center near Pueblo, Colorado, which is operated under contract by a subsidiary of the Association of American Railroads (AAR).

FRA's R&D program includes these elements:

- The Railroad System Issues element encompasses research on technological and operational developments in the industry that may affect safety; system safety planning; and physical and cyber security in the railroad system.
- The Human Factors element focuses on human performance in railroad operations (*e.g.*, the effects of fatigue) and at grade crossings (e.g., the interface between highway users and visual and audio warnings).
- The Rolling Stock and Components element focuses on improvement of equipment defect detection and control via wayside and onboard technology and the development of advanced materials.
- The Track and Structures element focuses on improved methods of detecting hazardous conditions that can lead to failure of rails or structures.
- The Track/Train Interaction program assesses improved methods for reducing derailments due to interactions of track structures and vehicles.
- The Train Control program involves facilitation, risk analysis, testing, and evaluation of new train control systems, including positive train control.
- The Grade Crossings program focuses on technical aspects of crossings such as train presence detection, crossing geometry, and warning device technology.
- The Hazardous Materials element addresses the design and structural integrity of tank cars.

- The Occupant Protection element looks at the structural crashworthiness of locomotives and passenger cars through simulations, laboratory tests, and full scale fire and impact tests.

A theme running through virtually all of the R&D program elements is the use of sensors, computers, and digital communications to collect, process, and disseminate information to improve the safety, security, and operational efficiency of railroads. Along the lines of the Intelligent Transportation Systems being developed in the highway and transit industries, FRA and the railroad industry are working on the development of Intelligent Railroad Systems that would, in an integrated way, incorporate the sensor, computer, and digital communications technologies into train control, braking systems, grade crossing protection, track and equipment defect detection, and scheduling systems as well.

The R&D program also includes the Next Generation High-Speed Rail Technology Demonstration Program, which will help develop and demonstrate the utility of positive train control, a high-speed non-electric locomotive, innovative grade crossing warning systems for application on high-speed corridors, and innovative methods of constructing track and structures suitable for high-speed passenger operations and heavy axle load freight operations. Our R&D office is also implementing the Magnetic Levitation Technology Deployment Program.

FRA's Strategies for Accident Prevention

FRA combines all of the elements of its safety program to address current problems that are likely causes of accidents, injuries, and hazardous materials releases. Railroad safety contains several sub-fields, or disciplines. For each discipline, I will give some examples of how the safety program elements have been brought to bear on safety problems.

Human Factors

Human performance, especially that of railroad employees and their immediate supervisors, is critically important to railroad safety. Human factors cause about a third of train accidents and a large portion of employee injuries every year. In the 1980s, FRA identified abuse of alcohol and drugs by operating employees as a major contributor to serious railroad accidents. In 1985, the agency issued the nation's first alcohol and drug testing requirements for private sector employees. At first, railroad employee organizations opposed those rules all the way through the Supreme Court, where the rules were upheld in a landmark case in 1988. The rules have proven enormously successful and have virtually eliminated the use of alcohol and illegal drugs as a cause of train accidents. Although no one likes being tested, many employees have praised these rules as having greatly improved the safety of the industry and, in some cases, the lives of individual employees whose substance abuse has been addressed because of the rules. FRA is currently exploring the subject of legal drug use as a factor in accident causation, having been urged to do so by NTSB.

A more recent example of FRA's efforts to use the various elements of its safety program to address an area of serious safety risk is the Switching Operations Fatality Analysis (SOFA) Working Group. In the late 1990s, FRA realized that an increasing number of employee fatalities and serious injuries were occurring in the context of switching operations. FRA organized the SOFA Working Group to develop recommendations for preventing such casualties. Representatives of the AAR, the United Transportation Union, the Brotherhood of Locomotive Engineers, and The American Short Line and Regional Railroad Association analyzed 76 fatal switching incidents that occurred between 1992 and 1998. The Working Group recommended five basic practices (the "SOFA lifesavers") that, if followed invariably, would prevent such fatalities: notification to the engineer before fouling the track; extra precautions when two or more crews are working on the same track; a safety briefing before the work begins; proper radio communications; and paying special attention to crew members with less than one year of service. The recommendations were voluntarily adopted by railroads across the nation. The Working Group continues to track and report on switching incidents. Switching fatalities have dropped from thirteen in 2000, to eight in 2001, to two so far this year, while both the number and rate of yard accidents declined 8 percent and 4.6 percent, respectively, in 2001. This is an example of how consensus, non-regulatory actions can be very effective in some circumstances.

Even more recently, FRA has taken action to address a sudden spate of train collisions in which human performance appears to be a primary contributing factor. On April 23, 2002, in Placentia, California, a Burlington Northern Santa Fe freight train collided with a Southern California Regional Rail Authority passenger train, resulting in two fatalities and 161 injuries. We believe the freight train passed a

restrictive signal. In just the past two months, there have been seven additional train collisions. Including Placentia, four of these collisions involved passenger trains and resulted in two fatalities and 258 injuries, and the other four collisions involved freight trains and resulted in one fatality and 21 injuries.

While the investigations of these accidents are not yet complete, in each case the early indications are that human error appears to have been a primary causal factor. The errors included running past restrictive signals, failing to comply with restricted speed requirements, and failure to broadcast on the radio the location of the train. All of these behaviors violate railroad operating rules, and in some cases FRA safety regulations. FRA requires railroads to conduct periodic operational tests and inspections to determine the extent of their employees' compliance with these critical operating rules. These "efficiency tests," as they are widely known, entail direct observations of employee performance during train operations.

On June 28, 2002, I wrote to the major railroads, commuter railroads, labor organizations, and trade associations to announce a focused effort to examine railroad efficiency testing programs. During the next several months, FRA and state safety inspectors will be working intensively with railroad officers to examine each major railroad's efficiency testing procedures, techniques, and results. We believe that improving the quality of efficiency testing programs will play an important role in stemming this unfavorable trend.

Fatigue on the part of operating employees has long been an important safety issue. Congress first addressed the subject by enacting the Hours of Service Act in 1907, which limited duty tours for train crews to 16 hours. As a result of amendments in 1969, that maximum was eventually reduced to 12 hours on duty in a 24-hour period. Off-duty periods must be at least 8 consecutive hours or, if the employee works 12 consecutive hours, the off-duty period must be at least 10 consecutive hours. FRA does not have authority to change these statutory parameters. Even if these restrictions are observed, train crews can work an enormous number of hours in a week, month, or year. While commuter train crews may have some predictability in their work schedules, crews of road trains rarely do. The long hours, irregular work/rest cycles, and lack of regular days off combine to have a very deleterious effect on employee alertness.

Operating employee fatigue is clearly a reality. The causal relationship between fatigue and particular train accidents or injuries has been clearly demonstrated in some instances, and fatigue is suspected as a causal element in many of the human factor accidents that comprise a large percentage of all train accidents. The NTSB has listed employee fatigue in all modes of transportation among its top ten "Most Wanted" recommendations. While research conducted by the Department of Transportation and others has demonstrated that fatigue impairs mental acuity, judgment, and reaction times, the cause of any specific human performance failure can be extremely difficult to pinpoint; therefore, it is often difficult to prove the exact role that fatigue may have played in a specific accident or what role fatigue plays in accident causation as a general matter.

Even more difficult is deciding how to address fatigue effectively. The major railroads and leading labor organizations have entered into a variety of arrangements in the last several years in an attempt to manage fatigue. These efforts to minimize the impact of fatigue have been significantly enhanced by utilizing the partnerships resulting from the SACP and the North American Rail Alertness Partnership (NARAP). The latter, a voluntary coalition of rail labor, management, governmental entities including FRA, and other concerned parties, has been especially fruitful in identifying fatigue concerns *and* solutions. As the result of partnership efforts, the following measures are becoming the norm throughout the industry: undisturbed rest periods; improvements in lodging facilities, including single occupancy; on-duty napping policies, especially for the operating crafts; work/rest refinements, *e.g.*, balancing operational requirements with appropriate work/rest schedules; educational measures on fatigue management that consider the families of employees; and screening for sleep disorders.

In addition to facilitating NARAP's cooperative efforts, FRA has embarked on a vigorous program to address a multitude of fatigue-related concerns through research on subjects that include: alertness of crew van drivers; measurement tools for assessing the success of fatigue countermeasures; individual fatigue awareness and behavioral change; alertness training videos; and analysis of a number of accidents/incidents using a software model designed to determine the impact of fatigue on performance.

FRA will continue to monitor the results from these various cooperative arrangements and research projects on fatigue and, as the need arises, recommend legislative action, take relevant regulatory action (to the limited degree it may do so in this context), or both.

Track and Structures

As mentioned previously, track-caused accidents have been on the rise in recent years, and track became the leading accident cause in 2001. Reasons for this increase and the deterioration in track conditions it reveals are not certain, but may include reduced investment in infrastructure, reduced maintenance-of-way staffs, insufficient training or monitoring of railroad track inspectors, increased traffic, increased axle loadings, and/or higher speeds. Of course, conditions vary from railroad to railroad.

FRA recently had great success in working with CSX Transportation, Inc. (CSX) to improve its track safety program. In 2000, FRA and state inspectors discovered disturbing patterns of noncompliance on CSX involving track gage, track inspection, and track repair. Track-caused accidents were on the increase. FRA and CSX entered into a unique compliance agreement that blended cooperative aspects with strict enforcement. Under the agreement, CSX promised to take specific steps to improve its use of track geometry vehicles, implement revised instructions for track inspections, develop performance standards and quality control teams for large scale track work, enhance management oversight of track inspections, and provide FRA with its capital improvement and maintenance programs for the next three years. CSX also agreed that it would pay fines without contesting them if FRA discovered any unacceptable track conditions posing an imminent hazard to train operations, and that FRA was authorized to issue a compliance order or emergency order that CSX would not contest if CSX failed to comply with the agreement. CSX took the necessary actions under the agreement (although it paid some uncontested fines along the way) and, within a year, had reduced its track-caused derailments substantially. FRA and CSX renewed the agreement for a second year, although, because of CSX's excellent performance, without certain of the original agreement's harsher enforcement provisions. The agreement expired on May 1st of this year, and the second year's results were also impressive: the number of track-caused derailments on CSX in 2001 was 25 percent lower than the number for 2000. The compliance agreement, coupled with CSX's commitment, brought about significant safety improvement.

The trend on track-caused accidents, however, is national in scope. To help address the problem FRA has sought and obtained 12 additional track inspector positions in fiscal year 2002, and the President's budget for fiscal year 2003 contains a request for an additional 12 positions.

In addition to augmenting its track resources, FRA has brought a fresh perspective to enforcement in the track area. In January 2002, FRA issued a new track enforcement manual in that makes focused enforcement a reality. The manual provides guidance on how to focus inspections on the leading causes of train accidents and strongly recommends taking enforcement action when certain very serious violations are found. FRA is making use of its new resources and more focused enforcement policy to address the track compliance problem. We will blend cooperative measures and tough enforcement to get the job done, as we did with CSX in recent years. For those who may be less willing than CSX was to meet the challenge head on, we will use whatever level of inducement is necessary to ensure improved compliance and safety results.

America's more than 100,000 railroad bridges are generally quite old but in most cases structurally sound. Many of the large bridges were designed to carry the heavy steam locomotives of their time and have a reserve capacity to safely carry today's railroad traffic. However, present-day car weights are approaching the design capacity of these bridges, and because of increasing traffic density on main routes, some of these bridges require increasingly intensive inspections and higher maintenance expenditures if they are to remain serviceable. Some shortline railroads lack sufficient capital to upgrade smaller bridges to handle the increasing weights of the latest generation of freight cars. FRA has had to issue two emergency orders against small railroads removing bridges from service when their owners failed to properly evaluate and repair conditions that posed a risk of catastrophic failure. In 2001, FRA entered into a successful compliance agreement with a regional railroad in which the railroad agreed to evaluate and repair its bridges in an orderly way as an alternative to emergency action by FRA.

Serious bridge safety problems have occurred infrequently, and FRA has been able to resolve them on a case-by-case basis without issuing mandatory regulations. Such rules would be very complex and could cause unnecessary expenses by requiring railroads to adapt their successful but varied bridge management practices to a common Federal standard. In 2000, rather than issuing binding rules, FRA issued a bridge safety policy that establishes suggested guidelines for bridge inspection and management. The policy (49 C.F.R. Part 213, Appendix C) makes clear that, if a bridge owner jeopardizes public and employee safety by failing to resolve a bridge

problem, FRA will use any appropriate enforcement tool, including an emergency order, to bring about elimination of the hazardous bridge conditions.

Hazardous Materials

The safety of hazardous materials transportation by rail depends to a large degree on safe track, equipment, and operating practices to ensure that the hazardous materials container is not involved in a train accident. The hazardous materials discipline, on the other hand, focuses on the integrity of the containers that hold the hazardous materials, the proper identification and marking of those containers, the use of appropriate shipping documents identifying the hazards presented by the material, the proper handling of the vehicles that contain these materials, and training of all who play a role in the preparation of these shipments and their movement. Within the Department, RSPA provides excellent leadership on these matters, which cut across the different modes of transportation.

Railroads have an outstanding record in moving hazardous materials safely. Releases of those materials as a result of train accidents are down sharply from earlier years. However, releases from stationary tank cars in rail yards or chemical facilities are a continuing problem. The primary cause of these releases is improper securement of the cars by the shipper. Much of FRA's enforcement efforts in this area are against shippers who commit these securement violations or improperly describe the shipments, which impedes appropriate handling and emergency response. Some of our investigations have led to criminal charges being brought against companies that prepare shipping papers for other companies and do so improperly.

Our hazardous materials staff closely tracks reports of hazardous materials releases or problems with the integrity of railroad tank cars. This has enabled FRA to stay ahead of emerging problems before they lead to tragic results. For example, we have on several occasions discovered patterns of cracks, deterioration, and even structural failure in particular portions of the tank car fleet. After thorough analysis of the problem, we have brought pressure to bear to ensure that all cars of the type shown to exhibit the problem are promptly inspected and, if necessary, repaired. We have done this through emergency orders and, more recently, through use of a new regulatory provision that permits FRA to require special inspections of tank cars in these situations. We believe these actions, which draw little public attention, have prevented a number of significant releases of hazardous materials.

FRA has also taken a proactive approach to the transportation of spent nuclear fuel and high-level radioactive waste. Our Safety Compliance Oversight Plan for transportation of those materials involves participation in route planning, ensuring proper training of railroad employees and emergency responders, and more intensive inspection of routes, equipment, and operations involved in those shipments.

Motive Power and Equipment

Congress began regulating railroad equipment by enacting the first Safety Appliance Act in 1893 and the Boiler Inspection Act in 1911. FRA has established standards for safety appliances (features of rail cars intended to prevent injury of the employees who work on and around them), power brakes, locomotives, and freight car components. We are currently implementing the first standards for passenger equipment, and revised standards on power brakes and their inspection. We are drafting standards for the crashworthiness of locomotives.

While equipment-caused accidents have trended slightly upward in recent years, they still account for a relatively small portion (18 percent) of all accidents. However, certain equipment failures can lead to devastating accidents, especially at higher speeds, and poorly maintained equipment can cause serious employee injuries. Accordingly, FRA inspectors carefully monitor railroad compliance with the equipment standards and employ civil penalties and special notices for repair as ways of encouraging compliance on serious matters. FRA's R&D efforts may play a very important role in developing improved methods of detecting equipment defects before they cause accidents.

As this decade unfolds, FRA hopes to find ways of encouraging the railroads to use electronically controlled pneumatic (ECP) braking. The AAR has been at the forefront in developing this technology and making sure it is mature. Now railroads need to take advantage of ECP train braking, which can reduce stopping distances and in-train forces, making it much easier for locomotive engineers to safety handle heavy tonnage trains and consists containing cars of various sizes and weights.

Signal and Train Control

Recent collisions, including the fatal collision of April 23rd between a Burlington Northern Santa Fe freight train and a Metrolink commuter train at Placentia, California, remind us that current methods of train operation rely too heavily on crew recognition of, and compliance with, signal indications (or with mandatory directives

in written form). FRA is supporting deployment of advanced signal and train control technology to improve the safety, security, and efficiency of freight, intercity passenger, and commuter rail service. These new systems will use various technologies to determine the precise location of trains and automatically control their movements when necessary to prevent a collision. This developing family of technologies, which we have referred to as Positive Train Control (PTC), is capable of preventing train collisions, overspeed derailments, and casualties to roadway workers (*e.g.*, maintenance-of-way workers, bridge workers, signal maintainers) operating within their limits of authority and can meet mandatory requirements for train control systems on developing high speed corridors wherever train speeds will exceed 79 mph. This technology has the potential capability to limit the consequences of events such as hijackings and runaways that are of special concern in an era of heightened security. Looking well out into the future, PTC will integrate a wide array of hazard sensors to protect train movements and will provide the platform for more cost effective warning of motorists at highway-rail crossings as a part of Intelligent Transportation Systems (starting with priority vehicles such as school buses and tractor trailers carrying hazardous materials).

Communications-based PTC will be more affordable than signal-based systems such as automatic train control (ATC) and will address a wider range of safety needs. FRA is promoting PTC by describing the necessary conditions for its introduction, putting in place more flexible regulations, investing expertise and funding in development and demonstrations of the technology, and requiring the use of technology addressing PTC functions where it is clearly warranted to do so.

Describing the necessary conditions. FRA's RSAC provided a Report to the Administrator on ***Implementation of Positive Train Control Systems*** in September of 1999. The report resulted from extensive effort by a working group comprised of representatives of railroads, rail labor organizations, states, and suppliers. One major result of the activity is increased understanding by all parties of the complexities of designing, installing, operating, and maintaining the proposed systems. FRA transmitted this report to the Congress on May 17, 2000, and it is available on our Web site at *www.fra.dot.gov* (under "Documents" for the year 2000). The report describes the safety and business uses of PTC systems and a variety of potential PTC architectures. The report documents the fact that risk is widely dispersed on the national rail system and that it will be necessary to implement PTC on a large scale in order to address the reality of locomotives which often move throughout the national rail network. The working group carefully studied the record of "PTC-preventable" accidents and developed cost estimates for various levels of PTC. The ultimate conclusion was that, based on safety benefits alone, PTC cannot be justified on a large scale. However, the RSAC remained optimistic that, as the technology is proven, unit costs decline, and the business benefits of the technology become better evident (*e.g.*, as limitations on rail capacity make it more important to precisely monitor and control rail traffic), passenger and freight railroads will find it attractive to make the necessary investments.

In anticipation of these developments, the RSAC described several things that industry and government need to do to support the growth of this life-saving technology. The major actions and the status of those activities follow.

Providing safety standards that fit the need. The RSAC recognized that existing signal and train control regulations (49 C.F.R. Part 236) were built around older technology and present potential obstacles to change. As a result, on August 10, 2001, FRA published a notice of proposed rulemaking on Performance Standards for Processor-Based Signal and Train Control Systems that was the consensus product of the RSAC. The RSAC Working Group has met to consider recommendations for finalizing the rule. Consultations among members are continuing to resolve a significant remaining issue, and the Working Group is also helping to develop a risk assessment toolset that can be used to make the necessary safety case for new systems under the rule.

Developing and deploying technology. The RSAC also recognized that public and industry investment was necessary to "jump start" PTC deployment by advancing the design process and by providing evidence that the technologies will be reliable as installed. Since advanced train control systems are mandatory where speeds above 79 mph are proposed, developing and demonstrating practical, affordable train control technology have been major program elements of FRA's Next Generation High Speed Rail technology development program.

In 1995, FRA joined with Amtrak and the State of Michigan to install an Incremental Train Control System (ITCS) on Amtrak's Michigan line to support proposed higher passenger operating speeds on the Detroit-to-Chicago corridor. This project includes high-speed grade crossing signal pre-starts and integration of remote health monitoring for crossing signals (so that the train is slowed if proper warning