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Testimony of the Honorable Deborah A.P. Hersman
Chairman
National Transportation Safety Board
Before the
Committee on Commerce, Science, and Transportation
United States Senate
Hearing on Staying on Track:
Next Steps in Improving Passenger and Freight Rail Safety
Washington, DC
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Good morning Senator Blumenthal, Senator Blunt, and Members of the Committee. Thank you for the opportunity to address you today concerning the National Transportation Safety Board's (NTSB) ongoing efforts to ensure rail transportation safety, including our ongoing investigations of the recent Metro-North passenger train derailment and sideswipe in Bridgeport, Connecticut, rail grade crossing accident in Rosedale, Maryland, and the collision and derailment of two freight trains in Chaffee, Missouri.

Rail Transportation Safety in General

The NTSB has been extremely active in investigating train collisions and derailments. During the past 12 months, we have launched 12 rail investigations, including 2 that involve highway-rail grade crossings. Of these 12 rail launches, 4 have occurred within the past 5 weeks. In addition to tragic fatalities and serious injuries to passengers, crew members, and other individuals resulting from these crashes, 3 of the derailments also involved the release of hazardous materials that required the evacuation of local residents in Columbus, Ohio, Paulsboro, New Jersey, and Rosedale, Maryland. Also, yesterday the NTSB met to consider and take final action on the agency's investigation of the head-on collision of two freight trains in Goodwell, Oklahoma, on June 24, 2012.

Despite the workload of the NTSB rail investigators and the spate of train collisions and derailments during the past year, overall, train crash numbers are improving. According to Federal Railroad Administration (FRA) data, total rail accident/incident rates have declined from 19.67 occurrences per 1 million train miles in 2004 to 14.18 in March 2013, a 28 percent decrease. In addition, the highway-rail grade crossing accident rate has improved significantly in the past decade. These rail safety achievements have occurred during a period of increased demand for rail transportation in the United States. In 2011, the seven largest freight rail carriers had operating revenues of $67 billion compared to $47.8 billion in 2009 -- an increase of over $19 billion.[1] Also, intercity passenger rail and commuter rail providers have recently experienced load factor increases. For example, according to Amtrak, a record 31.2 million passengers rode its trains last year and data compiled by the American Public Transportation

[1] Back on Track: The Quiet Success of America's Freight Railways, *The Economist*, April 13, 2013.

Association also show increased public transportation ridership levels in calendar year 2012 compared to the previous year.

Although the transportation of people and goods by rail has played an increasingly important role in the nation's economy, we must not become complacent when it comes to rail safety. The following summary of three of the rail collisions and derailments subject to NTSB investigations demonstrate the need for additional investments in safety technology. The NTSB's Most Wanted List also highlights important rail safety initiatives like Positive Train Control (PTC), limiting distraction, and investments in transportation infrastructure. Finally, safety would benefit from additional efforts to enforce rail safety legislative and regulatory requirements. For all of the ongoing investigations that are described, a probable cause has not yet been determined.

Derailment and Collision, Bridgeport, Connecticut, May 17, 2013

As described in the NTSB's preliminary report, at 6:01 pm on Friday, May 17, 2013, eastbound Metro-North Railroad passenger train, 1548, derailed. About 20 seconds after the eastbound train came to rest, it was struck by westbound Metro-North passenger train, 1581. As a result of the collision, 73 passengers, 2 engineers, and a conductor were transported to local hospitals with injuries. Damage was estimated by Metro-North at $18.5 million.

The Metro-North Commuter Railroad's New Haven Line runs east-west between Bronx, New York and New Haven, Connecticut. In the vicinity of the crash, the track structure consists of four main tracks. The maximum authorized speed on the four main tracks in the vicinity of the crash is 70 mph with no posted speed restrictions.

Train movements on the New Haven line are governed by the Metro-North Commuter Railroad operating rules and the signal indications of a traffic control signal system supplemented with cab signals and train control.

The more than 60 miles of track on the New Haven Line are visually inspected by Metro-North personnel three times per week. This track inspection is performed with the use of a hi-rail vehicle or on foot. The last track inspection prior to the derailment was performed on May 15, 2013, by hi-rail. The inspection found an insulated rail joint with inadequate supporting ballast and indications of vertical movement of the track system under load at catenary No. 734 on track 4 near milepost (MP) 53.3. It is important to note that this inspection finding did not disclose a violation of the FRA's Track Safety Standards (49 CFR Part 213). As part of its ongoing investigation, however, the NTSB is undertaking a comprehensive review of Metro-North track inspections and follow-up work and is also looking at the adequacy of the FRA's Track Safety Standards.

Preliminary indications are that the derailment occurred at MP 53.3. Sections of this rail containing rail joint bars are at the NTSB materials laboratory in Washington, DC, for further examination.

Initial information obtained from onboard event recorders indicates that the eastbound train was traveling at about 70 mph when it derailed. After the eastbound train came to rest, it was fouling the adjacent track, track 2, and was struck about 20 seconds later by the westbound train. Initial information from the event recorders indicates that the westbound train engineer applied the emergency brakes, slowing from 70 mph to 23 mph prior to striking the eastbound train.

The parties to the investigation include Metro-North Railroad, the FRA, the Association of Commuter Rail Employee, the Metropolitan Transportation Authority Police Department, Connecticut Department of Transportation, Brotherhood of Locomotive Engineers and Trainmen, United Transportation Union, and the Brotherhood of Maintenance of Way Employees Division.

The NTSB will conduct a thorough investigation of this event, complete it in an expeditious manner, establish its probable cause, and issue recommendations to prevent this type of event in the future.

Railroad Employee Fatality, West Haven, Connecticut, May 28, 2013

The NTSB is also investigating the tragic death of a Metro-North track foreman in a track work zone in West Haven, on the New Haven Line. We are working with the FRA, Metro-North, and the Metropolitan Transportation Authority Police Department and, among other things, examining the communications with the Metro-North rail traffic control center.

We have issued safety recommendations to the FRA in the past concerning additional safety requirements to protect maintenance-of-way work crews.[2] The NTSB submitted comments in response to an FRA notice of proposed rulemaking (NPRM) issued last August to amend its Roadway Worker Protection regulation (49 CFR Part 214). In the NPRM, the FRA specifically asked for comments in response to one of the two NTSB safety recommendations concerning additional safety requirements for rail work crews.

Railroad Grade Crossing Crash, Rosedale, Maryland, May 28, 2013

On May 28, a three-axle roll-off straight truck approached and crossed a rail grade crossing consisting of two tracks. The truck was struck by a CSX freight train while it was crossing the tracks. This crossing is a passive crossing, which means there were no lights or crossing gate in place. The crossing was marked with cross buck signs and non-standard stop signs which were yellow. The paint on both stop signs was significantly faded and both were

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[2] See *Collision of Massachusetts Bay Transportation Authority Train 322 and Track Maintenance Equipment near Woburn, Massachusetts, January 9, 2007*, Railroad Accident Report NTSB/RAR-08/01 (Washington, D.C.: NTSB, 2008) and Recommendation R-08-06 to the FRA:

> Require redundant signal protection, such as shunting, for maintenance-of-way work crews who depend on the train dispatcher to provide signal protection.

displaced from their original location, including one that hung upside down and faced away from oncoming traffic. The truck driver did not stop at the grade crossing.

The train, travelling at 49 miles per hour, struck the truck on the right side near the rear axle. The impact caused 15 train cars to derail. The seventh car carried sodium chlorate and the ninth through twelfth cars carried terephthalic acid, and these cars released their products. Additionally, there was a post-crash fire and subsequent explosion that was felt at least one mile away.

The truck driver was seriously injured, and four people responding to the accident or working nearby sustained injuries from minor to serious.

Railroad Train Collision, Resulting in a Highway Bridge Collapse, Chaffee, Missouri, May 25, 2013

On Saturday, May 25, 2013, at about 2:30 a.m., central daylight time, Union Pacific Railroad (UP) freight train, 2ASMAR-25, collided with BNSF Railway (BNSF) freight train U- KCKHKMO-O5T near Chaffee, Missouri. The crash occurred where UP and BNSF tracks cross at grade at a railroad interlocking (*Rockview Junction*). The BNSF train was occupying the interlocking when the UP train struck the 12th car behind the locomotives of the BNSF train. As a result of the collision, 13 cars of the BNSF train were derailed. Two locomotives and 11 cars of the UP train were derailed. Spilled diesel fuel from the derailed UP locomotives caught fire. Missouri State Highway M Bridge is above the *Rockview Junction* interlocking; collision forces resulted in the collapse of portions of the highway bridge. Thankfully, there were no fatalities on the trains or the roadway, but the UP engineer and conductor were injured and transported to a local hospital. Also, subsequent to the highway bridge collapse, two motor vehicles struck damaged highway elements and were involved in fires. Five occupants of the motor vehicles were injured and transported to a local hospital.

The UP train consisted of 2 locomotives and 60 cars. The BNSF train consisted of 3 locomotives and 75 cars. The weather was clear and 48° F at the time of the crash. The preliminary damage was estimated to be $11 million.

Event recorder data from the locomotives of both trains, as well as recorded data from the signal system, is being examined to determine train speeds and signal aspects prior to the collision. Initial data review indicates that the UP train was traveling about 49 mph when it struck the side of the BNSF train, which was traveling about 22 mph. Preliminary data indicate that the BNSF train received a signal indication permitting it to proceed through the interlocking, while the UP train received a stop signal indication at the interlocking. No PTC system is currently installed at this location.

Parties to the investigation are the FRA, Missouri Department of Transportation, Scott County Emergency Management Agency, Union Pacific Railroad, BNSF Railway, Brotherhood of Locomotive Engineers and Trainmen, United Transportation Union, and the Brotherhood of Railroad Signalmen.

The NTSB's Most Wanted List and Rail Safety

Each year, the NTSB issues a Most Wanted List of top transportation safety priorities designed to increase industry, Congressional, and public awareness of these important issues and recommended safety solutions. The current Most Wanted List includes three issue areas that pertain either specifically or more generally to the rail industry. These issues are: Positive Train Control, Distraction, and Preserving the Integrity of Transportation Infrastructure. Next, I will address each of these areas.

Positive Train Control (PTC)

In the NTSB's nearly half century of investigating railroad crashes, including hundreds of train collisions and over-speed derailments, we have seen mechanical defects, maintenance issues and track failures, but the biggest safety challenge is human error - and that's the area where technology can be so important. Since 2005, the NTSB has completed 16 investigations of rail crashes that could have been prevented or mitigated with positive train control. These 16 crashes claimed 52 lives and injured 942 more. The damages totaled hundreds of millions of dollars and in each of these crashes, the NTSB concluded that PTC would have provided critical redundancy that would have prevented the crash.

PTC prevents train-to-train collisions and overspeed derailments. Although human error cannot be eradicated, PTC technology is capable of supplementing the human operation of trains. Such systems provide a safety redundancy by slowing or stopping a train that is not being operated in accordance with signal systems and operating rules, as was the case in each of the 16 crashes referenced previously. For years, it has been in place on Amtrak trains in the Northeast and Michigan, but for PTC to reach its greatest safety potential, it must be implemented on all passenger and freight lines. With this technology, even if the train operator has fallen asleep or is distracted in some way, human lives will not be at risk. PTC however, would not have prevented the derailment and crash of the Metro-North trains in Bridgeport because they were operating on separate tracks. Nonetheless, in numerous rail collisions investigated by the NTSB, including the Goodwell, Oklahoma, crash the NTSB reviewed yesterday, the agency has concluded that had a PTC system been available, the collisions would have been prevented.

Because of the NTSB's repeated findings that technology based collision avoidance systems could provide the needed safety redundancy to prevent rail crashes, PTC was placed on the NTSB Most Wanted List of Transportation Safety Improvements at the inception of that list in 1990. Following the tragic head-on collision between a passenger train and a freight train in Chatsworth, California, on September 12, 2008, which resulted in 25 fatalities and more than 130 injuries, Congress enacted the Rail Safety Improvement Act of 2008 (RSIA). This law requires each Class I railroad over which poisonous-by-inhalation or toxic-by-inhalation hazardous materials is transported and regularly scheduled intercity or commuter rail passenger transportation travel to implement a PTC system by December 31, 2015. Encouraged by this legislative action, the NTSB's Safety Recommendation calling for PTC to be installed on railroads, was classified as closed and was removed from the Most Wanted List in October 2008.

As a result of the May 2011 rear-end collision between two CSX freight trains in Mineral Springs, North Carolina, and last June's collision of two UP trains in Goodwell, Oklahoma, collisions which killed five crewmembers, destroyed cars and goods, and put tracks out of service for days, the NTSB decided to refocus on rail safety and added PTC to our 2013 Most Wanted List.

In 2005, NTSB held a symposium on PTC to learn about the industry's progress on this issue and to reinvigorate dialogue among rail carriers, component manufacturers and government agencies. During that 2-day meeting, the NTSB examined each of the major aspects of PTC systems including safety, efficiency, and operational issues. This past February, the NTSB held a 1-day public forum on PTC. In opening the forum, I acknowledged there are real hurdles to clear in meeting the RSIA's December 31, 2015, mandate to implement PTC technologies. In particular, many public operators do not have the available capital they need to not only maintain but also upgrade their systems. Although a number of presenters at the forum addressed a variety of regulatory, technical, budgetary, product and spectrum availability, and legal issues associated with implementing PTC, the NTSB also heard from other presenters who described various success stories where carriers' PTC systems have already received type approvals and certification by the FRA.

There is much debate by policymakers over whether to extend the 2015 deadline established by RSIA. Some railroads will meet this deadline. For those railroads that have made the difficult decisions and invested millions of dollars, they have demonstrated leadership. For those railroads that will not meet the deadline, there should be a transparent accounting for actions taken and not taken to meet the 2015 deadline so that regulators and policymakers can make informed decisions. Lives depend on it.

Distraction

As we all know, the serious public health and safety issues associated with distraction are not limited to road and highway travel. The NTSB has been concerned for many years about the danger of distraction across all transportation modes. For example, within the rail industry, in 2003, the NTSB issued an accident report concerning the May 28, 2002, head-on collision of two Burlington Northern Santa Fe (BNSF) freight trains near Clarendon, Texas, that resulted in the death of one of the train's engineers, injuries to the three other crewmembers, and damages exceeding $8 million. The NTSB determined the probable cause of the collision was one of the engineer's uses of a cell phone during the time he should have been attending to the requirements of the track warrant his train was operating under.

The NTSB focused again on the danger of distraction in the rail industry in investigating another head-on collision of two BNSF freight trains that occurred near Gunter, Texas, on May 19, 2004. The NTSB had determined that 25 calls were made by crewmembers from both trains during the trip and up to the time of the collision, and that 22 of those calls were of a personal nature. Similarly, in the tragic Chatsworth, California, Metrolink crash mentioned above, the NTSB determined that during the time periods the engineer was responsible for operating a train, the train

operator sent 21 text messages, received 20 text messages, and made four outgoing telephone calls.

As a result of the Clarendon, Texas, collision, the NTSB issued a recommendation in 2003 to the FRA to issue regulations to control the use of cellular telephones and other wireless communication devices by railroad operating employees while on duty. In response to the recommendation, the FRA and its Rail Safety Advisory Committee closely examined the issue and, on October 7, 2008, published in the Federal Register Emergency Order No. 26, to restrict on-duty railroad operating employees from improperly using cellular telephones and other distracting electronic and electrical devices. On September 27, 2010, the FRA issued a final rule that supplanted Emergency Order No. 26 and codified most its requirements in a new subpart C, titled "Electronic Devices," to Part 220, of Title 49, Code of Federal Regulations. This recommendation has been closed because of this positive action by the FRA.

Preserving the Integrity of Transportation Infrastructure

As the American Society of Civil Engineers' 2013 Report Card for America's Infrastructure points out, the U.S. freight and passenger rail network consists of more than 160,000 miles of track, 76,000 rail bridges, and 800 tunnels. The Report notes both freight and passengers railroads have made significant investments in their infrastructure, using both public and private funding, but meeting capacity demands will be an increasing challenge as rail ridership and freight rail continue to increase. Of the 16 infrastructure categories evaluated in the Report Card, including aviation, inland waterways, ports, roads, and transit, Solid Waste (trash disposal) received the highest assigned rating -- B– (Good). Rail and Bridges received the second highest assigned rating -- C+ (Mediocre).[3]

The NTSB Most Wanted List item on transportation infrastructure points to the need for periodic, standard railway inspections for railcars and track used to replace defective segments as well as track originally laid down. For example, after investigating a March, 2001, derailment of Amtrak's *California Zephyr*, near Nodaway, Iowa, while operating on track owned by BNSF, resulting in 1 fatality and injuries to 78 people, the NTSB determined the probable cause of the derailment was the failure of the rail beneath the train, due to undetected internal defects.

Similarly, the NTSB investigated the January 18, 2002, derailment of 31 of 112 cars of a Canadian Pacific Railway freight train near Minot, North Dakota. Five tank cars carrying anhydrous ammonia, a liquefied compressed gas, catastrophically ruptured, and a vapor plume covered the derailment site and surrounding area. One resident was fatally injured, and 60 to 65 residents of the neighborhood nearest the derailment site were rescued. As a result of the crash, 11 people sustained serious injuries, and 322 people, including the 2 train crewmembers, sustained minor injuries. Damages exceeded $2 million, and more than $8 million was spent for environmental remediation. The NTSB's report indicated the probable cause of the derailment was an ineffective inspection and maintenance program that did not identify and replace cracked joint bars before they completely fractured and led to the

[3] www.infrastructurereportcard.org (March 2013).

breaking of the rail at the joint. Contributing to the severity of the accident was the catastrophic failure of five tank cars and the instantaneous release of about 146,700 gallons of anhydrous ammonia.

Other Important NTSB Rail Safety Recommendations

The NTSB has long advocated in-cab recording devices in order to better understand crew activities leading up to serious accidents. As a result of its investigation of the collision between a Maryland Rail Commuter train and an Amtrak train near Silver Spring, Maryland, on February 16, 1996, in which all operating crewmembers were fatally injured, the NTSB was unable to determine whether certain crewmember activities leading up to the crash may have contributed to the crash. Consequently, the NTSB recommended that the FRA

> Amend 49 *Code of Federal Regulations* Part 229 to require the recording of train crewmembers' voice communications for exclusive use in accident investigations and with appropriate limitations on the public release of such recordings. (Safety Recommendation R-97-9)

After its investigation of another railroad crash with no surviving crewmembers that occurred in 1999 in Bryan, Ohio, the NTSB reiterated Safety Recommendation R-97-9 to the FRA. The FRA responded that it

> ... has reluctantly come to the conclusion that this recommendation should not be implemented at the present time. ... [The] FRA appreciates that, as time passes and other uses are found for recording media that may create synergies with other public and private purposes, the Board's recommendation may warrant re-examination.

Based on this response and further meetings, the NTSB classified Safety Recommendation R-97-9 "Closed—Unacceptable Action."

Since the refusal by the FRA to act on the recommendation regarding in-cab recorders, the NTSB has continued to investigate crashes in which such recorders would have provided valuable information to help determine probable cause and develop safety recommendations. As a result of its investigation of the July 10, 2005, collision of two CN freight trains in Anding, Mississippi, the NTSB made the following safety recommendation to the FRA:

> Require the installation of a crash- and fire-protected locomotive cab voice recorder, or a combined voice and video recorder, (for the exclusive use in accident investigations and with appropriate limitations on the public release of such recordings) in all controlling locomotive cabs and cab car operating compartments. The recorder should have a minimum 2-hour continuous recording capability, microphones capable of capturing crewmembers' voices and sounds generated within the cab, and a channel to record all radio conversations to and from crewmembers. (Safety Recommendation R-07-3)

Most recently, as a result of the investigation into Chatsworth, California, head-on collision between a Metrolink commuter passenger train and a Union Pacific freight train, the NTSB reclassified Safety Recommendation R-07-03 "Closed—Unacceptable Action/Superseded." In that investigation, the NTSB noted that

> In all too many accidents, the individuals directly involved are either limited in their recollection of events or, as in the case of the Chatsworth accident, are not available to be interviewed because of fatal injuries. In a number of accidents the NTSB has investigated, a better knowledge of crewmembers' actions before an accident would have helped reveal the key causal factors and would perhaps have facilitated the development of more effective safety recommendations.

The NTSB reclassified Safety Recommendation R-07-3 "Closed—Unacceptable Action/Superseded," when it issued Safety Recommendation R-10-1 to the FRA:

> Require the installation, in all controlling locomotive cabs and cab car operating compartments, of crash- and fire-protected inward- and outward-facing audio and image recorders capable of providing recordings to verify that train crew actions are in accordance with rules and procedures that are essential to safety as well as train operating conditions. The devices should have a minimum 12-hour continuous recording capability with recordings that are easily accessible for review, with appropriate limitations on public release, for the investigation of accidents or for use by management in carrying out efficiency testing and systemwide performance monitoring programs. (R-10-1)

The NTSB also issued the following Safety Recommendation to the FRA:

> Require that railroads regularly review and use in-cab audio and image recordings (with appropriate limitations on public release), in conjunction with other performance data, to verify that train crew actions are in accordance with rules and procedures that are essential to safety. (R-10-2)

Recommendations R-10-1 and R-10-2 are currently classified as "Open—Acceptable Response."

Based on the important safety and investigative role of inward-facing video and audio monitoring devices, the NTSB reiterated Safety Recommendations R-10-01 and -02 in its report[4] concerning collision of a BNSF coal train with the rear end of a standing BNSF maintenance-of-way equipment train near Red Oak, Iowa. As a result of the collision, both

[4] See *Collision of BNSF Coal Train 322 With the Rear End of Standing BNSF Maintenance-of-Way Equipment Train, Red Oak, Iowa, April 17, 2011*, Railroad Accident Report NTSB/RAR-12/02 (Washington, D.C.: NTSB, 2012)

crewmembers on the striking train were fatally injured. Damage was in excess of $8.7 million.

As the NTSB stated in its report, the rear-end collision near Red Oak again demonstrated the need for in-cab recording devices to better understand (and thereby prevent) serious railroad crashes that claim the lives of crewmembers, passengers, and the public. While video recorders will assist in the investigation of crashes, their value in preventing crashes cannot be overstated. Installation of inward-facing cameras can also assist railroads in monitoring rules compliance and identifying fatigued engineers. Such monitoring can lead to interventions before a crash occurs.

Closing

I appreciate the opportunity to appear before you today to discuss rail safety and I am prepared to answer your questions.