The Honorable Deborah A.P. Hersman
Chairman

Before the
Subcommittee on Transportation, Housing and Urban Development, and Related Agencies
Committee on Appropriations
United States Senate

Hearing on
Railway Safety

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Good afternoon, Chairwoman Murray, Ranking Member Collins, and Members of the Subcommittee. Thank you for the opportunity to appear before you on behalf of the National Transportation Safety Board (NTSB) and to update you on our ongoing work to improve railroad safety by investigating railroad accidents and issuing safety recommendations. Our nation's economy depends on a safe, reliable rail transportation system, and the American public expects and deserves nothing less. Recent railroad accidents under active investigation, including fatal accidents, remind us of the clear imperative to stay vigilant and stand ready to make improvements to the safety of railroad transportation. Our nation's railroad systems are generally safe, but evolving demands on these systems mean evolving safety challenges, and much work is ahead in our shared mission of making our nation's railroad systems as safe as they can be.

Recent events have placed railroad safety at the forefront of the national conversation. Last May, in Bridgeport, Connecticut, 76 people were injured when a Metro-North Railroad (Metro-North) commuter train derailed, fouled the adjacent track, and was struck by a train approaching on that adjacent track. Just over one week later, a Metro-North track foreman was struck by a train and killed in West Haven, Connecticut. In July, a CSX train operating on Metro-North tracks derailed in The Bronx, New York. On December 1, four people lost their lives and 59 others were injured when a Metro-North commuter train derailed in The Bronx after entering a curve with a 30-mile-per-hour (mph) speed limit at 82 mph. One month later, 2014 dawned with a team of NTSB investigators working the scene of a serious railroad accident near Casselton, North Dakota, where 20 cars of a 106-car BNSF Railway (BSNF) petroleum crude oil unit train ignited after colliding with cars from a derailed BNSF grain train.[1] More than 476,000 gallons of crude oil were released in the accident, and the massive fire triggered a voluntary evacuation of 1,400 people from the surrounding area and resulted in millions of dollars in damage. Last month on March 10, a Metro-North third rail electrician lost his life when struck by a Metro-North train in Manhattan, New York. And most recently, a team of NTSB investigators responded to a Chicago Transit Authority (CTA) train derailment inside the O'Hare International Airport station on March 24 in which 32 people were injured. Early information suggests fatigue may have played a role in the accident.

Our investigations into these accidents continue, and the second portion of this written testimony will update the Subcommittee on what we have learned so far. At any time however, the NTSB may issue safety recommendations in its investigations. In our investigation of the Casselton accident, on April 7, we issued a safety recommendation to the Association of American Railroads (AAR) calling for improved nondestructive testing of rolling-stock axles to detect manufacturing material defects before they lead to accidents. On February 18, we issued three safety recommendations to Metro-North to install signs to clearly warn train crews that they are approaching areas of permanent speed restrictions and to install and review inward- and outward-facing audio and video recorders in locomotives and control cars, which is a longstanding NTSB recommendation to the Federal Railroad Administration (FRA) that remains open.

Current Safety Issues

First, I would like to offer NTSB perspectives on current safety issues that the FRA and

[1] A unit train is a train made up of cars carrying the same product.

others, as appropriate, should expeditiously address. These recommendations reflect the fact that improving rail safety requires a layered approach: prevent accidents, mitigate those we cannot prevent, and ensure that emergency responders are well-equipped and well-trained to handle the accidents when they occur.

The NTSB has issued 106 recommendations to FRA since 2000 to improve railroad safety. Of those 106 recommendations, 55 remain open, and, of those 55 open recommendations, 29 remain open with unacceptable FRA responses. The percentage of open recommendations that have unacceptable responses is higher for the FRA than for any other Department of Transportation (DOT) modal agency or the U.S. Coast Guard. An appendix listing our open recommendations to FRA is attached to this statement. We understand that the FRA's congressionally-mandated rulemaking projects occupy, as they should, a substantial portion of the agency's rulemaking resources. At the same time, however, the FRA's implementation of open NTSB recommendations—recommendations to reduce fatigue among train engineers[2], to implement positive train control (PTC), to require better maintenance, and to make other safety improvements—will save lives. The FRA should develop and publish a plan for implementing open NTSB recommendations without further delay.

I would like to provide further context on several specific NTSB recommendations issued to the FRA and other stakeholders, and safety issues that particularly relate to recurring accidents.

Untreated Sleep Disorders Among Locomotive Engineers

Several NTSB investigations since 2001 have revealed a safety risk that the FRA has not, to date, fully addressed: train crewmember fatigue due to untreated or insufficiently treated obstructive sleep apnea. Impairment from fatigue caused by obstructive sleep apnea caused at least two fatal accidents in the past: Clarkston, Michigan, in 2001, and Red Oak, Iowa, in 2011. Also, we have recently learned that the engineer involved in the December 1 Metro-North accident suffered from obstructive sleep apnea at the time of the accident. Fatigue resulting from undiagnosed obstructive sleep apnea among train engineers continues to pose a clear safety risk that FRA must address.

For more than a decade, the NTSB has recommended that FRA take appropriate measures to ensure that train crewmembers receive prompt diagnoses and treatment for fatigue-inducing conditions, such as sleep apnea. The NTSB's first recommendations on the subject emerged from an investigation of the 2001 collision of two trains near Clarkston, Michigan, in which two train crewmembers died and two others were seriously injured.[3] The NTSB determined that the probable cause of the accident was that the two crew members were sleepy due to fatigue most likely resulting from obstructive sleep apnea, and recommended that the FRA consider sleep problems when assessing the medical fitness of engineers and that the FRA

[2] NTSB Recommendations Nos. R-12-017, and R-13-020 and -021.
[3] NTSB, *Collision of Two Canadian National/Illinois Central Railway Trains Near Clarkston, Michigan November 15, 2001*, Rpt. No. NTSB/RAR-02/04 (Nov. 19, 2002); *see* NTSB Recommendation Nos. R-02-24 to R-02-26.

require that incapacitating or impairing medical conditions be reported to rail carriers.[4]

Moreover, in its investigation of a 2011 freight train collision in Red Oak, Iowa, that killed two crewmembers,[5] the NTSB recommended that the FRA "[r]equire railroads to medically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders" and that the BNSF, the rail carrier involved in the accident, "[m]edically screen employees in safety-sensitive positions for sleep apnea and other sleep disorders."[6] These recommendations remain open.

Fatigue has been raised as a potential issue in current investigations as well. As the NTSB vigorously investigates these accidents, we continue to call on the FRA to take strong action to ensure operating personnel are assessed for fitness with reference to appropriate medical standards that consider sleep disorders. Crewmembers with sleep disorders must receive proper medical treatment to protect against the adverse effects of fatigue in railroad operations.

Railroad Tank Car Design

The nation's railroad network is taking on an expanding role—one that has profound economic importance—as a major channel for the transportation of crude oil and other hazardous products. As the NTSB noted recently, the AAR's 2012 *Annual Report of Hazardous Materials Transported by Rail* states that crude oil traffic has increased by 443 percent since 2005 and that this growth is expected to continue for the foreseeable future. According to the FRA, the volume of crude oil transported by rail has increased dramatically in recent years, from approximately 65,600 carloads in 2011 to approximately 257,450 carloads in 2012—an increase of 292 percent.[7] Moreover, not only is more crude oil being transported by rail, but some of the crude oil being moved on the nation's railroad system—such as that originating in the Bakken formation—may have more volatile properties. In January, the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a safety alert advising "the general public, emergency responders and shippers and carriers that . . . the type of crude oil being transported from the Bakken region may be more flammable than traditional heavy crude oil," with the results of further tests of Bakken crude oil forthcoming.[8]

Furthermore, ethanol traffic transported by railroad increased 442 percent between 2005 and 2010; in 2012, ethanol was the most frequently transported hazardous material in the railroad system.[9] The evolving role of our nation's railroad network in the transportation of flammable crude oil and ethanol requires interested parties to take a comprehensive approach to eliminate or significantly reduce the safety risks. This approach must include improvements to track

[4] NTSB Recommendation Nos. R-02-24, -25.
[5] NTSB, *Collision of BNSF Coal Train With the Rear End of Standing BNSF Maintenance-of-Way Equipment Train, Red Oak, Iowa, April 17, 2011*, Rpt. No. NTSB/RAR-12/02 (April 24, 2012).
[6] NTSB Recommendation Nos. 12-16, 12-26.
[7] FRA Emerg. Order No. 28, 78 Fed. Reg. 48218, 48220 (Aug. 7, 2013).
[8] PHMSA Safety Alert: Preliminary Guidance from Operation Classification (Jan. 2, 2014).
[9] FRA Emerg. Order No. 28, 78 Fed. Reg. at 48221; *see also* NTSB, Letter to The Honorable Cynthia L. Quarterman, Administrator, Pipeline and Hazardous Materials Safety Administration, U.S. Department of Transportation (Jan. 21, 2014), at 7 n. 11-13 (and citations therein).

inspection and maintenance programs and the crashworthiness of the tank cars that transport these materials.

Indeed, as the volume of flammable materials transported by rail grows, the Casselton, North Dakota, accident has become an increasingly commonplace story—and multiple recent serious and fatal accidents reflect substantial shortcomings in tank car design that create an unacceptable public risk. The crude oil unit train involved in the Casselton accident consisted of railroad tank cars designed and manufactured to Department of Transportation (DOT) Specification 111-A100W1 (DOT-111)—a design that presents demonstrated and serious safety concerns when used to transport hazardous materials such as crude oil. Specifically, the NTSB has identified vulnerabilities in DOT-111 tank car design with respect to tank heads, shells, and fittings that create the unnecessary and demonstrated risk that can result in the release of a tank car's product in an accident. Flammable materials such as crude oil and ethanol frequently ignite and cause catastrophic damage.[10]

The NTSB continues to find that accidents involving the rupture of DOT-111 tank cars carrying hazardous materials often have violent and destructive results. For example, on July 6, 2013, a 4,700-foot-long train that included 72 DOT-111 tank cars loaded with crude oil from the Bakken fields derailed in Lac-Mégantic, Quebec, triggering an intense fire fed by crude oil released from at least 60 cars. The fire engulfed the surrounding area and completely destroyed the town center. Forty-seven people died. The NTSB is assisting the Transportation Safety Board of Canada (TSB) in its investigation of that accident, and in January both the NTSB and the TSB issued safety recommendations asking the FRA and PHMSA, as appropriate, to require railroads to evaluate the safety and security risks of crude oil train routes and select routes that avoid populous and other sensitive areas; require railroads to develop comprehensive emergency response plans for worst-case releases resulting from accidents; and require shippers to sufficiently test and properly classify hazardous materials such as crude oil prior to shipment. We look forward to working with PHMSA and the FRA on implementing these recommendations.

In addition, the NTSB is investigating, or has investigated, a spate of recent similar accidents in the United States that demonstrate the destructive results when DOT-111 tank cars containing hazardous materials are punctured, including:

- the July 11, 2012, Norfolk Southern Railway Company train derailment in a Columbus, Ohio, industrial area in which three derailed DOT-111 tank cars released about 54,000 gallons of ethanol, with energetic rupture of one tank car in a post-accident fire;

- the October 7, 2011, Tiskilwa, Illinois, train derailment of 10 DOT-111 tank cars

[10] *See, e.g.*, NTSB, *Derailment of CN Freight Train U70691-18 With Subsequent Hazardous Materials Release and Fire Cherry Valley, Illinois, June 19, 2009*, Accident Rpt. No. NTSB/RAR-12/01 (Feb. 14, 2012), at 88 (concluding that, in accident involving breaches of DOT-111 tank cars, "If enhanced tank head and shell puncture-resistance systems such as head shields, tank jackets, and increased shell thicknesses had been features of the DOT-111 tank cars involved in this accident, the release of hazardous materials likely would have been significantly reduced, mitigating the severity of the accident."). The capacity of a tank car is about 30,000 gallons or 675 barrels of oil.

resulting in fire, energetic rupture of several tank cars, and the release of 162,000 gallons of ethanol;

- the June 19, 2009, Canadian National Railway train derailment in Cherry Valley, Illinois, in which 13 of 19 derailed DOT-111 tank cars were breached, caught fire, and released about 324,000 gallons of ethanol. The post-accident fire resulted in one death, nine injuries, and the evacuation of 600 houses within half a mile of the accident site; and

- the October 20, 2006, New Brighton, Pennsylvania, Norfolk Southern Railway Company train derailment in which 23 DOT-111 tank cars derailed, fell from a bridge, caught fire, and released more than 485,000 gallons of ethanol.

Federal requirements simply have not kept pace with evolving demands placed on the railroad industry and evolving technology and knowledge about hazardous materials and accidents. While the current AAR industry standards adopted for DOT-111 tank cars ordered after October 1, 2011, that are used to transport packing group I and II crude oil impose a level of protection greater than corresponding federal requirements,[11] the NTSB is not convinced that these modifications offer significant safety improvements.

The NTSB continues to assert that DOT-111 tank cars, or tank cars of any successor specification, that transport hazardous materials should incorporate more effective puncture-resistant and thermal protection systems. This can be accomplished through the incorporation of additional protective features such as full head shields, jackets, thermal insulation, and thicker head and shell materials. Because the average service life of a tank car may run 20-50 years, it is imperative that industry, the FRA, and PHMSA take action now to address hazards that otherwise would exist for another half- generation or longer.

Following the 2011 ethanol release and fire in Cherry Valley, Illinois, the NTSB reiterated its prior recommendation that PHMSA, in consultation with the FRA, require that railroads immediately provide emergency responders with accurate, real-time information on hazardous materials on a train.[12]

The importance of providing correct information to first responders highlights a related issue. Following the freight train derailment in Paulsboro, New Jersey, on November 30, 2012, which is the subject of an ongoing NTSB investigation, the NTSB learned of the critical

[11] These new standards, for example, call for DOT-111 tank cars that transport flammable liquids in packing groups I and II (the highest-risk of the three packing groups, classified according to flash and boiling points) to be built with protective "jackets" around their tanks, constructed of normalized steel at least 7/16 inch thick, and call for non-jacketed tanks to be constructed from normalized steel (steel that has been subjected to a heat-treating process that improves its material properties) at least half an inch thick. *See* American Assoc. of Railroads, *Manual of Standards and Recommended Practices: Specifications for Tank Cars*, M-1002. Corresponding Federal regulations require steel thickness of at least 7/16 inch, but they allow for the use of non-normalized steel and do not require incorporation of jackets or head shields. *See* 49 C.F.R. part 179, subpart D.

[12] NTSB Recommendation No. R-07-4.

importance to first responders of immediate, accurate information about the contents of a derailed tank car. First responders' ability to make good decisions in responding to a hazardous materials release depends on their clear understanding of what is in a tank car. Any improvement to railroad tank car safety must proceed hand-in-hand with an improved approach to ensuring first responders have adequate information to take appropriate life-saving actions. PHMSA indicates it, along with the FRA, is working to implement this recommendation.

Although important decisions are clearly ahead for regulators and industry, the NTSB is pleased that at least some progress has been made. PHMSA published an advance notice of proposed rulemaking (ANPRM) on September 6, 2013, for potential safety improvements to DOT-111 tank cars, and we remain engaged in that rulemaking proceeding. In NTSB comments on the ANPRM dated December 5, 2013, we urged PHMSA to promptly address the four recommendations from the Cherry Valley accident report and to issue improved and effective regulations that reduce the risks associated with DOT-111 tank cars. We will continue to carefully monitor PHMSA's progress and will ensure decision-makers have the full benefit of the lessons the NTSB has learned through its investigations. The NTSB also continues to call on industry stakeholders to rise to the challenge and explore measures that will improve tank car design in the interim, and, on April 22-23, we will hold a rail safety forum on the transportation of crude oil and ethanol to get more information on this important safety issue in to the public domain.

Implementation of PTC Systems

PTC systems help prevent (a) derailments caused by over-speeding, (b) train-to- train collisions by slowing or stopping trains that are not being operated in accordance with the signal systems and operating rules, and (c) track workers being struck by trains. The first NTSB-investigated accident that train control technology would have prevented occurred in 1969, when four people died and 43 were injured in the collision of two Penn Central commuter trains in Darien, Connecticut. The NTSB recommended in response to that accident that the FRA study the feasibility of requiring railroads to install an automatic train control system, the precursor to today's PTC systems.[13]

More recently, in 2008, more lives were lost in a PTC-preventable accident when a Metrolink commuter train and a Union Pacific freight train collided head-on in Chatsworth, California, killing 25 people and injuring 102 others. The NTSB concluded that the Metrolink engineer's use of a cell phone to send text messages distracted him from his duties. PTC would have prevented the tragedy that resulted. In the aftermath of the Chatsworth accident, Congress enacted the Rail Safety Improvement Act (RSIA) of 2008, which requires rail lines with passenger service or that carry poisonous-by- or toxic-by-inhalation materials.[14] In 2012, however, the FRA exempted about 10,000 miles of track from the PTC mandate.

We continue to see accidents that could be prevented by PTC. The December 1 Metro-North accident in The Bronx, which killed four people and injured 59 others, would have been prevented by PTC. Since 2004, in the 25 PTC-preventable freight and passenger rail accidents

[13] NTSB Recommendation No. R-70-020.
[14] Rail Safety Improvement Act of 2008, Pub. L. No. 110-432, § 104 (2008).

that NTSB investigated, 65 people died, more than 1,100 were injured, and damages totaled millions of dollars.[15]

Implementation of PTC systems was included on the NTSB's Most Wanted List when the list was first published in 1990 and has remained on the list almost continuously since that time. We may never eliminate human error from the railroad system, but PTC provides a level of redundancy to protect the people on board trains and in surrounding communities when human factors, such as distraction or fatigue, might otherwise set an accident sequence into motion.

Some rail carriers have installed PTC or are working to meet the 2015 deadline. However, in August 2013, the Government Accountability Office reported to the U.S. Senate that, due to a number of complex and interrelated challenges, the majority of railroads will not complete PTC implementation by the 2015 deadline.[16] The NTSB files are filled with accidents that could have been prevented by PTC, and for each and every day that PTC implementation is delayed, the risk of an accident remains.

There is much debate by policymakers over whether to extend the 2015 deadline established by the 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 deadline so that regulators and policymakers can make informed decisions. Lives depend on it.

The NTSB has called for such a transparent accounting. Following the head-on collision of two Union Pacific freight trains in Goodwell, Oklahoma, the NTSB recommended that railroads covered under the RSIA PTC implementation mandate "[p]rovide positive train control implementation update reports to [the FRA] every 6 months until positive train control implementation is complete." Additionally, the NTSB recommended that the FRA publish these reports on its website within 30 days.[17]

This information should be made available online to ensure a transparent accounting for actions taken and not taken to meet the 2015 deadline so that regulators and policymakers can make informed decisions. However, because of the FRA's lack of sufficient action on this recommendation, we recently classified the recommendation as "Open—Unacceptable Response." We are disappointed by the FRA's recent position that it will not regularly and automatically provide the public with updates on rail carrier progress toward PTC implementation. The American people deserve full information on such important safety improvements.

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[15] These accidents do not include Metro-North accidents.

[16] Gov't Accountability Office, *Positive Train Control: Additional Authorities Could Benefit Implementation*, GAO Rpt. No. GAO-13-720 (August 2013), *available at* http://www.gao.gov/assets/660/656975.pdf.

[17] *See* NTSB, *Head-On Collision of Two Union Pacific Railroad Freight Trains Near Goodwell, Oklahoma June 24, 2012,* Rpt. No. NTSB/RAR-13/02 (June 18, 2013); Recommendation Nos. R-13-23 and R-13-27 (2013).

Inward- and Outward-Facing Locomotive Audio and Image Recorders

The December 1, Metro-North accident in the Bronx raised questions about the actions of the engineer prior to the crash. The NTSB has repeatedly called for railroad carriers to install inward- and outward-facing audio and image recorders to answer similar questions that have arisen in other accidents. Recorders in locomotives and cab car operating compartments are critically important not only because they would assist NTSB investigators and others understand what happened in a train in the minutes and seconds before an accident, but also because they would help railroad management *prevent* accidents by identifying and responsibly addressing safety issues before they lead to injuries and loss of life and allow for the development of material that can be a valuable training and coaching tool.

The Chatsworth tragedy in 2008 again made the case crystal-clear for understanding the activities of crewmembers in the minutes and seconds leading up to accidents. Discussing the strong safety case for a requirement for inward-facing cameras in locomotives, the NTSB noted that

> [i]n 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.[18]

Accordingly, the NTSB recommended that the FRA require the installation, in control compartments, of "crash- and fire-protected inward- and outward-facing audio and image recorders capable of providing recordings [for at least 12 hours] to verify that train crew actions are in accordance with rules and procedures that are essential to safety as well as train operating conditions."[19] The NTSB also recommended that the FRA "[r]equire that railroads regularly review and use in-cab audio and image recordings . . . to verify that train crew actions are in accordance with rules and procedures that are essential to safety."[20]

The NTSB recently reiterated these important recommendations in its report on the collision of a BNSF coal train with the rear end of a standing BNSF maintenance-of- way equipment train near Red Oak, Iowa, which resulted in fatal injuries to the two crewmembers of the striking train. Damage was in excess of $8.7 million. As the NTSB stated in its report, the accident 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.

[18] NTSB, *Collision of Metrolink Train 111 With Union Pacific Train LOF65-12 Chatsworth, California September 12, 2008*, Rpt. No. NTSB/RAR-10/01 (Jan. 21, 2010), at 58.
[19] NTSB Recommendation No. R-10-1.
[20] NTSB Recommendation No. R-10-2.

In February, we issued our longstanding recommendation on this subject directly to Metro-North Railroad. An industry-wide FRA-mandated approach would be far more effective, but failing that, we will address the recommendation on an individual basis.

Strong Safety Cultures

Fostering the development of transparent, top-to-bottom safety cultures in transportation is an important priority of the NTSB. Creating and nurturing a thriving safety culture within rail carriers is even more imperative in light of the expanding role of the nation's railroad system as a main transporter of flammable materials and the continual increase in passenger ridership.

The NTSB held a public forum on September 10 and 11, 2013, on successes and challenges associated with creating and maintaining strong safety cultures across the transportation modes, including rail. Panels of experts from academia, industry, and Federal regulatory agencies, such as the FRA, offered their perspectives on the significant organizational commitments and managerial work that are required to maintain safety cultures across large, complex organizations such as transportation carriers.

As Members of the Subcommittee well remember, organizational factors at the Washington Metropolitan Area Transit Authority (WMATA) contributed to the fatal June 22, 2009, Metrorail train collision near the Fort Totten station in Washington, D.C. The NTSB found that WMATA leaders did not take sufficient action to make safety a priority and to identify and address safety issues from the top down: the WMATA General Manager did not provide adequate information about critical safety issues; the WMATA Board of Directors did not seek information about critical safety issues; and the Board of Directors did not exercise oversight responsibility for system safety.

While WMATA has addressed many of these issues, the NTSB is examining the role of safety culture in the Metro-North accident investigations. The NTSB public investigative hearing regarding two Metro-North accidents last May examined the importance of an organizational safety culture and the critical role that organizational culture plays in preventing accidents. The NTSB learned during the hearing that Metro-North has undertaken efforts to foster a stronger safety culture but that challenges remain. The then-president of Metro-North spoke of the "challenge" associated with creating "a clear understanding across the organization that safety is the core value and we're not looking for shortcuts, and that we want people to work safely."[21] Metro-North officials and labor stakeholders further assured the NTSB that Metro-North is taking action to address safety issues from the top to the bottom. Organizational issues within the railroad industry will continue to be an area of examination as the NTSB investigations of the Bridgeport, West Haven, two Bronx, and the Manhattan accidents continue.

In particular, the Bridgeport accident underscores the critical importance of regular, vigorous, and robust inspections of tracks. Railroad management must afford track workers adequate time and opportunity to conduct inspections and make repairs as necessary. As part of

[21] NTSB, Board of Inquiry in the Matter of Two Metro-North Rail Accidents: Bridgeport Train Derailment on May 17, 2013, and West Haven Collision Death of a Metro-North Track Foreman on May 28, 2013, Tr. Vol. II at 329 (Washington, D.C., Nov. 7, 2013).

its ongoing investigation, 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.

The importance of building relationships between management and employees that foster a vibrant safety culture cannot be overlooked. Trust is an essential ingredient in those relationships. A culture in which front-line employees may openly report operational errors and safety issues without fear of reprisal is absolutely critical, and, as we have seen in the aviation context, improves safety.

The NTSB will continue to urge Federal regulators, such as FRA and the Federal Transit Administration (FTA), to facilitate establishment of appropriate safety cultures. The WMATA accident, in particular, underscored the critical need for rail mass transit operators to enhance and nourish safety cultures. Our 2014 Most Wanted List reaffirms our view that:

> [t]he FTA should consider the elements of safety culture, crew resource management, fatigue risk management, and technology, as well as lessons learned from the rail industry, as it moves forward with [new legislative authority to set and enforce new safety standards and conduct investigations]. Identifying and implementing these will be key to saving lives and preventing injuries.

Updates on Ongoing Investigations

I would now like to update the Subcommittee on developments in several recent investigations that are keeping the NTSB's railroad investigators very busy and demonstrate the need for continued vigilance in the railroad operating environment.

Metro-North Railroad Accidents

On December 1, 2013, the NTSB launched an investigative team to The Bronx, where a Metro-North Railroad commuter train with approximately 115 passengers on board derailed shortly after 7:15 a.m. near the Spuyten Duyvil station, while going from Poughkeepsie to Grand Central Station in New York City. Four passengers died in the Thanksgiving holiday weekend accident and at least 59 others sustained injuries requiring medical treatment. Metro-North estimated damage in excess of $9 million. The Bronx derailment was the fourth accident involving Metro-North property to trigger an NTSB investigation in 2013.

The NTSB issued a preliminary factual report on the accident on January 14, 2014. Based on evidence obtained to this point, our investigators have found that the accident train was traveling at approximately 82 mph when it derailed in the curve on approach to the Spuyten Duyvil station. The speed limit for the curve was 30 mph. PTC would have prevented this accident. Metro-North does not have a PTC system and has stated it will not meet the deadline, but it thought its system would be as robust as PTC. This accident demonstrated that it was not.

Investigators have conducted detailed inspections and testing of the signal system, train brakes, and other mechanical equipment, and thus far have found no anomalies. They found no pre-accident anomalies in the track in the derailment area. Investigators have interviewed the train crewmembers, including the engineer and first responders and will continue to obtain and examine evidence from NTSB headquarters as the investigation proceeds. We are receiving excellent cooperation from the parties to the investigation: the FRA, Metro-North, the New York Public Transportation Safety Board, Teamsters Local 808, the New York Police Department, the New York Fire Department, and Bombardier Transportation, which manufactured the cars involved in the accident.

As previously stated, in February, the NTSB issued three additional safety recommendations to Metro-North. As our investigation proceeds, the NTSB will be prepared to issue additional safety recommendations if we determine any further safety improvements are necessary prior to the completion of our investigation.

Last June, the NTSB issued an urgent safety recommendation following the May 28 accident in which the track foreman died, calling upon Metro-North to immediately implement redundant measures to ensure the safety of track workers[22] (Metro-North indicates it is implementing this recommendation), and the NTSB reiterated a safety recommendation to the FRA to require redundant signal protection, such as shunting, for maintenance-of-way work crews who depend on the train dispatcher to provide signal protection.[23] That recommendation is currently classified as open with an acceptable response.

I am pleased to inform the Subcommittee that Metro-North has fully cooperated in all these investigations, at a difficult time for the railroad and its employees in the wake of several closely-spaced accidents. We anticipate and look forward to Metro- North's continued cooperation as the investigations proceed.

Although it is still too early in our investigations of these accidents to draw definitive conclusions, we will seek answers to the following questions, among others: What caused these accidents? Are there common threads among the accidents? What improvements can Metro-North, regulators, and others adopt that will prevent similar accidents from occurring in the future?

At the same time, we are closely studying FRA's March 2014 report to Congress on the agency's "Operation Deep Drive," a comprehensive assessment of the safety of Metro-North's operation. As we analyze FRA's findings, we are at least encouraged that FRA is taking a broad view in its safety oversight and has demonstrated willingness to identify and correct safety deficiencies while the NTSB's investigation proceeds.

The NTSB tentatively expects to complete our investigations of all four accidents involving Metro-North trains or property in mid-November. Last month, we sent a team to New York City to investigate another Metro-North worker fatality. It is troublesome that this is the fifth accident involving Metro-North in less than one year that we are investigating. We

[22] NTSB Recommendation No. R-13-17.
[23] NTSB Recommendation No. R-08-6.

recognize and share the Subcommittee's sense of urgency to understand what lessons can be drawn from these accidents and to ensure that the railroad industry and its regulators implement appropriate safety improvements to prevent recurrences, and if our investigation reveals problems that need immediate attention, we will not hesitate to issue appropriate recommendations before we complete the investigation.

Freight Train Collision and Crude Oil Release near Casselton, N.D.

As I noted above, the NTSB is investigating the December 30, 2013, Casselton, North Dakota, accident that resulted in a significant post-crash fire that triggered a voluntary evacuation of about 1,400 people from the surrounding community.

The accident sequence began shortly after 2 p.m. when 13 cars of a 112-car westbound BNSF grain train derailed. One of the derailed cars came to rest on the adjacent track. Shortly afterward, a 106-car BNSF petroleum crude oil unit train travelling east on the parallel track collided with the derailed grain car. The collision caused the head-end locomotives and the first 21 cars of the crude oil train to derail. Some of the crude oil tank cars were punctured during the accident releasing crude oil that ignited and caused the energetic rupture of several other tank cars. Dense smoke and concern over expanding fires resulted in voluntary evacuation of the surrounding area.

The crews on the two trains were uninjured. No injuries to the public were reported. Damage was estimated at $6.1 million.

On a preliminary basis, we have found that, of the 20 derailed tank cars, 18 were breached and more than 476,000 gallons of crude oil were released. NTSB investigators have completed the on-scene portion of the investigation, including interviews with the train crews and first responders. A broken axle and two wheels were shipped to the NTSB materials laboratory in Washington, D.C., for further evaluation and analysis, as well as the locomotive event and video recorders. The parties to the investigation include the FRA; PHMSA; the BNSF; the Brotherhood of Locomotive Engineers and Trainmen; the International Association of Sheet Metal, Air, Rail and Transportation Workers, formerly known as the United Transportation Union; Trinity Rail Car; and Standard Steel, LLC.

On April 7, we issued a recommendation to the AAR to "require secondhand-use railroad axles to undergo nondestructive testing specifically designed to locate internal material defects in axles." We issued this recommendation after learning that the recovered broken axle broke because of a manufacturing defect The current nondestructive testing requirements prescribed by the AAR are not effective in detecting internal material defects, including centerline voids as discovered in the Casselton axle, in secondhand-use axles. Alternate test methods, however, are capable of locating internal material defects, such as the centerline void we discovered in the axle involved in the accident. We have found that, had the broken axle in this case been subjected to more thorough nondestructive testing when it was reworked in 2010, the material defect would likely have been found and the axle would not have been allowed to be returned to service. Our recommendation calls for augmented testing to ensure that axles are safe to return to service.

CTA Accidents

The NTSB also continues to investigate recent two CTA accidents in the Chicago area, the most recent of which occurred March 24, 2014, at about 2:49 a.m. local time, when a CTA train collided with the bumper post at the end of a track at the CTA's O'Hare Station. The lead car rode over the bumper and went up an escalator at the end of the track. Thirty-two people, including the operator, were transported to the hospital. Damage to equipment was estimated at $6 million.

The train was operating at about 26 mph when it passed over the fixed trip stop, which applied the train emergency braking system. The distance from the fixed trip stop to the end of the track, however, was too short to allow the train to stop in time.

The operator said she dozed off shortly before the accident and that the last signal she recalled indicated that the next signal would require a stop. She said she woke up when the train passed over the fixed trip stop. We are continuing to gather evidence as we thoroughly investigate this accident.

We also continue to investigate the September 30, 2013, CTA train collision in Forest Park, Illinois, in which, at 7:42 a.m. local time, an unattended CTA train collided with a train in operation at the Harlem-Congress Station on the CTA Blue Line. One car derailed. No serious injuries were reported; however, two CTA employees, including the train operator, and 33 passengers were transported to local hospitals and were later released.

The unattended train, with neither an operator nor passengers aboard, had begun rolling out of the Forest Park Yard at 7:38 a.m. It traveled northward onto the southbound main track toward the Harlem-Congress station. Based on a preliminary review of the event recorder data, we believe it was traveling at 25 mph just before reaching the Harlem-Congress Station. At 7:41 a.m., CTA train 110, which was operating in service with eight railcars, was stopped as scheduled at the Harlem-Congress Station. At 7:42 a.m., the unattended train struck the in-service, stopped train.

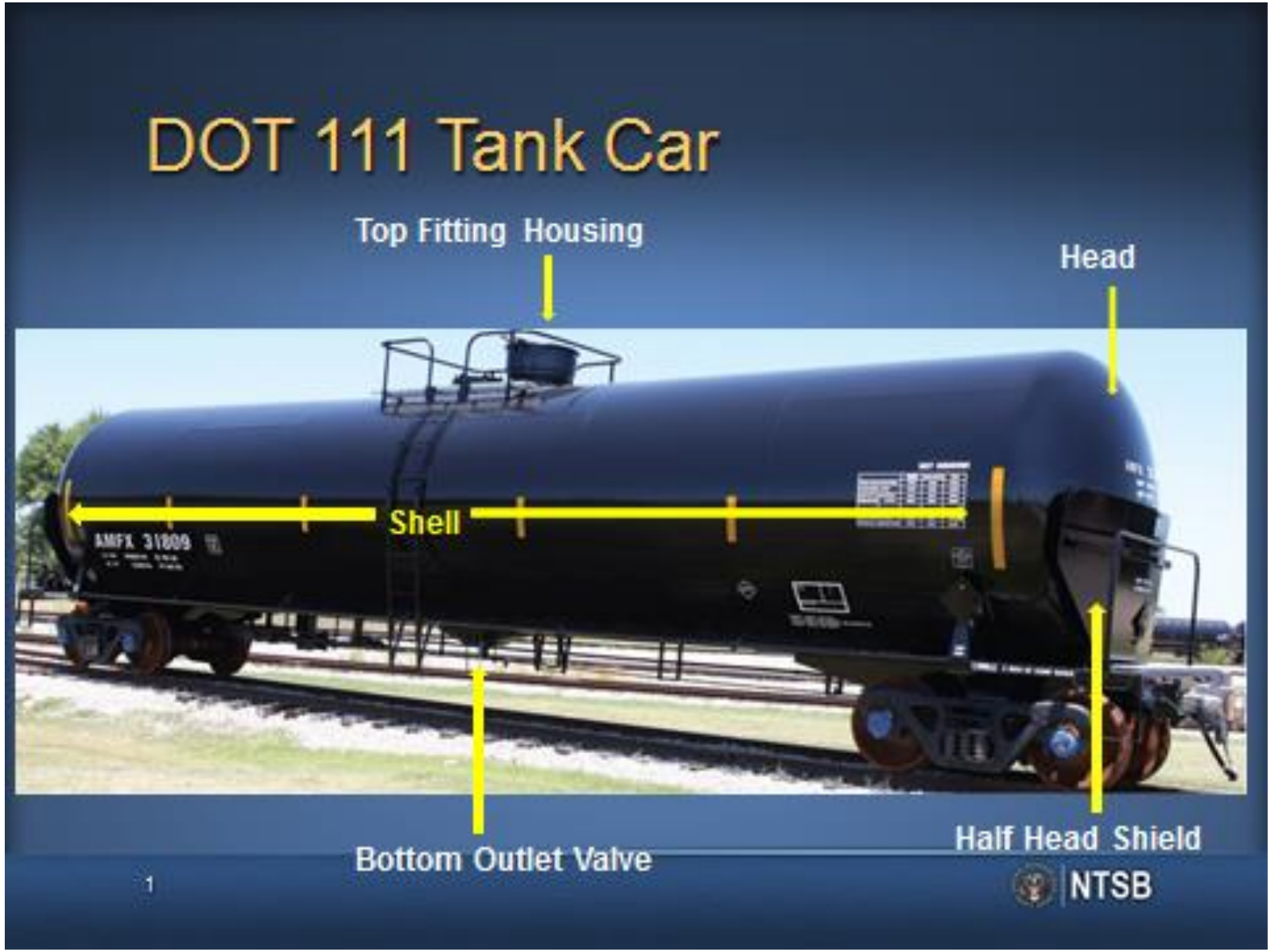
Both trains were designed for multiple unit operation. Electrical power was provided by an outside third rail. Train movements on the Blue Line are controlled by a traffic control system, which consists of wayside track signal indications and in-cab signals in the train operator's cab. Initial property damage was estimated at $6.4 million.

On October 4, 2013, the NTSB issued two urgent safety recommendations[24] to the CTA. The recommendations address the need for redundant protection to prevent unintended train movements on the CTA system. The NTSB also issued one safety recommendation[25] to the FTA to advise all transit properties to review their operating and maintenance procedures for stored, unoccupied cars.

[24] NTSB Recommendation No.R-13-034 and R-13-035.
[25] NTSB Recommendation No. R-13-036.

Conclusion

Thank you for the opportunity to appear before you and to provide updates on our ongoing investigations as well as NTSB perspectives on several compelling safety issues. Please be assured that the NTSB will remain engaged on these and all issues affecting transportation safety. I look forward to answering the Subcommittee's questions.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