

**TESTIMONY BEFORE THE PENNSYLVANIA SENATE TRANSPORTATION
AND ENVIRONMENTAL RESOURCES & ENERGY COMMITTEES
REGARDING RAIL TRANSPORTATION OF CRUDE OIL
JUNE 9, 2015**

Good morning. I would like to thank Chairmen Rafferty, Wozniak, Yaw, and Yudichak and both the Senate Transportation and Environmental Resources & Energy committees for inviting Norfolk Southern to participate in today's hearing regarding the movement of crude oil by rail in the Commonwealth of Pennsylvania. My name is Rudy Husband, and I am resident vice president of government relations for Norfolk Southern, based here in Harrisburg. I joined the railroad 27 years ago, and have had the honor of calling Pennsylvania home for the past 25 years.

Corporate Overview

To provide a brief description of Norfolk Southern, we are one of the largest freight railroads in North America. We operate over 20,000 route miles of track in 22 states, primarily east of the Mississippi River, with approximately 30,000 employees. Pennsylvania is the largest state on the NS network, with more than 5,000 employees, and a payroll of \$340 million. Our major employment centers in the Commonwealth include Allentown, Altoona, Harrisburg and Pittsburgh. In 2014, we purchased more than \$1 billion in goods and services from Pennsylvania vendors and paid \$34 million in state and local taxes. Since 2011, NS has invested \$610 million into our infrastructure in Pennsylvania.

As it relates specifically to crude oil, Norfolk Southern operates 14-25 trains weekly, serving refineries and transload facilities in Pennsylvania, New Jersey and Delaware. To provide some context, the movement of crude oil by rail makes up less than 2 percent of Norfolk Southern's book of business.

As part of today's panel discussion my focus will be on the ways that the rail industry is working to advance safety, and steps that have already been taken under federal regulatory action.

Crude Oil & Hazardous Material Safety Performance

The growth of North American oil in recent years represents an important opportunity for the United States to reduce our dependence on foreign oil. While this in itself is a positive outcome, the increase in domestically produced energy is creating more economic development opportunities all over the country, which translates into thousands of new jobs – as evidenced by what has been occurring in the Philadelphia region -- tens of billions in annual savings in our nation's trade deficit, and large amounts of new tax revenue at the federal, state and local levels. Rail has a critical role in delivering these benefits to our country. From 2000 through 2014, a period during which U.S. railroads terminated 1.405 million carloads of crude oil, more than 99.99 percent of those carloads arrived at their destination without a release caused by an accident.

Operating Restrictions that Apply to Crude Oil

Over the past several years there have been numerous discussions between the rail industry and appropriate agencies in Washington about further enhancing safety on the movement of crude oil by rail. In your packet is the chronology of crude oil by rail safety actions the rail industry has taken since 2009. But I would like to take a moment to focus on two significant steps.

The first was that on January 16, 2014, top leadership from the nation's railroad and oil production industries met with U.S. Secretary of Transportation Anthony Foxx to discuss ways to improve the safety of crude oil by rail. At that meeting, Secretary Foxx charged officials from each industry with providing specific information to the DOT on immediate steps that will be taken to improve the safety of crude by rail, with a focus on actions that improve both accident prevention and mitigation.

As a result of this meeting, on February 21, 2014, the U.S. Department of Transportation and the rail industry announced a rail operations safety initiative that instituted various new voluntary safety operating practices regarding the movement of crude oil by rail. These voluntary practices went above and beyond the AAR's industry operating practices (AAR Circular OT-55) and Federal Railroad Administration (FRA) Emergency Orders. The key elements of that voluntary agreement included:

- Risk assessment routing analysis that utilized at a minimum 27 different safety and security factors to evaluate rail routes
- Speed restrictions, such as 40 mph restrictions in High Threat Urban Areas (HTUA) for trains meeting the agreement definition
- Additional rail inspections above federal requirements
- Additional advanced trackside detectors above federal requirements
- Training and tuition assistance for local first responders
- Creating local emergency response resource inventories
- Use of end-of-train devices or distributed power for faster train stopping

The second significant step occurred on May 1 when the USDOT issued its Final Rule for enhanced tank car standards and operational controls for high hazard flammable trains (referred to as HHFTs). This new rule applies to trains that contain a continuous block of 20 or more tank cars loaded with crude oil and other flammable liquids or 35 or more loaded flammable liquid tank cars anywhere in the train. This new rule actually codified many of the provisions of the 2014 voluntary agreement. In your packet is a summary of the new rule as well as the timeline for retrofitting existing tank cars, but the areas addressed in the new rule include:

- Enhanced standards for new tank cars to be used in HHFT service as well as the retrofitting of existing tank cars when those cars are intended for HHFT service
- Braking systems utilizing two-way end of train devices or distributed power, and later, electronically-controlled pneumatic brakes, or ECP brakes.
- Reduced operating speeds in certain areas
- More accurate classification of unrefined petroleum-based products
- Routing analysis and inclusion of HHFTs in security plans, along with coordination with emergency responders to that end

While the rail industry will comply with the requirements of the new rule as they become legally effective, it should be noted that the rail industry has serious concerns about the ECP brake requirements and the potential adverse impacts on the fluidity of the national freight rail network. It should be further noted that at least five appeals

challenging the May 1, 2015 tank car Final Rule have been filed against USDOT in United States Circuit Courts of Appeal, at least one of which involves ECP brakes.

Enhanced Tank Car Standards

As new crude oil sources are used for energy production that apparently produce uncharacteristically highly flammable crude oils; as modeling of tank car failures in derailments becomes more sophisticated; and as commercially available materials of construction improve in the marketplace, we also must address the opportunities to reduce the risk of tank cars failing in an incident. Improved tank car construction standards for new builds and retrofits are a must.

Crude oil and thousands of other products are transported by railroads in tank cars safely every day across the nation's railways. The total North American tank car fleet consists of about 335,000 tank cars. Railroads themselves own less than 1 percent of these cars; nearly all are owned by rail customers and leasing companies.

There are dozens of different types of tank cars, approximately 228,000 of which are so-called "DOT-111" general service tank cars. These cars are considered the workhorses of the tank car fleet. Approximately 92,000 of these DOT-111 cars are used to transport crude oil today, and these include various different types of DOT-111 cars.

The AAR Tank Car Committee sets industry standards regarding how tank cars used in North America are designed and constructed. These standards often exceed the requirements of federal standards. The Tank Car Committee is comprised of railroads, rail car owners, rail car manufacturers, and rail hazmat customers that lease tank cars, with active participation from the U.S. Department of Transportation, Transport Canada, and the National Transportation Safety Board (NTSB).

The NTSB has been recommending enhanced standards for DOT-111 tank cars used to transport hazardous materials for years. Railroads have also been aggressively advocating for improved tank car standards for years, and we agree with the spirit of the NTSB's recommendations and will continue to work cooperatively with the agency as it pursues our joint goal of enhanced transportation safety.

In March 2011, the AAR petitioned the Pipeline and Hazardous Materials Safety Administration (PHMSA) to adopt more stringent requirements for new tank cars used to

transport Packing Group I and II hazardous materials, which include most crude oils. These tougher standards called for more puncture resistance through the use of a thicker tank car shell or a jacket, extra protective “head shields” at both ends of the cars, and additional protection for the fittings on the top of a car.

In July 2011, after PHMSA did not act on the AAR’s proposal, the Tank Car Committee proactively and voluntarily adopted the standards included in AAR’s petition to PHMSA as the basis for new industry standards for tank cars used to carry crude oil. The new standards, referred to as “CPC-1232,” apply to new tank cars ordered after October 1, 2011. To date, approximately 18,000 tank cars have been built to this tougher CPC-1232 standard.

In November 2013, the rail industry filed rulemaking comments to PHMSA’s Notice of Proposed Rulemaking recommending adoption of safety standards even more stringent than CPC-1232 for new tank cars being built to transport flammable liquids. This recommendation also called for aggressively retrofitting and/or phasing out older tank cars (including CPC-1232 cars and the older “legacy” DOT-111 cars) used to transport flammable liquids.

In the Final Rule issued by USDOT in May, new tank cars constructed after October 1, 2015 and used in so-called “high hazard flammable train” service (i.e., in blocks of 20 or more cars, or 35 or more cars anywhere in a train), are required to meet the new standards. The prescribed car has a 9/16 inch tank shell, 11 gauge jacket, 1/2 inch full-height head shield, thermal protection, and improved pressure relief valves and bottom outlet valves. Existing tank cars must be retrofitted with the same key components based on a specific retrofit schedule.

The final rule will require retrofitting or replacing the DOT-111 tank cars used in high hazard flammable train service for Packing Group I, which covers most crude shipped by rail, within three years and all non-jacketed CPC-1232s, in the same service, within approximately five years. Note that, in contrast to the rules in Canada, the legacy DOT-111s will not be entirely phased out of flammable liquid service in the United States. Even at the end of the phase out schedule, they will be permitted as long as they are not used in so-called high hazard flammable trains. This means that railroads

will need to determine how many of each kind of tank cars the shippers are using to ensure that upgraded tank cars – or, alternatively, not too many of the older DOT-111 or CPC-1232 tank cars – are in a particular train, or else be required to implement a variety of operational restrictions that could affect service and the fluidity of the national freight rail network. The rail industry had advocated for the Canadian approach – a complete phase out of the legacy cars from flammable liquid service, not dependent on the intended use of the tank car or the number of flammable liquid cars in any particular train.

We believe the Final Rule should have been stronger regarding the pool fire survivability standard. The AAR and the American Petroleum Institute (API) raised this issue when they submitted joint comments on tank car standards in response to the proposed rule issued by the Pipeline and Hazardous Materials Safety Administration (PHMSA) last September. AAR and API jointly urged PHMSA to adopt requirements for a thermal blanket as part of a thermal protection system.

AAR also recommended a thermal conductivity standard for a thermal blanket that prior modeling shows would generally achieve 800 minutes of survivability in a pool fire as compared to the 100 minute pool fire survivability standard specified in the final rule. The 100 minute pool fire survivability standard in the final rule does little, if anything, to enhance the performance of these cars. Prior modeling shows that these cars can meet this standard even in the absence of a thermal blanket, so as a performance standard, it is simply ineffectual. Adoption of the AAR's proposal to require a thermal blanket would have resulted in very significant safety benefits at a modest cost. Unfortunately, PHMSA did not even discuss these recommendations when it published its Final Rule earlier this month. We can do better, and we feel that PHMSA is leaving an unacceptable amount of risk on the table with a 100 minute pool fire survivability standard.

The NTSB shares our concern on this based on the April 3, 2015 Safety Recommendation that they submitted to PHMSA. The NTSB stated in this document that they are concerned that the 100 minute pool fire survivability standard may not be sufficiently robust to prevent unacceptable performance in accidents. NTSB further advised in this Safety Recommendation that thermal blankets that are already in use on

cars that are used to transport liquefied petroleum gases have the capability to provide protection that significantly exceeds the 100 minute performance standard when used on flammable liquids tank cars.

The rail industry would welcome whatever assistance the General Assembly and the Commonwealth would be willing to offer in urging PHMSA to address this important aspect of tank car safety.

Conclusion

In conclusion, the single most important point I hope you take away from this presentation is the full understanding that the rail industry has been – and will continue to be – extremely proactive on safely transporting crude oil by rail. We are committed to continuing to work with appropriate government agencies, shippers, oil industry customers, and other stakeholders as necessary to identify additional safety enhancing steps that will help make the North American rail network even safer.

Thank you.

“Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains” Final Rulemaking

Below is a summary of the key provisions contained in the May 1, 2015 Final Rule issued by the Pipeline and Hazardous Materials Safety Administration and the Federal Railroad Administration.

Scope of Rulemaking

- Unless stated otherwise, the rule applies to “High-hazard flammable trains” (HHFT) which means “a continuous block of 20 or more tank cars loaded with a flammable liquid or 35 or more tank cars loaded with a flammable liquid dispersed through a train.”

Enhanced Braking

- Require HHFTs to have in place a functioning two-way end-of-train (EOT) device or a distributive power (DP) braking system.
- Require any high-hazard flammable unit train (HHFUT)¹ transporting at least one packing group I flammable liquid be operated with an electronically controlled pneumatic (ECP) braking system by January 1, 2021.
- Require all other HHFUTs be operated with an ECP braking system by May 1, 2023.

Enhanced Standards for New and Existing Tank Cars Used in HHFTs

- New tank cars constructed after October 1, 2015 are required to meet enhanced DOT Specification 117 design or performance criteria for use in an HHFT.
- Existing tank cars must be retrofitted in accordance with the DOT-prescribed retrofit design or performance standard for use in an HHFT.
- Retrofits must be completed based on a prescriptive retrofit schedule. The retrofit timeline focuses on two risk factors, the packing group and differing types of DOT-111 and CPC-1232 tank car.
- A retrofit reporting requirement is triggered if consignees owning or leasing tank cars covered under this rulemaking do not meet the initial retrofit milestone.

Reduced Operating Speeds

- Restrict all HHFTs to 50-mph in all areas.
- Require HHFTs that contain any tank cars not meeting the enhanced tank car standards required by this rule operate at a 40-mph speed restriction in high-threat urban areas defined the Transportation Security Administration’s regulations at 49 CFR 1580.3.

More Accurate Classification of Unrefined Petroleum-Based Products

- Document sampling and testing program for all unrefined petroleum-based products, such as crude oil.
- Certify that programs are in place, document the testing and sampling program outcomes, and make information available to DOT personnel upon request.

Rail routing - Risk Assessment

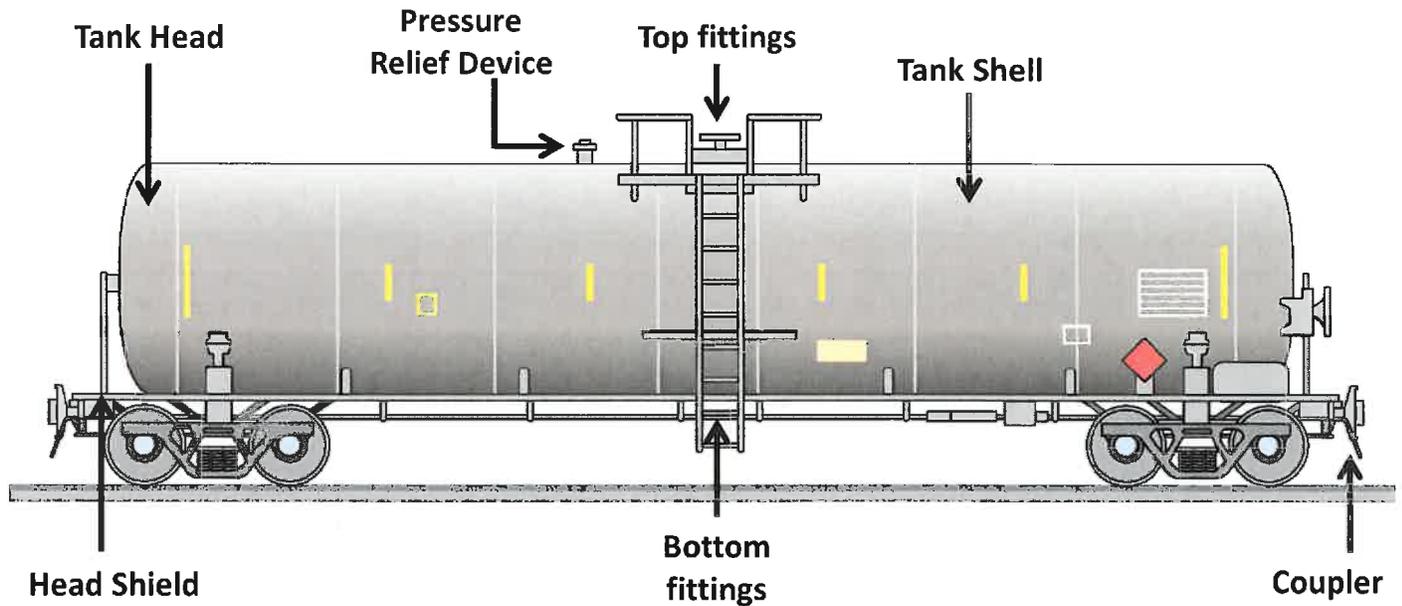
- Railroads operating HHFTs would be required to perform a routing analysis that considers, at a minimum, 27 safety and security factors and select a route based on its findings. These planning requirements are prescribed in 49 CFR § 172.820.

Rail routing – Information Access

- Ensures that railroads notify State and/or regional fusion centers, and that State, local and tribal officials who contact a railroad to discuss routing decisions are provided appropriate contact information for the railroad in order to request information related to the routing of hazardous materials through their jurisdictions.

¹ A “high-hazard flammable unit train” (HHFUT) means a train comprised of 70 or more loaded tank cars containing Class 3 flammable liquids traveling at greater than 30 mph.

Anatomy of a Tank Car



Timeline for the Retrofit of Affected Tank Cars for Use in North American HHFTs			
Tank Car Type / Service	US Retrofit Deadline*	Tank Car Type / Service	Transport Canada Retrofit Deadline
Non Jacketed DOT-111 tank cars in PG I service	(<i>January 1, 2017</i>) ² <i>January 1, 2018</i>	Non Jacketed DOT-111 tank cars in Crude Oil service	<i>May 1, 2017</i>
Jacketed DOT-111 tank cars in PG I	<i>March 1, 2018</i>	Jacketed DOT-111 tank cars in Crude Oil service	<i>March 1, 2018</i>
Non Jacketed CPC-1232 tank cars in PG I service	<i>April 1, 2020</i>	Non Jacketed CPC-1232 tank cars in Crude Oil service	<i>April 1, 2020</i>
Non Jacketed DOT-111 tank cars in PG II service	<i>May 1, 2023</i>	Non Jacketed DOT-111 tank cars in Ethanol service	<i>May 1, 2023</i>
Jacketed DOT-111 tank cars in PG II service	<i>May 1, 2023</i>	Jacketed DOT-111 tank cars in Ethanol service	<i>May 1, 2023</i>
Non Jacketed CPC-1232 tank cars in PG II service	<i>July 1, 2023</i>	Non Jacketed CPC-1232 tank cars in Ethanol service	<i>July 1, 2023</i>
Jacketed CPC-1232 tank cars in PG I and PG II service and all remaining tank cars carrying PG III materials in an HHFT (pressure relief valve and valve handles).	<i>May 1, 2025</i>	Jacketed CPC-1232 tank cars in in Crude and Ethanol service and all remaining tank cars carrying PG III materials in an HHFT (pressure relief valve and valve handles).	<i>May 1, 2025</i>

² The January 1, 2017 date would trigger a reporting requirement, and shippers would have to report to DOT the number of tank cars that they own or lease that have been retrofitted, and the number that have not yet been retrofitted.

CHRONOLOGY OF CRUDE-BY-RAIL SAFETY ACTIONS TAKEN BY THE FREIGHT RAIL INDUSTRY

Aug. 2009 – The Association of American Railroads (AAR) begins process to introduce tank car standards safer than DOT-111s.

Mar. 2011 – The AAR formally petitions Pipeline and Hazardous Materials Safety Administration (PHMSA) to implement tougher tank car specifications for DOT-111 tank cars used for crude oil and other hazardous materials.

Aug. 2011 – In absence of any announcement by the U.S. Department of Transportation (DOT) the AAR Tank Car Committee adopts new industry construction specifications for tank cars and the stronger CPC-1232 design becomes the standard for all tank cars built after October 2011.

Aug. 2013 - AAR modifies industry best practices, making trains carrying 20 or more carloads of any hazardous material subject to a speed restriction.

Aug. 2013 – Freight rail industry [responds](#) to DOT Emergency Order and Safety Advisory to further strengthen train operations on mainline tracks or sidings.

Nov. 2013 – AAR again [urges](#) DOT to improve federal tank car regulations and require all tank cars transporting hazardous flammable liquids such as crude oil be retrofitted or phased out of crude service.

Feb. 2014 – Following discussions with DOT Secretary Anthony Foxx, the nation’s major freight railroads [issue](#) voluntary safety initiatives for the transportation of crude oil by rail, including new operating practices such as speed reductions for trains transporting crude oil, increased inspections of tracks on crude oil routes, and stepped-up crude oil incident training for first responders.

May, 2014 –AAR forms joint task force with the American Petroleum Institute (API) to examine components associated with moving crude by rail.

July, 2014 – First crude-by-rail training course for first responders takes place at the Transportation and Technology Center (TTCI) in Pueblo, Colorado. More than 1,500 emergency responders receive three-day classroom and in-field training in 2014.

Sept. 2014 – In [comments](#) to DOT’s proposed rules for regulating crude oil trains, AAR again calls for dramatically-improved tank cars that carry crude oil and ethanol and proposes comprehensive safety package, which includes thicker shells, thermal protection and appropriately-sized pressure relief devices. AAR advocates an aggressive retrofit or phase-out program for crude service tank cars.

Oct. 2014 – Roll-out begins of industry-developed AskRail mobile application, which is an additional tool for emergency responders to get tank car information if responding to an incident.

Nov. 2014 - Web-based crude oil training for first responders launched through the Transportation Technology Center.

Jan. 2015 - AAR further modifies industry best practices to increase commodity flow information provided to local emergency response agencies for all hazmat being transported through their communities.

Mar. 2015 – AAR and API announce new crude-by-rail safety course for first responders. The program, to be offered through the TRANSCAER program, is in addition to specialized training offered to thousands of first responders by railroads in local communities, at TTCI, and through web-based training.