PETITION TO THE SECRETARY OF TRANSPORTATION TO ISSUE AN EMERGENCY ORDER PROHIBITING THE SHIPMENT OF BAKKEN CRUDE OIL IN UNSAFE TANK CARS

Submitted by Earthjustice on behalf of Sierra Club and ForestEthics

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(photo credit, Ryan Remiorz, AP/Canadian press)

INTRODUCTION

This Petition asks the Secretary of Transportation to issue an emergency order prohibiting the shipment of Bakken crude and other highly flammable crude oil in hazardous tank cars, known as legacy DOT-111 tank cars, a type of tank car put into service decades ago that lacks safeguards added to improve crashworthiness.[1] Since the tragic accident in Lac Mégantic, Quebec that killed 47 people, including children, and destroyed the city's downtown a year ago, the U.S. Department of Transportation ("DOT") has found that the dramatic increase in the shipment of highly flammable Bakken crude oil in unit trains has created emergency unsafe conditions that pose an imminent hazard to life, health, property, and the environment. The Secretary has issued emergency orders addressing certain operational and emergency response issues, but the actions taken by the DOT to date leave a gaping hole. Specifically, DOT has yet to restrict the shipment of volatile crude oil in the unsafe DOT-111 tank cars. This omission is inexcusable given the long string of findings by the National Transportation Safety Board ("NTSB") that the legacy DOT-111 tank cars are extremely vulnerable to puncture, spilling oil, and precipitating explosions and fires in train accidents.

While DOT has initiated a rulemaking proceeding to develop new tank car safety standards, that rulemaking will need to resolve a suite of complex issues concerning the safety features for the next generation of tank cars that will ship crude oil and other hazardous materials, as well as other rail operational safeguards needed to reduce risks of oils spills. Petitioners agree that such rulemaking is warranted and intend to advocate vigorously for the strongest possible safety standards in that process. However, it will conservatively take a year or more before the rulemaking will produce upgraded tank car standards that are fully applicable to the existing fleet. In the meantime, it is beyond doubt that the legacy DOT-111 tank cars create an imminent hazard warranting emergency restrictions, as they puncture at alarming rates, indeed in some accidents more than half the impacted cars punctured and spilled their contents. These tank cars are simply too prone to spilling oil in accidents to be used to ship flammable crude oil. Indeed, in Canada, the use of some DOT-111 tank cars to ship crude oil has already been banned and a surcharge has been imposed on all other DOT-111 crude oil shipments. These actions create incentives to add the DOT-111s previously in service in Canada to the U.S. fleet, exacerbating the risk of oil spills and disasters in the United States.

This Petition asks the Secretary of Transportation to issue an emergency order prohibiting the shipment of Bakken and other highly flammable crude oil in legacy DOT-111 tank cars. This prohibition is necessary to abate what the National Transportation Safety Board has called the "unacceptable public risk" posed by shipping such flammable cargo in the DOT-111 tank cars. In light of the emergency and hazardous conditions underlying this Petition, we ask that the Secretary issue the requested emergency order within 30 days.[2]

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[1] The tank cars are known as DOT-111 Specification tank cars in the United States and CPC-111 tank cars in Canada. This Petition uses the term "DOT-111" to refer to the legacy tank cars that lack safety improvements, either jackets or the specifications adopted by the industry in 2011.

[2] Interests of Petitioners: Sierra Club is the nation's oldest grassroots environmental organization promoting the exploration, enjoyment, and protection of the environment and America's wild places. Sierra Club seeks to reduce the production, transportation, and consumption of

I. RECENT CRUDE-BY-RAIL DISASTERS REVEAL UNACCEPTABLY HAZARDOUS CONDITIONS.

In 2013, more than 1.1 million gallons of crude oil spilled in the U.S., more in one year than the total amount spilled from 1975-2012.[3] More than 4,000 people were evacuated from their homes due to crude-by-rail train explosions in 2013, dwarfing the total number evacuated due to pipeline and rail accidents from 2002-2012.[4] Three accidents spotlight the hazards to human life, communities, and the environment posed by shipping crude oil in DOT-111 tank cars.

Just over a year ago, on July 6, 2013, one of the worst rail disasters in North American history occurred in Lac Mégantic, Quebec, Canada, when an unattended train carrying 72 tank cars filled with Bakken crude derailed, and more than 60 of the 63 derailed DOT-111 tank cars breached and spilled an estimated 1.6 million gallons of crude. The subsequent explosion killed 47 people, including children as young as 4 years old, leveled a four-block radius in the downtown area, and led to the evacuation of over 2,000 residents after testing revealed toxic particles in the smoke.[5] The damage to people and communities from this accident will likely cost between $500 million to $1 billion in cleanup or compensation.[6] However, the rail line, the Montreal, Maine and Atlantic Railway ("MMA"), which had only $25 million in liability insurance, has filed for bankruptcy, saddling federal and provincial governments with the bulk of these costs.[7] This accident awakened the public consciousness, spurring investigations, safety

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dangerous fuels that put the health and safety of our communities at risk. With more than 1.2 million members and supporters, Sierra Club engages in grassroots organizing, educational and media outreach, and legal actions to achieve its goals. ForestEthics is a nonprofit environmental group committed to protecting North America's forests and wild places, and the wildlife and people that depend on them. ForestEthics has opposed new crude-by-rail terminals in North America and has raised awareness of the risks of transporting crude oil in outdated rail cars. It recently released an online mapping tool revealing that 25 million North Americans live in a one mile "blast zone" of the rail lines on which oil trains carry crude oil.

[3] Curtis Tate, *More Oil Spilled From Trains in 2013 than in Previous 4 Decades, Federal Data Show*, McClatchy DC, Jan. 20, 2014 (*available at* http://www.mcclatchydc.com/2014/01/20/215143/more-oil-spilled-from-trains-in.html).

[4] *See* Keystone XL Project Final Supplemental Environmental Impact Statement at 5.1-78 & 5.1-89 (Jan. 2014) (Exhibit 1), for historic evacuation data.

[5] Transportation Safety Board of Canada, Rail Recommendations R14-01, R14-02, R14-03, at 1 (Jan. 24, 2014) (Exhibit 2); Testimony of NTSB Chair Deborah A.P. Hersman, Hearing on Railway Safety, Before the Appropriations Subcomm. on Transportation, Housing and Urban Development and Related Agencies, Senate Appropriations Committee at 5 (Apr. 9, 2014) (Exhibit 3).

[6] Oil Change International, Analysis of the Potential Costs of Accidents/Spills Related to Crude by Rail at 1, 5-6, 9-10 (Nov. 8, 2013) (Exhibit 4).

[7] *Id.* at 6.

alerts, emergency orders, and rulemaking processes on both sides of the border. However, it was by no means an isolated occurrence.

On November 8, 2013, a 90-car oil train, carrying 2.9 million gallons of Bakken crude in DOT-111 tank cars, derailed in a rural area near Aliceville, Alabama, a town of 2,400 near the Mississippi border. Twenty-one of the twenty-six derailed cars spilled oil, triggering a series of explosions and an extensive fire.[8] Preliminary NTSB findings reveal that 630,000 gallons of crude spilled, primarily into a wetland adjacent to the tracks.[9] Four months after the accident, news reports observed that the area was still heavily contaminated with oil.[10]

On December 30, 2013, a unit train with more than 100 cars laden with Bakken crude collided with a BNSF grain train that had derailed and fouled the adjacent track near Casselton, North Dakota. Eighteen of the 21 derailed tank cars ruptured, releasing more than 400,000 gallons of petroleum crude oil. The ruptured tank cars ignited, causing explosions and a mushroom-shaped fireball that burned and produced heavy plumes of toxic smoke for over 24 hours.[11] Emergency responders described a "giant fireball" that went hundreds of feet into the air, and noted that the plume of smoke could be seen for 25 miles.[12] The incident occurred a half mile outside of Casselton, a community of 2,300, all of whom were told to flee by the County Sherriff, along with anyone living within 5 miles to the south or east of the site.[13] The main rail line runs directly through the center of Casselton where an ethanol plant sits just yards away from the track.

The spate of disasters is not letting up. A recent NTSB presentation documents 16 significant accidents between 2006 and the spring of 2014, with dozens of fatalities and 2.8 million gallons of crude oil spilled.[14] In one, a train derailed in Plaster Rock, New Brunswick in

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[8] Emergency Restriction/Prohibition Order DOT-OST-2014-0067 (May 7, 2014) (Exhibit 5).

[9] Presentation of Magdy El-Sibaie, Associate Administrator, Pipeline and Hazardous Materials Safety Administration at 4 (April 2014) (Exhibit 6).

[10] Jay Reeves, Associated Press, *Oil Mars West Alabama Swamp Months After Train Crash Near Aliceville*, Salon, Mar. 15, 2014 (*available* at http://www.salon.com/2014/03/15/oil_mars_ala_swamp_months_after_crude_train_crash/).

[11] NTSB, Preliminary Report–Railroad - DCA14MR004 (Exhibit 7); Emergency Restriction/Prohibition Order DOT-OST-2014-0067 (May 7, 2014) (Exhibit 5).

[12] Daniella Silva, *Mile Long Train Carrying Crude Derails, Explodes in North Dakota*, NBC News, Dec. 30, 2013 (*available at* http://usnews.nbcnews.com/_news/2013/12/30/22113442-mile-long-train-carrying-crude-oil-derails-explodes-in-north-dakota?lite).

[13] David Shaeffer, *As oil train burns, 2,300 residents of Casselton, N.D., told to flee*, Star Tribune, Dec. 31, 2013 (*available at* http://www.startribune.com/business/238070771.html?page=1&c=y).

[14] NTSB Senior Hazardous Materials Accident Investigator, *Rail Accidents Involving Crude Oil and Ethanol Releases*, Before NTSB Rail Safety Forum: Transportation of Crude Oil and Ethanol at 3-5 (Apr. 22-23, 2014) (Exhibit 8).

January 2014 with two DOT-111s built in 1984 and 1996 being the primary source of released crude oil which caught fire.[15]

Based on these and other crude-by-rail accidents, DOT has found that the number of accidents involving Bakken crude has increased as has the amount of oil spilled as well as the overall severity of the accidents.[16] The U.S. Government's best estimate is that crude-by-rail train disasters will continue under current conditions. In its environmental analysis of the Keystone XL pipeline, the U.S. State Department predicted that dozens of injuries and between 6 and 28 deaths will occur every year due to rail shipments of crude oil and petroleum.[17] This estimate was based on rail accident data from 2002-2012, which preceded the surge in Bakken crude shipments and resulting disasters.

II. THE LEGAL BASIS FOR AN EMERGENCY ORDER

Two overlapping statutes authorize DOT to promulgate regulations governing railroad safety, one focused on the transportation of hazardous materials by any means, and the other focusing broadly on rail operations, including safety. Both expressly authorize DOT to issue emergency orders to abate unsafe conditions during the time it takes to complete a rulemaking process.

First, the Hazardous Materials Transportation Act ("HMTA") directs the Secretary of Transportation to "prescribe regulations for the safe transportation, including security, of hazardous materials in intrastate, interstate, and foreign commerce."[18] HMTA expressly authorizes the Secretary to issue emergency orders. Specifically,

> If, upon inspection, investigation, testing, or research, the Secretary determines that a violation of a provision of this chapter, or a regulation prescribed under this chapter, or an unsafe condition or practice, constitutes an imminent hazard, the Secretary may issue or impose emergency restrictions, prohibitions, recalls, and out-of-service orders, without notice or an opportunity for a hearing, but only to the extent necessary to abate the imminent hazard.[19]

An imminent hazard is defined as "the existence of a condition relating to hazardous material that presents a substantial likelihood that death, severe personal injury, or a substantial

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[15] Transportation Safety Board of Canada, Railway Investigation of Train Derailment in Plaster Rock, New Brunswick (June 12, 2014) (Exhibit 9).

[16] Emergency Restriction/Prohibition Order DOT-OST-2014-0067 (May 7, 2014) (Exhibit. 5).

[17] Errata Sheet to Keystone XL Project–Final Supplemental Environmental Impact Statement at 1-2 (June 2014) (Exhibit 10); Keystone XL Project–Final Supplemental Environmental Impact Statement at ES-35 & 5.1-74 (Jan. 2014) (Ex. 1).

[18] 49 U.S.C. § 5103(b); *see id.* § 5103(b)(1)(B) ("The regulations . . . shall govern safety aspects, including security, of the transportation of hazardous materials as the Secretary considers appropriate.").

[19] 49 U.S.C. § 5121(d).

endangerment to health, property, or the environment may occur before the reasonably foreseeable completion date of a formal proceeding begun to lessen the risk of that death, illness, injury, or endangerment."[20]

Second, the Federal Railroad Safety Act ("FRSA") authorizes the Secretary "as necessary" to issue regulations and orders "for every area of railroad safety supplementing laws and regulations in effect" when the FRSA became effective in 1970.[21] Like HMTA, FRSA expressly authorizes the issuance of emergency orders:

> If, through testing, inspection, investigation, or research carried out under this chapter, the Secretary of Transportation decides that an unsafe condition or practice, or a combination of unsafe conditions or practices, causes an emergency situation involving a hazard of death, personal injury, or significant harm to the environment, the Secretary immediately may order restrictions or prohibitions, without regard to section 20103(e) of this title, that may be necessary to abate the situation.[22]

Both HMTA and FRSA require the Secretary to promulgate hazardous materials and rail safety regulations through notice and comment rulemaking with some additional consultation and oral presentation requirements.[23] The Pipeline and Hazardous Materials Safety Administration ("PHMSA") administers HMTA, and the Federal Railroad Administration ("FRA") administers the FRSA.[24] In the past, PHMSA has promulgated Hazardous Materials Regulations governing railroad tank cars that carry hazardous materials, in coordination with the FRA, and has invoked the authority given to the Secretary under both statutes as the basis for doing so.[25]

III. SHIPPING HIGHLY FLAMMABLE CRUDE OIL IN LEGACY DOT-111 TANK CARS POSES UNACCEPTABLE RISKS TO HUMAN LIFE AND THE ENVIRONMENT WARRANTING ISSUANCE OF AN EMERGENCY ORDER.

The last few years have witnessed a surge in shipments of highly flammable crude from the Bakken region, mostly in unit trains with dozens and often more than 100 tank cars carrying explosive cargo. The growth in the number and length of trains carrying crude oil is staggering. In addition, the crude oil has proven to be more flammable than previously represented, and the crude oil is being shipped in tank cars that have a propensity to breach on impact and cause spills, fires and explosions. The tank cars are so prone to puncture and spills that the NTSB has long urged DOT to ban the transport of explosive materials in these tank cars.

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[20] 49 U.S.C. § 5102(5).

[21] 49 U.S.C. § 20103(a).

[22] 49 U.S.C. § 20104(a).

[23] 49 U.S.C. § 5103(b)(2); §§ 20103(a) & (e).

[24] 49 C.F.R. §§ 1.97(b), 1.89 (delegations of authority).

[25] *See, e.g.*, 74 Fed. Reg. 1770, 1789 (2009).

A. The Huge Increase in Unit Trains Carrying Explosive Crude Oil

The United States is experiencing an unprecedented surge in oil production. Crude oil production increases between 2011 and 2012 marked "the largest increase in annual output since the beginning of U.S. commercial crude oil production in 1859," and U.S. production in 2014 is projected to be "the highest annual average level since 1988."[26] The United States recorded an increase in production of 1.1 million barrels per day in 2013, "the largest growth in the world and the largest annual increment in the country's history for a second consecutive year."[27] Most of the growth is due to hydraulic fracturing (or fracking) in the Bakken shale formation in North Dakota and Montana.[28] North Dakota reached a milestone in April 2014, producing over one million barrels of oil per day.[29]

Historically, crude oil has been transported primarily by pipeline, but existing pipelines lack the capacity to handle the surge in oil production in places like North Dakota, and pipelines lack the flexibility and geographic reach to serve the disparate production locations and markets.[30] The result: Transporting crude oil by rail has skyrocketed.[31] In 2008, only 9,500 tank car loads of crude were transported by rail. That number ballooned to over 400,000 car loads in 2013, moving roughly 280 million barrels of crude oil that year, an increase in over 4,000%, and all indications are that rail shipments of crude oil and Bakken crude, in particular, will continue to grow.[32] Crude oil is the fastest growing type of freight hauled by rail, and Bakken oil

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[26] U.S. Energy Information Administration ("EIA"), *Short-Term Energy Outlook Supplement* (Feb. 14, 2013) (Exhibit 11).

[27] BP Statistical Review of World Energy at 3 (June 2014) (Exhibit 12).

[28] Statement of Administrator of the EIA Adam Sieminski, Hearings before Senate Committee on Energy & Natural Resources at 18 (July 16, 2013) (Exhibit 13); AAR, Moving Crude Oil by Rail at 3 (Dec. 2013) (Exhibit 14).

[29] Daniel Graeber, *With North Dakota Oil Boom Comes Concern Over Spills*, Christian Science Monitor, July 1, 2014 (*available at* http://www.csmonitor.com/Environment/Energy-Voices/2014/0701/With-North-Dakota-oil-boom-comes-concern-over-spills); Industrial Commission of North Dakota: Oil and Gas Division 2014 Monthly Statistical Update (June 2014) (*available at* https://www.dmr.nd.gov/oilgas/stats/2014monthlystats.pdf).

[30] *See supra* n.29.

[31] AAR has stated that crude oil traffic has grown by 443% and others have repeated that figure, but the tank car load data AAR has provided reflect an increase of 4,111% since 2005. *See, e.g.*, Testimony of NTSB Vice Chair Christopher A. Hart, Hearing on Enhancing Our Rail Safety: Current Challenges for Passenger and Freight Rail, Before Subcomm. on Surface Transportation & Merchant Marine Infrastructure, Safety & Security, Senate Committee on Commerce, Science and Transportation at 3 (Mar. 6, 2014 (Exhibit 15).

[32] Congressional Research Service, *U.S. Rail Transportation of Crude Oil: Background & Issues for Congress* at 1 (Feb. 6, 2014) (Exhibit 16); AAR, *Moving Crude Oil by Rail* at 1 (Dec. 2013) (Exhibit 14); Testimony of Edward R. Hamberger, AAR President, Hearing on Enhancing Our Rail Safety: Current Challenges for Passenger and Freight Rail Before U.S. Senate Comm. on Commerce, Science and Transportation at 5 (Mar. 2014) (Exhibit 17).

comprises the vast majority of crude-by-rail shipments, ranging between 600,000-700,000 barrels per day in 2013.[33] The NTSB has cautioned that: "The sharp increase in crude oil rail shipments in recent years as the United States experiences unprecedented growth in oil production has significantly increased safety risks to the public."[34]

Most of the crude oil is shipped in unit trains that have dozens and sometimes over 120 cars transporting a single bulk commodity.[35] The enormous length of the trains increases the amount of flammable liquids that can be spilled when tank cars collide.[36] Indeed, the NTSB has found that transporting hazardous materials in unit trains poses heightened risks because of the high volumes that can be spilled.[37]

Not only is more crude oil traveling by train, but DOT has identified "unique hazardous characteristics of Bakken crude oil."[38] After the Lac Mégantic disaster, the Canadian TSB analyzed the Bakken crude oil on that train and found that it had been misclassified as Packing Group III, instead of more flammable Packing Groups I or II. Its flammability is closer to that of gasoline than other crude oil.[39] One article described the Bakken crude as "so light and gassy that it froths over refinery units like champagne."[40] U.S. regulators conducted an investigation called Operation Classification, also known as "The Bakken Blitz," which found that several shippers mischaracterized Bakken crude by failing to designate it as a Packing Group I or II hazardous material due to its flammability and volatility.[41] PHMSA also has raised concerns about corrosiveness of Bakken and other crude.[42] In January 2014, PHMSA issued a safety alert warning that Bakken crude may be more flammable than traditional heavy crude and instructing that it must be classified as Packing Group I or II, which is subject to stringent hazardous

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[33] Safety Advisory 2013-06, 78 Fed. Reg. 48,224, 48,228 (Aug. 7, 2013) (Exhibit 18).

[34] NTSB Recommendations 14-1 through 14-3, at 4 (Jan. 23, 2014) (Exhibit 19); FRA, Emergency Order 28, 78 Fed. Reg. 48,218, 48,220 (Aug. 7, 2013) (Exhibit 20).

[35] AAR, *Moving Crude by Rail* at 5 (Exhibit 14).

[36] NTSB Comments on PHMSA Advanced Notice of Proposed Rulemaking (*see infra*) at 2 (Dec. 5, 2013) (Exhibit 21).

[37] NTSB Recommendations R-12-5 through -8 at 4 (Mar. 2, 2012) (Exhibit 22).

[38] Emergency Order DOT-OST-2014-0025 at 10 (Feb. 25, 2014) (Exhibit 23).

[39] CRS at 12 (Bakken is much more volatile than other crude); Alison Sider, *Oil From U.S. Fracking is More Volatile than Expected,* Wall Street Journal (June 24, 2014) (*available at* http://online.wsj.com/articles/oil-from-u-s-fracking-is-more-volatile-than-expected-1403653344).

[40] Meagan Clark, US Oil From Fracking More Volatile Than Previously Believed, International Business Times, June 25, 2014 (*available at http://www.investing.com/news/commodities-news/us-oil-from-fracking-more-volatile-than-previously-believed-291473*).

[41] FRA Letter to American Petroleum Institute (July 29, 2013) (Exhibit 24).

[42] *Id.*

materials regulations.[43] DOT followed up in February 2014 with an emergency order requiring rail shipment of bulk quantities of all types of crude oil to comply with Packing Group I or II hazardous materials regulations.[44]

B. The Hazards Posed By the Legacy DOT-111 Tank Cars Used to Ship Crude Oil

Accidents happen, as the old adage warns. On the rail lines, that translates to train derailments occurring nearly every week.[45] The reasons vary, with some attributed, for example, to washed out rails and others linked to human error. When a derailment occurs, deficiencies in the design of the tank cars can greatly exacerbate the severity of the accidents. Tragically, the tank car of choice for shipping crude oil has been the legacy DOT-111, the basic tank car initially put into service many decades ago. On impact, the shell of the legacy DOT-111 has a propensity to puncture and the valves on the top and bottom of the car tend to shear off or rip open. The result is predictable: an oil spill often followed by a fire or explosion. The President of the Village of Barrington, Illinois appropriately dubbed the DOT-111 tank cars the "Ford Pinto of rail cars."[46]

More than two decades ago, NTSB found that more than half (54%) of the DOT-111 tank cars involved in 45 accidents during a one-year period in the late 1980s punctured and spilled their contents. Tank cars with additional safety features breached at less than half the rate of the

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[43] Safety Alert–January 2, 2014 (Exhibit 25).

[44] Emergency Restriction/Prohibition Order DOT-OST-2014-0025 (Feb. 25, 2014) (Exhibit 23) (finding "the flammability of crude oil being shipped by bulk rail poses a significant risk of substantial endangerment to health, property, or the environment when an explosion occurs."). In response to a recent inquiry from Senators Merkley and Wyden, NTSB indicated that:

> Crude oil of all types and from all regions are flammable materials. The NTSB has investigated numerous accidents in which all types of flammable materials have been released in accidents. We are aware of several accidents involving crude oil from other regions in which these products were released, causing environmental damage and fires.

See Letter to Senators Wyden & Merkley from NTSB Acting Chairman Christopher A. Hart (June 25, 2014) (Exhibit 26). On this basis, NTSB reiterated its recommendation to use more robust tank cars to carry flammable crude. *Id.* at 3. NTSB's findings support extending the requested DOT-111 ban to all crude oil, as DOT has done in its directive to treat all crude oil shipments as Packing Group I or II. *See* Emergency Restriction/Prohibition Order 2014-0025 (Exhibit 23).

[45] Eric de Place, *Northwest Region Averaging Nine Freight Train Derailments Per Month*, Sightline Daily, May 13, 2014 (*available at* http://daily.sightline.org/2014/05/13/northwest-region-averaging-nine-freight-train-derailments-per-month/).

[46] Richard Wronski, *As More Oil Flows by Rail, Concerns Grow About Safety of Tank Cars*, Chicago Tribune, Nov. 29, 2013 (*available at* http://articles.chicagotribune.com/2013-11-29/news/ct-dangerous-tank-cars-met-1129-20131129_1_tank-cars-oil-production-more-oil-flows).

DOT-111s (23%).[47] Nearly 25 years ago, NTSB recommended that DOT modify tank car regulations to eliminate unacceptable risks of hazards from hazardous material spills and explosions.[48] DOT upgraded its tank car standards, but only for some hazardous materials.[49] Many touted the improved safety record resulting from these tank car upgrades: "Despite growth in traffic, only one person has died as a result of release of hazardous materials from a tank car since 1980 compared with more than 40 fatalities during the 1970s."[50] However, the old, unimproved DOT-111 tank cars could still be used to ship other hazardous materials, which inevitably led to more accidents in which the tank cars punctured, spilled their contents, and caused serious harm.[51] Another series of accidents in 2002-2005 led to NTSB investigations and recommendations to improve the safety and structural integrity of tank cars in accidents. In 2009, DOT again adopted stronger interim design standards for newly manufactured tank cars, but only for those carrying hazardous materials posing poison inhalation hazards.[52]

The folly of this patchwork was laid bare by a spate of ethanol train accidents in the 2000s. NTSB made detailed findings and recommendations in its investigation of the 2009 Cherry Valley accident in which 13 of 15 derailed DOT-111 tank cars ruptured and spilled ethanol, causing an intense fire and one fatality. NTSB found:

> Clearly, the heads and shells of DOT-111 tank cars . . . can almost always be expected to breach in derailments that involve pileups or multiple car-to-car impacts . . .. This accident demonstrates the need for extra protection such as head shields, tank jackets, more robust top fittings protection, and modification of bottom outlet valves on DOT-111 tank cars used to transport hazardous materials.

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[47] NTSB Safety Recommendation R-91-19 (July 1, 1991) (Exhibit 27).

[48] *Id.* at 3-5.

[49] 60 Fed. Reg. 49,048, 49.050 (Sept. 21, 1995).

[50] National Research Council, *Ensuring Railroad Tank Car Safety* at 1-4 (1994) (Exhibit 28).

[51] *See id*. at 10, 12 (describing DOT as reactive in addressing demonstrated tank car defects, adopting measures to advance safety, by, for example, establishing head and thermal protection requirements, only after tank cars ruptured in accidents and then slowly and only for the types of hazardous materials spilled in those accidents).

[52] 74 Fed. Reg. 1770 (Jan. 13, 2009). The rule improved top fittings performance, required normalized steel, thicker jackets or shells, and full-head shields, increased the gross weight of tank cars meeting the enhanced standards, and adopted a 50 m.p.h. speed limit for loaded rail cars carrying poison-by-inhalation hazardous materials in urban areas. The final rule adopted these interim standards as a first stage of a longer-term strategy to enhance safety of tank cars once DOT adopts a crashworthiness standard, as compelled by Congress in 2005 when it converted key NTSB recommendations into direction to assess crashworthiness of tank cars in accidents and develop new tank car standards. 49 U.S.C. § 20155.

> [If the tank cars had these features], the release of hazardous materials likely would have been significantly reduced, mitigating the severity of the accident.[53]

In its safety recommendations, NTSB reiterated:

> During a number of accident investigations over a period of years, the NTSB has noted that DOT-111 tank cars have a high incidence of tank failures during accidents.
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> The fact that DOT-111 general service tank cars experience more serious damage in accidents than pressure tank cars . . . can be attributed to the fact that pressure tank cars have thicker shells and heads. The pressure cars are also usually equipped with metal jackets, head shields, and strong protective housings for top fittings. They do not have bottom outlet valves, which have been proven to be prone to failure in derailment accidents.
>
> Of the 15 derailed DOT-111 tank cars that piled up in this accident, 13 cars lost product from head and shell breaches or through damaged valves and fittings, or a combination of the two. This represents an overall failure rate of 87 percent and illustrates the continued inability of DOT-111 tank cars to withstand the forces of accidents, even when the train is traveling at 36 mph, as was the case in this accident.[54]

In the Cherry Valley report, NTSB pointed to its 1991 finding that over 50% of DOT-111 tank cars punctured and spilled hazardous contents in collisions, a rate that was more than double the failure rate of other tank cars whose shells and heads had greater reinforcement. BNSF recently indicated that academic studies confirm this 50% conditional probability of release rate for the DOT-111 tank cars.[55] Recent studies that use a different accident baseline produce failure rates for the DOT-111 tank cars that range from roughly 20 to over 25%.[56] Even under the more conservative estimate, one in four or five tank cars impacted in an accident are likely to spill oil, leading to fires, explosions, contamination of rivers and wetlands, and tragically, in some instances, loss of life.

By the time the NTSB released its Cherry Valley investigation report, the Association of American Railroads ("AAR") had adopted design standards, called CPC-1232, for new tank cars

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[53] Derailment of CN Freight Train U70691-18 With Subsequent Hazardous Materials Release & Fire: Cherry Valley, Illinois, June 19, 2009 at 75-76 (adopted Feb. 14, 2012) ("Cherry Valley Report") (Exhibit 29).

[54] NTSB, Safety Recommendation R-12-5 through -8 (Mar. 2, 2012) (Exhibit 22).

[55] Notes from Administrator's Meeting with BNSF at 2 (Mar. 19, 2014) (Exhibit 30).

[56] Comments of AAR and American Short Line and Regional Railroad Association on PHMSA Advance Notice of Proposed Rulemaking - 2012-0082 at 4 (Nov. 14, 2013) (Exhibit 31); RSI & AAR, *Tank Car Accident Safety Research for Crude Oil & Ethanol Cars*, NTSB Rail Safety Forum at 10 (Apr. 22-23, 2014) (Exhibit 32).

used to ship crude oil and ethanol ordered after October 1, 2011.[57] The CPC-1232 specifications call for normalized steel, thicker, more puncture-resistant jackets or shells, protective (half-height) head shields at both ends of the tank car, a reclosing pressure relief device, and additional protections for the top fittings.[58] Shifting to the CPC-1232 standards would reduce the risk of a spill by over 75% according to BNSF's estimate and by about 50% according to the new crashworthiness estimates.[59]

Based on the Cherry Valley investigation report, NTSB recommended that DOT: (1) amend its regulations to incorporate the stronger CPC-1232 standards; (2) strengthen the standards further by, for example, addressing bottom outlet valves that break open in accidents; and (3) make the upgraded standards applicable to both new and the existing fleet of tank cars:

> the NTSB recommends that PHMSA require that all newly manufactured and existing tank cars authorized for transportation of denatured fuel ethanol and crude oil in Packing Groups I and II have enhanced tank head and shell puncture-resistance systems and top fittings protection that exceeds existing design requirements for DOT-111 tank cars.[60]

NTSB was especially critical of the position then taken by AAR and DOT that the upgraded standards should apply only to new and not to existing tank cars.[61] AAR and others petitioned PHMSA in March 2011 to incorporate AAR's CPC-1232 standards into DOT's tank car regulations, but asked that no requirement be imposed to modify or retrofit existing DOT-111 tank cars. Similarly, in November 2011, DOT told NTSB that it did not plan to require a phase out or retrofitting of the deficient tank cars. NTSB responded:

> The decision not to phase out or retrofit existing tank cars allows new DOT-111 tank cars with improved protection to be commingled in unit train service with the existing fleet of insufficiently protected tank cars . . .. The safety benefits of new specification tank cars will not be realized while the current fleet of DOT-111 tank cars remain in hazardous materials unit train service, unless the existing cars are retrofitted with appropriate tank head and shell puncture-resistance systems.[62]

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[57] AAR Petition 1577 to PHMSA at 5-7 (Mar. 9, 2011) (Exhibit 33) (petition to codify CPC-1232 standards for tank cars used to ship Packing Group I and II materials).

[58] *See* Cherry Valley Report at 56, 76 (Exhibit 29).

[59] Notes from BNSF Meeting at 2 (Exhibit 30); AAR Comments on PHMSA 2012-0082 at 4 (Nov. 14, 2013) (Exhibit 31); RSI & AAR, *Tank Car Accident Safety Research for Crude Oil & Ethanol Cars*, NTSB Rail Safety Forum at 10 (Apr. 22, 23, 2014) (Exhibit 32).

[60] Cherry Valley Report at 79 (Recommendation 12-5) (Exhibit 29); *see also id*. at 81, 88 (bottom outlet valves).

[61] Cherry Valley Report at 77 (Exhibit 29).

[62] Cherry Valley Report at 77, 88 (Exhibit 29); NTSB Cherry Valley Safety Recommendations 12-5 through 8, at 4-5, 6-9 (Exhibit 22).

AAR has since reversed its position and it now supports aggressively retrofitting or phasing out oil tank cars built before October 2011 and modifying those built after that date.[63] DOT, however, had taken no action in response to AAR's petition to upgrade its tank car standards when the Lac Mégantic accident occurred.

In the wake of the Lac Mégantic disaster and other crude-by-rail accidents, the NTSB reiterated its finding that past investigations "identified the vulnerability of the tank heads, shells, and fittings to damage and subsequent release of lading during derailments." Again, NTSB recommended that new and existing tank cars should be required to meet stronger standards, and it explicitly extended this recommendation to shipments of crude oil.[64] In December 2013, NTSB offered the following assessment:

> Based on previous and ongoing NTSB accident investigations, the documented poor accident performance of existing specification DOT-111 tank cars continues to raise serious concerns about the safety of communities, emergency responders, and other individuals who may come in contact with flammable hazardous materials transported in these cars. The NTSB would like to take this opportunity to emphasize the importance of the expeditious implementation of four Safety Recommendations . . . that were issued as a result of the June 19, 2009, derailment of an ethanol unit train of DOT-111 tank cars in Cherry Valley, Illinois.
>
> Recent accidents, such as the July 6, 2013, train accident in Lac-Mégantic, Quebec, Canada, which resulted in 47 fatalities and the destruction of the town center, illustrate the danger posed to the public when transporting flammable liquids under the existing regulations that govern the transportation of hazardous materials in railroad tank cars . . .. [R]ecent railroad accidents have shown <u>that using DOT-111 tank cars to ship flammable liquids creates an unacceptable public risk</u>.
>
> In light of the Quebec accident and most recently, the derailment of DOT-111 tank cars in Aliceville, Alabama, on November 7, 2013, that resulted in a large crude oil release and fire, the NTSB urges PHMSA to take immediate action to require a safer package for transporting flammable hazardous materials by rail.[65]

As the NTSB Vice-Chair (now Acting Chair) explained in testimony before a Senate Committee:

> 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 <u>an unacceptable public risk</u>. The crude oil unit train involved in the Casselton accident consisted of railroad tank cars designed and

[63] AAR Comments on ANPR at 2 (Exhibit 31); Hamberger Testimony at 14-15 (Exhibit 17).

[64] NTSB Safety Recommendation R-14-4 through 6 at 11 (Jan. 21, 2014) (Exhibit 34).

[65] NTSB Comments on PHSMA 2013-0082 at 1-3 (Dec. 5, 2013) (Exhibit 35) (emphasis added).

> 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, in an accident, hazardous materials could be released and, in the case of flammable materials, such as crude oil and ethanol, could ignite and cause catastrophic damage.
>
> The NTSB continues to find that accidents involving the rupture of DOT-111 tank cars carrying hazardous materials often have violent and destructive results.[66]

The Transportation Safety Board of Canada ("TSB"), NTSB's Canadian counterpart, which is investigating the Lac Mégantic accident, made the following findings and recommendation:

> Considering the susceptibility of Class 111 general-service tank cars to product release during accidents, the large number of general-service Class 111 cars remaining in service, and the increased movements of large volumes of flammable liquids by rail through many Canadian and American communities, the Board believes that further action is required immediately.
>
> Given the magnitude of the risks and given that tank car standards must be set for the North American rail industry, the Board recommends that:
>
>> The Department of Transport and the Pipeline and Hazardous Materials Safety Administration require that all Class 111 tank cars used to transport flammable liquids meet enhanced protection standards that significantly reduce the risk of product loss when these cars are involved in accidents.[67]

IV. DOT'S ACTIONS FALL SHORT OF WHAT IS NEEDED TO ABATE THE UNSAFE CONDITIONS POSED BY THE DOT-111 TANK CARS.

The Lac Mégantic disaster precipitated a series of recommendations from the NTSB and its Canadian counterpart to improve safety for crude-by-rail shipments, including by prohibiting the shipment of crude oil in DOT-111 tank cars. Both DOT and Transport Canada have, upon making explicit findings that imminent hazards and emergency unsafe conditions exist, adopted emergency orders, issued safety advisories, and pursued rulemakings. None of the actions, however, has abated the imminent hazard posed by shipping crude oil in DOT-111 tank cars.

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[66] Hart Testimony at 3-4 (Exhibit 15) (emphasis added).

[67] Transportation Safety Board of Canada, Recommendations Ensuing from the Rail Accident in Lac-Mégantic, Quebec, Recommendation 14-01 (Jan. 23, 2014) (Exhibit 36); *see also* Transportation Safety Board of Canada, Rail Safety Recommendations (Jan. 23, 2014) (Exhibit 37).

A. U.S. DOT Actions

The U.S. DOT has responded to the spate of accidents and increase in crude-by-rail shipping by issuing a series of emergency orders imposing immediate safeguards, including requiring designation of crude oil as Packing Group I or II materials subject to stringent hazardous materials regulations,[68] admonishing shippers to properly test, characterize, and designate Bakken and other volatile crude oil, requiring updated safety and security plans, prohibiting leaving trains unattended, and requiring rail lines to provide advance notification to State Emergency Response Commissions of weekly shipments of more than 1,000,000 gallons of Bakken crude oil by county.[69] In addition, the Secretary of Transportation convinced the Class I railroads to agree to voluntary actions, including speed restrictions, track inspections, and funding emergency responder training.[70]

The various actions taken by DOT to date have addressed many of the identified causes of recent accidents and conditions that have exacerbated the harm that derailments cause, with one glaring exception. NTSB and its Canadian counterpart have urged DOT to prohibit shipping crude oil in DOT-111 tank cars. The Secretary of Transportation publicly acknowledged on the Rachel Maddow Show that he lacks "confidence in the DOT-111" and "the DOT-111 I've always said needs to be either retrofitted or replaced."[71] This spring, DOT made explicit findings about the hazards of shipping Bakken crude in legacy DOT-111 tank cars:

> Changes in railroad operations over the last several years, including increased rail traffic, higher in-train forces due to the transportation of hazardous materials tank cars at higher gross rail loads, and the likelihood of individual tank cars accumulating more miles annually, have resulted in tank car design changes to accommodate these increased stresses and to significantly reduce the chances of catastrophic failure (i.e., the sudden and total failure of the tank resulting in a release of the tank's contents). Design changes include new tank car steel and

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[68] Crude oil is classified as a Class 3 flammable liquid. However, since crude oils have a wide range of flash points, they are divided into Packing Groups reflecting their respective hazards based on their flash and boiling points. Packing Groups I and II ignite more readily and pose higher risks than Packing Group III materials. The Hazardous Material Regulations imposes additional safety and security requirements on bulk shipments of Packing Group I and II materials compared to Packing Group III. 78 Fed. Reg. 69,745 (Nov. 20, 2013).

[69] Emergency Order 28, 78 Fed. Reg. 48,218 (Aug. 7, 2013) (Exhibit 20); Safety Advisory 2013-06, 78 Fed. Reg. 48,224 (Aug. 7, 2013) (Exhibit 18); Safety Advisory 2013-07, 78 Fed. Reg. 69,745 (Nov. 20, 2013) (Exhibit 38); Safety Alert (Jan. 2, 2014) (Exhibit 25); Emergency Order, DOT-OST-2014-0025 (Feb. 24, 2014) (Exhibit 23); Emergency Order DOT-OST-2014-0067 (May 7, 2014) (Exhibit 5).

[70] *Id.* at 9.

[71] Interview with Anthony Foxx, Secretary of Transportation, Rachel Maddow Show, MSNBC, May 14, 2014 (available at http://dot111.info/2014/05/15/secretary-of-transportation-anthony-foxx-lynchburg-had-upgraded-tank-car/) (Unofficial Transcript, Exhibit 39).

> improvements of structural features. Older "legacy" tank cars, however, without more modern construction and design enhancements, continue to be used to transport hazardous materials, including Bakken crude oil.[72]

Despite these findings, all DOT has done to date is issue a safety advisory and that safety advisory does no more than:

> urge offerors and carriers of Bakken crude oil by rail tank car to select and use the railroad tank car designs with the highest level of integrity reasonably available within their fleet for shipment of [Bakken crude] by rail in interstate commerce.
>
> recommend that offerors and carriers of Bakken crude oil by rail select and only use the tank car designs with the highest level of integrity reasonably available within their fleet. The features that offerors should consider in assessing tank car integrity include, without limitations, tank shell jacket systems, head shields, and top fittings protection.
>
> advise offerors and carriers to avoid the use of older, legacy DOT Specification 111 or CTC 111 tank cars for the shipment of such oil to the extent reasonably practicable.[73]

Instead of taking immediate steps to ban the use of DOT-111 tank cars for transporting volatile crude, DOT seems to have relegated that issue to a lengthy rulemaking process. In September 2013, PHMSA, in coordination with FRA, published an advance notice of proposed rulemaking in response, as its title indicates, to "Rail Petitions and Recommendations to Improve the Safety of Railroad Tank Car Transportation."[74] The Advance Notice seeks public comment on several petitions to revise the hazardous materials regulations, including AAR's March 2011 petition to codify its CPC-1232 standards for newly constructed tank cars, and a petition filed in April 2012 by the Village of Barrington, Illinois, and The Regional Answer to Canadian National, which asked that the new tank car standards be made applicable to the existing fleet used to transport Packing Group I and II materials.[75] The Advance Notice also sought comment on NTSB Safety Recommendations, including three that recommended that both newly manufactured and existing tank cars authorized for transportation of hazardous materials, and specifically crude oil, meet the CPC-1232 standards, as well as additional safeguards.[76]

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[72] Recommendations for Tank Cars Used for the Transportation of Petroleum Crude Oil by Rail, Safety Advisory 2014-01 (PHMSA-2014-0049; Notice No. 14-07) at 2 (May 7, 2014) (Exhibit 40).

[73] *Id.* at 1, 2, 4 (emphasis added).

[74] 78 Fed. Reg. 54,849 (Sept. 6, 2013); AAR Petition (Exhibit 33); Petition by the Village of Barrington, Illinois, and The Regional Answer to Canadian National (Apr. 2012) (Exhibit 41).

[75] *Id.* at 54,854-57.

[76] *Id*. at 54,857.

This long overdue rulemaking may well heed the emerging consensus and prohibit the shipment of crude oil and ethanol in DOT-111 tank cars. In addition, this rulemaking will need to determine what additional safety upgrades are needed in addition to what AAR adopted in its CPC-1232 standards. NTSB has long found that other features of DOT-111 tank cars, such as the bottom outlet valves, are inadequate and susceptible to breaches[77] and has indicated that it is not convinced that the CPC-1232 modifications offer significant enough safety improvements.[78] For its part, AAR supports making additional modifications beyond the CPC-1232 standards by requiring that all tank cars carrying crude and ethanol have jackets, full-head shields, thermal protection and bottom outlet valve safeguards.[79] BNSF officials have indicated that they would not have supported the consensus CPC-1232 standard in 2011 if they had known about crude oil at the time. They now believe the tank cars need to have a jacket and thermal protection in addition to the CPC-1232 upgrades, and have represented that these additional safeguards would increase tank car crashworthiness by another 50% over that afforded by the CPC-1232 standards.[80] Shortly after a train derailment in Lynchburg, Virginia involving at least one CPC-1232 car, Secretary Foxx stated that he is "not convinced the 1232, which is the upgraded car, is the absolute solution. I think there's probably going to need to be a new type of tank car established to keep this country as safe as possible."[81]

A proposed rule has been drafted and sent to the Office of Management and Budget for review. Secretary Foxx indicated that the proposed rule will address speed restrictions and train routing in addition to tank car standards.[82] However, once a proposed rule is published in the Federal Register, DOT must afford the public an opportunity to comment, hold hearings, consult with the White House, and conduct various regulatory analyses before adopting a final rule.[83] This process will take time even if it is expedited, and there will be significant pressure to weaken the upgraded safety design endorsed by AAR and to keep DOT-111 tank cars in the crude oil fleet for an inordinate period of time.[84] This petition seeks an emergency order

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[77] Cherry Valley Report, *infra*; Hart Testimony at 5-6 (Exhibit 15); *see also* NTSB, *DOT-111 Tank Car Design* (Apr. 2014) (Exhibit 42).

[78] Hersman Testimony at 6 (Apr. 9, 2014) (Exhibit 3).

[79] AAR Comments on PHMSA 2013-0082 at 3-7 (Exhibit 31).

[80] Notes from Administrator's Meeting with BNSF (Mar. 19, 2014) (Exhibit 30).

[81] Secretary Foxx Interview on the Rachel Maddow Show, Unofficial Transcript at 2 (Exhibit 39). On April 30, 2014, an oil train loaded with Bakken crude derailed in Lynchburg, Virginia, and derailed cars fell into the James River and spilled oil, precipitating a fire and spilling tens of thousands of gallons of oil into the river. Emergency Restriction/Prohibition Order 2014-0067, at 5 (Exhibit 5).

[82] Secretary Foxx Interview on Rachel Maddow Show at 2 (Exhibit 39).

[83] 49 U.S.C. §§ 5121(a), 20103(e).

[84] *See* Jim Snyder & Thomas Black, *Older Tank Cars to Be Phased Out Under Industry Proposal*, Bloomberg, July 15, 2014 (*available at* http://mobile.bloomberg.com/news/2014-07-14/oil-industry-u-s-railroads-said-to-agree-on-tank-car-standard.html) (reporting that rail and oil industry trade groups reached a deal to weaken future tank car standards from what AAR had

prohibiting the shipment of explosive crude in legacy DOT-111 tank cars during the extensive period of time it will take to complete the rulemaking.

B. Canada's Actions Do More to Protect Citizens But Exacerbate the Emergency Conditions for the U.S. Fleet

The Canadian Minister of Transport has also issued emergency directives to lessen the "immediate threat to safety railway operations," including directives barring unattended locomotives, requiring at least a two-person crew on trains transporting dangerous goods, establishing speed limits for trains carrying dangerous goods, and requiring shippers to develop emergency response plans for trains with more than one car loaded with higher risk petroleum products or ethanol.[85]

In addition and in contrast to the U.S. DOT, Transport Canada has taken significant steps to stop the use of DOT-111 tank cars for shipping explosive crude. First, in April 2014, Transport Canada issued an emergency order "immediately and unilaterally" prohibiting the use of the oldest DOT-111 tank cars—those without a continuous reinforcement of their bottom shell—for transporting crude oil and ethanol effective in late May 2014. Second, it has adopted new tank car standards corresponding to the CPC-1232 specifications, making it clear no new DOT-111 tank cars can be built, even while it is assessing further upgrades to the tank car standards to reduce other hazards revealed in recent accidents and investigations. Third, a surcharge has been imposed on DOT-111s used to ship crude oil or ethanol. Fourth, in January 2014, Transport Canada set a three-year deadline for all tank cars used to transport crude oil or ethanol to meet CPC-1232 standards.[86]

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been proposing and to allow DOT-111 tank cars to be used to ship crude oil for at least three more years and to ship ethanol for even longer).

[85] Transport Canada Emergency Directive re: Safety & Security of Locomotives in Canada (July 23, 2013 (Exhibit 43); Protective Direction No. 31 (Oct. 17, 2013) (Packing Group I unless crude testing shows otherwise) (Exhibit 44); Protective Direction No. 33 (Apr. 23, 2014) (tank cars filled over capacity) (Exhibit 45); Minister of Transport Order (Apr. 23, 2014) (train speeds and routes) (Exhibit 46).

[86] Transport Canada Protective Directive No. 34 (Apr. 23, 2014) (Exhibit 47); 2014 TSB Recommendations & TC Responses (May 20, 2014) (Exhibit 48); Transport Canada, *Addressing the Safety of DOT-111 Tank Cars Carrying Dangerous Goods* (Apr. 23, 2014) (Exhibit 49); Transport Canada, *Minister Raitt Announces New Rail and Dangerous Goods Requirements* (June 27, 2014) (Exhibit 50); Transport Canada, *Amendments to Transportation of Dangerous Goods Legislation* (June 27, 2014) (Exhibit 51). Transport Canada represents that the roughly 5,000 DOT-111 tank cars subject to the immediate ban in Canada can be repurposed to transport non-dangerous goods. Transport Canada, *Addressing the Safety of DOT-111 Tank Cars Carrying Dangerous Goods* at 2.

In taking these steps, the Canadian Minister noted that Canada ordinarily tries to harmonize rail safety standards with the United States, but in this instance, it had to "move more aggressively to address the safety concerns of Canadians."[87] Elaborating, the Minister explained:

> Given the highly integrated nature of our respective rail networks, and the similarities between recent TSB and National Transportation Safety Board recommendations, Canada will continue to work with the U.S. to coordinate and harmonize regulatory actions wherever possible. Nevertheless, recognizing the scale of the Lac-Mégantic tragedy and its impact on Canadians in general, as well as the serious concerns of the public and many municipalities with DOT-111 tank cars, Canada will take unilateral steps where necessary.[88]

Canada's actions create a perverse incentive for shippers to shift the oldest, most dangerous cars to shipments in the U.S., which would further increase the risks and severity of rail accidents in this country. Indeed, BNSF officials have expressed concerns "that the DOT 111s will come to the U.S. and the CPC-1232s will end up in Canada."[89]

V. EMERGENCY MEASURES ARE NEEDED TO REDUCE THE RISKS OF OIL SPILLS AND EXPLOSIONS FROM DOT-111 TANK CARS DURING THE TIME IT WILL TAKE TO COMPLETE A RULEMAKING.

A. The Shipment of Bakken Crude in Legacy DOT-111 Tank Cars Poses an Imminent Hazard.

Both the HMTA and the FRSA authorize the Secretary to issue emergency orders when an unsafe condition constitutes an imminent hazard or an emergency situation involving a hazard of death, injury or significant harm to the environment.[90] Shipping highly flammable crude oil in tank cars that are prone to rupture and spilling oil is precisely the type of emergency that warrants issuance of an emergency order to reduce hazards that present a substantial likelihood of harm to people, property and the environment during the time it will take to complete a rulemaking.

The Secretary has already found that the surge in crude-by-rail unit trains carrying flammable Bakken crude has created unsafe conditions that threaten human life, harm to communities, and environmental destruction. Specifically, in issuing emergency orders since the Lac Mégantic disaster, the Secretary has made findings that unsafe conditions pose an emergency situation warranting immediate restrictions and requirements. A February 2014 emergency order states:

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[87] Protective Directive No. 34 (Apr. 23, 2014) (Exhibit 47).

[88] 2014 TSB Recommendations & TC Responses at 2 (Exhibit 48).

[89] BNSF Meeting at 2 (Exhibit 30).

[90] 49 U.S.C. §§ 5121(d), 20104(a).

> Shipping hazardous materials is inherently dangerous. Transporting petroleum crude oil can be problematic if the crude oil is released into the environment because of its flammability. This risk of ignition is compounded in the context of rail transportation because petroleum crude oil is commonly shipped in unit trains that may consist of over 100 loaded tank cars. With the rising demand for rail carriage of petroleum crude oil throughout the United States, the risk of rail incidents increases along with the increase in the volume of crude oil shipped. There have been several significant derailments in the U.S. and Canada over the last ten months causing deaths and property and environmental damage that involved petroleum crude oil shipments. These accidents have demonstrated the need for emergency action to address unsafe conditions or practices in the shipment of petroleum crude oil by rail.[91]

In the February 2014 emergency order, the Secretary relied, in part, on the findings made by the State Department in its environmental review for the Keystone XL Pipeline, in which the State Department projected six fatalities and 49 additional injuries per year if Bakken and other crude oil is shipped by rail at levels that will meet market demands. The Secretary noted that the State Department's projections may be skewed because, on the one hand, they did not take into account the recent measures put in place by DOT and, on the other hand, the State Department relied on rail accident data from 2002-2012 before the Lac Mégantic and other recent accidents.[92] The State Department has since increased its projections to 6-28 deaths and 49-189 injuries annually from crude and petroleum rail shipments again based on more complete accident data that still precedes the surge in Bakken crude shipments and Lac Mégantic.[93]

The Secretary's most recent emergency order issued in May 2014 reiterates the above findings in the February emergency order and elaborates:

> Upon information derived from recent railroad accidents and subsequent DOT investigations, the Secretary of Transportation (Secretary) has found that an unsafe condition or an unsafe practice is causing or otherwise constitutes an imminent hazard to the safe transportation of hazardous materials. Specifically, a pattern of releases and fires involving petroleum crude oil shipments originating

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[91] Emergency Order DOT-OST-2014-0025 at 4 (Exhibit 23); *see also id.* at 3 ("Petroleum crude oil may contain dissolved gases, may exhibit corrosive properties, and also may exhibit toxic properties. Additionally, the flammability of crude oil being shipped by bulk rail poses a significant risk of endangerment to health, property, or the environment when an explosion occurs.").

[92] *Id.* at 11 & n.6.

[93] Errata Sheet to Keystone XL Project–Final Supplemental Environmental Impact Statement at 1 (Exhibit 10); Keystone XL Project–Final Supplemental Environmental Impact Statement at ES-35 & 5.1-74 (Exhibit 1).

> from the Bakken and being transported by rail constitute an imminent hazard under 49 U.S.C. 5121(d).[94]
>
> The number and type of petroleum crude oil railroad accidents described below that have occurred during the last year is startling, and the quantity of petroleum crude oil spilled as a result of those accidents is voluminous in comparison to past precedents. Due to the volume of crude oil currently being shipped by railroads, the demonstrated recent propensity for rail accidents involving trains transporting crude oil to occur, and the subsequent releases of large quantities of crude oil into the environment and the imminent hazard those releases present, this Order requires that railroads take the action described above to assist emergency responders in mitigating the effects of accidents involving petroleum crude oil trains. Releases of petroleum crude oil, subsequent fires, and environmental damage resulting from such releases represent an imminent hazard as defined by 49 U.S.C. 5102(5), presenting a substantial likelihood that death, serious illness, severe personal injury, or a substantial endangerment to health, property, or the environment may occur.[95]

After reciting all of the actions taken by DOT to date through emergency orders, safety advisories, voluntary industry agreements, and initiation of a tank car rulemaking process, the Secretary concludes:

> Notwithstanding the above DOT actions, in light of continued risks associated with petroleum crude oil shipments by rail, the further actions described in this Order are necessary to eliminate unsafe conditions and practices that create an imminent hazard to public health and safety and the environment.[96]

The May 2014 Emergency Order requires rail carriers that ship more than 1,000,000 gallons of Bakken crude to notify state emergency response agencies of the number and routes of the trains and emergency response information. While such notifications may enable emergency responders to prepare for and improve their ability to contain a disaster as it unfolds, such notifications do nothing to prevent the tank car puncture that causes the oil to spill and produces a destructive fire or explosion. The unsafe conditions creating the imminent hazard noted by the Secretary in his most recent emergency order findings persist.

The DOT-111 tank cars are a disaster waiting to happen. NTSB has recognized as much in its unbroken recommendations to stop shipping hazardous materials in DOT-111 tank cars in the wake of the Cherry Valley and Lac Mégantic disasters. Indeed, recent testimony by the NTSB Vice Chair (and now Acting Chair) called the DOT-111 "a design that presents demonstrated and serious safety concerns when used to transport hazardous materials such as crude oil" and presents an "unacceptable public risk."[97] DOT has acknowledged the

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[94] Emergency Order DOT-OST-2014-0067 at 1-2 (Exhibit 5).

[95] *Id.* at 4.

[96] *Id.* at 9-10.

[97] Hart Testimony at 3 (Exhibit 15).

unacceptable risks when it has amended its regulations to upgrade safety features in tank cars after accidents have repeatedly brought home the deficiencies in the DOT-111 tank cars. And Secretary Foxx has stated publicly that the DOT-111 tank cars need to go.[98]

The rate at which DOT-111 tank cars puncture and spill their contents is astounding. As long ago as 1991, NTSB calculated a DOT-111 failure rate of over 50% in train accidents in the late 1980s. BNSF reported in March 2014 that recent research has calculated a 50% conditional probability of release when DOT-111 tank cars are impacted in accidents. In its advance notice of proposed rulemaking on tank car standards, PHMSA asked: "Is the 68% failure rate for DOT Specification 111 tank cars that occurred during the June 19, 2009 incident in Cherry Valley, Illinois typical?"[99] While AAR is using a 20-25% failure rate based on a different set of accident data, that projected failure rate means 1 in every 4 or 5 tank cars are likely to breach and spill oil in an accident.[100] Given the flammability of Bakken crude, the risk of fires and explosions is untenable.

The most recent spate of accidents lays bare the threat of catastrophic damage and potential loss of life from shipping highly flammable crude oil in DOT-111 tank cars. These accidents have shocked two nations and shattered the safety record previously touted by the railroad industry. Dozens of people have died in crude-by-rail accidents when DOT-111 tank cars punctured and spilled flammable crude, triggering catastrophic explosions and fires. Contamination persists in rivers and wetlands, and the heart of downtown Lac Mégantic remains a wasteland. The damage could be even worse if the next catastrophic release occurs in proximity to densely populated areas, like cities or venues with large numbers of people in attendance.[101] The recent notifications to states reveal that BNSF Railway, alone, reports moving as many as 27 oil trains per week through Chicago's Cook County and 8-13 per week through Seattle, all containing 1,000,000 or more gallons of Bakken crude.[102] More than 20 million Americans live close enough to rail lines likely to be carrying crude oil that they would be evacuated in a derailment that caused a fire or explosion.[103] AAR has testified that a catastrophic train accident in an urban center like Chicago or Seattle could give rise to liabilities

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[98] Secretary Foxx Interview on the Rachel Maddow Show at 2 (Exhibit 39).

[99] 78 Fed. Reg. at 54,857.

[100] AAR Comments on PHMSA 2013-0082 at 4 (Exhibit 31).

[101] *See* NTSB Recommendation 14-1 through 14-3 at 6 & 74 Fed. Reg. 20,752 (Apr. 16, 2008) (noting DOT's heightened obligation to prevent hazardous spills near population centers, as well as near environmentally-sensitive areas, iconic buildings, or landmarks).

[102] Matt Brown (AP), *U.S. railroads disclose figures, details on volatile oil train shipments*, Montreal Gazette, June 25, 2014 (*available at* http://www.montrealgazette.com/business/Railroads+disclose+figures+details+volatile+train+shipments/9970734/story.html); Phuong Le (AP), *BNSF data show recent drop in state's oil-train traffic*, Seattle Times, July 7, 2014 (available at http://seattletimes.com/html/localnews/2024015893_oiltraindropxml.html).

[103] Kate Valentine, *MAP: 25 Million Americans Live Within The 'Blast Zone' Of An Oil Train Explosion*, Climate Progress, July 9, 2014 (*available at* http://thinkprogress.org/climate/2014/07/09/3457911/map-oil-train-blast-zone/).

that would easily exceed a billion dollars, far exceeding the amount of insurance coverage available to a railroad.[104]

As a common carrier, a railroad must haul hazardous materials, including explosive crude, as long as the request is legal, and under current DOT regulations, it is legal to ship crude oil in DOT-111 tank cars without added safety features.[105] The railroads have no choice but to accept shipments of Bakken and other crude in legacy DOT-111 tank cars until DOT changes its tank car regulations (or issues the requested emergency order). States and communities along the rail lines are often powerless to protect themselves given pervasive preemption of state and local authority over railroads and the shipment of hazardous freight.[106] Only DOT can take steps to prevent the next spate of rail disasters.

Despite the unbroken and dire warnings from the NTSB, DOT has yet to strengthen design requirements for new or existing tank cars transporting crude oil. At an April 2014 NTSB Public Forum on Rail Safety: Transportation of Crude Oil and Ethanol, the NTSB Chairwoman, Deborah A.P. Hersman, described a serious accident in February 1978 that took 16 lives and spurred DOT to require retrofitting of jumbo tank cars by the end of 1978, which led to a decline in the number of accidents and fatalities. She described 2013—the year of Casselton and Lac Mégantic—as another low point in railroad history that cries out for emergency actions to stem the tide of crude-by-rail disasters.[107] She urged DOT to use its emergency authority to toughen tank car standards rather than wait for the cumbersome rulemaking process to run its normal course and risk another accident occurring before new regulations are in place. She told reporters that: "There is a very high risk here that hasn't been addressed. They aren't moving fast enough. We don't need a higher body count before they move forward. That is a tombstone mentality. We know the steps that will prevent or mitigate these accidents. What is missing is the will to require people to do so."[108] Chairwoman Hersman's plea describes the emergency conditions the nation faces and that compel the Secretary to issue an emergency order prohibiting shipments of Bakken crude in DOT-111 tank cars.

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[104] Comments of AAR, *Review of Railway Third-Party Liability Insurance Coverage Regulations* Before Canadian Transportation Agency at 8 (Jan. 21, 2014) (Exhibit 52). Because railroads are common carriers, AAR is advocating for governments to limit railroads' liability for transporting hazardous materials, as has been done for the nuclear power industry. *Id.*

[105] Hersman Testimony at 6 & n.11 (Exhibit 3) (noting that federal regulations continue to allow use of legacy DOT-111 tank cars for shipping crude oil and ethanol); see 49 C.F.R. part 179, subpart D.

[106] See 49 U.S.C. §§ 5125, 20106.

[107] Chair Deborah Hersman, Written Closing Remarks. Rail Safety: Transportation of Crude Oil & Ethanol, NTSB Public Forum, Apr. 22, 2014 (Exhibit 53).

[108] Joan Lowy, *NTSB Chief Says Obama Administration Needs to Act Immediately on Oil Train Safety*, U.S. News & World Report, Apr. 23, 2014 (Exhibit 54) (http://www.usnews.com/news/politics/articles/2014/04/23/ntsb-head-action-needed-now-on-oil-train-safety).

B. Canada's Recent Actions Escalate the Risks in the United States.

As described above, Canada's recent actions make it more likely that DOT-111 tank cars previously in service in Canada will be moved into the U.S. fleet. Transport Canada has banned the shipment of crude oil and other dangerous goods in the oldest DOT-111 tank cars, and a surcharge has been imposed on shipments of crude oil in DOT-111 tank cars. Canada has already upgraded its tank car standards to comport with CPC-1232, even while it is developing more stringent safety standards, and it has set a deadline for the phase out of the use of tank cars that fall short of the CPC-1232 standards for transporting any dangerous goods in Canada. The actions taken by Canada, coupled with DOT's failure to act, create perverse incentives to move the hazardous tank cars that may no longer be used to ship crude oil in Canada into service in the U.S.

C. The DOT Rulemaking Will Take Far Too Long to Address the Emergency Posed by Shipping Highly Flammable Crude in Legacy DOT-111 Tank Cars.

A rulemaking is finally underway. In September 2013, PHMSA, in coordination with FRA, published an advance notice of proposed rulemaking, soliciting public comment on a series of rulemaking petitions and on NTSB recommendations to upgrade tank car safety standards.[109] This advance notice is just the first step in the rulemaking process. Yet it took DOT over two years since AAR filed its petition to codify the CPC-1232 standards to take even this initial step.

DOT has since developed a proposed rule that has been undergoing review in the Office of Management and Budget since April 24, 2014. Given the consensus that is emerging and endorsed by AAR and BNSF, the proposed and final rules will presumably prohibit shipping crude oil (and possibly ethanol and other hazardous materials) in DOT-111 tank cars. The rulemaking, however, will also need to resolve a series of complex design issues for future tank cars as well as operational issues, such as speed limits and train routes.[110] With respect to future tank car standards, AAR and BNSF are proposing that jackets, thermal protection and other safeguards be required in addition to those specified in CPC-1232, and NTSB has been recommending for years that DOT reduce the risks posed by bottom outlet valves and require other safety features.[111] Secretary Foxx has indicated that this rulemaking will likely need to establish "a new type of tank car . . . to keep this country as safe as possible."[112] Indeed,

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[109] 78 Fed. Reg. 54,849 (Sept. 6, 2013).

[110] Secretary Foxx Interview on Rachel Maddow Show at 2-3 (Exhibit 39).

[111] Cherry Valley Report at 81, 88 (Exhibit 29); *see also* Transportation Safety Board of Canada, *Rail Safety Advisory Letter—15/13 Re: Operating Lever Design for Tank Car Bottom Outlet Valve* (Nov. 26, 2013) (Exhibit 55). Note that AAR may be backing away from its proposed upgrades. Press reports indicate that AAR may have cut a deal with the oil industry to weaken those standards and accede to a long phase-out of the use of DOT-111 tank cars for shipping crude oil. *See* Jim Snyder & Thomas Black, *Older Tank Cars to Be Phased Out Under Industry Proposal*, Bloomberg, July 15, 2014 (*available at* http://mobile.bloomberg.com/news/2014-07-14/oil-industry-u-s-railroads-said-to-agree-on-tank-car-standard.html).

[112] *Id.* at 2.

manufacturers are already producing what they call the "Tank Car of the Future" that includes many of these additional safety features recommended by AAR and BNSF and will further reduce the risks of an oil spill.[113] Even if the pace of the rulemaking is greatly accelerated, establishing the minimum standards for future tank cars will take time.

If shipping Bakken crude in legacy DOT-111 tank cars is prohibited, as the petition requests, shippers will likely turn to tank cars that meet the CPC-1232 or even stronger standards. BNSF has represented that CPC-1232 tank cars are 76% more crashworthy than unjacketed DOT-111 cars.[114] In its comments on the advance notice of proposed rulemaking, AAR has represented that the risks of an oil spill would be cut in half (or more) if legacy DOT-111 tank cars were no longer used. According to its analysis, the probability of an oil spill from a derailed legacy DOT-111 is 19.6-26.6%, and it would be reduced to 10.3-13.2% if the tank car met the CPC-1232 standards.[115] The next generation tank cars meeting more stringent standards than CPC-1232 would reduce the risks of breaches and oil spills even further. Some have represented that the new generation of tank cars being built today are 85% more crashworthy then the legacy DOT-111 and twice as crashworthy as the CPC-1232 cars.[116] Petitioners do not believe the CPC-1232 design is adequate and they assert that it is essential to require tank cars to include additional safety features that will further reduce the risks of oil spills. However, the precise design of the next generation of tank cars is properly the subject of the ongoing rulemaking process.

If a proposed rule is published this summer or fall, it will take many months and possibly a year or more before a final rule will be promulgated and likely even longer for compliance with any new standards to be required.[117] In the meantime, the surge in shipping volatile crude-by-rail is putting communities and major cities along the rail lines at risk of a disaster. The ongoing rulemaking process will take too long to address the imminent hazard posed by use of dangerous DOT-111 tank cars to ship crude oil.

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[113] William C. Vantuono, *Tank Car of the Future Among More Greenbrier Railcar Contracts*, Railway Age, June 19, 2014 (Exhibit 56) (http://www.railwayage.com/index.php/mechanical/freight-cars/tank-car-of-the-future-among-greenbrier-railcar-contracts.html).

[114] BNSF Meeting at 2 (Exhibit 30).

[115] AAR Comments on PHMSA 2013-0082 at 4 (Ex. 31) (the two data points reflect the amount of oil spilled and overall reduction in the spill projections is due to a change in the accident data used to 2008-2010, a timeframe that precedes the recent spate of serious crude-by-rail disasters). AAR's data show that a DOT-111 with a jacket would have a risk of spilling oil in a crash comparable to a CPC-1232 tank car (8.5-12.8%). For that reason, the requested emergency order should ban shipping Bakken crude in legacy DOT-111s lack jackets or have not been retrofitted or built to meet the CPC-1232 standards.

[116] AAR Comments on PHMSA 2013-082 at 4 (Exhibit. 31).

[117] Congressional Research Service at 13 (implementation could take years) (Exhibit 16).

CONCLUSION

For all of the reasons set forth above, in the attached materials, in NTSB's findings and recommendations, in the tank car rulemaking record, and in the emergency orders and other actions taken by DOT since the Lac Mégantic disaster, this Petition asks the Secretary to issue an emergency order prohibiting the shipment of Bakken and other highly flammable crude oil in legacy DOT-111 tank cars. The failure rate of legacy DOT-111 tank cars makes them far too hazardous to be used to ship highly flammable crude.[118] Banning the shipment of highly flammable crude oil in legacy DOT-111 tank cars is necessary to abate the unsafe conditions posing an imminent hazard to human life, communities, and the environment. We urge the Secretary to issue an emergency order imposing such a ban immediately.

Submitted by:

Patti Goldman
Jan Hasselman
Earthjustice
705 Second Avenue, Suite 203
Seattle, WA 98104

On Behalf of:

Sierra Club
85 Second Street, 2nd Floor
San Francisco, CA 94105

ForestEthics
1 Haight Street
San Francisco, CA 94102

[118] There may well be a basis for extending the legacy DOT-111 prohibition to ethanol. NTSB has recommended prohibiting the shipment of ethanol in legacy DOT-111 tank cars, and since the Cherry Valley disaster, tank cars have continued to rupture and spill ethanol in numerous derailments, including in August 2012, in Plevna, Montana; in July 2012 in Columbus, Ohio; in October 2011 in Tiskilwa, Illinois; in February 2011 in Arcadia, Ohio; and in October 2006 in New Brighton, Pennsylvania. NTSB Senior Hazardous Materials Accident Investigator, *Rail Accidents Involving Crude Oil and Ethanol Releases*, Before NTSB Rail Safety Forum: Transportation of Crude Oil and Ethanol at 2-5 (Apr. 22-23, 2014). (Exhibit 8).

EXHIBITS IN SUPPORT OF PETITION TO THE SECRETARY OF TRANSPORTATION TO ISSUE AN EMERGENCY ORDER PROHIBITING THE SHIPMENT OF BAKKEN CRUDE OIL IN UNSAFE TANK CARS

Exhibit No.	Description
1	United States Department of State Bureau of Oceans and International Environmental and Scientific Affairs, Final Supplemental Environmental Impact Statement for the Keystone XL Project, Excerpted pages cover, ES-35—ES-36, 5.1-74 – 5.1-102, and 5.3-7 – 5.3-11 (Jan. 2014).
2	Transportation Safety Board of Canada, Rail Recommendations R14-01, R14-02, R14-03 (Jan. 23, 2014).
3	National Transportation Safety Board, Testimony of The Hon. 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 (Apr. 9, 2014).
4	Analysis prepared by Ian Goodman and Brigid Rowan, on behalf of Oil Change International, *Analysis of the Potential Costs of Accidents/Spills Related to Crude by Rail*, Before the Pipeline and Hazardous Materials Safety Administration in the Context of Hazardous Materials: Rail Petitions and Recommendations to Improve the Safety of Railroad Tank Car Transportation (Nov. 8, 2013).
5	United States Department of Transportation, Petroleum Crude Oil Railroad Carriers (Docket No. DOT-OST-2014-0067), Emergency Restriction/Prohibition Order (May 7, 2014).
6	U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration PowerPoint, Pipeline and Hazardous Materials Safety Administration, presented by Dr. Magdy El-Sibaie, Associate Administrator (Apr. 2014).
7	National Transportation Safety Board, Preliminary Report, Railroad accident near Casselton, North Dakota, on December 30, 2013, DCA14MR004 (2014).
8	National Transportation Safety Board PowerPoint, Rail Accidents Involving Crude Oil and Ethanol Releases, presented by Paul L. Stancil, Sr. Hazardous Materials Accident Investigator, before the National Transportation Safety Board Rail Safety Forum: Transportation of Crude Oil and Ethanol (Apr. 22-23, 2014).
9	Transportation Safety Board of Canada, Railway Investigation R14M0002, Train derailment in Plaster Rock, New Brunswick (June 12, 2014).

10	United States Department of State Bureau of Oceans and International Environmental and Scientific Affairs, Final Supplemental Environmental Impact Statement for the Keystone XL Project, Errata Sheet, Excerpted pages: 1-2, 8-10 (June 2014).
11	Short-Term Energy Outlook Supplement: Key drivers for EIA's short-term U.S. crude oil production outlook, prepared by U.S. Energy Information Administration (Feb. 14, 2013).
12	BP Statistical Review of World Energy (June 2014).
13	Statement of Adam Sieminski, Administrator, Energy Information Administration, U.S. Department of Energy, Before the Committee on Energy and Natural Resources, U.S. Senate (July 16, 2013).
14	Association of American Railroads, *Moving Crude Oil by Rail* (Dec. 2013).
15	Testimony of National Transportation Safety Board Vice Chairman Christopher A. Hart on Enhancing Our Rail Safety: Current Challenges for Passenger and Freight Rail, Before the Subcommittee on Surface Transportation and Merchant Marine Infrastructure, Safety, and Security Committee on Commerce, Science and Transportation (Mar. 6, 2014).
16	Congressional Research Service, U.S. Rail Transportation of Crude Oil: Background and Issues for Congress (Feb. 6, 2014).
17	Testimony of Edward R. Hamberger, President & Chief Executive Officer, Association of American Railroads, Before the United States Senate, Committee on Commerce, Science, and Transportation, Hearing on Rail Safety (June 19, 2013).
18	Safety Advisory 2013-06, 78 Fed. Reg. 48224, 48, 228 (Aug. 7, 2013).
19	National Transportation Safety Board, Safety Recommendations R-14-1 through R-14-3 (Jan. 23, 2014).
20	Federal Railroad Administration, Emergency Order Establishing Additional Requirements for Attendance and Securement of Certain Freight Trains and Vehicles on Mainline Track or Mainline Siding Outside of a Yard or Terminal, 78 Fed. Reg. 48218 (Aug. 7, 2013).
21	National Transportation Safety Board Comments on Pipeline and Hazardous Materials Safety Administration's Advanced Notice of Proposed Rulemaking (Dec. 5, 2013).

22	National Transportation Safety Board, Safety Recommendation R-12-5 through R-12-8, R-07-4 (Mar. 2, 2012).
23	United States Department of Transportation, Petroleum Crude Oil Offerors & Petroleum Crude Oil Rail Carriers (Docket No. DOT-OST-2014-0025), Emergency Restriction/Prohibition Order (Feb. 25, 2014).
24	United States Department of Transportation, Federal Railroad Administration, Letter from Thomas J. Herrmann, to Jack Gerard, American Petroleum Institute, regarding reviewing potential safety concerns about the proper classification of crude oil being shipped by rail (July 29, 2013).
25	United States Department of Transportation, Pipeline and Hazardous Materials Safety Administration, Safety Alert—January 2, 2014, *Preliminary Guidance from OPERATION CLASSIFICATION*.
26	Letter from Christopher A. Hart, Acting Chairman, National Transportation Safety Board, to Senators Ron Wyden and Jeff Merkley, regarding the safe transportation of flammable products by rail (June 25, 2014).
27	National Transportation Safety Board Safety Recommendation R-91-19 (July 1, 1991).
28	Transportation Research Board Special Report 243, Ensuring Railroad Tank Car Safety, Committee for the Study of the Railroad Tank Car Design Process (1994).
29	National Transportation Safety Board Accident Report, Derailment of CN Freight Train U70691-18 With Subsequent Hazardous Materials Release and Fire, Cherry Valley, Illinois (June 19, 2009).
30	Notes from Administrator's Meeting with BNSF, for Docket PHMSA-2012-0082, Open Rulemaking HM-251 (Mar. 19, 2014).
31	Comments of the Association of American Railroads and the American Short Line and Regional Railroad Association, Docket No. PHMSA-2012-0082, Before the Pipeline and Hazardous Materials Safety Administration (Nov. 14, 2013).
32	Railway Supply Institute Association of American Railroads PowerPoint, Tank Car Accident Safety Research for Crude Oil and Ethanol Cars, for the Rail Safety Forum; Crude Oil and Ethanol in Transportation, National Transportation Safety Board, presented by Todd Treichel, RSI-AAR Railroad Tank Car Safety Research & Test Project (April 22-23, 2014).

33	Petition for Rulemaking: Tank Car Standards for DOT Class 111 Tank Cars Used for Packing Group I and II Materials, Before the Pipeline and Hazardous Materials Safety Administration, submitted by Association of American Railroads (Mar. 9, 2011).
34	National Transportation Safety Board, Safety Recommendation R-14-4 through R-14-6 (Jan. 21, 2014).
35	National Transportation Safety Board Comments on Pipeline and Hazardous Materials Safety Administration's Advanced Notice of Proposed Rulemaking (Dec. 5, 2013).
36	Transportation Safety Board of Canada, Recommendations ensuing from the rail accident in Lac-Mégantic, Quebec (Jan. 23, 2014).
37	Transportation Safety Board of Canada, Rail Safety Recommendations (Jan. 23, 2014).
38	Pipeline and Hazardous Materials Safety Administration, Safety and Security Plans for Class 3 Hazardous Materials Transported by Rail, 78 Fed. Reg. 69745 (Nov. 20, 2013).
39	Unofficial Transcript of: Rachel Maddow, MSNBC, Interview With Anthony Foxx, Secretary of Transportation: Lynchburg Had Upgraded Tank Car (May 14, 2014).
40	Department of Transportation, Federal Railroad Administration, Safety Advisory 2014-01), Pipeline and Hazardous Materials Safety Administration (Docket No. PHMSA-2014-0049; Notice No. 14-07), Recommendations for Tank Cars Used for the Transportation of Petroleum Crude Oil by Rail (May 7, 2014).
41	Petition for Rulemaking: Tank Car Standards for the Existing Fleet of DOT Class 111 Tank Cars Used for Packing Group I and II Materials; and Real-Time Electronic Freight Consist Distribution, Before the Pipeline and Hazardous Materials Safety Administration, submitted by the Village of Barrington and TRAC Apr. 3, 2012).
42	PowerPoint: DOT-111 Tank Car Design, presented by Paul L. Stancil, CHMM, National Transportation Safety Board, Office of Railroad, Pipeline and Hazardous Materials Safety.
43	Emergency Directive Pursuant to Section 33 of the *Railway Safety Act*, Safety and Security of Locomotives in Canada.
44	Transport Canada Protective Direction No. 31 (Oct. 17, 2013).

45	Transport Canada Protective Direction No. 33 (Apr. 23, 2014).
46	Transport Canada Minister of Transport Order Pursuant to Section 19 of the *Railway Safety Act* (Apr. 23, 2014).
47	Transport Canada Protective Direction No. 34 (Apr. 23, 2014).
48	Transport Canada 2014 TSB Recommendations & TC Responses (May 20, 2014).
49	Transport Canada Backgrounder, Addressing the safety of DOT-111 tank cars carrying dangerous goods (Apr. 23, 2014).
50	Transport Canada News Release, Minister Raitt announces new rail and dangerous goods requirements (June 27, 2014).
51	Transport Canada Backgrounder, Amendments to transportation of dangerous goods legislation (June 27, 2014).
52	Before the Canadian Transportation Agency, Review of Railway Third-Party Liability Insurance Coverage Regulations, Comments of the Association of American Railroads (Jan. 21, 2014).
53	Closing Remarks of Chairman Deborah A.P. Hersman at the Rail Safety: Transportation of Crude Oil and Ethanol NTSB Public Forum, Washington, D.C. (Apr. 22, 2014).
54	Associated Press article, by Joan Lowy, *NTSB chief says Obama administration needs to act immediately on oil train safety* (Apr. 23, 2014).
55	Transportation Safety Board of Canada, Rail Safety Advisory Letter – 15/13 (Nov. 26, 2013).
56	Railway Age article, by William C. Vantuono, Editor-in-Chief, *Tank Car of the Future among more Greenbrier railcar contracts* (June 19, 2014).