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Are We Unprepared for "Pipelines on Rails"? Oil Transport Risks & Policy Challenges

By Susan Christopherson, Cornell University¹

What is the Issue?

In July 2013, a 74-car train carrying crude oil from North Dakota derailed in Lac Megantic, Quebec. Multiple tank cars exploded and a massive fire left 47 people dead. This catastrophe and its aftermath awakened North Americans to a dramatic increase in crude oil transport by rail. Since the conflagration in Quebec, five additional serious derailment accidents have occurred in Canada and the US, producing explosions, fires and population evacuation, though fortunately no further loss of life. This brief reviews the origins of the current surge in crude oil transport, the risks associated with moving this hazardous substance across the Great Lakes states into the Northeast, and how federal, state and local governments are responding to prevent future catastrophes.

The Context

Since 2010, use of land and water transport networks connecting energy extraction sites in the Western US and Canada with refineries and ports on the East, West, and Gulf Coasts has grown exponentially, posing environmental and safety risks along rail lines and for transshipment centers and waterways. The number of crude oil carloads hauled by U.S. railroads surged from 10,840 in 2009 to a projected 400,000 in 2014.

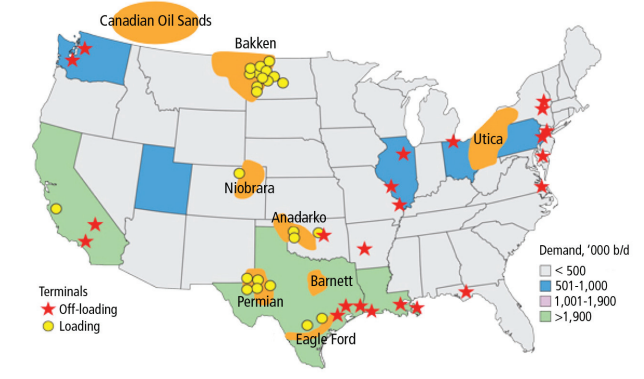
They are carrying several types of crude across the Great Lakes states and provinces: 1) light crude shale oil, particularly from North Dakota's Bakken Shale; 2) heavy crude from the Bakken region, which is sometimes mixed with light crude; and 3) exceptionally heavy "tar sands" crude, sometimes as diluted bitumen ("dilbit").

It is expected that both light crude from shale plays and heavy crude from Alberta oil sands will play a prominent role in commodity transport in the Great Lakes States into the 2020s. And because of their historic role in commodity transport and their access to coastal refineries, the Great Lakes themselves and their waterways will be part of the transportation routes.

Some suggest that the risks of oil transport could be solved by construction of West-to-East pipelines. While preferable from a safety standpoint, oil pipelines are expensive, take time to construct and have fixed routes, so the oil & gas industry prefers rail transport. Rail provides the transportation flexibility they need as production increases in one shale play and ebbs in another.² These "pipelines on rails" span many states, and move through highly populated areas.

Map 1: The Great Lakes States are central to the transport network

US RAIL TERMINALS, CRUDE DEMAND



Source: "Outlook for Rail Crude Oil Transport." Rail Energy Transportation Advisory Committee. Surface Transportation Board. Mar. 14, 2013

The Regulatory Gap

A preliminary examination of issues arising from rail transport of crude oil indicates that existing regulatory policy and capacity are not sufficient to address the risks to the public, property, or the environment. The National Transportation Safety Board has acknowledged that transport of crude oil by rail has increased dramatically in a short period of time, without a concomitant increase in monitoring or regulatory capacity. This lack of capacity is recognized in a 2013 federal report by the Government Accountability Office, noting that *only 1%* of the railroad infrastructure in the US is examined by the Federal Railroad Administration (FRA) every year, and that the FRA lacks the capacity to examine the broader risks associated with transport of crude oil across multiple states and through highly populated regions.³

The FRA's responsibilities have been defined very narrowly. As the GAO report spells out, the FRA is understaffed, slow to move, and reactive; it carries out activities such as safety checks, rather than developing and implementing performance-oriented regulation. As a consequence, some risks emanating from crude oil transport are not effectively monitored, others are not regulated at all.

However, the scope of action at the state and local level is severely limited by the "railroad exception", whereby the ability to regulate

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² Lewis, J. 2013. "CP Rail oil shipment deal signals rail transport no longer stopgap measure" (January 9) Available at: http://business.financialpost.com/2013/01/09/cp-rail-oil-shipment-deal-signals-rail-transport-no-longer-stopgap-measure/?_jsa=9166-8b42

³ US Government Accountability Office. 2013. Rail Safety: Improved Human Capital Planning Could Address Emerging Safety Oversight Challenges. Report to Congressional Requesters. Available at: <https://www.hsdl.org/?search&collection=limited&fct=&so=date&submitted=Search&tabsection=GAO+Reports+%26+Testimony>

railroads is vested solely in the FRA, and any policy action by state or local government affecting railroad operations, practices and infrastructure is preempted.

The risks lie in three arenas:

1. **Landside risks** along train routes, at crossings, and in highly populated as well as rural areas.
2. **Waterside risks** as trains travel close to fragile bodies of water such as the Great Lakes and Hudson River.
3. **Transshipment site risks** in urban centers where crude oil is stored in tanks or in parked trains for off-loading at refineries or onto barges for shipment to refineries.

What are these Risks?

One set of risks is *infrastructural*, involving the safety of railroad equipment, crossings and track. These include:

1. **The safety and reliability of the equipment being used.** Based on the investigation of the Lac Megantic catastrophe, oil shippers have been using tank cars that are not safe to carry volatile crude. The U.S. Department of Transportation has issued a safety warning to the public, emergency responders and shippers about the high volatility (and low flash point) of crude from the Bakken Shale. Much of the oil shipped in the U.S. and Canada uses DOT-111 tankers. For many years preceding the oil shipment boom, the NTSB issued warnings about these tank cars because their metal skin is easily punctured. Yet, newer tank cars that are built to ship volatile crude remain insufficiently available.
2. **The scale of the trains and effect on track condition.** The sheer volume of hazardous substance carried by these unit trains creates a distinctive magnitude of risk; each tank car has a capacity of 34,500 gallons, and each train is 80-120 tankers long. Poorly maintained track and trestles have been implicated in several recent derailments, raising questions about their maintenance. Accident investigators indicate that the actual weight of tank cars may have exceeded the legal limit. They point out that heavy trains deteriorate track more quickly (especially under weather conditions in North Dakota and the Great Lakes region generally) compounding the effects on track condition from increased traffic in other export commodities.
3. **Unsafe crossings.** FRA data assures us that accidents and deaths per-mile-traveled decreased through 2009 (before the current surge in oil trains and derailments). Accidents and deaths at crossings, however, remain high. As mile long oil trains take up to 45 minutes to pass, impatience and crossing trespass incidents are already likely. They may become more frequent if proposed safety measures further slow train speeds in populated areas.

In addition, there are *contextual risks*, occasioned by the proximity of vulnerable populations, lack of access to timely emergency services, insufficient safety and security at transshipment sites, and the like:

- 1) **Routing through highly populated areas.** Oil trains frequently traverse major cities such as Toronto, Chicago, St. Paul/Minneapolis, and Albany. At transshipment sites such as Albany, lines of tank cars may sit in minimally secured locations near office buildings, housing, or highways for up to 20 hours before the crude oil is unloaded. Railroads have interconnect agreements that allow them to route trains around populated areas, but re-routing is unlikely because of the multiple criteria (such as track or crossing condition) used to make routing decisions.

- 2) **Disparate impacts.** In some places such as in Albany, environmental, safety and security risks are disproportionately borne by lower-income neighborhoods near the parked, unsecured, trains.
- 3) **Train routes proximate to critical waterways and environments.** The federal preemption of railroad routing and safety regulation means that critical water resources, such as the Hudson River and The Great Lakes, are exposed to risks of contamination without an environmental impact analysis.
- 4) **Unclear best practice and financial responsibility for accident cleanup.** Railroad companies are responsible for paying for and coordinating cleanup of an accident site, and remediation of environmental and property damage. Activities are carried out by HazMat contractors hired by the railroad companies, but accountability for the quality of their work remains uncertain. While railroads carry commercial insurance, they acknowledge that the insurance available is not adequate to cover the worst accidents. The railroad responsible for the Lac Megantic disaster filed for bankruptcy, transferring millions of dollars in liability to the public sector.
- 5) **Security risks.** Because of the vulnerability of oil trains routed through major population centers, there are risks of *purposeful* action to cause harm.

While not exhaustive, this list exemplifies the risks that must be addressed by federal, state and local policymakers to minimally satisfy public concerns.

Next Steps

State officials are beginning to take notice of the significant risks associated with the transport of crude oil. In New York, crude oil trains move through 23 upstate counties and down the Hudson River through highly populated areas. Governor Andrew Cuomo recently issued an executive order calling for a review of policies related to oil transport through the State. Despite the “railroad exception”, there are strategies that local and state governments can use.

Governments can calculate and publicize the costs associated with providing safety and emergency response services to the shippers and railroads -- essentially unfunded mandates imposed on local and state government. These costs should be borne by the shippers and carriers.

States can examine whether commercial insurance carried by the railroads and the ports is sufficient to cover potential liabilities from accidents. If all costs are not covered by private insurance, they constitute a redistribution of risk and liability to the public sector. If states *insist* that all costs must be covered, shippers and carriers will have to take action to align risks with commercial insurance requirements.

Local governments can carefully scrutinize facilities for carriers and shippers that require local planning board approval. These facilities and the increased rail traffic they support may entail public costs as well as environmental, safety and security impacts.

Finally, states can *insist* on a comprehensive risk assessment at the federal level to examine both infrastructural and contextual risks arising from crude oil transportation.

Further Reading

<http://www.ogj.com/articles/print/volume-111/issue-8/transportation/rail-emerging-as-long-term-north-american.html>

<http://news.nationalgeographic.com/news/energy/2012/11/121130-north-dakota-oil-trains/>

