



Crude-by-rail in Oregon: 2012-2016
by Miles Johnson, *Columbia Riverkeeper Clean Water Attorney*

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Oregon's rail lines connect North America's crude oil deposits to U.S. and potentially international oil refineries. During the last decade, high international oil prices and new extraction technologies sparked a renaissance in North American crude oil production. Without pipelines to bring these new crudes to ports and refineries, crude-by-rail boomed.

But crude-by-rail accidents have occurred with disconcerting regularity across North America, and the resulting fires and explosions overwhelmed local first responders. Oil train disasters in Quebec, North Dakota, Alabama, Virginia, and elsewhere raised concerns about the ability of Oregon firefighters to combat an oil train fire.¹

This report describes oil train traffic in Oregon over the past four years and Oregon's level of preparedness for a fire or explosion caused by an oil train derailment.

I. When, where, what, and how much?

The amount of crude oil on Oregon's railways fluctuated significantly over the last decade. Crude oil on Oregon's rails rose from almost zero in 2007,² to roughly the equivalent of five unit trains per week in 2014. A "unit train" is a train consisting entirely of cars hauling the same cargo and typically contains 100 to 120 cars. In 2015, crude oil shipments fell to the equivalent of one or two unit trains per week as the global price of crude plummeted. The sections below describe the Oregon rail lines where crude oil travels and, to the extent such information is available, the amount of oil that has moved and is moving on each line.

Crude-by-rail shipping routes and volumes can change quickly. Indeed, this flexibility is why oil producers use rail cars to move crude. The Washington side of the Columbia River currently sees more crude-by-rail traffic than Oregon, but new oil discoveries, and new refineries or shipping terminals,³ could alter that dynamic. Moreover, crude-by-rail shipping in Oregon—which decreased in 2015 due to the low price of oil—could increase if international crude prices rebound even modestly.⁴

a. Bakken crude along the Columbia River from Portland to Clatskanie.

A dramatic increase in oil production in the late 2000s in the Bakken formation, located primarily in North Dakota, increased crude-by-rail shipments. The major influx of Bakken unit trains into Oregon occurred on about 60 miles of short-line railroad connecting Portland and Clatskanie. Burlington Northern and Santa Fe ("BNSF") brought unit trains of Bakken crude west along the Washington side of the Columbia, crossed from Vancouver to Portland, and transferred the trains onto a rail line operated by Portland and Western ("PNW") railroad. PNW brought the unit trains to a crude oil storage and transloading terminal along the lower Columbia River near Clatskanie controlled by Global Partners.

PNW began shipping crude oil along this line in November 2012. Train speed restrictions and lack of railroad sidings effectively limited PNW to six unit trains per week, though Global Partners had hoped to achieve nine or ten unit trains per week through rail infrastructure improvements.⁵ Documents submitted by PNW and BNSF show that this line handled three unit trains per week in 2014.⁶ PNW moved only a handful of unit trains to Clatskanie in 2015, in response to decreased demand from west coast refiners. In January 2016, citing

“severe headwinds in the crude oil market,” Global Partners dismissed most workers at the oil terminal and signaled that the facility would stop receiving crude oil.⁷ This announcement ended, at least temporarily, the transport of crude oil along the PNW line west of Portland.

b. Bakken crude along the Deschutes River and through central Oregon.

Just east of The Dalles, the so-called “Oregon Trunk” rail line intersects the main rail lines along Columbia River. The Oregon Trunk runs north-south across central Oregon on the east side of the Cascades, following the Deschutes River canyon before crossing through Bend and Klamath Falls. The Oregon Trunk line is BNSF’s most direct link between BNSF’s great northern route (where most Bakken unit trains originate and travel) and California’s oil refineries.

BNSF moved between zero and one unit trains of Bakken oil per week on the Oregon Trunk route during June 2014.⁸ In September 2014, BNSF announced its intention to move between zero and three Bakken unit trains per week on the Oregon Trunk route in the future,⁹ and BNSF has not revised this filing. But California has received no Bakken crude by rail since November 2014,¹⁰ so it is unlikely that BNSF currently moves any Bakken oil on this route.

c. Utah waxy crude along UP’s main line to Portland.

Union Pacific’s (“UP”) main route into the Pacific Northwest stretches from Salt Lake City to Portland. In Oregon, UP’s main east-west line begins in Huntington (near Ontario) and roughly parallels Interstate 84 in northeastern Oregon through Baker City, La Grande, Pendleton, Hermiston, Boardman, and west through the Columbia River Gorge to Portland. UP’s line is well positioned to bring waxy crude oil from Utah’s Uinta region to Oregon ports and Washington refineries.

UP probably hauls a little over 100 cars (one unit train’s worth) per week of Utah waxy crude to Arc Logistics’ transloading terminal in Portland.¹¹ In November 2015, UP stated that it moved a total of a little over 100 tank cars of oil each week in Oregon.¹² Because UP had not yet begun moving Bakken oil by rail in Oregon at that time,¹³ and because UP was not moving Canadian Tar Sands crude to California (at least since August 2014),¹⁴ it can be assumed that most of UP’s 100 plus rail cars of oil per week in Oregon contained Utah waxy crude traveling to Portland.¹⁵ While the drop in world oil prices has decreased Utah waxy crude production,¹⁶ Arc Logistics may have a long-term contract to supply Chevron refineries with Utah waxy crude.¹⁷ If so, roughly 100 cars per week of Utah waxy crude could continue arriving at Arc Logistics’ Portland terminal despite the unfavorable crude market.

d. Canadian tar sands crude by rail in Oregon.

Oregon’s railways are part of the most direct rail route between Alberta’s tar sands oil fields and California refineries. The Oregon Trunk line—and another rail line that follows the Willamette Valley south to Eugene and rejoins the Oregon Trunk between Bend and Klamath Falls—have both carried some tar sands crude to California over the last five years.

Tar sands rail traffic through Oregon peaked in December 2013, when California accepted a monthly record of 709,000 barrels of Canadian crude by rail.¹⁸ Most of that oil was Alberta

tar sands crude¹⁹ that had passed through Oregon.²⁰ This equated to roughly one unit train per week in December 2013. After 2013, Canadian crude movement into California by rail through Oregon declined to zero barrels per month in August 2014²¹ and remained at zero throughout 2015.²² It is not clear when, or if, tar sands crude might be shipped on Oregon rails again.

e. Bakken crude along the Columbia River from Wallula to Portland.

In November 2015, UP announced it would begin hauling up to one unit train of Bakken crude per week along the Oregon shore of the Columbia River from Wallula, Washington, to Portland.²³ These Bakken unit trains would probably leave BNSF's great northern route in Spokane, travel through eastern Washington to Kennewick then Wallula, and connect to UP's main east-west line near Hermiston. This arrangement is probably designed to avoid BNSF's somewhat-congested main line on the Washington side of the Columbia Gorge. These trains would ultimately return to Washington at Portland and deliver crude to a refinery in Tacoma.²⁴ These shipments appear to be ongoing.

II. Are Oregon's first responders prepared to fight a crude oil fire or explosion?

Oregon's Fire Marshal, at the direction of the Governor's office, compiled a report on Oregon's preparedness for an oil train fire or explosion and made recommendations to increase Oregon's response capacity. That report, its recommendations, and Oregon's response to those recommendations are discussed below.

a. Most Oregon fire departments could not proactively extinguish a fire or explosion caused by an oil train derailment.

A survey of 80 local fire agencies in Oregon whose jurisdictions contain railways carrying crude oil revealed that most are not prepared to extinguish a fire from a crude oil rail car.²⁵ Ninety percent of local fire agencies surveyed said they would not attempt to actively control a fire from a tank car, but would "respond in a defensive fashion . . . from a safe distance and keep [the oil] from spreading."²⁶

This limited response capability appears to stem from a lack of proper equipment for fighting crude oil fires. In fact, 81% of Oregon's local fire agencies indicated that they did not have all the necessary equipment to respond to a crude oil fire.²⁷ While many local fire agencies had some of the necessary equipment, almost 50 out of 80 local fire agencies lacked enough aqueous film-forming foam to fight a crude oil rail car fire.²⁸ And almost 40 of 80 local fire agencies also needed foam applicators.²⁹ The Oregon Fire Marshal concluded that the survey's "overriding takeaway is [that] a majority of fire agencies with crude oil trains traveling through their jurisdictions . . . do not have enough equipment to respond to a crude oil incident . . ."³⁰

b. Oregon's answer to oil train fires: Regional Hazardous Materials Response Teams.

Oregon has elected to address crude oil train fire preparedness by upgrading the capacity of Oregon's Regional Hazardous Materials Response Teams ("Regional HazMat Teams"). Oregon created the Regional HazMat Team system in 1989 to assist local fire departments responding to emergencies involving hazardous materials. Thirteen Regional HazMat Teams are

currently based throughout Oregon, with members specially trained to respond to hazmat emergencies.³¹ Regional HazMat Teams respond to incidents, when requested by local first responders, by providing technical assistance and advice.³²

The Oregon Office of the Fire Marshal suggested, and a majority of local fire departments endorsed, giving Oregon's thirteen Regional HazMat Teams the primary responsibility for responding to crude-by-rail accidents in Oregon.³³ The Office of the Fire Marshal and the Oregon Fire Chiefs Association also endorsed "locating six foam trailers equipped with personal protective equipment and necessary hardware throughout the state."³⁴ In theory, this seems a reasonable plan for a state like Oregon where most local fire departments are small, lightly funded, and staffed largely by volunteer employees not trained in hazmat response.

Currently, however, the Regional HazMat Teams cannot effectively respond to most crude oil train explosions or fires. First, the goal response time for Regional HazMat Teams in most areas of Oregon is two and a half hours;³⁵ probably not fast enough to substitute for capable, equipped first responders. Second, there is no Regional HazMat Team based in central Oregon,³⁶ further slowing response along the remote Oregon Trunk railroad which has carried Bakken and Tar Sands crudes. Third, because crude-by-rail is relatively new to Oregon, even the Regional HazMat Teams are not fully equipped to fight a fire from a crude oil train—hence the recommendation that Oregon procure and locate "six foam trailers . . . throughout the state."³⁷ Finally, the Oregon Legislature declined to fund the Regional HazMat Teams at the level necessary to make this strategy viable: the Oregon Office of the Fire Marshal estimated a budget of \$2,708,000 (including \$1,391,000 in equipment and \$854,000 in training for the Regional HazMat Teams).³⁸ The Oregon legislature responded by appropriating just \$365,000.³⁹ Accordingly, neither Oregon's local fire departments nor Oregon's Regional HazMat Teams are equipped to respond to and extinguish an oil train fire

III. Conclusion

Oil shipments on Oregon's rails rose, and then fell, sharply between 2012 and 2016. Because conditions favoring crude-by-rail could return, Oregon should use the current lull in oil train traffic to adequately equip local and regional emergency personnel to fight oil train fires and explosions.

Sources

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- 4 Reuters, *US shale's message for OPEC: Above \$40, we are coming back* (February 29, 2016) (online at: <http://www.cnn.com/2016/02/29/us-shales-message-for-opec-above-40-we-are-coming-back.html>).
- 5 See Exhibit 2, *Port of St. Helens, Resolution No. 2013-81* (November 13, 2013).
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- 9 Exhibit 5, *BNSF, Filing pursuant to U.S. DOT Docket No. DOT-OST-2014-0067*, p.3 (September 30, 2014).
- 10 See California Energy Commission, *Crude Imports By Rail 2014* (last accessed February 11, 2016) (online at: http://energyalmanac.ca.gov/petroleum/statistics/2014_crude_by_rail.html); see also California Energy Commission, *Crude Imports By Rail 2015* (last accessed February 11, 2016) (online at: http://energyalmanac.ca.gov/petroleum/statistics/2015_crude_by_rail.html).
- 11 The Oregonian, *Oil Trains Now Delivering Utah Crude to Portland* (May 16, 2014) (online at: <http://www.opb.org/news/article/trains-carrying-utah-crude-oil-destined-for-portla/>).
- 12 The Oregonian, *Oil trains' newest route? Past Multnomah Falls* (November 18, 2015) (online at: http://www.oregonlive.com/environment/index.ssf/2015/11/oil_trains_newest_route_past_m.html#incart_related_stories).
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- 14 See California Energy Commission, *Crude Imports By Rail 2014* (last accessed February 11, 2016) (online at: http://energyalmanac.ca.gov/petroleum/statistics/2014_crude_by_rail.html); see also California Energy Commission, *Crude Imports By Rail 2015* (last accessed February 11, 2016) (online at: http://energyalmanac.ca.gov/petroleum/statistics/2015_crude_by_rail.html).
- 15 This is also roughly the throughput capacity of Arc Logistics' terminal. See Exhibit 6, *Arc Logistics Partners LP Investor Presentation*, p.8 (May 2015) (explaining that Arc Logistics' Portland terminal's maximum throughput is 18,000 barrels per day, which is about 182 cars per week).
- 16 Reuters, *Uinta Basin drilling for waxy crude has 'dried up'—Tesoro CEO* (August 10, 2015) (online at: <http://www.reuters.com/article/tesoro-utah-crude-idUSL1N10H23920150810>).
- 17 See The Oregonian, *Oil Trains Now Delivering Utah Crude to Portland* (May 16, 2014) (online at: <http://www.opb.org/news/article/trains-carrying-utah-crude-oil-destined-for-portla/>).
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- 27 *Id.* at 2.
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- 32 *Id.*
- 33 Exhibit 8, p.1.
- 34 *Id.* at 4.
- 35 *Id.* at 4.
- 36 *Id.* at 4.
- 37 *Id.* at 4.
- 38 *Id.* at 5.
- 39 See Exhibit 9, *Oregon Legislature, Enrolled House Bill 3225 (HB 3225-B), Section 5* (July 13, 2015).