

Oil By Rail Is Getting Another Safety Upgrade. Will It Be Enough This Time?

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TC-117 Tank Car

The new TC-117 tank car is required to be constructed as a thermally protected, jacketed tank car with steel that is 9/16th of an inch thick and full head shields. A jacket will be added as an outer cover on the exterior of the shell to keep insulation in place and provide additional strength and reinforcement. These features provide improved puncture resistance, structural strength and fracture resistance.

At 2:42 A.M. on March 7, 2015, a CN train powered by two locomotives and carrying 94 tank cars loaded with crude oil derailed near the northern Ontario community of Gogama. The Transportation Safety Board's interim report on the incident noted that, "Looking back, the crew observed a fireball about 700 feet behind the locomotives. They detached the locomotives and first five cars behind the locomotives from the derailed cars, and pulled clear." That fireball was the result, the report revealed, of cars number six through 44 having jumped the tracks, and while the sixth car made it to the east side of a nearby river, the seventh slammed into the south side of the bridge that spanned it. Two cars ended up fully submerged in the river and three partially submerged in it, while the last two cars- numbers 43 and 44 - stayed on the west side of the river, derailed but upright. The remaining 29 cars ended up in a pile on the west river bank, and they began releasing the crude that would ignite the fire that would quickly destroy the bridge and 700 feet of nearby track.

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– Keith Creel

That accident was bad enough on its own, but the fact that it was the second CN derailment in the area made the problem of trains carrying crude oil jumping their tracks too much for Transport Minister Lisa Raitt to ignore. And so, barely a year after announcing a gradual phaseout of the DOT-111 cars that had been involved in the 2013 Lac-Mégantic disaster, Raitt introduced a much more aggressive timeline for improvements to rail safety in Canada in a joint announcement with U.S. Transportation Secretary Anthony Foxx on May 1. The TC-117, with safety features including thermal protection, thicker steel, a full head shield at both ends and a bottom valve outlet, would replace both the aging DOT-111s and the CPC-1232 cars that had been introduced as their replacement beginning in 2011. TC-117 cars must replace existing non-jacketed DOT-111 cars by May 2017, and all tank cars built after October 1 of this year must be built to the TC-117 standard. Within 10 years, that's a standard that all tank cars traveling the rails in Canada and the United States will have to meet.

The new regulations certainly provide an aggressive schedule for retrofitting existing tank cars and building new cars to the new standard, but they're not the only change the industry is being asked to make. There are also requirements for new operational protocols pertaining to routing, speed limits and communications with local government agencies for trains carrying large volumes of flammable liquids. And while the new rules and regulations are a direct response to the Lac-Mégantic disaster and other less tragic incidents, according to Jean-Pierre Gagnon, a railroad safety consultant and former Transport Canada rail safety expert on dangerous goods, that's how major improvements in rail safety have traditionally been made. "In the 1980s, accidents drove new regulations for the tank cars used for propane and butane," he says. "Seven years ago, a rash of accidents prompted the development of the CPC-1232 tank car which had some improvements over the legacy DOT-111. Transport Canada was about to adopt the CPC-1232 as the new standard when Lac-Mégantic happened. Now the new car is almost the same as the one used for propane."



Canadian Pacific is continuing its legal fight against a recent court decision that awards more than \$430 million to victims and creditors of the Lac-Mégantic train derailment

Still, while the new regulations were certainly a step in the right direction, it's not clear that they stepped far enough. One of the major factors driving the crude-by-rail phenomenon is the dramatic growth of shale production in the U.S., particularly in North Dakota's Bakken formation, and while this has resulted in a massive increase in the volume of crude being moved by rail, it has also changed the types of crude being transported. The Bakken fields produce crude oil containing high levels of propane, and that gas can increase the pressure inside a given tank car and make the liquids inside it even more flammable than they already are. North Dakota now requires producers to extract those gases before transport, and while many expected the May 1 regulations issued by Canada and the U.S. to make it universally mandatory, the focus was on the rail cars instead.

That focus on the cars isn't going to be enough to make the movement of crude by rail truly safe. As the Transportation Safety Board's report on Lac-Mégantic noted, there was a "weak safety culture" at the Montreal, Maine and Atlantic (MMA) Railway. The TSB's recommendations in that report included improved maintenance of the railroad tracks to minimize derailments and accidents, better safety training for the operators of trains, enhanced communication and protocols between the train operators and officials in the communities they pass through, and enhanced and more frequent inspections. To that end, Raitt announced in October 2014 the addition of 10 rail inspectors who would do more audits and provide more information to municipalities about the types of rail cargo being transported through their areas.

Paul Miller, the Canadian Rail Research Laboratory's "Railroader in Residence" and a former VP of safety at CN, says there are four areas the rail industry is focused on to improve safety. In addition to improving the tank cars, the industry is working on reducing the volatility of oil and gas

products before transport and responding more effectively with emergency response plans when a -derailment occurs. But of utmost concern is preventing those derailments in the first place, and this means better rail control equipment, better training of personnel, improved track maintenance and managing and monitoring the speed of the trains. Industry, for its part, says it's doing what it can to get ahead of the issue. "We are working our tails off to be very progressive," CP president and COO Keith Creel said at the company's May AGM. "We don't have a choice but to move this product in these cars – they need to be more robust. So the sooner we can get that done, the safer this industry is going to be."

But that progressive culture still needs some work, if the results of a Transport Canada raid on CP's Calgary headquarters in May are any indication. As CBC reported on June 22, the company had failed to apply the hand brakes when it parked a train of 57 loaded rail cars unattended and in the dark at the top of steep hill above the town of Revelstoke, B.C., in early February. That failure to deploy the hand brakes was in violation of the regulations put in place after Lac-Mégantic, and as Revelstoke fire chief Rob Girard told the CBC's Dave Seglins, "It is a bit disturbing ... I thought we would have learned some lessons."

"The softening of oil prices and production levels makes the oil tank car leasing business less profitable."

– Kevin Neels

Time will tell what the price tag on those lessons will be, but industry has a much clearer sense of what replacing their fleet of tankers will cost. According to AllTranstek, a commercial rail transport management and consulting company, the new cars will cost roughly \$32,000 more per unit to build than the CPC-1232s. In December 2014, in anticipation of new regulations being announced in 2015, the RSI commissioned a report from the Brattle Group which pegged the overall impact to the U.S. economy of the new car regulations at \$60 billion. This figure includes the cost of the building the new car, retrofitting older cars, training, operational systems changes, the cost to shippers and the costs associated with the early retirement of existing cars. The report was based on much tighter timelines for the changeover than the ones which made it into the new regulations, which has an impact on the estimated bill. But no matter the timeline, it's clear that the costs to the affected industries will be considerable.

As the Brattle Group's Kevin Neels notes, these higher costs of transporting oil by rail are coming at the same time as producers are getting much lower prices for the stuff. The \$60-billion figure, he says, is the result of discovering that specialized facilities will be required to make the modifications necessary to meet the new laws. Rail car manufacturers have a limited capacity now to produce a range of rail cars, and the need to build a new model and retrofit existing cars will require additional facilities. And because the new cars are heavier and made with thicker steel, that both reduces their capacity and increases the energy costs associated with hauling them. "The softening of oil prices and production levels makes the oil tank car leasing business less profitable in the near term," says Neels. According to Beth Lau, the manager of supply and markets for CAPP, that's a price that producers will almost certainly end up paying. "The shippers will ultimately pay the costs for the

new rail car to get their commodity to market.” Still, if the costs associated with making the transportation of crude oil by rail safe are high, the price of failing to do that is even higher. Pipelines, anyone?

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