The ALDON Express

OIL and RAIL: a perfect mix

There is an Oil Rush taking place on the northern Great Plains these days. Potentially vast quantities of crude oil lie buried between layers of shale rock two miles beneath the surface. What geologists call the Bakken Formation extends some 200,000 square miles across eastern Montana, western North Dakota, and the southern part of Saskatchewan Province in Canada. No one really knows how much oil can be recovered from the Bakken region — estimates have ranged from 3.65 billion to over 10 billion barrels — but everyone agrees that this is the biggest discovery of oil in North America in 40 years.

The oil has been locked in the Bakken shale formations for over 300 million years. For 60 years, geologists have known of the existence of oil there, but only recently have advances in shale oil extraction technology made it practical to get at the Bakken finds.

The lure of tapping into such an immense ocean of energy has brought in 150 oil companies and thousands of well-paid “roughneck” workers to drill wells and build oil-loading platforms. In 2011, North Dakota had 1800 wells pumping; by 2015, the state is expected to produce a million barrels a day of light sweet crude.

Getting at the Bakken oil and natural gas involves fracturing rocks at extreme depths, or “fracking.” The well hole is drilled vertically as much as 10,000 feet to reach the hard shale, then horizontally into softer layers of dolomite rock which lie between the shale layers. The dolomite layers are just 10 to 50 feet thick and contain pockets of oil and natural gas. The drilling breaks up the dolomite, after which huge amounts of chemically treated water and sand are forced into the fractured rocks and pumped out again. Only then can the oil and gas be sucked out.

New extraction technologies have not been enough to exploit the potential of the Bakken finds. It took an old technology — an existing railroad network — to supply the drilling operation and to carry away the high volume of oil from this remote region.

Two great Class I railroads, the BN-SF and the Canadian Pacific pass through the Bakken region. Three short lines complete the rail network.

The thousands of operating wells have an endless appetite for supplies: miles of drilling pipe must be brought in on flat cars; a constant supply of sand must be brought in hopper cars from as far away as Illinois; fracking chemicals are delivered by tank car.

The tremendous output of Bakken crude oil requires 100-car unit trains a mile long to carry the oil to distant refineries.

There are serious environmental concerns over fracking. Depletion of aquifers and contamination from chemical spills are some of the risks involved in exploitation the Bakken oil fields. Federal and State regulators will have to be vigilant but sensible in seeing that the least amount of damage is done to the land as the drilling goes on.

The oil boom on the Great Plains may last between 10 and 30 years. It will help to reduce the need to import foreign oil, but at some point, there will be no more oil. The Bakken discovery buys us time to find new forms of energy and to become more efficient in how we use energy.

The information for this brief overview was primarily drawn from:

The photos are courtesy Fred Frailey. Rail map courtesy TRAINS Magazine
Special thanks to Mike Yuhua, TRAINS Magazine, for having suggested this idea to us for this issue of the EXPRESS.

We have found inspiration for several of our Aldon Express issues in the pages of TRAINS Magazine. The articles are compelling and the photos are breathtaking. Please consider subscribing to this valuable resource.

Railroads can carry anything
Waves of super-heated air rise from steel mill “torpedo” cars carrying molten pig iron from the blast furnace to the oxygen furnace where steel is made. The insulated spindle-shaped body holds 150 tons of liquid metal at 3000°F, but must be emptied within an hour or two to avoid solidification. A large electric motor at one end of the monster car turns the spindle beyond 90° to empty the red-hot contents in a shower of sparks and smoke.
Special Purpose Rail Car Pry Bars

- Tank Car Pry Bar
  Pops open manway covers with ease.
  
  4020-18

- Sliding Gate Turning Bar
  for covered hopper cars
  
  4020-03

- Hatch Key™ for covered hopper cars
  4020-17 (Heavy Duty)
  4020-15 (Standard)

- Swing Gate Pry Bar
  for open top hopper cars
  
  4020-12 (5-foot), 4020-15 (3-foot)

Spill Protection

- Catch every drop under one car or 10 cars.
  Modular molded poly pans fit snugly in track. Pans have overlapping flanges and interconnect with overflow pipe nipples. Grates create walkway. Solid covers prevent rain and snow mixing with spills. Drainage piping can be installed under pans.

- Single spot spill protection
  Lightweight polyethylene pans are easily placed under rail car outlet valves to catch small spillage.

- Black Pan for small liquid spills
  Pan locks to rail. Capacity: 50 lbs. of drips

- Blue Pan for plastic pellets and other dry materials
  29” long x 14” wide by 10” high. Screened drain in bottom lets rain water pass through.

- Better than a push broom.
  AIR BROOM cleans up dry spillage and unclogs hopper chutes with a jet of high pressure air.
  Don’t let switchpoints and flangeways in flush rail track get clogged with snow and dirt. Blow it out with Air Broom.
  Air Broom delivers 13 to 24 lbs. of thrust, depending on input pressure used. Dead man trigger protects worker. Handle accepts 3/4” male NPT pipe thread connections.

Track Clearance Markers

- Establish proper parking limits for rail cars in spur tracks.

  FOR EXPOSED TRACK
  Flexible urethane cone, 10” tall, bends easily if struck by brake hoses. Marker is screwed to cross tie as a permanent indicator of where to spot a freight car.

  FOR FLUSH TRACK
  Many rail yards have sections of paved-over rails which also need a permanent indicator of where to spot a freight car. Bumper marker is 3 feet long and only 1” thick. Fasteners provided for bolting to concrete or spiking to asphalt.

“Do Not Cross Here” Signs

- Two-sided magnetic base signs warn of the danger of crossing between cars and between cars and bumping posts. Easily installed and removed from exposed and flush rail.
  4015-185 (car-car), 4015-187 (car-bumping post)

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