

The Modern American Gold Rush

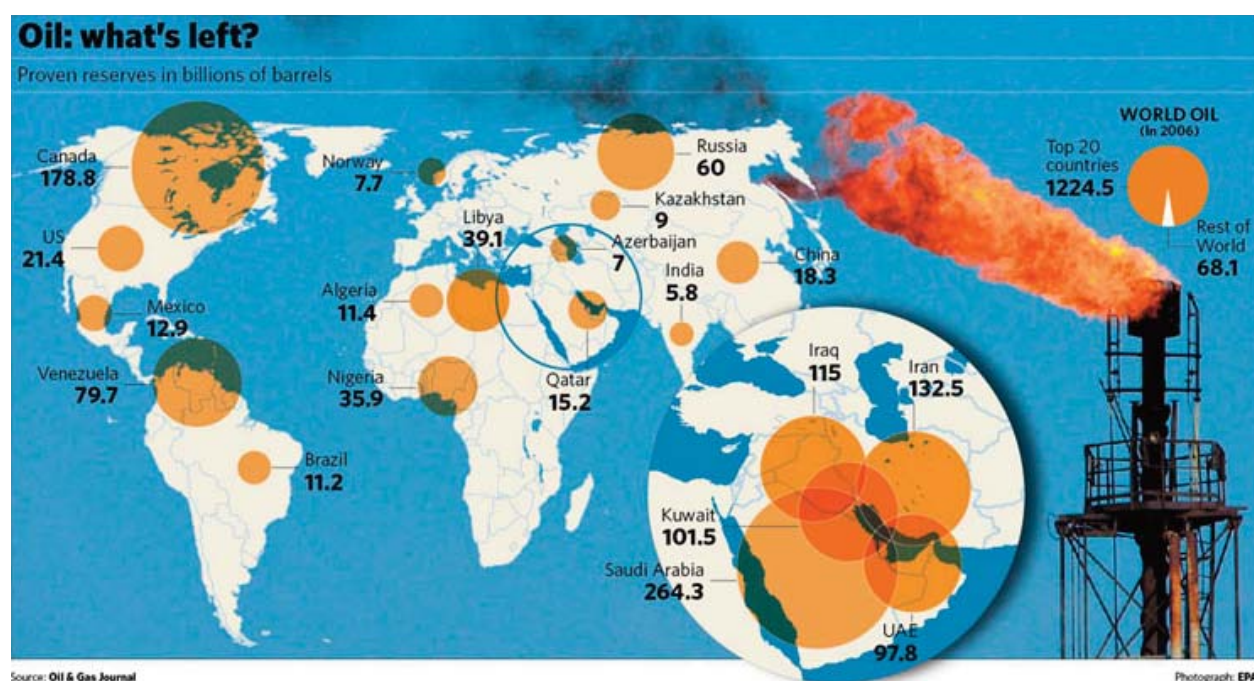
Finding New Ways To Extract and Transport Crude Oil in America



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America is number ten on the list of top ten countries in the world with the most oil reserves – right behind Mexico and Libya.¹ So why aren't we producing more crude oil? The problem thus far has been not only getting to the oil and extracting it but also how to transport it from northern locations south to the pipelines and refineries.



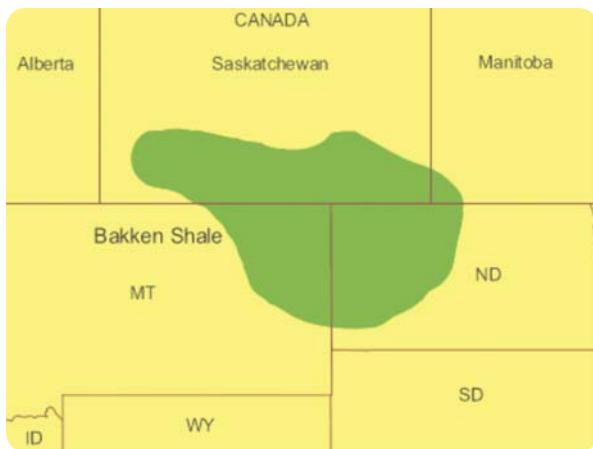
Crude oil is used to make almost everything: gasoline, plastics, wax, jet fuel, pharmaceuticals, home heating oil, you name it, it's probably a product of crude oil. America is extremely dependant on oil and the current love triangle of supply, demand and political instability in foreign countries has helped create a combustible situation. Crude oil prices are ever increasing causing gas prices to rise sharply and the price of most items has increased as well.

On average, the United States uses approximately 20 million barrels of oil a day – about a quarter of the

world's oil supply. With the rise in population and subsequent increase in oil demand we could conceivably run out of oil in the next few decades.² To address this issue many of the major oil companies go in search of untapped reserves. One such reserve that's getting more and more attention these days is the Bakken oil play, which is one of the largest onshore plays in the United States.

The Bakken is located in North Dakota and extends into Eastern Montana and neighboring territories of Saskatchewan and Manitoba, Canada. It covers more

than 24,000 square miles. Even though the Bakken was discovered in 1951 technology had not progressed enough to extract any of the crude until recently. High oil prices coupled with an evolution of drilling technology (horizontal drilling), hydraulic fracturing (or fracking) and a greater understanding of the underlying geology, have enabled independent oil companies to rapidly increase Bakken production.³ It is not necessary to drill 20 wells anymore when you can drill two or three and get the same or better recovery. Horizontal drilling is still more expensive than vertical drilling, but the greater productivity makes it a preferred method of extraction these days.⁴



Pipelines are the most efficient method for transporting crude oil and they're used to move crude oil from the wellhead to gathering and processing facilities and from there to refineries and tanker loading facilities.⁵ But what do you do if there is no pipeline to connect to for at least a thousand miles?

Crude Oil Transport

Once a permanent wellhead is installed the other surface equipment also needs to be set up. When not

going directly into the pipeline, crude oil is stored in floating roof tanks that hold approximately 2.7 million gallons of crude each. It is here that a tanker truck will draw the oil out of the storage tank and proceed to a terminal near a railway station. Approximately 120 connected rail cars will be waiting on a rail spur to be filled with oil from the trucks. Transloading, which is pulling from one vehicle to put into another, takes place. Metering systems keep track of how much product is moved. Rail cars can be loaded top or bottom and use a loading arm to do so. Workers always need to get to the top of the car either to fill or vent, so fall prevention is a major issue.

Crude Oil Loading Racks

Crude oil loading racks must be built as high as the rail car about 12 feet high. Stair units provide access to the fixed platform then a gangway folds out so the operator can access the rail car or tank truck from the platform. The loading arms act as a mean to transfer the product from the source at the platform to the rail car or tank truck.

Terminal Essentials

Truck and rail loading terminals should include all of the components required to safely load and unload product. An integrated design keeps the terminal functioning smoothly and ensures that personnel are safe from falls and other injuries. Workers are protected and productivity increases with a properly integrated terminal.

Here are some of the elements that create a safe and productive terminal:

- Crude oil loading racks for trucks or rail cars allow access to multiple vehicles or multiple hatches at once.

- Single or double-sided loading racks help provide safe access to a variety of trucks and rail cars.
- Portable tank truck access system with fall prevention cage for bulk loading and unloading.
- Tracking gangway systems.
- Truck safety cages: elevating, articulating or extended.
- Rail safety cages.
- Guardrail systems – a must have for safe access to the tops of railcars.
- Common crash box handrail rail systems are not OSHA compliant. Ensure your rail enclosures surround the crash box rail.
- Full rail car enclosures.
- Mobile transloading carts are versatile and offer quick, safe access to truck and rail cars.
- Mobile dual vehicle access systems have access gangways with fall prevention cages to access the tops of vehicles for transloading. Loading arms or hoses are then connected to both vehicles to transfer product.
- Loading and unloading skid systems with meters, pumps, valves, filtration, instrumentation, grounding, high-level shut off and ticket printer systems.
- Top and bottom loading arms with a wide range of valves, fittings, and instrumentation equipment for leak free operation in most situations.

Spill Containment

Be prepared for spill containment BEFORE a seal fails during loading or unloading. Spill containment track pans hold drips, leaks and spills and meet the required environmental spill contamination regulations. The overflow is contained quickly so there's no damage to the environment. Most track pans are made from either steel or fiberglass.

Traveling America

Once loaded the rail cars are ready for their trip south to Louisiana, Houston or another stop that has access to the pipeline. When the rail cars reach the refinery location there should be terminals built there, too for the reverse process of transferring crude oil safely. Ladders, loading racks, gangways and other safety equipment must be provided at the terminal to unload the rail cars.



ENDNOTES

- 1 "Top 10 Countries with the Greatest Oil Reserves" www.mapsofworld.com/world-top-ten/greatest-crude-oil-reservers.html
- 2 Smejek, Tony. "What is Oil Use per Day in the United States?" www.brighthub.com/environment/renewable-energy/articles/102087.aspx
- 3 "The Bakken Boom", Energy Policy Research Foundation, Inc., http://eprinc.org/?p=824&utm_source=rss&utm_medium=rss&utm_campaign=the-bakken-boom
- 4 ©1999, University of Wisconsin, Board of Regents. "A Crude Story", www.geology.wisc.edu/courses/g115/oil/4.html
- 5 PetroStrategies, Inc., www.petrostrategies.org/Learning_Center/oil_transportation.htm