Meandering Through the Oil Industry: Part 8

This technical article is part of a series characterizing the process that the oil industry follows to bring us one of our favorite commodities, the gasoline that powers our Classics. Twenty billion gallons of oil, destined for us or our neighbors, is transported through Washington by vessel, rail, and pipeline; the same magnitude of refined products must make it to the local fueling station. There is a huge infrastructure in place to make it happen economically and (mostly) safely.

TRANSPORTING OILS & FUELS

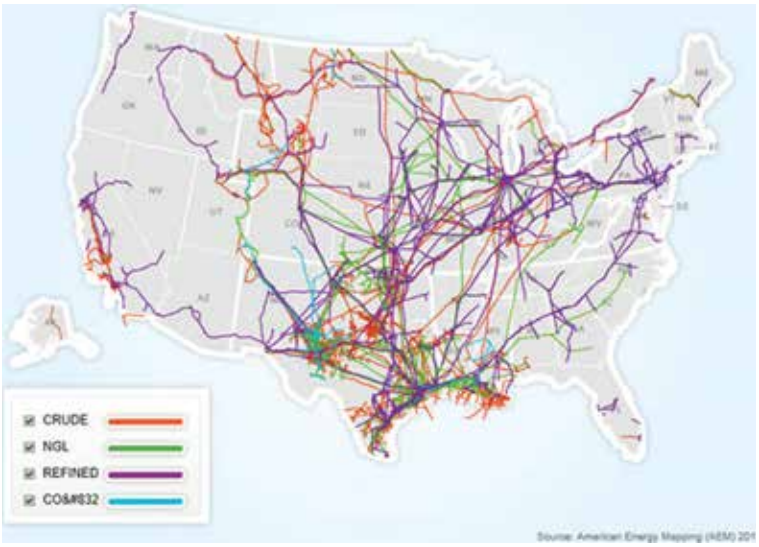
By Brian Rohrback

The approach we take to transporting crudes and fuels is ultimately driven by cost and safety. If we only need to move a relatively small amount of product short distances, trucks are the mode of choice (despite their relatively high cost per gallon of fuel moved). If the volume increases, typically we employ feeder or distribution pipelines; there is a major one skirting the East side of Puget Sound. As the volumes and distances increase, we add tanker ships and rail cars to the mix. Of course, there are storage tanks that we need to provide a buffer for varying supply and demand.

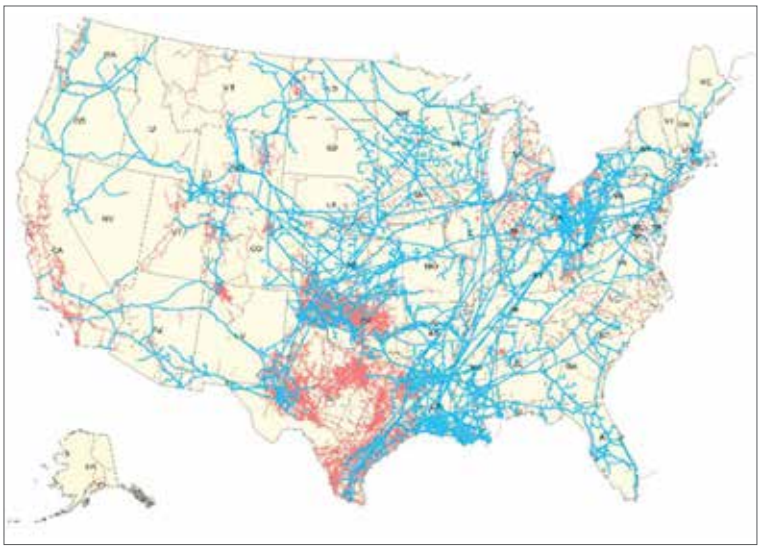
The places where we find crude oil, where we convert it to gasoline and other products are separated by (typically) extremely long distances. And then, we are charged with getting the fruits of our refining process to a neighborhood pump. All things considered, our system of trucks, rail cars, and tankers carry a small portion of the load; in the US, the primary means of hydrocarbon transportation is in the 190,000 miles of liquid and more than 300,000 miles of natural gas pipelines.

You likely have never seen a pipeline, even though there are enough miles of this infrastructure in the US alone to encircle the globe 20 times. Most of these pipes are buried underground, where they are also monitored using the Pipeline Performance Tracking System (PPTS); to which we are adding technology to further improve safety which, despite the occasional news article, is excellent.

To get a feel for the pipelines in the country, take a look at the map charting the position of all the areas serviced by moving liquid (mostly crude oil and refined fuels). The map looks like a slightly-psychotic spider, with a preference for Oklahoma, Louisiana and Texas, was spinning a bit of performance art on the map. These routes connect producing areas on-shore and off-shore to refineries and chemical plants (gathering lines) and



Liquid Pipelines in the US
(courtesy of the American Petroleum Institute)



Natural Gas Pipelines in the US
(again courtesy of API)

a separate set of pipes to move the products to distribution terminals (transmission lines), where it is often trucked to the final retail outlet. Pipelines operate largely without interruption.

Just to see a complete picture of the pipeline story, I also include a map of the natural gas pipelines, where red shows the pipes that stay within a state's borders and blue shows the interstate transmission lines.

So, when we gather oil from the source, the pipes are typically 2 to 8 inches in diameter. These are found where the oil is found, mostly in the swath covering New Mexico, Oklahoma, Texas, and Louisiana plus spots in Alaska, North Dakota, Wyoming and California. Minimized by the inset in the map shown, the granddaddy of our pipelines really is the Trans-Alaska Pipeline System at 48 inches in diameter. Note, for every doubling of the diameter, the volume of liquid carried is roughly 3 times the smaller pipe. Once the oil is gathered, we typically stuff it into 72,000 miles of larger pipes (mostly 8-24 inches in diameter) to get it to the myriad refineries spread around the country.

Once the oil is turned into refined products like gasoline, diesel, jet fuel and home heating oil, they enter a second set of pipelines spanning approximately 63,000 miles to get close to the population centers and ending at distribution terminals. There are not separate pipes for different products, so a quality control system is in place to ensure the products do not cross-contaminate one another.

Although it costs a significant amount of money and time to put a pipeline system together, the continuing cost of operation is significantly lower than any other option.

Care & Feeding of Batteries

By Kirk White

Batteries will discharge over time so cars that are driven infrequently should make use of a battery maintainer. There are many available in the market that can be semi-permanently installed using a pig-tail secured to the battery clamp. The pig-tail stays attached to the battery and is plugged into the maintainer when the car is parked for a period. It is important that these maintainers have an automatic function that will control charge voltage to prevent over-charging.

1. Be sure to unplug the charger/maintainer from its power source BEFORE connecting or removing battery cables from battery. A spark can easily ignite accumulated hydrogen.
2. Ensure the positive charger lead is connected to the positive battery terminal. Reverse polarity can damage the charger and can cause damage to the battery.
3. Never charge a battery that is frozen, cracked, swollen or leaking.

Kirk White has been selling batteries for many years. Until his retirement, Kirk was the sales manager at Interstate Batteries in Everett, WA. He keeps active selling period authentic battery cases to house modern AGM batteries. Anyone interested in contacting Kirk can reach him at Specialty Battery Sales, 425-381-7015, specialtybattery@gmail.com