A Conversation with Greg L. Armstrong

Trains Carry the Load of U.S. Crude Surge as Pipeline Growth Lags

Greg L. Armstrong is chairman and CEO of Plains All American Pipeline LP, one of the nation's largest crude oil and energy transportation companies. The Houston-based firm handles more than 3.5 million barrels per day of crude oil and natural gas liquids (NGLs), much of it through pipeline, rail tanker car, trucking and terminal holdings. Armstrong is also a director and chairman pro tem on the board of the Federal Reserve Bank of Dallas, Houston Branch.

Q. When did you realize that the U.S. energy industry's recent growth was more than simply a burst of activity?

Crude oil production in the Bakken formation [in North Dakota and Montana] was in the neighborhood of 100,000 barrels of oil a day in 2007. It has increased recently to as high as 700,000. It was also about that same time that operators in the Eagle Ford Shale [in south central Texas], which was probably producing in the neighborhood of 30,000 barrels per day in 2009, started to apply the same technology. The early results were very encouraging; it was almost too good to believe. You stood back and looked at the vast nature of the resource and you said if this continues to work, it could be fairly large.

About 2009, we decided to start actively participating in the rail transport of crude oil. We did our calculations and realized quickly that the production of crude in areas such as the Bakken and in the Eagle Ford was going to ramp up more quickly than the industry was going to be able to install pipelines to transport it, and so rail provided the bridge that enabled us to move large volumes for a decent distance. We had been involved in the rail business for close to 15 years. We had the expertise in-house to know how to move petroleum products by rail, but our activities at the time were limited to NGLs or liquefied petroleum gas (LPG).

Pipelines are generally much more efficient and they're much cheaper. They require more upfront investment, but they have cheaper variable costs. So, if you know where you want to take crude oil on a routine basis, pipeline is the best method. Crude oil also is moved on [104-car-long] unit trains because pipelines are so difficult to build.

The change that's happened involves not just getting crude to a market, but getting it to the best market. That's the reason we believe rail will continue to be part of the longer-term solution. It'll certainly diminish in relevance five years from now, but it will still be a permanent part of the solution because it's difficult to get crude pipelines built to the East or the West coasts, which are highly populated areas, or areas that are just difficult environmentally. California permitting can take many, many years.

Q. Crude oil and natural gas producers traditionally relied on pipelines to reach refiners and other end users. How did rail transport become an alternative?

Trucking is a more immediate response, the first line of attack to a problem of moving crude oil from the wellhead to the markets. But it's limited in its capacity and volume. You can only put 180 barrels on a truck. A rail car will hold, on average, 650 barrels, and you can put as many as 100 of them on a train. So you move much larger volume for an extended distance at a lesser cost versus the truck.

If, let's say, you're going 500 miles, it may cost anywhere from $400 million to $700 million or $800 million [to build a pipeline] depending on what territory you're going through, and it may take two to three years from start to finish. If you're looking at rail and you have access to existing track, in some cases, you can build a rail loading facility for probably $30 million to $50 million. The difference is that once you complete construction, the transportation cost on a pipeline may be in the $1 to $3 range per barrel of incremental tariff. Rail is much cheaper to build, but transportation costs may be in the neighborhood of $12 to $15 a barrel.

In building a pipeline, in many cases, the pipeline owners—the people constructing it—will actually look for a 10-year commitment from the producer who wants the pipeline built. In the early stages of development of a play, producers may feel uncomfortable making that long-term commitment because they don't have enough knowledge of the size of the field or duration of production—whereas on the rail side, because you're dealing with a much smaller initial investment, you can deal with three- to five-year commitments.

Q. The sudden expansion must be straining resources. What shortages or bottlenecks place the most serious constraints on activity?

Sourcing rail cars has certainly become a bit more challenging. A car comparable to a crude oil tanker car in 2006–08 would probably cost an average of $600 per car per month to lease. Today, that cost is probably closer to $1,300 per car per month, dependent on the length of the lease. If you're looking for a very short-term lease, that number can be closer to $3,000. Another potential issue is rail congestion. The number of rail cars placed on the tracks for incremental business associated with crude oil is still a small percentage of the total for the rail companies. In certain areas, like in Philadelphia or in the Upper East Coast near Albany and New York, you

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can run into congestion issues as tracks start to converge. So far, there's been some help on the track congestion by the fact that natural gas prices have declined to the point that they are pushing some portion of coal out of the power-generation market. Coal shipments are among the most intense uses of rail. As some of the coal cars are taken off the tracks, they have been replaced by crude oil.

To my knowledge, we have one of the largest rail-car fleets. By the end of 2013, our total fleet will reach 6,700—which includes NGLs, and about 3,000 are dedicated to crude. A year ago, our total holdings were probably in the 3,000-car range.

Skilled labor is a bit of a challenge for the energy industry in general, whether you're looking for field employees to be pumpers or drivers for trucks. It's also hard to find welders and other positions. We are just short on what you would call skilled field labor. It's a nuisance right now as opposed to a big problem, but there certainly is wage inflation in that part of the business.

Q. The Southwest has been a traditional center not only for oil and gas exploration, but also for refining and petrochemicals. How do you see that changing given the flexibility that rail tankers allow?

Much of what we are doing is taking the raw product to the refinery so that it can be refined into gasoline and diesel, etc. You really don't move the refineries around. What refiners are doing is diversifying their source of supply. When you combine the significant increase in domestic crude oil production and the Canadian crude oil production—we view those as one market, with some regulatory hurdles—we have been reducing our reliance on foreign imports of both refined products and crude oil. Around 2007, we were importing close to 10 million barrels of crude oil per day. Currently, we're importing 7.5 to 8 million barrels per day. We've had a net reduction in crude oil imports of 2.5 million barrels per day.

There is a similar trend with respect to refined products. U.S. refiners today have the benefit of being able to buy discounted crude. U.S. crude oil trades at a discount to the world benchmark of Brent. U.S. refiners also have access to cheap natural gas. They are competing against international refiners who have to buy LNG-indexed natural gas [to power their plants]. So they have a cheap feedstock and a cheap power source for the refineries. As a result, we have seen a significant increase in the export of refined products.

So, going back to that 2007 period, refined exports were about 1 million barrels a day, and refined-product imports were around 3.5 million barrels a day. Today, that number is closer to 3 million barrels a day of refined-product exports, and we've reduced our reliance on refined-product imports to about 2 million barrels a day. These refiners have an advantage over their world competitors to supply markets. They are buying cheap and selling high. That'll work every time.

Q. There is great demand for rail services. How do you keep things moving given the competitive environment?

This is where scale and scope come into play. We are one of the largest customers for both loading and unloading with the railroads. They're trying to make all their customers happy. But they want to make sure they keep their largest customers happy, for sure.

There's typically negotiation about rates, but as a practical matter, you're not going to be denied service—it's just a question what you're going to pay. If you're looking to ship crude one time in a spot transaction, your price is not going to be as favorable as if you're willing to commit to a certain number of rail cars for the next four or five years. There are discounts associated with higher volumes.

Q. How much of the price of a barrel of oil is attributable to transport and storage?

If you're in the Bakken and you want to go to Louisiana, it takes about five days' transit time, and the walk-up rate would be about $15 [per barrel]. If you're going to Yorktown, Va., which is on the East Coast, it would be closer to $17.50. Ultimately, we think we can get it to California for about the same cost.

Once the barrel gets to a particular location, it has a commodity value. If I put a barrel of WTI [West Texas Intermediate], a barrel of Bakken, a barrel of Light Louisiana Sweet and a barrel of Brent side by side, quality-wise there may not be a dollar difference between those barrels. Ultimately, the refiner is going to pay the same price for it. The question gets to be, how did I get it there? It's really a discount: So instead of saying how much of a barrel cost is transportation, it's how much did the producer have to give up to get it to the right market.

Q. How do environmental concerns play into your business plans?

Hydraulic fracturing has nothing to do with the mode of transport. In the future, if they were to restrict hydraulic fracturing, it could have a major impact on everything that's already occurring.

Without hydraulic fracturing, you couldn't have the significant volume of recoveries that we have in the Bakken or the Eagle Ford.

There's been a little more press attention recently because of the Keystone [pipeline planned between Canada and the Gulf Coast]. It appears that some who oppose Keystone are trying to keep the oil out of the U.S. altogether. If you don't put it in a pipeline, it's probably going to come in by rail. The question is how do you decrease the probability of an environmental event? Certainly, derailments do occur. With rail, access to wherever the derailment would occur is pretty easy. The volumes would be pretty limited, and you wouldn't have a continuous flow the way you would with a pipeline, perhaps, where they couldn't get a valve shut in time. It's unlikely that if you had a derailment, you would have all the cars rupture.

There are some mitigating checks and balances on the safety issue. I've read that the safety of pipelines is much better than the safety of rails. Now the push from some of the same people who opposed the Keystone pipeline is that rail is three times more likely to have an accident than a pipeline. So, there are pluses and minuses to both.

As an American who believes in the best for our country, I think Keystone should be approved. As a company, we might be in a position to make more money if it weren't. The simple fact is that if we aren't bringing in crude from Canada, we are going to countries less friendly to us, with higher uncertainty.

Q. Looking out a decade, how will the way oil and gas reach the market change?

There's going to be a high demand for rail in the next four or five years. We'll be looking to lease rail cars at cheaper rates after there are too many cars looking to find a home. Right now, there is such congestion in all these producing areas that rail is a volumetric solution to clearing the product from the source of production. Ultimately, we think rail will be used mostly to access markets that can't be accessed by pipeline—the ability to get to the East and West coasts and occasionally the Gulf Coast.

Rail will be a pressure-relief valve when there is a disconnect with a refinery that goes down or a pipeline has some shutdown time or a quality imbalance. We are going to end up with too much light sweet product in the system relative to what the refiners have designed their refineries to run. Years ago, they spent billions upon billions of dollars to run heavy sour crude. We need to clear the light crude out of the Gulf Coast and take it to the East and West coasts to balance things out because those refiners are captive to [light sweet] Brent.

Q. If production of oil and natural gas liquids continues to increase, do you think the U.S. will become an oil exporter?

In the absence of a regulatory prohibition on exporting, we are not that far away from it making sense for us to export even though we are not totally self-sufficient on crude oil. What should happen? We ought to be able to start exporting light sweet crude and continue to import the heavy sour crude that the refineries are designed to run. That's what would happen in a normal market, free of restrictions.

If Congress would just remove that prohibition, I think we would balance the market by letting the crude go where it had the best price advantage. In the absence of that, we will see light sweet discounted. That should cause somebody in Washington to focus on the fact that we should let free markets work. The big danger of changing the rules is if gasoline prices were to go up 50 cents a barrel and you're the politician who permitted exports, someone's going to draw a correlation. It may have nothing to do with cause and effect, but it's not politically real savvy. Sometimes people do the political thing and not the right thing.

Photo courtesy of Plains All American Pipeline LP

Unit trains stretching over 1.25 miles bring crude oil from the Bakken formation in North Dakota and Montana to refineries on the Gulf Coast.