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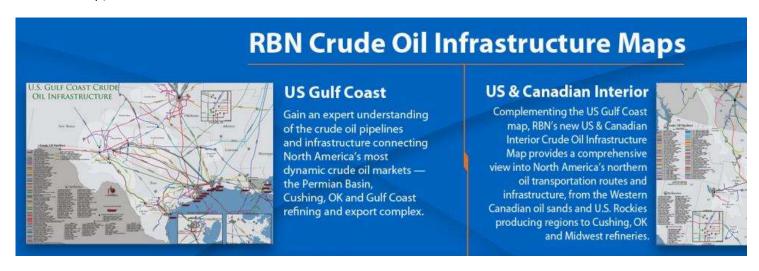
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## Deep Water, Part 4 - Tallgrass's Plan for a Crude Oil Export-Import Terminal Off the Louisiana Coast

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There are common drivers behind the handful of offshore crude oil terminals now under development along the Gulf Coast, chief among them the well-founded belief that shippers would prefer putting crude on Very Large Crude Carriers (VLCCs), which can only be fully loaded in deep water. But each of these projects also has unique nuances — its own specific rationale and characteristics. Tallgrass Energy's plan is a case in point in that it involves a new pipeline from the crude hub in Cushing, OK, to the refinery center in St. James, LA, and to a new onshore crude storage and loading terminal a few miles down the Mississippi River, to be followed by a VLCC-ready offshore terminal capable of both exporting and importing crude. Today, we continue our review of made-for-VLCCs offshore terminals with a look at Tallgrass's effort to deliver neat, unblended barrels directly from multiple inland plays to deep water — "shale-to-ship," in other words.



This is the fourth episode in our series. In <a href="Part 1">Part 1</a>, we discussed the ongoing boom in U.S. crude oil exports, which have been rising steadily since the 40-year ban on most exports was lifted in December 2015. Crude exports averaged 590 Mb/d in 2016, 1.1 MMb/d in 2017, and more than 1.8 MMb/d so far in 2018. While 2-MMbbl VLCCs are by far the most cost-efficient way to haul crude to Asia, their humongous physical dimensions restrict the number of land-based terminals they can use. A typical VLCC is about 1,100 feet long, with a beam (or width) of nearly 200 feet and a fully loaded draft of 72 feet. And even those terminals that can accommodate VLCCs can only load these supertankers part-way— "reverse lightering" out in deeper, open waters is required to fill a VLCC to the brim. We also

reviewed the joint plan by Oiltanking, Enbridge and Kinder Morgan to develop a crude export terminal 30 miles off the coast of Freeport, TX (yellow diamond in Figure 1). In <a href="Part 2">Part 2</a>, we considered JupiterMLP's proposal for an offshore export terminal only six miles off Brownsville (light blue diamond) — and a new long-haul pipeline from the Permian to that South Texas city. Last time, in <a href="Part 3">Part 3</a>, we looked at the plan by Trafigura, the international logistics and trading company, to build a deepwater export terminal 15 miles off Corpus Christi (lavender diamond). Each of these projects also calls for the development of several million barrels of onshore storage capacity to support the regular loading of VLCCs.

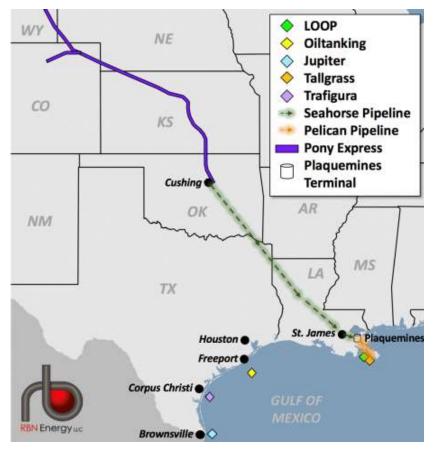


Figure 1. Seahorse and Pelican Pipelines. Source: RBN (Click to Enlarge)

Today, we turn our attention to Tallgrass Energy's \$2.5 billion plan, which is a horse of a different color. Tallgrass is best known for two of its pipelines: the Rockies Express (**REX**) natural gas pipeline, which was initially designed to transport Rockies gas east but increasingly is moving Marcellus/Utica gas west, and the Pony Express Pipeline (PXP; purple line in Figure 1), which can transport up to 350 Mb/d of crude oil from the Powder River and Denver-Julesburg (DJ) basins in the Rockies to the crude hub at Cushing. (Tallgrass plans to increase PXP's capacity to 400 Mb/d by the end of this year, and further expansions are possible.) Earlier this month (on August 1, 2018), Tallgrass announced that it is planning a roughly 700-mile pipeline (dashed green line in Figure 1; the route has not been finalized, and lines are for illustrative purposes only) that will run from Cushing to the storage,

distribution and refinery hub at St. James, LA, and from there to a new, <u>onshore</u> marine terminal Tallgrass will build a few miles down the Mississippi River in Plaquemines Parish, LA (storage tank icon). In a nod to the new pipeline's connection to Pony Express at Cushing and export markets at its terminus near the Gulf of Mexico, Tallgrass has named the pipe Seahorse. (Get it?) As for an <u>offshore</u> terminal, the company plans to bring that online a year or so after the onshore terminal is up and running.

Now, for the details. The Seahorse Pipeline will employ 30-inch-diameter pipe, its capacity will be as much as 800 Mb/d, and it is currently expected to come online in the third quarter of 2021. (This past Wednesday, August 15, Tallgrass initiated a binding open season to assess shipper interest that will continue through late September.) Importantly, Seahorse will operate as a multi-grade, common batch system to enable shippers to transport discreet volumes — or "batches" — of specific crudes. (For more on batching, see <a href="Refined">Refined</a>, <a href="Piped">Piped</a>, <a href="Delivered">Delivered</a>.) For example, if a St. James-area refinery or an overseas buyer wants to receive neat crude from the Bakken, the Powder River Basin or the DJ, Tallgrass could provide exactly that via Pony Express and Seahorse. More generally, Seahorse also will provide additional takeaway capacity out of Cushing — something that may well be needed if production in the aforementioned basins continues to rise and more crude needs to move from Cushing to the Gulf Coast.

There are two primary destination points along the Seahorse Pipeline: St. James and the planned Plaquemines Liquids Terminal (PLT). As we said in <u>Take the Long Way Home</u>, St. James (located on the Mississippi 60 miles upriver from New Orleans) is an important crude storage and distribution hub that receives crude by pipeline, by barge and tanker, and by rail. St. James has more than 30 MMbbl of storage capacity, and it sends crude out to area refineries with a combined capacity of more than 2.5 MMb/d. [See <u>I Got Storage (I Feel Good)</u> for more on these refinery connections.] Seahorse will give St. James-area refineries their first direct, straight-shot access to barrels passing through (or stored at) Cushing.



Tallgrass is developing PLT (the Plaquemines terminal) jointly with Drexel Hamilton Infrastructure Partners LP (an investment fund) and as part of a public-private partnership with the Plaquemines Port & Harbor Terminal District (a Louisiana state agency). PLT will be sited on the Mississippi about 20 miles downriver from the Big Easy; it will have at least 5 MMbbl of tank storage initially (and up to 20 MMbbl over time), and will have the ability to load one New Panamax or Suezmax tanker a day.

Tallgrass currently expects its new Plaquemines terminal to come online in the second quarter of 2020. By then, work on Tallgrass's offshore terminal (orange diamonds in Figure 1 and Figure 2) is expected to be well under way. That terminal will be located 1.5 miles off Venice, LA (at the mouth of the Mississippi) in waters about 130 feet deep — easily enough depth to accommodate fully laden VLCCs. It also will have two mooring points, will be connected to PLT via the planned Pelican Pipeline (dashed orange line), which will consist of twin 42-inch-diameter pipes and which is currently expected to begin operating by the third quarter of 2021.

Wait? Two mooring points and twin pipes? Yes. As we mentioned in our intro, Tallgrass's offshore terminal will be capable of both exporting and importing crude. While crude-import volumes are down from their 2005-06 peak of about 10.1 MMb/d, they are still critically important and have been averaging about 8.0 MMb/d so far this year — as opposed to the previously mentioned 1.8 MMb/d of exports year-to-date. [It's important to note that as production of light crude in the U.S. has risen and refinery inputs have increased, crude exports must still be offset by crude imports (see One Piece At A Time for a detailed explanation)]. Tallgrass's terminal plan reflects the realities of increasing imports and exports — and VLCCs, which (whether carrying crude from the U.S. or to it) remain the most cost-effective way to transport those large volumes of oil. A VLCC-ready export-import terminal in deep water off Venice would put Tallgrass's planned terminal in direct competition with the nearby Louisiana Offshore Oil Port (LOOP; green diamond in Figure 1), which is currently the only Gulf Coast facility capable of unloading and (fully) loading VLCCs. And while LOOP benefits from its direct connection to 72 MMbbl of crude storage at Clovelly, LA, Clovelly's access to the variety of crudes Tallgrass's Seahorse Pipeline could deliver (Permian, SCOOP/STACK, DJ, Powder River and Bakken) are limited (see Part 1 and Clovelly Calling? for more on that).

In our next episode, we'll look at Enterprise Products Partners' plans for an offshore crude export terminal off the coast of Texas, as well as the possibility of still more deepwater terminals being proposed by others.



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"Deep Water" is a track off country singer George Strait's 1986 album, 7. "Deep Water" was written by Fred Rose and was first recorded and released by Bob Wills and his Texas Playboys in 1948. George Strait's 7 LP — his seventh album — reached #1 on the Billboard Top Country Albums chart, and #27 on the Billboard Top 200 Albums chart. It produced two #1 hit singles, "Nobody in His Right Mind Would've Left Her" and "It Ain't Cool to be Crazy About You." Personnel on the LP were: George Strait (lead vocals and acoustic guitar), Curtis Young (background vocals), Eddie Bayers (drums), David Hungate (bass), Billy Joe Walker (guitar), Reggie Young (guitar), Richard Bennett (guitar), John Jarvis (piano), Johnny Gimble (fiddle and mandolin) and Paul Franklin (steel guitar).

George Strait is a Texas country music singer, songwriter, actor, and music producer. He has released 29 albums on the MCA label, and has had 61 #1 songs on the country charts, more than any other artist in any genre. He has sold more than 68 million records in the U.S. alone, and has 13 multiplatinum, 33 platinum and 38 gold albums. He holds the record for the most CMA and ACM Awards. He is still recording and on tour through the end of 2018.

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