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## Deep Water, Part 2 - Contenders in the Race to Build Crude Oil Export Terminals Off the Texas Coast

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Much like their heated competition to build new crude oil pipelines from the Permian to the Gulf Coast, midstream, logistics and trading companies are jockeying to construct the first new export terminal capable of fully loading Very Large Crude Carriers — Trafigura joined the fray earlier this week. While VLCCs are by far the most cost-efficient way to haul crude to Asia, their Godzilla-like physical dimensions restrict the number of land-based terminals they can use. And even those that can accommodate these seagoing behemoths can only load a VLCC part-way — “reverse lightering” out in deeper, open waters is required to fill the supertanker to the tippy top. So a handful of ambitious midstreamers are developing plans for *offshore* terminals out in deep water, miles from the Texas coast. Today, we continue our review of these proposals with a look at JupiterMLP’s plan for a terminal off Brownsville — and a new Permian pipeline to the city.

This is the second blog in this series. As we said in [Part 1](#), U.S. crude oil exports have been rising steadily since the 40-year ban on most exports was lifted in December 2015. According to the Energy Information Administration (EIA), U.S. crude exports averaged 590 Mb/d in 2016, rose to 1.1 MMb/d in 2017, and so far in 2018 have averaged just over 1.8 MMb/d. In the week ending August 3 — the latest EIA data available — nearly 1.9 MMb/d was being sent abroad. Recently, exports hit an all-time high at an even 3.0 MMb/d exported the week ended June 22. The ratcheting up of export volumes is likely to continue — it needs to, really, to help balance a steady rise in U.S. production. As we said in [Got That Swing](#), the three production-forecast price scenarios that we assessed in our most recent update — crude prices flat at \$70/bbl or \$55/bbl to 2023, or (like the forward curve) ramping down to \$55/bbl over the next five years — would result in crude production growth of between 2.0 MMb/d (under the flat-at-\$55 scenario) and 5.0 MMb/d (under the flat-at-\$70 scenario). That’s on top of the 11 MMb/d the U.S. is already producing, which is twice the 5.5 MMb/d rate back in 2010. U.S. refineries already are operating at close to full capacity, and while at least a few refinery expansion projects are being planned, they would only be capable of absorbing a small portion of the incremental crude production we’re likely to see. Rising exports are, to put it bluntly, a market necessity.

## RBN Crude Oil Infrastructure Maps

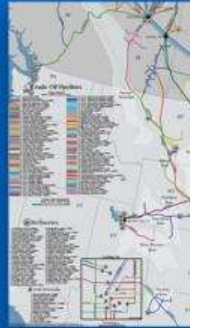


### US Gulf Coast

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Complementing the US Gulf Coast map, RBN's new US & Canadian Interior Crude Oil Infrastructure Map provides a comprehensive view into North America's northern oil transportation routes and infrastructure, from the Western Canadian oil sands and U.S. Rockies producing regions to Cushing, OK and Midwest refineries.



In the same way that Texas-size Ford F-Series and Chevy Silverado pickups enjoy most-favored-vehicle status in the Lone Star State, the Very Large Crude Carrier (VLCC) is preferred by many long-distance shippers. VLCCs can very economically transport about 2 MMbbl of crude oil to Asia or Europe, but their dimensions — 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 — limit where they can dock. As we said in [Rock the Boat](#), there's still only one terminal on the Gulf Coast that can fully load a VLCC: the Louisiana Offshore Oil Port (LOOP; green diamond in Figure 1), which is located in 110-foot-deep waters 18 miles off Port Fourchon, LA. And while LOOP benefits from the 72-MMbbl crude storage, blending and distribution hub in nearby Clovelly, LA (red dot), pipeline connections to Clovelly from key Texas and Oklahoma plays to LOOP are limited (see [Part 1](#) and [Clovelly Calling?](#) for more on that).

Elsewhere along the coast, VLCCs need to be loaded in offshore deep water by full reverse lightering from smaller vessels — a slower and more costly loading process that typically involves shuttling crude out in smaller tankers to a VLCC in a trans-shipment area (TSA) and transferring the crude onto the larger ship. In recent months, a number of companies have been testing the docking and partial loading of VLCCs at terminals along the Texas coast, with the hope of using a hybrid approach — partially loading of VLCCs at the dock, followed by partial reverse lightering offshore in TSAs — on a more regular basis soon (see [Working on a Dream](#)). That would be more efficient than the full reverse lightering in common usage today, but an even more efficient alternative would be to fully load a VLCC at an onshore dock — or at a LOOP-like offshore terminal.



Figure 1. Source: RBN (Click to Enlarge)

Fully loading VLCCs at land-based terminals along the Texas coast would require multi-year channel-deepening projects. The potentially simpler and quicker alternative would be to develop a new, greenfield offshore loading terminal in waters deep enough to accommodate fully laden VLCCs (72 feet or more), and to connect the facility by large-diameter pipe to onshore storage and pipeline networks to allow for rapid loading. In Part 1, we described the joint plan by Oiltanking, Enbridge and

Kinder Morgan to build a new crude storage terminal in Freeport (TX) and a connecting pipeline to a new offshore crude loading facility (about 30 miles from shore; yellow diamond) by 2022. Today, we turn our attention to a plan by JupiterMLP to build a VLCC-capable crude loading facility only six miles off the coast of Brownsville (light blue diamond).

Jupiter's plan, like Oiltanking/Enbridge/Kinder Morgan's, calls for the development of about 10 MMbbl of new, onshore crude storage capacity. The tank storage planned by Jupiter for a site within the Port of Brownsville is needed to absorb the ebb and flow of crude as it is piped in from the Permian (more on this in a moment) and staged for loading onto VLCCs (and other, smaller tankers) at the Jupiter Offshore Loading Terminal (JOLT). The onshore storage would be connected to JOLT by two 24-inch-diameter pipelines together capable of loading 1 MMb/d — that is, one fully loaded, 2-MMbbl VLCC every 48 hours. (There will be room for two VLCCs to dock side by side so loading of the next tanker can continue with minimum delay.)



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The source of crude for the export operation would be — what else? — the Permian. To get that light, sweet oil to Brownsville, Jupiter plans to build the 675-mile Jupiter Pipeline (dashed orange-and-black line) from West Texas, passing through Three Rivers (TX) in the Eagle Ford along the way. (We should note that the dashed orange-and-black line in Figure 1 shows the *original* plan for a shorter pipeline. Jupiter has since expanded the project's reach into key producing areas in the Permian's Delaware and Midland basins, but a map for that plan is not yet public.) At Three Rivers, the Jupiter Pipeline would be interconnected to Kinder Morgan's Double Eagle Pipeline (brown line), which moves crude either southeast to Corpus Christi or northeast to Kinder's Crude & Condensate Pipeline (turquoise line); the Crude & Condensate pipe transports oil to key refining and export points up the coast. These links are designed to provide shippers with some degree of destination flexibility — that is, the ability to deliver crude to points other than Brownsville.

Our understanding is that the diameter and capacity of the Jupiter Pipeline are still in flux — at minimum, the developer is looking at 24-inch pipe and 500 Mb/d, and at maximum 36-inch pipeline and 1 MMb/d. Jupiter also plans to develop as much as 175 Mb/d of crude *processing* capacity at Brownsville that would enable it to convert very light ([API gravity](#) of about 50), very low-sulfur crude from the Delaware Basin to ultra-low-sulfur diesel (ULSD) and atmospheric gas oil (AGO) that could be exported to Mexico, which has been turning to the U.S. for an increasing share of its refined-product needs (see [Más](#)). At Brownsville, Jupiter also is planning up to 2.5 MMbbl of refined-product storage capacity, improvements to land-based docks at the port (to allow 30-Mb/hour loading of smaller, Panamax-class tankers), and multiple rail racks capable of loading/unloading crude oil and refined products. Jupiter plans to have all this — including the Jupiter Pipeline and JOLT — up and running by the latter half of 2020.

You might ask, why Brownsville? From Jupiter's perspective, there are a few benefits, including the fact that you need to go only six miles offshore to find waters deep enough to accommodate VLCCs — compared to 30 miles off Freeport (see the Oiltanking/Enbridge/Kinder Morgan plan) and maybe 80 miles out from the Houston Ship Channel. (Every mile of offshore pipe can set you back \$10 million or more.) Also, onshore acreage for tanks etc. is much cheaper in Brownsville than the busier, more built-out ports up the coast, and permitting is much easier. Whether that's enough to make JOLT and the Jupiter Pipeline a reality remains to be seen. In our next episode, we'll consider other plans to develop

LOOP-like offshore loading facilities along the Texas coast, including that newly announced plan by Trafigura for a deepwater terminal off the coast of Corpus Christi (pink diamond).



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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 multi-platinum, 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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### Comments Offshore VLCC



Submitted by Stephen T. Harr... on Thu, 08/09/2018 - 17:48

Very good article, but there is a missing 800 lb gorilla in the room. While the article discusses the considerable advantage of VLCCs, it completely overlooks the ULCC category, which is significantly a larger volume crude carrier. ULCCs are from 300,000 dwt to 570,000 dwt and will need at least 140 feet (35 meters minimum) draught. I worked at a STS terminal in the late 1970's and early 1980's off the outer Caymen Islands, where we always had a lee for transfer ops, and when a tanker came in that was over 500,000 dwt, we knew we had over 3 million barrels to transfer into smaller shuttles. There is a huge cost advantage for the charterers using these big fellas, and if you go off Brownsville, you get the necessary deep water. Construction of SMMB's to load offshore will be the same whether it is a VLCC or ULCC mooring bouy. Thanks

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