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PBF Extends Heavy Crude Bet in California

Pure-play refiner buys Shell Martinez plant.

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Data Sources for This Publication
CME Group
EIA
California Energy Commission
Alaska Department of Revenue
To discover more about the data sources used, click here.

Sweet and Sour

Independent refiner PBF Energy announced on June 11 its acquisition of Shell Oil's Martinez, California, refinery for $900 million-$1 billion. The purchase, expected to close by the end of 2019, will be PBF's sixth U.S. refinery and add 157 thousand barrels a day to its existing 865 mb/d portfolio, pushing its footprint over 1 million barrels/day. PBF retains overall fourth place in the U.S. market behind Marathon (3 mmb/d), Valero (2.6 mmb/d), and Phillips 66 (1.9 mmb/d). Except for the 173 mb/d Toledo, Ohio, plant, PBF's refineries are equipped with cokers that extract value from the heaviest sour crude. As such, the Martinez acquisition extends the company's long-term bet that heavy crude refining margins will exceed those of simpler refineries processing light sweet grades, even as U.S. production of the latter soars. This note looks at prospects for the Martinez refinery and the sweet/sour spread.

The U.S. refinery market has seen significant M&A activity in the past two years, topped by Marathon's 2018 acquisition of rival Andeavor, formerly Tesoro, to create the largest independent (see our May 2018 note, Has Marathon's Refining Empire Hit a Wall?). In November, smaller indie Par Pacific snapped up U.S. Oil's 41 mb/d Tacoma, Washington, plant from private-equity-backed Trailstone, and in January this year, Chevron purchased the 110 mb/d Pasadena, Texas, refinery from Petrobras (see Permian Majors Expand Downstream Processing). Just last month, Midwest independent CVR Refining announced its 132 mb/d Coffeeville, Kansas, and 74 mb/d Wynnewood, Oklahoma, refineries could be sold under an asset review. These plants are changing hands despite strong margins experienced in 2018 (see our January note, Record Runs and Strong Margins Boosted Refiners in 2018) and continued discounts for domestic crude during the shale era as production exceeds refinery demand for light sweet grades.

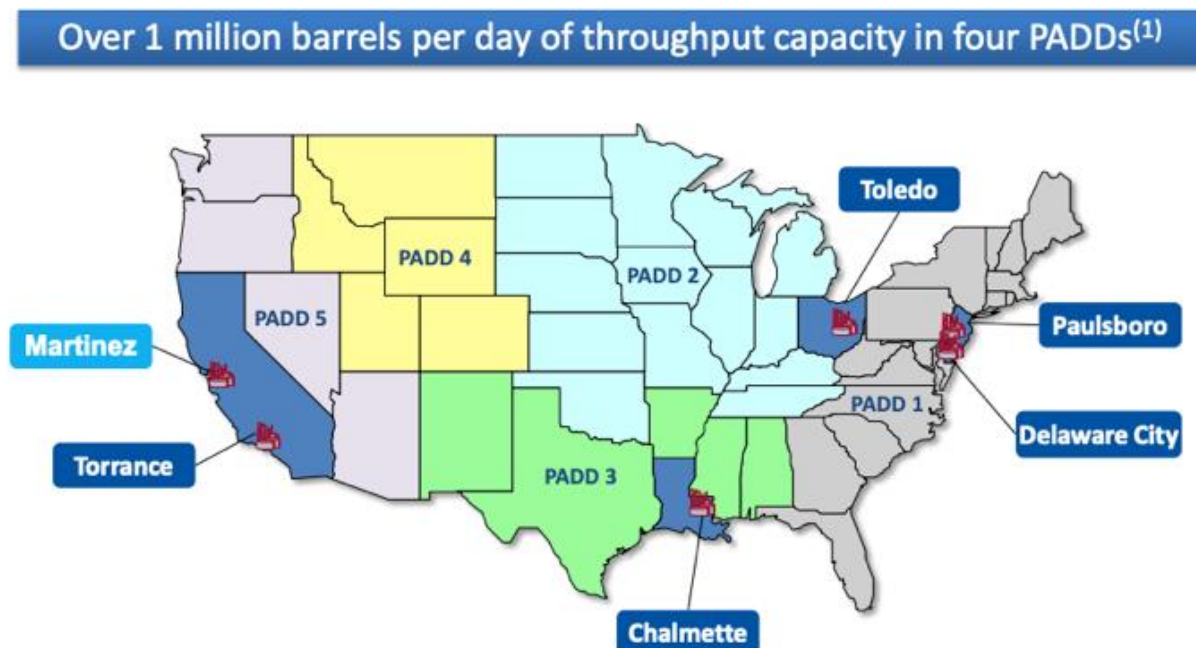
Doubling Down

Despite U.S. crude production doubling from 5.5 mmb/d in 2010 to 11 mmb/d in 2018 according to the Energy Information Administration, refining capacity only increased by 1 mmb/d to 18.6 mmb/d in that period. In part, the lack of expansion reflects difficulty permitting new construction for anything but small refineries as well as existing refiners' reluctance to invest in new capacity to process abundant light crude, with the notable exception of ExxonMobil's planned 300 mb/d Beaumont plant expansion. The bulk of current U.S. capacity coming on line in the past 40 years was designed to process heavy crude in the belief it would be easier and cheaper to acquire than lighter crude, which was expected to be scarce. Instead, this year—with OPEC, Russian, and Canadian production cuts as well as sanctions on Iran and Venezuela—heavy sour crude has become scarce and light sweet shale crude is flooding the international market. In these circumstances, PBF Energy's $1 billion investment in a California refinery running heavy sour crude represents a doubling down on the company's belief that technically

superior U.S. refineries can extract better value from heavy crude than less sophisticated rivals can from shale grades.

The sophisticated Shell Martinez refinery located near San Francisco has a Nelson complexity index of 16.1. Together with the former ExxonMobil 160 mb/d Torrance refinery near Los Angeles, which PBF acquired in 2016, this makes the PBF fleet the most complex in California. PBF also has two refineries on the East Coast in Delaware City, Delaware, and Paulsboro, New Jersey, as well as the Toledo plant and the 190 mb/d Chalmette, Louisiana, Gulf Coast refinery also purchased in 2016 (Exhibit 1). California has 11 transport fuel refineries that we described in an August 2017 outlook (see California Refineries Hostage to Climate Science) with a total 1.8 mmb/d capacity. The Martinez acquisition puts PBF in third place in the state with 317 mb/d, behind Marathon (508 mb/d) and Chevron (514 mb/d). Marathon's 120 mb/d Anacortes, Washington, refinery makes it the biggest player in the West Coast Petroleum Administration for Defense District 5, followed by Chevron and Phillips 66, then PBF.

Exhibit 1 PBF Refining Fleet



Source: PBF presentation.

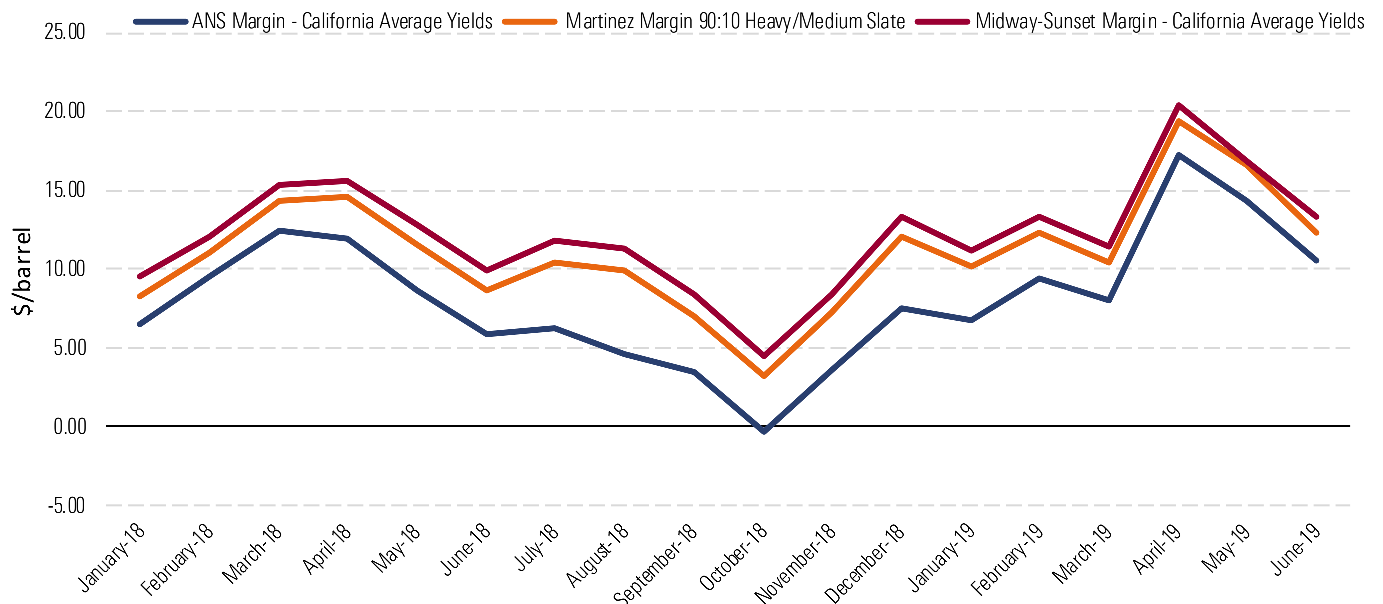
Performance

PBF provided indicative yields for the Martinez plant in a post-acquisition conference call. These showed the plant producing yields of 55%-60% gasoline, 35%-40% distillate—of which two thirds is jet kerosene and one third California Air Resources Board specification diesel—and 10%-15% other fuels (likely liquid petroleum gases and fuel oil). Weekly refinery reports from the California Energy Commission indicate typical yields at California refineries are 58% gasoline, 22% diesel, 16% jet fuel, and 3% fuel oil. This

data suggests Martinez produces more jet kero that its rivals, probably because it is connected by pipeline to the San Francisco airport. The Martinez refinery crude slate is 90% heavy sour crude, mostly sourced from domestic California production, and 10% medium or light, including Alaska North Slope.

Based on these yields, we estimated monthly average margins for the Shell Martinez refinery in 2018 based on a 90% heavy/10% ANS crude slate at $9.86/barrel compared with $6.66 for a typical California refinery yield running ANS crude and $11.07/barrel for a typical California yield running local heavy Midway-Sunset crude (Exhibit 2). Results were better still at Martinez this year after the spate of refinery outages that raised gasoline prices during April (see our June note, California Gasoline Shortage Boosts Refinery Margins). Martinez margins reached an average $19.37/barrel in April, retreating to an average $12.37/barrel during the first fortnight in June. Between January 1 and June 13, Martinez margins averaged $13.51/barrel versus a California average $14.45/barrel for heavy crude and $11.05/barrel for ANS. The Martinez plant therefore has run more profitably over the past two years than rivals using lighter crude. The better performance of the typical California plant running heavy crude reflects higher diesel yields versus jet. On that front, as part of the acquisition announcement, PBF and Shell agreed to jointly move forward with reviewing a proposed renewable diesel project that would repurpose existing idled equipment into a renewable fuels production facility. This would improve diesel output while pleasing California regulators looking to replace fossil fuels.

Exhibit 2 Martinez and California Refining Margins



Source: CEC, Alaska Department of Revenue, Chevron posting, CME Group, Morningstar.

Closed for Margins

With refineries in Los Angeles and San Francisco, PBF becomes a stronger player in the insulated California market, where the state's unique environmental fuel specifications limit easy access to supplies from other regions or overseas. In case of refinery outages—especially unplanned—refiners struggle to find adequate gasoline supplies to meet downstream commitments. Having another plant certainly helps that balance. Cynics might say that because gasoline prices tend to increase during outages—even planned maintenance—an owner with two plants can improve margins at one while the other is idle.

IMO

As we have said, PBF is making a clear bet on heavy sour crude refining by purchasing Martinez to add to its already heavy-leaning fleet. The company's strategy in the short term is to maximize returns from the IMO bunker fuel regulation changes due Jan. 1, 2020. These new rules eliminate the market for up to 3 mmb/d of high-sulfur fuel oil now used as ship bunkers, requiring an ultra-low-sulfur replacement. In theory, the change favors refiners like PBF with sophisticated plants that can process heavy crude to remove most of the sulfur. The argument is that most refineries worldwide that are less sophisticated produce high-sulfur fuel oil traditionally delivered into the bunker market. With that avenue closed, these less sophisticated players will have to process lighter low-sulfur crude. The resultant increase in demand for low-sulfur crude will (the argument goes) reduce the value of heavy crudes, making them cheap for refiners like PBF, which should then enjoy fatter margins.

Danger

The danger in this argument comes when the expected shortage of light sweet crude does not materialize, or if it does, reduced supplies of medium and heavy crude from traditional suppliers like OPEC, Russia, Venezuela, and Iran keep the sweet/sour spread narrow after IMO 2020. That narrow spread has already been the case this year in light of scarce supplies, and it had a negative impact on many U.S. refiners processing heavy crude during the first quarter. In the longer term, the apparent growing abundance of light shale crude supplies as well as a downstream preference for cleaner low-sulfur fuels could skew investment away from heavy crude and tighten supplies. In that case, the flexibility to process lighter crude will favor those refiners that have invested in it. M

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